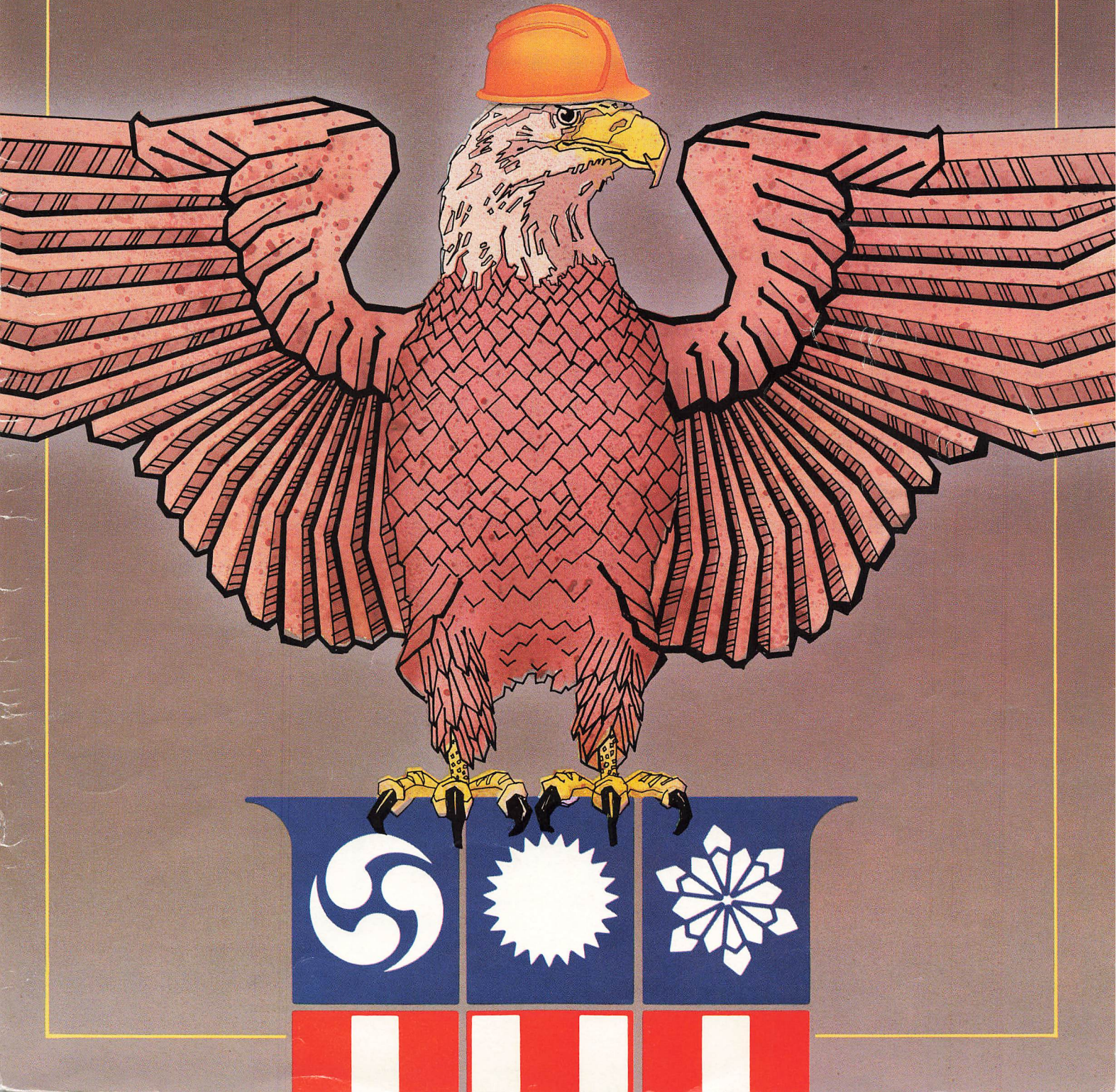


National Roofing Contractors Association

ROOFING SPEC

OCTOBER
1984
\$2.00





HERE'S A GREAT ANGLE.

NOW YOU CAN INSTALL A PRE-ENGINEERED, PRECUT TAPERED ROOF SYSTEM THAT HAS ALL THE BENEFITS OF OWENS-CORNING FIBERGLAS® ROOF INSULATION.

The Siborooftm system is an excellent choice for new roof, reroof and roof recover applications. It goes down easily, can be tapered to zero and requires no special equipment or training to install.

PRE-ENGINEERED AND PRECUT.

A modular system utilizing 3'x4' boards of Fiberglas roof insulation the Siborooft system is totally pre-engineered and precut at the factory to insure a precision fit. Each job is custom designed and tapered to fit the exacting requirements of any roof. The Siborooft system is available in slopes of 1/8", 3/16" and 1/4" per foot. All corners, regardless of angle, are precut. Crickets and saddles are simply mopped into place.

PRECISION DESIGNED.

Complete design and layout services are provided by Sibo, Inc. In a typical installation, a Sibo technician will render an accurate drawing of the roof including all drain locations. From these drawings cost estimates are made, and working shop drawings are drafted showing precise tapering detail.

READY TO INSTALL.

The system arrives at the job site poly-wrapped, palletized and identified by number to correspond to roof area installation diagrams. All material necessary to complete a specific roof area is in one place, eliminating the constant shuffle of pallets and resulting in substantial labor savings. Virtually no field fabrication is necessary.

THE ADDED PLUS.

In addition to the inherent value of the tapered roof system, Siborooft goes one step farther, offering the excellent features of Fiberglas roof insulation: lightweight, inorganic composition, dimensional stability, porous construction, impact resistance and the best base for any built-up roof.

CODE COMPLIANCE.

The Fiberglas insulation components of a Siborooft comply with Underwriters Laboratories regulations and meet with Factory Mutual approval.

FOR FURTHER INFORMATION.

To learn more about the Siborooft system and why you should use it for your next tapered roof job, write for our new brochure by filling out and sending in the coupon below. Or call Sibo, Inc. collect in Ohio at 614-443-2821 or toll free outside Ohio at 1-800-USA-SIBO.



SIBO, INC.

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Columbus, Ohio
43207



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- Please send me the Siborooft brochure.

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ROOFING SPEC

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COVER

Government actions can affect the roofing business in many ways. But with hard work and concerted action the industry can affect the government as well.

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CONTRACTORS
ASSOCIATION

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(312) 693-0700

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can sure smell sweet

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A roll of dark roofing material is shown against a blue sky with white clouds. The roll is partially unrolled, and the dark surface of the material is visible. The text is printed in white on the dark surface.

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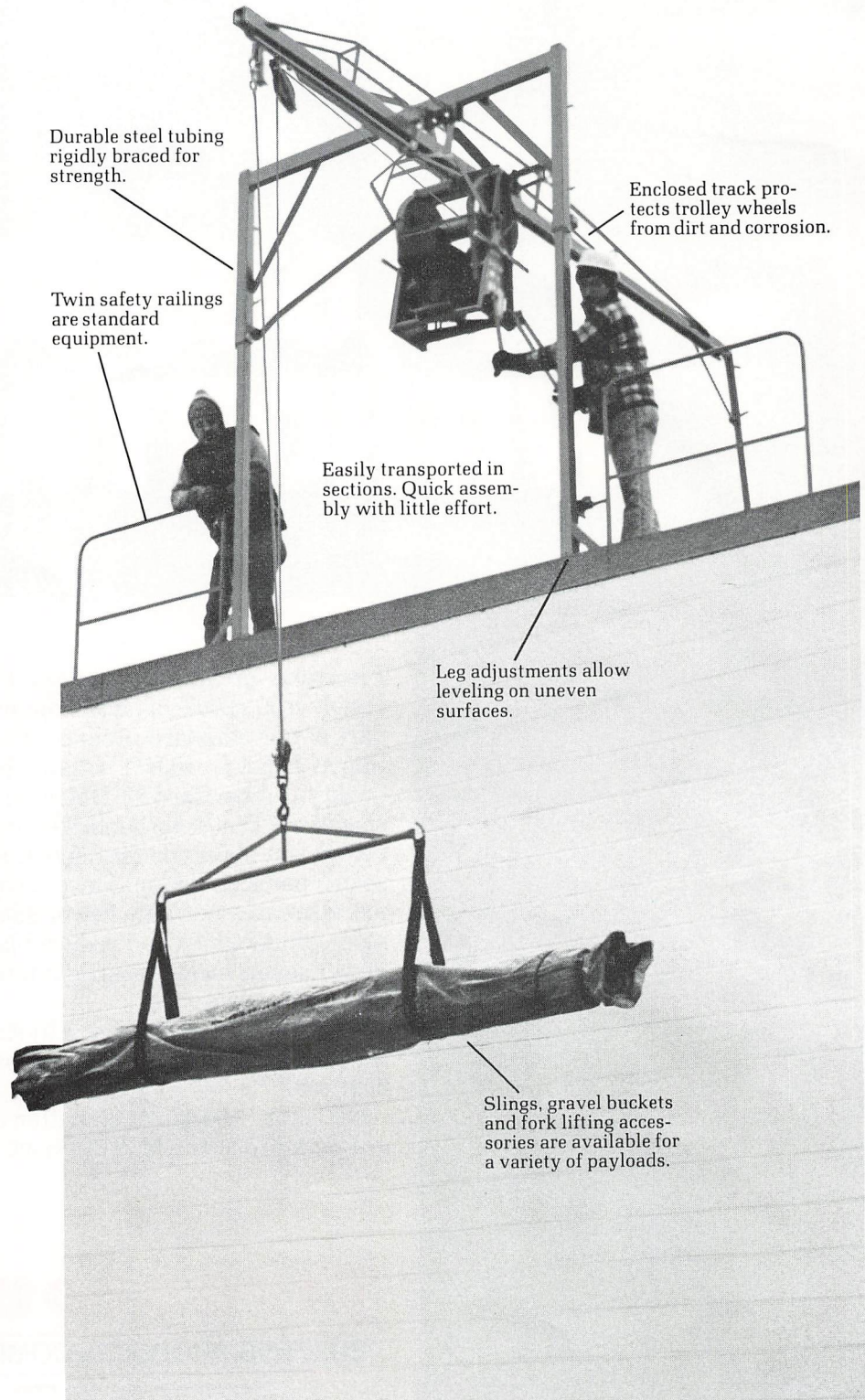
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July contracting increases despite weak housing market

Contracting for total new construction edged up 3 percent in July despite the weakening housing market, the F.W. Dodge Division of McGraw-Hill Information Systems Co. reported.

Continued strength in commercial and industrial building, along with a gain in public works projects, lifted the seasonally adjusted Dodge Index of construction contract value to 152 from June's 148. (The Dodge Index uses 1977 as its 100 base.)

On an unadjusted basis, the value of all new construction work started in July was \$19.5 billion.

"July's strong rate of contracting showed that the two-year-old building cycle is still in business," said George A. Christie, vice president and chief economist for F.W. Dodge, "but the trade-off of commercial building for housing has its limits. The non-residential building market will soon be facing some unavoidable constraints: retail construction needs more homebuilding to keep it going; office building continues to defy the law of gravity, but has nowhere to go but down.

"Unless interest rates ease soon, we are not far from the peak of the building cycle."

Contracting for non-residential building, valued at a near-record \$6.9 billion in July, advanced a seasonally adjusted 9 percent. The latest month's gain extended the sizzling pace of commercial and industrial building into 1984's third quarter, according to Dodge.

July's 12 percent increase in commercial and industrial building was led by strong rates of contracting for factories (up 22 percent) and offices (up 12 percent), Christie said.

"As is often the case whenever a big month comes along, there's an unusually large project that stands out," the Dodge economist stated. "In July, it was a \$200 million office building started in New York's financial district that headed a list of half a dozen other sizeable new office projects—all of them in the Northeast and Midwest."

New retailing facility construction (stores, shopping centers, warehouses, etc.), which had been rising

sharply all through 1983, has begun to taper off and may already be reflecting 1984's homebuilding slowdown, Christie said.

Residential building continued to sag in July. Rising mortgage costs brought the rate of single-family building below one million units for the first time in 1984. "Multi-family starts also declined, although July's volume remained comfortably above 700,000 units (annual rate), still a very strong level of condominium and apartment building," Christie said.

The value of July's newly started residential building, including non-housekeeping structures (hotels, motels, etc.), was \$9.1 billion. After seasonal adjustment, July's contracting slipped 3 percent from June's rate, bringing the current rate of building 11 percent below 1984's peak month.

July contracting for non-building construction (public works and utilities) advanced a seasonally adjusted 6 percent in a generally weak market. The latest month's \$3.5 billion (unadjusted) of new projects left 1984's 7-month cumulative total 9 percent below last year's value for the same period.

Highway and bridge construction, which has been plagued by an erratic flow of federal funding this year, rose 5 percent in July, while sewer and water projects declined. Utility construction, although up from June's very low contracting rate, remained depressed in July.

Regionally, July's 3 percent gain in total construction contracting was paced by the Northeast's 12 percent improvement. The South, with a 3 percent advance, matched the national average rate, while contracting declined 1 percent in the Midwest and 6 percent in the West.

At the end of seven months, the value of all new construction started in 1984 was \$125.3 billion, a gain of 12 percent over the same period in 1983.

Monthly Summary of Construction Contract Value

Prepared by F. W. Dodge Division
McGraw-Hill Information Systems Company

	JULY 1984 CONSTRUCTION CONTRACT VALUE (000,000)	SEASONALLY ADJUSTED PERCENT CHANGE FROM PREVIOUS MONTH
Nonresidential Building	\$ 6,895.7	+ 9
Residential Building	9,092.7	- 3
Nonbuilding Construction	3,534.2	+ 6
Total Construction	\$19,522.6	+ 3

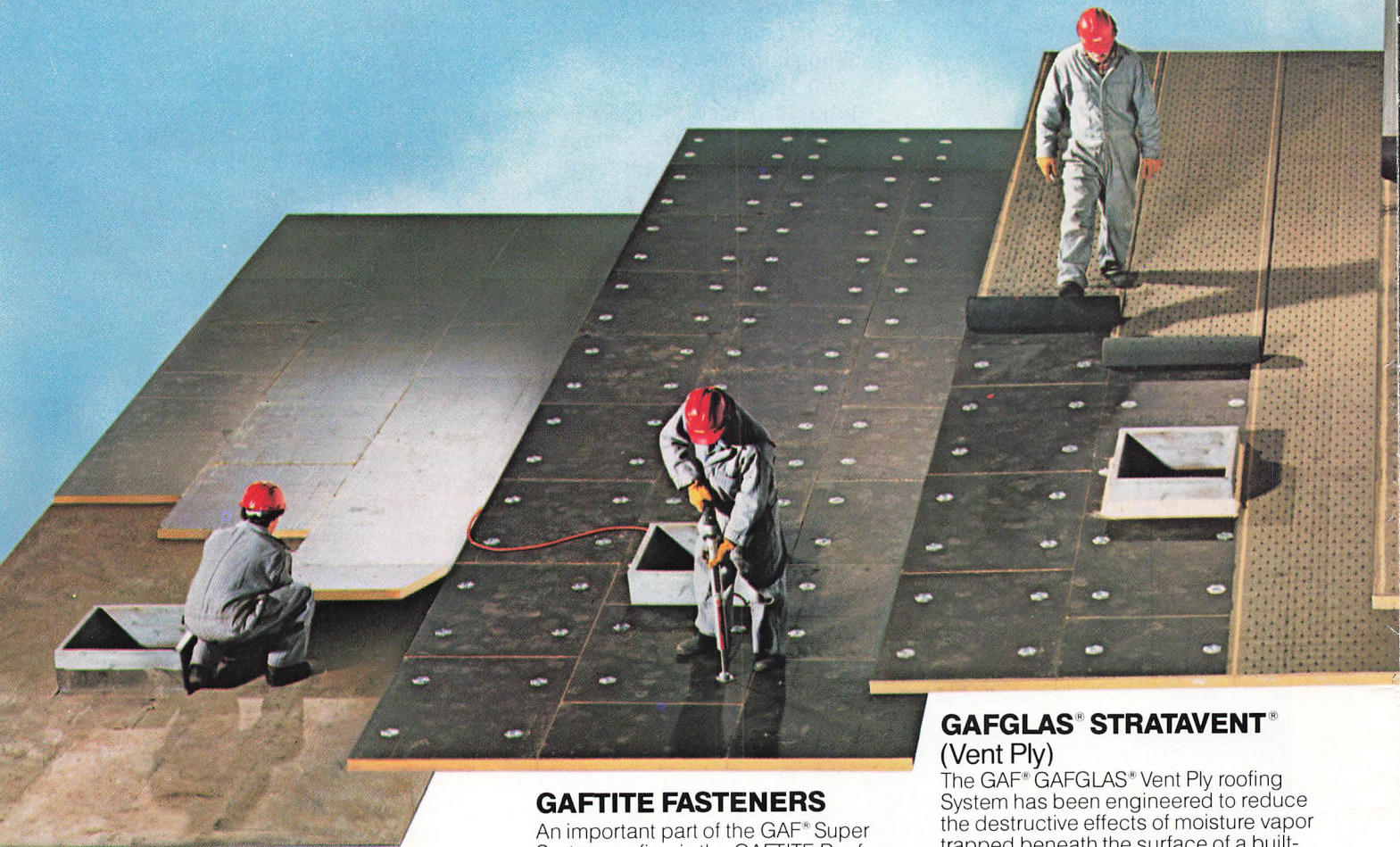
	7 MOS. 1984 (000,000)	7 MOS. 1983 (000,000)	CUMULATIVE PERCENT CHANGE
Nonresidential Building	\$ 41,709.4	\$ 34,938.1	+ 19
Residential Building	62,221.7	53,208.1	+ 17
Nonbuilding Construction	21,386.5	23,373.9	- 9
Total Construction	\$125,317.6	\$111,520.1	+ 12

Dodge Index (1977 = 100, Seasonally Adjusted)

May 1984 . . .	165
June 1984 . . .	148
July 1984 . . .	152

National News continued on page 10

WE REROOF WHAT OTHERS JUST COVER UP



GAFTEMP® INSULATION

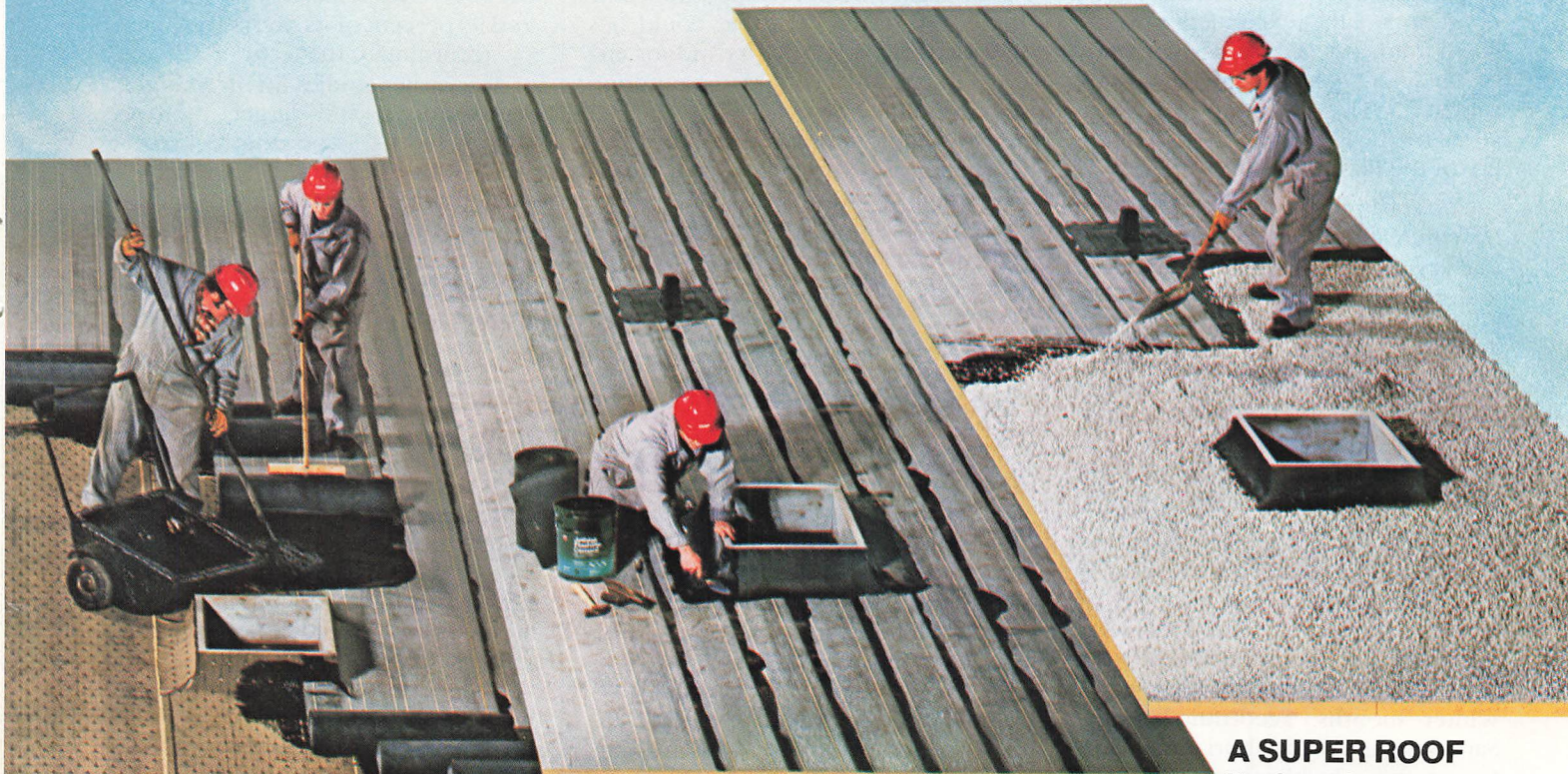
GAF offers one of the widest lines of roof insulation products in the industry. Under the GAFTEMP® name, you'll find six different insulations to choose from as the important first step of the Super System. Here, we're starting with GAFTEMP Isotherm insulation, a non-composite board made up of asphalt-coated facers bonded to a core of isocyanurate foam. No lower "U" value is available in any other FM Class I rated product of equivalent thickness. It's lightweight, easy to handle, and fast to install.

GAF TITE FASTENERS

An important part of the GAF® Super System roofing is the GAF TITE Roof Insulation Fastening System. It's the time-saving, and the money-saving, way to lock insulation down to stay. No more bitumen or other adhesives. No more hot mopping. No more nailing. 50% less labor. Quick and easy installation with half as many fasteners as most traditional nailing methods. Fewer problems during installation and after, with positive protection against wind uplift, vibration, and construction movement. Factory-Mutual Approved Systems.

GAFGLAS® STRATAVENT® (Vent Ply)

The GAF® GAFGLAS® Vent Ply roofing System has been engineered to reduce the destructive effects of moisture vapor trapped beneath the surface of a built-up roof. Granules on the underside of Stratavent Base Sheet provide venting for any trapped moisture vapor. Moisture won't rot, shrink, or expand it. It's easy to apply and can be specified for any type of roof deck. Since it's rolled out dry, it yields significant savings in asphalt and labor. Carries the U.L. Type G 2 BUR label.



A SUPER ROOF

The Super System provides many ways to finish off a roof — with GAFGLAS® Mineral Surfaced Cap Sheet, GAF® Granules, GAF® Asbestos-Free Fibered Aluminum coating, GAF® Asbestos-Free Weather-Coat Emulsion, or GAF® Special Roofing Bitumen or Roofing Asphalt and aggregate. Whichever way you choose, you'll have a Super Roof that solves problems, and not just a cover-up.

GAFGLAS® FLASHING & VENT STACKS

The best roofs deserve the best flashing — GAFGLAS® Flashing. The specially formulated long fiber glass mat and heavy asphalt coating give maximum protection from the elements and insure long lasting strength and durability. It's easy to install using GAF® Asbestos-Free Jetblack™ Flashtite Cement, the asphalt plastic cement that's unequalled for longlasting adhesion. And for maximum moisture protection, you'll want to install GAF® Vent Stacks that let warm air and vapor from the sun-heated roof out, and keep cool outside air from coming in.

GAFGLAS® PLY 4

GAFGLAS® PLY 4 glass ply roofing sheet is the superior membrane for all built-up roofs in all climatic zones. You'll like the ease of application. It's light in weight and rolls out fast, so your labor costs will be lower. It has high tensile strength, great dimensional stability, and resists blistering, fishmouthing and rot. Interply adhesion is excellent. GAFGLAS® PLY 4 roofing sheet meets Fed. Spec, SS-R-620B Type III requirements, and exceeds ASTM D2178 Type IV. It carries the U.L. Type G 1 BUR label.

Reroofing is more than just covering up an old roof with material. It requires a carefully executed plan of determining specific problems, selecting the correct products, and placing the system down with proper application procedures. At GAF, we pride ourselves in reroofing with a time-proven built-up roofing Super System. Shown here are only a few of GAF's roofing products, which also include residential asphalt roofing shingles.

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EVERY STEP
OF THE WAY

Expanded polystyrene withstands test's simulated harsh weather

When faced with severe weather conditions EPS (expanded polystyrene) holds up, according to a study by the Energy Materials Testing Laboratory (EMTL). The study was sponsored by the EPS Division of the Society of the Plastics Industry (SPI).

The study was conducted to learn how much moisture EPS absorbs under severe but realistic temperature and humidity conditions. Earlier reports by the Cold Regions Research and Engineering Laboratory (CRREL) and the National Bureau of Standards (NBS) showed that EPS, like other thermal insulations, lost its effectiveness when force-saturated with water under severe temperature and humidity conditions.

The same general design used in the earlier studies was adopted by EMTL, but testing conditions were designed to reflect weather the insulation might experience during the winter months, according to SPI. Samples were placed horizontally between two chambers, one hot and one cold, for 120 days. The samples

were subjected to temperature and humidity differences that could occur between a warm, dry indoor environment and a cold, damp outdoor environment.

No sample in the EMTL study absorbed more than .55 percent water by weight, with an average sample absorbing .2 percent, the study indicated. The absorbed moisture had little or no effect on the insulation's compressive or flexural strength and

the EPS retained between 95 percent and 97 percent of its thermal efficiency, according to the tests.

The earlier studies involved higher temperatures and larger moisture driving forces. Some samples in these studies absorbed up to 50 percent water by volume and retained only 33 percent of their thermal efficiency.

Copies of the full EMTL report are available for \$10 from SPI, 3150 Des Plaines Ave., Des Plaines, Ill. 60018.

NBS opens doors to proprietary testing

The National Bureau of Standards (NBS) has opened its doors to private industry. The Bureau is making available facilities in Gaithersburg, Md. and Boulder, Colo. for testing proprietary products and standards, it was reported in the July 23 issue of the *Federal Register*.

The move is part of the federal government's policy to improve the competitive position of U. S. firms in the international market. It is hoped that the domestic companies will be able to use

the NBS facilities to advance technology and improve productivity.

Because the Bureau's labs will be testing proprietary products, the analyses or measurements produced will not appear in the public domain and will be treated as confidential information.

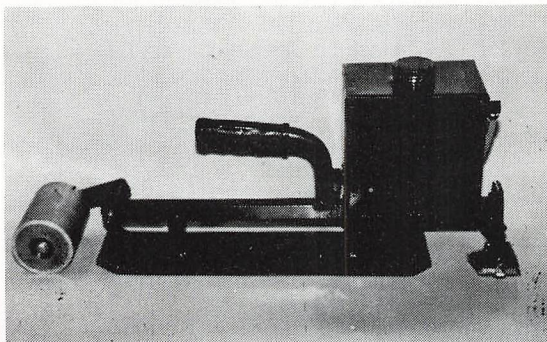
Under this program the facilities' users will pay all testing costs and will be required to follow NBS conditions and guidelines.

National News continued on page 12

SOLVENT SEAMING MADE SIMPLE

Ten reasons you should be using the Edge Seamer

1. Save 50% or more on labor costs doing gravel stops and base metal
2. Save on material, solvent stays clean in the reservoir (no more waste)
3. Eliminates possibilities of spills from open container
4. Eliminates hazards to roofers from skin contact with solvent
5. The Edge Seamer is lightweight (only 20 lbs., filled with 1/2 gal. solvent)
6. The Edge Seamer can be used either right or left handed by simply swinging the brush
7. The cloth covered skid plate absorbs any excess solvent, thus eliminating possible membrane damage
8. The solvent spreader has a built in membrane guide to give an even flow between PVC sheets
9. The heavy wheel holds even pressure on the skid plate keeping membrane's free of voids
10. The Edge Seamer is built rugged, keeping maintenance at a minimum



Get the Edge at walls, curbs, gravel stops and field runs.

Seam 30 to 60' per minute on gravel stops and base metal.

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When you have to put a new roof on an existing building, you really should think about what you are getting into.

“Remember what you are buying is the total roof, not just the roofing material, not just the roofing installation, and certainly not just the warranty; but a total roof that should last without problems for years and years.”

First of all, remember what you are buying is the total roof, not just the roofing material, not just the roofing installation, and certainly not just the warranty; but a total roof that should last without problems for years and years.

In order to get such a roof, you need a high quality membrane, high integrity seams, proper design, and a highly capable and conscientious installation contractor.

The only sure way to know if a membrane will last for twenty or twenty-five years is to look at its history of service on other buildings. With single-ply products this is pretty hard to do, since most haven't been around for that long.

“Look at its history of service... Sarnafil samples taken from 20-year-old roofs are as serviceable today as when they were installed.”

Sarnafil has however, and samples taken from twenty-year-old roofs are as serviceable today as when they were installed.

Sarnafil doesn't shrink. And, unlike other PVC products, it retains its plasticizer and original pliability.

ity. Samples taken from twenty-year-old roofs and subjected to accelerated aging tests show many years of additional life expectancy.

Seams and joints are equally important. If you have to depend on sealants, they too must have some record of service life.

And you should consider the many variables that

tant considerations on which you should have qualified technical assistance.

“Sarnafil inspects the old roof and works closely with you in the planning and engineering of your new roof.”

At Sarnafil, we work closely with you in the plan-

best warranty of all... one that you'll probably never have to exercise.

If you'd like more information on Sarnafil roofs, write Sarnafil (U.S.) Inc. Canton Commerce Center 100 Dan Road Canton, MA 02021. (617) 828-5400



“Sarnafil single-ply roofing doesn't ask you to take anything on faith... its performance has been proved in twenty years of actual service.”

affect the integrity of field joints such as talc on the

“Sarnafil roofs don't use joint sealants. They are hot-air welded... creating a joint that is stronger than the membrane itself.”

sealed surfaces, moisture, temperature, and the shelf life of the sealants.

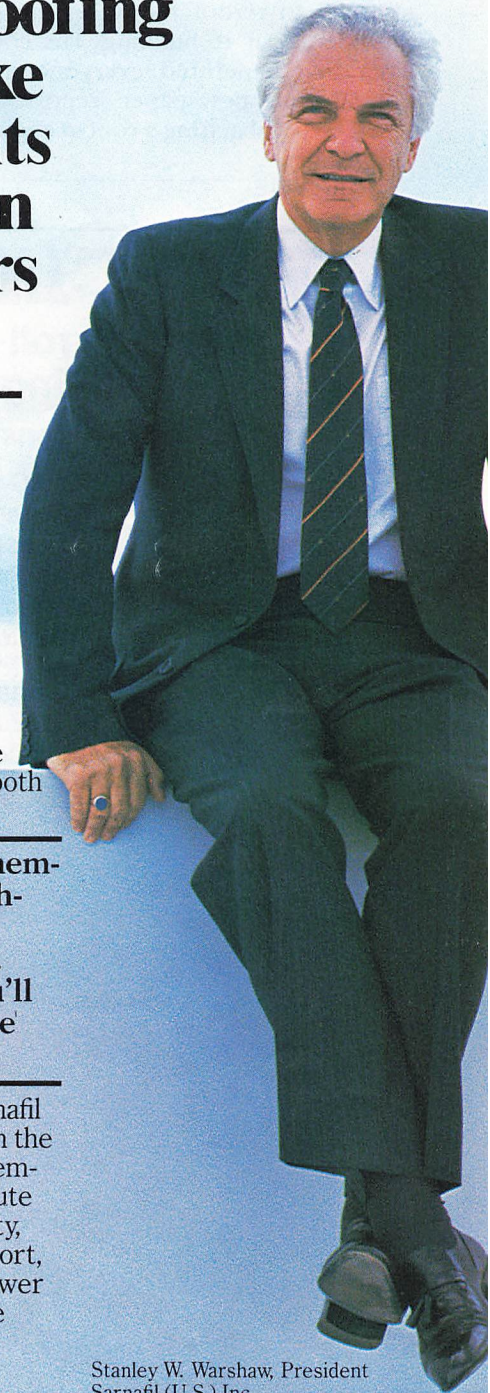
Sarnafil roofs don't use joint sealants. They are hot-air welded by a process that fuses both surfaces together, creating a joint that is actually stronger than the membrane itself.

But even with a high quality membrane and high integrity seams, you still aren't out of the woods. Design factors, such as building dynamics; wind uplift; vapor transmission, which varies from climate zone to climate zone; load bearing; and the treatment of penetrations, are impor-

ting and engineering of your roof, inspect the old roof, make sure that the surface is properly prepared, train, certify, and thoroughly support our Sarnafil qualified contractor during the installation. And inspect and approve the finished roof before issuing a warranty on both materials and labor.

“You get the best membrane, the best technical support, the best installation... and a warranty you'll probably never have to exercise.”

When you buy a Sarnafil roof, you get more than the world's best roofing membrane... you get absolute leakproof seam integrity, the best technical support, the best installation, lower lifetime cost... and the



Stanley W. Warshaw, President Sarnafil (U.S.) Inc.

Sarnafil®

“Living up to the promise of single-ply roofing”

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Unions cooperate to reroof Local 46

In the shrinking and highly competitive union market, two unions have found that cooperation can sometimes be the most effective way to get the job done.

According to the Rochester, N. Y. *Democrat and Chronicle*, a dozen apprentices of the local roofers' and sheet metal workers' unions joined together to reroof the Sheet Metal Workers Local 46 building. The collaboration benefitted everyone involved, the newspaper reported, with the Local getting a roof at about

a quarter of the cost and the union apprentices getting much needed experience.

The building was roofed with solvent-welded, loose-laid Trocal, a single-ply PVC manufactured by Dynamit Nobel of America. The company supplied the material with the standard guarantee at half cost, bartering its product for the publicity the job would generate.

A roofing contractor, studying sheet metal work at the Local building, saw the need for reroofing and came up with the unique collaboration. Rick Collins, owner of R.C. Roofing and Sheet Metal Corp., had

his drawings ruined by the leaky roof while sitting in class one evening.

"I got disgusted," Collins said, "Here I was a roofing contractor, so I went up to look at the roof and realized it would be easy to put on this system."

Collins achieved the cooperation not only of Trocal and the sheet metal workers for the project but other suppliers as well. One company donated the gravel ballast and another supplier provided the insulation at cost.

Houston studies prevailing wages

Houston may be computing its prevailing wages differently if a study commissioned by the city council suggests the change. The study will explore the possibility of combining union and non-union wage scales to determine prevailing wages for municipally funded projects.

Previously, wage rates for municipal projects followed the rates established for federal projects by the Davis-Bacon Act. Last year, however, Houston unions agreed to a 15 percent wage reduction on municipal projects to bolster failing union strength.

In spite of union conciliations, the Associated Builders and Contractors (ABC) began lobbying the city council to use a weighted-average approach to figuring prevailing wages. The Association is hoping this new study will promote lower wage rates more in line with what open shops in the Houston area are paying. About 70 percent of the contractors in the Houston area belong to the open-shop ABC.

Although the Houston-Gulf Coast Building and Construction Trades Council is opposed to the weighted-average method it has agreed to participate in the study.

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PAC-CLAD PANELS

precision roll formed batten and standing seam systems

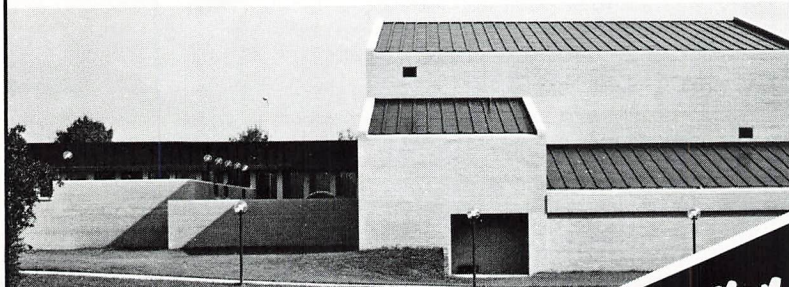
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This certificate is awarded only to experienced, carefully selected roofer who have been trained in the application of BRAI modified asphalt membrane.

GET A PROFESSIONAL ROOFER — AND **brai**[®], THE ROOFING THAT COMES IN A ROLL.

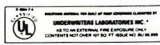
brai[®] is the leading modified asphalt roofing preferred by professional roofers.

Only those roofers who have proved their reliability are eligible for U. S. Intec training and approval. By selecting one of these professionals, you assure yourself of the finest roof modern science and engineering can supply.

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Subject to the conditions of approval as indicated on the Report #104647-AS

See ICBO Report No. 1062 and National Research Council Report No. 1010-22 for details on preparation, use and conditions presented in these documents. They are subject to examination, revision and possible cancellation.

NRCA urges senators urged to curb unfair utility competition

A letter sent by NRCA to selected U.S. senators urges passage of legislation that would protect roofing contractors from unfair utility company competition.

The letter, authored by Ken Nyquist, director of NRCA's Government Relations, states that some utilities have moved into the residential and commercial roofing markets. "In some areas these well-financed conglomerates have become overnight competitors in a marketplace that has traditionally been serviced by small business contractors," the letter states.

The utilities are using their federally-mandated energy audits to gain an unfair advantage, the senators are told. The companies are performing the roofing work recommended in their audit reports.

"The utilities operate with a ready and familiar customer base," the letter says. "Their energy audit technicians easily double as building fix-up salespersons."

A bill has been passed in the House of Representatives that protects small businesses from these abuses. The bill enables state governments to moni-

tor a utility's audit program. If a public hearing determines that the utility's roofing activities affect the marketplace adversely, the state has the power to correct the situation under this legislation.

"We would like the Senate to concur with what the House characterized as small business protections," Nyquist's letter urges.

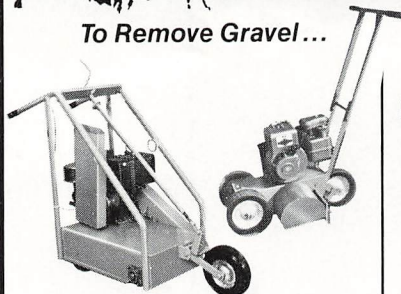
National News continued on page 17



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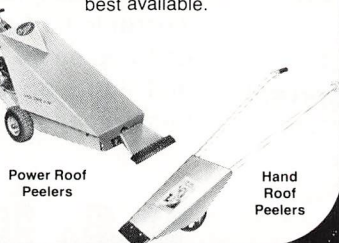
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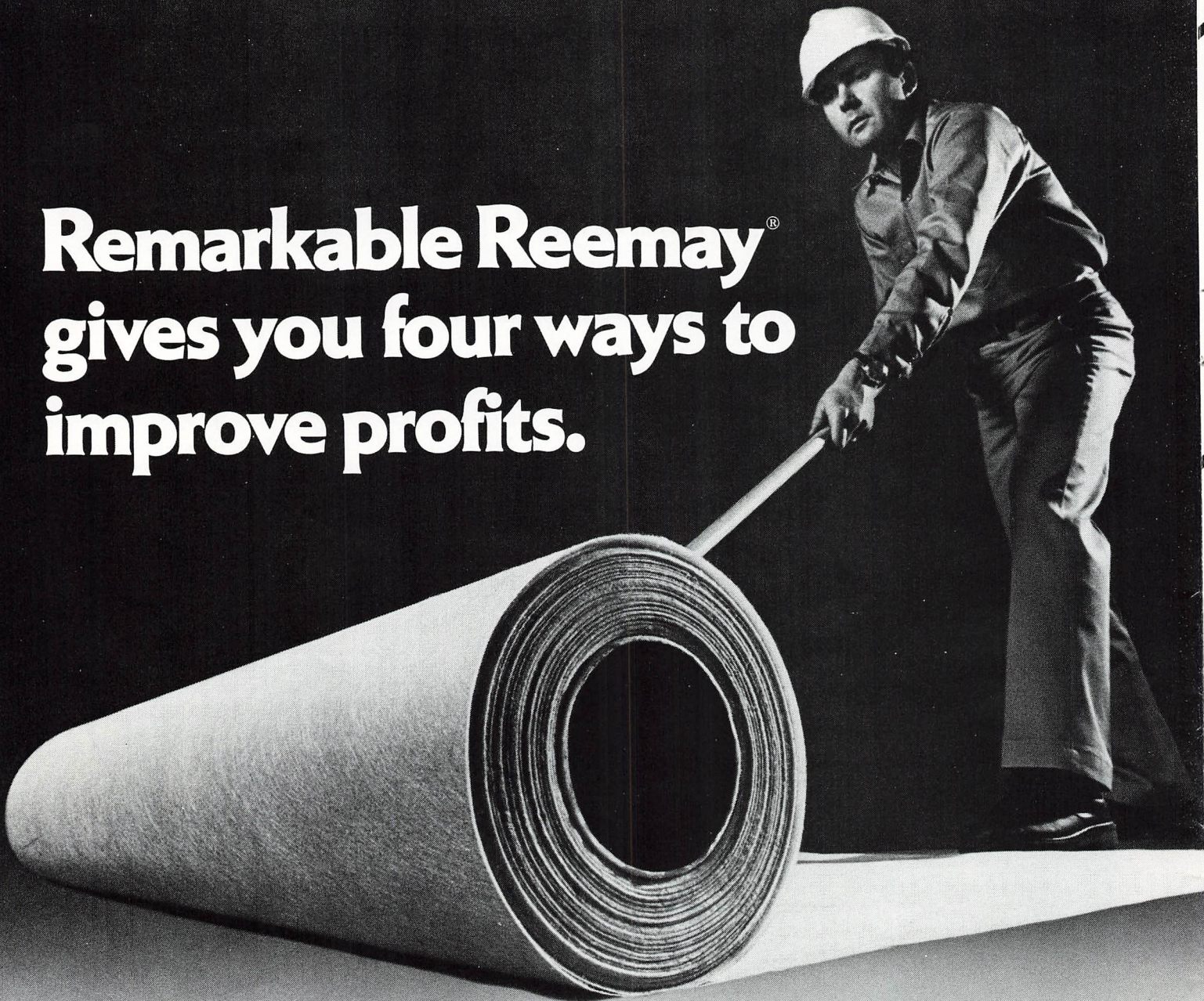
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DiversiTech General raises price of GenSeal PVC roofing by 8 percent

Another single-ply manufacturer has raised its prices. DiversiTech General's Building Systems Division increased the cost of its GenSeal PVC roofing membrane by two cents per square foot. Component costs are now 8 percent higher. The price hikes have been effective since Oct. 1.

On Aug. 1, the company raised its GenFlex price 1 1/2 cents per square foot. Higher labor and raw materials costs made the second price increase necessary, according to the company.

DiversiTech General is a division of GenCorp, formerly the General Tire & Rubber Co.

AGC president praises unions' constraint

Temperate unions have helped the construction industry recover in spite of rising interest rates, according to Doug Pitcock, president of Associated General Contractors of America (AGC), a *Construction Labor Report* article states.

Pitcock cited wage freezes and reductions, settlements tied to productivity, the decline of craft leapfrogging and the elimination of outmoded work rules as ways the unions have cooperated with contractors.

The unions' acceptance of open-shop employers was also praised by

Pitcock. Sixty percent of AGC's members, including Pitcock's company, are open shop.

"The praise I extend to current union leadership has been earned by its willingness to adjust to change and to make the employers who hire union members more competitive with those of us who do not," Pitcock said.

National News continued on page 19

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Trade library opens in Illinois

One of the largest private construction libraries in the Midwest has been opened in Downers Grove, Ill.

The Independent Contractors Association (ICA) of Illinois has established a library to meet the contracting industry's needs. The facility holds more than 350 publications and periodicals donated by trade publishers.

"The library is expected to expand to more than 1,000 volumes by 1985," Chris Kiscellus of ICA says. Kiscellus is requesting donations of new books, periodicals and magazines from publishers to meet that goal.

The library's services are available to contractors, suppliers, attorneys and other professionals. "We extend the invitation to use our new facility to other trade associations, not-for-profits and community organizations that serve the construction industry," says Linda Rebottini, Public Relations.

The library is at 6400 Woodward M in Downers Grove.

National News continued on page 20

DON'T COUNT ON THIS ALONE TO SAVE YOUR LIFE.



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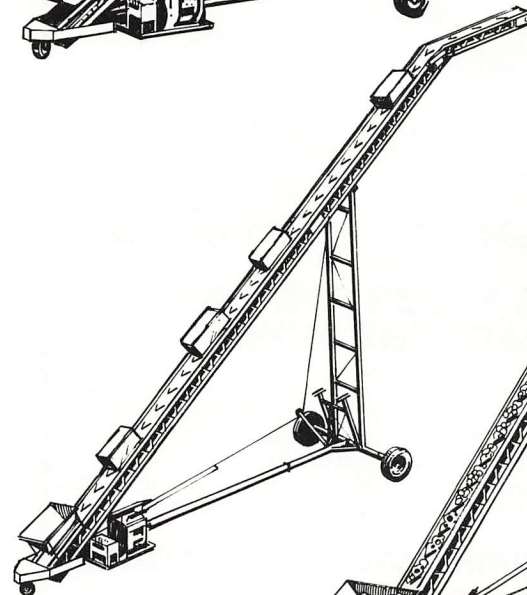
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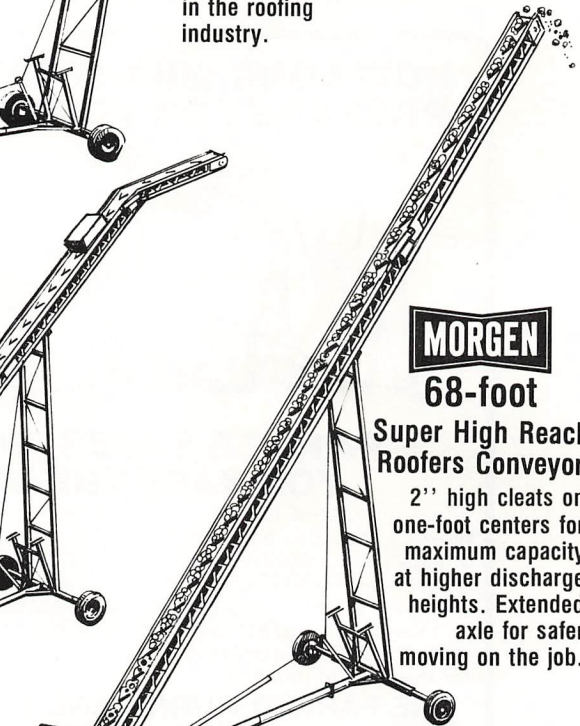


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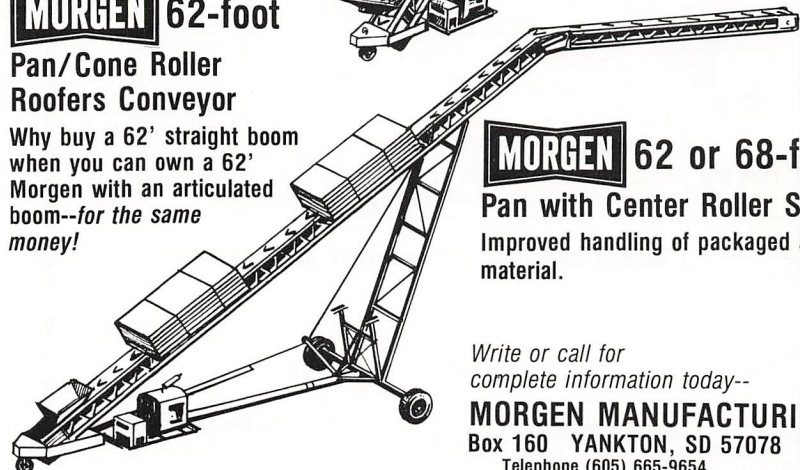


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RIEI elects new Board members

New officers and three new members have been elected to The Roofing Industry Educational Institute's (RIEI) Board of Regents.

John W. Ricketts, vice president of Tamko Asphalt, was elected chairman of the Board. Ricketts served the Board most recently as secretary/treasurer. John Stenson, staff engineer with General Motors Corp., was elected vice chairman and Donald McNamara, president of E.J.A. Christiansen Roofing Co., was elected secretary/treasurer. The newly elected officers, along with the immediate

past chairman, Gregory Faherty, will make up the RIEI Executive Committee.

Johnny Zamrzla, past president of NRCA and president of Western Pacific Roofing Corp., was elected to serve on the Board. He was chosen along with John A. Danneker, vice president and general manager of Construction Products Division, W. R. Grace & Co., and Justin Henshell, AIA.

The three new members will serve on the Board for four years. The 12-member Board meets twice each year with the various committees meeting more frequently. The Board determines the overall policy for RIEI.

AFL-CIO unhappy with OSHA head

The AFL-CIO is unhappy with the past record of Robert Rowland, named as head of the Occupational Health and Safety Administration (OSHA), according to *The Wall Street Journal*.

Rowland was chosen to direct OSHA in a recess appointment last July. He was previously chairman of OSHA's review commission. In that position Rowland was soft on OSHA offenders, an AFL-CIO study says. The chairman supported the upholding of only one OSHA ruling in the 20 cases reviewed this year. Employers saw his reign as an open invitation to appeal OSHA rulings, according to the study.

Rowland was not available to reply to the charges personally, but an OSHA spokesperson said the agency leader feels "maligned" by such criticism.

Asbestos abatement courses planned

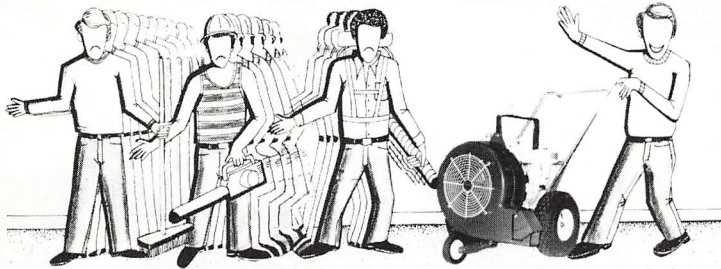
Training courses have been scheduled in various cities by the Association of Wall and Ceiling Industries (AWCI) to cover all aspects of asbestos abatement. The courses were instituted by AWCI in response to growing public and governmental concern over asbestos hazards.

Each 2 1/2-day course examines asbestos abatement from discovery to elimination. It is possible for participants to take an examination at the end of the course that will certify them for pre-qualification purposes.

A schedule of course times and locations will be included on *Roofing Spec's Coming Events* page.

For additional information contact AWCI, Technical Department-Asbestos, 25 K St., N.E., Washington, D.C. 20002; phone 202/783-2924.

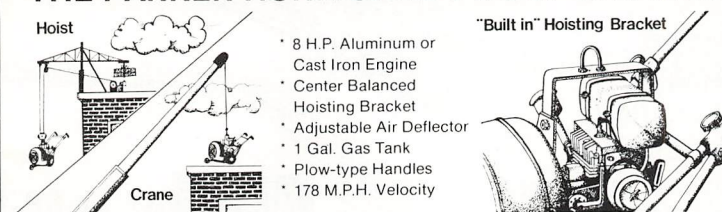
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National News continued on page 22

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Housing starts up but will taper off

Construction of new housing units rose 13 percent in the first half of 1984 from the same period in 1983, according to the F.W. Dodge Division of McGraw-Hill Information Systems Co. New housing starts from January through June totaled 931,600 units, up from 824,748 during the same months of 1983.

Phoenix led the nation in new housing units, with a total of 30,905 in the first six months of 1984. This represents a 27 percent gain over the first half of last year. Dallas ranked second, although its total housing declined 16 percent from last year's housing rate.

The other top 10 metropolitan statistical areas for new housing construction in 1984's first half were: Atlanta, Washington, Houston, Tampa-St. Petersburg-Clearwater, Fort Worth-Arlington, Los Angeles-Long Beach, Riverside-San Bernadino and San Diego.

In the second quarter of 1984, the number of new housing starts in the U.S. amounted to 529,024, a 9 percent increase from the 486,525 units of last year's second quarter.

This year's housing boom may not persist, however, according to a Cahners Publishing Co. market forecast.

"The housing recovery is now past its peak level of activity," said James W. Haughey, director of Cahners Economics Service. "We expect the decline in new home building, both single-family and multi-unit, to continue into 1985.

"The slowdown for housing expected in 1985 will be nowhere as severe as in 1981-82. In 1985, we expect housing starts to be 1.6 million units, versus the slightly more than 1 million units in 1982."

The forecast predicts that housing starts will decline about 11 percent from the 1.8 million expected in 1984. Total housing starts in 1985 will be a little more than 1.6 million units.

New home sales will also decline about 10 percent next year, according to the report. Sales of existing homes will decline from 1984's projected 3 million to 2.6 million in 1985.

The forecast also predicts that rising interest rates and higher new home prices will force buyers to purchase smaller homes with fewer amenities.

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From the start.
Because your track
record counts for
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this business."***

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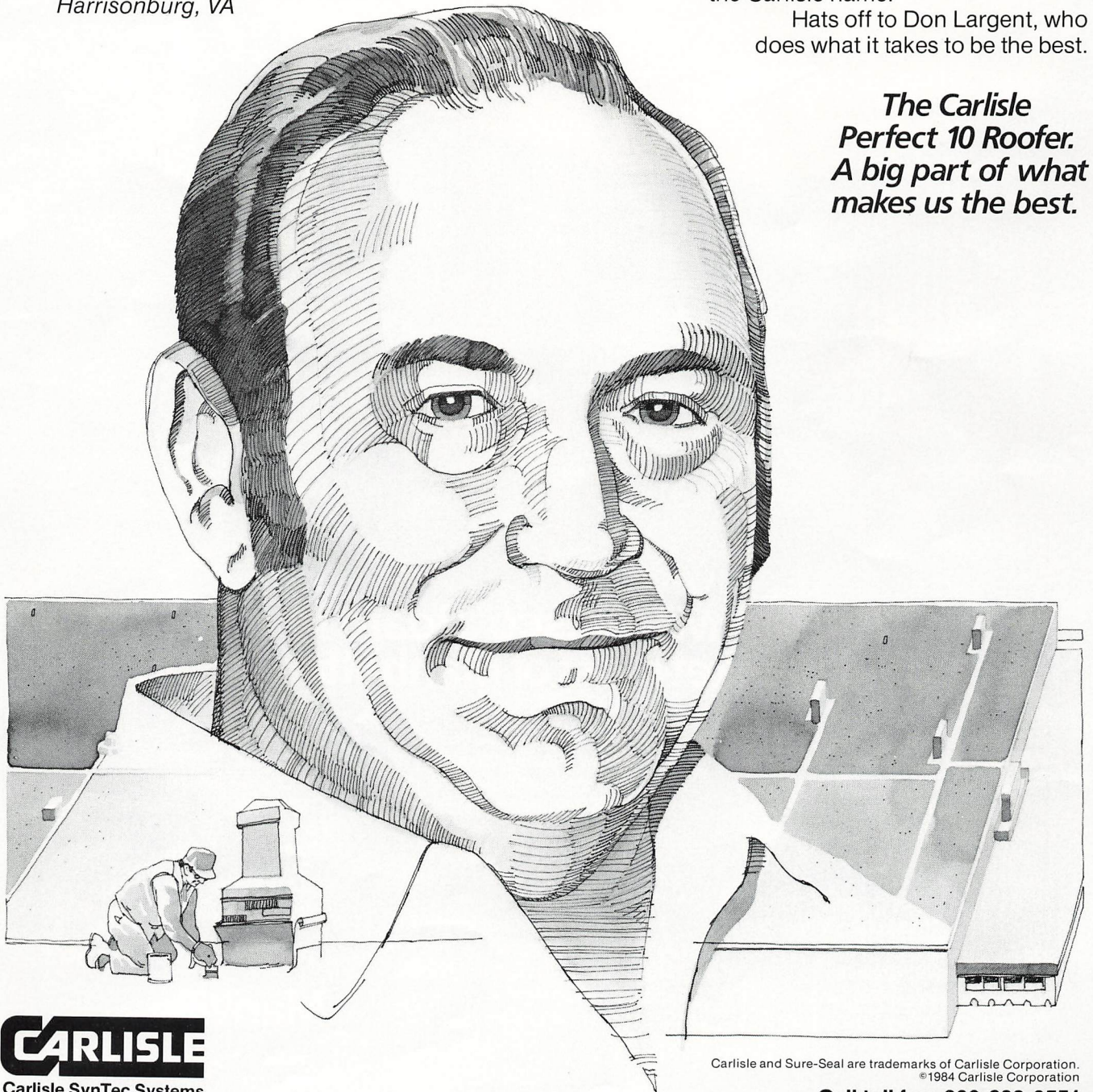
It's this winning philosophy that puts Don Largent at the very top of the roofing trade.

Ever since he opened his business in 1948, Don's commitment to quality workmanship—from the start—has paid off. In 1982 Don received Carlisle's first PERFECT 10 award for 50 perfect Carlisle Sure-Seal® roofing installations as judged by Carlisle's meticulous technical inspectors. Today he's forged past the 100 mark.

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Hats off to Don Largent, who does what it takes to be the best.

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Since we began making Fesco Board in 1959, more than six billion square feet have been used on the roofs of America. Enough to cover all of Manhattan Island, except for Central Park. And we wouldn't want to cover that.

Here's convincing proof of the popularity of this versatile, reliable roof insulation board among specifiers and installers.

Originally specified for its thermal efficiency, Fesco Board

has come to be used more for its dimensional stability. Its rigidity and ability to resist compression. Installation without joint taping. Excellent mopping surface. Fire resistance. All the features required for a sound, solid substrate for built-up roofs.

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Buildex relocates to Itasca, Ill.

Buildex, a division of Illinois Tool Works, Inc., has recently relocated to a new larger facility in Itasca, Ill. The company will use the extra space to house administrative, sales, marketing, engineering, manufacturing and warehousing activities.

The new facility is situated on six acres near Chicago's O'Hare Airport. It will provide increased distribution capabilities for the company's network of distributors and construction industry customers.

The new Buildex address is 1349 W. Bryn Mawr Ave., Itasca, Ill. 60143.

CertainTeed closes five roofing plants

CertainTeed Corp. is consolidating its roofing production into four major manufacturing facilities.

"This move enables the company to concentrate its efforts in those markets where industry demand is strong," said Richard A. DeCoste, president of the Shelter Materials Group. "We will continue to be a major factor in the north central, lake central, middle Atlantic and southern regions of the country."

These areas will be served by larger, more efficient roofing plants in Shakopee, Minn.; Avery, Ohio; Oxford, N.C. and Savannah, Ga.

On July 25, the company announced its plans to phase out roofing production at its plants in Richmond, Calif.; Tacoma, Wash.; Dallas, Texas; Chicago Heights, Ill. and York, Pa. These facilities accounted for less than 30 percent of CertainTeed's roofing sales.

CertainTeed will continue to manufacture and distribute its other product lines in their current markets, according to the company.

Good Housekeeping gives Celotex seal

A collection of Celotex Corp. products, including shingles and insulation, has earned the Good Housekeeping Seal, according to Louis E. Porterfield, publisher of *Good Housekeeping* magazine.

The Seal was awarded to Celotex's Thermax and Tuff-R foam insulation boards and the company's line of

fiber glass asphalt shingles.

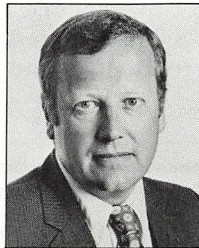
"We are proud to have our consumer products bear a seal that evokes such recognition and consumer confidence," said Frank S. Burgen, president of Celotex.

GAF promotes Frankoski, Hibbits

The Building Materials Division of GAF Corp. has named Stanley P. Frankoski director of research and development and Noreen E. Hibbits marketing services coordinator.

Frankoski began his 12-year career with GAF as a research chemist, manager of analytical research services physical testing and manager of quality assurance.

Hibbits will coordinate advertising and public relations activities for the Building Materials Division. She has been with GAF for five years in transportation and supply positions.



Dow Chemical buys into Insulcrete

The Dow Chemical Co. has purchased 50 percent of the available stock of Insulcrete, Inc. The two companies are planning a joint marketing effort for the Insulcrete exterior wall insulation and finish system.

This hard-coat wall system includes Dow's Styrofoam® brand insulation and a polymer-cement coating produced by Insulcrete.

Dow and Insulcrete will be integrating sales forces and promotional efforts. Insulcrete will assemble a nationwide network of contractors approved to install the wall system.

According to Dow commercial director, Larry Atkins, the move is part of Dow's effort to further expand its role in the construction industry.

Associate News continued on page 26

And our systems cover just about everything.



When you choose Manville, you have a choice of 3 systems.

Our built-up roofing system gives you base and finishing felts, insulations based on Fesco® Board and thermally efficient foams plus a complete line of cements and coatings.

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And these three systems work with our line of accessories—expansion joints, fascias, drains and solar-operated roof vents.

You can't miss with Manville systems. Because we cover everything.

Manville

Sarnafil promotes Muller to senior vice president

Sarnafil, Inc. has announced the promotion of E. Michael Muller to senior vice president. Muller will be responsible for the manufacturing, finance and administrative functions of the company.

Muller, who originally joined Sarnafil in 1980, supervised construction of the company's manufacturing facilities in Canton, Mass. and has been responsible for all manufacturing operations. Before joining Sarnafil, he served as plant manager for Union Carbide and Tenneco, Inc.

Vidozzi named technical director at American Roofing Corp.

The American Roofing Corp. of Chicago has announced the appointment of Dr. Pino G. Vidozzi as technical director. Vidozzi is a native of Mariano Del Friuli, Italy. He holds doctorate degrees from Trieste University, Italy and McGill University, Canada.

The American Roofing Corp. manufactures modified bitumen roofing materials. Vidozzi will be responsible for finished product quality control. He will also be in charge of product research.

Lanctot appointed Gardner director

Edmund W. Lanctot, Jr. of Gardner Asphalt Corp. has been appointed director for 1984-85 of the Roof Coatings Manufacturers Association (RCMA), according to John E. Messervey, executive director of the Association.

Lanctot, vice president of marketing for Gardner Asphalt, was elected to the post at the Association's national convention in San Diego.

The RCMA provides professional seminars and workshops for its membership and also acts as an industry liaison with other national builder associations.

Gardner Asphalt Corp. manufactures a full line of asphalt-related products for both residential and commercial uses.

UC Industries appoints Hess, Lowman sales representatives

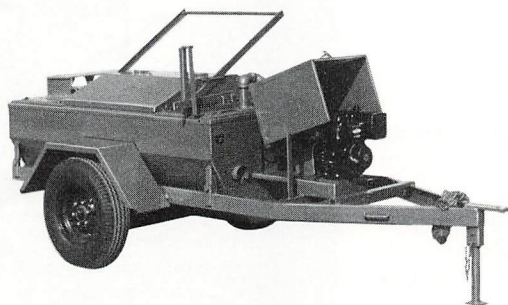
UC Industries, manufacturer of Foamular extruded polystyrene insulation, has announced the appointments of John J. Hess as sales representative for the company's eastern Massachusetts, Rhode Island, New Hampshire and Maine sales territory, and Frank R. Lowman as representative for the company's Chicago and northern Illinois territory.

Hess has several years' experience in the building materials industry and was previously employed by a laminated wood manufacturer whose products are used in the residential housing market.

Prior to joining UC, Lowman was employed by a roofing company. He attended Northwestern University, Chicago, Ill.

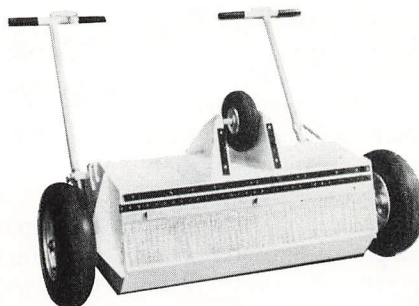
UC Industries is headquartered in Parsippany, N. J. with manufacturing facilities in Tallmadge, Ohio and Rockford, Ill.

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Leigh names Glaze sales force head

Leigh Products has appointed Robert Glaze national sales manager.

He will head Leigh's sales force, develop sales programs and provide direction for Leigh regional managers.

Glaze was previously Leigh's south-eastern regional manager.

Cooley promotes two in sales

John Smith, vice president/general manager of Cooley Roofing Systems, Inc., recently announced the promotions of Steve Seiner to sales service manager and Ron Walker to western regional sales manager.

Seiner will provide information on pricing, shipping, orders, general sales service and follow-up to all Cooley customers. He previously held manufacturing positions at Cooley.

Walker, whose territory includes California, Nevada, Oregon and Washington, will be headquartered in Santa Anna, Calif.

Pittsburgh Corning names two VPs

The Board of Directors of the Pittsburgh Corning Corp. has selected Richard C. McPherson, Jr. as vice president, human resources and Jon G. Chase as vice president, sales and marketing.

McPherson, who joined Pittsburgh Corning in 1973, will supervise all company industrial and labor relations. Chase joined Pittsburgh Corning last year. He will be responsible for company sales and marketing in the U.S. and Canada.

Kalbas appointed Carlisle sales VP

H. Joseph Kalbas has been appointed vice president of sales for Carlisle Syn-Tec Systems, according to Hugh C. Kenney, executive vice president for marketing and sales.

Kalbas will be responsible for Carlisle's national sales organization, including the company's regional sales offices and distribution centers. He will also direct the company's independent sales representatives.

Associate News continued on page 27



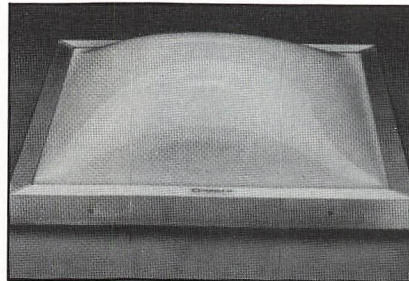
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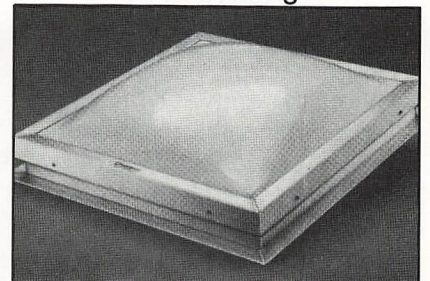
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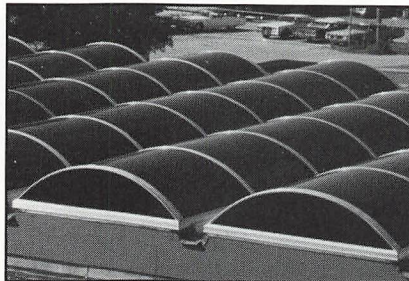
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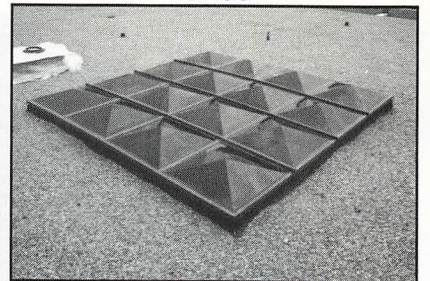
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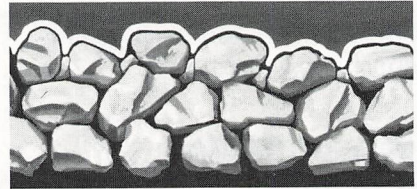
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Florida contractors elect officers and honor members

The 62nd Annual Convention of the Florida Roofing Sheet Metal & Air Conditioning Contractors Association, Inc. (FRSA) brought about several changes in the organization's administration.

Frank Jenkins, J.M. Montgomery Roofing, Miami, was installed as 1984-85 president. Don Springer, Springer Peterson Roofing & Sheet Metal, Lakeland, became chairman of the board; Glenn Warren, Tack & Warren, Clearwater, became president elect; Elva Mimbs, CPRC, Aquaproof Roofing, Bradenton, became vice president and Brad Bowen, Bowen & Son Roofing, Sebring, became secretary treasurer.

In addition, outstanding FRSA members were honored at the meeting. George W. "Bill" Tucker, CPRC, Marion Heating & Roofing Co., Ocala, was awarded the Bob Campanella Memorial Award for his broad range of service to FRSA, community groups,

government agencies and the roofing industry. Harley Force, Jr., Daytona Sheet Metal, Daytona Beach, was elected a life member of the Association and Bob Guest, Adams & Beagles Roofing, Hialeah, and Ed "Leaky" Walker, Walker Roofing, Homestead, were elected to honorary memberships.

Affiliates urged to register voters

NRCA's affiliate members are being urged to help with voter registration, according to Ken Nyquist, director of NRCA's Government Relations Department.

In a letter sent to affiliate executives, Nyquist invites affiliates to join in a white-collar voter registration drive. "Reports from around the country indicate voter registration will be a critical aspect of the 1984 election," Nyquist says in the letter. "American business must do its share."

The executives are being asked to organize informational meetings for their members' management and administrative personnel. In these meetings the contractors will tell their staffs about the importance of voting and help all those who need to register.

"Two years ago, 42 percent of all white-collar employees in American business did not vote. That means there's a tremendous pool of potential voters in every office, including NRCA contractors' offices. Their votes are needed in 1984," Nyquist tells the affiliates.

By participating in the drive, affiliate executives won't simply be fulfilling their civic duty, however. They will also be competing in a contest that will send the winner and another person of his or her choice to an NRCA 1985 legislative conference in Washington, D.C. The executive of the affiliate with the greatest membership percentage holding registration meetings will receive airfare, hotel accommodations, meals, ground transportation, registration fees, taxes and gratuities for the trip.

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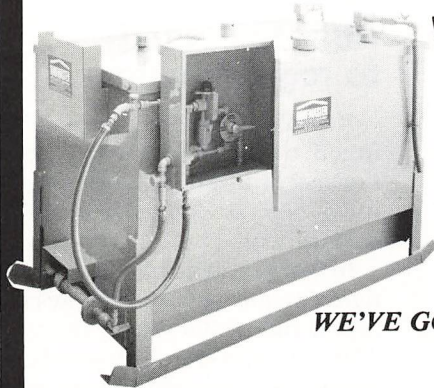
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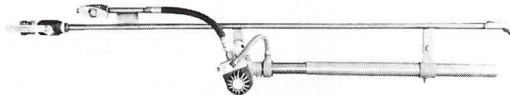
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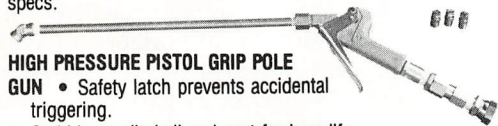
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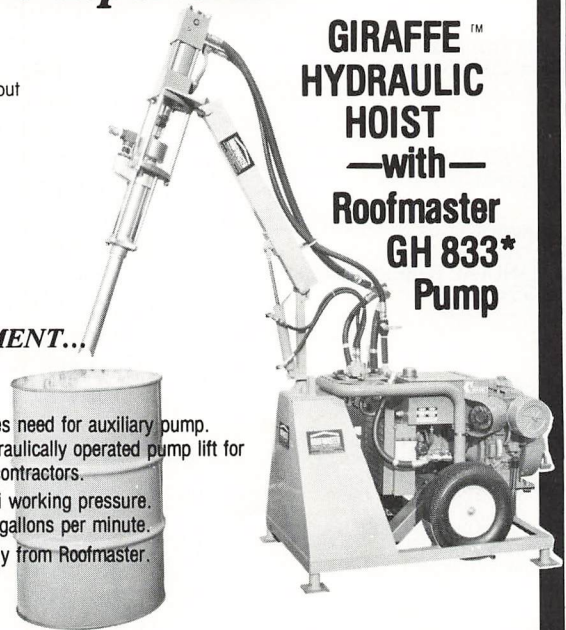
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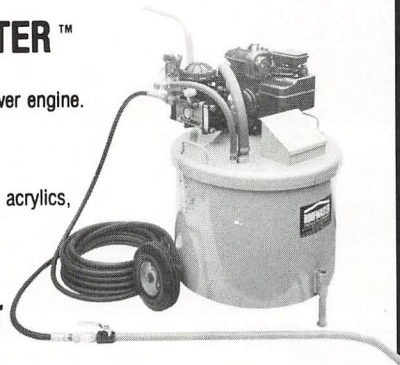
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Taking a Good look: roofing and the political climate

Washington, D.C. is 616 miles from the Beyer Roofing Co., Inc. in Saginaw, Mich. It is 768 miles from Columbus, Ga., where the Alco Roofing Co., Inc. has its offices. And employees of Helen Griffith's Griffith Roofing Co. in Beaverton, Ore. would have to travel 2,838 miles to reach the Land of the Lawmakers. But distance becomes irrelevant in light of the impact legislators' actions have on all of these businesses.

As Rep. Guy Vander Jagt said at the NRCA Legislative Conference this year, "The decisions we make here on the Hill will affect your businesses more than the decisions you make in your own companies." In an effort to help NRCA members better understand these decisions, *Roofing Spec* interviewed Executive Director Bill Good about the upcoming national elections, the economic outlook for the business community and pending legislation that will affect the construction industry.

Win one for the Gipper

"I think the number one issue in the presidential race is the U.S. economic policy," Good states. "The average person cares about the federal deficit to a surprisingly high degree."

"Look at the 1980 presidential campaign. Reagan gained a lot of strength with

Forecast: partly cloudy

By Christine Nolen Taylor

his campaign against the deficit; the Democrats were trying to defend it. It's rather ironic that Reagan is now in the position of having to defend these expenditures," he comments.

In spite of this, Good believes Reagan will be re-elected.

"People vote for presidents for a lot of reasons," he says. "Union job security is arguably better than it was four years ago. There's more work being done."

"Political history teaches us that when times are good, as in our current recovery, it's very difficult to defeat an incumbent."

Interesting outlook

Good believes that certain events are inevitable and do not depend on whether a Democrat or a Republican is in the White House.

"Interest rates have got to go up. It's got to happen, if not in the next year then in the next three or four years," he says with certainty. "The best bet today appears to be that we will continue in this recovery period for a year, that inflation and interest rates will remain moderate. Then, assuming the deficit isn't reduced considerably—and I don't think there is any way the deficit will be reduced—interest rates and inflation have got to rise," he states.



I think we need to start talking about issues that affect the health of the people and have nothing to do with partisanship.

"A Mondale administration would have some affect on national economic trends," he admits. "Interest rates might go up sooner in anticipation of a sustained or increased level of government spending and new federal taxes.

"But the good news for the roofing industry is that we have learned how to live through a recession now," Good reports. "We do that by going into renovation, repair, reroofing markets. We tend to fare better than the construction industry as a whole, but I doubt that we will ever return to the 1978-79 levels of strength in new construction, coupled with the demand for reroofing . . . the good old days," he says, chuckling.

The construction industry is keeping a close eye on several issues that could be affected by the outcome of the November elections. Good offers his views on what might transpire under different administrations.

Davis-Bacon regulations

"Davis-Bacon is here to stay until there are major ideological changes in this country," he says. "I don't think we're near that yet."

The Reagan administration has established regulations that lessen the impact of the Davis-Bacon Act, which was passed in 1935. The Act states that a contractor must pay his workers the area's "prevailing wage" on any federal or federally-funded construction project. "Depending on one's point of view, the regulations would make Davis-Bacon more reasonable and palatable," Good comments. "The regulations were challenged in court and were dismissed as being unfairly contrary to the intent of Congress.

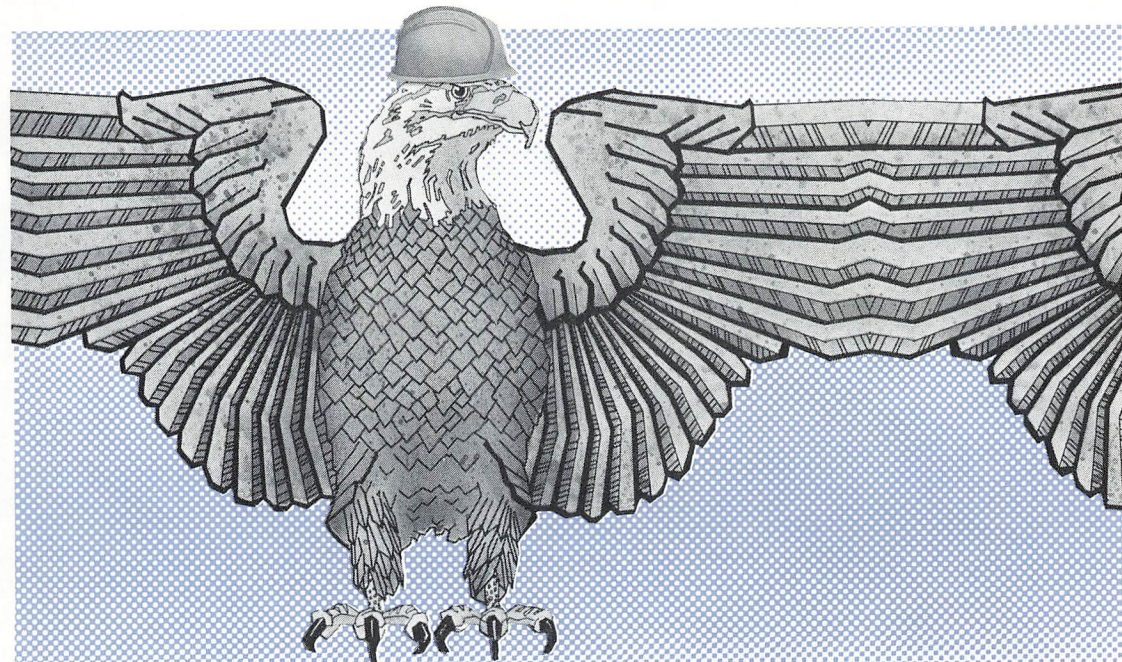
"It's true, I think a Republican administration would continue to push for regulatory reform, whereas a Mondale administration clearly would not," he says bluntly. "NRCA has had a very difficult time wrestling with this," Good adds. "We are not advocates. We're in an information role; we do have members who support it as it is now and members who support its change. It has been very difficult for us to develop a policy on it; Davis-Bacon is an emotional and controversial issue. It's largely in the hands of the bureaucrats and the courts now, but regulatory change may in fact come during a second Reagan administration."

Occupational Safety and Health Administration

"Any improvements in the area of worker health and safety in the construction industry have been accomplished in spite of OSHA," Good states, "although the agency has called attention to some questions that might not have come to the surface otherwise. Asbestos is one of them. They have forced us to do our homework," he adds.

"OSHA regulations have been proposed and hearings held on asbestos by a Republican administration. Although they are not in final form yet, the regulations we think we're going to see are much tighter than those that were proposed under a Democratic administration," Good reports.

"I think we need to start talking about issues that affect the health of the people and have nothing to do with partisanship," Good says suddenly with a touch of impatience. "Especially with an issue such as asbestos and whether or not it's dangerous—that is clear.



Single vote sometimes the silver ballot



By Rep. Guy Vander Jagt, R-Mich.

The latest reminder that the outcome of elections sometimes hinges on one vote comes to us from tiny Benzonia, tucked away in the far

northwest corner of Michigan's lower peninsula.

A six-mill school levy failed to pass when a June election ended in a tie vote. But the next week's recount revealed that one voter had marked the "no" box with a check mark instead of an "x". Even though the voter's intent was clear, under Michigan law only an x counts as a valid vote, so the millage defeat was turned into victory by a margin of just one vote.

One vote has often been decisive. After our Revolutionary War anti-British sentiment was so strong that a resolution in the Senate abolishing English and substituting German as

our official language failed by just one vote.

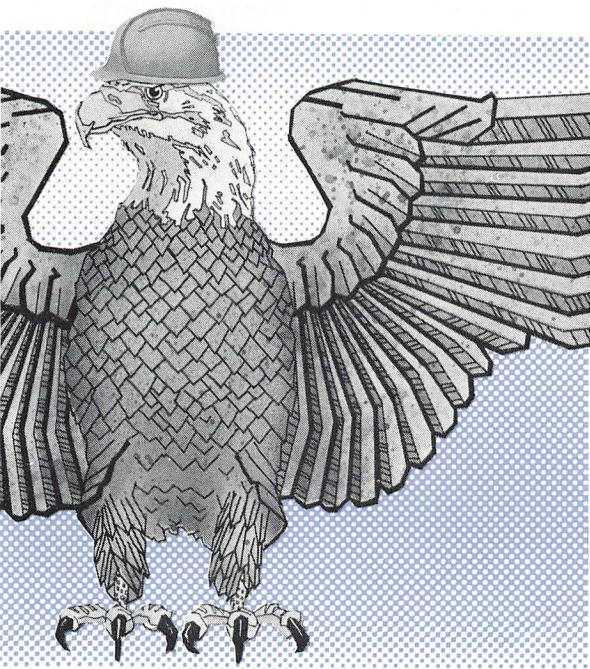
Texas was admitted to the Union by a margin of just one vote. And the man who cast the deciding vote, Sen. Harrigan of Indiana, was elected to the Senate by a margin of just one vote.

But let's bring this up to 1976, when a shift of just one vote in every other precinct in three states would have elected Gerry Ford instead of Jimmy Carter president of the United States.

As tiny Benzonia reminded us recently, one vote can be mighty important indeed.

"The real difference between a Republican OSHA administration and a Democratic one is that the Republican OSHA has been more inclined to let the business community come up with its own way of solving its problems. A Republican OSHA head will come to the business community and say, 'Here's the problem. Here's the standard we want you to meet. Come back and tell us how you can meet it.' A Democratic OSHA says, 'Here's the problem and here's the standard; here's how you have to meet it.'

"We in the roofing business applaud the former method," he adds. "And from all evidence the effectiveness of OSHA has increased over the last four years."



Utility competition

Utilities, originally mandated to perform commercial and residential energy conservation audits, are now performing the work they themselves recommend to bring structures up to maximum energy efficiency levels. The NRCA has joined a coalition of contractors, manufacturers, wholesalers and retailers who are questioning the anti-competitive nature of these practices.

"The issue, simply stated, is whether utility companies ought to be allowed to compete with the private sector," Good says. "To date, they have been. For the roofing industry, this means we have power companies not only recommending to homeowners and building owners that they insulate their attics and buildings but arranging for it themselves," he says, clearly annoyed. "They can perform the work at a lower price because they have a competitive edge; they're subsidized by tax dollars.

"We do have the advantage of being in the small business community," Good says more cheerfully. "Being in the small business community in Washington is next to godliness. This is a clear-cut case of the little guy vs. the big guy.

"The chairman of the House of Representatives' Small Business Committee is a liberal Democrat from Baltimore. He's one of those leading the way in the decision for us. I think Congress is pretty apt to do something for us on this, whether it's under a Republican or Democratic administration," he says.

Association members PACing a punch

In addition to organizing grass-root support, NRCA has formed its own Political Action Committee.

"Our PAC is a part of the government relations program; it's a tool," Good states. "If a national association doesn't have a PAC, I think it detracts from its credibility."

In response to a question about the purpose of the Political Action Committee contributions, Good says firmly, "PACs don't buy anything except access. In the senate race in Minnesota this year, each candidate is spending \$40 million. The top PACs in the country are raising and spending \$2 million, and the laws allow a PAC to contribute only \$5,000 to any

single candidate. In that environment, one special interest group isn't going to own anybody.

"PACs recognize that campaigning is an expensive proposition today and those campaigns need money to be effective. To the best of my knowledge PACs help the candidate get elected, pure and simple," Good stresses.

"The process works because an individual makes a \$100 contribution to a larger body, a PAC, and the PAC contributes to a candidate's campaign," Good continues. "The legislator is responsive to that constituency as a result. If that individual sent his \$100 directly to a candidate he would not enjoy that same kind of access."

The NRCA PAC tries to raise \$25,000 every two years. In this cycle, the Association will raise about \$20,000, Good reports.

When it comes to the legislative process, Good is a pragmatist. "In a perfect world, I suppose we would have debates in which candidates would be judged on their merits and on how they would be voting over the next few years if elected. But we don't live in a perfect world.

"To vote, candidates have to be elected. To get elected, they need to spend money. That money has to be raised by interest groups," he says flatly.

"I trust that process."

Getting out the vote

To make sure its voice is heard in Washington, NRCA sponsored a voter registration drive this year. Contractor members were mailed booklets that told them how to mount drives in their own businesses; the aim was to register as many white-collar workers as possible.

"The Chamber of Commerce, the Republican National Committee and to a lesser extent the American Society of Association Executives all urged groups such as ours to take this action," Good says. "We feel it is part of our obligation as a national association to remind members of their civic responsibilities and encourage them to get involved.

"But we've never given voter registration anything more than lip service," he admits. "This is the first time it has ever taken on this significance.

"Our goal is to register as many administrative and executive people in our member companies as possible," Good continues. "They tend to be the ones who would

vote in line with our business objectives. But we would like to see this effort extend throughout the company's ranks—as far as the company wants it to go."

Good pauses a moment, then says: "I think we may in fact be missing a good bet here. We are building in some basic assumptions about the ways in which certain people vote. We know from the last election, though, that just less than a majority voted Republican," he says thoughtfully. "It's not necessarily true that blue-collar workers are not going to vote in the interests of the company. We're directing our efforts more toward the white-collar folks because they are the people we are supposed to represent. But we may be presuming too much," he says.

"I think if a voter registration program is presented correctly and intelligently to anybody in the construction industry, he or she will be more likely to vote," Good concludes.

"And we'll all be happy with those results."

Missile control in Houston: all systems go for liftoff

Meteorologists, building designers, code officials and industry representatives met in Galveston Aug. 16-17 to reminisce about Hurricane Alicia, the storm that chewed up millions of dollars in construction costs when it whipped through Texas one year ago. Alicia was the first tropical cyclone of hurricane intensity to strike the U.S. mainland in more than three years. It is the second costliest storm ever to strike the United States—Hurricane Frederick, which hit Mobile, Ala. in 1979, takes those honors.

Although Alicia was not a strong hurricane, the Houston-Galveston metropolitan area was directly in its path. Flooding in Galveston's coastal area and glazing in a cluster of downtown Houston high-rises accounted for most of the damage.

Taking Texas by storm

The two-day conference was sponsored by the American Society of Civil Engineers. It began with a review of the storm's forecast and analysis of the data gathered afterward. Alicia had some unusual qualities: it gained strength rapidly just before landfall, and it had a double eye. Alicia gave birth to 23 tornadoes; the water depth at the storm's peak was just over 9 feet above sea level.

It was the first storm for which a new "probability" system was used to predict landfall. And, because it passed over a large metropolitan area, it was one of the most comprehensively observed storms ever to contact the coastal United States.

Windborne missiles

Alicia's winds caused most of the property damage. Estimates range from \$750 million to \$1.65 billion. Overall, more than 2,000 homes and apartments were reported destroyed, and more than 16,000 others were damaged. The majority of the damage was along the Galveston Island Gulf coastline and the shoreline of Galveston Bay.

In the Houston area, the storm tore up signs, uprooted trees and ripped away parts of buildings. In Houston's central business area, Alicia smashed hundreds of windows in a cluster of high-rise buildings.

Alicia one year later

By Jeff Lowinski

"The wind-induced damage from Alicia in the Houston-Galveston area was caused by a lack of hurricane-resistant construction rather than by the storm," the Committee on Natural Disasters commented. "Adequate fastening and anchoring of houses in the Galveston area and control of windborne missiles in the Houston area would have substantially reduced the damage . . ."

In general, Alicia's winds did not exceed the design values building codes require for construction in the Houston-Galveston area. Little building and structural damage should have occurred, but this was not the case. Some structures could have been exposed to higher-than-design pressures because of channeling effects, downdrafts or interference.

It is certain that windborne debris, such as loose sheet metal, aggregate, street debris, broken glass and debris from other wind-damaged construction ricocheting from building to building was a major source of damage in downtown Houston. Penthouses and other rooftop structures, often not given proper engineering attention or installed after wind-tunnel or other hurricane tests have been conducted, also contributed to the damage caused by the winds and to the windborne debris.

Code medicine

Homes, apartments and other non-engineered structures also performed poorly. Most of the damage was attributed to inadequate roofing material fastening, poor anchorage of the roof system to the wall frames, poor connections of walls to sill plates and poor connections of sill plates to foundations. Hurricane clips were practically non-existent in all but a few of the demolished houses.

The aftermath of the storm has seen considerable public concern for more stringent hurricane-resistant building construction. Proposed revisions to the Houston Building Code include increasing the design wind load values and eliminating gravel-surfaced roofing on all high-rise buildings by 1989. Houston is also considering a city-sponsored periodic roof maintenance inspection, to be paid for by the building owner, to remove rooftop debris

The building code was changed to require all buildings to meet a windload of 120 miles per hour.

and check the anchorage of rooftop equipment and structures.

In Galveston, the building code was changed to prohibit wood shingle, require 5/8-inch minimum plywood roof sheathing and require all buildings be designed to meet a windload of 120 miles per hour.

The design-level hurricane in two cities provided an ideal opportunity to explore the implications of such an event in depth. The conference devoted to Hurricane Alicia provided a forum to reflect on the

hurricane's characteristics and effects; to call attention to storm-related conditions that should be studied further; to study the warnings, responses and recovery occasioned by the storm; and to analyze the ability of structures to withstand design-level winds.

The result is a better understanding of hurricane forecasting, forces generated by hurricane winds and the design and engineering of buildings necessary to resist those forces.

Estimates of Losses from Hurricane Alicia in Galveston, Harris, Brazoria, and Chambers Counties

TYPE OF LOSS	VALUE (MILLIONS OF DOLLARS)
Residential	100 (9,500 structures)
Commercial	9 (300 structures)
Industrial	4
Public Facilities	1
Roads and Highways	1
Utilities	60
Vehicles	19 (6,250 vehicles)
Agriculture	51
Marine	10
Total	250

SOURCE: U.S. Army Corps of Engineers, 1983.

Housing Units Damaged or Destroyed by Hurricane Alicia

	DESTROYED	MINOR DAMAGE
Single-family homes	1,209	12,472
Mobile homes	455	1,034
Multifamily units (apartments, etc.)	633	2,857

SOURCE: Interagency Hazard Mitigation Team, 1983.

Survey compares practices to problems

NRCA conducted quarterly surveys in 1983 to obtain data on 1,300 roofing jobs performed by Association members. The contractors were randomly selected and represented all states in the country.

The same two surveys were conducted each quarter with different contractors; one was for baseline data and the other for problem job data. Baseline data were obtained on 858 roofing projects under construction on specific dates. Problem job data consisted of reports on 404 jobs on which problems occurred or were detected some time during 1983.

The surveys have several limitations that should be noted. First, there was no attempt made to correlate answers with climates, locations or building sizes. Second, the survey did not ask for an indication of the problems' severity. Third, neither the statistical significance of the survey process nor the accuracy of the data submitted has been verified.

Still, there appears to be agreement on the trends in both baseline and problem jobs. This agreement lends some credibility to the broad interpretation of the data and some insight into how these trends, problems and performances are interrelated.

Problem jobs

The data identified specific problems with 300 of the 404 problem jobs reported. These are summarized in Table 1a.

Membrane splitting occurred on 17 percent of the problem jobs. Blistering appeared to be the second most frequent problem. This was observed in 16 percent of the cases. A combination of two or more defects, such as splits, blisters, ridges, fish mouths or minor leaks, occurred on 37 percent of the roofs in this category. Flashing failures amounted to only about 3 percent while wind damage and membrane slippage occurred on 4 percent and 2 percent of the jobs.

Lap deficiencies appeared to be restricted to single-ply membranes and were reported on 11 percent of the 300 roofs.

It is interesting, but not necessarily surprising, that the data given in Table 1b show the majority of problems became evident during the roofs' life early years.

Project Pinpoint uncovers successes and failures

A total of 62 percent of the observed defects were apparent within one year; 86 percent showed up in less than three years. Only 1 percent were observed on roofs more than 10 years old. The number of roof problems decreases quite sharply as the roof's life span increases.

Litigation is a potential indicator of roof problem severity. Table 1c demonstrates that 19 percent of the 313 problem jobs reported in this category are involved in either litigation or potential litigation. On the bright side, respondents reported that no litigation was anticipated in about 80 percent of the problem jobs.

Table 1. Problem Job Survey Results

a. Problem areas

PROBLEM	PERCENTAGE OF 300 JOBS
Combination of problems	37
Membrane splitting	17
Membrane blistering & interply separations	16
Lap separations (single-ply membranes)	11
Ridging, buckling, fishmouths, leaks	9
Wind blow-off	4
Flashing defects	3
Slippage	2

b. Age of Roof When Problem Discovered

YEAR	PERCENTAGE OF 379 ROOFS
1	62
2	12
3	12
5	8
10	5
over 10 years	1

c. Litigation

	PERCENTAGE OF 313 ROOFS
Litigation proceeding	12
Litigation possible	7
No litigation	77
Litigation completed	3
Negotiating	2

By Bill Cullen
NRCA research associate

General findings

The sum of the baseline and problem job results given in Table 2a shows that reroofing was the major type of roof construction, with about 60 percent of the market. It was rather surprising that about 85 percent of the reroofing involved tear-offs of the previous roofs.

The roof system's slope plays an important role in its performance. The information in Table 2b appears to confirm that roofs with some slope perform better than

Fibrous glass felts commanded a large segment of felts used.

roofs with no slope. Twenty percent of the baseline jobs and 36 percent of the problem jobs had no slope. Even gradual slopes of 1/4-inch per foot or less seem to improve overall performance.

Table 2c, which lists data collected from 675 baseline and 288 problem job roofs, including both bituminous and single-ply types, indicates that surfacing was used on 68 percent of the bituminous and 60 percent of the single-ply roofs. Smooth-surface roofs accounted for the remaining 32 percent and 40 percent. There appears to be a slight trend toward improved performance from aggregate-surface roofs.

Roofing membranes

Different estimates are heard throughout the industry on the amounts of bituminous roofing marketed in the United States as opposed to the elasto/plastic (single-ply) membranes. Project Pinpoint 1983 results indicate that all types of bituminous products, including the polymer-modified types, account for the membranes applied on 70 percent of the roofs surveyed (as shown in Table 3a). Elasto/plastic types comprise the remaining 30 percent. If we include the polymer-modified bituminous products in the single-ply category, the tally now stands at roughly 60 percent bituminous, 40 percent single-ply.

Bituminous membranes generally consist of two components: the reinforcing felt or fabric and the waterproofing/adhesive. These were handled separately in the survey questionnaires, and the results are given in Tables 3b and 3c.

It was not surprising that fibrous glass felts commanded a large (64 percent) segment of felts used (see Table 3b). These were followed by organic felts with 17 percent and asbestos at 2 percent. Felts used in cold-applied membranes also accounted for 2 percent. Modified bitumen products were used on 15 percent of the roofs surveyed.

A comparison of the baseline and problem jobs results indicate some trends of problems with the various generic products.

It is interesting to compare the relative percentage of baseline jobs to problem jobs for fibrous glass felts vs. organic and asbestos felts. While fibrous glass felts comprised 64 percent of the baseline jobs, only 27 percent of the reported problem jobs involved fibrous glass felts. On the other hand, while organic felts comprised only 17 percent of the baseline jobs, 35 percent of the problem jobs involved organic felts. Asbestos felts accounted for just 2 percent of the baseline jobs but 19 percent of the problem jobs.

Polymer-modified bituminous products showed only a 2 percent increase, which still indicates the modified bituminous membranes are not immune to conventional roof membrane problems.

A tally of the survey results on mopping bituminous products shows that asphalt commands up to 88 percent of the survey market and asphalt was the bitumen on 82 percent of the problem jobs. Coal tar products (there was no distinction made between coal tar pitch and coal tar bitumen) were used in 12 percent of the baseline jobs and 18 percent of the problem jobs.

Steep grade asphalt conforming to ASTM Standard Specification D312, Type III, was used on almost 70 percent of the baseline roofs. Types I and II, the flat or level grades, combined to tally about 25 percent of the market. The special steep grade, Type IV, was reported at around 5 percent. Softer grade asphalts seem to perform slightly better.

Table 3d is a tally of the various amounts of single-ply membranes used on the roofs surveyed. Note that modified bituminous products are not included in this table. Based on 1983 Project Pinpoint results, it appears that ethylene propylene diene

Table 2. General Findings

a. Type of Projects

	BASELINE ROOFS PERCENTAGE OF 816 JOBS	PROBLEM JOB ROOFS PERCENTAGE OF 383 JOBS
New construction	37	41
Reroofing (with tear off)	53	50
Other reroofing	10	9

b. Roof Slope

	PERCENTAGE OF 804 JOBS	PERCENTAGE OF 373 JOBS
No slope	20	36
Less than 1/4-inch per foot	65	53
1/4-inch to 1 inch per foot	11	7
Over 1 inch per foot	4	4

c. Surfacing of Roof Membranes

	PERCENTAGE OF 675 JOBS	PERCENTAGE OF 288 JOBS
Aggregate surfaced	69	60
No surfacing	8	9
Cap sheet	6	4
Other smooth surfacing	17	27

monomer (EPDM) dominates the single-ply market with 77 percent of the 247 baseline jobs. Polyvinyl chloride (PVC) membranes are the distant runner-up, reportedly used on 14 percent of the baseline roofs. Chloro-sulfonated polyethylene was rated at 5 percent and all others at 4 percent collectively.

Polymer-modified bituminous membranes are often included under the single-ply category. Table 3e breaks down baseline roof percentages for single-ply membranes when modified bitumen membranes are included. EPDM continues to lead with 56 percent, followed by the modified bitumen with 27 percent and PVC with 10 percent of the market. The remaining materials comprise 6 percent.

A comparison of the baseline results and the problem jobs results for single-ply membranes is presented in Tables 3d and 3e. Project Pinpoint data appear to indicate that EPDM membranes suffer fewer problems than the other major single-ply membranes included in the survey. According to Project Pinpoint survey results, PVC membranes comprised a higher percentage of the problem jobs (24 percent or 17 percent, depending on whether modified bitumen is included within the single-ply category) than PVC's share of the baseline jobs (14 percent or 10 percent).

Roof insulations

Table 4a provides results of questions on roof insulations by their generic classifications. It was somewhat surprising that about 20 percent of the 1,262 roofs contained no insulation above the roof deck. Fibrous glass insulations continue to be the most popular with 26 percent of the total amount used. Perlite types follow closely with 22 percent. A relatively new arrival, composite board, ranks in third place with 18 percent of the market surveyed. Polystyrene follows with 15 percent and polyurethane types are at 4 percent.

It appears from the survey results that composite board insulation may be less susceptible to roof problems than other types of insulation. According to Project Pinpoint, composite board was installed on 19 percent of the 488 baseline jobs and 5 percent of the 234 problem jobs. In contrast, polyurethane insulation was used on only 5 percent of the baseline jobs and 14 percent of the problem jobs.

Table 4b is a breakdown of the thickness ranges of insulations used. Roughly one-

third of the roofs had insulations with thicknesses of less than 1 inch. A little more than one-third fell in the 1- to 2-inch range, and on the remaining roofs the insulation thickness was greater than 2 inches. The survey results indicated that on about 10 percent of the insulated roofs the insulation was applied in a multi-layered fashion. Tapered insulation was used on about 3 percent to 5 percent of the insulated roofs.

The insulation attachment data in Table 4c demonstrates the beneficial effect of using mechanical fastening over hot- or cold-applied adhesive, in spite of the fact that it was used in only 34 percent of the baseline cases. It was also apparent that bituminous materials were used as the attachment adhesive in 64 percent of the roofs. In general, problems were less apparent on roofing employing mechanically attached insulation.

A new arrival, composite board, ranks third with 18 percent of the market.

Table 3. Roof Membranes

a. Type of Membrane

	BASELINE ROOFS PERCENTAGE OF 858 JOBS	PROBLEM JOB ROOFS PERCENTAGE OF 404 JOBS
Bituminous (including modified bitumen types)	70	69
Elasto/plastic (single-ply)	30	31
Bituminous (excluding modified bitumen types)	60	58
Elasto/plastic/modified bitumen	40	42

b. Reinforcing components of bituminous roofing membranes

	PERCENTAGE OF 579 JOBS	PERCENTAGE OF 258 JOBS
Fibrous glass felts	64	27
Organic felts	17	35
Polymer bituminous felts	15	17
Asbestos felts	2	19
Cold-applied felts	2	2

c. Bitumens used in bituminous membranes

	PERCENTAGE OF 426 JOBS	PERCENTAGE OF 179 JOBS
Asphalt	88	82
Coal tar pitch on bitumen	12	18
ASPHALT TYPES (ASTM D-312)	PERCENTAGE OF 374 JOBS	PERCENTAGE OF 147 JOBS
Type I	9	7
Type II	17	13
Type III	69	78
Type IV	5	3

d. Single-ply membranes (excluding modified bitumen types)

	PERCENTAGE OF 247 JOBS	PERCENTAGE OF 114 JOBS
EPDM	77	66
PVC	14	24
CSPC	5	1
Others (CPE, PIB, ECB, neoprene, etc.)	4	9

e. Single-ply membranes (including modified bitumen types)

	PERCENTAGE OF 331 JOBS	PERCENTAGE OF 157 JOBS
EPDM	57	48
Modified bitumen	27	27
PVC	10	17
CSPE	2	2
Other (CPE, PIB, ECB, neoprene, etc.)	3	6

Experience shows that better steel deck performance might be expected when heavier gauges are used.

Vapor flow retarders

Vapor flow retarders were used in only 22 percent of the roofs surveyed. For the most part those that were used were bituminous. No particular trends were apparent between baseline and problem job results.

Roof decks

Table 5a reports data on the generic types of structural decks. It was no surprise to find that metal decks were used predominantly, types used, comprising almost 40 percent. These were followed by wood at 28 percent, concrete at 22 percent and

gypsum at 11 percent. The results indicated that roofing systems with metal decks may be more susceptible to roofing problems.

Table 5b divides the metal deck category into gauge classes. The lower the gauge number, the heavier or thicker the metal from which the deck is constructed. By far the 22-gauge is the most frequently used, showing up in almost 75 percent of the metal deck roofs surveyed. There were no obvious trends between problem jobs and baseline data, although experience shows that better performance might be expected when heavier gauges are used.

Table 4. Roof Insulations

a. Insulations types on insulated roofs

	<u>BASELINE JOBS PERCENTAGE OF 488 JOBS</u>	<u>PROBLEM JOBS PERCENTAGE OF 234 JOBS</u>
Fibrous glass	26	22
Perlite	23	25
Composite board	19	5
Polystyrene	15	15
Fiberboard	12	19
Polyurethane	5	14

b. Insulation Thickness

	<u>PERCENTAGE OF 552 JOBS</u>	<u>PERCENTAGE OF 274 JOBS</u>
Less than 1 inch	33	34
1 to 2 inches	36	43
Over 2 inches	26	20
Tapered	5	3

c. Insulation Attachment

	<u>PERCENTAGE OF 379 JOBS</u>	<u>PERCENTAGE OF 187 JOBS</u>
Bituminous adhesive	64	72
Mechanical attachment	34	24
Other adhesives	2	4

Table 5. Structural Roof Decks

a. Types of Decks

	<u>BASELINE JOBS PERCENTAGE OF 776 JOBS</u>	<u>PROBLEM JOBS PERCENTAGE OF 371 JOBS</u>
Metal	39	47
Wood products	28	23
Concrete materials	22	20
Poured gypsum	11	10

b. Metal Deck Gauges

	<u>PERCENTAGE OF 286 JOBS</u>	<u>PERCENTAGE OF 156 JOBS</u>
18 gauge	3	1
20 gauge	17	16
22 gauge	72	75
24 gauge	8	8

Tulsa! Where the waving wheat can sure smell sweet

The products of more than 150 exhibitors will be on display at the 35th Midwest Roofing Contractors Association Convention Oct. 28-31 in Tulsa, Okla. MRCA reports that this will be its largest trade show ever.

The Convention is expected to draw 2,500 people to Tulsa for the exhibit and business sessions, which will cover the latest on expanded polystyrene insulation, Type IV glass felts, FM's loss prevention data sheet 1-28, single-ply safety, reroofing and marketing techniques.

Participants can view the exhibits in the Tulsa Convention Center. The MRCA is using the Tulsa Excelsior and Westin Williams Plaza hotels for housing.

In the spotlight

Howard K. Smith, ABC News anchor, will talk to attendees at the Monday, Oct. 29 welcoming luncheon.

Smith has won every major award given for excellence in broadcasting, including an Emmy for a documentary program titled "The Population Explosion." He is the only journalist to have been awarded the DuPont Commentary Award twice and the only news person ever to be invited to address the U.S. House of Representatives.

The two television debates that are widely believed to have been decisive factors in presidential race outcomes were both moderated by Smith. These were the Kennedy-Nixon confrontation in 1960 and the Carter-Reagan "Great Debate" in 1980.

Fifteen honorary doctorates have been bestowed upon him by American universities.

George Plimpton, celebrated author and a man who lives out all his fantasies, is scheduled to address the group on Tuesday. Plimpton has an extraordinarily diverse background.

He has played quarterback for the Detroit Lions, basketball for the Boston Celtics, hockey for the Boston Bruins and percussion with the New York Philharmonic Orchestra. He has photographed center-folds for *Playboy* and performed on a trapeze for the Clyde Beatty-Cole Brothers Circus. Plimpton has used all of these experiences and more in his books and magazine articles.

MRCA's 35th Annual Convention

Plimpton is a native of New York City and holds a degree from Harvard University. He founded *The Paris Review* in 1953, a literary quarterly of which he is still editor. He has taught at Barnard College and been associate editor at both *Horizon* and *Harper's* magazines. He is a special contributor to *Sports Illustrated*.

Plimpton is also the fireworks commissioner of New York City (of course).

The Glenn Miller Orchestra will provide a moonlight serenade for the Tuesday evening banquet. The James Q. McCawley Award, the MRCA's highest honor, will be presented after dinner.

Tulsa Trail

Tulsa is a young city nestled in the Osage Hills in eastern Oklahoma. It is nourished by seven large man-made lakes—contrary to the popular opinion that it is an arid dustbowl.

In fact, Tulsa sits squarely in the middle of what locals refer to as the "Green Country," a fertile 21-county area in northeastern Oklahoma. The Port of Catoosa, the nation's newest inland water port, links Tulsa with the Mississippi River. The lakes surrounding the city total more than a half-million surface acres.

More than 500,000 people live in the city and surrounding area; 30,000 of those work for 1,000 oil and oil-related Tulsa firms. Aviation and aerospace is also a strong industry there. Several Tulsa firms with Apollo contracts were instrumental in putting astronauts on the moon and are now working on the space shuttles.

"Combining a proud Indian heritage with the fresh and vital image of a youthful city and standing on the foundation of the Old West, Tulsa has developed as a modern cultural center as well," the city's promotional material states.

■ **Oral Roberts University.** The Prayer Tower serves as the focal point of this internationally known university. The visitor center has two multi-media presentations and an observation deck. Free admission.

*"We know we belong
to the land . . ."*

—Oklahoma!

*Richard Rodgers and
Oscar Hammerstein*

- **Harwelden.** Listed in the National Register of Historic sites, this 30-room mansion is the home of the Arts and Humanities Council of Tulsa. It was built in the Jacobean style of architecture in 1923 for oil millionaire Earl Palmer Harwell and covers a square city block near the Arkansas River. Free admission.
- **Sun Co., Tulsa Refinery.** This huge oil refinery is located on the banks of the Arkansas River. Tours are available. Free admission.
- **Tulsa Performing Arts Center.** The Center is a municipally-owned and op-

erated facility designed by architect Minoru Yamasaki. It is on six levels and includes a 2,400-seat music hall, 450-seat performing theater and two multi-form experimental theaters.

- **Expo Square.** Located between Harvard and Yale avenues and bound by 15th and 21st streets, the Square is the home of the annual Tulsa State Fair, one of the nation's largest. Other special attractions at Expo Square include Bell's Amusement Park, the Tulsa Speedway and a 75-foot high statue of an oil driller that marks the entrance to the Exposition Center.

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Booth 901

■ **Philbrook Art Center.** This Renaissance villa built in the late 1920s by famed oilman Waite Phillips is surrounded by 23 acres of spacious formal gardens. The mansion houses collections of Indian baskets, pottery and paintings; Italian Renaissance paintings and sculpture; and Chinese jades.

■ **Mohawk Park.** A 2,800-acre tract of natural woodland, it represents one of the largest city-owned parks in the United States. Picnic grounds, fishing and boating, a 36-hole golf course, the Tulsa Zoological Park and the Children's Zoo are featured.

A loaf of bread, a jug of wine

For those of you visiting Tulsa for the first time who would like to get out after dark, here is a sampling of the city's clubs and restaurants.

- **Celebrity Club,** 3109 S. Yale, 743-1800. Steaks.
- **S & J Oyster Co.,** 3301 S. Peoria, 744-4440. Seafood.
- **Freddie's BBQ & Steakhouse,** 1425 New Sapulpa Road, 224-4301. BBQ.
- **Uncle Tytomo's,** 111 W. Fifth, 582-5936. Italian.

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Reach Plastics Ltd.
Booth 1303, 1304

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- The Chalkboard Restaurant, 1324 S. Main St., 584-6958. Continental.
- Gaslight Dinner Theatre, 8555 E. 91st St., 252-2566. Dinner and entertainment.
- The Chalet, 3030 S. Harvard, 743-9797. Continental.
- The Fountain's, 6540 S. Lewis, 749-9916. Steaks.
- Palladino Restaurant, 8276 E. 71st St., 254-9029. Italian.
- Molly Murphy's House of Fine Repute, 3900 S. Sheridan, 663-9400. Steaks.
- Razor Clam, 2777 S. Memorial Drive, 663-8280. Continental.
- La Cabane Restaurant, 10032 S. Sheridan, 299-5335. French.
- Casa Bonita, 2120 S. Sheridan, 836-6464. Mexican.
- Phoenicia Club, 3525 E. 51st St., 743-6586. Steaks.
- LaCuisine, Ltd., 5800 S. Lewis, 749-9200. Continental.
- The Rafters, 4848 S. Yale, 496-8367. Steaks.

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Detroit, April 11, 1985
Milwaukee, April 18, 1985

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- Roof Decks
- Roof Insulation
- The Built-up Roof Membrane
- Roof Details: Protecting the Roof's Most Vulnerable Points
- Single-Ply Roofing
- Attitudes and the Qualified Contractor

Roofing Systems Conference

Washington, D.C., Dec. 6, 1984
Tampa, March 28, 1985

Program

- Investigating the Problem
- Decision Points: Repair or Reroof
- Insulation and Energy Payback
- Reroofing Options: Built-up Roof Systems
- Reroofing Options: Single-Ply Roofing
- Retrofit Details
- Pre-Bid and Pre-Job Conferences

For further details on the conferences and registration information, contact the
NRCA Education Department, 8600 Bryn Mawr, Ave., Chicago, Ill. 60631 (312) 693-0700.



Doctoral research puts bitumen through paces

Clemson University is the site of a National Roofing Foundation (NRF) study on the mechanical behavior of typical low-slope modified bitumens. NRCA Research Associate Bill Cullen reviewed the research's progress during a recent visit to the campus in Clemson, S.C.

A larger market share

In recent years, new roof construction and reroofing has included broad use of polymer-modified bitumens. The use of these materials can potentially reduce labor costs and decrease the weight of the construction.

Bitumen modified by polymers performs better at low temperatures than oxidized bitumen, which becomes somewhat brittle in the cold. As a result, polymer-modified bitumens are capturing a larger share of the roofing market.

Modified bitumens are relatively new to U.S. roofing. Their characteristics are not yet widely noted in the open literature. The NRCA *Materials Reference and Guide*, February 1984 lists 71 modified bitumen products. Fourteen percent of these originated in the United States. Italy produced 48 percent of the products and France produced 20 percent.

Tests of character

The NRF study includes fundamental tests on the materials' character that will be useful in evaluating load-deformation properties. The work, although directed specifically to modified bitumens, can be expanded for use with other types of asphalts, including conventional air-blown bitumens.

Joel P. Porcher, Jr. is completing the NRF research at Clemson. Porcher is a doctoral candidate in civil engineering. He has presented other research results at NRCA/

National Bureau of Standards symposia and will be one of the first doctorate recipients to research roofing membrane materials. Porcher is working with Professor Herbert Busching. Bill Cullen acts as technical overseer.

Some of the material properties being measured at Clemson are rupture loads, Poisson's ratio, time-dependent loads at selected isothermal conditions and the temperature-dependent coefficient of linear thermal expansion.

The thermal splitting resistance of a polymer-modified bitumen subjected to a single severe temperature decrease may be estimated from the test data. A procedure for estimating resistance to thermal splitting would give contractors and roofing technologists better insight into the modified (and air-blown) bitumen performance, especially for colder climates in the United States where thermal splitting failures have been observed by contractors in some conventional BUR systems.

The thermal splitting temperature predicted from initial analysis will be validated in further tests. Several specimens restrained from contraction have been cooled until they ruptured. Temperatures measured from these tests are compared to those predicted to evaluate the calculations' validity.

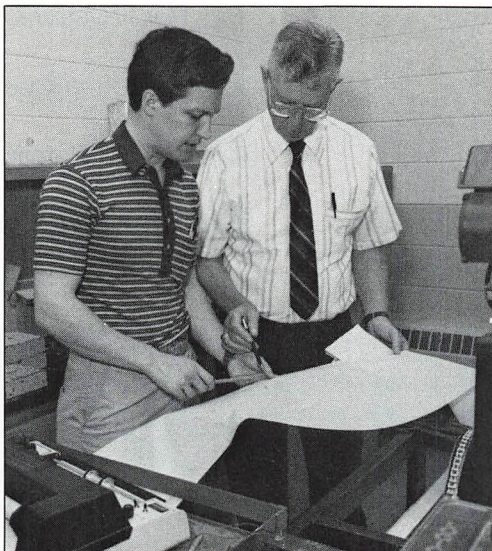
A procedure that successfully calculates the rupture temperature and rupture load in carefully controlled laboratory tests could lead to the use of a similar method for estimating splitting temperatures and modified bitumen loads under service conditions. Temperatures in the NRF testing program go as low as -40°F .

It is anticipated that analysis methods developed in this project could be used to establish more rational guidelines for evaluating polymer type and amount based on extreme climatic service conditions. And, guidelines could be established for identifying conditions in which conventional air-blown bitumen is adequate.

Education and research

This project complements some theoretical work conducted in Great Britain. Experimental validation of this earlier research by R.L. Bonafont (as reported in the proceedings of the Second International Symposium on Roofs & Roofing sponsored by the London Society of Chemical Industry) will be included in this research.

Significant results of this research project will be published later and will be presented at the Second International Symposium on Roofing Technology sponsored by NRCA and the National Bureau of Standards in September 1985.



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oxidation, its cold-flow, self-healing properties—is further enhanced by the professional roofing contractors who apply Koppers coal tar built-up roofing systems.

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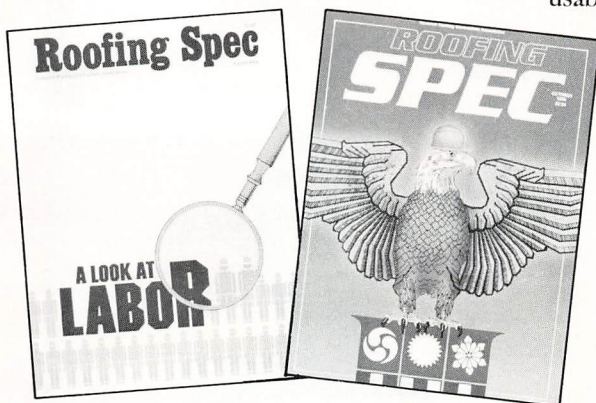
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Spec worthy of another look

I shaved off my moustache a while back. It had been a part of my looks for several years; no one at the office had ever seen me without it. During my first clean-shaven day at work, I was amused to see the reactions of my colleagues. Some barely recognized me while others hardly noticed the difference.

Presenting our redesigned October issue is a little like walking into work with a new look. The *Spec* staff is anxiously awaiting your reaction. Will you recognize us? Will you notice the change? And most important, will our new look reflect the positive changes that have occurred in the publishing and the roofing industries.



Why did we make the change? We wanted the magazine's look to echo our commitment to lively, informative and literate writing. We chose a clean, modern and versatile design that will allow us to bring you information in a variety of formats, from technical papers to personality profiles. At the same time, the layout and type styles will lead you through each article or department without disturbing your concentration.

To put it another way, we simply outgrew our old design. It is our hope that our new format will give us the room to keep on growing. We hope you like the redesign. It's just one of our efforts to bring you the most recent and reliable news in an attractive and usable format. As always, we welcome your comments on the *Spec's* redesign or its contents.

Martin Eastman

Editor

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*Chlorinated polyethylene from the Dow Chemical Company. Fortrel® is a registered trademark of Fiber Industries, Inc., a subsidiary of Celanese Corporation. CoolTop® is a trademark of Cooley, Inc.

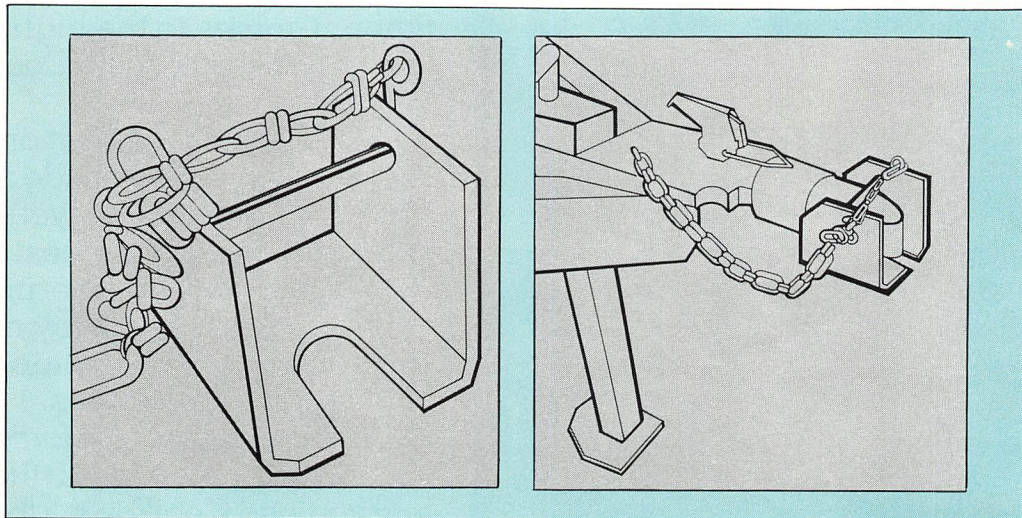
In order to form a more perfect union...

A device made in the shop helps keep trailers hitched at Beldon Roofing & Remodeling Co., San Antonio, Texas.

The idea was submitted by Walter F. Heinig of the Beldon Co. "It virtually eliminates the possibility of the coupler slipping off the trailer ball," Heinig says. "It is relatively inexpensive to make and greatly increases the margin of safety when you pull a trailer."

The device is designed to slip over a bulldog-type coupler on a trailer's tongue.

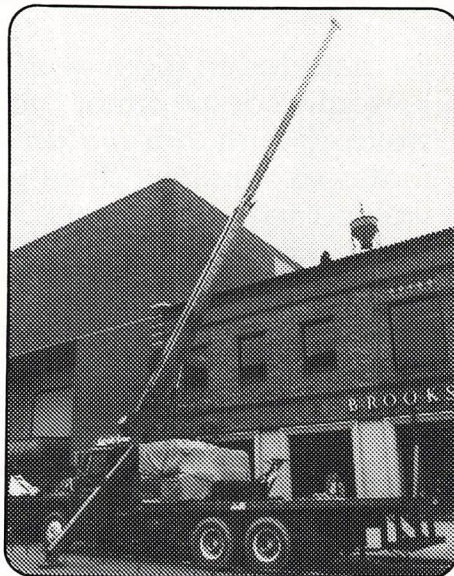
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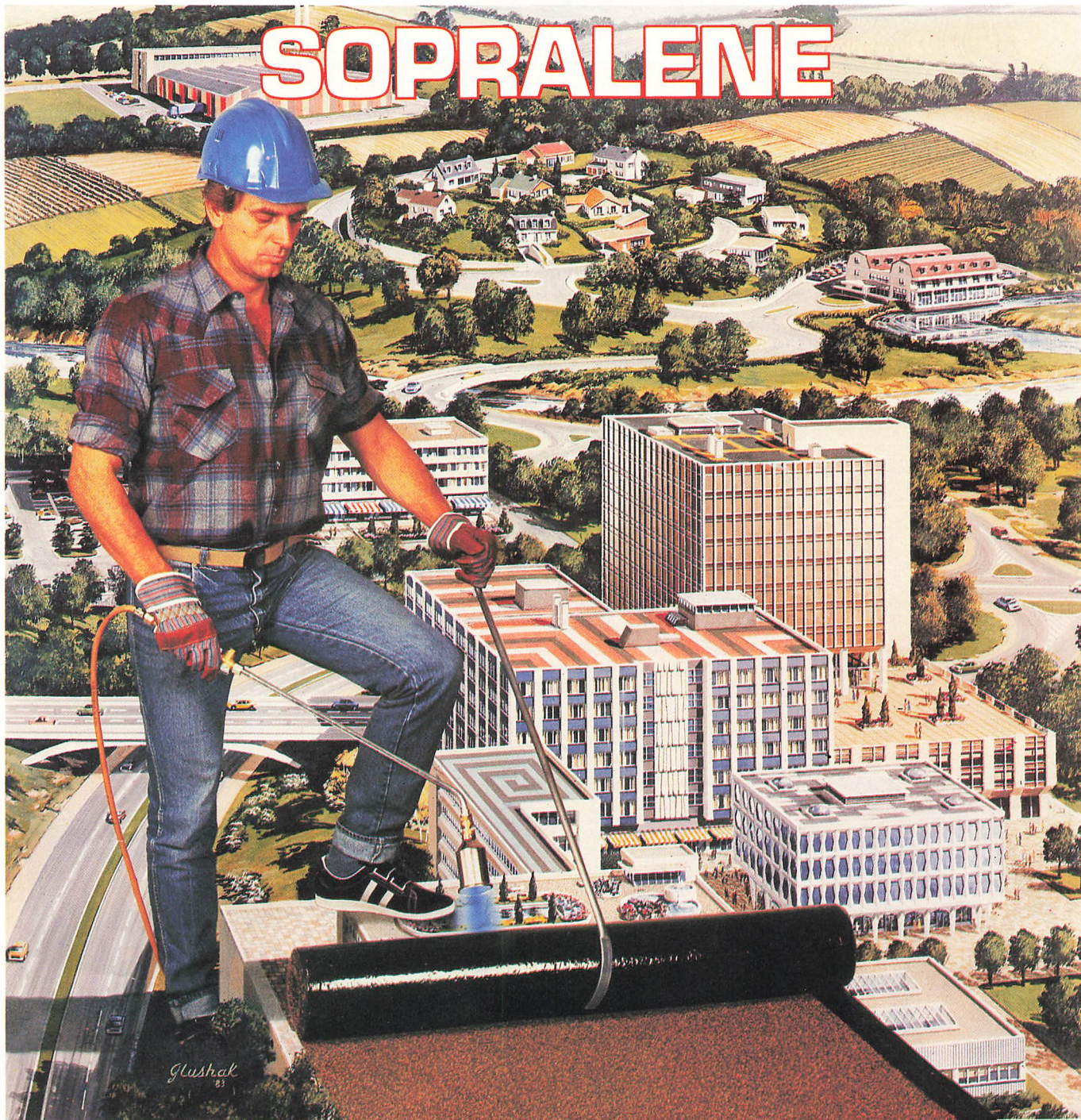
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Goodyear roofing passes test

It may not stand up to a congressional session, but Goodyear sheet rubber roofing has been shown to withstand blasts of nearly twice hurricane force.

The tests were conducted for the International Congress of Building Officials (ICBO) to set single-ply, sheet rubber roofing specifications for building codes in the western U.S., according to Goodyear engineers.

The winds were generated by two 250-horsepower engines powering 72-inch fans. An airspeed of 125 mph across the 120-square-foot test surface was achieved.

"The angle of wind attack was held at a critical 45 degrees to the building corner to provide maximum wind effect during the test," said Paul Oliveira, Goodyear's chief engineer for roofing systems.

Goodyear engineers believed previously established industry findings and standards on ballast movement in high winds needed re-evaluation, according to Oliveira. Data should include both the size of ballast stones and the roof's applied weight, he said.

Through testing, engineers learned that the rate of scour—the wind's pushing of ballast around the rooftop—depends on stone size and weight as well as wind speed. High winds will redistribute larger sized ballast stones and may blow smaller stones off the roof, according to Oliveira.

Goodyear's Versigard mechanically fastened system was also tested under the high speed blow. The company claims the roofing emerged unaffected.

The mechanically fastened Goodyear system weighs less than one-half pound per square foot compared with 18 to 31 pounds per square foot for the ballasted systems that are intended for high wind locations.

Goodyear says its roofing engineers are working closely with building code officials, testing agencies and insurance experts to establish minimum criteria for materials and roofing systems design for the single-ply rubber roofing industry.

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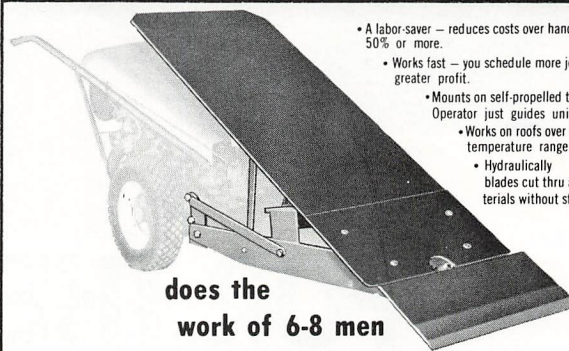
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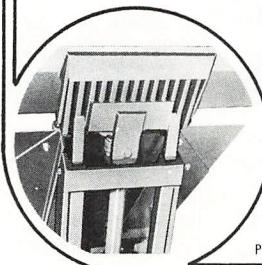
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(For inclusion of events, address all correspondence to: **Roofing Spec "Coming Events"** 8600 Bryn Mawr Ave., Chicago, Ill. 60631).

October 17

Table Top Shows
Plant Services
Cleveland, Ohio

October 18

Design & Specification of Roofing Systems
Roofing Industry Educational Institute
Richmond, Va.

October 19

Update Seminar
Roofing Industry Educational Institute
Richmond, Va.

October 19

Update Seminar
Roofing Industry Educational Institute
Andover, Mass.

October 23

The Role of the Architect/Engineer in Contract Administration
Construction Specifications Institute
Chicago, Ill.

October 23-24

Computers for Contractors
Florida Roofing Sheet Metal & Air Conditioning Contractors Association
Ft. Lauderdale Beach, Fla.

October 23-26

Four-Day Basic Roofing Technology Seminar
Roofing Industry Educational Institute
Boston, Mass.

October 23-26

Four-Day Basic Roofing Technology Seminar
Roofing Industry Educational Institute
Andover, Mass.

Oct. 25-30

Annual Convention
National Association of Plumbing-Heating-Cooling Contractors (NAPHCC)
Atlanta, Ga.

Oct. 28-31

Annual Convention & Trade Show
Midwest Roofing Contractors Association
Tulsa, Okla.

Oct. 31-Nov 2

The Buildings Show
Buildings Magazine
St. Louis, Mo.

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1893 Formation of the original company by T.L.L. Temple as a forest products supplier in East Texas.



1958 Expansion into the manufacturing of fiberboard products after 60 years of steady growth.

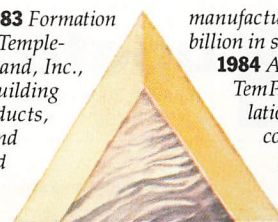
1980 Opening of Temple-Eastex rigid foam insulation plant in Diboll, Texas.



1983 Formation of Temple-Inland, Inc., a building products, pulp and paper, and container

manufacturer with \$1.2 billion in sales.

1984 Addition of TemPro roof insulation to the company's product line.



Deficit reduction can be taxing for small businesses

The U.S. House and Senate recently passed a compromise tax reform bill called the Deficit Reduction Act of 1984. The legislation is Congress' response to concern over the federal deficit. Several existing or scheduled tax regulations were changed by Congress to staunch the flow of money out of the government's coffers. It is believed the reforms will raise about \$50 billion in new taxes, while cutting federal expenditures by \$13 billion through fiscal 1987.

Small businesses will be affected by many of these changes. Some tax breaks firms have enjoyed in the past, such as depreciation allowances or investment tax credits (ITC), have been eliminated, reduced or postponed. Other modifications in accounting procedures and in a federal development bond program will change the way firms do business.

Write-off rules tougher

One change affects the write-off for depreciation of a business auto's cost. Previously, the full cost could be written off over three years as a depreciation allowance. A 6 percent investment tax credit could also be taken on the car during the first year of its operation. The depreciation

write-off period will now depend on the value of the car, with costlier cars being depreciated over longer periods. The first year credit has been limited to \$1,000, prohibiting any additional credit for cars costing more than \$16,000.

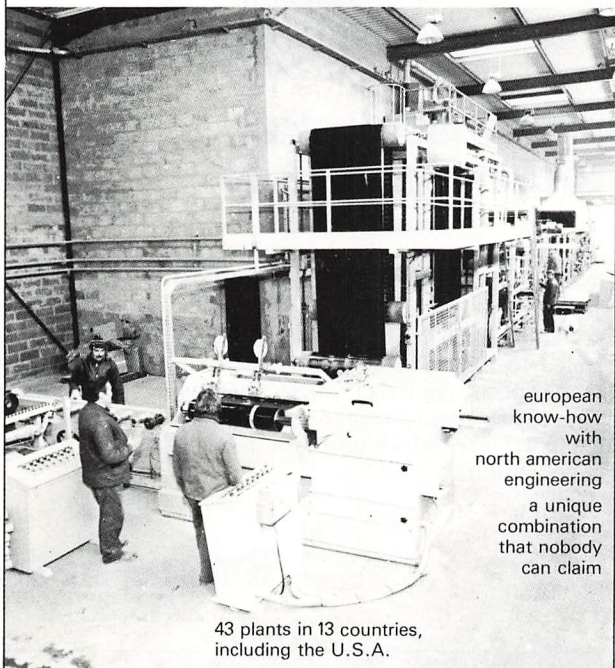
In addition, the amount a business auto is used for private purposes will determine the proportion of its cost that can be written off. Tax write-offs for personal equipment, including autos, used half the time or less for business will also be restricted. Using the equipment will have to be a job requirement and a detailed log of its business use will have to be kept.

More regulations on ITC write-offs are also in the new legislation. The law postpones a scheduled increase in the amount of other assets a small business can write off in one year. The increase would have raised the write-off limit from \$5,000 to \$10,000 after 1985. The limit will remain at \$5,000 for four years under the new Act.

Property will depreciate slower

Real estate depreciation allowances will also be changed, but the compromise regulation isn't as bad as the Senate's original proposal. Before the new legislation, de-

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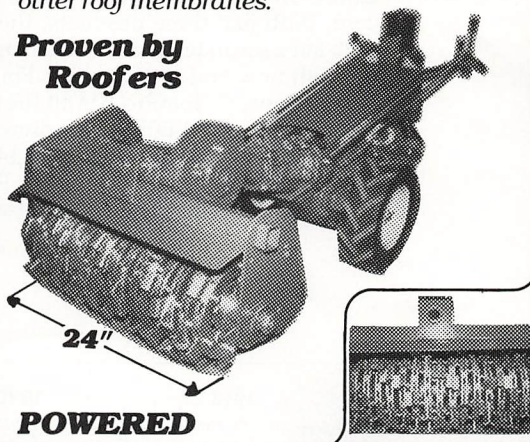
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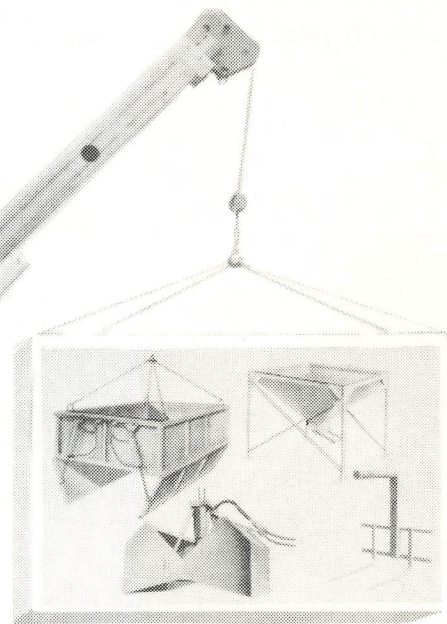
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Companies will have to report their expenses closer to the time they are actually paid.

preciation on new real estate investment was spread over 15 years. The Senate proposal would have stretched this period to 20 years but the House stood firm on this issue, and a compromise write-off period of 18 years was reached.

The limit on another tax break will not be raised under the bill. At present, the maximum amount of used property eligible for investment credit is \$125,000. This limit was scheduled to be raised to \$150,000 in 1985. The new legislation will not raise the limit until 1987.

Corporations treated differently

The bill also contains a number of provisions for corporate and shareholder tax treatment. Corporations with taxable income in excess of \$1 million will no longer receive the benefit of presently applicable graduated tax rates. This will mean qualifying corporations will experience a \$20,250 tax increase, the present tax reduction resulting from the graduated rates.

Some changes in accounting and reporting procedures the Act mandates will make it necessary for companies to report their expenses closer to the time they are actually paid. Firms using an accrual method of accounting could, in the past, report the expense in one year and pay it in the following year. Tax shelters that took advantage of this loophole will also be prohibited. This one change in the tax laws is expected to raise \$5 billion.

Limit set on bonds

One other change will affect the amount of money flowing into small businesses from the government. It restricts the amount of tax-exempt industrial development bonds (IDB) state and local governments may distribute through the year. The bonds are frequently used to help finance private businesses. The new regulations let the states choose a \$150 per capita limit or a \$200 million ceiling on the amount.



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A Permalite Tapered roof insulation system is the best choice for BUR and single-ply membrane roofs where you need a positive slope to drain. Its dimensional stability, high

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Check # 868 on Reader Service Card

Plasteco adds residential model to skylight line

Plasteco, Inc. is introducing its Thermobloc series of skylights to the residential market with its Model 221 skylight. This model features a built-in PVC curb with engineered air voids that combine to act as a thermal barrier. In tests the Thermobloc Model 221 remained frost-free for one hour at a temperature of -104F.

Because the PVC is an energy-efficient material, the Thermobloc skylights minimize interior condensation and eliminate the need for weep holes, cutting down on energy loss. The PVC curb also simplifies installation by making site-built curbs unnecessary.

The Model 221 Skylight has an interior finish of baked bronze enamel. The unit has a low profile and the acrylic or glass is available in a variety of colors. More information on the Thermobloc series may be obtained from Plasteco.

Check # 230 on Reader Service Card

Andek Chemical offers two new liquid coatings

Two new sun- and flame-retardant coatings that can be applied over polyurethane foam have been added to the product line of Andek Chemical Corp.

White Roofdex Coating, developed from an extended polyurethane resin formula, and RAC Roofdex Aluminum Coating, developed from an aluminum extended polyurethane formula, are both solvent-based, heavy liquid membranes that can be applied to either vertical or horizontal surfaces.

The coatings provide joint-free, elastic membranes with light- and heat-reflective properties. They are applied in single coats from single components with no priming required.

Both membranes form a permanent bond to most substrates and are compatible with all building products. The ready-mixed coatings are available in five-gallon pails.

Additional information on these products may be obtained from Andek Chemical Corp.

Check # 231 on Reader Service Card

Liquid Asphalt markets crane, gravel scratcher

Liquid Asphalt Systems has announced two new products in its roofing accessory line.

The Rockbuster is a self-propelled gravel scratcher attachment with a power drive feature that permits the operator to walk and steer. The unit fits onto a self-propelled tractor and runs smoothly over roof membranes without bucking.

The cutter blades are designed to reduce damage to felts and other roof membranes and cut a 24-inch-wide path to within 4 inches of obstructions.

The Series 600A telescoping crane is a compact, 21 1/2-ton capacity unit that reaches up to 116 feet. In normal operating areas a reach of over 116 feet is possible. The crane mounts on a standard tandem rear axle truck, with five different mounting configurations possible.

Also available is a 66-foot, three-section, fully hydraulic boom with a reach of 76 feet. This unit, in combination with an 18-foot outrigger span, allows a 360-degree working area without stabilizers. The boom pivot and the hoist are both fitted with cylinder bearings to increase the life of the units.

Further details on these new products and information on the accessory line are available from Liquid Asphalt.

Check # 232 on Reader Service Card

Single-ply and pedestals added to roofing line

American Hydrotech, Inc. has added two new items to its product line.

Lite-Top is a single-ply, mechanically fastened Hypalon sheet that provides the advantages of both plastic and rubber membranes. Like plastic membranes, Lite-Top is seamed with hot-air welding for seam strength. Yet the product self-cures to the weatherability of rubber.

The membrane is resistant to a range of contaminants and is reinforced with a polyester scrim for strength and stability. It is available in white and a variety of colors and comes with a 10-year warranty.

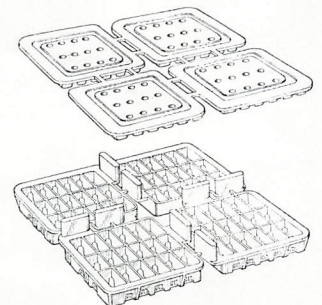
The second new product introduced by the company is Paver-Saver, a paver pedestal system that incorporates a three-way rotating shim.

This system provides a variety of thicknesses for levelling pavers during installation. By changing the shim's position, 1/8-inch, 1/4-inch or 5/16-inch can be added to the height of the pedestal support, eliminating the need for double or triple shimming.

The Paver-Saver system elevates the deck surface to provide a drainage plain between the pavers and the supporting substrate. Paver-Saver pedestals are available in a 6-inch-square size, making them suitable for most paver installations.

More information on both of these new products is available from the manufacturer.

Check # 233 on Reader Service Card



Plastics & Resins introduces new liquid membrane

Plastics & Resins, Inc. has developed a liquid elastomeric membrane that provides a seamless waterproofing coating for most types of roofs.

The non-toxic membrane, marketed under the name Polarroof, is pre-mixed and can be applied by rolling, brushing or airless spraying. Because Polarroof is water-based, it may be applied on a damp surface; the same feature also allows easy equipment clean-up.

The membrane will bond to any surface, including tar, asphalt, wood, shingle, concrete, brick, glass and metal. It will not bleed through when applied over new asphalt, according to the manufacturer. Upon drying, Polarroof forms an elastic membrane that moves and gives with the substrate, filling and bridging cracks. The flexible cover breathes, allowing vapor or moisture in the substrate to dissipate and reducing the problem of water accumulation.

The elasticity of the coating makes it resistant to damage from ultraviolet rays, heat and cold, and salt water. Polarroof also inhibits the growth of mold and mildew on the roof surface. The membrane is non-bituminous and does not melt to spread fire.

The manufacturer recommends that two coats of Polarroof be applied for an estimated roof life of 20 years. Additional details on the system are available from Plastics & Resins.

Check # 234 on Reader Service Card

Solvent port adds life to gun for dispensing foam

Universal Foam Systems, Inc. has redesigned its U-Control foam dispensing gun to include a solvent port, through which chemical waste may be flushed from the interior of the breech. The device extends the life of the gun, which is an integral part of the company's Versi-Foam portable polyurethane foam systems.

The port extends through the 'A' side. The solvent is also used to clean exterior portions of the gun.

Other patented features of the U-Control gun are a foam metering trigger and adjustable chemical flow. Also exclusive to the gun are a hand-conforming pistol grip and a thumb-controlled safety to prevent accidental dispensing.

Versi-Foam systems are sold in two portable sizes and in refillable units. The foam comes in several densities. It is used for a variety of commercial and industrial insulating, sealing, patching and filling applications. For further details, contact Universal Foam Systems.

Check # 235 on Reader Service Card

"Roofers' bible" *Slating and Tiling* is republished

A new edition of *Slating and Tiling*, the "bible" of roofers who work with these materials, is now available from Langley London.

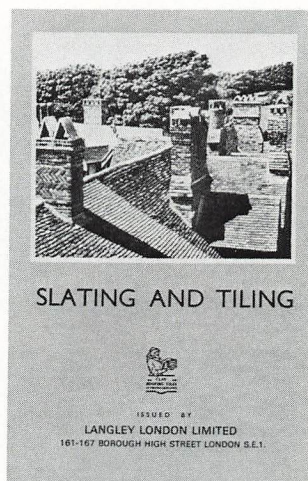
The booklet, written by C.G. Dobson and first published in 1945, has been reprinted in a pocket-sized edition. It includes discussions on roof preparation, roof pitch, uses of mortar, types of tiles and slates and repairs to slated roofs. Information on the weight of slating covering capacities and heat loss is also found in the guide.

It is illustrated throughout with diagrams, line drawings and photographs.

Slating and Tiling was originally published as an aid in repairing rocket damage to slate and tile roofs in post-war England. The rules for slating and tiling to insure watertight roofs are still applicable; the republished guide is designed as a reference for those who work in this craft.

Information on ordering this guide may be obtained from Langley London.

Check # 236 on Reader Service Card



Tropical offers brochure on Poly-Cap I, II

Tropical Industrial Coatings has made available a free brochure that gives technical data, applications and installation instructions for two polyester membranes manufactured by the company.

Poly-Cap I and Poly-Cap II are reinforcing membranes that are designed to be compatible with almost any roofing system.

Poly-Cap I is lightweight and somewhat stiffer for use over smooth surfaces. Poly-Cap II is made of a thicker, more flexible polyester and can be used over surfaces such as imbedded gravel. Both membranes are non-woven, spun-bonded polyester, designed to provide flexibility and elongation.

Tropical's Poly-Cap brochure includes test results for both of the products. The brochure and other information on the Poly-Cap membranes are available from Tropical.

Check # 237 on Reader Service Card

Continued on page 63

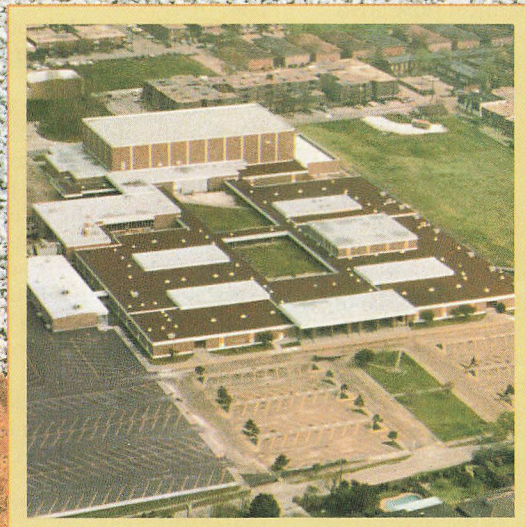
Elastomeric Design

Paradiene 20/30 includes two component plies, each composed of an elastomeric asphalt blend, reinforced by a light fiberglass mat. This allows exceptional elongation/recovery characteristics, while providing superior dimensional stability.

Multi-ply practicality

Paradiene's multi-ply design provides double protection. Its durable top ply has a factory-applied granular surface, available in a variety of colors. The system can be applied conventionally with hot asphalt or with cold adhesive.

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Paradiene: time-proven in the world's climatic extremes since 1968; a lightweight, highly flexible system, with superior resistance to sun, ponding water and other traditional causes of roof degradation — guaranteed against leaks for a full ten years.

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Continued from page 61

CSI offers *Spectext* options to subscribers

The Construction Specifications Institute (CSI) has announced that *Spectext*, its master guide specifications system, will now be offered in three subscription packages.

Spectext-AR, for architectural specifiers, will offer more than 250 master guide specifications contained in CSI's Divisions 1 through 14, covering architectural, civil and structural disciplines. The engineering package, *Spectext-M/E*, provides more than 150 master guide specification sections contained in Divisions 1, 15 and 16. The third option is the total *Spectext* package of more than 350 sections in Divisions 1 through 16.

Subscribers to the packages will receive copies of CSI's Technical Aid Series (TAS) documents referenced in the specific *Spectext* sections contained within the selected subscription package. These TAS documents, as well as the *Spectext* sections, will be updated quarterly by CSI. Existing subscribers will be able to continue their subscriptions in any of the three options selected.

Automated versions are also available through Bowne Information Systems. For further information contact CSI.

Check # 238 on Reader Service Card

Dry metal topping speeds up roof aluminization

A new dry metallic aluminizing roof topping has been introduced by Consolidated Protective Coatings Corp. The topping, called Goodyear Quick Silver, is manufactured from a special aluminum alloy and processed into uniform lightweight particles or chips.

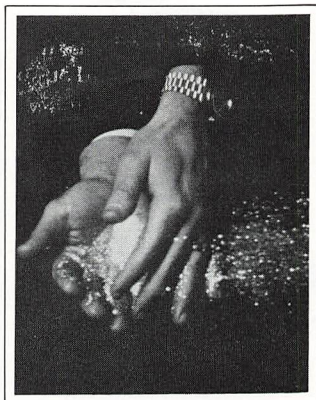
The topping may be applied by blower or by hand. No special training is required to apply the product.

Goodyear Quick Silver is blown onto any tacky, freshly applied, cold-process roof coating. The process reduces delay in rooftop aluminization because the worker need not wait for the coating to set up.

Compared to conventional dark-surfaced roofing Goodyear Quick Silver provides a 45 percent reduction in roof heat load. The product also contributes to longer roof life by keeping bitumens softer and reducing temperature differentials, which increase roof membrane stress.

Additional information on the product is available from the manufacturer.

Check # 239 on Reader Service Card



Guide outlines technical data for Chem-Elast

Carboline Co., Building Products Division has announced the release of a new guide outlining Chem-Elast elastomeric coating for urethane foam.

Designed as a concise reference for facility maintenance engineers, contractors and architects, the guide provides thorough descriptions of Chem-Elast Class "A" systems with technical data sheets and recommendations for existing roof maintenance and new roof construction.

Benefits of urethane foam roof insulation and Chem-Elast protective membranes are presented, including details on cost-saving features of the systems. The guide also contains a sample specification for a Chem-Elast two-coat system. The specs may be used with the information provided on the product technical data sheet.

The guide is available free of charge from Carboline Co.

Check # 240 on Reader Service Card

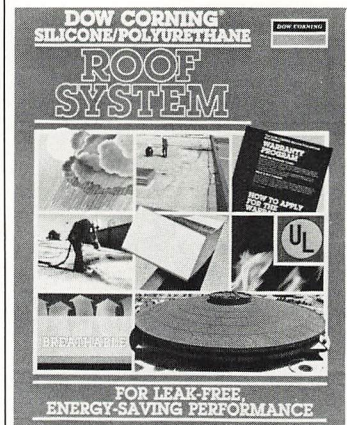
Dow Corning publishes roofing system brochure

A new eight-page brochure from Dow Corning describes installation steps and applications for the Dow Corning silicone polyurethane roof system. The system includes a lightweight blanket of spray-applied polyurethane foam. This layer is protected from weather by a coating of silicone rubber.

According to the brochure, the silicone/polyurethane roof system can reduce heating and air conditioning costs by 30 to 50 percent. The system is suitable for new construction involving long spans and limited support as well as for reroofing applications.

Also included in the brochure is information on the Dow Corning approved applicator and warranty program. More information may be obtained from Dow.

Check # 241 on Reader Service Card



Directory lists contractor names and numbers

A comprehensive directory of 28,225 roofing contractors has been published by American Business Directories, Inc.

Compiled from the yellow pages of 4,800 telephone directories, covering every city and town in the country, the reference directory lists contractors' business names, addresses, zip codes and telephone numbers. The information is organized alphabetically by state and city and can be used for sales leads, telemarketing, direct mail advertising, market analysis and sales trip planning.

The book is spiral bound and sized to fit easily into a briefcase. Cost information and further details are available from American Business Directories.

Check # 242 on Reader Service Card

Roofblok designs interlocking block ballast system

A new ballast system for single-ply roofs has been developed by Roofblok, Ltd.

The system incorporates an interlocking block designed specifically for roof ballast. The non-combustible block is manufactured from lightweight concrete and provides a uniform weight of 11.5 pounds per square foot. The bottom of the block is smooth, allowing direct contact with most membranes and insulations. Channels in the block bottom provide drainage.

The blocks also feature a bevelled design that allows for a lockdown, preventing wind uplift while making membrane inspection possible.

The design of the system provides membrane protection against puncturing, cutting, scouring, ultraviolet rays and roof traffic. A complete technical study on the design and installation of the interlocking ballast block, along with detailed specifications, is available from Roofblok.

Check # 243 on Reader Service Card

Two-way welder now available from Columbine

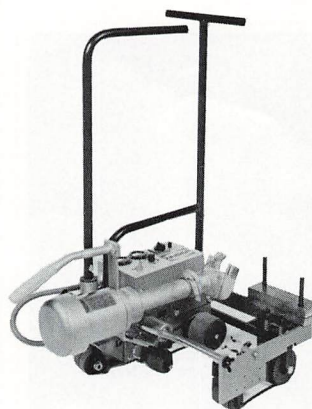
Columbine International, Ltd. has announced the availability of a new 6000-watt welder with an attachment that allows the operator to weld in both directions.

The Zinser K-77 automatic welder with the three-in-one attachment eliminates the need to transport the welder back across the roof deck to weld the next seam and requires no cool-down period on tip changes.

The welder also allows the operator to weld up to within 6 inches of parapets and features a variable speed control, an automatic drive switch and steering capabilities. Meters on the unit give amp and volt readings, and a separate control allows the operator to adjust the air volume as needed.

Columbine also has a tape welding attachment and a parapet welding attachment available for use with the K-77. The company will also build to individual specifications if desired. For more information on the Zinser automatic welder and attachment, contact Columbine International.

Check # 244 on Reader Service Card



SPRI publishes new single-ply roofing guides

The Single-Ply Roofing Institute (SPRI) has come out with two new publications on single-ply systems.

General Guidelines for Single-Ply Ballasted Systems is a generic document that deals with three main areas: 1) design of the system, with particular emphasis on rooftop wind velocity and the design of the roof structure; 2) selection of ballast materials, which are generally washed, well-rounded river bottom stones; 3) application, with information on available methods and special techniques used to ensure high quality installation.

Also available from SPRI is *Single-Ply Roofing: A Professional's Guide to Specifications*. This *Guide* is actually a series of documents addressing four different aspects of the single-ply industry: available products (differentiated by generic types), terminology, system components and application methods, and maintenance and repair.

The *Guide* comes in a three-ring binder and is fully indexed, allowing for quick access to specific information and continual expansion and updating.

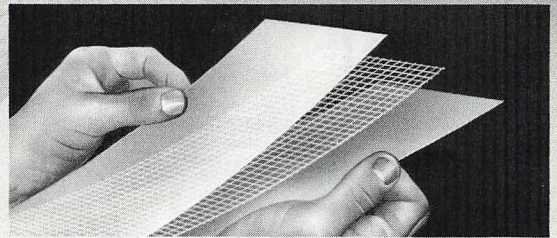
Part one of the *Guide*, dealing with generic classifications of products, their physical properties and test results, is now available; parts two through four will be made available as they are completed.

Information on these and other publications on single-ply roofing is available from SPRI.

Check # 245 on Reader Service Card

DuPont introduces the strongest reinforcement ever for BUR: new Reemay[®] Hot

New fabric combines the stability of fiberglass with the flex of polyester to help you win more bids



REEMAY Hot combines the stability of fiberglass (middle ply) with the stretch and flex of polyester.

DuPont's new REEMAY Hot roofing fabric is the strongest reinforcement you can buy for hot 3-ply roofs. A single ply supports the weight of two men.

REEMAY Hot is really a tough, light sandwich of fiberglass between two layers of REEMAY spunbonded polyester. Break strength is 50% over the 200-pounds-per-inch NBS recommendation for 20-year roofs, and over 50% higher than Type IV

fiberglass. And stretch and flex-life are 1,000 times higher, to resist splitting and cracking.

REEMAY Hot—made only by DuPont—is highly conformable. It absorbs asphalt thoroughly over a broad temperature range. And it weighs a lot less for easier handling and reduced freight costs.

You'll offer higher quality and win more bids with DuPont's new, super-strong reinforcement fabric. For more

information and the distributor nearest you, call (302) 999-5077, or write: DuPont Company, Room G40088, Wilmington, DE 19898.



ROOFER'S CRANE FOR SALE

1974 Pettibone Hi Lift crane. 70-foot reach; pallet fork; Humpty Dumper tear-off box. Cummins diesel engine. Excellent condition. \$34,900. Call or write Giuffre Bros. Cranes, Inc., 9770 South Ridgeview Drive, Oak Creek, Wis. 53154. (SEE YOU AT THE MRCA CONVENTION, BOOTH 901).

MANUFACTURERS REPRESENTATIVES WANTED

Rapidly expanding manufacturer of state-of-the-art white, reinforced single-ply roofing systems is seeking aggressive agents who are currently selling to the roofing trades. Experience dealing with architects, building owners, contractors necessary. Excellent commissions, exclusive territories plus company marketing support. Send resume or contact Bill Shroyer, Seal-Dry/USA, Inc., 486 S. Opdyke Road, Pontiac, Mich. 48057; 313/333-2590.

CRANE FOR SALE

ARLO. Capacity 1,500 pounds at 85 feet; 3,000 pounds at 20 feet. Mounted on a 1980 Ford chassis. \$13,850. Call 201/344-5444.

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Successful roofing contractor wants to communicate only with the best in the business. Candidates must have very successful experiences 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 Co., 66 Eastfield Drive, Rolling Hills, Calif. 90274.

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Gravel removal, roof cleaning service. Dry vacuum or high pressure wet vacuum removal available. Serving the entire southeastern and central states. Action Environmental, Inc. 813/961-6040.

SALES PERSONNEL WANTED

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CRANE FOR SALE

Roofers' special hydraulic truck crane, 1979 RO Stinger TC85-2; eight-ton capacity; 74-foot boom; hydraulic clam bucket; pallet fork; gravel hopper; Humpty Dumper; nylon belts mounted on a 1979 GMC truck with a 16-foot body. 25,000 miles; like new. Want to sell fast! \$43,900. Call or write Giuffre Bros. Cranes, Inc., 9770 South Ridgeview Drive, Oak Creek, Wis. 53154; 414/761-2300. (SEE YOU AT THE MRCA CONVENTION, BOOTH 901).

ROOFING SYSTEM ENGINEER

Fortune 500 company seeking individual with commercial roofing experience. Duties will involve product and system development, code approvals and liaison with research and marketing.

Compensation and fringes commensurate with experience. Please send resume and salary history in confidence to: Box 10A, Roofing Spec, 8600 W. Bryn Mawr, Chicago, Ill. 60631. Equal Opportunity Employer M/F

CRANE FOR SALE

Roofers' special hydraulic truck crane; 1975 Pitman; eight-ton capacity; 65-foot boom; hydraulic clam bucket; pallet fork; gravel hopper; Humpty Dumper mounted on a 1975 Ford F750 with a 14-foot body. Runs on propane and gasoline. 52,000 miles. Want to sell fast! \$32,500. Call or write Giuffre Bros. Cranes, Inc., 9770 South Ridgeview Drive, Oak Creek, Wis. 53154; 414/761-2300. (SEE YOU AT THE MRCA CONVENTION, BOOTH 901).

Continued on page 68

Two of REEVES Top Ten Performers

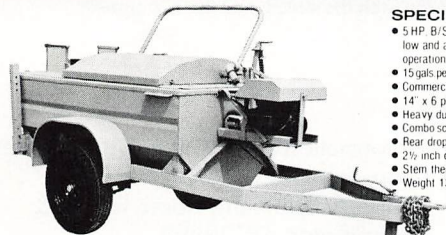


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- 3 axle heavy duty running gear
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RK 1500 Gallon JUMBO LP Two Burner Pump Kettle



SPECIFICATIONS

- 5 HP B/S I/C series motor mounted low and away from heat for cooler operation and easier maintenance
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- 14" x 6 ply tires
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RK 200 Gallon Single Burner Pump Kettle

TEN high performance models

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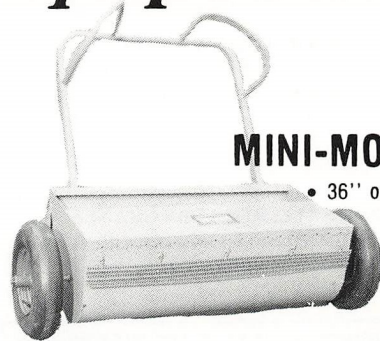
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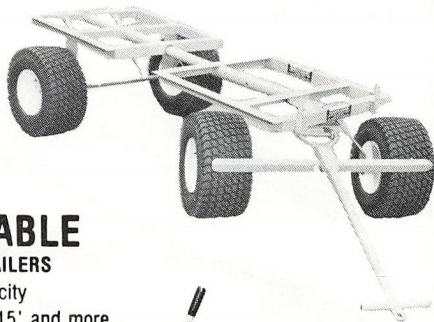
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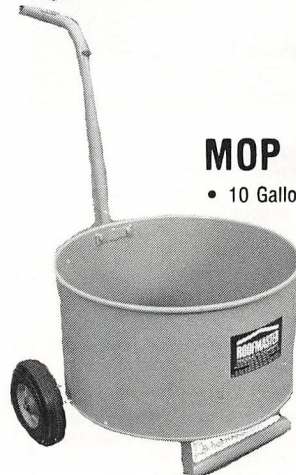
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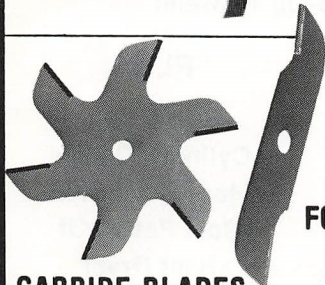
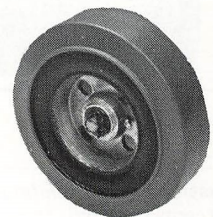
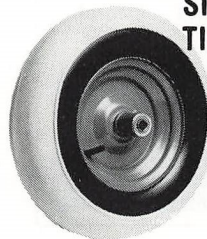
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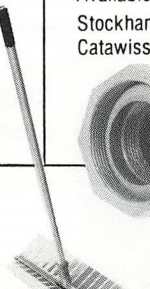
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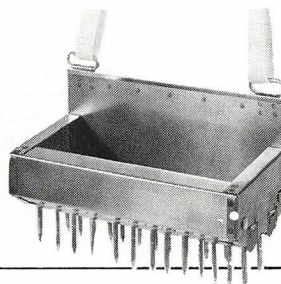
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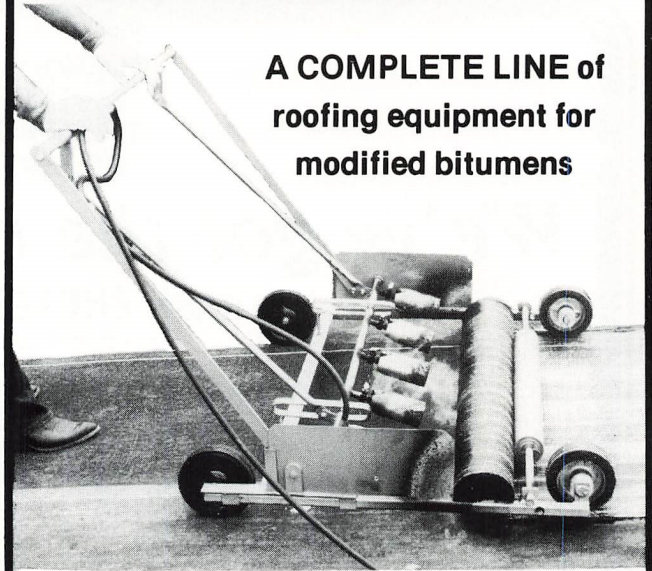
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Several actions by the federal government have made their mark on the roofing industry in the last year. Some of these laws, regulations and programs directly affect the technical side of the business, with the federal government becoming involved in research, health and safety concerns and standards development.

Test center funded

Congress gave the Department of Energy (DOE) about \$2 million to build a roof test center at the Oak Ridge National Laboratory (ORNL), Oak Ridge, Tenn. ORNL is owned and operated by Martin Marietta Systems, Inc. The company recently purchased the facility from the Union Carbide Corp.

At a recent meeting, George Courville of the ORNL told the NRCA Technical Operating Committee that the center will provide an adequate facility to study the thermal performance of low-sloped roof systems. Researchers at ORNL will be able to look at a roof's efficiency, moisture degradation and watertight integrity.

Courville said the most useful equipment at the center will be the combined environmental simulator and calibrated hot box. The unit is capable of handling 12-foot by 12-foot roof sections. With this equipment researchers will be able to simulate temperature extremes, dynamic cycling, thermal shock, radiation, precipitation, wind uplift and mechanical loading. As roof systems are analyzed, their performance will be carefully measured, and mathematical modeling efforts will parallel all experiments.

Courville sees the center as a national user facility with the roofing industry as its clientele. ORNL already enjoys this type of relationship with other industries. The roof test center will respond to an industry advisory committee comprising various segments of the roofing industry.

The center's permanent technical staff will carry out research suggested to the advisory committee. According to DOE's present guidelines for the facility, suggested projects should address fundamental problems in thermal performance. The suggesting body can choose its involvement in the research. In some cases it may simply sponsor the work. If it wishes, however, it may loan some of its staff to the center to aid in the research or gain experience.

Selected roofing industry groups involved in research and testing are invited to discuss the test center at a public meeting in Washington, D.C., Oct. 17.

Industry to use NBS facilities

As reported in the July 23 *Federal Register*, the National Bureau of Standards (NBS) will allow private parties to use certain facilities at Gaithersburg, Md. and Boulder, Colo. to carry out proprietary measurements. The government hopes to improve the competitive position of U.S. firms in the international market by providing the facilities to advance technology and increase productivity. The results of the proprietary measurements will not appear in the public domain and will be treated as confidential information. NBS does not intend to replace its general policy to operate as an open institution, however.

The Reagan administration continues to suggest eliminating NBS building research and fire research centers. This measure would shave about \$10 million a year from the government's expenses.

Air force manual revised

Since late 1983, when NRCA submitted its revisions, the U.S. Air Force has updated and improved several areas of its Air Force manual *AFM 91-36 on Real Property Operations and Maintenance for BUR Management Programs*. The Air Force circulated an *Interim Message Change* in February incorporating some of NRCA's suggestions.

Also, to aid manual revisions, the Air Force contracted with the consultants Booz, Allen and Hamilton/Hanscomb Associates, Inc. to study flat roofs with minimum slopes. The Air Force has been disappointed with the performance of its flat roofs with minimum or no slope; it has been necessary to replace membranes on several occasions. In the future, the Air Force hopes to build roofs with the greatest slope affordable, using for guidance an economic analysis of roof slopes prepared by the consultants in May 1984. NRCA recommended to the Air Force the criteria on slope and drainage outlined in the *NRCA Roofing & Waterproofing Manual*.

The Air Force also contracted with DOE, through the ORNL, to study the use of all currently marketed, rigid board insulation materials in low-sloped BURs. The study compared, on a life-cycle cost basis, currently marketed insulation systems with fibrous glass insulation, the only insulation the Air Force currently specifies. A report was released by ORNL to the Air Force in June 1984 that the Air Force will use to establish criteria for including other insulation in their manual.

The revised *AFM 91-36* should be available in early 1985 and will include the results of these studies and recommenda-

Feds get technical

by Bob LaCrosse



HUD is simplifying the MPS for multi-family housing.

tions. The NRCA Air Force Manual Revision Task Force plans an early November meeting with the Air Force to discuss the new edition before it is published.

Thermal envelope researched

In addition to its Ad Hoc Committee on Toxicity of Building Products in Fires, the Building Thermal Envelope Coordinating Council (BTECC) has organized a Research Coordinating Committee on Roofing. The Committee hopes to stimulate and coordinate research, development and verification of roofing system performance technology related to thermal envelope performance. This research will examine several areas, from individual roof components to the performance of the total roof system and the systems' interactions with other building systems. Roofing characteristics such as moisture control, durability, fire safety, structural integrity and materials' properties will be analyzed. Bill Cullen, NRCA research associate and I will represent NRCA on the Committee.

HUD simplifies standards

I previously reported that the Department of Housing and Urban Development (HUD) was considering accepting applications for properties that comply with local building codes rather than HUD's minimum property standards (MPS) for one- and two-family houses.

In addition, HUD is simplifying the MPS for multi-family housing, according to a report in the May 1 *Federal Register*. The new standards will rely on state or local building codes or nationally recognized model codes to provide health and safety criteria.

A state or local code will be used only after HUD has judged it comparable to one of the nationally recognized model building codes. This ruling eliminates unnecessary duplications and conflicts between the model code requirements and those presently contained in the MPS for multi-family housing. The present multi-family MPS has been deleted in favor of the national model building codes' provisions.

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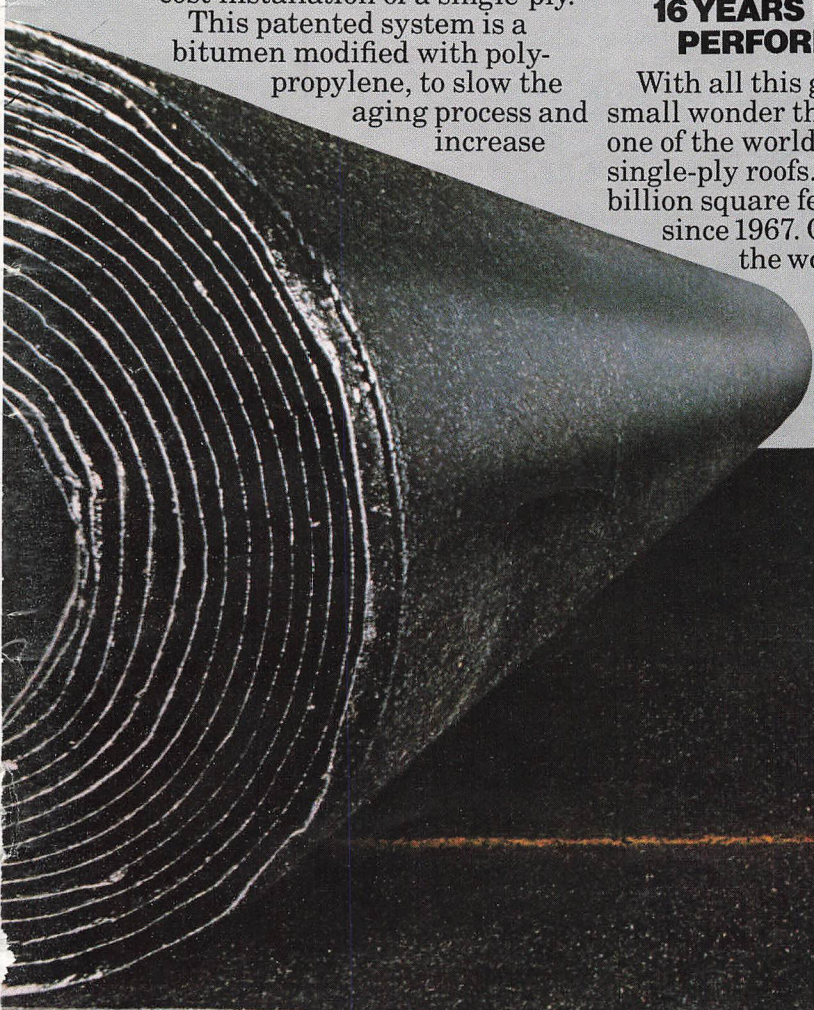
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