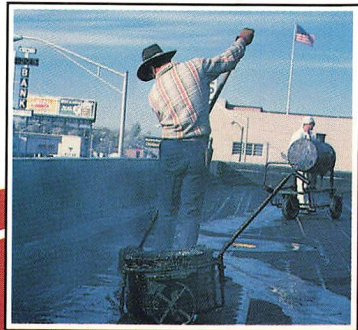
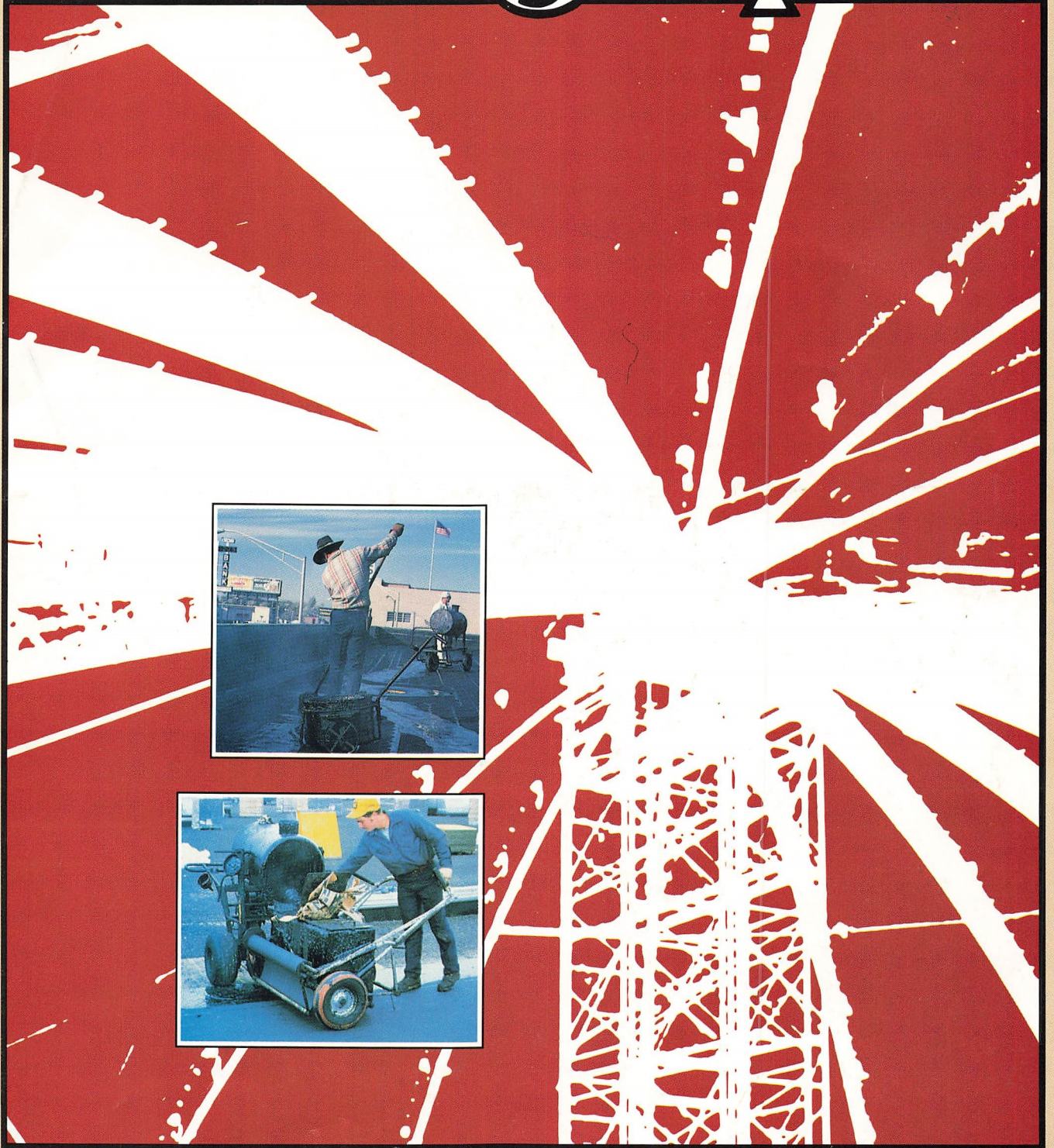


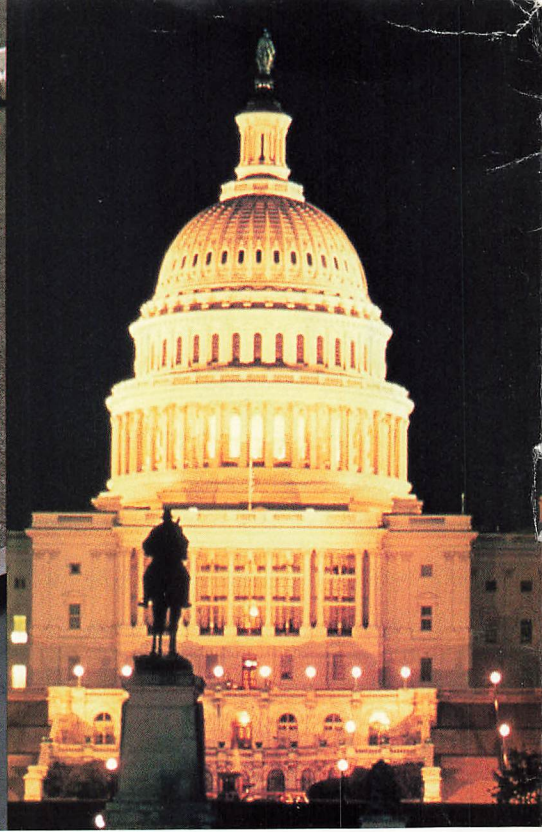
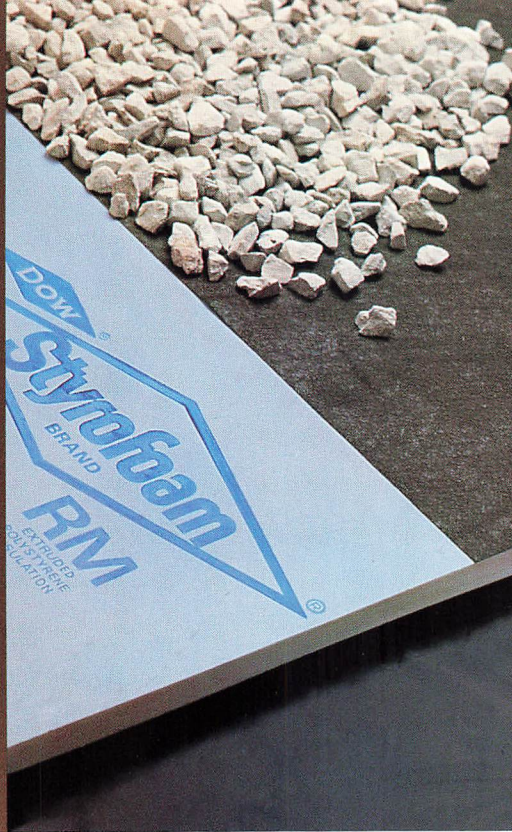
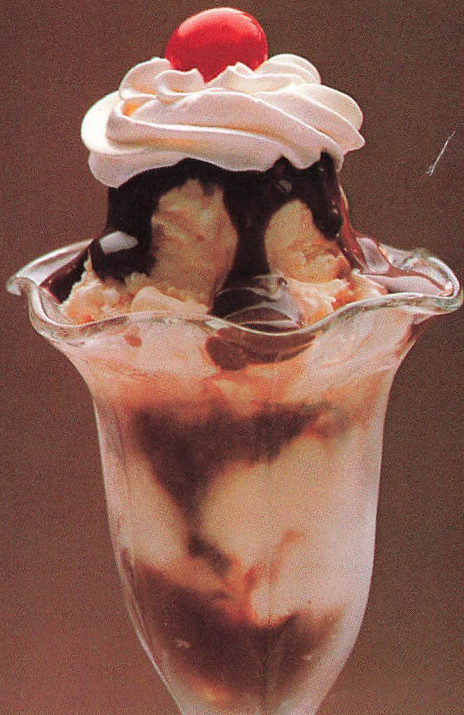
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# roofing spec

National Roofing Contractors Association

September, 1982





## Some of the world's greatest toppings.

There's only one way to top a single-ply roof, and that's with STYROFOAM\* RM Brand Insulation. Because nothing protects, insulates and keeps out the elements year after year, season after season like STYROFOAM Brand Insulation.

Only STYROFOAM is performance-proven to provide outstanding protection from physical abuse and moisture in demanding roofing applications *on top* of a single-ply membrane roof. STYROFOAM stands up to gravel and the repeated abuse of vicious freeze-thaw cycles, too. And STYROFOAM RM Brand Insulation installs fast and easy... while its renowned high R-value lasts and lasts.

STYROFOAM Brand Insulation. It's the only topping that works so well with single-ply technology. So if you appreciate all the advantages of the new single-ply membrane systems for both new and re-roofing jobs, put STYROFOAM RM Brand Insulation on top. Don't accept anything less than the greatest topping.

For more information write: The Dow Chemical Company, STYROFOAM Brand Insulation, Dept. H96, Midland, MI 48640.



STYROFOAM Brand Insulation is listed in the General Building File of Sweets Catalog under section 7.15/Dow.

CAUTION: STYROFOAM Brand Insulation is combustible and should be handled and installed properly according to Dow literature available from your supplier or from Dow.

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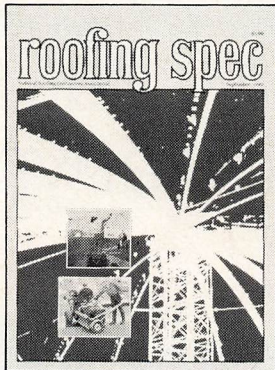
# roofing spec

Vol. 10 No. 9

September 1982

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New construction is down but, according to a *Roofing Spec* survey, there is still work being done in the reroofing sector of the industry.



**NATIONAL  
ROOFING  
CONTRACTORS  
ASSOCIATION**

8600 Bryn Mawr Avenue  
Chicago, Illinois 60631  
(312) 693-0700

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# Comment

## A Lesson Relearned

**N**ews item: A recent gathering of the Sheet Metal Workers' International Association featured addresses by Senators Edward Kennedy, Alan Cranston, John Glenn and Ernest Hollings, and former Vice President Walter Mondale.

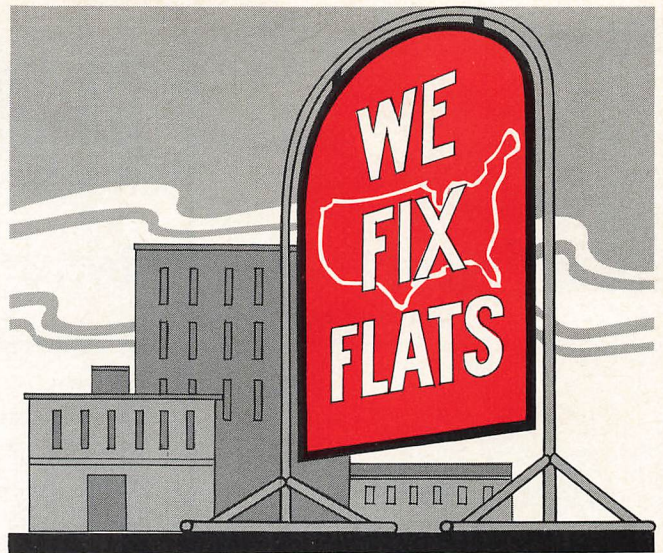
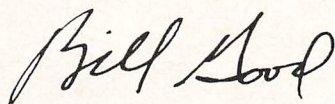
The item is significant not because sheet metal workers must now surely hold the record for most time spent listening to what is wrong with Reaganomics, but because (a) the 1984 presidential election has now unofficially begun, and (b) candidates will not be bashful about appealing to small groups in order to mold large constituencies.

Concerning (a), we can only offer the observation that we've come a long way since Andrew Jackson boasted, "I have not gone into the highways and market places to proclaim my opinions." Today's politicians, competing for early trends and early publicity, travel almost anywhere to find a group willing to give its endorsement. And while 160,000 sheet metal workers do make up a sizable group, they're not the stuff that U.S. presidents are made of.

Concerning (b), it is a sad fact of political life that elected officials spend inordinate amounts of time getting elected and re-elected, which means, under the burdens of the Federal Election Campaign Act, that they must spend countless hours raising money.

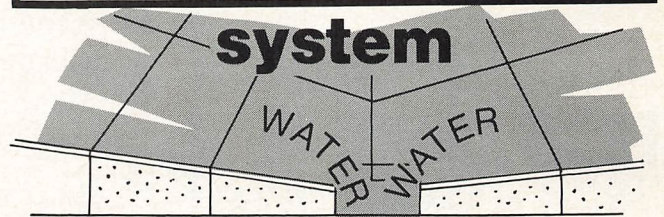
The safest incumbent Congressman will spend a quarter of a million dollars this year on his campaign, and that does not include the never-ending trips to the district, the public appearances, etc., etc. It's a job no one in his right mind would want, which, come to think of it, is another problem entirely.

Still, if the lure of an endorsement from the sheet metal union can cause the most frequently mentioned Democratic presidential candidates to parade before its leaders, there is a lesson for all of us, and it is a lesson we constantly relearn: Politics involves us all, or ought to, because it affects us all. Those who have learned that lesson, participate, and get satisfaction; those who do not understand, complain about our sad state of affairs, and get frustration.



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# Ideas, notes and random thoughts

**This issue** of *Roofing Spec* carries with it the winds of change in the American roofing industry. With a continuation of slowed new construction in practically all parts of the United States, NRCA members are picking up the slack with an increased emphasis on reroofing. In addition, the smart contractor is offering innovative roof maintenance programs to building owners. In the words of NRCA President John Bradford, a preventive maintenance plan could "double the life of the average roof." While vital economic signs were picking up in late August, it always makes sense to diversify a roofing company by adopting new business tactics.

m.b.

**Our belated thanks** to Jim Rea, president of the Chicago-based solar contractor firm Comstock, Inc. for his gracious assistance in allowing us to photograph a company installation at the Chicago Museum of Science and Industry. The photographs were used in the August issue of *Roofing Spec*, devoted to solar energy.

**In other NRCA news**, the Government Relations Committee is now offering a new service in the form of a 24-hour Government Relations Hotline at 312/693-6039. The prerecorded message gives interested callers information on pending legislation relative to the roofing segment of the U.S. construction industry. The report is updated weekly by NRCA Executive Director Bill Good.

**A warm *Roofing Spec* welcome** is deserved for Constance Arkus, editorial assistant. Connie, 25, a 1979 journalism graduate from Marquette University, will be responsible for assisting with the writing for and production of *Roofing Spec*. In addition, Connie's other NRCA-related duties will include maintaining contacts with other construction-trade publications and coordinating the association's ventures into video for the upcoming Centennial Celebration.

**NRCA Director of Education** Alan Grayson announced recently that the coming series of Roofing Systems Conferences promises to be the most informative, intense one-day session ever offered. The conference objective is to offer critical design and performance considerations for industrial and commercial roofing. Each of the four conferences (New Orleans, Dallas, Charlotte and Kansas City) will feature a wide range of presentations collectively devoted to the entire roof system. The program is designed for architects, engineers, specification writers, general contractors, building owners, and, of course, roofing contractors. The conference dates are: New Orleans, Dec. 2; Dallas, Dec. 9; Charlotte, March 24; and, Kansas City, April 7. For more information and a registration form, contact NRCA, 8600 W. Bryn Mawr Ave., Chicago, Ill. 60631.

**American consumers** like the idea of a balanced budget, according to a recent Gallup Organization opinion survey conducted for the U.S. Chamber of Commerce. A majority of 64 percent of those polled said they favored a proposed Constitutional amendment requiring a balanced budget and a limit on tax increases.

**"The true harvest** of life is intangible. It is as the tints of morning and evening. It is a little stardust caught... a segment of the rainbow."

—Henry David Thoreau

## NATIONAL ROOFING FOUNDATION UPDATE

The National Roofing Foundation wishes to thank THE KIMMENADE CORPORATION, Hugo P. Landheer, Bridgeton, Mo. for their recent donation.

The first "Introduction to Commercial and Industrial Roofing Technology" course has been purchased by the University of Oklahoma, Oklahoma City, Okla. The course will be offered through the Construction Science program beginning in January.

Puerto Vallarta, Mexico is the site for the National Roofing Foundation's 1983 Reconvened Convention. Be on the lookout for more information.

# Tapered FOAMGLAS<sup>®</sup> Roof Insulation Systems, Better for the Roofer, Better for the Owner.

For reroof or new roof, Tapered FOAMGLAS Roof Insulation Systems are better because they are designed for quality buildings, demanding owners and the responsible roofer.

## Better for the roofer

Each piece of insulation is identified for its position and direction of slope. Take-off drawings, by your FOAMGLAS insulation distributor or Pittsburgh Corning, can be easily followed. The systems are installed using traditional methods. Cricket Systems, using the same materials, are available for drain-to-drain installation.

And after the roof is properly installed, you know your customer has the best roof insulation system available.

## Better for the Owner

There's a lot more to roof insulation than "R" factor and the

Tapered FOAMGLAS Roof Insulation Systems provide a lot more.

FOAMGLAS Insulation is all glass, it cannot absorb moisture in liquid or vapor form. This means that *it will maintain its original insulating value for the life of the installation.* That's constant insulating value. Other insulations cannot make that claim. If a leak occurs they absorb moisture and that destroys their insulating value. Complaints, expensive tear-offs and reroofing results.

## Single-ply or BUR

Tapered FOAMGLAS Roof Insulation Systems are dimensionally stable . . . they will not stretch, shrink, warp or swell. This makes them an ideal base for adhered single-ply or built-up roof membranes. They may be installed direct to the deck or over existing systems.

## Drains Water Fast

Tapered FOAMGLAS Roof Insulation Systems have 1/8-inch or 1/4-inch per foot taper, either system drains water off the roof fast.

You can install Tapered FOAMGLAS Roof Insulation Systems with confidence. For more information, call or write Pittsburgh Corning Corporation, Marketing Department RF0982, 800 Presque Isle Drive, Pittsburgh, Pa. 15239, U.S.A., Tel: (412) 327-6100.



**THE  
INNOVATIVE  
INSULATION  
PEOPLE**



# NATIONAL NEWS

## July Construction Weakens: Dodge Reports 12 Percent Decline

The seasonally adjusted Dodge Index for new construction contracting slipped 12 percent in July following a strong advance in June, according to the F.W. Dodge Division of McGraw-Hill Information Systems Co. The Dodge Index (1977 = 100) retreated to 98 in July from 111 in June.

July's \$12.5 billion of contracting for new construction of all kinds, after adjustment for seasonality, remained even with the average value of work started during the weak second quarter.

"July's setback came as no surprise since June's spurt was due more to a bunching of office building projects than to a general improvement in basic market conditions," said George A. Christie, vice president and chief economist for F.W. Dodge. "July's lower rate of contracting bears out the impression that the bottom of the building recession has been reached, but recovery hasn't yet begun."

Nonresidential building contract value, at \$5 billion in July, was down 15 percent after seasonal adjustment, as the latest month failed to sustain June's surge of office building projects, according to the latest report.

"After the exceptionally high rate of office building starts reported in June, it was inevitable that July's contracting would show a decline — as, in fact, it did," Christie said. "But otherwise, July's nonresidential building activity was typical of 1982's recession-dominated market, with across-the-board weakness in most types of commercial and industrial building."

At the end of seven months, this year's cumulative total square footage of nonresidential building trailed the same period of 1981 by 22 percent, Christie said.

Residential building contract value totaled \$5.1 billion in July, a decline of eight percent from June's rate, in seasonally adjusted terms. Due largely to different methods of statistical reporting, Dodge showed a different pattern of multi-family housing starts over the past several months than the Department of Commerce. Both sources, however, reported virtually the same totals of one-family and multi-family units started during the first seven months of 1982.

"July housing activity was unaffected by the recent sharp break in interest rates which will eventually support higher levels of one-family home building and sales," Christie said. "So far, only short-term interest rates have declined, but it is only a matter of time before mortgage rates will also be retreating from their

recent extremes."

Contracts for nonbuilding construction totaled \$2.4 billion in July. The continuing limitations of recession on utility construction and the impact of budgetary restraint on public works led to a 12 percent seasonally adjusted decline in total nonbuilding construction for July.

At the end of seven months, the cumulative value of all new construction started was \$83.3 billion, a decline of 11 percent from the total for the same period in 1981.

Following is a summary of the latest month's Dodge construction statistics. These contract-award statistics measure the value of newly started construction that will be brought to completion over the months ahead. They indicate the amount and direction of future expenditures of this major sector of the economy.

National News continued, page 9

### MONTHLY SUMMARY OF CONSTRUCTION CONTRACT VALUE Prepared by F.W. Dodge Division McGraw-Hill Information Systems Company

	July 1982 Construction Contract Value (000,000)	Seasonally Adjusted Percent Change From Previous Month
Nonresidential Building	\$ 5,011.4	- 15
Residential Building	5,144.4	- 8
Nonbuilding Construction	2,371.9	- 12
Total Construction	\$12,527.7	- 12

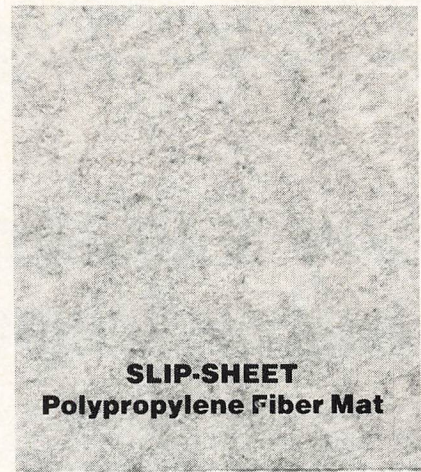
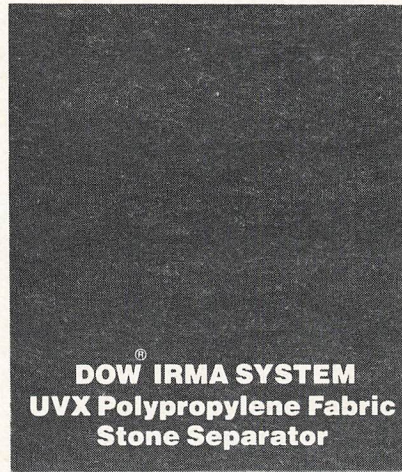
	7 Mos. 1982 (000,000)	7 Mos. 1981 (000,000)	Cumulative Percent Change
Nonresidential Building	\$32,002.3	\$34,840.4	- 8
Residential Building	30,831.4	38,485.4	- 2
Nonbuilding Construction	20,514.8	19,965.4	+ 3
Total Construction	\$83,348.5	\$93,291.2	- 11

#### DODGE INDEX

(1977 = 100, SEASONALLY ADJUSTED)

May 1982	94
June 1982	111
July 1982	98

# THE NEW WORD IN ROOFING FABRICS!



# RUFON™

NONWOVEN  FABRIC

**PHILLIPS FIBERS CORPORATION**  
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Rufon may be a new word to many, but when roofs are your business, and you care about making them stronger and making them more stable and still making a profit... news like Rufon travels fast!

Rufon: a versatile series of nonwoven fabrics developed by Phillips Fibers Corporation, America's largest and most diversified manufacturer of needle-bonded, nonwoven fabrics; a product of Phillips dedication to research and development.

## A Roofing Revolution

In this case, the problem was both economics and product performance. A proprietary Phillips manufacturing process produces Rufon fabrics for stronger, longer performing roofs... and Rufon fabrics will not separate, fuzz up or delaminate like most other nonwovens.

Check the figures on tensile strength, tear strength, puncture resistance, elongation and rot/mildew resistance. Also Rufon fabrics will form and fit easily. Stay flexible in low temperatures. Because of 100% man-made fiber composition, Rufon won't swell when wet.

Lightweight and easy to handle, Rufon is currently available in weights from 0.25 to 0.33 oz. per sq. foot... Rufon fabrics are pre-marked with overlap guides for more accurate installation.

## Something for Everyone

Rufon's wide-ranging capabilities and overall superior performance offer advantages for virtually every type of roofing system.

- Rufon fabric elongation properties, tear and puncture strengths and stability meet needs of cold applied single ply systems or BUR (Built-Up-Roof) applications for new roofs or repairs.
- Ultraviolet degradation resistance and fabric strength make Rufon an ideal stone separator on inverted roofs, such as the Dow® IRMA (Insulated Roof Membrane Assembly) system.
- Specially designed sturdy slip-sheet qualities suit Rufon for PVC systems.
- As a reinforcement membrane in the high performance felt systems, Rufon provides needed strength and elongation required for use with asphalt modifiers such as Solprene.

With so many advantages for so many applications, it's no wonder Rufon is the new word in roofing fabrics. Look into it today. Ask your roofing products distributor or call or write:

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# NATIONAL NEWS

continued

## Firestone Ready To Expand Roofing Materials Division

The Firestone Tire & Rubber Co. announced in late August that it is poised to make a multi-million dollar capital investment in its roofing business.

Terry J. Renninger, president of the Firestone Industrial Products Co., said the division will announce in mid-September the site of the plant and a date when construction is likely to begin. Renninger said Firestone will invest "well over \$30 million" in the new facility and will employ up to 200 additional workers. The plant will be constructed in the "southern Midwest or Midwest."

"We have evaluated the single-ply roofing market as a rapidly growing segment of the growing roofing mar-

ket," Renninger said. "We feel the demand will soon far outstrip the supply.

"The plant will be fully dedicated to producing Firestone EPDM roofing."

The new facility will have more than 250,000 square feet of covered floor space and will have an initial production capacity of 400 million square feet annually.

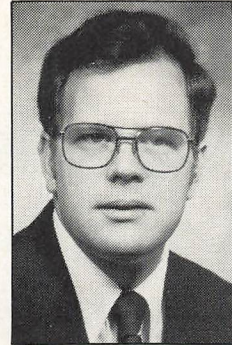
The plant will be in full operation by late 1983. It will use advanced technology and will incorporate sophisticated production processes.

"The new plant will be the largest and most efficient rubber roofing manufacturing facility in the industry," Renninger said. "It has been designed for a quick and cost-effective doubling of production capacity to meet future requirements."

Renninger said plans for the new plant are enthusiastically backed by the Firestone Board of Directors. He said the company decided to construct a new facility and invest more money in its roofing segment because of the "significant returns" enjoyed by Carlisle Tire & Rubber Co.

since that Pennsylvania-based firm became heavily involved in the manufacture of roofing systems.

"EPDM rubber roofing has become the most economical product for covering new and existing flat roofs," Renninger said. "The auto-



Terry J. Renninger

mated facility will enable Firestone to effectively compete in this rapidly growing market."

Renninger said the design and engineering of the new plant have been completed and that orders have been placed for needed machinery and equipment.

The firm will continue making

continued on following page

## Nieman Power Roof Remover...\*

\*Patent No. 3,779,605



**does the work of 6-8 men**

- 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.

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.



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Golden Galvanized is a superior finish as proven in tests conducted by Arnold Green testing laboratories, Natick, MA.





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# NATIONAL NEWS

continued

EPDM roofing materials at its Noblesville, Indiana plant, according to Sunil Kumar, Business Manager, Roofing Products and Systems.

"The demand will be great enough to keep both plants operating," Kumar said.

## ARMA Announces Winners Of Plant Safety Awards

The Asphalt Roofing Manufacturers Association recently announced the winners of its 1981 President's Safety Awards for plant safety.

Specially designed flags for out-

standing records based on lowest incidence rate and lowest number of recordable cases for comparable man hours of production were awarded in five categories.

Top awards went to The Celotex Corporation, Los Angeles, California; The Celotex Corporation, Memphis, Tennessee; Elk Corporation of America, Ennis, Texas; Genstar Building Materials Company, Ennis, Texas; Leatherback Industries, Albuquerque, New Mexico, and Owens-Corning Fiberglas Corporation, Minneapolis, Minnesota.

Thirty-four other plants received certificates of achievement for reducing their accident incident rate over 1980 and also for being below the 1981 group average.

The program is one of several that ARMA sponsors to aid member companies in their employee safety and health education efforts.


## Group Promotes Workmanship

The Michigan Roofing Contractors Association recently wrote to all manufacturers of elasto/plastic roofing materials listed in the June, 1982 *Roofing Spec*, addressing what MRCA felt to be a potential problem resulting from the sales practices of some manufacturing companies. The letter said, in part:

□ "It has come to the attention of this organization that it is the practice to promote and sell single-ply roofing products to owners of buildings and other individuals, and instructing the individuals in the installation of the product.

□ "A misapplication by non-professionals creates not only a curse on the industry, but also undue publicity for all manufacturers."

Seventeen manufacturers have responded to the letter, according to Mervin Smith, MRCA secretary. Nearly all were in agreement with the association's objectives, he said.

One manufacturer replied: "We believe, like you, that single-ply membranes should be applied by professionals." Another said, "If you know where our policy is being varied from, please bring it to our attention. We agree with the stand your association is taking." 

# Save Time, Money and Re-Roofing Headaches!

with the correct equipment

from



Designed especially for superior surface preparation when installing a new roof over old.

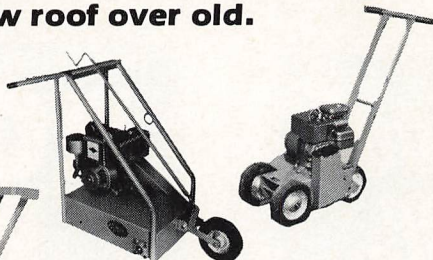
To Remove Gravel...

### POWER ROOF PLANERS

Precise depth control protects felts. Choose from either 5" or 14" models.

### POWER SWEEPERS

Moves gravel fast, the 36" Sweeper moves gravel ahead, left or right. 12" Mini-Sweeper is perfect for edges and tight areas.



Power Roof Planers

To Remove The Old Roof...

### POWER ROOF CUTTERS

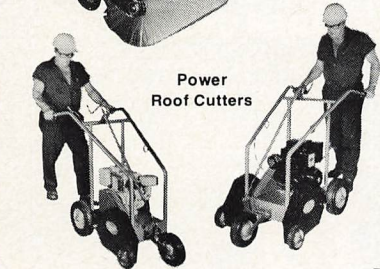
Single and Double Blade Cutters slice old roofs for easy in tear off sections. Carbide tipped blades adjust to 3 3/4" deep.

### ROOF PEELERS—Hand & Power

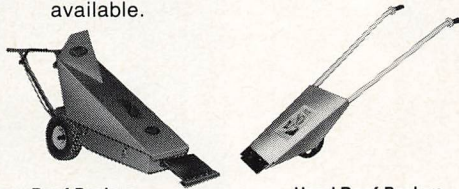
Power Peeler uses "S" type slice/cutter for faster work and less vibration. The unique hand peeler is considered by many roofers to be the best available.



Power Sweepers



Power Roof Cutters



Power Roof Peelers

Hand Roof Peelers



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**AEROIL PRODUCTS INC.**

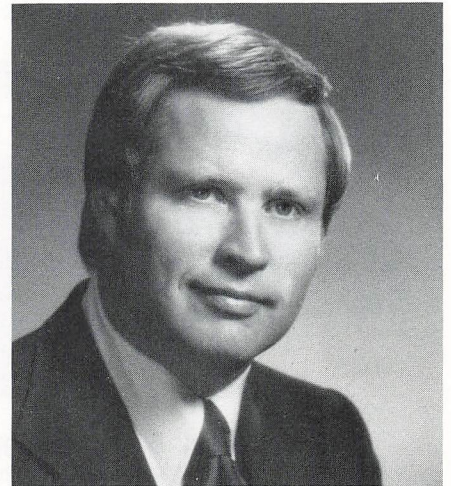
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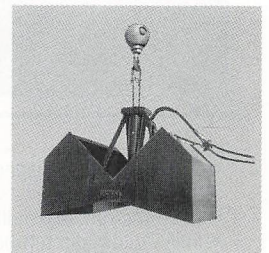
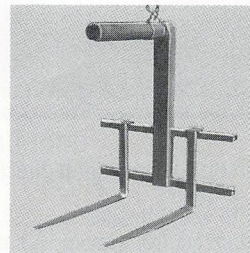
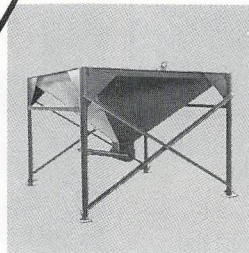
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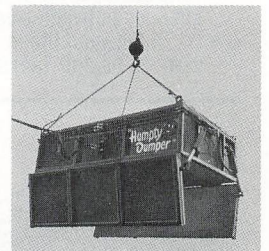
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The **EXCLUSIVE Giuffre Brothers' Roofers Package** includes: a 1 1/2 yard hopper for gravel/stone, a special adjustable pallet fork for shingles/insulation, etc., a 5/8 yard clam bucket and the patented 3 1/2 cubic yard "Humpty Dumper" with hydraulic bottom doors — crane carried for one man operation.

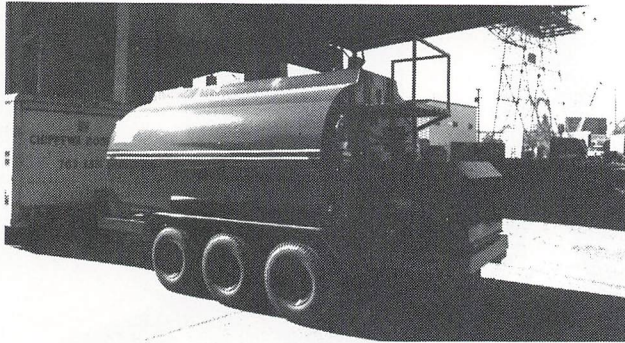


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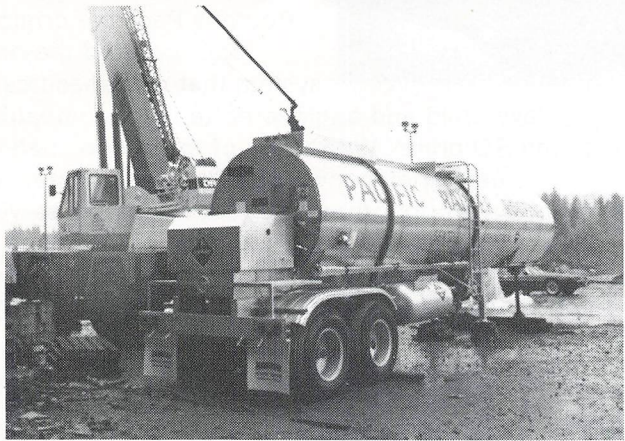
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- Fully-automatic temperature control system which enables your crews to start immediately at the beginning of each day, with a full day's supply of "Hot."
- No one on the ground maintaining tank or kettle. Tank will cycle automatically to maintain proper temperature. No waiting for tank or kettle to warm up.
- Fuel consumption is at least 50% under conventional job tanks, of equal size, and considerably less than a kettle.

- Reduce your job cost by:**
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  - **lower material cost**
  - **increasing production**



## **Job Site Transporter**

- Offers the maximum in load carrying capabilities (20 tons) and an excellent on the job performance.
- A fully-automatically controlled heat system assures a constant material temperature while also controlling the heating surface, resulting in prolonged flue life. No hot spots or coking.
- Capable of staying at the job site for long periods of time as a Job Tank, by means of a pumping system—pump directly to the roof or fill other Job Tanks.

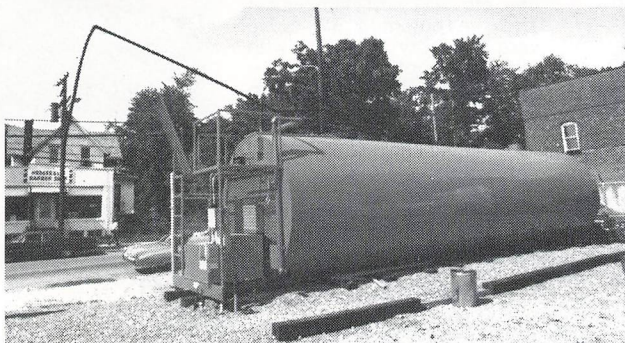
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- Fully-automatic temperature control system. A constant and consistent supply of material. No hot spots or coking. Longer intervals between cleanings.
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- An efficient and economical bulk asphalt storage system, allowing you total control over your asphalt supply.
- Bulk asphalt costs less, plus no handling or storage cost of carton asphalt.
- Load Job Tanks per the job and only when necessary, no waiting in line at the refinery.
- A fully-automatically temperature control system enables you to keep asphalt only as hot as necessary to pump into Job Tanks.



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# Associate News

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ARCO Chemical Co., Philadelphia, Penn., named Neil A. Marshall its Technical Specialist for the Dylite EPS Market Development Group and also announced plans for reorganization of the EPS Group.

A native of Leeds, England, Marshall was associate engineer at ARCO Chemical's Research and Engineering Center. He is a graduate of Lehigh University, with a degree in chemical engineering and is currently working towards his M.S. degree at Drexel University.

Manager David L. Johnston, announced the reorganization in the EPS Group, replacing the present product application approach. Roofing contractors will now be served by three specialists not just one.

According to Johnston, reorganization provides for a specialist in insulation applications development, one for new product, concept, warranty development, and the technical specialist who will provide support in such areas as codes, ratings, standards and engineering backup.

---

Make no mistake. You can tell it's Trumbull Asphalt by the label on the container.

Now every carton of roofing asphalt shipped from Trumbull plants is marked with the company's logo and such product information as equiviscous temperature, average flash point, the pour date and the plant at which it was manufactured.

"Placing product identification and relevant information on our packages lets the purchaser know he's getting the asphalt he wanted," said Robert D. Heddens, Trumbull Asphalt's general manager.

Trumbull Asphalt, located in Summit, Ill., is the nation's largest manufacturer of roofing asphalt.

## Trumbull Leaves Its Mark



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Pneumatically-driven staples have been approved by the CertainTeed Corporation for re-roofing applications.

Certain criteria must be met when using the staples in applications of roofing shingles over existing asphalt or wood shingle roofs. According to Ack Blocher, vice president of marketing and roofing products, correct staple placement, 3/4" deck penetration and strict adherence to the procedures printed on the CertainTeed shingle wrapper must be followed.

CertainTeed Corp., located in Valley Forge, Penn., is a leader in the development and manufacture of high quality roofing materials for more than 75 years.

## CertainTeed Approves Staples for Re-roofing

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Expansion of the Aiken, S.C., plant of Owens-Corning Fiberglas Corporation is nearing completion, with the start-up date planned for late December, 1982.

The 40,000 square foot expansion adds a second production line for mat at Aiken, more than doubling the plant's capacity to produce Fiberglas mat for residential roofing shingles.

Bert E. Elliott, vice president of the Residential Roofing Division, said that glass fiber-based shingles now constitute 60 percent of the industry total, up from 20 percent in 1980.

"The expansion at Aiken will assure our customers that we intend to satisfy their requirements for Fiberglas residential and commercial roofing products," Elliott said.

## OCF Expansion Nears Completion



***“Business is the worst in the 12 years I’ve been working.”***

—Rocco Jacobazzi  
Chicago, Illinois

***“We’re seeing more activity now and there are more positive things in the marketplace.”***

—Michael Beldon  
San Antonio, Texas

***“We have to learn a new method of reading our profit-loss statement because of the economy . . .”***

—C.V. Grossman  
St. Paul, Minnesota

## **Survey Shows NRCA Members Cautiously Optimistic**

by Connie Arkus

**C**autious optimism best describes the mood of NRCA roofing contractors at the onset of the autumn building season, according to a recent *Roofing Spec* random telephone survey.

A majority of those surveyed hoped that the slight increase in summer productivity — which several regions are experiencing — is an indication of what is to come after what has been described as one of the worst years for the building industry.

The results of the *Roofing Spec* survey did not produce any definitive conclusions, but a few patterns did emerge in conversations with roofing contractors from all regions of the continental United States.

More often than not, an increase in the use of glass fiber felts was heard in conversations with contractors. Single-ply use is also on the rise.

Almost every respondent said that reroofing comprised the bulk of 1982 profits, with new construction down considerably from the previous year. The majority of contractors said that 80 percent of this year’s work was in the reroofing area.

Most companies kept their workers busy, but profits were down from previous years. Fierce competition



for the limited number of available jobs resulted in many projects completed at cost, hurting the nearly-empty coffers even more.

"For the volume we've done, the profit just isn't there," said Michael Promen, Clark Roofing Co., Broadview, Ill.

New construction contracting slipped 12 percent in July following a strong advance in June, according to figures released by the F.W. Dodge Division of McGraw-Hill Information Systems Co.

The Dodge Index for July was 98, a drop from 111 in June.

George A. Christie, vice president and chief economist for Dodge wasn't surprised by July's numbers. He said the bottom of the building recession has been reached, but added the recovery has yet to begin.

C.V. Grossman, Allweather Roof Co. Inc., St. Paul, Minn., offered a theory on the state of the roofing industry in 1982. He said companies should not compare August 1982 figures with August 1981. August '82 should be compared with June or July '81.

"We have to learn a new method of reading our profit-loss statement because of the economy, and the reluctance on the part of clients to enter into new activity," Grossman said.

On a regional basis, it appears that at the present "it's a good time to be a roofer in the east."

"Roofing is fantastic," said John Babcock, Baker Roofing Co., Norfolk, Va. "New construction is way off, but reroofing has picked up the slack."

Babcock explained that Baker Roofing is near a U.S. naval base. "We're coming up to the end of the year on the government's calendar, so reroofing bids are increasing for the company," he said.

"Because of the dip in the prime rate, a number of projects that had been on the drawing board or in the files have been released," said Russ Levi, Uniroof, Inc., Silver Springs, Md.

"The big push is on now to get everything under a roof before winter," he said. "Everybody wants it yesterday."

In the west, Anderson Roofing Co. Inc., in Portland, Ore. and Consolidated Roofing Inc., Denver, Colo., have been "busy" and noticing a "slight increase" since the beginning of the year.

Blue's Roofing President Tim Blue said that his San Jose, Calif. firm saw a "flat first half of the year, but there's been a turnaround in summer."

Hustle is the name of the game in the north and Midwest.

Thomas Brown, Jr., Wright-Brown Roofing Co., Detroit, Mich., said he's been "travelling a lot, with a number of jobs out-of-state."

"Extremely competitive" is how E.C. Jackson rated business for Greenberg Roofing in Grand Forks, N.D.

"We have to do a lot of work at cost," he said.

Promen said his company has become "more aggressive" in going after business. Looking ahead on a positive note, Promen said, "roofs do wear out. There was some bad work done in 1979 and problems start to manifest themselves in three year cycles."

And then there's two Midwest companies that are experiencing opposite reactions to the summer economy. Craig Isaacson of Isaacson Roofing Contractors, Inc., Des Moines, Iowa, could not be reached for comment. Asked when he would be available, a company spokesman replied, "I don't expect him back until the snow falls — he's mighty busy."

Compare those thoughts with what's happening at R&J Roofing Co., Inc., Chicago.

"It's (business is) the worst in the 12 years that I've been working," Rocco Jacobazzi said. "We have two out of ten trucks operating."

Has the Texas boom bottomed out? Billy Branson, W.H. Branson Co.,

Houston, Texas, said that business has been "very, very slow. There's been a glimmer of a pick-up the last 30 days, but just a little."

Albert Bowles, A.M. Bowles Co., Houston, said his business has been steady. Ed Marlow, Sr., Pyramid Roofing Co., Houston, agreed and added, "busy but not backlogged."

Michael Beldon, Beldon Roofing and Remodeling Co., San Antonio, hasn't seen much of a backlog of work either, but noted a change in business in July.

"We're seeing more activity now, and there are more positive things in the marketplace," Beldon said.


One "positive thing" is the decline in interest rates.

"As interest rates continue to fall and government contracts keep coming, business will be picking up," said Dan Hand, Seyforth Roofing Co., Birmingham, Ala. Hand explained that because the slowdown hit the south later than the east, southern recovery is now lagging behind.

Again, according to F.W. Dodge's George Christie, the cyclical low point for construction was reached early in the second quarter. Christie said, however, that "further improvement in 1982's second half hinges on the participation of the housing sector where interest rates remain the key."

Figures released by the Commerce Department show that housing starts jumped 33.7 percent in July — the highest level in 15 months.

Lower interest rates, the rush to get a roof installed before winter and government contracts could give a boost to an otherwise lackluster year. The late summer upswing is encouraging, but there's no getting around the fact that times continue to be tough.

Perhaps the prevailing NRCA contractor attitude is best summed up by Tim Blue's guarded optimism: "Business now should make up for the first half of the year ... we hope." 

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# Manville's Move To Reorganize Under Chapter 11 of Bankruptcy Code Due To Asbestos Lawsuit Pressure

*Editor's note: The following is an excerpted version of an official report released by Manville Corp. following the firm's move to reorganize under Chapter 11 of the Federal Bankruptcy Code. For further information on the various complicated legal aspects of this case, and how it will affect roofing contractors, please refer to this issue's Legal column (page 28) authored by attorney Sharon Gay, of the Atlanta-based law firm of Summers, Hendrick, Spanos, Phillips & Grant.*

**M**anville Corp. announced that it had filed for reorganization under Chapter 11 of the Federal Bankruptcy Code. The filing was made in United States Bankruptcy Court for the Southern District of New York on Thursday, August 26, 1982.

Manville's operations and cash flow have been strong even through the recession, and are expected to continue strong, a company spokesman said, but the filing was forced by the continuing burden of litigation costs relating to persons excessively exposed to asbestos.

In a statement on August 4, 1982, the board of directors of Manville announced that outside consultants had advised it that asbestos-health lawsuits may continue unabated for the foreseeable future. Over 16,500 such suits are pending against Manville or its subsidiaries and have been coming in at 500 new cases per month this year. The August 4 announcement declared that a special committee of the board of directors would review and evaluate the study and that the costs of the continued high incidence of lawsuits could have a material adverse effect on Manville's consolidated financial position.

Based on the study, it was forecast there would be at least 32,000 or more new asbestos lawsuits in the future.

After reviewing the committee's report and recommendations, the Manville directors concluded that Chapter 11 was the best way to address the company's litigation dilemma.

The filing was made to preserve the company's continuing operations, protect its assets, and achieve even-handed treatment of asbestos-health lawsuits and the claims of lending institutions and trade creditors.

Current disposition costs of asbestos cases to Manville and its affiliates are averaging \$40,000 per claim. The problem was made more acute due to continued Government refusal to accept responsibility for persons injured in shipyards during World War II and later, Congressional delays in dealing with the occupational disease compensation problem, and the failure of insurance

companies to fulfill obligations.

All further proceedings in pending lawsuits and the commencement of all new suits against Manville and its affiliates are automatically stopped by the Chapter 11 filing.

With regard to future operations, Manville expects to meet its new and ongoing obligations to suppliers of goods and services and customers while a plan of reorganization is being formulated. Employee paychecks and benefits will be unaffected and no employee will lose his or her job as a result of Chapter 11, a Manville spokesman forecast.

John A. McKinney, Manville chief executive, said, "Nothing is wrong with our businesses. Filing Chapter 11 does not mean that the company is going out of business or that its assets will be liquidated. Lawsuits are the problem. We will continue to manufacture and ship high quality products and provide the same services, as always."

Manville's consolidated assets are approximately \$2.2 billion. Consolidated liabilities (excluding asbestos health and other product liability claims) approximate \$1 billion.

Manville, a diversified mining, manufacturing, and forest products company with approximately 25,000 employees, has a consolidated debt for borrowed money of approximately \$600 million. Also outstanding are 4,600,000 shares of \$5.40 cumulative preferred stock and approximately 24,000,000 shares of common stock. Consolidated sales of Manville for 1981 were \$2 billion and were \$1.1 billion for the first seven months of 1982.

Trading in the company's stock was suspended by the New York Stock Exchange.

No Chapter 11 filings for affiliates outside North America were made, and no filings have been made in Canada.

North American affiliates filing reorganization petitions were: Johns-Manville Corporation, Manville Building Materials Corporation, Manville Forest Products Corporation, Manville International Corporation, Manville Export Corporation, Manville Products Corporation, Johns-Manville Amiante Canada Inc., Johns-Manville Canada Inc., Johns-Manville International Corporation, Johns-Manville Sales Corporation, Manville International Canada, Inc., Manville Canada Inc., Manville Investment Corporation, Manville Properties Corporation, Allan-Deane Corporation, Ken-Caryl Ranch Corporation, Manville Idaho Inc., Manville Service Corporation, Manville Canada Service Inc., and Sunbelt Contractors, Inc.



# The U.S. Army has a tough new roof.

## The Corps of Engineers recruited a single-ply.

The U.S. Army has a long, proud tradition for keeping trim and fit. That goes for its people—and that goes for its *property*, too. So when the built-up roof on this old Army warehouse and repair facility developed major problems, the Corps of Engineers put out the specs for a new *single-ply* roof. As a result, the contractor selected a *Carlisle* single-ply system—and got the best of everything.

Carlisle helped pioneer single-ply; our first roof installed over twenty years ago is still going strong. And Carlisle provides the complete system: EPDM membrane produced in extra-wide widths at our two American plants.

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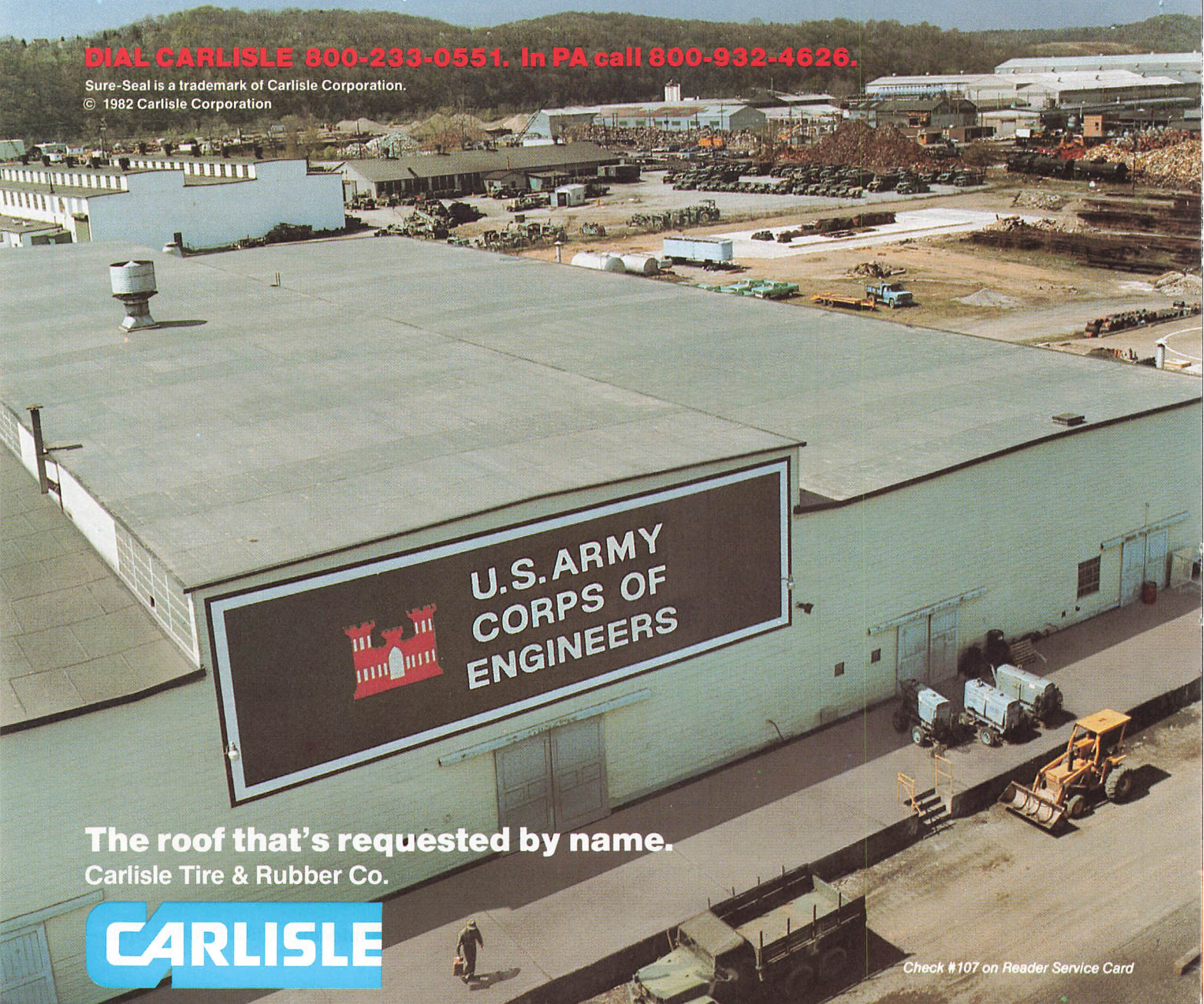
What's more, a Carlisle single-ply roof can be easily installed on new decks or right over top of failing built-up roofs. Even in marginal weather. It's virtually maintenance-free. And it can be warranted for up to 10 years.

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# What To Do *After* The Government Comes Knocking

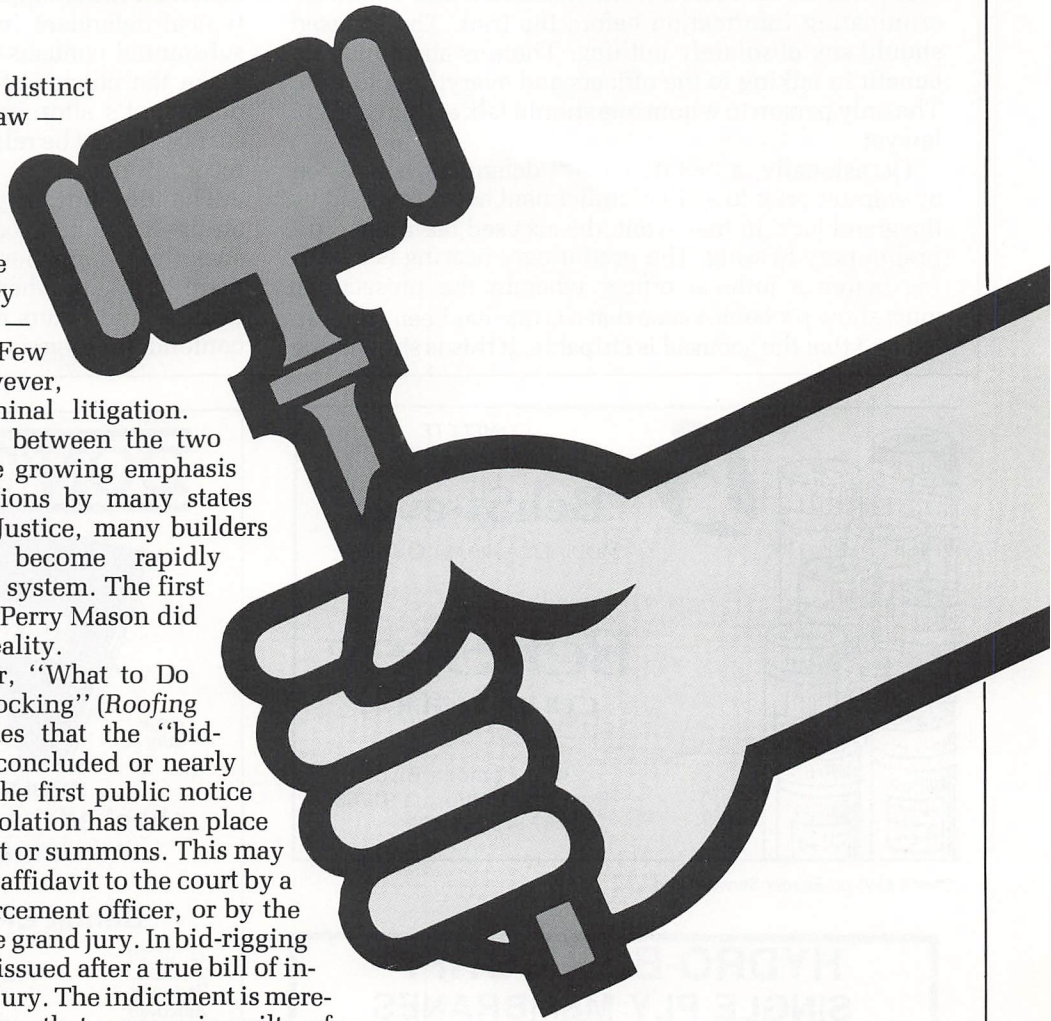
by Stokes, Shapiro, Fussell &  
Genberg law firm, Atlanta

In this country there are two distinct and separate branches of the law — civil and criminal. Many factors, among them the skyrocketing costs of construction and depressed markets, have caused the majority of managers in the construction field to be very familiar with civil litigation — usually to no one's pleasure. Few construction professionals, however, have any familiarity with criminal litigation. There are numerous differences between the two systems. Unfortunately, with the growing emphasis on criminal anti-trust investigations by many states and by the U.S. Department of Justice, many builders are discovering a need to become rapidly acquainted with the criminal law system. The first thing that anyone realizes is that Perry Mason did not even remotely approximate reality.

This article follows the earlier, "What to Do When the Government Comes Knocking" (*Roofing Spec* March 1982) and presumes that the "bid-rigging" investigation has been concluded or nearly concluded by the government. The first public notice that the government suspects a violation has taken place is the issuance of an arrest warrant or summons. This may be issued either on the basis of an affidavit to the court by a third person, usually a law enforcement officer, or by the return of a bill of indictment by the grand jury. In bid-rigging cases, a warrant is almost always issued after a true bill of indictment is returned by the grand jury. The indictment is merely an accusation. It does not mean that anyone is guilty of anything. It indicates that sufficient information has been given to the grand jury for them to find "probable cause" to return a true bill. Probable cause means that a crime has "probably" been committed and the named defendant "probably" committed it. From the great infrequency of "no bills" (a finding that there is no probable cause), it seems clear that the burden of proof necessary to get an indictment is very slight.

Typically, the target of the grand jury investigation is represented by legal counsel. The prosecutor generally

continued on following page



# Government Comes Knocking

continued

telephones the defendant's attorney, informs the attorney of the indictment, and requests that the attorney bring the defendant by for initial appearance and arraignment before the court. Occasionally, however, the prosecutor does not do this. Sometimes for tactical purposes the prosecutor may order a law enforcement office to serve the warrant and arrest the defendant. This is usually for one or both of the following reasons: The first, and least likely, is that the defendant will try to flee the jurisdiction. The second reason to have a defendant arrested rather than just summoned is for law enforcement officers to interview the defendant and obtain incriminating information before the trial. The accused should say *absolutely nothing*. There is absolutely no benefit in talking to the officers and everything to lose. The only person to whom one should talk at this time is a lawyer.

Occasionally, a "white collar" defendant is arrested by warrant prior to a bill of indictment being returned by the grand jury. In that event, the accused has a right to a preliminary hearing. The preliminary hearing is a hearing before a judicial officer wherein the prosecution must show probable cause that a crime has been committed and that the accused is culpable. If this is shown, the

accused is "bound over" to the grand jury for the return of an indictment. The defendant is offered the opportunity to waive this hearing. Many defendants and defense counsel waive the hearing in order to appear to be cooperative — perhaps in hope of obtaining a lesser bond. Tactically, this is usually unwise.

The preliminary hearing is an excellent opportunity to learn of the evidence on which the prosecution intends to rely in trying their case. Counsel for the accused has the right to cross-examine and to require the witnesses to put their version of events into the record so that they cannot later amend it. If the defense counsel is successful in showing the lack of probable cause, it is highly unlikely that the prosecution will even take the case before a grand jury.

Within a reasonable time after the arrest the accused is to be taken before a judicial office to set bond. This is called an initial appearance in most jurisdictions. The typical defendant in a "white collar" crime case has substantial contacts and ties in the community which make the chance of flight very slight. Therefore, the defendant's attorney should be successful in arguing that he should be released on a token bail or on his own recognizance.

The next judicial proceeding is an arraignment. The arraignment may occur at the initial appearance or sometime thereafter. The arraignment is typically a mere formality where the defendant is apprised of the charges and enters a plea of guilty, not guilty or nolo contendere. In greater than 99 percent of the cases, the



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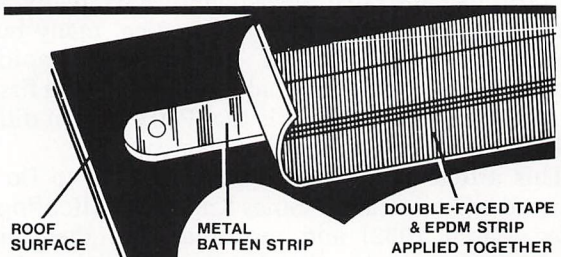
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defendant enters a not guilty plea at arraignment. That is because time is needed to determine the strength of the government's case, the advisability of proceeding to trial, and the sufficiency of the evidence to prove the defendant guilty. Additional time is usually needed to prepare advice as to these factors.

Immediately after the arraignment, the defense counsel must learn as much about the government's case as

***“The typical defendant in a white collar crime case has substantial contacts and ties in the community.”***

possible. This is done through the process of discovery. The amount of discovery permissible in criminal cases differs from jurisdiction to jurisdiction; however, in no jurisdiction is it so broad as in civil cases. For instance, discovery in criminal cases is totally one-sided. Most jurisdictions require the government to allow the defense counsel to inspect, photograph and copy all physical and documentary evidence the government intends to introduce against the defendant. In addition, all jurisdictions require the government to disclose evidence which is exculpatory to the defendant. The defense will find it necessary to file endless pretrial mo-

tions.

In addition, under the federal rules any motions to suppress must be filed before trial unless the defendant's failure to file the motion is for good cause. The court has discretion to hear it at the trial as well, however, it makes much more sense to dispose of it prior to trial. A motion to suppress is the pleading by which the exclusionary rule is presented to the court. The exclusionary rule is the rule which provides for the suppression and exclusion from criminal cases of evidence which has been illegally obtained. The rule rests on the theory that suppression of any evidence which is legally obtained will deter law enforcement officials from using illegal and improper methods to obtain evidence. The exclusionary rule will operate to exclude statements of the accused obtained in custodial interrogation, where the accused has not been advised of any constitutional rights, or to exclude evidence obtained from an improper search and seizure, or pursuant to an invalid search warrant.

While all of these efforts are going on, the defense counsel and the defendant are weighing all the admissible evidence and determining whether it makes sense to enter a plea of guilty or nolo contendere. Nationally the vast majority of criminal matters are disposed of by pleas of guilty. In fact, were all cases brought to trial, the judicial system as it is now structured could not handle them. Therefore, both the courts and the prosecution are keenly aware of their limited resources and freely acknowledge the necessity for the plea bargaining system.



#### GORILLA For Sale

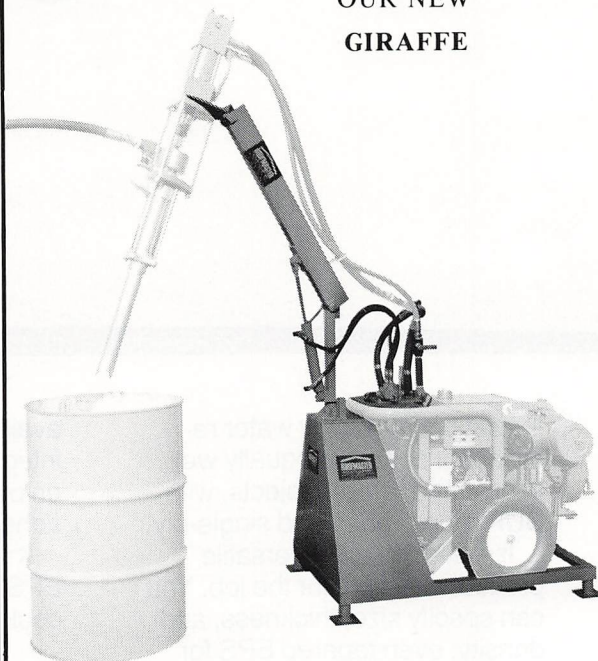
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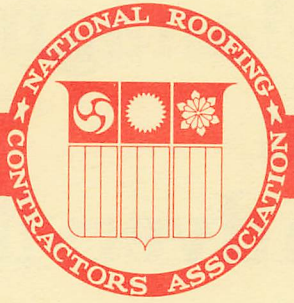
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# Report Says Non-Union Growth To Continue In Sheet Metal Industry

A study of the competitive positions of unions versus non-union contractors in the sheet metal industry has been completed by the Sheet Metal and Air Conditioning Contractors' National Association, according to an announcement made recently by SMACNA President William M. Chapple.

Conducted by Arthur D. Little, Inc., (ADL), and its subsidiary, the Opinion Research Corporation, the study was completed on June 27th. It was then reviewed by a "blue ribbon" committee of SMACNA contractors and chapter executives.

Three specific questions were the basis of the study:

- What are the important national and regional trends in the use of non-union labor in the sheet metal industry and the construction industry in general?
- What are the comparative strengths and weaknesses of SMACNA members versus their industry competitors?
- What actions could SMACNA undertake to increase the competitive position of its members?

Information for the study was gathered through mail surveys of SMACNA membership and chapter managers and telephone surveys of the industry. Also, over 100 personal interviews were held in seven targeted areas, and the report also incorporated information from Dun

and Bradstreet.

The industry profile drawn from this data lists large sheet metal contractors (those doing over \$500,000 in sheet metal work and having more than 10 employees) by total firm revenues, their union versus non-union status and whether or not they are SMACNA members. Currently, SMACNA represents over one-half of the more than 4,000 large contractors in the industry and a preponderance of those doing over \$2 million annually.

Arthur D. Little estimates that the U.S. sheet metal contracting industry will total \$8.6 billion in 1982, or about six percent of total U.S. building activity. Commercial jobs account for approximately \$4.3 billion, industrial for \$2.9 billion and residential \$1.4 billion. These figures show a growth from \$3.6 billion in 1970. The industry, however, has experienced little or no growth since 1970 when adjusting for inflation.

ADL reports that since 1970, total industry revenues of union firms have increased steadily, however, when inflation is taken into consideration, union contractors have collectively experienced a 35 percent decline in revenues since 1970.

Ten years ago, non-union contractors represented less than 10 percent of industry revenues. In 1982, they account for over 40 percent, with a growth in constant dollars of over 400 percent.

The study shows that the average sheet metal contract is about \$125,000. The largest job reported was \$25 million, but for most contractors a one-million-dollar contract is very large. The vast majority of sheet metal contracts are valued at less than \$50,000.

ADL believes union contractors dominate the "specialty" jobs where the skill level of the firm is critical and, also, the very large jobs where the capitalization of the firm is the key factor. ADL predicts that the skill level and financial structure of non-union firms will continue to improve, thus facilitating the continuous non-union growth.

Both union and non-union contractors agree that union contractors have lost a share of the market over the past decade and at an increasing rate in the past five years. Given the current outlook, possible future technological development and increasing labor costs, there is every reason to expect the trend to continue, ADL states.

The pattern will be for gradual retreat of union firms from bidding residential, light commercial and small industrial jobs. ADL expects the very large and complicated jobs will remain union for the near term. However, as non-union firms become larger, better capitalized and more sophisticated, the competition for these "specialty" jobs will increase.



## Managing in Adversity

### A checklist and guide for the roofing contractor:

#### I. Managing in a recession/poor economy.

- A. Financial Decisions
1. How far ahead should you forecast cash flow and operations?
  2. What efforts must be made to collect accounts receivable?  
What do you do if those efforts are not working?
  3. How can you most effectively control cash flow?
  4. How can you best work with your banker?
  5. Can you identify and develop other sources of business?
- B. Financial - Budget Problems
1. At what point do you cut back on operations?
  2. What do you cut back?
  3. How "fat" is your company administration?
  4. Should you have contingent or fall back plans?
  5. What items should be reduced or eliminated and in what order?
  6. Have you examined and compared your operating ratios with the most recent NRCA Simplified Management Survey?

#### II. Business Management Challenges

- A. Productivity
1. What changes can be made to assist productivity?
  2. Which people are most productive/Are they identified in some priority?
  3. Can you "mix" people for more efficiency?
- B. Types of Work - Challenge
1. What is your present mix of work, i.e., "new" vs. "old" - "residential" vs. "commercial", etc.
  2. What is the ideal mix in a recession?
  3. Should you actively pursue a different mix of work?
  4. Which types of work are most profitable?
  5. Can you improve communications with your customers?

#### III. The Individual Job - Are You Winning the War?

- A. Are you getting the jobs you need/want?
- B. How far ahead are you committing a contract price?
- C. Are you applying the materials and systems that will *not* come back to haunt you?

#### IV. Looking Ahead

- A. When do *you* predict a turnaround in business?
- B. Will you be ready with trained men and equipment to pursue an increased market?
- C. Have you planned a "pricing strategy" when business improves?
- D. Are you maintaining "high-visibility" with your customers?
- E. Do you have any plan for sudden and unexpected business changes - good or bad?

# Managing In Adversity

by Fred Good  
NRCA Executive Vice President

**T**hese are tough times, and it is probably a good idea now for you to make an effort to check up on your management skills. How are you managing in adversity?

One mark of a successful manager is his ability to make good decisions. It's always a sound practice to keep a notebook or diary of the difficult decisions you have to make. Every time you must make a hard major decision, jot down the problem and the solution you decided on. Review this book about every six months. As time goes on, you are likely to know whether the decision was good or bad. Look for common denominators in bad decisions and determine to avoid repeating these mistakes. This can help sharpen your decision-making ability, and is a good practice anytime.

Especially now, when things are "tough," it is a good idea to go through a checklist for managing in adversity. Make your decisions and keep a record. Nobody can supply the answers; you alone have to make the final decisions.

The intent of the following checklist is to help you consciously deal with some critical questions. Look over the questions and add to them if you wish. Enter your answers in a notebook. Make thoughtful and conscious decisions about the management of your company. You may want to have other executives of your firm do the same thing and then compare decisions and reasons.

You are first on the "firing line" and must make important decisions everyday. Most decisions should be conscious and thoughtful, but sometimes a decision is made by default. You are still the decision maker whether you carefully ponder all options, or decide without careful analysis, or, in fact, do nothing at all. While no single activity can magical-

ly transform a previously poorly-operated firm into a solid, well-managed company, the following checklist should contain enough important points that apply to most business situations. Make your decisions. Answer and record them and then check back in 90 days to see if you're on the right track.

At best "managing in adversity" is difficult. Are you doing it well? Is your company on the road that you have carefully charted? Your decisions now may well spell the success or failure of your firm over the next few years.

Add your own series of questions and company decisions. If nothing else, the process of thinking and decision making may give you assurance that you are doing all you can to manage in adversity.

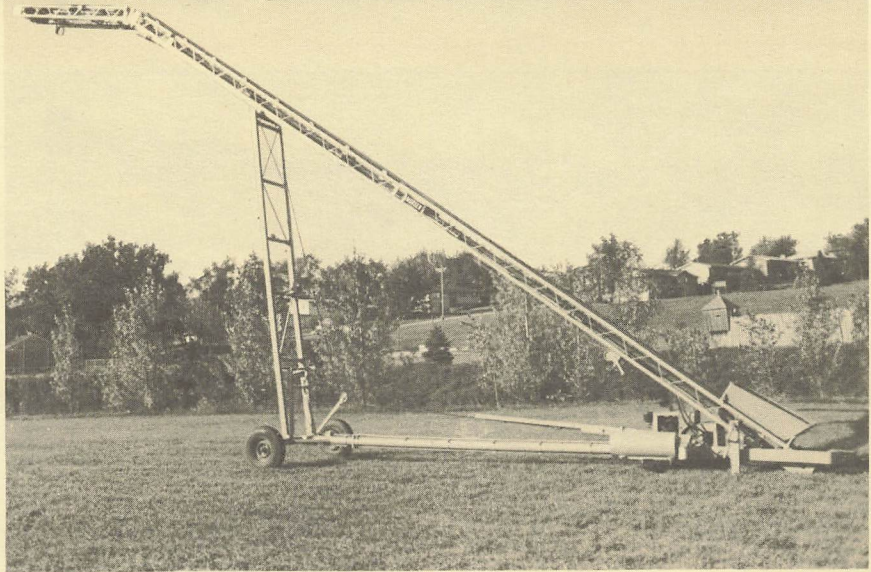
## Member Firm Set To Celebrate 30th Anniversary

The Albritton Roofing Co. has announced the change of its corporate name to the Albritton Company. The announcement was made by T. Gayle Albritton, president of the 30-year old roofing and sheet metal firm, at their St. Petersburg corporate offices.

"As we approach our 30th anniversary, we felt that it was time for a change to better reflect the services we offer," Albritton said. "Although we started with roofing in 1953, those services are only a part of what we do today since we also have a full-service metal shop and do quite a bit of consulting as well."

The Albritton Roofing Co. was founded in 1953 by W.L. Albritton and has provided roofing and other associated services to Florida and the Tampa Bay area continuously since that time. Starting with an original three-man crew and one truck, the company has grown to more than 75 employees and annual billings in excess of \$4 million. The firm has installed, replaced and repaired all types of roofing common to Florida. Its largest contract to date was for \$658,812 for installation of metal roofing and siding on 17 structures at the Florida State Fairgrounds in Tampa. The company will celebrate its 30th anniversary in 1983.

# Get an articulating boom for no more than the price of a straight 62-foot boom!



Morgen now features a 62-foot Roofers Conveyor with most of the features available on their popular 68-foot unit.

The 68-foot Morgen will still be the first choice for most contractors because it offers greater reach, hydraulic articulation and greater capacity at any given height.

But if your work simply doesn't require a discharge at heights greater than 41 feet, Morgen's 62-foot becomes the best choice among the 62-foot conveyors.

A 12-foot jib section can be manually articulated for on-the-job use or folded under for transportation. A hand-operated winch controls the folding action through a system of cables. It is priced competitively with straight boom 62-foot conveyors.

The 62-foot discharges at 41' at its maximum elevation and at 32½ feet when the articulating boom is level for maximum reach across the roof.

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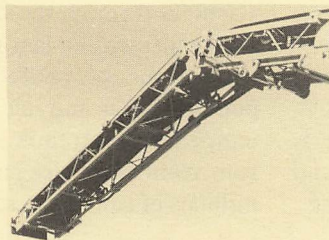
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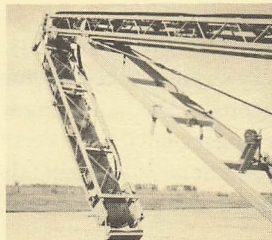
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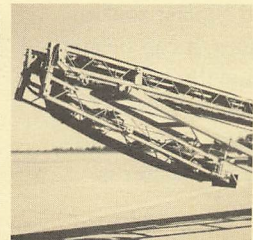
## 62-foot Roofers Conveyor



A winch and cable system provide manual articulation and folding of the 12-foot jib section. Strong enough to hold boom in an articulated position while material is being elevated.

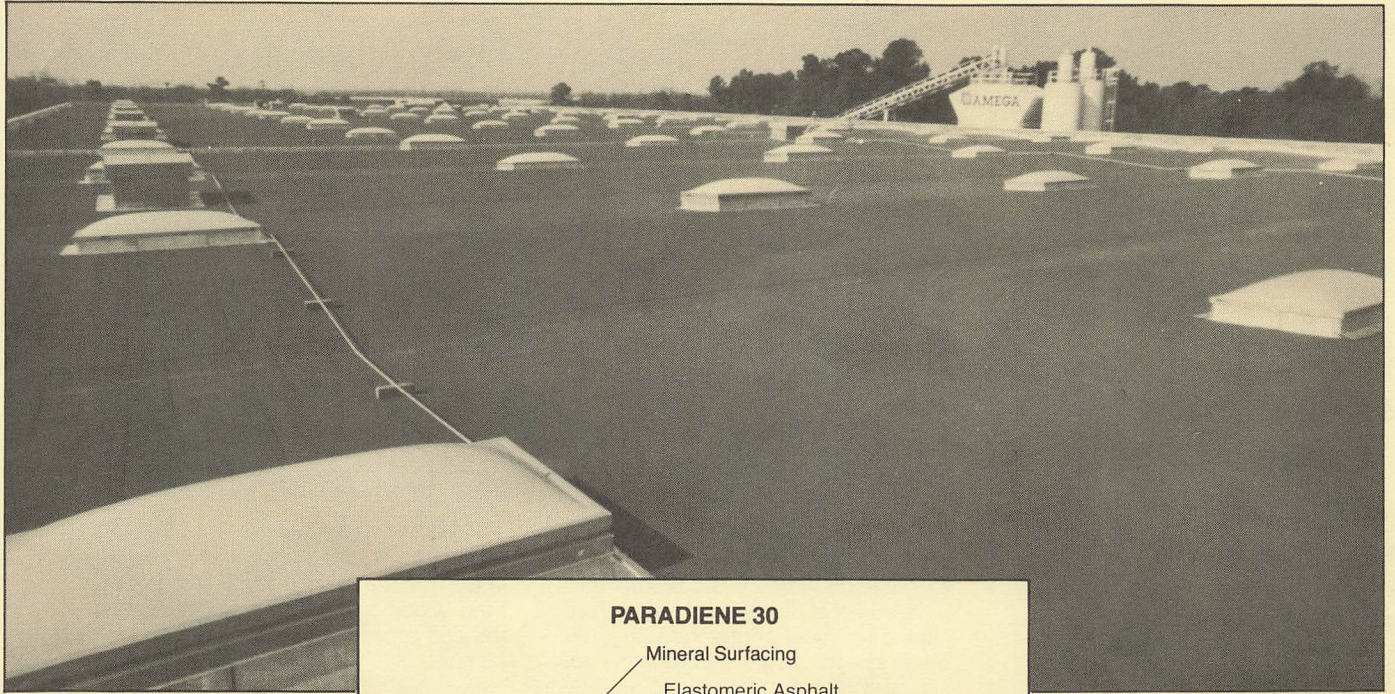


A second winch pulls the jib from the above position up to a stored position where it can be secured for transport.

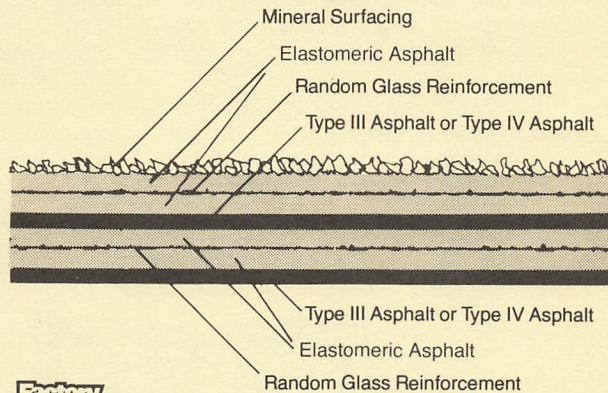


Any truck can be used to tow the conveyor. No longer do you need to tie up a truck with a special towing tower in the bed.

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bear witness to that.

Paradiene 20/30 is also relatively lightweight and easy to install. It can be used over most decks and roof insulations on all slopes up to 2½ inches per foot. Because of its granular surface, there's no need to apply gravel. And it comes in a choice of colors.

Fully guaranteed against leaks for 10 years, Paradiene 20/30 is the quality roofing system to think of first, when you want it to last. Trouble-free, so they'll forget it's there.

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## Coming Events

### October 14—15

RIEI Elasto/Plastic Seminar,  
Denver.

### October 13—18

Assoc. Roofing Contractors of  
Maryland, Inc. Annual  
Convention, Puerto Vallarta,  
Mexico

### October 13

NRCA Membership Phone Day,  
Chicago.

### November 7—10

MRCA Annual Convention,  
Colorado Springs, Colo.

### November 18—20

NRCA Committee Meetings,  
Chicago.

### December 2

NRCA Roofing Systems  
Conference, New Orleans, La.

### December 3—4

Chicago Roofing Contractors  
Association Year-End  
Meeting, Lake Lawn Lodge,  
Delevan, Wis.

### December 9

NRCA Roofing Systems  
Conference,  
Dallas.

(For inclusion of events, address  
all correspondence to *Roofing  
Spec* "Coming Events," 8600 W.  
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60631.)

This monthly column is prepared for *Roofing Spec* by the law firm of Summers, Hendrick, Spanos, Phillips & Grant. The column presents information of legal matters of general interest. The text is necessarily generalized, and you are advised to consult with a professional legal advisor before taking any action.

## Manville Files for Voluntary Reorganization Under Chapter 11

**M**anville Corporation filed for voluntary bankruptcy last month in a move that surprised both the business and the legal communities. Manville's action was unusual from a business perspective because the company is not insolvent and apparently has no current cash flow problems. According to John H. McKinney, Manville's chairman and president, the filing was done chiefly to halt the thousands of lawsuits pending against Manville and its subsidiaries for asbestos-related personal injury claims and to preclude the commencement of any further asbestos suits.

Manville's move was a novel use of the federal Bankruptcy Code primarily to forestall legal claims against the company for injuries arising out of use of its asbestos products. But the company's bankruptcy action may have important implications for its roofing materials customers as well.

Manville took out a full page advertisement in a number of major newspapers around the country to explain its action and to reassure its customers that the company intends to continue business as usual. Manville also sent letters signed by John H. McKinney to many of its customers for the same purpose.

McKinney stated that the bankruptcy filing was done solely to halt the asbestos health lawsuits. He revealed that outside consultants had advised Manville that as many as 56,000 such suits could be filed against the company, exposing it to a potential liability of \$2 billion. McKinney also indicated that Manville's insurance carriers had refused to pay many of the asbestos claims. Manville has stated that it hopes to persuade Congress to set up a fund for all asbestos claimants.

At the time Manville filed its bankruptcy petition, 16,500 asbestos suits were pending against the company, with 500 new ones filed each month. Manville has resolved 3,500 of these lawsuits, either through settlement or litigation, at an average cost of \$40,000 per suit. According to *The Wall Street Journal*, the Manville bankruptcy petition revealed that the company has spent \$24 million for injuries, \$7.5 million for property damage, and \$24.5 million for legal fees.

The Manville action probably will be challenged. Representatives of the Asbestos Litigation Group, an organization of the lawyers suing Manville on health claims, have indicated that they plan to challenge the bankruptcy filing.

### What Happens During the Proceeding?

Manville filed its bankruptcy petition in the United States Bankruptcy Court in New York City for voluntary reorganization under Chapter 11 of the federal Bankruptcy Code. A Chapter 11 petition asks the court to allow the business to reorganize its operations and assets so that it may remain in business. In contrast, a Chapter 7 petition requests complete liquidation and termination of the business to pay off the largest creditors.

The bankruptcy petition includes Manville Corporation and its principal North American affiliates. Manville Corporation, formerly known as Johns-Manville, announced a major corporate reorganization less than a year ago. Manville's SPM single-ply roofing system is marketed by Manville Building Materials Corporation. Johns-Manville Corporation and its subsidiary, John-Manville Sales Corporation, manufacture and market asbestos and commercial built-up roofing products. Manville guarantees historically have been issued by Johns-Manville Sales Corporation. All of these affiliates are included in the bankruptcy petition.

The purpose of a Chapter 11 proceeding is to give breathing room to a troubled corporation by freezing its obligations until the company can get back on its feet. A Chapter 11 proceeding has five stages: commencement of the case, operation of the business, formulation of a reorganization plan to reduce or eliminate debt, acceptance of the plan by a sufficient number of creditors, and confirmation of the plan by the bankruptcy court.

A Chapter 11 proceeding is commenced by the filing of a petition with the bankruptcy court. This petition lists the creditors, assets and liabilities, unperformed contracts, and statement of affairs of the business. Under the federal Bankruptcy Code as amended in 1978, insolvency is not a prerequisite for voluntary bankruptcy. Thus, Manville was able to file a bankruptcy petition even though it reportedly has a positive cash flow.

Once the petition is filed, creditors committees are formed to meet with officials of the company. The creditors committees are empowered to select attorneys and other professionals, to inquire into the financial affairs of the corporation, to appoint a trustee in case of mismanagement by the debtor corporation, and to address other considerations relevant to the continuation of the business.



After the bankruptcy petition is filed, the debtor corporation remains "in possession" and continues to operate its business. Thus, Manville may continue its regular operations. The company has the power to use and sell assets in the course of its regular business and to obtain credit.

During the bankruptcy proceedings, Manville also may elect either to reject or to assume its obligations under any contracts that have not been fully performed. The corporation cannot invalidate all its contracts just because it has filed for bankruptcy, but it can exercise its business judgment to reject those contracts that do not appear to be beneficial to the corporation.

The most important factor from Manville's perspective is that all suits arising from transactions that occurred before the petition was filed are "stayed" until the reorganization plan is approved. A stay of litigation means that no action may be taken in any lawsuit currently pending against Manville, and no other lawsuits may be filed. In addition, all creditors are prevented from taking any steps to collect their debts. Manville currently owes \$68 million to Prudential Corporation, \$36 million to Morgan Guaranty Trust Company, \$20 million each to Bank of America, Chemical Bank, and Citibank, \$12 million to Republic National Bank of Dallas, and \$10 million each to Continental Illinois National Bank and Wells Fargo Bank.

This automatic stay of all litigation and collection efforts will allow Manville to accumulate enough cash to meet its current business obligations without having to make further payments to asbestos claimants. McKinney stated in his letter to Manville customers that the company plans to build up substantially more cash in the next few months as a result of the automatic suspension of payment of pre-Chapter 11 debts and stays of asbestos health litigation.

The third step in Chapter 11, the formulation of a plan or reorganization, is done by the debtor corporation, but creditors have some participation rights. The debtor has four months to file a reorganization plan that designates its creditors and provides for payment. After that time, the creditors and stockholders may participate in drawing up the plan for reorganizing the business and paying off its obligations. Any creditor who has filed a "proof of claim" stating that it is entitled to receive a payment from Manville must be provided for in the plan.

After the plan is completed and filed with the court, it is voted on by all creditors whose rights to payment are impaired under the plan. In certain circumstances, a class of creditors may be forced to accept the plan in a procedure referred to as "cram down." Manville may elect to use this procedure to avoid making payments to asbestos claimants.

The company has conceded that its creditors and suppliers will end up losing millions of dollars in the reorganization plan. Richard van Wald, a company attorney, acknowledged that the company's creditors and

suppliers are going to have to share the burden of paying off individuals who claim health damage from exposure to asbestos materials made by Manville.

The formulation and acceptance of the reorganization plan will take several years to complete. The process is further complicated by a recent United States Supreme Court decision which found that certain grants of power to the United States Bankruptcy Courts made by the 1978 Bankruptcy Code were unconstitutional. Since Manville filed its petition in a federal bankruptcy court rather than a federal trial court, its action may be delayed until Congress comes up with an acceptable plan for setting up the bankruptcy courts. During this time, Manville may operate its business free from any obligation to defend lawsuits or to make payments to creditors whose rights arose before the petition was filed. It appears that hundreds of millions of dollars of accounts and notes payable by Manville and other accrued liabilities will remain stayed, barring special court intervention, until the legal issues of reorganization are concluded.

After the reorganization plan is filed, the bankruptcy court will hold a hearing to determine whether the plan should be approved. Once confirmation of the plan is granted, Manville may return to private operation of its business. All pre-bankruptcy obligations not paid or otherwise accounted for in the plan will be discharged. The effect of a discharge is that no lawsuit can ever be filed, and no attempt can ever be made to collect the debt.

## **What Does the Bankruptcy Proceeding Mean to Roofing Contractors?**

Manville's primary objective in filing a Chapter 11 petition apparently was to get out from under the burdens imposed by the asbestos health lawsuits. However, the bankruptcy proceeding will affect everyone who does business with Manville.

### **Litigation**

All previously filed lawsuits on allegedly defective roofs in which Manville is a party will be affected. Just as the asbestos health lawsuits will be stayed initially, the suits against Manville and its subsidiaries will be automatically stayed, at least with respect to Manville. Relief from the stay may be available in circumstances of unusual hardship. In practice, such relief generally is granted only to large creditors who have mortgages, liens, or similar secured interests in property held by the debtor corporation. The Asbestos Litigation Group has indicated that it plans to seek relief from the stay so that asbestos lawsuits can be continued.

In lawsuits where Manville is one of several co-defendants, or where the owner or general contractor has sued the roofing contractor and the roofing contractor has sued Manville, the effect is unclear. The other defendants may seek a stay of the entire litigation, claiming the suit cannot be litigated fairly in Manville's

continued on following page



continued

absence, but the plaintiffs will want to continue the lawsuit against the other defendants. This problem will have to be resolved on an individual basis by the trial court where the action is pending. The result depends on whether the court believes that the suit can be pursued fairly against the other defendants without contribution from Manville.

New lawsuits on roofs constructed with materials purchased before the bankruptcy petition was filed also are stayed during the course of the bankruptcy proceeding. Unless the contractors who have built roofs using Manville products file proofs of claim with the bankruptcy court, all future obligations of Manville with regard to those roofs may be discharged.

For roofs built with materials purchased after August 26, 1982, the result is different. No suits can be filed while the bankruptcy proceeding is pending, but the obligations will not be discharged in bankruptcy. Thus, there could be a lawsuit after the proceeding is over.

## Warranties

The effect of the bankruptcy proceeding on warranties is primarily a concern of owners because Manville's guarantees and warranties are generally issued to the owner of the building. Like the contractors, the owners are precluded from filing a lawsuit during the course of

the bankruptcy proceeding. Unless they file a proof of claim, their rights under the warranties also probably will be discharged.

Owner's claims would be considered "contingent" because no present obligations have arisen, but Manville may become obligated in the future if defects appear before the warranty expires. Similarly, roofers who built roofs with materials purchased before the bankruptcy also have contingent claims. These contingent claims have a low priority. Thus, they may not be included in the reorganization plan.

## Present Contracts

Perhaps the most immediate concern of all roofing contractors is whether they should continue to purchase materials from Manville. Those who have contracts to build roofs using Manville products may be concerned about their ability to obtain the necessary materials from the company.

Manville has the power to reject, subject to court approval, all contracts for materials not yet delivered and all guarantees that have not expired. Such a rejection is not likely as a practical matter if Manville wants to continue in the roofing business since Manville will be concerned about maintaining its good will with its customers. Manville has given every indication that it intends to continue its roofing operations and honor all its supply contracts for goods and services. Like many other companies, the slowdown in construction has forced Manville to make cutbacks in its field and headquarters staff. Of course, there is some uncertainty regarding Manville's long-term ability to honor its contracts if the Chapter 11 process is not completed successfully and the company is forced to liquidate.

Purchasers of Manville products who have current unperformed supply contracts with Manville should be aware that contracts cannot be cancelled just because Manville has filed for bankruptcy. Ironically, Manville's Approved SPM Roofing Systems Contractor Agreement provides that Manville may cancel its contract if the contractor files for bankruptcy. However, bankruptcy law prohibits any party from terminating an agreement solely because the other party has become insolvent or has filed for bankruptcy. Thus, if Manville elects to honor its contracts, roofing contractors also must honor their obligations.

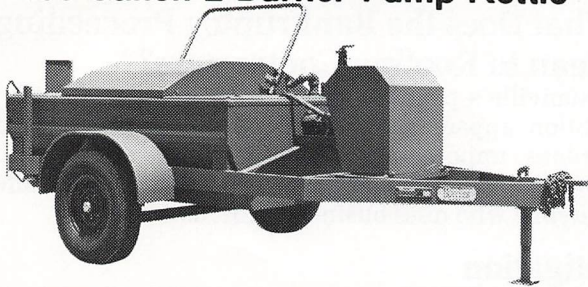
Those who purchase materials and transact other business with Manville after the petition was filed are in the best position because none of the obligations incurred in those transactions can be discharged in bankruptcy.

Manville's bankruptcy proceedings could take as long as five or six years to complete. During that time, pre-bankruptcy creditors and suppliers have no recourse for recovering the obligations owed to them by Manville. Manville has indicated that it plans to continue manufacturing and delivering roofing materials to its customers, so roofing contractors may not be affected in their ordinary business dealings with Manville.

Resolution of all the issues will take time. But if things proceed as planned, Manville hopes to emerge as a viable corporation, free of asbestos health claims.

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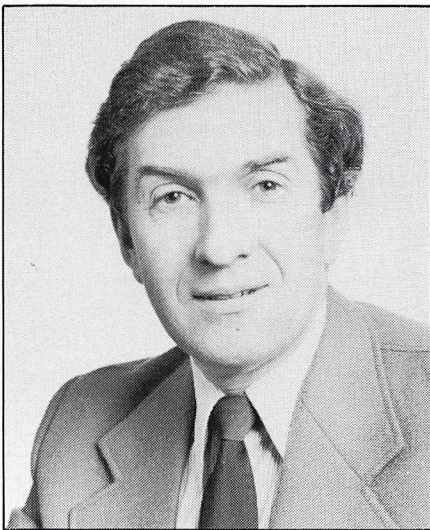
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## Manville

# An English- man Looks At The Evolution of Flat Roofing ... or Why Modern Roofing Contractors Have More To Worry About Than The Weather



by Michael Reid  
Managing Director, Eurorof Ltd.  
Northwich, Cheshire  
England

**F**lat roofs were known in the most ancient of civilizations. The inhabitants of the Indus Valley, some 70 centuries ago, used their flat roofs as sleeping areas in hot weather, and similar methods of construction have been the basis of roofing in India and the Middle East ever since.

The design and construction problems in erecting modern flat roofs, however, are often far from simple — unlike the flat roofs of some 40 or 50 years ago, whose construction was basically that of a floor with waterproofing and drainage.

The flat roof, with some form of bitumen covering as we know it today, emerged from the smoke of the Industrial Revolution and many fine examples of these can still be found on the remaining cotton and flax mills of Lancashire and Yorkshire, England. These large flat roof structures were used to house the vast numbers of workers, who for the first time were concentrated under one roof.

Beneath their waterproof coverings many had original sand-asphalt roofing, brattice cloth and tar, or the earliest forms of felt. Little thought was given to the problems of expansion or contraction, although one Yorkshire flax mill did have a unique expansion joint formed by the frontal wall being set on a radiused foundation and this could be moved by turnbuckles to compensate for roof movement. This construction, unlike many of its era, survived until the 1950s.

The earlier waterproofings were of natural asphalt, with company names like Limmer, Neuchatel, Ragusa and Trinidad echoing the sources in Italy, Switzerland and the Great Lake. Originally, felts had little to do with roofing, but were employed in the sheathing of ships. Principal sources of felt were Belfast, Dundee, Hamburg and Copenhagen, where many manufacturers began production in the mid-19th century.

Although the flat roof certainly has its origins in the ancient civilizations, it has probably experienced its greatest metamorphosis in the last 50 years. Lightweight steel decks, supported by steel frames, with cork or

wood fiber insulation, appeared in the early 1930s and transformed the hitherto staid roofing precepts — allowing greater flexibility in design techniques.

Examples of large steel deck constructions were built to accommodate the expansion of war plane production during the Second World War. These were illustrations of complete roof systems, as a simple trade operation, although the Anderson Belfast roof, with bow string trusses, boarded decks and felt covering was probably the earliest single trade system.

War-time construction included very large areas of concrete slabs and perhaps the earliest modular, prefabricated roof structures. These changes saw the flat roof evolve as a well defined structure, when building recommenced in the late 1940s, using three deck types, two insulation types, two waterproof membrane types — a maximum of twelve systems in all, whose performance was known by experience.

In the 1950s the Festival of Britain pavilions showed us new and exciting uses of lightweight materials — although nothing was known of their weathering properties. A Ministry of Technology publication in 1955 specified and costed 49 different systems of designing insulated flat roofs. Only seven were based on experience. The remainder included lightweight screeds on boards and compressed straw slabs on concrete. The industry had become too complex and confusion abounded.

The period from 1955-1974 may be classed as Britain's flat-roof syndrome, during which time almost every building type had to have a flat roof because of cost savings. The ensuing search for greater cost savings resulted in many of the problems which gave flat roofing a bad name.

A basic lack of understanding of the physics of the system was partially to blame, in particular the problems causing condensation. Materials were used which failed structurally, not through leakage, but due to the amount of water cre-



**Top**, An example of an original roofing felt manufacturing machine circa 1894 by Jens Villadsens Fabriker, Denmark. **Bottom**, The 6,000 square meters of roof at Sandeman Wine Merchant's distribution center in Harlow, Essex, which has been refurbished with Derbigum high performance roofing.

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# Evolution of Flat Roofing

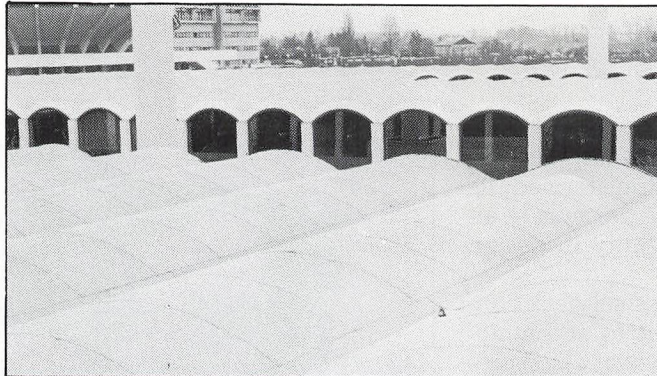
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ated within the building.

The industry in the United States purported to have the answer, and stated that condensation was created on the drawing board. It was later discovered that the correct application of thermal insulation could alleviate the problems.

## The Introduction of Synthetics

As the growth of the flat roof escalated and spread, even to low rise housing, the monotony of the roofscape was relieved by complex elevations and equally complex detailing. It was at this time that the petrochemical industry took an interest in the subject, introducing new products in plastic and synthetic rubber, both on insulations and roof membranes. Using their marketing expertise they launched the products with a campaign maxim "new equals bet-



An example of just how complex roof systems can be: a hospital in Copenhagen with a barrel vaulted roof and white mineral surface. The system was installed 12 years ago.

ter," to great effect.

To architects, specifiers and contractors, however, new equals 'unknown' and this early experiment with modern roofing membranes proved to be very expensive in terms of failed roofs. Following these early setbacks certain products have been developed into reliable components. In the United States, some synthetic rubber membranes are also performing well, but in carefully designed systems.

In 1974, the OPEC oil embargo crisis altered economics radically. The cost of raw materials rose by four or

five times, and the need to conserve energy demanded very efficient thermal insulations. At the same time, a great international exchange of information occurred at all levels, and formal conferences, notably Brighton in 1974 and Washington in 1977, started to define clearly the properties and performance of the roof components. The very term "high performance," indicates that the mechanical properties of the roof membrane are stated in pure engineering terms rather than giving an indication of the properties of the raw material's composition.



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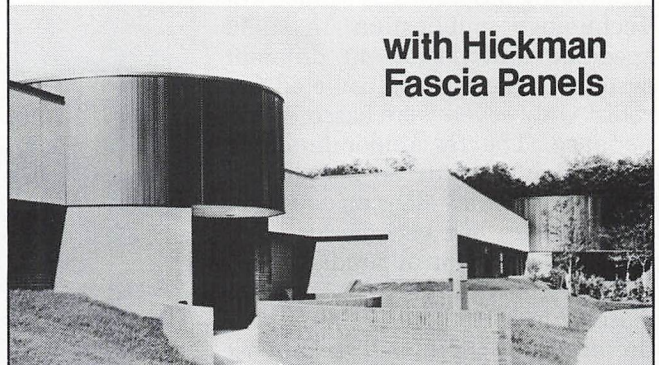
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The necessity for thermal insulation to reduce condensation was also clearly defined at this time — and highlighted in the Brighton paper "Balance of Insulation." Creation of the European Agreement brought together expertise in test methods to verify levels of performance. These Agreement certificates are issued on products reaching the specific standard.

Since 1974, the flat roof has not generally been the cheapest form of

construction and therefore, its uses have been far more selective and logical. The industry in every country is now faced with the task of upgrading existing roofs to offer higher thermal protection. International experience gives us essential knowledge since these high standards of thermal protection have been a requirement in Scandinavia and elsewhere for many years. Thus, the problems and solutions are already clearly recognized.

The history of the post war flat roof

is perhaps inevitable in terms of development. Experience based systems performed well, but experiments were expensive. It may be optimistic to believe that we have a sufficient understanding of flat roof systems to predict the performance of the new breed of roofing membranes, but its true to say that a great deal of progress has been made and most importantly recorded — so future development need not be costly mistakes.



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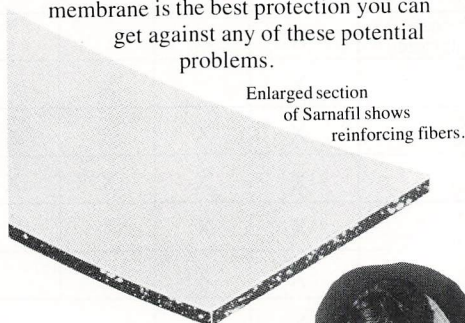
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Enlarged section of Sarnafil shows reinforcing fibers.

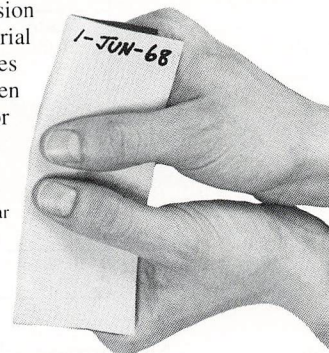
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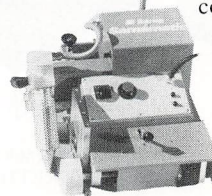


**It Won't Get Brittle or Deteriorate with Age.** The only way any manufacturer can make this claim is to have actual installations in place for many years in all climatic conditions. Sarnafil PVC membranes retain their plasticizer even after years of service. Samples taken from early installations retain their original pliability and can be folded or even creased without surface cracking. The excellent aging properties of Sarnafil membranes allow the fusion of new material to membranes that have been in service for many years.

Unretouched photo of 14 year old Sarnafil.



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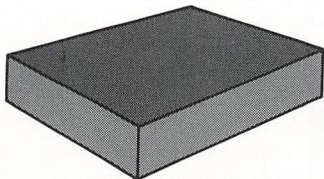
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	Permalite® Urethane foil/glass faced	X	X	X	X	
	Permalite® Urethane kraft/foil faced	X	X			
	Permalite® Urethane reinforced kraft faced	X	X			
7.69 to 20.00	Permalite Pk® felt faced	X		X		X
	Permalite Pk® foil/kraft faced	X	X	X	X	
	Permalite Pk® foil/glass faced	X	X	X	X	
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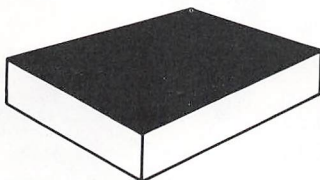
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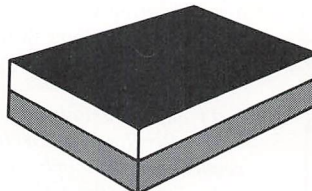
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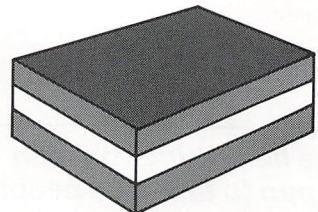
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# The Need For Standards and Tolerances in the Roofing Industry

by Jack Williams  
President, Twin City Roofing Inc.  
Wahpeton, N.D.

As contractors responsible for the installation of roofing systems, our work is constantly subjected to scrutiny by testing laboratories, manufacturers, architects, inspectors and by ourselves. The economic survival of many of us may rest on the results of a few one square foot test cuts obtained from a roof consisting of tens of thousands of square feet. The results are often produced weeks or months after the roof is completed. The replacement of that roof could bankrupt most of us should those tests fail to meet standards and tolerances provided by others who may have only a slight familiarity of the requirements of those standards or knowledge of the tolerances typically obtainable in field installations. The present situation concerning standards and tolerances in the roofing industry is lamentable.

The history of built-up roofing is a history of redundancy. Originally, we recognized the chance of human error by installing three plies in hopes of obtaining two plies. These redundancy factors were established in recognition that we were dealing with a thermo-setting material (hot bitumen) installed in widely varying weather conditions, in which the element of time was always a factor in quality and quantity of material application. As the material was applied, it cooled rapidly and only a few seconds were available to ensure proper installation. The costs of redundancy could be overlooked since these materials and labor were inexpensive and the "overkill" of plies provided a safety factor to a membrane serving only a waterproofing function.

These conditions changed as building design concepts changed and the membrane became a part of the thermal insulation composite of a roofing system. Increased engineering properties in the membrane were required. Now we needed a full three plies for the roof to perform. Did we increase the number of plies and add more redundancy? No, the costs became too great. We were expected to provide the three plies and no less. The safety factors provided by redundancy were eliminated. We now had no tolerances with which to work and as contractors, we have been naive in accepting this situation in the belief we could perform with no tolerances.

Originally, roofing manufacturers specified roofing systems and prescribed application standards in their specifications. By this inclusion there was also established an implied warranty that the system would perform. Modern manufacturers, recognizing the diffi-

culties produced by implied warranties, now suggest that they supply the materials only, and not the design expertise of roofing systems. Yet, the industry continues to look to the manufacturer for standards and tolerances from the traditional basis.

In analyzing the present manufacturer-application standards we find that no definitive standards exist. While one manufacturer requires 20 pounds of interply bitumen another manufacturer requires 23, or 25, or 28 pounds when applying the identical felt material. No one has really determined just what amount of material is required to "produce a serviceable roofing system" by our definition (*see box*).

Of even greater concern is the lack of recognition by the manufacturer of the "level of preciseness of application of materials" obtainable in the field. Common wording in the industry specification is, "the bitumen shall be applied uniformly over the entire surface." What does this mean? Does the word "uniform" designate "no variation" in thickness or quantity of bitumen as it implies? What constitutes the "entire surface?" Does this imply that no skips or voids can be tolerated? In either case, reason suggests that in applying our thermo-setting bitumen over large expanses, inexactitudes will occur. Any task performed by man must have a tolerance level.

As roofing lawsuits resulted in the 1950s the courts applied tolerances to our application. In 1960, one manufacturer called for roofing felts to be laid in asphalt weighing 27.5 pounds per roofing square. In 1961 their requirement was changed to 20 pounds per square with a plus/minus 15 percent tolerance. Most observers felt this drastic change resulted from recognition that the 27.5 pounds was not obtainable in the field and the practical effect of court applied tolerances where none existed. Most manufacturers quickly followed suit with the application of plus/minus 15 percent tolerances, but no uniformity was established as an application standard.

Is the plus/minus 15 percent tolerance realistic and based upon field application studies or is it (like the 27.5 pounds) based on something else? Is it based on that "level of preciseness reasonably attainable" or is it an arbitrary number "picked from the skies" guaranteed to produce workmanship error?"

The critical question on application standards should be: "What material quantities are required to produce a serviceable roofing system?" A major problem in the industry is that we haven't defined just what is a serviceable system. The closest we have come is the Preliminary Performance Criteria for Built-Up Roofing as proposed by the National Bureau of Standards. This criteria has been accepted by NRCA.

When we reach agreement as to the criteria for a serviceable system we can then deal with a whole series of related questions concerning material quantities and

continued on following page

## Key Words

Application standard: "The optimum amount of material required to be present in order to produce a serviceable roofing system."

Application Tolerance: "The degree or level of preciseness of application of materials reasonably attainable in the field by trained, conscientious workmen, using accepted methods and means of application."

# Standards & Tolerances

continued

serviceability. In most material systems standards are set above a minimum point for optimum performance and include suitable safety factors. In roofing, where too much material can be detrimental the standard must be set at a mean point between two critical points. The high and low critical factor points must be identified to set the standard. Safety factors must be included on both of the critical points. This produces a "range of application" of material directly related to performance factors.

## Realistic Tolerances

The basic question is, "what degree or level of preciseness of application is reasonably attainable in the field by trained, conscientious workmen using accepted methods and means of application?" The related critical question is whether this "level of preciseness" falls within the "range of application" established by our application standards. The answer to these questions will require another series of tests and examination of the basic questions of material application.

When we speak of what is "reasonably attainable" we

enter the field of human performance factors. Much has been made of the poor caliber of modern workmen. The argument that old time workmen were more diligent in their applications could be countered by the argument that they were not confronted with the myriad of materials, equipment and installation methods faced by modern workmen. Modern applicators may have to be more diligent in application to produce satisfactory systems since their margin for error has been reduced and they are expected to install roofing products at higher rates of production.

Nevertheless, while we can all hope for more qualified people, is there an industry satisfied with the human performance factors of their workmen? Must we not face the fact that "what we have, is what we get?" Would we not be better off ensuring that our materials, our means and methods of application can be applied with simple skills?

Some of the materials used in the industry are more difficult to install than others. Some are more affected by uncontrollable factors such as weather, and some are not compatible with the other components of the system. In some cases we're trying to do the impossible. We shouldn't blame workmen for failing to combine materials that are not combinable.

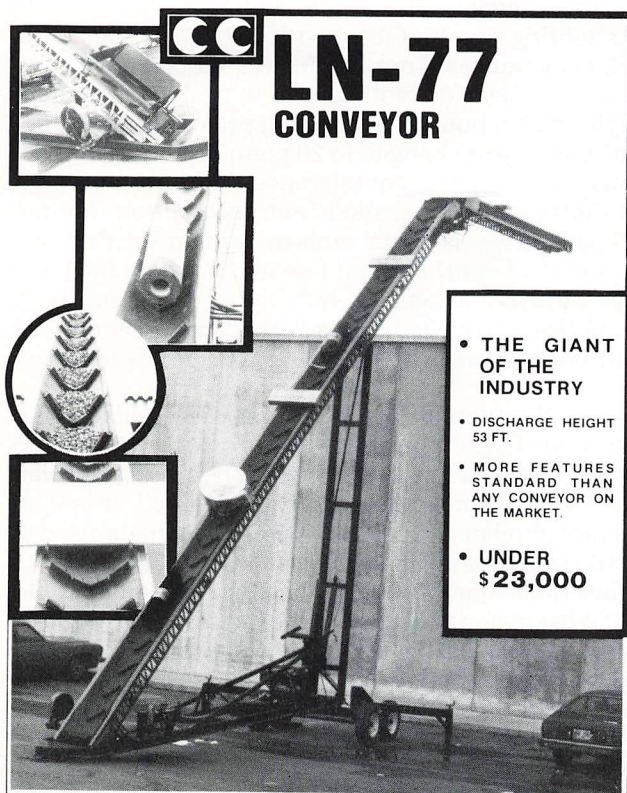
What methods of application are universally accepted by the industry? The effect of roll weight on interply bitumen could be overcome by the practice of "flysheeting." This practice, however, is not accepted by the industry and creates additional problems. What methods are acceptable and produce the least amount of negative side effects?

What means of application are acceptable? What equipment applications are recognized as producing quality systems with low error rates? Roofing equipment manufacturers continue to produce new and better equipment to apply roofing. But are we aware of the need to provide equipment which will apply material within the range of application required with average applicator skill levels? Do we not sometimes re-invent the famous "skyhook" that does everything but perform?

Finally, we have to go out in the field with our workmen and really examine each facet of the work they do. We must understand the difficulties involved in each of their tasks. We must analyze, test and probe their finished product to produce "reasonably attainable" performance levels.

## Relationship of Standards & Tolerances

The application standards established a "range of application" which must be met. The "reasonable attainable tolerance levels must fall within the range of applications. If they do not we are asking the impossible. We should recognize that the task is too difficult to perform using our present materials, methods and means of application. Inadequate materials can be eliminated when identified. Methods can be modified and better equipment produced if these are necessary. The fact that we're not even aware whether they are necessary should tell us something about the condition we are in. It's long past time to get to work on it, and eliminate the Russian Roulette of standards and tolerances.



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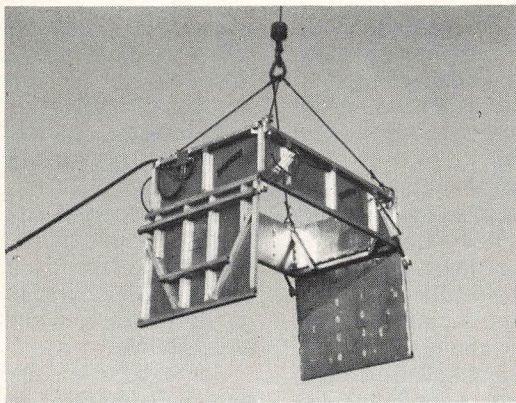


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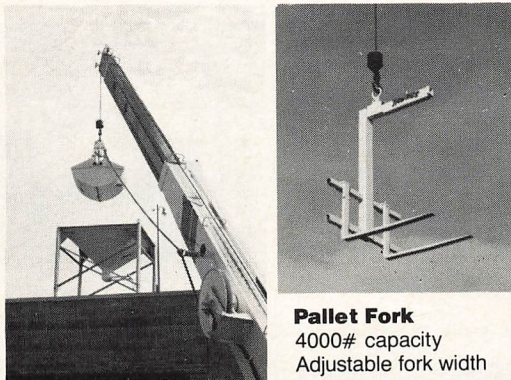


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The durability and performance of the "National" brand of truck-mounted cranes, with Taurus' carefully matched and engineered system of accessories for the roofing industry, create a system unmatched in overall performance. Strong and dependably built to give you more of what you buy a crane for—reach, lifting capacity and operational reliability.



**3½ yd. E-Z Dump Box** — All high tensile strength aluminum construction with hydraulic bottom doors for dumping and a side ramp-door for loading tear-off or gravel easily into box.

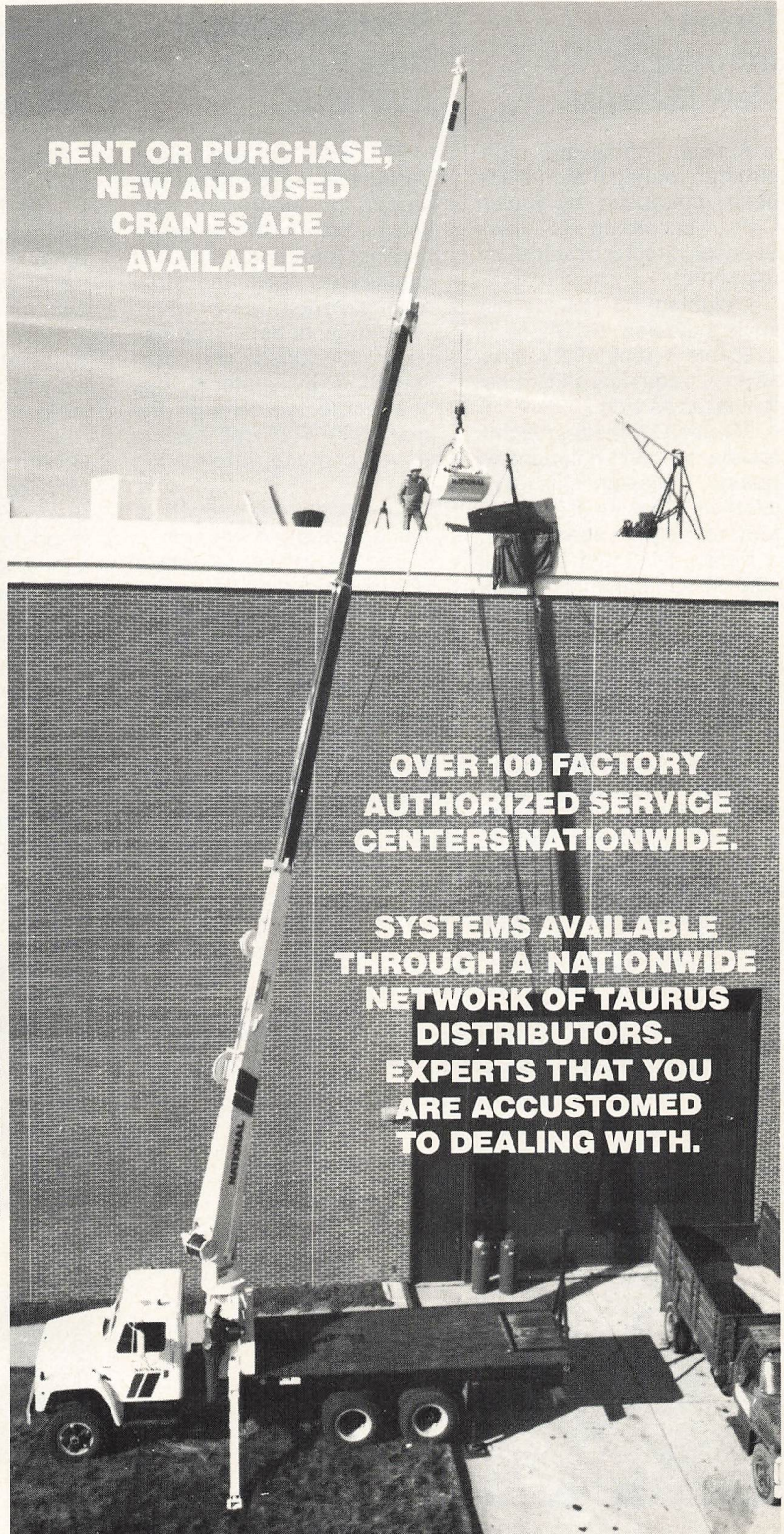


**Pallet Fork**  
4000# capacity  
Adjustable fork width

**¾ yd. Clam Bucket, 1½ yd. Gravel Hopper and Hydraulic Hose Reel**— All part of a complete system. A selection of booms, jibs, attachments, and accessories allowing us to tailor our cranes to your job requirements.

**Taurus, Liquid Asphalt Systems, Inc.**  
2425 Jefferson  
Kansas City, Mo. 64108  
**(816) 474-0448 1-800-821-3204**

- MORE REACH** — up to 140 feet height with 2000# load capacity.
- MORE LIFTING CAPACITY**—up to 34,000# maximum load, the most of any Truck-Crane.
- MORE LOAD TO THE ROOF**—the first with weight-saving aluminum Roofer's accessories.
- MORE SELECTION**— 6 National Crane models to choose from.



RENT OR PURCHASE,  
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CRANES ARE  
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OVER 100 FACTORY  
AUTHORIZED SERVICE  
CENTERS NATIONWIDE.

SYSTEMS AVAILABLE  
THROUGH A NATIONWIDE  
NETWORK OF TAURUS  
DISTRIBUTORS.  
EXPERTS THAT YOU  
ARE ACCUSTOMED  
TO DEALING WITH.

# New Products, Ideas, & Publications

## Frelen Introduces New Material

A new, lightweight, high-strength roofing material has been introduced by Frelen Corp., according to Jack Spencer, director of sales and marketing.

Weighing 1.3 pounds per square, Frelen Dri-Sheet is available in rolls of six, nine, 12 and 24 squares, and in custom sizes as well.

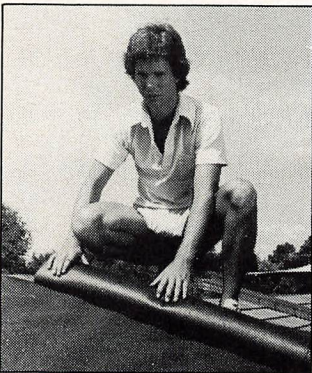
"Frelen Dri-Sheet is highly resistant to ultraviolet and to tearing," Spencer said. "Its pliability enables it to conform to irregular surfaces."

Frelen Dri-Sheet is available in various thicknesses for residential roofing and for other applications such as separator sheets for single-ply roofing over existing gravel roofs. It can also be used as a replacement for shake ply (30 pounds) in 18 inch width.

Frelen Dri-Sheet is black, has a thickness of 1/16 inch, has a minimum tensile strength of 36 psi, elongation of 45 percent, flame spread 75, smoke less than 20, a temperature range of 225° to -100°F and a K factor of .24 @ 75 mean.

For more information, write Frelen Corporation, 11 Ballard Way, Lawrence, Mass. 01843.

Check #1 on Reader Service Card



## Roofing Survey Data For Sale from Hull

Hull & Co., of Greenwich, Conn., has issued three new reports on significant markets for thermal insulation, including information on the commercial and industrial roofing market.

An original data base has been developed and consumption by material has been projected through the year 1990. The Hull roofing survey contains information on:

- The continued growth of single-ply roofing systems.
- Thermal insulation data of EPS, expanded perlite board, rigid fiber glass, polyisocyanurate foam board and extruded polystyrene.

For more information on report findings, additional services and costs, please contact Charles W. Morgan, Hull & Co., 5 Oak St., PO Box 4250, Greenwich, Conn. 06830.

Check #2 on Reader Service Card

## Sausalito Complex Features Bronze Metal Roofing

Sausalito, at the "other end" of the Golden Gate Bridge, has its own salty, artist-colony flavor. Like any other small community, Sausalito wants to preserve its own identity.

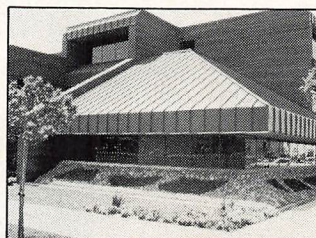
How do you design a large office complex to be compatible with the environment that residents identify as Sausalito's? Raiser Architectural Group of San Mateo, Calif. blended bronze-colored metal roofing, cedar siding and wood trellis accents to create a three-story building with its own charm.

The bronze-metal roofing panels supplied by Architectural Engineering Products Co. (now known as AEP/Span with Span Metals Corp.) are guaranteed against color change or chalking beyond very strict limits. The medium gloss finish is applied to extra-smooth, hot-dipped, galvanized steel.

The architects identified "other important attributes" of the metal roofing materials as "its lightness of weight and corresponding reduced size of structure, low maintenance, speed of installation, fire-proof characteristic and long-life expectancy."

For more information on this type of roofing material, contact AEP/SPAN Metals, P.O. Box 26288, Dallas, Tex. 75226.

Check #3 on Reader Service Card



## New Trolley Hoist From Reimann & Georger

Reimann & Georger, Inc. has announced the addition of a new product to its line of trolley hoists; the TT1500, a hoist capable of safely lifting to the roof loads up to 1500 pounds.

Made of durable steel tubing and powered by a B/S Farymann diesel engine, the TT1500 can handle tons of material every workday. The wide-spaced support legs (6½ feet) allow heavy, bulky materials to be deposited well back from the roof edge.

A protective operator fence is offered as a standard feature of the TT1500. It can be easily transported. Assembly is fast because of the use of self-locking pins to join parts together. Also available are gravel buckets and fork lifting accessories.

For a complete brochure on all of Reimann & Georger's equipment, write to: Reimann & Georger, Inc., PO Box 681, Buffalo, N.Y. 14240.

Check #4 on Reader Service Card



## New Wide Sheet from Wat-Pro

The Flagon C single-ply roofing system is now available in 10-foot wide, seamless rolls in both 40 and 48 mil thicknesses. This new size is easy to handle and could reduce field seaming labor by as much as 50 percent, according to the manufacturer.

The Flagon C wide membrane also is resistant to weathering, ultraviolet rays, thermal shock, sparks, radiant heat and industrial exhaust pollution, a company spokesman claimed.

The Flagon C single-ply roofing system and the new wide seamless system are available from Wat-Pro, Inc., Hwy 35, PO Box 336, Manasquan, N.J. 08736

Check #5 on Reader Service Card

## Copper Flashing Improves With Age

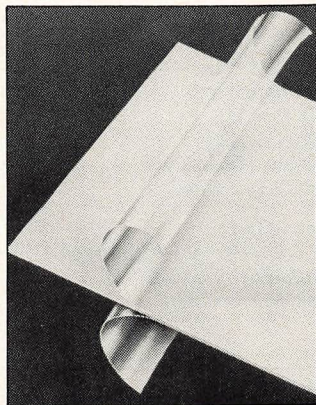
York Manufacturing of Sanford, Maine, has announced the availability of Dryseal, a three ounce copper flashing laminated on both sides with a film of dense polyethylene.

According to the manufacturer, the polyethylene coating provides total moisture resistance and protects the copper during installation. Dryseal is designed to give permanent protection and enhance the value and appearance on whatever it appears.

Dryseal is available in roll lengths of 200 feet and widths of six, nine, 12, 18, 24 and 36 inches. The manufacturer is offering to all interested people a free brochure and product sample.

For more information contact: Richard Lolley, York Manufacturing, Inc., Pioneer Rd., Box 1009, Sanford, Maine 04073.

Check #6 on Reader Service Card



## How-To Guide Available From London Chemical

London Chemical Co., manufacturers of roof maintenance products, announced recently the addition of a new application guide, the latest in the firm's line of liquid elastomeric coatings and materials.

Elastaseal, a seamless liquid-applied waterproofing system, can be applied by spraying, rolling or brushing. The manufacturer claims the product is impervious to heat and cold, ponding water, and has a stretch factor of 400 percent. The coating can also be applied over a variety of existing systems including BUR, metal and sprayed-in-place foam roofs.

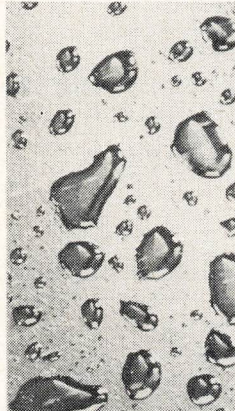
For additional information, contact: Joan Wherley, London Chemical Co., 3135 E. 17th Ave., Columbus, Ohio 43219.

Check #7 on Reader Service Card

Application Guide

**Elastaseal/Coloseal**

Seamless Liquid Applied Waterproof Membrane for Roofs



A specially formulated polyurethane pitch composition specifically designed for re-surfacing and repairing leaking flat roofs.

A Product of

**London Chemical Company**  
3135 E. Seventeenth Avenue Columbus, Ohio 43219  
Telephone 614-476-2105  
London Chemical Company Atlanta Division  
4625 Hugh Howell Road Tucker, Georgia 30084

## OCF Develops Merchandising Support for Ad Campaign

Through a variety of merchandising support programs and materials, distributors, contractors and dealers are all tying into Owens-Corning Fiberglas Corporation's latest roofing advertising scheme, featuring the internationally acclaimed secret investigator, Inspector Clouseau.

The company has developed official Roof Inspector Kits for each of its trade-customer groups. The kit used by roofing contractors contains door-knob hangers, consumer mailers with reply cards, roof estimate forms, ad slicks and radio scripts.

Contractors can also receive a sales presentation binder to provide the framework for organizing sales support materials to make more effective sales calls.

In addition, both contractors and dealers will be provided with the Residential Roofing Merchandising Manual, containing data on product listings, advertising and publicity items, training materials and application instructions.

For more information on this special Roof Inspector merchandising support program, contact Margaret Meeks, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

Check #8 on Reader Service Card



# New Members

The following have been approved for NRCA membership between May 30 and September 1, 1982.

## CONTRACTORS

- A-1 Roofing Service Co.  
P.O. Box 62242  
5048 Cleveland Street  
Virginia Beach, VA 23462  
Steven L. McCleef
- Action Roofing Company  
917 Northern Blvd.  
Great Neck, NY 11021  
Anthony Capurro
- Alva Rfg. Co. Inc.  
615 Santa Fe  
P.O. Box 358  
Alva, OK 73717  
Rex. E. Hardiman
- Associated Roofing & S/M Co.  
Inc.  
P.O. Box 5601  
712 Anderson St.  
Charlotte, NC 28225  
David Brashear
- Baillie Roofing Inc.  
State Road 54  
Elfers, FL 33533  
R.W. Baillie
- BURMCO  
600 Nestora Avenue  
Aptos, CA 95003  
John M. Lasica
- C & S Roofing & S/M Co.  
7323 A Lockport Place  
Lorton, VA 22079  
Calvin Smith
- Cedars West Inc.  
P.O. Box 7265  
7263 Mistyglen Avenue  
Boise, ID 83707  
Steven Reidhaar
- Certified Companies Inc.  
1923 Capitol  
San Antonio, TX 78201  
Charley Beldon
- Clerkin Roofing  
P.O. Box 397  
3197 Lemm Street  
Colorado City, CO 81019  
Gary Clerkin
- Commercial Roofing  
Contractors Inc.  
6300 Westpark #370  
Houston, TX 77057  
Richard M. Olszak

- Contemporary Inc.  
3730 Kori Road  
Jacksonville, FL 32217  
Steve Irwin
- Gay Roofing  
A Division of CBS Mechanical  
Inc.  
5001 W. University Drive  
Denton, TX 76201  
David M. Morton
- General Roofing & Siding  
4400 Dove Road  
Port Huron, MI 48060  
William Novar
- Izzy's Roofing Company  
Incorporation  
P.O. Box 563  
Sherman, TX 75090  
Kenneth L. Kerr
- Kevin & Sons Roofing Corp.  
9431 S. Albany  
Evergreen Park, IL 60642  
Kevin O'Connor
- Kimmenade Corp.  
12220 Penridge Drive  
Bridgeton, MO 63044  
Hugo P. Landheer
- Lockesbury Roofing & Sheet  
Metal  
Rt 1 Box 212  
Hwy 24 & Pleasant Drive  
Lockesburg, AR 71844  
Delwin Houser
- Chas. Magid's Sons Inc.  
38-54 13th Street  
Long Island City, NY 11101  
Sanford J. Magid
- Marsteller Corporation  
P.O. Box 13226  
1809 Franklin Road S.W.  
Roanoke, VA 24012/32  
D.L. Marsteller Jr.
- Middleton Roofing Co.  
8310 Kelly Dr.  
Mentor, OH 44060  
Randy Griffiths
- Newt & Butch Roofing & S/M  
1810 W. 7th  
P.O. Box 238  
Clovis, NM 88101

- P & C Roofing Inc.  
700 South Madison Street  
Wilmington, DE 19801  
Vincent M. Papa
- J.L. Robinson Roofing Co.  
P.O. Box 342  
Monroeville, PA 15146  
John Robinson
- Roof-Tek Inc.  
P.O. Box 99  
Marshville, NC 28103  
John N. McNamara
- Southern Roofing Inc.  
P.O. Box 1342  
Rt. 4 Box 187 A  
Anderson, SC 29622  
Alvis R. Kernels
- Townsend Roofing & Sheet  
Metal Co. Inc.  
P.O. Box 2717  
2253 S. Riverside Drive  
Iowa City, IA 52244  
Carroll Townsend
- Tristate Roofing &  
Waterproofing Inc.  
133 Baker Avenue  
Berkeley Heights, NJ 07922  
Christine Singer
- White Roofing Company  
P.O. Box 14423  
2145 Piedmont Road  
Atlanta, GA 30324  
Dennis Miller

- IPW Interplastic  
156 Ludlow Avenue  
Northvale, NJ 07647  
Mitchell Haas
- Leatherback Industries Inc.  
P.O. Box 594  
Hollister, CA 95023  
George L. Benson
- Pan Am Distributing Inc.  
P.O. Box 1699  
423 Hoefgen  
San Antonio, TX 78296  
Ken Hamill
- Polysar Inc.  
1501 Commerce Drive  
Stow, OH 44224  
James W. Puse

## INDUSTRIAL/INSTITUTIONAL

- Clayton County BOE  
Maintenance Dept.  
218 Stockbridge Road  
Jonesboro, GA 30236  
B.J. Dixon
- Marc Development Co.  
835 Sterling Avenue  
Platine, IL 60067  
Larry Kirchner
- Naval Facilities Engineering  
Command  
P.O. Box 727  
900 Commodore Drive  
San Bruno, CA 94066  
William S. Tsuchida

## INTERNATIONAL

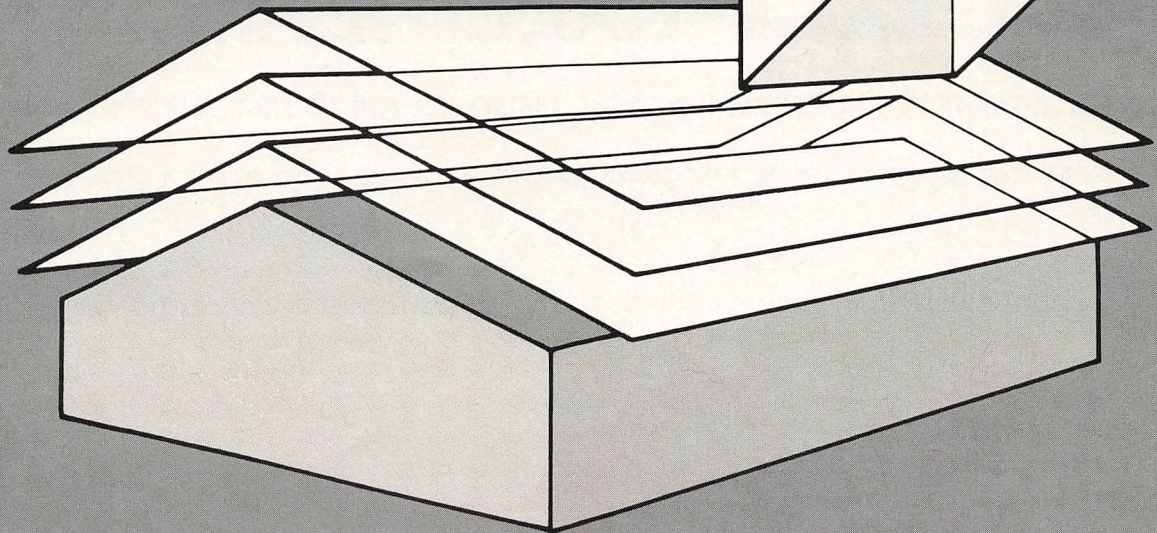
- Gerard Roofing Systems (NZ)  
Ltd.  
Private Bag  
Papakura  
Auckland New Zealand  
R.J. Leggett
- Maco  
414 Executive Center Suite 3  
El Paso, TX  
John Acerna
- The Felt Roofing Contr.  
Advisory Board  
Maxwelton House  
Boltro Road  
West Sussex RH16 1BJ Engl  
W.A. Jenkins
- Wuhan Building Materials  
Institute  
Wu Chang, Hubei, 430070  
China

## ASSOCIATES

- Arzee Supply Corp. of N.J.  
35 Franklin Turnpike  
Mahwah, NJ 07430  
Joel Roth
- Duro-Last Roofing Inc.  
525 Morley Drive  
Saginaw, MI 48601  
John R. Burt
- Envirospec Inc.  
P.O. Box 119  
Ellicott Station  
Buffalo, NY 14205  
Robert De Clute
- Hyload Inc.  
1006 B McKnight Park Drive  
Pittsburgh, PA 15237  
Alex W. Harkness



**ONLY ZIEBARTH KEEPS  
MOISTURE, ENERGY BILLS AND  
MAINTENANCE COSTS FROM  
GOING THROUGH THE ROOF.**

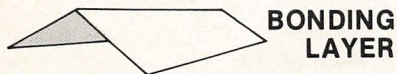


**COOLER IN SUMMER**

**WARMER IN WINTER**

## The Energy Efficient Metal Building of the Future . . . Today

Introducing a breakthrough in metal roofing technology. Competitively priced insulated re-roofing for metal buildings. A fluid applied ceramic insulating roof and wall system for metal buildings that insulates, waterproofs, extends building life, is condensation and corrosion resistant and acoustically sound deadening.



**BONDING  
LAYER**

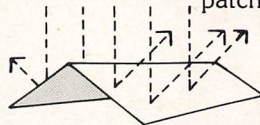
A dual purpose anti-corrosive and primer, Ziebarth Anticorrosive #10 is applied directly to the present surface. It covers and protects all of the metal surfaces. Its chemistry penetrates flash rust where it neutralizes destructive iron oxide (rust) to iron sulfate and then prevents further oxidation. Metal roof deterioration is eliminated, expensive repairs unnecessary, life of the building is extended.

**WATERPROOFING  
LAYER**



Waterproofing that remains watertight even under unusual demanding conditions. Waterproof Sealer #5 applied in two coats over all seams and fastening devices with

fiberglass reinforcing providing a positive watertight seal. This unique waterproof coating remains flexible, even at extreme temperatures enabling the system to expand and contract with the building, defeating the major cause of metal roof leaks. Cost of re-roofing or patching is eliminated.



**CERAMIC  
LAYER**

Insulation that more than pays for itself. The ceramic outer layer contains tiny cellular ceramic insulating spheres that resist the passage of heat or cold. Leak causing expansion and contraction of the metal roof is eliminated. Under roof temperatures drop drastically in summer. Internal building heat is prevented from escaping in winter. Net result is lower energy bills with reduced demand on heating and cooling.

The silicon-ceramic tiles used on NASA's space shuttle are covered with a thin film of ceramic borosilicate glass. 95% of the heat of re-entry is shed by this thin film, while only 5% of the heat is shed by the foam-like body of the tile. Ziebarth ceramic

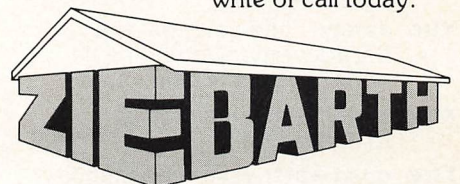
insulation coat functions much the same as NASA's ceramic borosilicate tile coating, retaining its properties under conditions of unbelievable stress.



### Unbeatable Combination

The combination of bond coat, fiberglass cloth at joints and double waterproof coat provides strength, longevity and watertight integrity. The ceramic layer is so hard and tough, foot traffic doesn't phase it. The new roof is resistant to pollutants, acid rain, fungus and fire, and best of all its insulating properties can pay dividends that return much more than its cost.

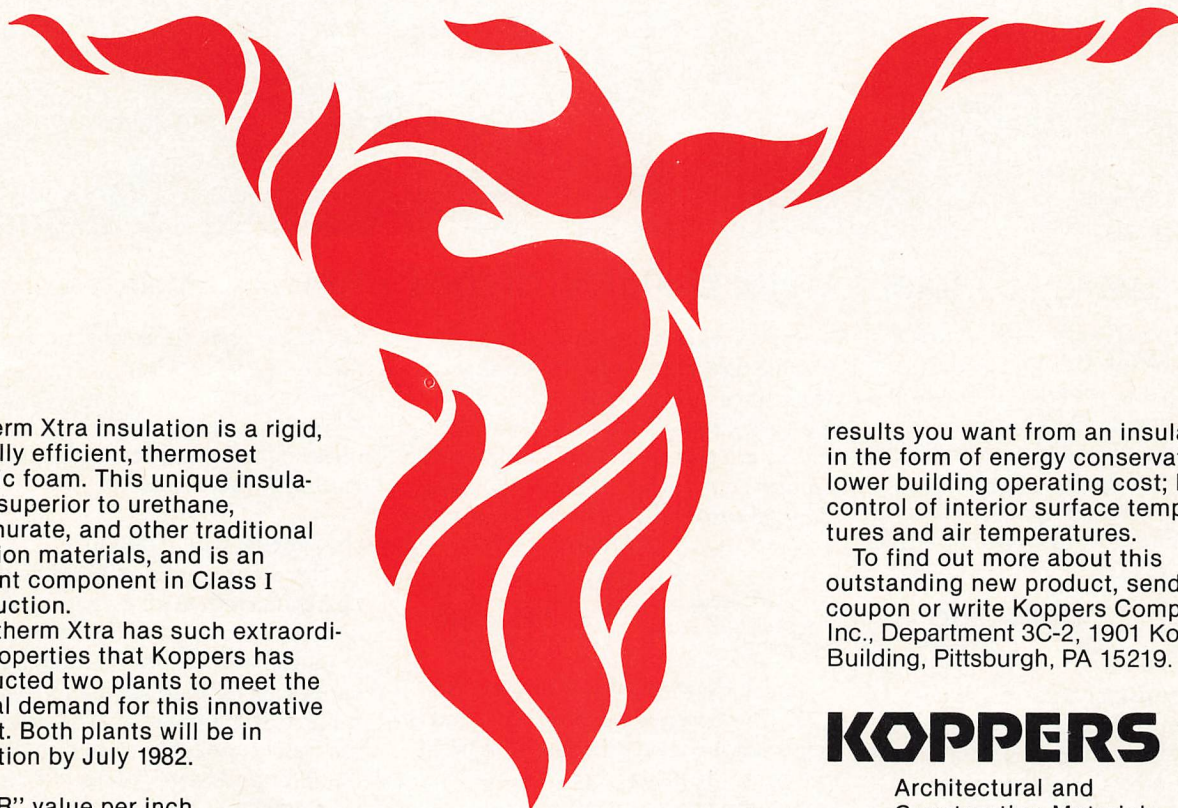
For the whole story on how Ziebarth can keep you and your metal building problems from going through the roof, write or call today.



ZIEBARTH CORPORATION (904) 726-9568  
954 S. HWY. 41 INVERNESS, FLA. 32650

# IT'S HERE! EXELTHERM Xtra<sup>®</sup>

...the superior insulation with extraordinary fire resistance and thermal retention properties



Exeltherm Xtra insulation is a rigid, thermally efficient, thermoset phenolic foam. This unique insulation is superior to urethane, isocyanurate, and other traditional insulation materials, and is an excellent component in Class I Construction.

Exeltherm Xtra has such extraordinary properties that Koppers has constructed two plants to meet the national demand for this innovative product. Both plants will be in production by July 1982.

**Xtra:** "R" value per inch

**Xtra:** fire resistance properties  
ASTM E 84

- Flame spread—20
- Smoke development—5

**Xtra:** dimensional stability... more stable than other foam insulations

**Xtra:** safety... the potential fire hazard of many other insulations is virtually eliminated

**Xtra:** high thermal-resistance/thickness ratio

**Xtra:** good water vapor permeability

With its extra-valuable combination of properties and characteristics, Exeltherm Xtra will maximize the

results you want from an insulation in the form of energy conservation; lower building operating cost; better control of interior surface temperatures and air temperatures.

To find out more about this outstanding new product, send the coupon or write Koppers Company, Inc., Department 3C-2, 1901 Koppers Building, Pittsburgh, PA 15219.

## KOPPERS

Architectural and  
Construction Materials

Please send literature on Exeltherm Xtra

Please have a representative call

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Title

Company

Address

City

State

Zip

Phone

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# Classified Ads

Place a classified ad in *Roofing Spec* for 25 cents per word. There is a minimum charge of \$10.00. Boxed or display advertisements are available in the classified section for \$20.00 per inch (one inch minimum). Ads using blind boxes available at no additional charge to NRCA members; non-members add \$5.00 to total order. Send ad copy and payment to: Advertising Manager, *Roofing Spec*, 8600 Bryn Mawr Ave., Chicago, Ill., 60631

## SALES REPRESENTATIVES

MONROE, INC., one of the OLDEST and LARGEST COLD PROCESS IN SINGLE-PLY roofing system companies in the U.S., is EXPANDING in MAJOR AREAS throughout the U.S. We are searching for AGGRESSIVE, experienced salesman in the establishment of sales territories and experienced with CLOSING \$2,000-25,000 orders to OWNERS, PLANT ENGINEERS, MAINTENANCE MANAGERS or PURCHASING AGENTS.

If you are motivated by MONEY—Commissions, Bonuses, and Sales Incentives—WE OFFER company benefits, protected territories, no travel, field and corporate support and no HOUSE ACCOUNTS. If you would like to learn more, telephone Doug Colwell, National Recruiting Manager at 1-800-321-7990 (in Ohio 216-248-7890) 8:00 a.m.—5:00 p.m. E.S.T. (or send your resume) to arrange for your PERSONAL and CONFIDENTIAL INTERVIEW.

MONROE, INC.,  
30801 Carter St.  
Cleveland, OH 44139

## ROOFING MANAGERS

Successful roofing contractor wants to communicate only with the best in the business. Candidates must have a very successful experience in industrial and commercial reroofing sales. Opportunities available on West Coast that are unique and lucrative. Send work history and objectives to Speranza Management Consultants Company, 12 Johns Canyon Road, Rolling Hills, CA 90274.

## TANKERS FOR SALE

2,500 gallon tanker on flat bed trailer, and 5,000 gallon trailer mobile transport tanker, both insulated, burners and pumps to pump to the roof. Both have good tires and brakes. Can be pulled with single axle truck. \$6,000 each. Carlock's Roofing, Rt. 2, Philpot, KY 42366, 502/729-4543.



roof engineering® inc.

p. o. box 335  
hobbs, new mexico 88240  
505-393-8949

## laboratory analysis of roof samples

### Roof Manual

Simple condensed language — 40 pages — a big help in passing state exams — 40 pages — measuring — cold process — safety-equipment — details various types of roofing — waterproofing — repairs — etc. \$9.75 post paid — R.M. Co., P.O. Box 986, El Toro, Ca. 92630.

### The HEAT SEEKERS

ASPLUNDH INFRARED SERVICES DIVISION  
BLAIR MILL ROAD  
WILLOW GROVE, PA 19090  
215-784-4245

ELECTRIC UTILITY INFRARED INSPECTION PROGRAMS  
SINCE 1967

# Tech Talk

continued from page 42

The standards for the most part are published in Part 15 of the ASTM Book of Standards. The following is a partial list of the ASTM standards referred to most frequently:

- ASTM D226 - Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and Waterproofing.
- ASTM D227 - Standard Specification for Coal-Tar Saturated Organic Felt Used in Roofing and Waterproofing.
- ASTM D250 - Standard Specification for Asphalt Saturated Asbestos Felt Used in Roofing and Waterproofing.
- ASTM D312 - Standard Specification for Asphalts Used in Roofing.
- ASTM D1863 - Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
- ASTM D2178 - Standard Specification for Asphalt Impregnated Glass Mat Used in Roofing and Waterproofing.

- ASTM D2626 - Standard Specification for Asphalt Saturated and Coated Organic Base Sheet.
- ASTM D3158 - Asphalt Saturated and Coated Organic Ply Felts.

Q. - What are the American standards that various elasto/plastic or single-ply materials must meet?

A. - At the present, there are no American standards for the elasto/plastic products being used in roof assemblies. ASTM Committee D08 on Roofing, Waterproofing and Bituminous Materials, however, through Subcommittee D08.18 on Polymeric Materials are now working on several standards for these products. The only known standards now used in North America are the Canadian Standards released by the Canadian General Standards Board. Two of the standards are finalized and a third is in its 10th draft due to be finalized soon. The two documents already in final form are:

- Standard for Membrane, Modified, Bituminous, Prefabricated, and Reinforced Roofing — 37-GP-56M.
- Standard for Roofing and Waterproofing Membrane, Sheet Applied, Flexible, Polyvinyl Chloride — 37-6P-54M.

The third document to be finalized shortly is:

- Standard for Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric — 37-6P-52M.





# Tech Talk

By Bob LaCrosse, CAE  
Director of Technical Services

## Important Questions Answered by the NRCA Technical Services Department, Part Two

In this, the final part of a series devoted to answering some of the hundreds of questions directed to the NRCA Technical Services area, we'll attempt to clear the air on a number of topics, including: Vapor retarders, aggregate advantages, field tests, underlayment for shingles and roofing material standards.

From time to time in this space, we'll again try to answer questions relating to the roofing industry and the many day-to-day problems confronting contractors, architects and manufacturers. Unfortunately, there is never enough time and never enough space to answer all inquiries. We do, however, encourage all interested parties to send *written questions* to "Tech Talk," *Roofing Spec*, 8600 W. Bryn Mawr Ave., Chicago, Ill. 60631. (Please, no telephone calls. Only *written questions* can be considered for inclusion in a later column.)

**Q.** - When should a vapor retarder be used?

**A.** - NRCA recommends that a vapor retarder be used whenever *both* of the following conditions are expected: When the outdoor mean-average January temperature is below 40°F, *and* when the winter indoor relative humidity is expected to be 45% or greater. When vapor retarders are used in a roof assembly, the temperature at the vapor retarder level must be warmer than the dew point. Therefore, enough insulation must be added above the vapor retarder to ensure that the temperature at the vapor retarder level is warm enough to prevent condensation.

**Q.** - What are the advantages of aggregate or gravel on a built-up or low pitch roof?

**A.** - Aggregate surfacing for built-up roofs serves the following important functions:

- It protects the felts and bitumen from the effects of sunlight.
- It increases wind uplift resistance by adding weight and rigidity to the membrane.
- It reduces the temperature load on the felts and bitumen by reflecting the sun's heat.
- It provides some fire protection.
- It increases the roof membrane's resistance to hail

and foot traffic damage.

NRCA recommends aggregate surfaced roof membranes except in the following situations: When roof loads must be kept to a minimum; when the possibility exists that aggregate surfacing materials may be blown off the roof and damage sensitive or critical equipment; where the roof configuration will not permit aggregate adherence (i.e., roof slopes over 3 inches per foot); and, on high rise building where it is difficult to get the aggregate up to the roof.

**Q.** - What generally recognized field test methods are available for testing installed built-up roof systems?

**A.** - For measuring uplift resistance, Factory Mutual Loss Prevention Data Sheet 1-52 describes two procedures. The Negative Pressure Test is non-destructive (unless the test is a failure), and employs a 5' by 5' dome and negative pressure to measure adherence of the roof system to the deck. The Pull Test is a destructive test, as it requires cutting through the roof components. The Pull Test also is not valid with mechanical fasteners and is not recommended when the roof slope exceeds ¼ inch per foot.

Three test methods are available for detecting the presence of moisture within roof installation. These methods employ the use of infrared photography, nuclear detection or measuring electrical capacitance. The equipment needed to conduct these tests is rather sophisticated and requires the operation and interpretation by trained personnel.

There are a number of tests that can be performed in the laboratory on samples obtained from completed built-up roof assemblies. ASTM D-2829 describes the sampling and testing procedures for existing built-up roof systems, and ASTM D-3617 describes the sampling and testing procedures for new built-up roof membranes.

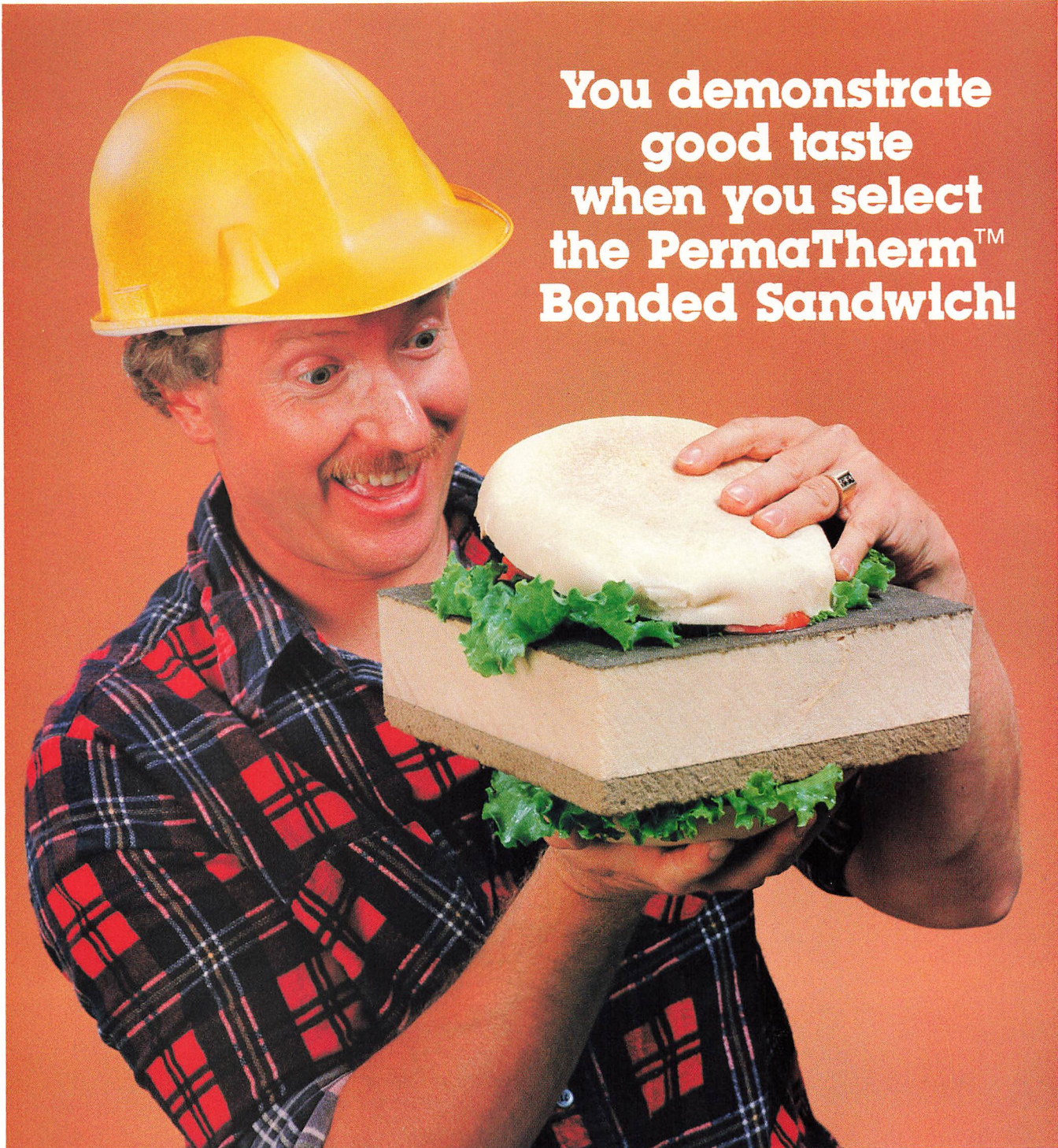
**Q.** - What are the recommended felt underlayment requirements under asphalt organic and inorganic shingles?

**A.** - When asphalt shingles are used on roofs with slopes of four inches per foot or more, one layer of minimum No. 15 felt should be applied. The felt sheets should be applied horizontally and should be lapped a minimum of two inches over the preceding felt sheet. On roofs with slopes between three inches per foot and 3½ inches per foot, two layers of No. 15 felt should be applied to the roof deck using steep asphalt or mastic to a point 24" from inside of exterior wall. This "double coverage" is accomplished by overlapping each sheet 19 inches over the preceding sheet. Asphalt shingles may be used on roof slopes between two inches per foot and three inches per foot when a hot roof underlayment or new bituminous underlayment is used. When asphalt shingles are applied over an existing roof, however, no overlayment is required as the existing roof adequately serves as the underlayment.

**Q.** - What standards must be met for materials used in built-up roofing?

**A.** - Typically, standards for roofing materials used in built-up roof assemblies are developed and published by the American Society for Testing and Materials (ASTM).

**Tech Talk** continued, page 41



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