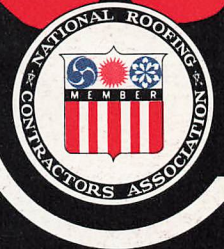


SEPTEMBER 1976

# the roofing spec

1515 NORTH HARLEM AVENUE • OAK PARK, ILLINOIS 60302 • 383-9513

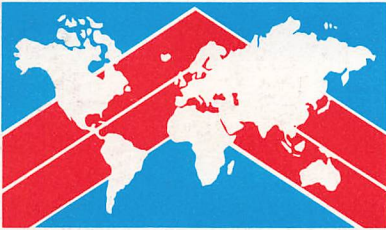


**ATLANTA**  
**ATLANTA**  
**ATLANTA**  
**ATLANTA**  
**ATLANTA**

**NRCA**  
**90<sup>th</sup>**  
ANNUAL  
CONVENTION  
& EXHIBIT

FEBRUARY 7-9, 1977

**SYMPOSIUM ON  
ROOFING TECHNOLOGY**



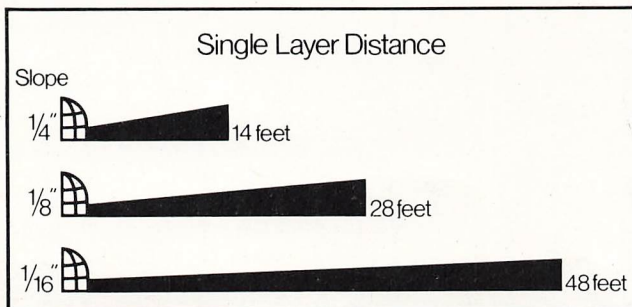
ル-フ-テ-クニ-ケ-ル-シ-ム-ホ-テ-ヨ-ム  
SYMPOSIUM UBER DACHTECHNOLOGIE  
SYMPOSIUM ON TAKBELÄGGNING TEKNOLOGI  
SYMPOSIUM SUR LA TECHNOLOGIE DE TOITURE

**INSURANCE  
AND THE  
ROOFING  
CONTRACTOR-  
PART 1**



## Install the new Tapered III FOAMGLAS® Roof Insulation System with less labor and underlayment costs.

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.

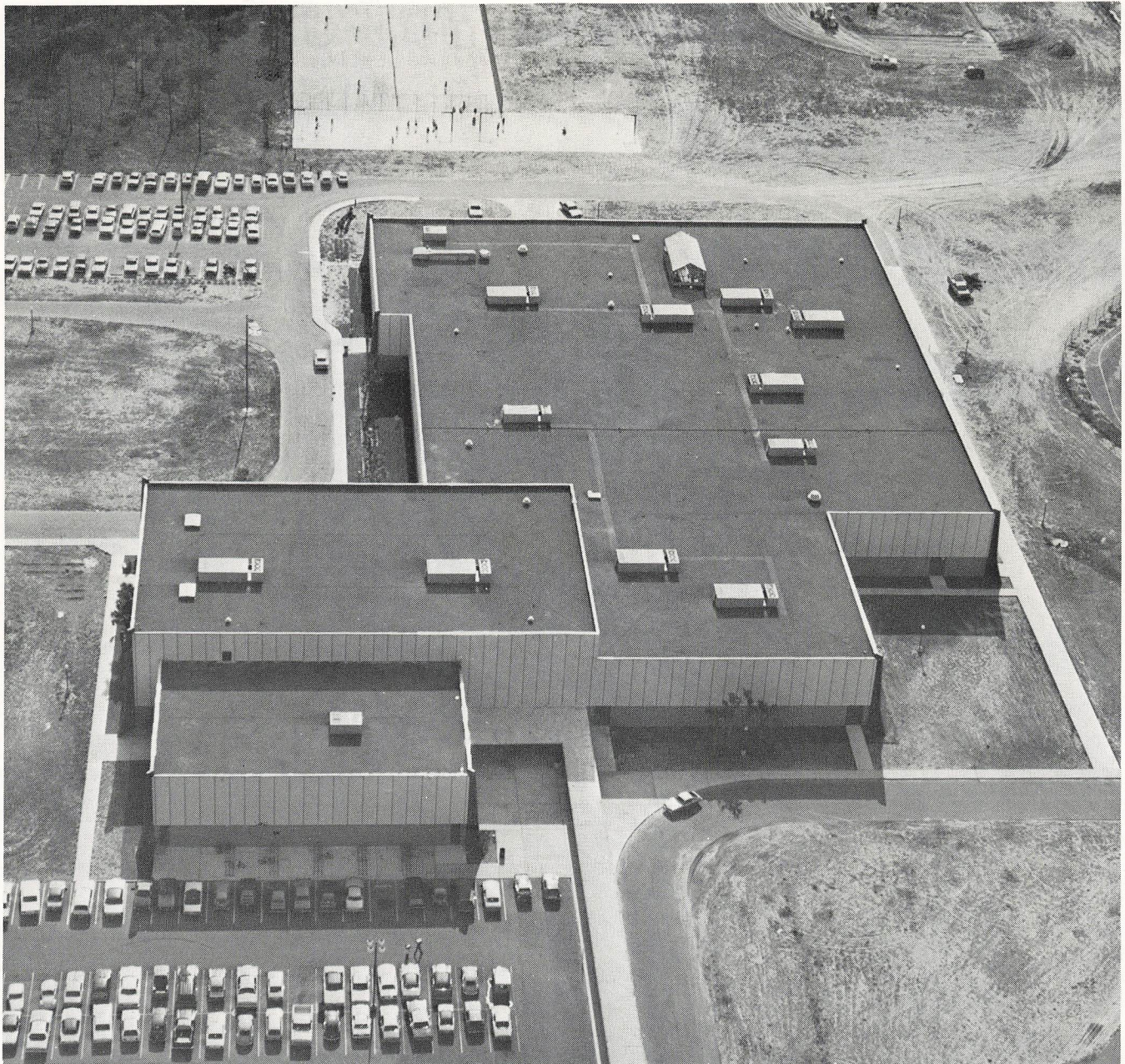


The Tapered III System arrives on the job-site shrink-wrapped and alphabetically and color coded for easy identification. Each tapered FOAMGLAS block is clearly marked according to its row and direction of slope to simplify installation. The Tapered III System is installed using conventional roofing 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-96, 800 Presque Isle Drive, Pittsburgh, Pa. 15239.





Lely H.S. Naples, FL, *Arch./Eng.* Watson and Co.; *Gen'l. Contr.* Peacock Constr. Co.; *Roof. Contr.* Republic Roofing.

## Low-fuming coal tar bitumen gets high marks!

Florida's tough sun and high humidity led designers of the 150,000 sq. ft. Lely High School Building to specify the long-life protection of a Koppers Coal Tar Bitumen roof system.

Coal Tar Bitumen, developed by Koppers, demonstrates the fine characteristics of time-proven coal tar roofing pitch, but in keeping with aims of govern-

ment, labor, and industry, features reduced fume evolution and improved workability.

Like coal tar roofs installed years ago, Coal Tar Bitumen resists oxidation, withstands ponding water, and has the cold flow ability necessary for self healing.

When you plan your next job, keep Koppers Coal Tar Bitu-

men roofing systems in mind. You can feel confident of receiving the finest products available... products developed with our environment in mind.

Examine Koppers Coal Tar Bitumen—you'll give it all A's!

Koppers Company, Inc.,  
Koppers Building, Pittsburgh,  
PA 15219.

# KOPPERS

Architectural and  
Construction Materials

# EVERYTHING YOU WANT in one roof insulation board...



## Permalite® Pk® perlite/urethane rigid roof insulation combines the fire resistance of perlite with the superior insulation of urethane!

### **New treated top surface.**

New asphalt-impregnated skin permits uniform cure of urethane during manufacture, provides superior bond of built-up roof to top surface of insulation and improves ability of top surface of urethane to withstand application of bitumen heated to 500°F.

### **More insulation, less thickness.**

Urethane with a k factor of .13 provides highest insulation efficiency. Perlite is dimensionally stable, moisture-resistant, fire-rated, easy to work with, non-irritating. Together—

as one composite product—they provide more insulation with less thickness and save both fuel and mechanical costs.

### **Full rating-bureau approvals.**

Permalite Pk rigid roof insulation meets requirements for UL and FM ratings not possible with urethane alone. Permalite Pk provides the way to use urethane insulation on a metal roof deck and get an acceptable fire rating. Insurance people love it. Write now for sample and technical data.

To meet other roof insulation needs, GREFCO also offers Permalite® Sealskin® perlite insulation board.

## Permalite® Pk

The roof insulation board designed to keep heating and air conditioning costs down as the cost of fuel goes up!



A subsidiary of  
General Refractories Company

GREFCO, Inc./Building Products Division  
Oak Brook, Illinois 60521—(312) 654-4500

# the roofing spec

Volume 4 Number 5 September 1976

## Departments

Comment: Some Rather Immodest Proposals	8
New Members	9
Ideas, Notes & Random Thoughts	10
News From Associate Members	40
News From Affiliates	36
Industry Developments	42

## Features

<b>Insurance and the Roofing Contractor</b>	
Part I of a timely report by Dick Lietz of Fred S. James & Co.	12
<b>Perlite Asphalt Thermal Setting Roof Insulation</b>	
Don McNamara presents the seventh in our series on Roof Decks	18
<b>NRCA's 90th Annual Convention</b>	
A Preview of Atlanta in February	22
<b>The Case For Metrication</b>	
Jud Hoops' article is presented on 8½" x 11" paper	24
<b>CCE Report</b>	
CCE speaks out on the CMA merger issue	30
<b>Symposium on Roofing Technology</b>	
Call For Papers	34
<b>The 1976 NRCA Membership Contest</b>	
Win a trip to Monte Carlo!	38

## Advertisers

Aeroil Products Co., Inc.	44	Liquid Asphalt Systems, Inc.	33
Architectural Steel Corp.	9	Machinery Development, Inc.	14
Julien P. Benjamin Equipment Co.	31	Marathon Roofing Products, Inc.	31
Benoit, Inc.	13	Midland Engineering Co.	32
The Bilco Co.	21	MM Systems Corp.	9
Blackwell Burner Co.	26	Monier-Raymond Roof Tile Co.	25
Carlisle Tire & Rubber Co.	6	National Nail Packaging Corp.	25
Celotex Corp.	16-17	Nieman Manufacturing Co.	32
Certain-teed Products Corp.	29	P & D Manufacturing Co.	35
Contech, Inc.	9	P.A.L. Development Corp.	43
Evode, Inc.	28	Panel Era Div.	37
GAF Corp.	11	Peterson Aluminum Corp.	13
Garlock Equipment Co.	43	Pfingsten Engineering Co.	39
B. F. Goodrich		Pittsburgh Corning Corp.	2
General Products Co.	15	Reeves Roofing Equipment Co.	36
GREFCO, Inc.	4	Reimann & Georger, Inc.	19
W. P. Hickman Co.	19	Roofmaster Products Co.	20
Johns-Manville Corp.	7	Rubber & Plastics Compound Co.	8
Koppers Co., Inc.	3	Vermont Structural Slate Co.	40



See Page 22



See Page 34

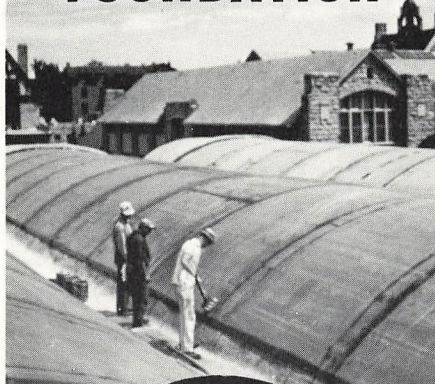


See Page 12

**THE ROOFING SPEC** is published bimonthly by the **National Roofing Contractors Association**, 1515 North Harlem Avenue, Oak Park, Illinois 60302. **Annual Subscription Rate** for NRCA members is \$6.00, which is included in Annual Membership Dues. Additional subscriptions for member firms are \$6.00 annually. Non-member subscription is \$12.00 per year. **Second Class Postage** paid at Oak Park, Illinois.

Statements of fact and opinion are made on the responsibility of authors alone and do not imply an opinion on the part of the Officers, or the membership of NRCA. **Material** may be reproduced by any member or affiliate association. Appropriate credit line is requested.

## FROM ROOF TO FOUNDATION



**CARLISLE**  
FOR  
LIQUID  
MANAGEMENT



### **CARLISLE SURE-SEAL ELASTOMERIC MEMBRANE**

Complex angles, awkward designs, and waterproofing problems are no mystery to Carlisle . . . whether it is roofing — liquid or sheet, sub-basement, or foundation waterproofing, subway or underground garage — it's Carlisle's business. Whenever containment or exclusion of liquid in any quantities is a problem . . . call Hugh Kenney at Carlisle . . . (717) 249-1000.

**Carlisle Tire & Rubber**

**CARLISLE**

Carlisle Tire & Rubber Company  
Division of Carlisle Corporation  
P.O. Box 99, Carlisle, Pa. 17013

## OFFICERS and DIRECTORS

### **NRCA OFFICERS**

#### **President**

GEORGE STEPHENSON  
Stephenson Roofing Co.

#### **Senior Vice President**

J. ROY MARTIN, JR.  
J. Roy Martin & Co., Inc.

#### **Vice President—Two Years**

MELVIN KRUGER  
L. E. Schwartz & Son, Inc.  
TOM MANSON  
Western Roofing Co.  
RICHARD WILLIS  
The Wehner Rfg. & Tinning Co.

#### **Vice Presidents—One Year**

GEORGE BODWELL  
Bodwell-Lemmon Co.  
WAYNE MULLIS  
Universal Roofers & Builders Inc.  
ARNIE SCHMAUTZ  
Buckaroo-Thermoseal, Inc.

#### **Immediate Past President**

ROBERT E. LINCK  
Warren-Ehret-Linck Co.

### **BOARD OF DIRECTORS**

#### **Three Year Term**

MIKE P. ALCOCK  
M. W. Powell Co.  
MIKE BELDON  
Beldon Roofing & Remodeling Co.  
TOM BOLLNOW  
Boice Roofing Co.  
WILLIAM L. BRITTON  
Augusta Roofing & Metal Works, Inc.  
ROBERT L. BUBENZER  
Henry C. Smither Roofing Co., Inc.  
WM. MICHAEL COCHRANE  
Cochrane Roofing & Metal Co., Inc.  
JAMES L. DAHILL  
F. J. Dahill Co., Inc.  
ROBERT C. HARRINGTON  
Harrington Roofing Contractors, Inc.  
STEPHEN K. KRUPNIK, JR.  
Krupnik Bros., Inc.  
WILLIAM KUGLER  
United Materials, Inc.  
SAM PIPER  
J. A. Piper Roofing Co.  
JOE RUTKOSKI  
Giffen Ind. of Tampa, Inc.  
W. H. WOLF  
Hamilton Roofing Co. of New Mexico

#### **Two Year Term**

GAYLORD BLUE  
Blue's Roofing & Insulation Co.  
JOHN H. BONITZ, JR.  
The Bonitz Insulation Co., Inc.  
JOHN BRADFORD  
Bradford Roofing & Insulation Co.  
ROBERT FIRST  
Clevenger Roofing & Sheet Metal  
WILLIAM T. FORT  
Fort Roofing & Sheet Metal Works  
ELTON HOGAN  
Anning-Johnson Co.  
RAY JOHNSON  
Empire Roofing & Insulation Co.  
JAMES KING  
Fred A. Snyder Roofing & S/M Co.

HERBERT J. KIZER, JR.

Therrel-Kizer, Inc.  
WALTER M. KRAVITZ  
Morris Roofing & S/M Corp.  
GLENN LANGER  
Langer Roofing & S/M Works  
JAMES MANSFIELD  
James Mansfield & Sons, Inc.  
GEORGE STEYER, JR.  
Steyer Roofing Co.  
JAMES TAYLOR  
Biebel Roofing Co., Inc.  
JOEL YANCEY  
Yancey Company  
JOHNNY ZAMRZLA  
Western Pacific Roofing Co.

#### **One Year Term**

HAROLD CANADAY  
J. L. Adler Roofing Co.  
TED GROCHOWSKI  
Progress Roofing  
WILLIAM HOLCOMB  
Sears Roofing Service, Inc.  
BURTON J. KARP  
Eagle S/M Works, Inc.  
LEONARD LEVINE  
B. Sheber & Sons, Inc.  
JAMES A. McBRADY  
James A. McBrady, Inc.  
FRANK B. McCORMICK  
B. B. McCormick Roofing Co.  
KAY MILLER  
Stucki-Miller, Inc.  
LAWRENCE I. MUSIL, JR.  
Interbay Roofing Co., Inc.  
JESSE H. PLUMMER  
Trinidad Asphalt Roofing Co.  
CHESTER L. RAYPHOLTZ  
Fresno Roofing  
CHARLES RUFF  
Charles F. Ruff & Co., Inc.  
EUGENE SCOTT  
Empire Roofing Co.  
DON G. SIMPSON  
Gulf Waterproofing  
OSCAR P. SKANDERUP  
Ace Roofing Co.  
RICHARD SMITH  
Home Roofing & Building Co.  
GAROLD STEWART  
Stewart & Ramseur, Inc.  
CLOYD TUCKER  
Cloyd Corporation  
DANIEL WOLFE  
Luppold Roofing Co., Inc.

### **STAFF**

#### **Executive Vice President**

FRED GOOD

#### **General Manager**

BRUCE MARTIN

#### **Technical Services Manager**

EDWIN MERTZ

#### **Administrative Manager**

WILLIAM GOOD

#### **Secretaries**

JANICE CLARDY  
LORAIN FABER  
MELODY LEJCAR  
PHYLLIS WENDT

# This new plant just boosted our production of Fesco<sup>®</sup> Board roof insulation by 50%. It can boost your sales and profits too.

Turning out enough J-M Fesco Board roof insulation to fill your orders has been a real problem.

Now that's all changed.

With the opening of our new Shenandoah plant at Woodstock, Virginia, our production of this popular roof insulation board has gone up a big 50%!

That's good news, particularly if you're located in the eastern tier of states from South Carolina to Maine. Because that's the area these new facilities are intended to serve.

It's good news for contractors elsewhere, too. It means that all the production from our plants in Rockdale, Illinois, and Natchez, Mississippi, is now available to all states outside the eastern tier.

Now you're in the position to get delivery when you need it.

No more allocation. No more waiting for delivery.

More Fesco Board means everyone's ahead.


Your clients realize important savings in both fuel and initial heating/air-conditioning costs.

And you're way ahead. Added insulation on every job means bigger sales. And bigger profit dollars. Try using Fesco Board in your NRCA Energy Manual Worksheets today!

For more information about Fesco Board or the J-M single source built-up roofing system, write for BU-274, Johns-Manville, P.O. Box 5108, Denver, Colorado 80217. Or call Peter McCracken — 303/770-1000.



**For single-source built-up roofing systems.**

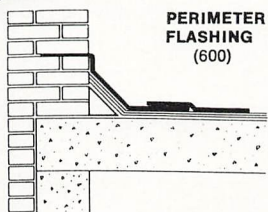
 **Johns-Manville**

JA 76-5L2

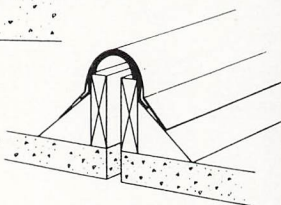


# UPSTAIRS—DOWNSTAIRS ALL AROUND THE HOUSE NERVASTRAL WATERPROOFS IT!

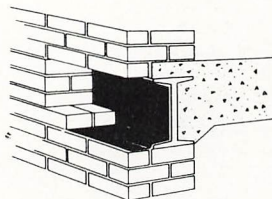
**PERIMETER  
FLASHING**  
(600)



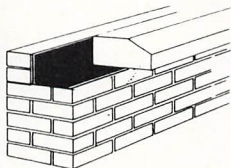
**NERVA-FLEX  
EXPANSION JOINT**



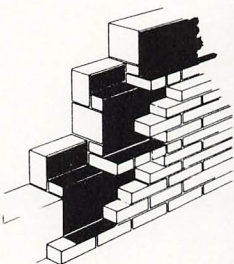
**SPANDREL  
FLASHING**  
(H-D, 300)



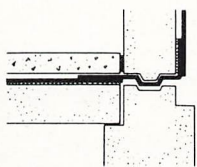
**SILL FLASHING**  
(H-D, 300)



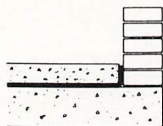
**THRU-WALL  
FLASHING**  
(H-D, 300)



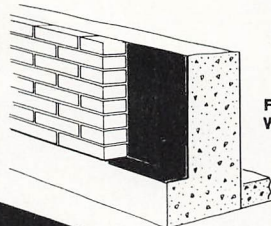
**NERVASTRAL  
SHEET MEMBRANE**  
(300-400-56-m600)



**NERVA-DECK  
SLAB MEMBRANE**  
(NERVA-DECK LIQUID)



**FOUNDATION  
WATERPROOFING**  
(300-400-56)



**RUBBER & PLASTICS COMPOUND CO.,  
INCORPORATED**



25-20 43rd AVENUE • LONG ISLAND CITY  
NEW YORK 11101, Telephone 212-392-6780

## Comment

### Some rather immodest proposals....

Your Board of Directors, Executive Committee, and some 23 NRCA Committees met for a long weekend in Chicago in late July, and laid the groundwork for what will become the most ambitious year in NRCA history. A sampling:

John Bradford's Energy Manual Task Force has completed its assignment, and an NRCA Energy Manual will be sent to all members this year.

Ditto Larry Musil's Waterproofing Manual Task Force.

Speaking of manuals, the Roofing Manual Committee has completed a revision of the Detail section, which also will be ready soon.

The Technical Assistance Program, under Mel Kruger's guidance, has been revitalized and now includes 52 qualified contractor participants.

The Education committee, under Burt Karp's direction, plans to produce a slide presentation on basic roofing techniques, in addition to holding two Superintendent's Conferences this year.

Ray Johnson's Specification Review (see Application Standards) Committee spent several hours with its appointed tasks.

The Legislative Committee, under Herb Kizer's leadership, will oversee NRCA's co-sponsorship of the Construction Industry National Legislative Conference next March in Washington.

Sam Piper's Insurance Committee has been meeting frequently to accommodate the many new NRCA/CNA participants.

The Technical and Research Committee, co-chaired by George Bodwell and Bill Kugler, is planning a new series of tests.

The Technical Symposium Committee has made all the preliminary plans for an international meeting in September of 1977.

Last and surely not least, Bud Ruff's Membership Committee has established a goal of 300 new members by next July.

The goal of 300 new members—like all of the NRCA committee undertakings—is a rather immodest proposal. It requires not only a dedicated Membership Committee, but a dedicated membership as well. NRCA has demonstrated time after time that there is strength in numbers, that the scope of NRCA programs corresponds directly to the size of the NRCA membership.

So we ask each member to set for himself a modest goal: to bring at least one new member into NRCA by the time of the Convention in February. You just might be surprised at how easy it is, and go on for one of the great prizes offered in this year's membership contest, described elsewhere in this issue.

Membership dues are the lifeblood of any association, and they make possible all of the programs mentioned above. It wasn't too many years ago that 1000 members seemed an impossible goal. Today, NRCA is on the brink of 1500 members, a very attainable goal. But attainable only with your help.



# New Members

The following have been approved for membership in  
NRCA between June 5 and August 5, 1976.

- A.B.C. Roofing & S/M Co.  
*East Detroit, MI*
- Complete Building Maintenance Co.  
*Chicago, IL*
- Esko Roofing Co.  
*Chicago, IL*
- Forest Roofing Co., Inc.  
*Monsey, NY*
- Jack's Roofing Co., Inc.  
*Bethesda, MD*
- Martin Roofing Inc.  
*Spring Valley, NY*
- Peterson Construction Inc.  
*Milwaukee, WI*
- Quisqueya Roofing Contractors, Inc.  
*Rio Piedras, Puerto Rico*
- Skinner Roofing & S/M Inc.  
*Colorado Springs, CO*
- Tolley-Hughes  
*Boise, Idaho*
- Tom's Roofing & Sliding Inc.  
*Wyandotte, MI*
- Tri-State Roofing Co., Inc.  
*Seaford, Del.*
- Ubelhoer Tinning & Roofing Co.  
*Hillside, NJ*

## Associate Members

- Clearfield Manufacturing Co.  
*Clearfield, Utah*
- Mobay Chemical Corporation  
*Pittsburgh, PA*

# WALL-BOND<sup>®</sup>

TEXTURED

## Stainless Steel THRU-WALL FLASHING & WATERPROOFING

FOR ALL FLASHING APPLICATIONS

Manufactured By

**ARCHITECTURAL STEEL CORPORATION**

One Broadway, Cambridge, Mass. 02142 Tel. (617) 491-3150

# What's in it for You...

## counts first with HER.

We think the roofing contractor besides the owner should benefit from using HER, our Hydrocide Elastomeric Roofing system. So we included features in HER you can benefit from today, tomorrow, or ten years from now to strengthen and improve your business. Specific benefits that allow you to triple production with present crews, maximize business through customer satisfaction and completely avoid environmental problems.

**Now when are you going to use HER?**



**Contech-Sonneborn**

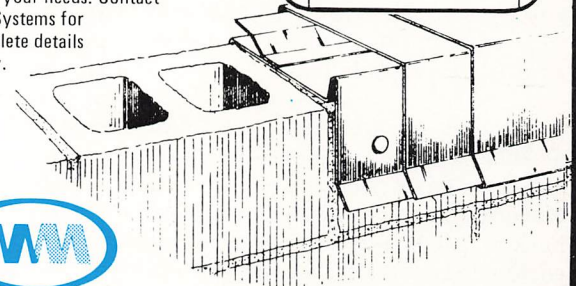
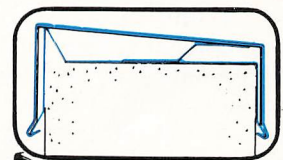
7711 Computer Avenue  
Minneapolis, Minnesota 55435  
Phone: (612) 835-3434



# THE MATERIALS MAKE IT... THE SYSTEM SHOWS IT.

Send for MM Systems' Free Brochure and let us show you how our proven engineering designs can help you with your roofing construction needs. For example, the Brochure includes MM Systems' unique Snap-Lok Coping, the watertight parapet covering with patented anchoring device that eliminates exposed fasteners.

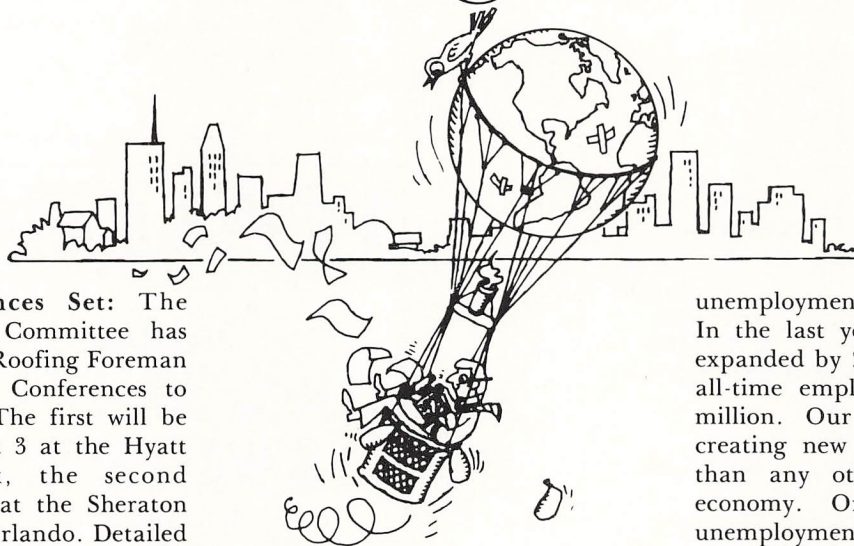
All MM Systems' products are factory prefabricated and include custom and standard designs to fit your needs. Contact MM Systems for complete details today.



**MM SYSTEMS CORPORATION**

4520 ELMDALE DRIVE, TUCKER, GEORGIA 30084 / PHONE (404) 938-7570

# Ideas, notes and random thoughts



**Super's Conferences Set:** The NRCA Education Committee has made plans for two Roofing Foreman & Superintendent's Conferences to be held this year. The first will be held December 2 & 3 at the Hyatt Regency Phoenix, the second December 9 & 10 at the Sheraton Olympic Villas in Orlando. Detailed information is available from the NRCA office.

**Dr. James H. Boren**, president and chairman of the board of the National Association of Professional Bureaucrats, tossed out these one-liners in an appearance at the U.S. Chamber of Commerce's Annual Meeting:

"When in doubt, mumble."

"Study a problem long enough and it will go away."

"If you're going to be phony, be sincere about it."

"Adjust the issues to our position."

"Let us learn to fuzzify."

**No Wonder:** The proposed Congressional budget for fiscal 1977 calls for outlays of \$413.2 billion and revenues of \$362.5 billion. For each U.S. household, this means the government will spend \$5,533 and collect \$4,704. And the national debt approaches \$700 billion.

**A Modest Revolt:** The *Christian Science Monitor* reports that one U.S. taxpayer sent the Internal Revenue Service the "shirt off my back." A Massachusetts taxpayer enclosed some tea leaves with his tax return to the IRS and marked the envelope, "Remember Boston."

**Energy Awareness:** HEW reports that it will use its \$9.5 billion list of current construction projects to encourage the use of energy conservation measures. From now on, application of HEW construction grants for hospitals, nursing homes, and educational facilities must include an energy efficiency analysis for the proposed structure. Private architects and engineers will probably be engaged to review the analyses for HEW Regional offices before grants are awarded.

**Quotable:** "A public job program...does little to stimulate economic growth and future job creation. When we cut taxes, we end up with new factories which go on producing and hiring for years. When we hire people to pick up papers in the park, for the same amount of money, we end up with a nice clean park for the untrained, unskilled, unemployed former public works employee to sit in, contemplating his good fortune at having had a public job once upon a time." — *Sen. Robert Taft [R-Ohio]*

**Employment Rate Up, Too:** "We often overlook the other side of the

unemployment coin, employment. In the last year, the economy has expanded by 2.6 million jobs, to an all-time employment high of 86.7 million. Our private economy is creating new jobs at a faster rate than any other major industrial economy. One reason that the unemployment rate is high is the very rapid growth in labor force participation. This is a healthy sign—more people are being drawn into the labor force by the rapid growth in job opportunities."—*Dr. Richard Leshner, President, Chamber of Commerce of the United States.*

**A Reminder:** Project Pinpoint is an ongoing, continuing process of data collection. If you have not done so, please send in Baseline reports on all jobs you completed the weeks of June 7 and 14. The next Baseline reporting period will be the weeks of December 6 and 13.

**Your Education Committee** has begun work on a slide program to cover the basics of good roofing practice. Anyone having slides or photographs of poor, good, or indifferent workmanship is encouraged to send them to the NRCA office.

**And Finally:** To start a new budget control procedure, the 1977 Federal fiscal year will start October 1, rather than July 1. As a result, Congress has adopted a mini-budget of \$98 billion just to cover the three-month interim period. We will spend more during this three month period than it cost to finance five wars, from the War of 1812 through World War I.



# "Why do I think GAF<sup>®</sup> Mineral-Shield<sup>®</sup> Roofing is so hot? Because it's cold-applied and that makes a big difference."

## Bill Steinmetz

Chairman  
Midland Engineering Company, Inc.  
South Bend, Indiana



"A play on words, hardly," Mr. Steinmetz continues. "We've been thinking cold around our company for over six years now. With some 400 cold process roofing jobs under our belt, we know that Mineral-Shield roofing performs. Not only can we recommend it with complete confidence to our customers, but we have also found through our extensive job experience that there are many advantages and benefits to the roofing contractor.

"Because Mineral-Shield is cold-applied, the need for heating kettles and tankers is eliminated. Also gone are hot luggers, felt layers, and gravel spreaders. In fact, a contractor's job equipment needs are reduced substantially and the cold process application equipment can easily be towed to the job site by conventional pick-up truck. The economics of this are obvious...less handling, faster job set-up, less equipment maintenance, not to mention the elimination of lost time due to accidents or burns.

"What really sold us on GAF Mineral-Shield Roofing system is that it works! And after all, that's the name of the game whether you're looking at it from the point of view of the owner, roofing contractor, or architect."

GAF Mineral-Shield is a modern cold-applied built-up roofing incorporating multi-ply of roofing membrane plus layers of roofing mastic and a surfacing of white mineral granules, usually applied by mechanized spray equipment. All components—roofing membrane, mastic and granules—are factory-finished under rigid GAF quality control. A Class "A" Underwriters' Laboratories Rating is available. Guaranteed by GAF when applied according to published specifications.



GAF Corporation  
Industrial Roofing and Waterproofing,  
140 West 51 Street,  
New York, New York 10020

Please send me further information on GAF Mineral Shield Cold-Applied Roofing.

Please have a representative call.

TA-RSP-96

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

## GAF<sup>®</sup> Mineral-Shield<sup>®</sup> Roofing

The Roofing Spec — 11



## INSURANCE AND THE ROOFING CONTRACTOR- PART 1

by Richard J. Lietz

**Editor's Note:** Mr. Lietz is a member of the Association Marketing Staff of NRCA insurance consultant Fred S. James & Co., where he works in the administration and development of NRCA's insurance programs. Previously, Dick was the CNA/insurance Account Manager for our program from its inception in 1971.

Commercial Insurance, that is Worker's Compensation, General Liability, Auto Liability and Physical Damage, Equipment and Material Coverage and the various forms of property insurance, have traditionally had a very important role in the operation of the Roofing Contractor. Insurance has sometimes been the difference between financial ruin and the orderly continuation of business operations.

The successful Roofing Contractor recognizes the impact that adequate insurance protection and cost has on his operation. He approaches his commercial insurance purchase in

the way he looks at the cost of material or labor. He will thoroughly review with his professional representative somewhere between 90 and 120 days ahead of his expiration the general sources of insurance protection. He will make a comprehensive review of the coverage and rates that he can expect to get and pay. He will then very carefully analyze his cost of operation to make sure current and future bids reflect realistically the current and estimated future cost of insurance. This is a never-ending assignment. The insurance-cost spiral has not moderated and will not do so for some time.

This two-part series will examine several of the most important and expensive components of your commercial insurance program. Specifically, we will examine Worker's Compensation, General Liability, and Umbrella Liability. These articles will discuss cost features, rate making techniques, the role of Bureaus, and what coverage you should consider fundamental and what you may want to sup-

plement a basic program of insurance.

### The Fundamental Factors That Affect the Premium You Pay

Insurance companies are stringently supervised by state and regional organizations which have been established to protect the public against discrimination and financial instability of the carriers. This supervision includes verification of liabilities and assets, and examination of claim reserves maintained by insurance companies to make certain that they have the means to pay claims fairly when due. In addition, all states are very strict in the application of manual and modified rates for Worker's Compensation insurance. Rating authorities supervise the overall application of Worker's Compensation manual rates as well as credits or debits superimposed by reason of loss experience.

### Schedule Rating

Notwithstanding all of the foregoing

supervision and control, which may give comfort to insurance buyers that the company will be around when the time comes to pay a claim, there is artful negotiation which goes into establishing the rates you pay for many forms of insurance.

Under General Liability and Automobile Liability, most states allow for schedule credits or debits which are applied to standard manual rates. Favorable points may include a formal accident prevention program, some aspects of your work which make it less hazardous than normal for your classification of operations, physical characteristics of the job at hand, and so on. However, it is important to note that even with the most sophisticated negotiation, it is much more difficult now to extract the level of schedule credit from underwriters that existed, say, two years ago. Insurance companies' recent loss experience, in large measure, has calcified their willingness to provide meaningful credits. This is particularly true under General Liability.

## Experience Rating

Worker's Compensation manual rates are actuarially sound. They are derived from a composite of reports submitted for all contractors doing roofing work within your state. These manual rates are then modified by your own loss experience over the past several years. If better than expected, your rates will be credited to reflect that improvement and, conversely, if your losses are worse than normal, experience debits will be applied to offset the likelihood of increased claim costs.

## Judgement Rating

General Liability coverage lends itself to negotiation. This is true not only of the basic Operations-Premises coverage, but also Completed Operations and Contractual Liability.

My object in calling this to your attention is not to cast a shadow upon what is, after all, my own

business, but rather to simply ask, "Who is doing this negotiating for you?"

Certain large contractors are able to employ people who are familiar with insurance rules and terminology and who have time to devote to supervision of such matters. However, most contractors have no such luxury.

Aside from selecting a representative qualified to function in the review of insurance specifications in construction contracts and coverage-premium determination, there is little the insurance buyer can do other than periodically determine how effective a job he is doing by securing either an objective survey, a competitive quotation, or both.

I hasten to add that the lowest insurance cost is not necessarily the best bargain in the world. The kind of service I have in mind is worth fair compensation and this is hardly assured by a rock-bottom quotation which is likely to be increased next year anyway. As an example, the

*continued*

When you spend \$1.00 for *materials and labor* using the *Benoit Tapered Foam System*, what would you spend using one of the other tapering systems?

Systems	Installed Cost	K-Factor
<b>Benoit Tapered Foam System</b>	<b>\$1.00</b>	<b>.24</b>
Tapered Cellular Glass	\$2.00	.38
Tapered Urethane	\$1.80	.14
Tapered Urethane w/Perlite Filler	\$1.60	Varies
Tapered Perlite (Field Tapered)	\$1.70	.36
Tapered Perlite (Factory Tapered)	\$1.50	.36
Tapered Asphaltic Fill	\$1.40	.40
Tapered L. W. Concrete	\$ .80*	.70*

\*Less expensive but only 1/3 the thermal efficiency and only if it is oven dry.

Our tapered roofs have an average "C" Factor between .04 and .08. If you need a specific average "C" Factor, just let us know.

Phone us, toll free:  
1-800-328-1436

**TAPERED FOAM**  
THE Benoit SYSTEM



**Benoit Inc.**

635 No. Prior Ave. • St. Paul, Minn. 55104

Phone: 612/646-1387 • Dial Toll FREE 1-800-328-1436

# YOU NAME IT, WE'VE GOT IT!

**We can deliver the goods—with the service and quality to fit the job.**

- Aluminum architectural sheet—gauges .025 to .125 in stock.
- Anodized—two sides.
- Duranodic—medium and dark bronze.
- Fluorocarbon—dark bronze—one side, finished two sides—medium/dark bronze, black/white, dark/dark (one inventory covers two items).
- Fabrication—We supply custom mansard systems, fascia, sills, and column covers. We form, shear, punch, drill, and weld.
- Extrusions—Over 7500 dies available for gravel stops, copings, angles, bars, tubes, channels and tees. Custom shapes to order, finished and cut to your specifications.

**Immediate service from stock, prompt expediting of special orders.**

**PETERSEN**  
**ALUMINUM CORP.**  
(312) 671-2510  
*Specialists in Quality and Service*  
3825 Willow St., Schiller Park, Ill. 60676

# INSURANCE

NRCA-sponsored property/casualty program, that started in 1971, has responded remarkably well to the insurance wants and needs of the general membership.

## Loss Prevention

As one of the first Occupational Safety & Health Act brochures said, "As of 4/28/71, unsafe is illegal." It is not for us to make a thorough examination of the requirements of this law. We expect at this point you are fairly well versed in your filing responsibilities, and NRCA has done a marvelous job in keeping you abreast of OSHA involvement in the Roofing Industry—all the way from the technique of administrative compliance to the manner of contesting citations.

Rather, our remarks concern a little known aspect of the OSHA law that created a federal commission to investigate state Worker's Compensation benefit levels. The results of the commission's study showed a very wide disparity in state Worker's Compensation benefit levels. The upshot, as you can imagine, has been

the introduction of federal minimum benefit Worker's Compensation legislation. The federal commission suggested minimums which, if finally adopted, will develop a substantial increase in Worker's Compensation premiums. The state changes are being made quickly—some states have matched or exceeded the federal minimums already.

The contractor who can control his Worker's compensation cost by virtue of good loss experience, and therefore a reasonable experience credit, has the inside track on keeping cost down with the attendant competitive edge. And that leads us into what specifically you can do in the important area of loss prevention.

I feel it most important to not only welcome—but to ask for—all the safety engineering assistance your insurance company can offer. This will have the effect not only of doing everything possible to safeguard your workers but will also make your insurance carrier happy. Further, these activities will go a long way in helping you satisfy your requirement under OSHA. The service is free,

and most firms consider it a compliment when asked to install an accident prevention program or supervise a job site. It enhances a feeling of cooperation and control which will tend to improve your relationship with the insurer.

Although we will be discussing Umbrella Liability and other General Liability coverages in a later issue of the *Roofing Spec*, we feel it is important to mention one aspect of Umbrella Liability now. The pricing of this coverage by the carriers has risen dramatically, especially since January 1, 1976. Increases of anywhere from 200% to 500% of current premiums are common. Obviously, the reason we bring this to your attention now is to prepare you for the shock, but there is also a real need to budget additional dollars for your next Umbrella rating period. These increases are not being limited to renewals only, but rather the companies are adjusting rates and premiums at anniversaries of three year policies. If you haven't done so already, you should talk to your insurance representative about this now.



# E-Z LIFT<sup>®</sup>

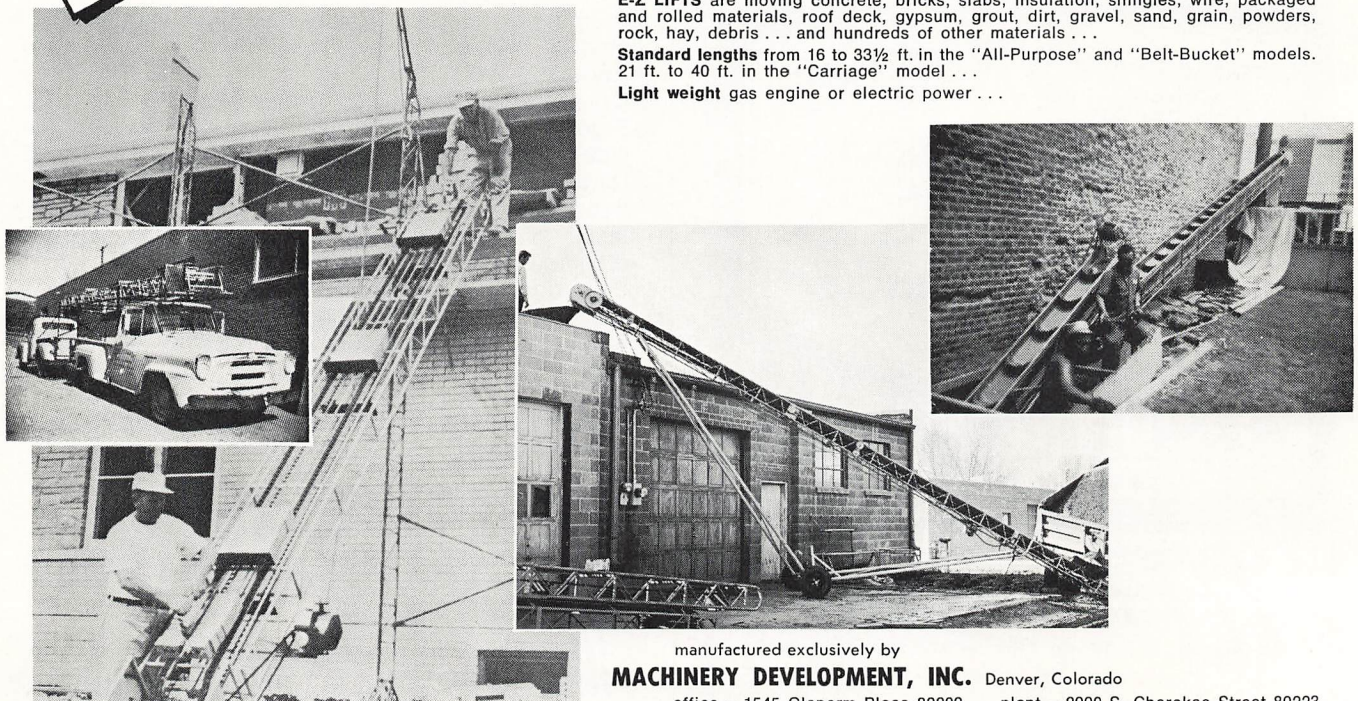
## AMERICA'S FINEST LIGHTWEIGHT PORTABLE CONVEYORS

PERFORMANCE PROVEN BY HUNDREDS OF SATISFIED USERS!

E-Z LIFTS are moving concrete, bricks, slabs, insulation, shingles, wire, packaged and rolled materials, roof deck, gypsum, grout, dirt, gravel, sand, grain, powders, rock, hay, debris . . . and hundreds of other materials . . .

Standard lengths from 16 to 33½ ft. in the "All-Purpose" and "Belt-Bucket" models. 21 ft. to 40 ft. in the "Carriage" model . . .

Light weight gas engine or electric power . . .



manufactured exclusively by

**MACHINERY DEVELOPMENT, INC.** Denver, Colorado

office — 1545 Glenarm Place 80202 . . . plant — 2000 S. Cherokee Street 80223

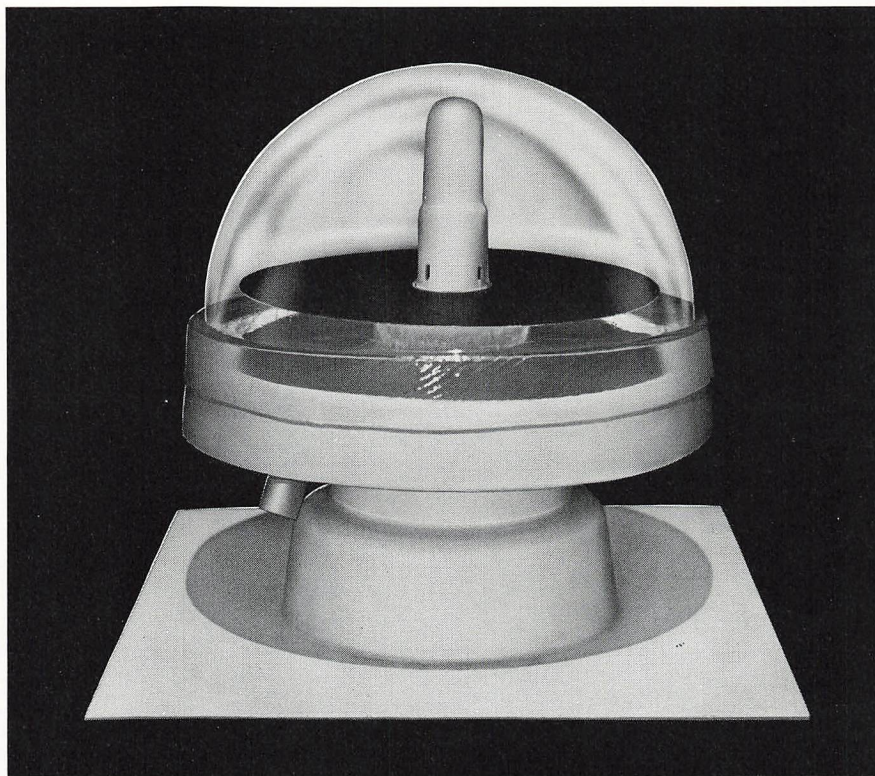
# SOLAR-POWERED ROOF VENT!

Moisture in a built-up roof insulation can cause:

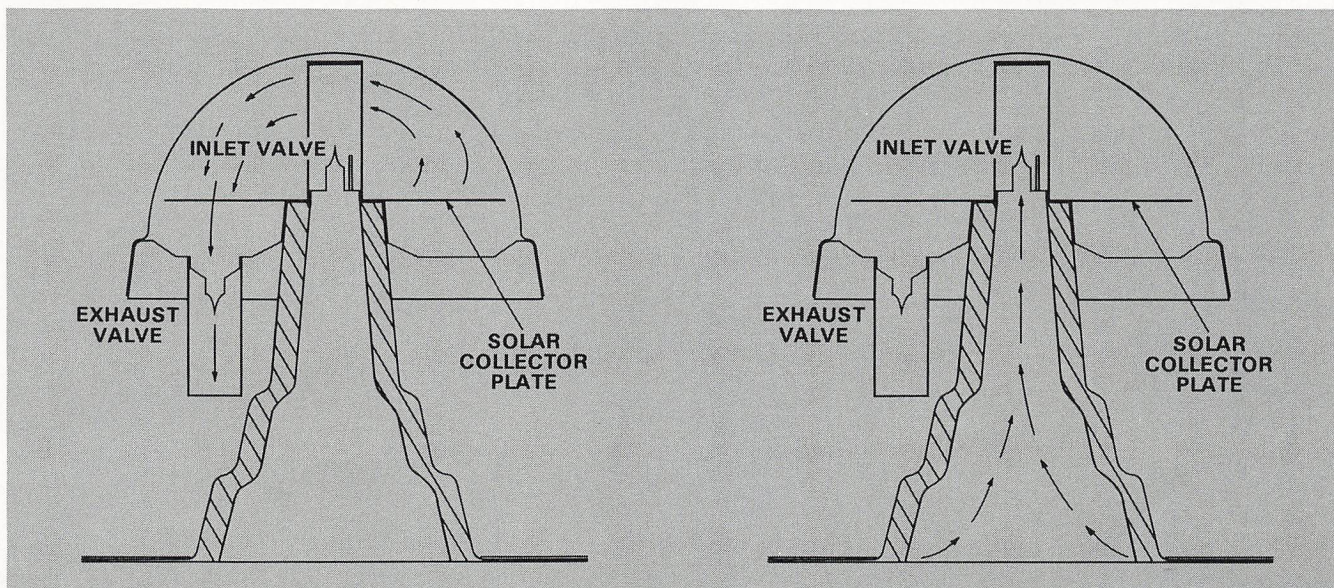
- Blisters in roof membrane.
- Reduce insulation quality of thermal insulation by as much as 70% in some lightweight insulation concrete and 40% in some preformed board insulation. At current energy prices the resulting energy waste could add thousands of dollars to the annual heating or cooling bills of buildings with large roof areas.



The new Lexsuco Solar-Powered Roof Vent acts like a pump, not like a breather. It pumps the moisture out of the roof and — due to a unique valve arrangement — will not allow the moisture to re-enter the roof assembly through the vent.



## How the Lexsuco Solar-Powered Roof Vent works . . .



1. When sunny, heated air in the chamber expands and exits through an exhaust valve, which opens under increased pressure.

2. When cloudy, cooled air in the chamber contracts, pressure drops, exhaust valve closes, and inlet valve opens to admit moisture from roof system.

For more information contact your local Lexsuco representative or our office in Solon, Ohio.



LEXSUCO PLANT

**B.F. Goodrich General Products Company**

A DIVISION OF THE B. F. GOODRICH COMPANY

SOLON, OHIO 44139 • (216) 248-4391



ONLY ONE FOAM  
INSULATION\*  
IS FIRE RATED  
OVER  
STEEL DECKS.  
THERMAX® ROOF  
INSULATION.

\*IN U.S.A.

**This is an industry breakthrough.**

We have developed a non-composite foam insulation which qualifies for Factory Mutual Class 1 fire rating when installed directly over unsprinkled steel decks.

It's a roof insulation board never before available. One with all the advantages of urethane: thin profile, lightweight, ease of handling, meeting all of today's more exacting requirements for insulating values. And with a Class 1 fire rating.

**Celotex Thermax® Roof Insulation.** It is a strong, lightweight roof insulation board with a foam core (reinforced with glass fibers) sandwiched between two asphalt-saturated asbestos facer felts.

It gives you the high insulation values of urethane, plus fire rating, without requiring a second product like perlite, foam glass or fibrous glass between it and a steel deck.

**Superior insulating efficiency.** 1.2 inches-thick Thermax Roof Insulation boards give approximately the same insulation value as 3 inches of cellular glass, 2½ inches of perlite or 1⅝ inches of fibrous glass. Because of this insulating efficiency, Celotex recommends Thermax Roof Insulation be applied in single thickness.

**Lightweight.** Compared with other FM-rated insulating materials providing the same insulation value, Thermax Roof Insulation boards are 3

to 6 times lighter. . . up to 75% less deadload factor. Building designers can explore new design concepts, such as the use of reduced sizes of structural members to support roofs. Less effort is required to apply the lighter, easier-to-handle Thermax Roof Insulation than mineral or fibrous glass boards offering the same insulation value.

**Easy to handle and cut.** An ordinary roofing knife does the job.

**Uses less warehouse space.** Lesser thicknesses of Thermax Roof Insulation required for desired C factors permit storage of more boards in less space.

**Lower installation cost.** Standard Thermax boards are 3'x4'. They cover more roof area in less time than conventional 2'x4' insulating panels.

**Strength.** The roofing facers of Thermax Roof Insulation boards will not crush beneath the weight of conventional roofing equipment. The corners have been made extremely tough so they do not break or crumble.

We started out by saying we had an industry breakthrough. We'd like to prove it to you. Contact your local Celotex sales representative or call John Hasselbach direct: Commercial Roofing Department, The Celotex Corporation, Tampa, Florida 33622.

**Celotex®**

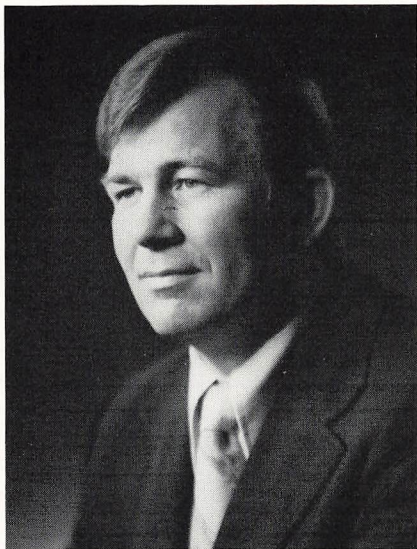
BUILDING PRODUCTS

The Celotex Corporation, Tampa, Florida 33622

a Jim Walter company

# PERLITE ASPHALT THERMAL SETTING ROOF INSULATION

by Donald G. McNamara



**Editor's Note:** Don McNamara is President of the F.J.A. Christiansen Roofing Co., Inc., Milwaukee, Wisconsin. He is a graduate of Marquette University College of Business Administration and School of Law, receiving his J.D. in 1961. Prior to joining Christiansen, he worked for six years as a specialist in corporate and individual income, estate and gift, and foreign tax matters for an international Certified Public Accounting firm. Don has served as a Director of NRCA, and is presently a member of the NRCA Roof Deck Committee. We are grateful to him for this, the seventh in our series on roof decks.

The concept of an asphaltic bound lightweight aggregate field-installed as a monolithic insulating substrate for built-up roofing goes back some 30 years. Yet today we find renewed interest in this material as it is being re-examined by a new generation of specifiers who see in it a time-proven way of meeting the demanding criteria of tomorrow's energy-conserving buildings.

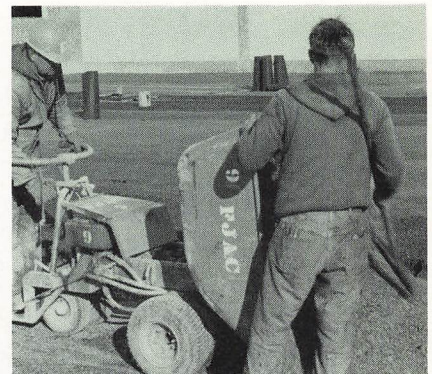
What is thermal setting roof insulation? It is simply a blend of hot



Materials handling is largely automated, with bulk perlite in the van and bulk asphalt in the tanker. The material is moved into the mixer by the operator who controls the transfer of both materials from a control panel mounted on the hopper.

asphaltic binder and a specific grade of expanded Perlite. This mixture is moved to the roof deck where it is precisely graded to the slope design required by the architect or engineer.

Since the equipment and the technical know-how of mixing and placing this material is of a very specialized nature, the work is done



The three basic steps are shown here. In the foreground the material is being dumped on the deck where it will be leveled off to the slope design on the drawings. Just beyond the compacted material is ready for roofing, and in the background the roofing operation is in progress.

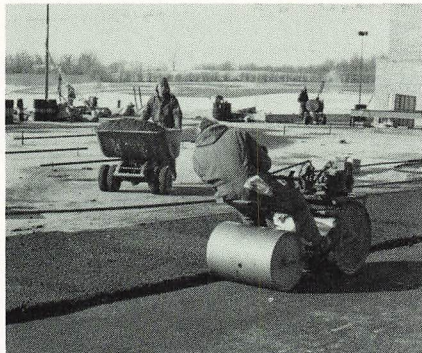
by a roof deck contractor who may or may not be a roofing contractor. The system is bid competitively in most parts of the United States, generally by firms who have many years of experience.

With a K factor in the range of 0.40, this type of insulation can easily meet today's requirements. A typical slope-to-drain fill might be 6" thick at high points and 2" thick at the

# PERLITE ROOF INSULATION

drains. Calculated on average thickness, this provides a C value for the insulation of 0.08. In Wisconsin, where minimum heat loss values are set by law, this kind of insulation is common.

Thermal setting roof insulation is



*Thermal setting roof insulation, after being hoisted to the roof deck, is transported with power buggies to the point of use. Here it is screeded to the slope design shown on the drawings. Notice compaction operation by the man on the roller in the foreground.*

well suited for installation over concrete decks of all kinds. The application includes a bond coat applied to the concrete. Since the fill must be compacted by rollers, the drainage slopes are screeded off at an elevation somewhat higher than the finished level. After compaction the surface is smooth and hard, and since it is an asphaltic product, the solid mopping of asphalt used to apply the first ply of roofing adheres well. It is perhaps the most compatible substrate found by the roofer, since he applies asphalt to asphalt.

In the northern states a great advantage of thermal setting fill is in cold weather application. Since there is no waiting time, the roofing crew is on the job simultaneously with the fill crew. In the snow belt this solves a major problem faced by roofing contractors who are often directed to apply the built-up roofing to a substrate which, during the curing time, may have accumulated a foot of snow.

Since the product goes down at about 300 degrees F, the crews are



*Once the material has been screeded to the slope design, rolling proceeds. This produces a hard monolithic surface which is ready to roof as soon as it cools.*

more comfortable working at lower temperatures. With no water in the mix to freeze, the limiting temperature is that which, along with wind chill, makes it impractical for men to work, rather than any effect low temperatures have on the material.

Thermal setting roof fill goes down dry and hot; the material hardens as it cools to ambient temperature. It is

*continued*

• 400 lbs.  
• 1000 lbs.

Stenciled Concrete Blocks

## TROLLEY HOIST

Has important advancements in control and safety. 1. Single control handle releases brake and raises load. 2. A separate brake handle controls speed of lowering. A dual brake system provides smoother control. Rear leg is redesigned to use concrete blocks for counter weights. The trolley hoist is raised to the roof in 3 units before assembly. No tools required.

• 200 lbs.  
• 400 lbs.

## LADDER HOIST

Easily assembled heavy duty sectional ladder provides hoisting from 16' to 44' with electric or gasoline power. A single long control handle releases brake and raises load. A separate handle controls lowering. Special accessories provide for delivering materials over the top of the ladder to the roof. One man operation.

Gravel discharges automatically into wheel barrow

Roll Roofing is delivered to the roof automatically

Write for literature.

**REIMANN and GEORGER, Inc.**  
P.O. Box 681-F, Buffalo, New York 14240

## GOT THIS? GET THIS!

### Hickman Permasnap Coping System

is the perfect replacement for broken tiles on old building parapets. It's **guaranteed** against water leakage. Styrene gutter chair at each joint channels away water to roof. Special adhesive anchors system without expensive wood nailers or imbedded bolts, holds against 60-lb./sq. ft. uplift. Permasnap Coping System is easy to install for a neat, trim look.

Reroofing? Include Hickman Reglets . . . the perfect way to flash a roof to a wall.

## HICKMAN Aluminum Construction Products

W. P. Hickman Company, Inc. / 175 Sweeten Creek Rd.  
P.O. Box 10505 / Asheville, N.C. 28803 / Tel: (704) 274-4000

*Available in Canada*

# PERLITE ROOF INSULATION

ready for roofing as soon as cool. Our experience indicates a gravel surfaced organic roofing specification performs best. Smooth surfaced roofs have not performed well in our climate.

A major and successful application of thermal setting insulation is in reroofing. Here the existing roof is swept and heavily primed. Roof mounted equipment is raised, if necessary. Edges may need to be built up with wood nailers. Where the existing roof is obviously soaked

and soft, it is removed down to the original deck. The fill is then placed to provide the required slopes. After the new roof has been installed, vapor relief vents are installed over cut outs going into the old roof and insulation. This permits the moisture content of the old roof to ultimately reach equilibrium.

Experience over a 10-year period with one large owner known to the writer has been excellent. This owner does an average of 2,000 squares a year of this type of work. With this

system, drainage may be provided on roofs that were formerly ponding water, and at the same time energy costs are greatly reduced, due to the extremely high insulation value of the new system. Since virtually all of the expensive roof removal cost is avoided, this quality system costs very little more than the ordinary remove and replace method, which does nothing for drainage and energy conservation.

Another outstandingly successful use of thermal setting insulation for many years has been in conjunction with waterproofing membranes over which some type of traffic deck is placed. Here the physical characteristics of the material are beneficial for this type of construction.

Because of its low water absorption, the material can be placed on top of the membrane. This has many advantages, one being that the membrane is protected from sharp temperature changes because it is on the warm side of the insulation. Another is that the insulation protects the membrane from the damage that so often occurs as a result of subsequent construction activity. Men and equipment required to pour the slab, erect the planters, and perform many other operations produce traffic and abuse which do not damage the membrane, since it is under the insulation.

Here also, a slope-to-drain application of the insulation permits the traffic deck to be installed at a constant thickness, often an advantage.

The compressive strength, in excess of 5,000 per square foot, permits heavy loading of the traffic surface without risk of settlement.

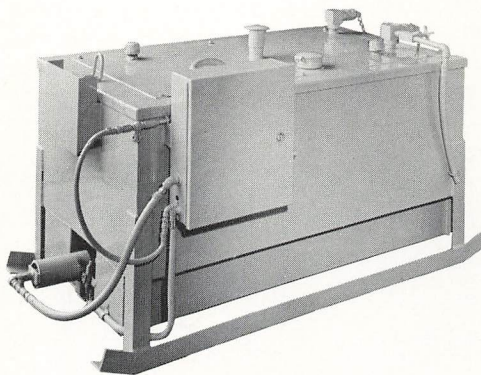
It is the opinion of this writer that each component of any construction system must be evaluated in light of the requirements of the particular job under consideration. Thermal setting roof insulation does some things better than most competitive materials. If the job requires a slope-to-drain fill with high insulation value that can be installed any season of the year and provides a firm monolithic surface to receive built-up roofing and has a history of many years of satisfactory service, this job requires thermal setting roof insulation.



## **N**ew cold process unit

## **E**liminates scorching and overheating

## **W**ithout thinning or diluting



- Indirect Fired
- Thermostatically Controlled
- Used with High pressure Hydraulic or Air Pumps
- Trailer Mounting Available
- Speeds application and extends spraying season

# WARM-MASTER

PATENT PENDING

### SPECIFICATIONS:

HEIGHT: 29"

LENGTH: 60"

WIDTH: 32"

SHIPPING WEIGHT: 650 LBS.

NOTE: Heat transfer oil not furnished. 40 gallons required.



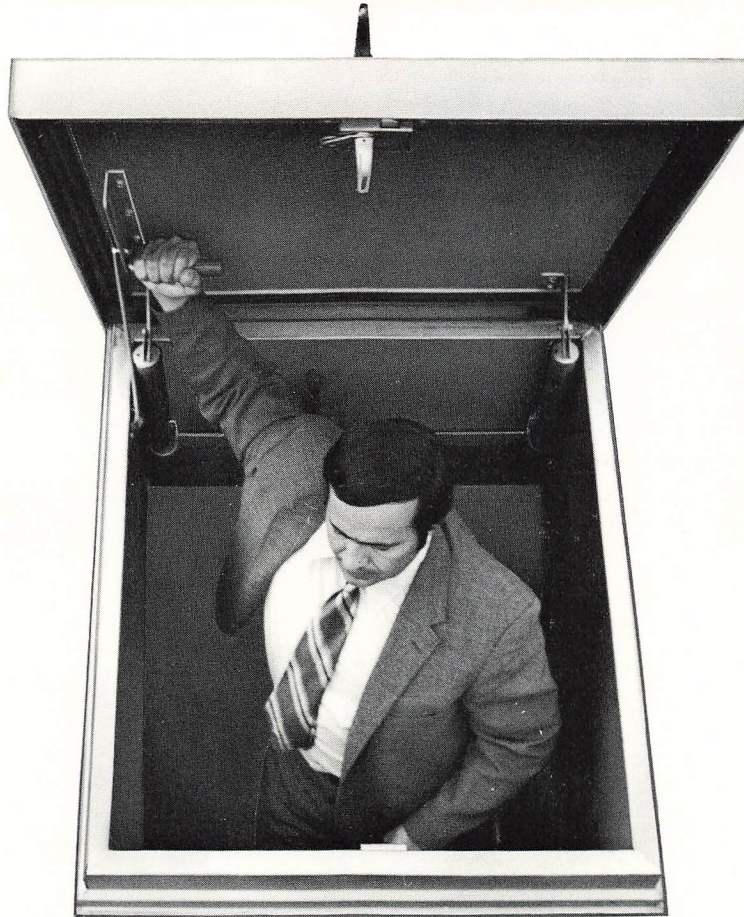
ROOFMASTER PRODUCTS COMPANY, INC.

P.O. Box 63167, Los Angeles, Calif. 90063

Tele: (213) 261-5122

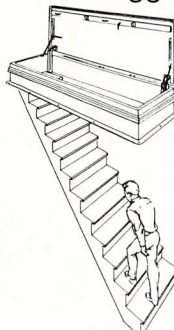
or (800) 421-6174 toll free (except Calif., Alaska, Hawaii)

# The single-handed roof scuttle.



## Your best way out.

For ladder access to the roof, a Type "S" Bilco Scuttle is always your best way out. It's compression spring operators literally float the cover upward, where it locks automatically in the open position. When descending, you enjoy the safety and convenience of the operating handle. With one hand securely on the ladder, it gives you effortless control in bringing the cover to its closed and latched position.



The combination of this patented feature, rugged heavy-duty construction, and fine workmanship has firmly established the Bilco Scuttle as the finest product of its type. Standard sizes in steel or aluminum for ladder access, ship stairs or normal stairs always in stock for prompt shipment. Special sizes available in single leaf and double leaf sizes, all designed for easy operation and long, trouble-free service.

Since 1926. Building our reputation for products that satisfy.



**Bilco**<sup>®</sup>

DOORS FOR  
SPECIAL SERVICES

The BILCO Company, Dept. RS-96, New Haven, Conn. 06505

ATLANTA  
ATLANTA  
ATLANTA  
ATLANTA  
ATLANTA

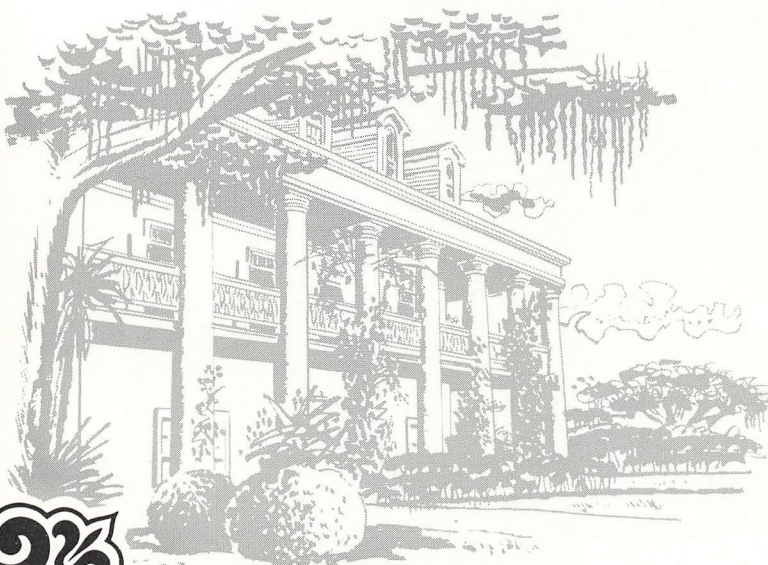
**NRCA**  
**90<sup>th</sup>**  
ANNUAL  
CONVENTION  
& EXHIBIT

**YOUR  
WEEK OF  
EXCITEMENT  
EDUCATION  
AND  
ENTERTAINMENT**

The NRCA Annual Convention—the biggest single event in the roofing industry—will be even greater this year, offering not only an exciting program and exhibition, but also one of the nation's most modern and progressive cities...the city of Atlanta.






Highlighting your week will be:

- The largest NRCA Exhibit ever assembled.
- Business and technical sessions, including "How To Avoid Litigation," a session on roof decks, a full technical program, and many workshop sessions.
- A full Ladies Program, with a special Ladies Day agenda on Tuesday.
- Some old-fashioned fun at the Champagne Welcome Party, Officer's Reception, and Annual Banquet (featuring the "Nipsey Russell Show").



# CALENDAR

## FEBRUARY 1977

	<h1>5</h1>	<p>Convention activities begin with the Second Annual NRCA Memorial Sports Day, including golf, tennis and bowling tournaments, and a dinner.</p>
	<h1>6</h1>	<p>As the final touches are being put on the exhibit in the Atlanta Marriott, the Board of Directors will be meeting. In the evening, the Welcome Party kicks off the regular Convention program.</p>
	<h1>7</h1>	<p>A morning in the Exhibit Hall is followed by the gala Opening Luncheon and a full afternoon of general sessions.</p>
	<h1>8</h1>	<p>A special breakfast and important technical sessions fill the morning, and the Exhibit reopens for the afternoon. Highlighting the evening is the exciting Officer's Reception and Cocktail Party.</p>
	<h1>9</h1>	<p>The final day begins in the Exhibit area, followed by Lunch and meeting sessions, including the election of new officers and directors. The evening, of course, is saved for the spectacular Annual Banquet, in the elegant Atlanta Hilton.</p>

### FEBRUARY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

# THE CASE FOR METRICATION

by E. Judson Hoops

*Editor's Note: Mr. Hoops is Vice President of Sales and Marketing for Concrete Plank Co., Inc., North Arlington, New Jersey. Jud serves on the NRCA Metrication Task Force, and presented the article that follows to the Task Force at its recent meeting in Chicago. We found the report so enlightening that we felt it should be brought to the attention of all NRCA members.*

## THE REASON FOR THE SYSTEM

One day in 1670, in the town of Lyons in France a vicar named Gabriel Mouton looked around, was horrified, and said "There must be a better way."

He was talking about the hodge-podge of confusing weights and measures in use at the time and the complexities of calculations concerning lengths, volumes, and weights.

He was observing the 17th century equivalent of a modern schedule of one's activities such as:




I am going to drive 20 miles ("land" or "statute" miles, not "sea" or "nautical" miles) to see a five-furlong horse race, won by a horse 17 hands high, then to the market for a quart (dry not liquid measure) of cornmeal, and a quart (liquid not dry measure) of milk, and an Avoirdupois pound of grapes and a peck (1/4 bushel) of potatoes. Then to the jeweler's to have a 2 carat diamond ring appraised and to buy a few Troy weight ounces of gold and to the druggist for a few Apothecaries weight drams and scruples of medicine. Then home to telephone to see if my incoming shipment is in long tons or short tons and how many Imperial gallons my 20 U.S. gallon car will hold and to find out how many teaspoons in a tablespoon.

This multiplicity of systems of measurement is only one of our problems.

The others are:

Lack of simple relationships to tie length, volume and weight together into a convenient system.

Lack of decimal relationship even within a sub-system, such as lengths. Thus we become enmeshed in calculations involving fractions. For example:

<p>For lengths we have among others</p> <ul style="list-style-type: none"> <li>• Inches</li> <li>• Feet</li> <li>• Yards</li> <li>• Miles</li> </ul>	<p>For volumes, we have among others</p> <ul style="list-style-type: none"> <li>• Liquid ounces</li> <li>    pints</li> <li>    quarts</li> <li>    gallons</li> </ul>	<p>For weight we have among others</p> <ul style="list-style-type: none"> <li>• Avoirdupois oz.</li> <li>                  lbs.</li> <li>                  tons</li> </ul>
		<p>An arrangement of Troy weights. An arrangement of Apothecaries weights.</p>
<p>There is no decimal relationship among the above lengths.</p>	<p>There is no decimal relationship among the above volumes.</p>	<p>There is no decimal relationship among the above weights.</p>
 <p>There is no simple relationship between lengths and volumes.</p>		 <p>There is no simple relationship between volumes and weights.</p>

If this sort of thing were not troublesome enough, Mouton and others were confronted with the fact that, as soon as they stepped from one village to the next, a whole new set of rules applied and units with the same name represented very different quantities.

## PLANNING OF THE SYSTEM

Scientists pondered the problem and the complications they were encountering in connection with weights and measures and came up with the following concept.

They would create a system that would:

1. Inter-relate length, volume, and weight.
2. Be on a decimal basis to eliminate cumbersome operations such as calculating the volume of a box with sides of 2'-7", 1'-3½", and 6¾", or finding out how many sq. ft. are in an acre, or how many ounces are in a barrel.
3. Be universally acceptable as a replacement for the Sargasso Sea of systems then in use.

It meant that they would have to create **new standard units for length, volume, and weight.**

They said, "Let's start off by establishing a **new standard unit of length.** After we do that, we'll create all other units of length by moving the decimal point back and forth, and **only by so doing.** Thus, for example, one unit may be .1 or .01 or .001 of the new standard unit of length or may be 10 times or 100 times or 1000 times the

new standard unit, but **never** ¼ or ⅓ or 1/12 of the new standard unit and **never** 16½ times or 5280 times the standard unit.

After having considered the **new standard unit of length** (and the other units of length created by moving the decimal point) they said "**Volumes** will take care of themselves. They will merely be the results of cubing the "new lengths" and naming these results. That left **weight** to be considered. They wanted a system that would conveniently relate **weight** to these "new lengths" and "**new volumes**" (which latter two would already be related to each other). They said "Let's take a common substance, such as water, then imagine a "new volume" filled with water and assign a name to that weight of water.

Thus by adopting a "new standard length" (and automatically creating a new standard volume) and interjecting the weight-of-water concept, we have a new system which relates **length, volume and weight** and provides a convenient means (i.e. by movement of the decimal point) of creating as many other units of length, volume and weight as we choose.

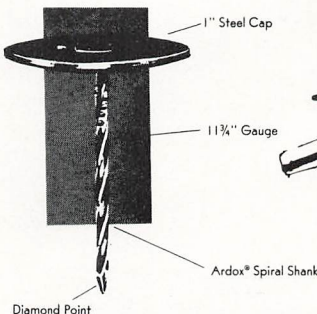
## IMPLEMENTATION OF THE PLAN

The next step was to establish this "**new standard LENGTH**". Scientists during the French Revolutionary times decided to call this unit a "meter" (from the Greek

*continued*

### INTRODUCING THE... BIC TOP LINE

... with the exclusive "ARDOX"® spiral nail design. They are better ... stronger and lower in cost per nail ... than the old fashioned smooth shank nails



"Ardox" Spiral Nails  
2984 CLYDON SW.  
GRAND RAPIDS, MI 49509  
PHONE: (616) 539-8000

CONTACT BOB RODENHOUSE FOR DISTRIBUTORSHIP



# YOU NEED WHAT WE'VE GOT --

High quality roofing at a really low cost  
Immediate delivery of a wide range of colors  
Courteous service by friendly people  
eager for your business

## MONRAY ROOF TILE

Corona, Ca.	714/737-3888
Stockton, Ca.	209/982-1473
Phoenix, Az.	602/269-2288
Dallas, Tx.	214/299-5233
Houston, Tx.	713/692-5945
Miami, Fl.	305/888-1411

WE REALLY MOVE OUR TILE FOR YOU

# THE CASE FOR METRICATION

for measure) and to relate it to the earth's meridional circumference, which they considered a definite dimension, rather than to such a dimension as the length of someone's arm, or foot or the width of 3 dry barley-corns, laid side by side.

They decided to make the meter  $\frac{1}{10,000,000}$  of the quarter-circumference of the earth and in the period between 1792 and 1798 French surveyor-engineers surveyed from Barcelona, Spain to Dunkirk, France. Their survey of this distance gave them enough data to calculate the quarter-circumference. After dividing the quarter-circumference by 10,000,000 they arrived at a value for the meter that was remarkably close to the length of the meter as currently defined.

Greek and Latin prefixes were added to the word "meter" to provide names for the units created by moving the decimal point:

Thus:

10 meters	=	1 dekameter
100 meters	=	1 hectometer
1000 meters	=	1 kilometer
1,000,000 meters	=	1 megameter
.1 or 1/10 meter	=	1 decimeter
.01 or 1/100 meter	=	1 centimeter
.001 or 1/1,000 meter	=	1 millimeter
.000001 or 1/1,000,000 meter	=	1 micrometer

Having established new lengths, (i.e. meters and decimal divisions or decimal multiples of meters; they

proceeded to name the **VOLUMES** generated by cubing these lengths.

Naturally the volume generated by cubing a length of one meter was a cubic meter. It was also, however:

$$\begin{aligned} 1000 \times 1000 \times 1000 &= 1,000,000,000 \text{ cubic millimeters or} \\ 100 \times 100 \times 100 &= 1,000,000 \text{ cubic centimeters or} \\ 10 \times 10 \times 10 &= 1,000 \text{ cubic decimeters} \end{aligned}$$

As a convenient unit for everyday use, a volume of 1000 cubic centimeters (i.e. 1 cubic decimeter) was considered particularly helpful and was given the name "liter" (this volume is slightly larger than our quart).

Usually, a liter is considered as consisting of 1000 parts, which parts are called both "cubic centimeters" and, for consistency of prefixes, "milliliters".

The third basic unit was of **Weight**.

The weight of 1 cubic centimeter or 1 cc or 1 milliliter or 1 ml of water was named a "gram".

Thus 1 liter (or 1000 c.c.'s or 1000 milliliters) of water weighs 1000 grams and, again for consistency of prefixes, is said to weigh a "kilogram".

Following the standard prefix procedure .001 of a gram is called a "milligram". 1,000 kilograms is called a "metric ton" or "megagram". Thus the interweaving of a new decimally-divided length unit and the weight of water created what is now known as

The Metric System or

The International System or

S I (for the French "Systeme International")

*continued*

## Bulk Systems by

*Blackwell*  
BURNER CO.

## service • quality • reliability



- emission control
- versatile work platform
- full range of options

yard tanks - 6,000 to 30,000 gal. size  
job tanks - 4 ton to 37 ton mobile storage

**BLACKWELL BURNER CO.**  
P. O. Box 37383  
San Antonio, Texas 78237  
512 - 432-7895

# THE CASE FOR METRICATION

## SAMPLE CONVERSION TABLE

### Comparing the Commonest Measurement Units

Approximate conversions from customary to metric and vice versa.

When you know:

You can find:

If you multiply by:

<b>LENGTH</b>	inches	millimeters	25.0
	feet	centimeters	30.0
	yards	meters	0.9
	miles	kilometers	1.6
	millimeters	inches	0.04
	centimeters	inches	0.4
	meters	yards	1.1
	kilometers	miles	0.6
<b>AREA</b>	square inches	square centimeters	6.5
	square feet	square meters	0.09
	square yards	square meters	0.8
	square miles	square kilometers	2.6
	acres	square hectometers (hectares)	0.4
	square centimeters	square inches	0.16
	square meters	square yards	1.2
	square kilometers	square miles	0.4
	square hectometers (hectares)	acres	2.5
<b>MASS</b>	ounces	grams	28.0
	pounds	kilograms	0.45
	short tons	megagrams (metric tons)	0.9
	grams	ounces	0.035
	kilograms	pounds	2.2
	megagrams (metric tons)	short tons	1.1
<b>LIQUID VOLUME</b>	ounces	milliliters	30.0
	pints	liters	0.47
	quarts	liters	0.95
	gallons	liters	3.8
	milliliters	ounces	0.034
	liters	pints	2.1
	liters	quarts	1.06
	liters	gallons	0.26
<b>TEMPERATURE</b>	degrees Fahrenheit	degrees Celsius	$5/9$ (after subtracting 32)
	degrees Celsius	degrees Fahrenheit	$9/5$ (then add 32)

# THE CASE FOR METRICATION

Subsequently the standards of reference were found to be insufficiently precise for scientific work and:

The meter was redefined and now is officially: 1,650,763.73 wave-lengths of the orange-red radiation in vacuum of Krypton 86 corresponding to the unperturbed transition between the  $2p_{10}$  and  $5d_5$  levels.

The gram was redefined as: Being .001 the weight of a particular piece of platinum-iridium that is stored at the International Bureau of Weights and Measures at Sevres, France and is called the "International Prototype Kilogram".

## EXAMPLES OF WHERE METRIC SYSTEM WOULD BE USED BY ROOFERS

Instead of weighing so many pounds per square, roofing felts will weigh so many kilograms for so many square meters.

A five gallon can of roofer's material would be approximately 19 liters, and perhaps the can size would be changed to 20 liters.

A piece of flashing would be so many meters long and so many millimeters or centimeters wide.

## THE SYSTEM'S STATUS TODAY

In 1840, after a period of simultaneous use of the metric system and former systems, France prohibited the use of any system other than metric in public commerce.

Since then its use, as the official system, has so spread throughout the world that now over 90% of the world's population lives in nations that are metric or committed to metric and the U.S. is the only major country that is not metric or officially converting to metric.

There is of course some use of the metric system in the U.S. Doctors, druggists, scientists, the U.S. Army and the National Aeronautics and Space Administration use it regularly and many of us buy 35 mm film. Nevertheless, even though in 1866 our Congress passed a law making the metric system legal (along with other systems) in the U.S., it is only very slowly beginning to affect the average American.

History has shown that unless a government mandates a change to the metric system, familiarity with the old system will tend to make the general public cling to that old system.

In 1902 a bill was introduced in Congress calling for mandatory adoption of the metric system but opposition arose and the bill was withdrawn.

Since then such considerations as the massive parts inventory in our industrial complex have worked against a mandatory adoption.

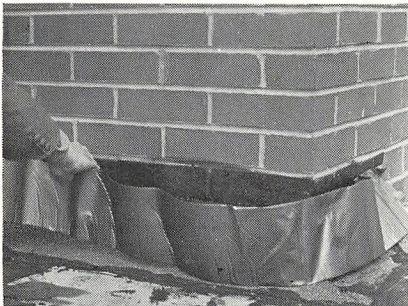
However, since we are now out of step with the entire remainder of the industrial world, metric's widespread adoption by us seems to be in the foreseeable future and it will start to make its way into the construction industry.



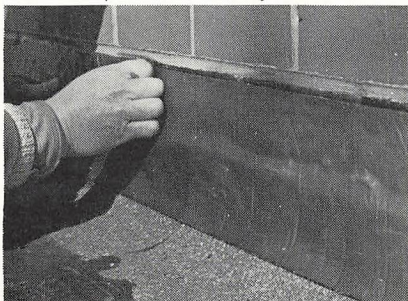
# This flashing installs in half the time at half the cost —with no call-backs!



No need to form reglets.



Last step — smooth by hand.



**FLASHBAND®** is roll aluminum with an asphalt-based pressure-sensitive adhesive. Comes in bright aluminum or grey finish.

- 1. Versatile.** Flashband seals chimneys, vent stacks, bases, eaves, walls, roof drains, counter flashings, gutters, ridges, curbs, valleys, fascias, coping, roof drains, construction joints.
- 2. Easy to use.** No special tools. Just cut to size, peel off release paper, position, and smooth down by hand.
- 3. Eliminates normal flashing steps.** No need to form reglets, chisel mortar, or repoint! To install over concrete or masonry, merely prepare surface first with an asphalt primer.
- 4. Bonds** to virtually any surface with an immediate, sure, and watertight grip that grows stronger with time.
- 5. Economical . . .** you save 50% or more in material cost and labor time over conventional flashing.

SIZES		
20 ft. roll In Bright Finish only		33 ft. roll In Bright or Grey Finish
2 in. wide	2 in. wide	9 in. wide
3 in. wide	3 in. wide	12 in. wide
6 in. wide	4 in. wide	18 in. wide
9 in. wide	6 in. wide	24 in. wide

**6. Durable.** Certified to withstand rain, wind, snow, extremes of heat and cold.

**FLASHBAND — the modern, economic way to flash, seal, repair.**

Use Service Card for free product data sheets.



401 Kennedy Blvd., Somerdale, NJ 08083  
609-784-8200

# The most beautiful profit story in the business.

With CertainTeed top-of-the-line asphalt shingles, you make more profit per job . . . more on what you sell.



## The Hallmark Shingle®

- 25 Year Manufacturer's Limited Warranty
- The dimensional look of wood shakes
- Heavyweight, # 380
- UL Class "C" fire rating
- Handsome natural earthtone colors
- Exclusive deep wood grain texture



### Independence Shingle®

- 25 Year Manufacturer's Limited Warranty
- The dimensional look of wood shakes
- Heavyweight, # 340
- UL Class "C" fire rating
- Rich, natural woodtone colors

### Woodtex®

- 25 Year Manufacturer's Limited Warranty
- Exclusive deep wood grain texture
- Heavyweight, # 300
- UL Class "C" fire rating
- Handsome, natural earthtone colors

**CertainTeed has all of the sales aids you need to sell top-of-the-line asphalt shingles. Act now, and watch your profits go through the roof.**

CertainTeed Products Corporation  
P.O. Box 860 • Valley Forge, Pa. 19482



I'm interested in extra profits. Tell me more about how CertainTeed's top-of-the-line can help, and send me samples of your complete line of promotional selling aids.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_ RS



## CCE REPORT

# CCE SPEAKS OUT... ON CMA MERGER ISSUE

The Council of Construction Employers (CCE) continues its efforts to bring about a merger of the Contractors Mutual Alliance (CMA) and CCE to the end that there may be just ONE VOICE for management in the construction industry when it comes to labor and labor-related matters.

At the CCE Board of Directors meeting, held in Washington in June, a full discussion of the possible merger was held. The CCE Board position was summarized by Chairman Robert E. Linck as follows:

"In recent weeks, much has been said and printed about negotiations between committees of CMA and CCE in an effort to bring about a merger of those two organizations. In the belief that chances of success of such talks would be enhanced by limiting comment and discussions to the groups directly involved, rather than attempting to negotiate through the news media, CCE has, up to now, carefully refrained from making public comment or issuing news releases on the subject.

"However, published comments attributed to others have been so misleading, that CCE believes the record needs to be corrected.

"Merger talks began well over a year ago at the urging of the presidents of both organizations.

Neither organization was forced by its members to engage in such negotiations. CCE initiated the talks and hosted the first meeting. Both organizations have met willingly.

"Committees from both groups readily agreed that the construction industry could better be served by one recognized national umbrella organization representing employers of union construction workers. With little difficulty, both groups agreed that such a merged association should have as its objectives the following:

1. **Balanced Collective Bargaining:** Seek to balance national and local labor bargaining by unifying at the national level employer labor relations policy making and the executive actions to assist in execution of such policy.

2. **Coordinate Bargaining:** Foster, promote the development of and provide assistance for coordination among management bargaining groups.

3. **Strengthen Bargaining Position of Local Contractors:** Encourage and facilitate national contractors to become part of and to support local and coordinated bargaining processes.

4. **Provide Research and Information:** Provide economic study and data as backup for collective bargaining. Conduct research into

the economics and bargaining of the construction industry, maintain data banks and information files, develop manpower planning, procurement and training programs, and research conditions of employment, contracting and management practices that will contribute to improve productivity.

**5. Conduct Government Relations:** Evaluate existing and proposed legislation that impacts construction labor relations. Express industry positions on such legislation and its administration to legislative and executive bodies. Promote legislative changes and administrative actions that will improve labor management relations.

**6. Encourage Customer Support of Bargaining:** Educate, encourage and coordinate customer understanding and support of construction labor management relations.

**7. Eliminate Restrictive Work Practices:** Identify and work toward the elimination of restrictive work rules and practices.

**8. Improve Productivity and**

**Stability:** Promote management, customer and labor relations activities that result in greater construction industry productivity, and that encourage more efficient and stable utilization of construction resources.

**9. Provide National Labor Relations Leadership:** Work with the Building and Construction Trades Department, the Building Trades International Unions, and others to encourage labor-management relations that balance the interests of labor, contractors, construction consumers and the public generally.

**10. Resolve Jurisdictional Problems:** Negotiate understandings and participate with others in organizations that settle jurisdictional disputes and that prevent jurisdictional work stoppages, consistent with efficient and economical work practices.

**11. Improve Industry Communications:** Formulate policies that encourage and support the objectives of the Association, and educate the industry and the public

to understand and support such policies.

"What then are the issues over which the negotiations have seemingly stalemated? CCE reportedly insisted that there must be prior agreement that its president will head the staff of any merged organization. This was not and is not the case. CCE reportedly insisted that the member associations be required to appoint staff as some representatives to the Board of Directors of a merged group. This also is not the case. CCE, however, continues to defend the right of member associations to select their own representatives to such a governing board.

"The real hang-ups in the negotiations fall into two general categories—(1) Membership on a merged Board of Directors and voting strength, and (2) Financing. What are the positions of CMA and CCE on these two important issues?

"CMA has proposed that a new Board of possibly ninety contractors be appointed, and that an annual budget of approximately \$750,000

*continued*

## BUILD BETTER ROOFS WITH MARATHON

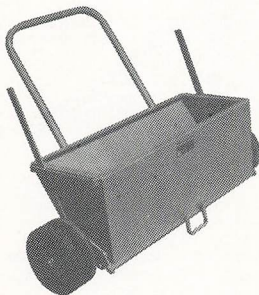
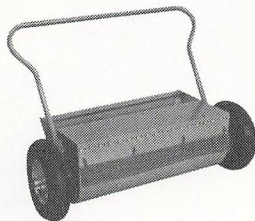
### MINI MOPPER

Re-located handle position reduces radius and makes "flip-over" easier. Speeds up mopping and coating . . .

saves energy.

Adjustable flow.

Capacity 25 gallons, width 36"



### ADHESIVE DISPENSER

This versatile dispenser has two built-in feeds for six and eight inch steel decks. Independent flow controls compensate for variances in consistency, weather etc. Dual wheels on either side prevent it from dropping into flutes. Capacity: 15 Gal.

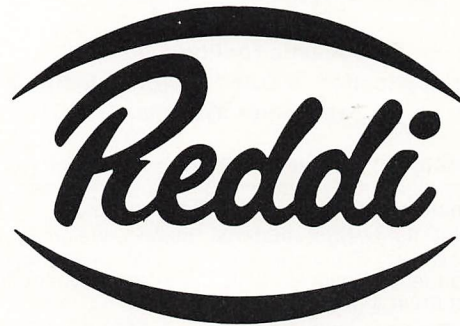


Write today for full information

## MARATHON ROOFING PRODUCTS INC.

367 Nagel Drive, Buffalo, N.Y. 14225  
Telephone (716) 685-3340

## When You Buy



## You Get The BEST !!

Feltlayers	Gravel Spreaders
Feltslitters	Adhesive Spreaders
Hot Luggers	Mop Carts
Mastic Dispensers	Carri All Carts
Magnetic Sweepers	Mop Heads (Bells)
Dewatering Pumps	Slag Pushers
Hoisting Wheels	First Aid Kits
Air Broom Sweepers	Hot Dispensers
Tar & Asphalt Cleaner	Taping Machines

### JULIEN P. BENJAMIN EQUIPMENT CO.

P.O. Box 41166, 2300 McCoys Blvd., Jacksonville, Fla.

# CCE REPORT

be adopted. During the first year the national associations would contribute \$450,000 and have 55 votes, (divided among the national associations in proportion to the amount of dues paid by each). Current members of CMA would contribute \$300,000 and have 30 votes. Certain regional bargaining groups would make no financial contributions but would have 5 votes. In subsequent years, the current members of CMA would gradually phase out both as members of the Board and as financial contributors. As they did so, the financial loss would be made up by the national associations and membership on the Board would be transferred to regional bargaining groups. Thus, in a relatively short period of time, say two or three years, the national associations would be obliged to pay several times the dues now being paid to CCE but would have only 65% of the vote on policy decisions. That proposal was and remains unacceptable to CCE.

"CCE is convinced that such a merged organization should have a Board of Directors consisting of an

equal number of representatives from each national association. Dues should be paid on the basis of a formula consisting of such factors as size and ability to pay. CMA is welcome to join such a group as any other association with the same number of votes as any other member of the CCE organization such as AGC, NECA, MCA, SMACNA, and so on. CCE does not believe in voting "stock shares", nor does CCE believe that an arrangement would be workable whereby large associations, or large contractors, could alone establish national policy for the entire construction industry consisting of hundreds of thousands of employers. CCE believes that member national associations, which represent over 105,000 contractors altogether should have a predominant majority on such a merged Board, in view of the fact that CMA numbers only 54 contractors in its membership.

"With respect to regional or local bargaining groups, CCE believes that much better communications can and should be established between them and the merged group—better

than either CMA or CCE has been able to provide in the past. CCE proposes the formation of a Labor Policy Committee which would include representation from each such group, meeting at frequent intervals and making recommendations to the Board of the merged organization on national policy matters.

"These then, are the points on which CMA and CCE up to the present have been unable to agree.

"There appear to be no other major items, insofar as CCE is aware, which cannot be more or less readily resolved. Although steadfast in its beliefs, CCE remains willing, even eager, to engage in meaningful discussions in an effort to conclude the merger and together get on to the tasks which await and confront the construction industry."

The Council of Construction Employers (CCE) is a Washington based association of 10 major national management associations in the construction industry, including NRCA, and is primarily concerned with labor relations matters in the construction industry.



## Midland's Improved "RIG II"

Cold mastic roofing machine  
for application of GAF "MINERALSHIELD"  
and other systems.

**The "Rig II" is airless**—Derives its power from a unique, heavy-duty hydraulic source. There's only one line to the gun for more efficient application.

**Special lightweight material pump**—Weighing approximately 60 pounds, the material pump is light enough for one man to easily move from drum to drum... not drum to pump.

**Whip hose for handling ease**—Comes complete with 250 ft. of 3/4 ID reinforced hose and 30 ft. of 1/2 ID whip hose for spraying ease.

**High production design**—Sprays approximately 4 1/2 GPM.

**Available with or without trailer**—The "Rig II" is mounted on a 7' x 10' all steel, 2500 lb. capacity trailer with 4-wheel electric brakes.



Call or write Bill Steinmetz or Bill Collins  
for current prices and additional information.

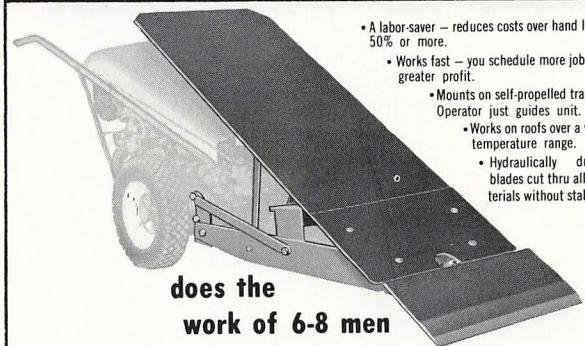


**MIDLAND ENGINEERING COMPANY, INC.**

52369 U.S. 31 North, South Bend, IN 46637 • (219) 272-0200

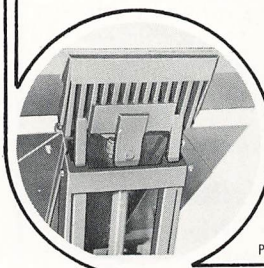
## Nieman Power Roof Remover...\*

\*Patent No. 3,779,605



- A labor-saver — reduces costs over hand labor 50% or more.
- Works fast — you schedule more jobs for greater profit.
- Mounts on self-propelled tractor. Operator just guides unit.
- Works on roofs over a wide temperature range.
- Hydraulically driven blades cut thru all materials without stalling.

does the  
work of 6-8 men



POWER ROOF REMOVER is equipped with two cutting tools to remove roofing down to the insulation or down to the decking, even if the insulation is solid mopped. A toothed blade (left) is used on most roof removing jobs when job conditions require its bull-dozer action. The wide cutting blade (above) is used mostly when removing fiberglass insulation and when removing roofing down to the insulation.

**Nieman**  
MANUFACTURING COMPANY, INC.

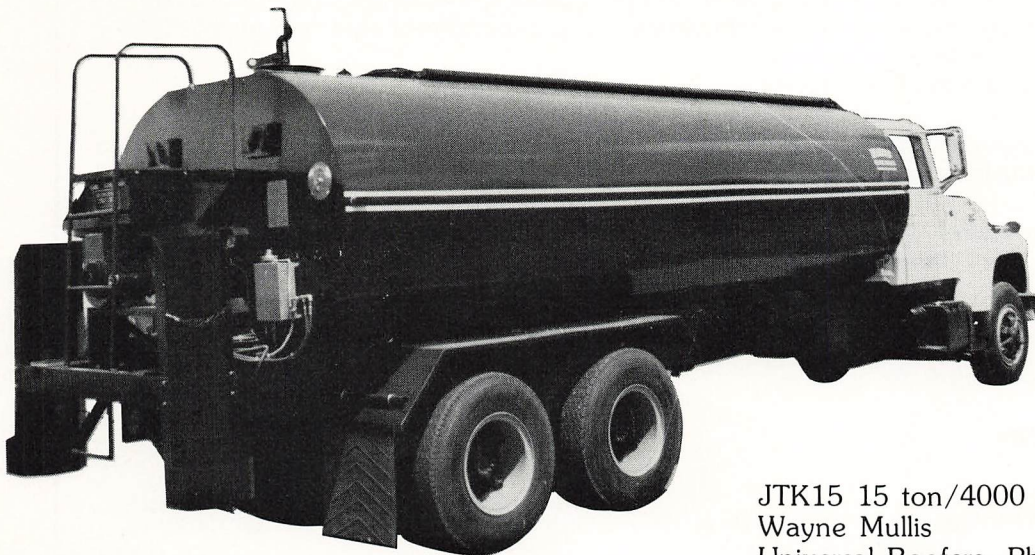


P. O. Box 64, New Prague, MN 56071 Telephone: (612) 758-4791

# There Are At Least 12 Good Reasons Why Roofing Contractors Choose



**Asphalt Handling Equipment**



*We  
Get  
Involved*

JTK15 15 ton/4000 gallon Capacity Job Tank  
Wayne Mullis  
Universal Roofers, Phoenix, Arizona

***When considering a complete liquid asphalt system or additional pieces of equipment perhaps it would be wise to call or write us for full details.***

**Liquid Asphalt Systems, Inc., 2435 Jefferson, Kansas City, Missouri 64108 (816) 474-0448**

## SYMPOSIUM ON ROOFING TECHNOLOGY



ル-フィフ技術に関するシムホ・ヂョーム  
SYMPOSIUM ÜBER DACHTECHNOLOGIE  
SYMPOSIUM ON TAKBELÄGGNING TEKNOLOGI  
SYMPOSIUM SUR LA TECHNOLOGIE DE TOITURE

# CALL FOR PAPERS

## SYMPOSIUM ON ROOFING TECHNOLOGY

Sponsored by  
NATIONAL BUREAU OF STANDARDS  
and  
NATIONAL ROOFING CONTRACTORS ASSOCIATION

September 21-23, 1977  
National Bureau of Standards  
Gaithersburg, Maryland U.S.A.

The National Bureau of Standards and The National Roofing Contractors Association have joined in sponsoring **four** National Conferences on Roofing Technology. These conferences have been held on a bi-annual basis since 1969 at the National Bureau of Standard's Gaithersburg, Maryland facility which is convenient to Washington, D.C. This Symposium on Roofing Technology is an extension of the National Conferences. Therefore, participants and attendees from all over the world including Europe, Asia, Africa, South America and Scandinavia are invited to join their North American colleagues for the purpose of exchanging technical information on the Science and Technology of Membrane Roofing.

### THIS IS A CALL FOR PAPERS

Papers are solicited for presentation at the Symposium and publication in the Symposium Proceedings. The subject matter will focus on **material, design, construction** and **performance** aspects of **membrane** roofing. Sessions are planned on:

- Energy Conservation and the Roof System
- Roofing Bitumens
- Membrane Roofing Systems Including Application
- Application of Performance Concept in Evaluation, Specification and Selection of Roofing Systems.

Papers will be accepted in English and French and should be a maximum of 15 typewritten pages. **Abstracts** of 250-300 words should be submitted no later than **NOVEMBER 1, 1976** to:

Dr. Edwin C. Mertz  
Technical Director  
National Roofing Contractors Association  
1515 North Harlem Avenue  
Oak Park, Illinois 60302  
USA

Complete manuscripts will be due no later than **MAY 1, 1977** in order to be published in the Symposium Proceedings.

A complete program announcement will be available in the near future. However, current information can be obtained from:

William C. Cullen or  
Robert G. Mathey  
B348 Building Research  
National Bureau of Standards  
Washington, D.C. 20234 USA

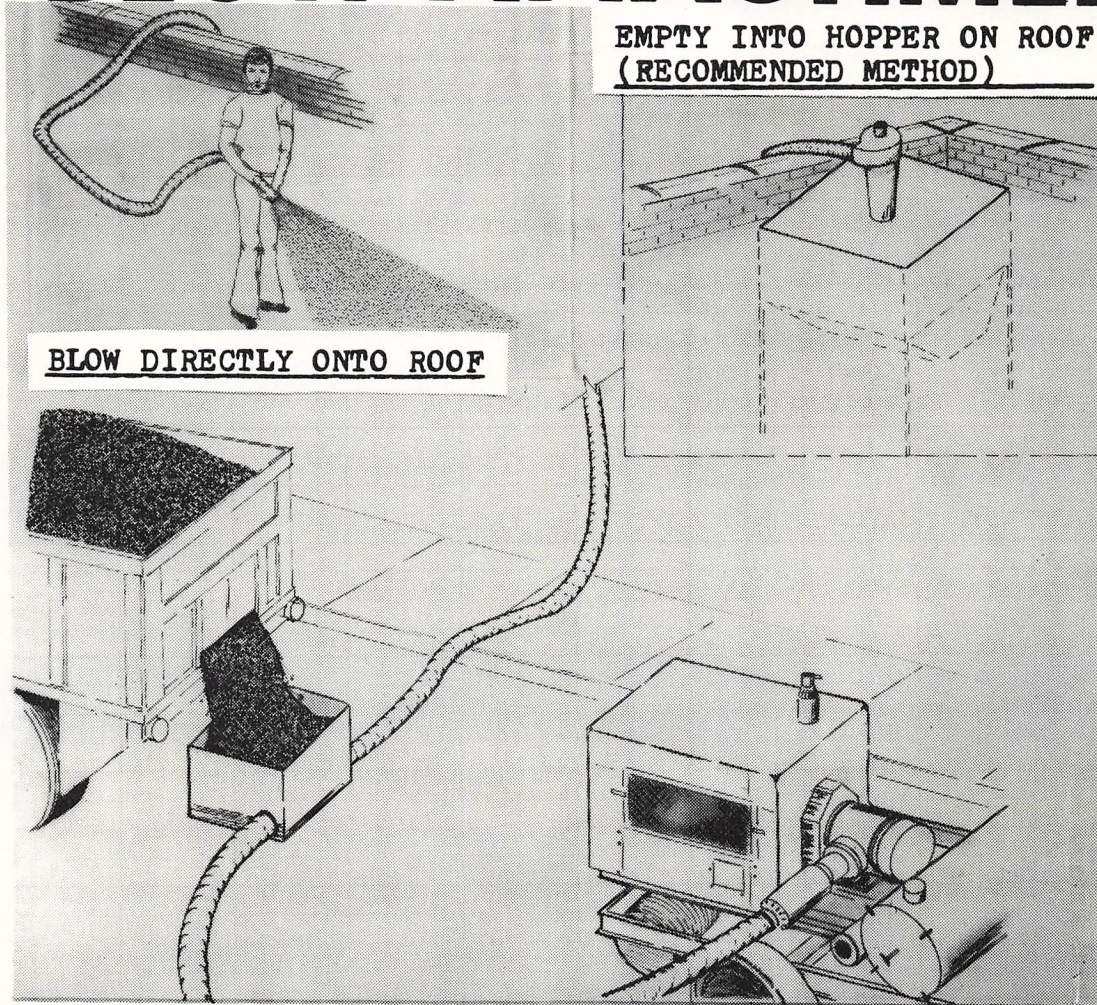
Telephone (301) 921-3407

William A. Good  
National Roofing Contractors Association  
1515 North Harlem Avenue  
Oak Park, Illinois 60302 USA

Telephone (312) 383-9513



# NEW SUPER VAC BLOW ATTACHMENT



EMPTY INTO HOPPER ON ROOF  
(RECOMMENDED METHOD)

BLOW DIRECTLY ONTO ROOF

- \* FUNCTIONS AS AN ATTACHMENT TO ANY MODEL SUPER-VAC
- \* CAN BE ATTACHED TO YOUR PRESENT ROOF VAC SYSTEM
- \* ATTACHES EASILY AND TAKES ONLY MINUTES
- \* SIMPLE, EFFICIENT SYSTEM
- \* ELIMINATES EXPENSIVE UPKEEP AND REPAIR COSTS

(IN THE INTERESTS OF SAFETY, WE RECOMMEND EMPTYING MATERIAL INTO HOPPER RATHER THAN BLOWING MATERIAL DIRECTLY ONTO ROOF)

**P & D MANUFACTURING, INC.**  
**5555 E. 69TH. COMMERCE CITY, CO 80022**  
**PHONE 303-287-3424**

FOR ADDITIONAL INFORMATION CALL OR WRITE, DON JEKEL, OR PAT JONES.

# News from affiliates

## Carolinas

The Carolinas Roofing and Sheet Metal Contractors Association elected the following officers at their 33rd Annual Convention in Myrtle Beach, S.C.:

President ..... Joe A. Piper II  
 1st Vice President ..... Edwin Williams  
 2nd Vice President ..... H. Tom King, Jr.  
 Secretary & Treasurer ..... Alvin Kernels

The Association also presented its highest honor, the Gordon M. Waters Distinguished Service Award, to William F. Hamlin, Sr., of the Hamlin Companies, Garner, North Carolina. The award is given for outstanding service to the Association and the industry.

## Florida

The 1976-77 officers of the Florida Roofing, Sheet Metal and Air Conditioning Contractors Association (FRSA) were formally installed during the association's 54th annual convention held recently in Bal Harbour.

John C. Carruth, Jr. will serve as president of the 550-member state association for the 1976-77 term.

Out-going president George E. Pepin, CPRC, became FRSA's Chairman of the Board.

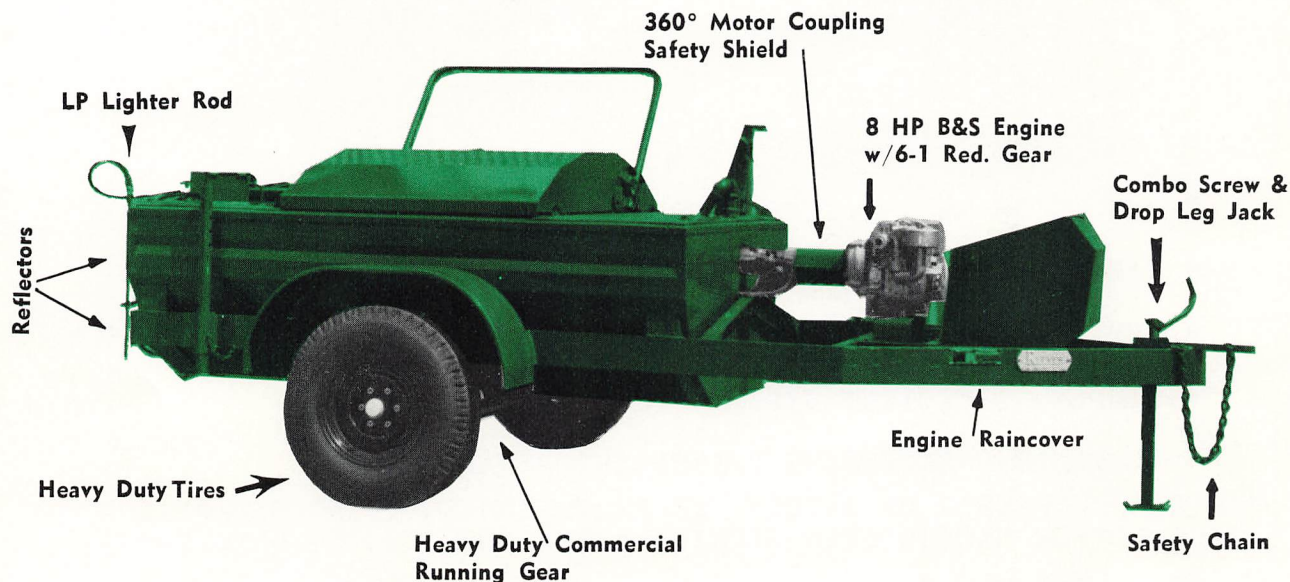
G. E. (Eddie) Daniels, CPSC, is the FRSA president-elect. Thomas O. Drake, CPRC, was elected vice-president, and John F. Starr continues as secretary-treasurer.

Also at the Convention, Frank B. McCormick, CPRC, FRSA's president in 1973-74, received the association's highest honor—the Bob Campanella Memorial Award. The award is presented annually to the member of FRSA who has most served the industry and the association during the preceding year.

FRSA also announces that it has awarded the title of Certified Professional Roofing Contractor to Edward T. Walker of Homestead, Florida, and to W. Mike Cochrane of Birmingham, Alabama. Walker has served as an FRSA director and on a number of association committees. Cochrane was the 1972-73 president of the Roofing and Sheet Metal Contractors Association of Alabama, and is a newly-elected director of NRCA.

## ★ Mr.ROOFER! Why Pay Extra For Standard Equipment?

Standard Equipment On Reeves Kettles Includes The Following...



See Reeves Distributor or Contact Direct...



## ROOFING EQUIPMENT CO., INC.

(512) 695-3567 • ROUTE 17, BOX 300 • SAN ANTONIO, TEXAS 78228

## Maryland

The Association Roofing Contractors of Maryland will be holding their Annual Convention October 1-4 at the Britannia Beach Hotel, Paradise Island, Nassau. A charter flight has been scheduled from Baltimore on October 1, and the association advises that there is still space available.

Interested persons should contact Nick Detorie, Convention Chairman, 2139 Huntingdon Ave., Baltimore, Md. 21211, or phone 301/837-8877.

## Midwest

The 27th Annual Convention and Exhibit of the Midwest Roofing Contractors Association will be held October 24-27 at the Broadmoor, Colorado Springs, Colorado. The Convention will include business and social functions, and a trade show. For further information, contact James Whittier, Executive Secretary, 1000 Power & Light Building, Kansas City, Mo. 64105.

## Texas

NRCA extends a warm welcome to its newest Affiliate Group member, the Roofing Contractors Association of Texas. The newly-formed group already has some 40 members, and its slate of officers is as follows:

President ..... Owen Hamilton  
Sr. Vice President ..... Max Eubank  
Vice President ..... Grady Barr  
Vice President ..... Jim Fisher  
Vice President ..... Hollis Porcher  
Secretary-Treasurer ..... Edis Oliver  
Texas contractors interested in more information should contact O. C. Smith, Jr., Executive Director, 3003 Yale St., Suite 109, Houston, Tex. 77018.

## Virginia

The Virginia Association of Roofing and Sheet Metal Contractors, Inc. has appointed R. Edward Rice of Richmond to be its new Managing Director. Mr. Rice was formerly the Executive Vice President of the Virginia Life Underwriters Association.



# INSULROOF™

## URETHANE ROOF INSULATION

- Largest capacity of Class I and Class II roof board insulation immediately available from nation's shipping center, Dallas.
- The most modern and best equipped quality control lab insures absolute dimensional stability in all product shipped.
- Permanent, trouble-free insulation—impervious to water; "C" factor is constant; superior wind uplift resistance; and high compression strength.
- Widest range of "C" factors available; from .167 to .031! R = 6.0 to 32.5!
- Lowest cost insulation per "C" value.
- The strongest, toughest, most rigid Class I roof insulation board.



## DIMENSIONAL STABILITY

# PANEL ERA™

Roofing rep inquiries invited...call toll free 1-800-453-5757

8001 CARPENTER FREEWAY  
DALLAS, TEXAS 75247  
(214) 630-5951

3447 MAIN STREET  
SALT LAKE CITY, UTAH 84115  
(801) 486-3474

# THE NRCA MEMBERSHIP COMMITTEE ANNOUNCES THE 1976 MEMBERSHIP CONTEST

You can help NRCA reach its next plateau—1500 members—by the time of the Convention in Atlanta. And you'll be rewarded for your efforts.

Sign up 5 new members between now and February 1, and we'll give you a free hotel room for 2 during the Convention (5 nights, single or double, at the Hilton or Marriott).

Sign up 10 new members and we'll give you the same hotel room **plus** complete registration packages for two.

And, if you sign up 20 members, you'll be our guest at the Reconvened Convention to Monte Carlo. (Package for 2, including air fare, hotel accommodations, and many social functions.)

The rules are simple and straight forward:

1. Anyone is eligible to compete.
2. Applications along with a check for first year's dues must be received in the NRCA office between August 1, 1976 and February 1, 1977.
3. Applications must be approved by the NRCA Board of Directors or Executive Committee and must include the name of the sponsor.

There's more, though, because three new categories of membership have been approved within the new Industrial/Institutional category of membership. All memberships in this category are for individuals, and do not carry the right to vote, or to serve on the Board. These are:

1. School Boards, Colleges and Universities—Annual dues are \$200 the first year, \$100 per year thereafter.
2. City-county-state government officials—Annual dues are \$200 the first year, \$100 per year thereafter.
3. Corporate "consumers", i.e., those with maintenance departments interested in roofing. Annual dues—\$500 per year, or \$1000 per year if they perform their own major roofing work.

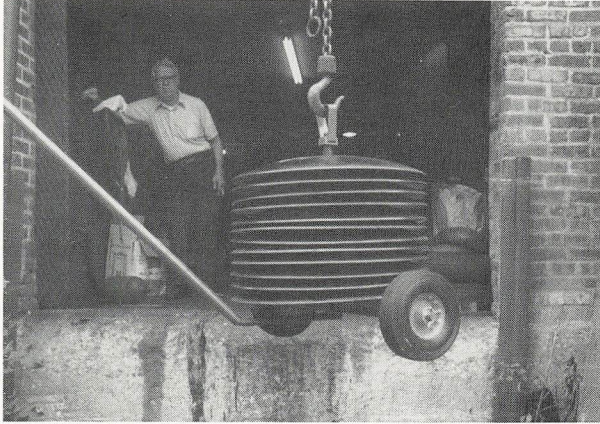
Applications for these new categories are presently being prepared and will be available soon.

As always, the NRCA office stands ready to assist you in your recruiting efforts. We'll provide you with prospects in your area, write follow-up letters, send out sample literature, anything to help you win a prize.

**Good Luck!**

# NEW from PFINGSTEN

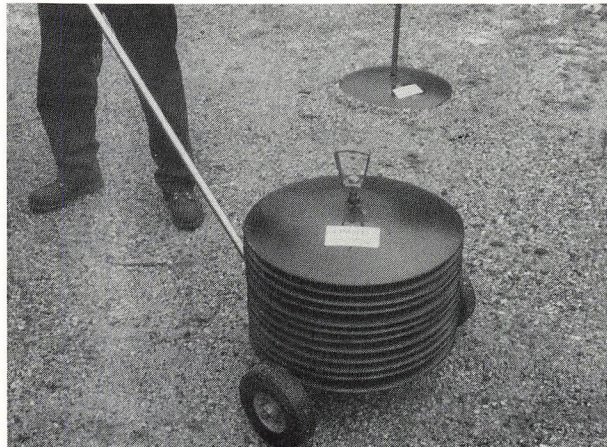
## PERIMETER WARNING SYSTEM



### EACH SET INCLUDES:

- 12 all-steel convex base pieces w/ welded center sleeve for extra stability and strength
- 12 48" all-steel stanchions w/ welded pig-tail to string warning flags
- 4 100' continuous pennant-type plastic warning flags
- 1 transport/hoisting/storage rack, which includes
  - :2 (8 2.00) semi-pneumatic tires w/ sealed bearings
  - :center hoisting eye
  - :all-steel construction

- One Compact Package (26"x26"x22")
- Fast, Easy Assembly/ Take-down
- Truck-to-roof/ Roll to Positions
- No Tools Needed
- Maintenance Free
- Not affected By Wind
- All-steel Construction



One set is sufficient for the perimeter of a 100 square job site. Pennant flags are strung on a 30 foot spacing.

For additional information: call Ed Krome (312) 785-6649

Distributed by: Krome Roofing Supplies, Inc.  
a division of Pfingsten Engineering Co.  
12141 S. Union, Chicago, Ill. 60628

# News from associate members

**Aeroil Products Co., Inc.** has announced the availability of their all new "Roofers Need Love Too" T-shirts. Printed in red on a white shirt, the "Love" shirts are offered to contractors for \$3.50 each or six for \$20 plus \$1.50 postage and handling. They are available in sizes medium, large, and extra large. Orders with accompanying checks should be sent to Aeroil Products Co., Inc., South Hackensack, NJ 07606.

Aeroil has also announced a change in their standard 30 gallon "Shrimp Boat" mop cart. The handle is now formed to hold the mop handles in the upright position and keep them off the roof deck when not in use.

Bob Blazer, Chicago Regional Salesman for the **Gibson-Homans Company**, has been assigned to the Miami, Florida region effective June 1, 1976. He will be working out of the company's Tampa Division. Mr. Balzer has been with Gibson-Homans for 3½ years, and was named Salesman of the Year in 1974.

The appointments of three new vice presidents was announced by R. S.

Funk, Vice President and General Manager of **GREFCO, Inc.** The new vice presidents are Richard L. Hamilton, General Manager of the Building Products Division, E. J. Manion, General Manager of the Dicalite Division, and E. L. Neu, General Manager of the International Division. All three will retain their managerial assignments, and will remain in the company's Los Angeles headquarters.

**E. L. Hilts & Company**, Hickory, N.C., has re-developed their Pitch Cream for use when working around pitch and asphalt fumes. Hilco Pitch Cream is packaged in 16 ounce jars, 12 per carton. Hilts advises that dealer inquiries are invited.

A roofing service group, which will provide experienced field technical assistance in roofing application and inspection, has been formed by the Organic Materials Division of **Koppers Company, Inc.**, Pittsburgh, Pa. The Koppers technical servicemen will work with customers on built-up roofing installation and inspection, maintenance products applications, and field training

needed for installation of newly developed roofing systems.

Koppers also announces that Rodney K. Shapard has been named project manager in their Organic Materials Division. Mr. Shapard, who has been with Koppers since 1965, will be primarily responsible for a new roofing system being manufactured and marketed for Koppers as a part of its extensive line of products for the roofing and waterproofing industry.

Bicknell Lockhart, President of **Monier-Raymond Company**, manufacturer of Monray Roof Tile, announces the election of three Vice Presidents: Roger D. Thompson as Vice President/Marketing, Robert Scholer as Vice President/Southern California operations, and Buzz A. Pulsifer as Vice President/Northern California operations. Monier-Raymond has two manufacturing facilities in Southern California, and one each in Northern California, Arizona and Texas. It also operates a Roofing Contract Division in Houston, and is exploring the feasibility of a new facility in Florida.



## ESTIMATOR

Built-up roofing/related sheet metal take charge man. Must be knowledgeable of new and reroofing from takeoff to supervision. Field experience helpful. Permanent position with a 76 yr. old, high volume firm.

Send complete resume and requirements to:

**Pulver Roofing Co.**

1206 Erie Street, Utica, N.Y. 13502

## SLATE ROOFING SHINGLES

Unfading Green, Unfading Mottled Green and Purple, and Unfading Purple Vermont Slate

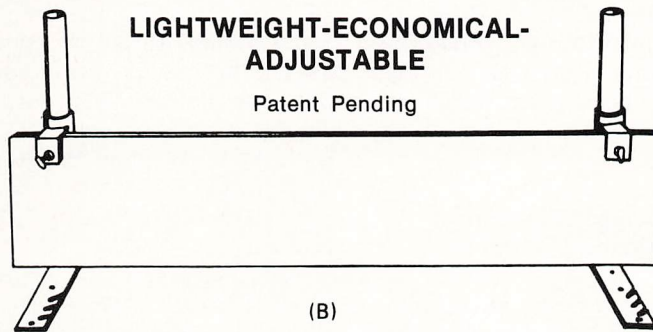
**Vermont Structural Slate Co., Inc.**

FAIR HAVEN, VERMONT 05743

802-265-4933

# INCREASE PRODUCTIVITY DECREASE COSTS

## SAFELY --- EFFICIENTLY! WITH P.A.L. PRODUCTS



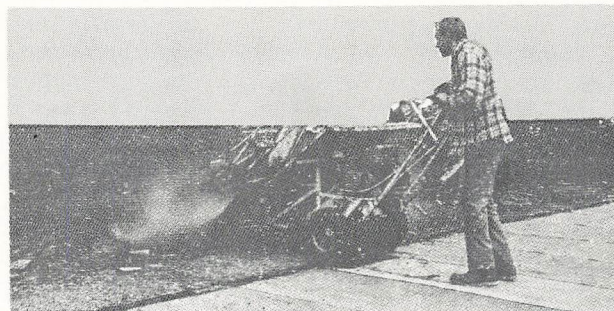
### THE TEMPORARY ROOF PARAPET

- Lightweight, easy and fast to install and dismantle.
- Adjustable from dead-level to 10/12 pitch.
- Lower receiver will support toe board or can be adjusted to receive up to 22 inch width of plywood. (See Drawing B)
- Hold debris on roof level.
- Asphalt shingle can be installed over base and when dismantled strike plate and base will release.
- Also can be used for product storage on steep roofs, and roof bracket with working & storage area.



### POWER CLAW . . . . .

The Power Claw assures a clean, modern, efficient removal operation to make your re-roofing jobs provide larger profit margins. Power Claws are now operating throughout the country, and has proven itself under the most adverse conditions. Therefore, may we suggest that you ask the Roofer who owns one to attest to the Power Claw's capabilities.



PATENT # 3542433

Write for more information on these P.A.L. products . . . . .  
"Engineered FOR the ROOFER . . . . . BY a ROOFER."

## P.A.L. DEVELOPMENT CORPORATION

P.O. Box #127

(414) 781-6870

Butler, Wisconsin 53007

# INDUSTRY DEVELOPMENTS

## Local 30 Used Violence, Says NLRB Judge

A National Labor Relations Board administrative law judge has ruled that Philadelphia roofers union local 30 resorted to physical violence and property damage at various times over a 3-year period in an effort to stunt the growth of the open shop.

Citing the union's propensity to violence, he recommended that the NLRB order the union to reimburse contractors and owners for damage done to buildings, equipment, and materials.

The case is part of a massive legal action filed in 1973 by ABC, charging that national and local building trades unions were engaged in a national conspiracy of violence against the open shop.

The judge found the local union responsible for the violent action in Philadelphia, and ruled it violated federal labor law because it subjected open-shop workers to coercion in the exercise of their right not to join a union. However, he dismissed the charge against the international union because there was no evidence it participated in, approved, or was responsible for the violence.

## Asphalt Labelling

An identification system for mopping grade asphalts used in built-up roofing has been endorsed and recommended by the Roofing Systems Technical Committee, a joint committee of the Asphalt Roofing Manufacturers Association and the National Roofing Contractors Association.

The proposed asphalt identification system is intended to advance the built-up roofing industry by providing the applying contractor with a clearer understanding of the characteristics of the material in such a way as to give a building owner a better performing roof.

The RSTC recommended that the following information be clearly shown on all packaged material and that it be printed on all bills of lading

for bulk material:

1. The Softening Point (SP) Range. The temperature ranges of the asphalt as determined in accordance with ASTM D-312.

2. The Minimum Flash Point (FP). Flash point of the asphalt as determined by ASTM Method D-92.

3. The Equiviscous Temperature (EVT) Range. The temperature at which a viscosity of 125 centistokes is attained, plus and minus 25°F.

4. The Minimum Finished Blowing Temperatures (BT). The minimum temperature at which the blowing of the asphalt has been completed.

## ASA Opposes Quotas for Awarding Contracts

Subcontractors meeting in Atlanta, Ga. at the annual convention of the American Subcontractors Association (ASA) recently, passed a resolution formally opposing any federal or local governmental policy which favors the award of public works construction contracts to minority joint ventures. The resolution states that all public construction contracts should be awarded to the lowest bidder who is qualified to perform the work, without regard to the ethnic or racial makeup of the ownership of the contractor. Any policy favoring a specific racial makeup "contradicts the goal of equal opportunity by arbitrarily excluding an entire segment of the citizenry from bidding on public contracts without regard to their financial or technical qualifications to perform the work," the subcontractors said.

## Dodge Update

The mid-year update of the 1976 **Dodge/Sweet's Construction Outlook** showed the total value of construction contracts for the year expected to advance 14 per cent to \$104 billion, with housing continuing to be the driving force. According to George A. Christie, vice president and chief economist of

the F. W. Dodge Division of McGraw Hill Information Systems Company, there has been an unmistakable upturn in nonresidential building during the past few months.

Christie stressed that housing will account for all of this year's gain in construction contract value; while there will continue to be a steady improvement in nonresidential construction over the balance of 1976, the total for the year will be \$30.9 billion, three per cent below 1975; this year's expected \$25.6 billion in nonbuilding construction, which lacks the impact of last year's trans-Alaska pipeline "superproject," will barely hold even with the unusually high level of 1975 contracting.

Store construction is expected to finish 1976 with a 24 per cent gain in contract value; institutional building will be virtually even with 1975's total; manufacturing building will be down 40 per cent from last year, according to Christie.

## Good Reading

Two new books of interest have recently been published and brought to our attention:

***Profitable Management for the Subcontractor*** (320 pages, \$16.50) by Robert L. Teets. The book covers subjects such as accounting, labor relations, estimating, cash flow, finance, insurance, liens, and contracts, and has a section on marketing as well. The author has held positions in practically every capacity of electrical contracting. The book is available from McGraw-Hill Book Co., 1221 Avenue of the Americas, New York, N.Y. 10020.

***Roofer's Handbook*** (187 pages, softbound, \$7.25) by William E. Johnson. The book is devoted entirely to shingling—covering tools, materials and application techniques. The author has been a journeyman roofer, superintendent, and instructor of shingle roofing methods. The book is available from Craftsman Book Co., 542 Stevens Ave., Solana Beach, Cal. 92075.



**FIRST CLASS**  
Permit No. 1600  
Oak Park, Ill.

---

**BUSINESS REPLY MAIL**

No Postage Stamp Necessary if Mailed in the United States

---

POSTAGE WILL BE PAID BY

NATIONAL ROOFING  
CONTRACTORS ASSOCIATION  
1515 North Harlem Avenue  
Oak Park, Illinois 60302



### FREE LITERATURE CARD

Use this convenient post card for more facts on the products described and advertised in this issue.

	Check Page Here		Page Check Here
Aeroil Products Co., Inc. ....	44	<input type="checkbox"/>	Liquid Asphalt Systems, Inc. .... 33 <input type="checkbox"/>
Architectural Steel Corp. ....	9	<input type="checkbox"/>	Machinery Development, Inc. .... 14 <input type="checkbox"/>
Julien P. Benjamin Equipment Co. 31	31	<input type="checkbox"/>	Marathon Roofing Products, Inc. . 31 <input type="checkbox"/>
Benoit, Inc. ....	13	<input type="checkbox"/>	Midland Engineering Co. .... 32 <input type="checkbox"/>
The Bilco Co. ....	21	<input type="checkbox"/>	MM Systems Corp. .... 9 <input type="checkbox"/>
Blackwell Burner Co. ....	26	<input type="checkbox"/>	Monier-Raymond Roof Tile Co. . 25 <input type="checkbox"/>
Carlisle Tire & Rubber Co. ....	6	<input type="checkbox"/>	National Nail Packaging Corp. . 25 <input type="checkbox"/>
Celotex Corp. ....	16-17	<input type="checkbox"/>	Nieman Manufacturing Co. .... 32 <input type="checkbox"/>
Certain-teed Products Corp. ....	29	<input type="checkbox"/>	P & D Manufacturing Co. .... 35 <input type="checkbox"/>
Contech, Inc. ....	9	<input type="checkbox"/>	P.A.L. Development Corp. .... 43 <input type="checkbox"/>
Evode, Inc. ....	28	<input type="checkbox"/>	Panel Era Div. .... 37 <input type="checkbox"/>
GAF Corp. ....	11	<input type="checkbox"/>	Peterson Aluminum Corp. .... 13 <input type="checkbox"/>
Garlock Equipment Co. ....	43	<input type="checkbox"/>	Pfingsten Engineering Co. .... 39 <input type="checkbox"/>
B. F. Goodrich		<input type="checkbox"/>	Pittsburgh Corning Corp. .... 2 <input type="checkbox"/>
General Products Co. ....	15	<input type="checkbox"/>	Reeves Roofing Equipment Co. . 36 <input type="checkbox"/>
GREFCO, Inc. ....	4	<input type="checkbox"/>	Reimann & Georger, Inc. .... 19 <input type="checkbox"/>
W. P. Hickman Co. ....	19	<input type="checkbox"/>	Roofmaster Products Co. .... 20 <input type="checkbox"/>
Johns-Manville Corp. ....	7	<input type="checkbox"/>	Rubber & Plastics Compound Co. . 8 <input type="checkbox"/>
Koppers Co., Inc. ....	3	<input type="checkbox"/>	Vermont Structural Slate Co. . . 40 <input type="checkbox"/>

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZIP \_\_\_\_\_

# BUILT TO LAST . . . BY GARLOCK

## THE PATCHING MACHINES

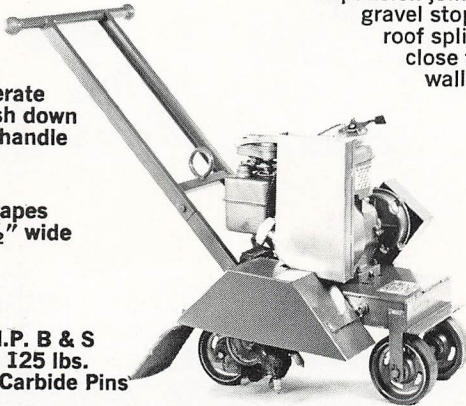
### THE PATCH SCRATCHER

To operate push down on handle

Scrapes 4½" wide

4 H.P. B & S  
Wt. 125 lbs.  
12 Carbide Pins

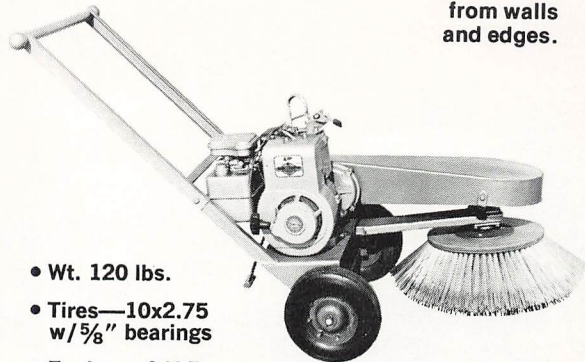
Use on repair jobs expansion joints gravel stops roof splits close to walls.



### THE PATCH SWEEPER

Sweeps away from walls and edges.

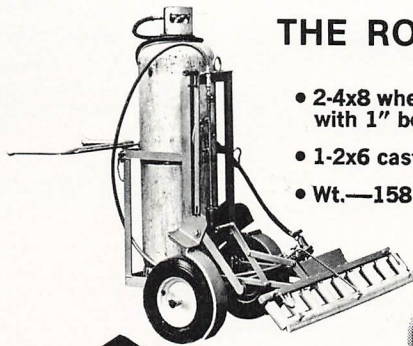
- Wt. 120 lbs.
- Tires—10x2.75 w/5/8" bearings
- Engine—4 H.P.



## THE DRYING MACHINES

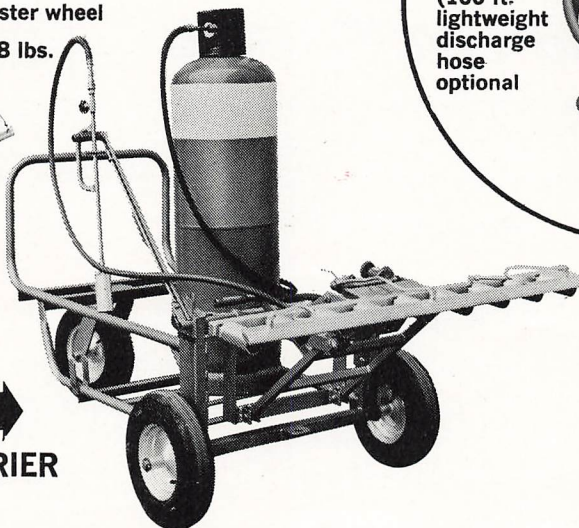
### THE ROOF DRYER

- 2-4x8 wheels with 1" bearings
- 1-2x6 caster wheel
- Wt.—158 lbs.



COMES WITH ITS OWN CARRIER OR . . .

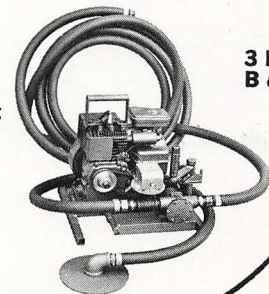
. . . MOUNTS ON A #4000 UTILITY CARRIER



### WATER PUMP WITH A CLUTCH AND AUTOMATIC CUT OFF

Weight 60 lbs.  
(100 ft. lightweight discharge hose optional)

3 H.P. B & S



Weight of dryer unit—72 lbs. cylinder not included

MANUFACTURED BY

# GARLOCK

EQUIPMENT CO.

3250 Gorham Avenue So.  
Minneapolis, Minn. 55426  
Phone 612-929-0496



# e-z load kettles

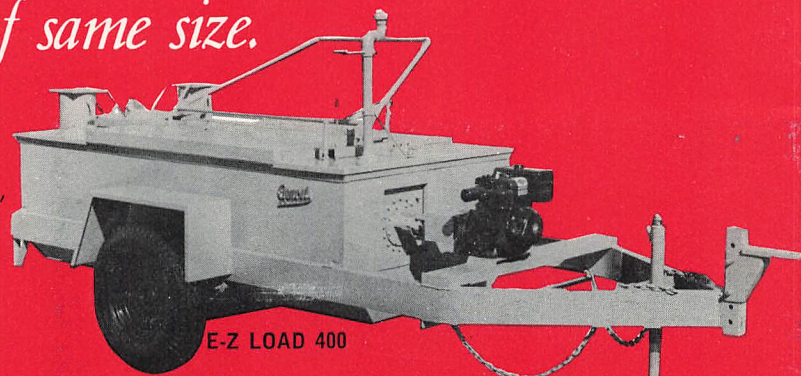
*melts more hot per hour than any other kettle of same size.*



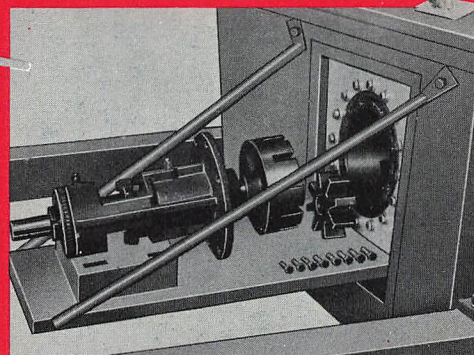
loading height only 42"

E-Z LOAD 600

loading height only 40"



E-Z LOAD 400



Easyout Submerged Gear Pump is easily serviced from outside the kettle. Pump never needs pre-heating because it's submerged in the hot. Pumps to 150 ft. plus at 35 GPM.

- Equipped with Easyout Submerged Gear Pump!
- Patented Heat-Riser cuts morning heat up time in half.
- Cover with break-away-lever-action makes opening a cinch!
- Heavily insulated!
- Equipped with adjustable tow hitch and double safety tow chains.
- Adjustable screw jack—the easiest way to keep kettle level.
- Heavy channel frame goes full length of kettle!

*There are more Aeroil Kettles in service than any other make.*

Aeroil's reputation for making roofers kettles that out produce and out live all others is legendary, now the E-Z LOAD Kettles are our newest legend. There's no question that these kettles can economically and efficiently supply a big crew on a big job . . .

*but did you know*

that on small jobs the E-Z LOAD Kettles offer you a number of benefits too! . . . such as, kettleman will have more time to do other jobs, torches can be turned down saving fuel, reducing coking and emissions, and increasing kettle-tube life.

**(Kerosene or LP-Gas)**

Model Number	Capacity	Length Overall	Width Overall	Tire Size	Loading Height	Kerosene Tank Capacity	Shipping Weight Approx.
E-Z LOAD 600	600 gal.	196"	85"	(4) 7.00x15 8 ply	42"	40 gal.	3800 lbs.
E-Z LOAD 400	400 gal.	180"	76"	(2) 7.00x15 8 ply	40"	30 gal.	2300 lbs.

**Aeroil Products Company, Inc.**

69 Wesley St., South Hackensack, New Jersey 07606 • 201-343-5200