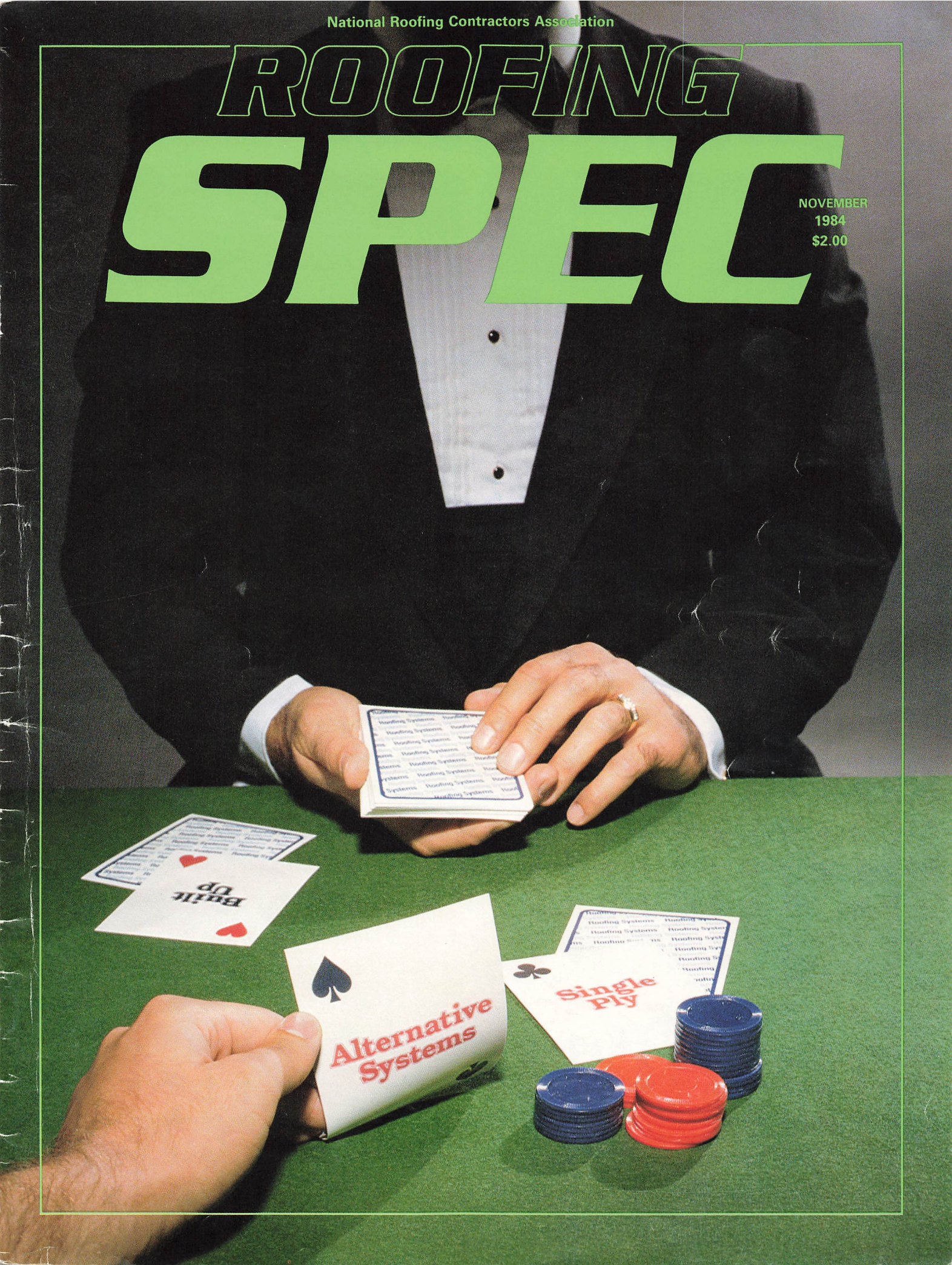


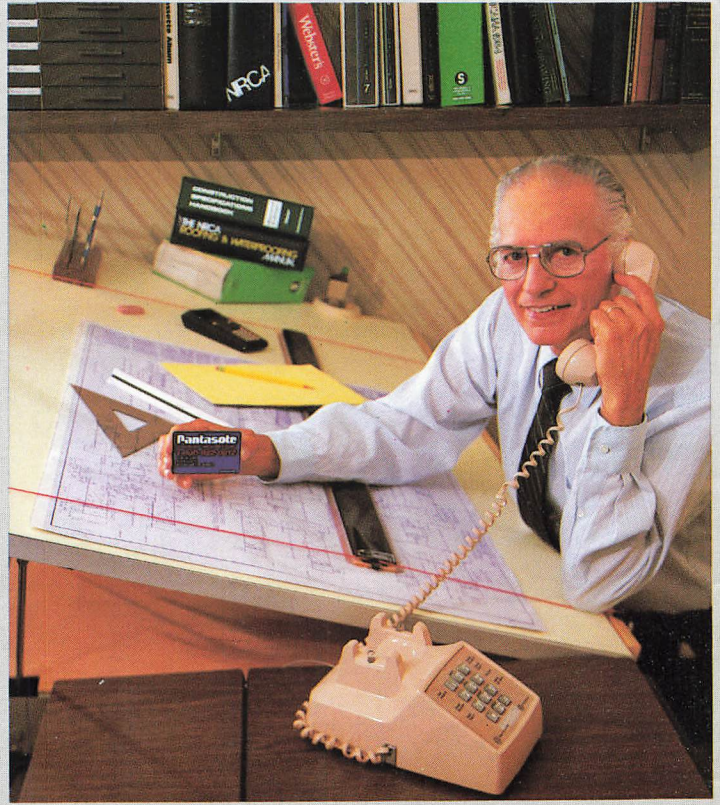
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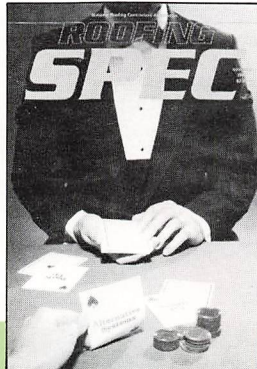
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# ROOFING SPEC

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# KOPPERS

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## August index drops as construction levels off

Contracts for new construction declined 1 percent in August after seasonal adjustment, the F.W. Dodge Division of McGraw-Hill Information Systems Co. reported.

August's unadjusted total of contracts for future construction work was \$19.6 billion, bringing the year's total of newly started construction to \$144.7 billion. This is a 10 percent increase in contracting over 1983's first eight months, according to Dodge.

Dodge's seasonally adjusted monthly index of construction contract value, which uses 1977 as its 100 base, dropped slightly to 151 in August from July's 152.

According to Dodge vice president and chief economist, George A. Christie, "The building cycle has flattened out, and the market remains steady but vulnerable. Our Dodge Index, which is currently hovering in the low 150s, is still where it was last winter when interest rates began to rise.

"It's a pretty good bet that interest rates will be easing before much longer but not in time to head off a temporary decline in construction contracting. It's already happening in the housing sector."

August contracts for non-residential building, valued at an unadjusted \$6.8 billion, declined 5 percent from July's seasonally adjusted rate of contracting. The latest month's decline was confined entirely to institutional building (schools, hospitals, etc.), while commercial and industrial construction starts held even with July's rate.

"Despite August's dip in non-residential contracts, this part of the construction market is still on an upward trend," the Dodge economist pointed out. "Expansion in commercial and industrial building since the beginning of 1984 has just about balanced the recent slippage in homebuilding, leaving an essentially flat condition overall."

Residential building contracts totaled \$9.4 billion in August. Although housing starts fell in August, the latest month's contract value was up 1 percent from July's rate after seasonal adjustment.

"The mix of August's housing starts explains part of this apparent inconsistency," Christie noted. "Last month's decline of housing starts occurred mostly in multi-family units, leaving the continued support of more expensive one-family housing. In addition, August brought a strong increase in contracting for hotels and motels, which are also included in residential building contract value."

Non-building construction contracts, valued at \$3.4 billion in August, declined 2 percent on a seasonally adjusted basis.

Highway construction, the single biggest category in the public works sector, remained strong in August but was little changed from July's total. Contracting for sewage treatment plants gained in the latest month, while water resource projects (dams, reservoirs, etc.) declined.

Electric power plant construction was negligible in August, as it has been through most of 1984.

Regionally, August's contracting data revealed a 12 percent decline in the Northeast (which had experienced a particularly strong July) and nominal gains of between 2 and 4 percent throughout the Midwest, South and West.

At the end of eight months, non-residential building, with \$48.4 billion of newly started work in 1984, led last year's comparable value by 18 percent. Residential building, at \$71.5 billion through August, was ahead by 15 percent. But non-building construction, with \$24.8 billion of newly started projects this year, was below its 1983 eight-month value by 11 percent.

### Monthly Summary of Construction Contract Value

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

	AUGUST, 1984 CONSTRUCTION CONTRACT VALUE (000,000)	SEASONALLY ADJUSTED PERCENT CHANGE FROM PREVIOUS MONTH
Non-residential Building	\$ 6,766.5	- 5
Residential Building	9,364.5	+ 1
Non-building Construction	3,449.1	- 2
Total Construction	\$19,580.1	- 1

	8 MOS. 1984 (000,000)	8 MOS. 1983 (000,000)	CUMULATIVE PERCENT CHANGE
Non-residential Building	\$ 48,389.1	\$ 40,895.2	+ 18
Residential Building	71,517.0	62,340.0	+ 15
Non-building Construction	24,812.9	27,787.0	- 11
Total Construction	\$144,719.0	\$131,022.2	+ 10

### Dodge Index (1977 = 100, Seasonally Adjusted)

June 1984 ... 148  
July 1984 ... 152  
August 1984 ... 151

## Underused federal program offers tax credit to employer

The Targeted Jobs Tax Credit is an underused federal program that could give a \$4,500 tax credit to qualifying companies, according to a newsletter published by the Research Institute of America (RIA). The program offers tax credits to employers who hire workers from targeted low-skilled or economically disadvantaged groups.

By hiring a qualified employee, a

company can claim a first-year tax credit for 50 percent of the first \$6,000 of the employee's income. The second year, 25 percent of the first \$6,000 can be claimed. The credit can be carried back three years and forward 15 years.

The program targets several different labor pools. Self-supporting 18- to 24-year-olds, Vietnam-era veterans,

participants in cooperative education programs, 16- and 17-year-olds in summer jobs and federal, state or local aid recipients are among the groups qualified.

Employers may be reluctant to use the program because of the paperwork involved, according to RCI. Employees must be qualified through state or local employment agencies and strict reporting deadlines must be observed.

To take the burden off of the employer, several administrative consulting firms are offering the administrative and screening services companies need to receive tax credits for all qualified new hires. The consultants submit the necessary paperwork to the proper government agencies and may even sit in with the employee at the employment agency's qualifying interview. These companies may charge a flat fee per qualifying employee or they may request a percentage of the tax credit received.

RCI suggests that any company employing 35 or more people might find the program helpful. More information on it may be obtained from a state employment office. The program is presently scheduled to run through 1985.

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## Study recommends change to control asbestos exposure

A better reporting system could help the Occupational Health and Safety Administration (OSHA) control workplace asbestos exposure. This is the conclusion of two Massachusetts Institute of Technology researchers.

The two studied the costs, benefits and overall feasibility of complying with soon-to-be-released OSHA asbestos exposure standards. The standards were created to reduce workplace contact with airborne asbestos fibers, a suspected cause of cancer.

An MIT report on the researchers' findings suggests three programs to report asbestos work to OSHA. The program most directly related to roofing is for reporting the removal of asbestos products, a situation sometimes encountered in roof tear-offs. The other two programs cover

reporting new asbestos product installation and the removal of asbestos while leaving the rest of the construction intact.

Under the first program, roofing contractors tearing off asbestos products would conduct a pre-job survey and submit a report to OSHA before beginning the job.

The MIT report states that this

would lead to a 40 percent reduction in worker asbestos exposure and would cost only \$1,000 to \$2,000 per full-time exposed worker. Further exposure reduction could be achieved with wet removal methods and the designation of regulated areas. Supplied-air respirators and air-fed hoods would also reduce exposure, according to the report.

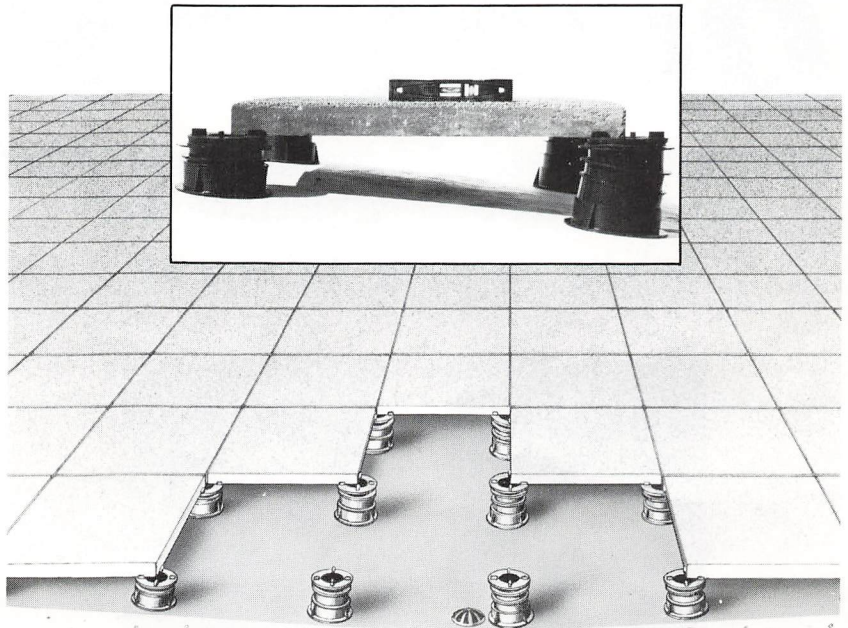
## Foam roofing maintenance easy, says Navy

Maintaining a polyurethane foam roofing system is possible and easy, according to a report from the Naval Civil Engineering Laboratory (NCEL).

The lab conducted several experiments to establish effective maintenance procedures. Researchers investigated existing methods, developed new procedures and materials and standardized the best procedures for Navy use.

A strong inspection and maintenance program can increase the life of a recoated roof by as much as five years, according to the study. "New sprayed PUF applied over an existing primer-coated foam system has performed very well in these studies," the report states.

A copy of the report may be obtained from the Naval Civil Engineering Laboratory, Port Hueneme, Calif. 93043.



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## NLRB ruling to be reviewed by Supreme Court

A National Labor Relations Board (NLRB) ruling barring unions from penalizing members who defect during strikes will be reviewed by the U.S. Supreme Court sometime during the Court's current term.

The Court will be considering the case of an Illinois clothing union that fined some of its members for resigning from the union and going back to

work during a strike. A provision of the union's constitution prohibits resignations or withdrawals during strikes or when strikes appear imminent.

Reviewing the case, the NLRB and the 7th U.S. Circuit Court of Appeals said the union did not have the right to prevent members from resigning, even during a strike.

The NLRB has made a similar ruling in other cases. In one instance, reported in the August 1984 *Roofing Spec*, the Board ruled that the Machinists Union could not fine a worker who resigned and went back to the car dealership the union was striking against. That ruling overturned a 1982 ruling that upheld the unions' right to impose a 30-day waiting period on members wishing to resign during a strike.

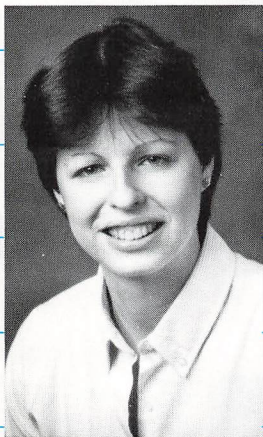
The Justice Department, representing the NLRB, is interested in the Supreme Court's ruling on the clothing union case because of similar problems in other unions.

The Supreme Court became involved in the case after the 9th Circuit Court of Appeals ruled in a separate case that unions do have the right to fine resigning employees. The Justices will attempt to resolve the inconsistency between the two lower court rulings.

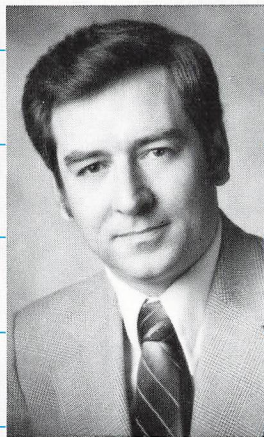
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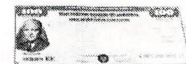
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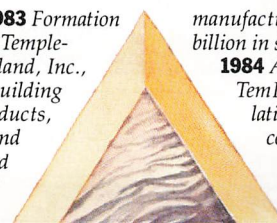
**1980** Opening of Temple-Eastex rigid foam insulation plant in Diboll, Texas.



**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.



## Syenergy makes personnel changes

Robert B. Brazil has been appointed director of marketing services and Carol Marston is now chief engineer of Syenergy, Inc. Randall L. Donovan of Providence, R.I. has been named technical service representative by Marston. Timothy Kulsik of Springfield, Pa. and Donald J. Hourahan of Rumford, R.I. have been appointed regional technical representatives.

Brazil was an account executive with Potter Hazlehurst, Inc. before joining the company. He will coordinate advertising, public relations and marketing services.

Marston is from Brooklyn, Conn. He is responsible for the Technical Service and Research and Development departments.

Donovan will help prepare estimates, review plans and warranties and work on customer service.

Kulsik and Hourahan will be responsible for providing technical service to both roofing and wall system customers in their assigned areas. Kulsik is the new Mid-Atlantic representative, and Hourahan is the Northeastern rep.

## Daniels named Tamko BUR director

Tamko Asphalt Products, Inc., Joplin, Mo. has announced the appointment of Phil Daniels to corporate director of built-up roofing. In his new position, Daniels will assume responsibility for product development, marketing and advertising of all Tamko BUR products.

In addition to his duties at Tamko, Daniels serves as lecturer at the Roofing Industry Educational Institute (RIEI).

## UC Industries opens new Technology Center

UC Industries has announced the opening of its expanded Technology Center in Tallmadge, Ohio. UC manufactures Foamular Extruded Polystyrene Insulation.

The original Technology Center, opened four years ago, rapidly became outdated as the company grew.

"The union of research and development and engineering activities in a centralized structure was implemented for the technological advancement of existing products and the research and development of new products," Roy Divis, vice president of technology, stated. "The expansion will permit closer coordination of data between technical groups."

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## Carlisle unveils facilities at expanded complex

Carlisle SynTec Systems has opened a new Technical Center and adhesives plant in Carlisle, Pa.

Constructed at a cost of \$3 million, the Center houses scientists, engineers, laboratory, technical and procurement personnel. According to the company, the Center is a state-of-the-art research and development facility.

The adhesives plant represents a \$5 million commitment to producing adhesives for Carlisle's single-ply roofing systems. The 22,000-square-foot manufacturing plant and warehouse uses such advanced technology as computer-controlled production and sophisticated safety and security systems, the company reports.

"The opening of the SynTec Technical Center and the adhesives plant is

proof that we are determined to maintain our leadership position," Robert A. Brown, president of Carlisle, stated.

## AlSCO's Johnson heads new group

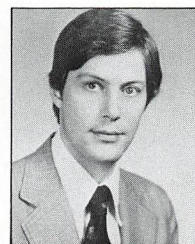
The AlSCO Building Products group of ARCO Chemical Co. has named Keith Johnson operations manager for WallFrame Building Systems. His new group will be responsible for manufacturing and marketing a panelized residential framing system, to be introduced this fall.

Johnson was previously project manager for commercial development with ARCO in Philadelphia where he worked in packaging design. He holds seven U.S. patents.

## Koppers names Morse manager

Peter V. Morse, has been appointed manager, planning and business analysis in the Building Products Sector of Koppers Co., Inc. He will be responsible for developing product, market and business strategies, as well as coordinating the finance, accounting and control functions for the Sector.

Morse joined the company in 1968 and has held positions of increasing responsibility in the company's operating divisions and Finance Department.




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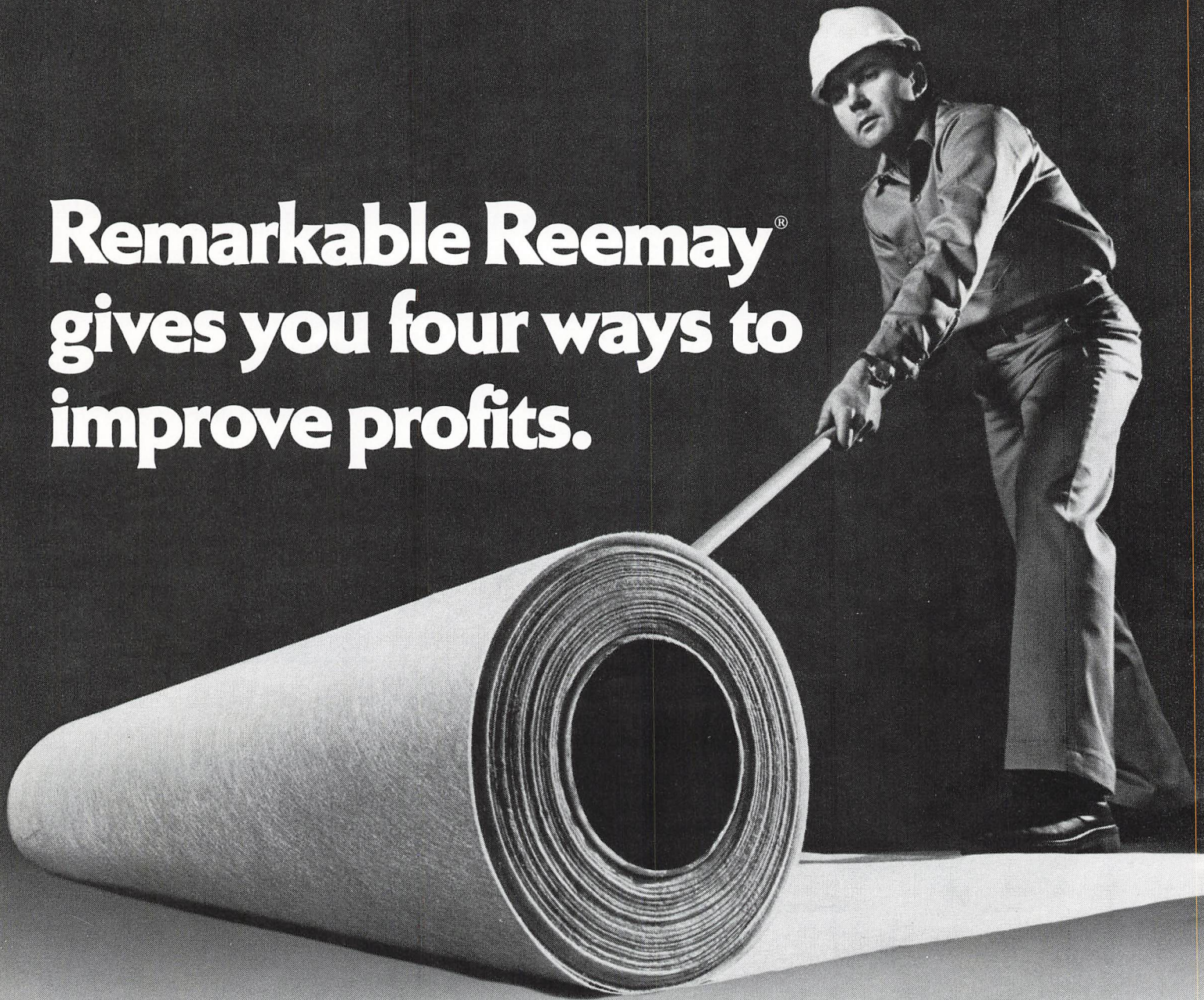
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## The profit is familiar, but . . .

"Failure to recognize true profit or loss seems to be the chief cause of the failure of many contracting companies," says Irv Chasen, a painting contractor and president and founder of the Profit Research On Operating Factors (PROOF). Chasen spoke this summer to 40 roofing contractors at a seminar sponsored by the Associated Roofing Contractors of the Bay Area Counties and the Bay Area Counties Roofing Industry Promotion Fund.

"The cause of many failures is mistaken pricing and not the contractor's lack of skills to manage the job itself," Chasen said. "Most contractors know the direct costs of any given job once the job is completed. When these costs are subtracted from the selling price, gross profit is the result. Therefore, when accurate operating costs (indirect or overhead costs) are subtracted from the gross profit, the bottom line will be an accurate record of the net profit for each job.

"Once contractors have mastered the art of accurately determining operating costs (overhead) on a completed job, they are in a position to apply this same precise overhead cost when pricing future jobs," Chasen concluded.

He went on to show contractors how to accurately determine overhead costs with a detailed series of graphs, worksheets and illustrations.

Six hours of credit was given to companies participating in the Academy of Roofing Contractors accredited program.

## Contractors form alliance for fair utility competition

Public utilities are competing directly with private contractors, claims the Associated Roofing Contractors of Maryland, Inc.

Associated Roofing Contractors is part of a larger group of contractors in the Baltimore/Washington area formed "to fight this unfair competition." The group calls itself the Alliance for Fair Utility Competition.

"Not content with their monopoly power, many public utilities are en-

tering into direct competition with private contractors," an Alliance news release states.

"Some have established subsidiaries to install 'energy management systems,' storm doors, insulation, siding and anything else that can be called 'energy-related.' These non-utility contractors are subsidized by the rates public utilities charge, which give them a competitive advantage over private contractors."

The Alliance recently filed a complaint with the Public Service Commission asking it to investigate these practices.

NRCA has sent a letter to selected U.S. senators urging passage of legislation that would protect roofing contractors from unfair utility company competition. (See National News, October *Roofing Spec.*)

## Michigan selects new officers

The Michigan Roofing Contractors Association, Inc. elected new officers and directors at its convention in September.

Officers chosen to serve during the 1984-85 term were: John Gundrum, Gundrum Roofing Co., Ann Arbor, president; Roger Steyer, Steyer Roofing Co., Warren, vice president; George Schena, Schena Roofing Co., Mt. Clemens, treasurer; and Mervin E. Smith, Warren, secretary.

## Carolinas name top four

The Carolinas Roofing and Sheet Metal Contractors Association elected 1985 officers at its July annual convention. They are: Nathan Pridgen, Davis Roofing Co., Florence, S.C., president; Dale Gillis, Mid-Atlantic Roofing, Charlotte, N.C., first vice president; Ben Pickens, Pickens Roofing and Sheet Metal, Spartanburg, S.C., second vice president; and Dennis Whitener, Barger-Ashe Roofing, Lenoir, N.C., secretary-treasurer.

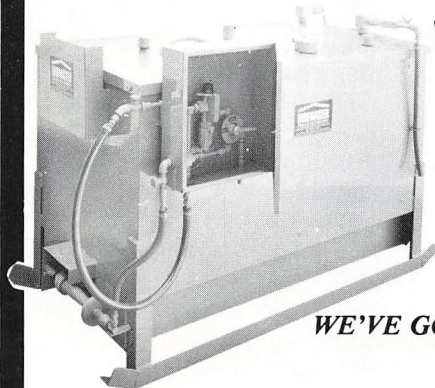
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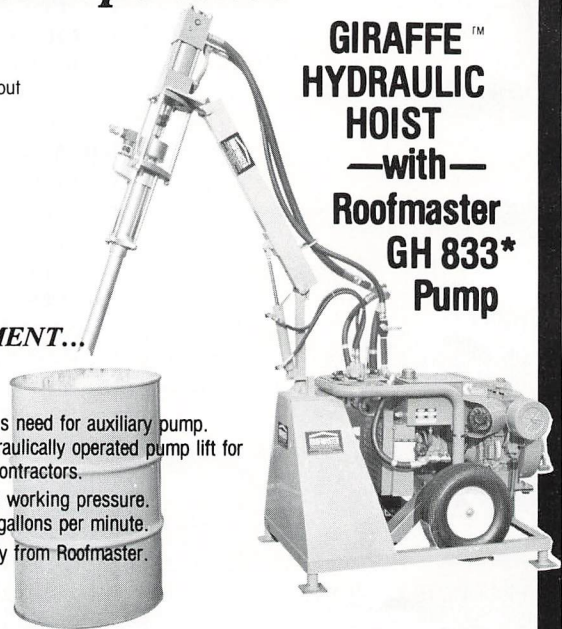


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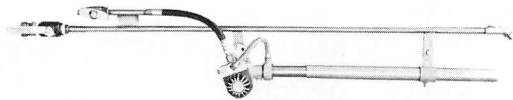
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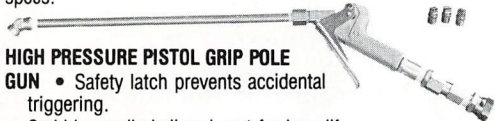
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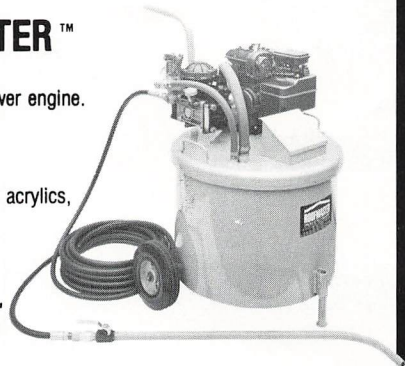


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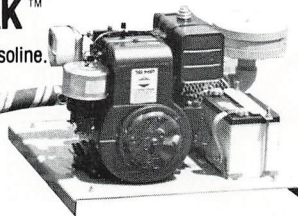
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# Manufacturers, builders, contractors test their metal

**I**f you can't beat 'em, join 'em. It may sound like a gentle way to admit defeat, but in the roofing business it's become a sound survival strategy. Ever since elasto/plastic membranes began encroaching on BUR territory, roofing contractors have been quietly joining the challenger's camp. The single-ply manufacturers eagerly welcome the contractors; working through them is the best way to get their products installed.

Most contractors haven't renounced built-up entirely; they've simply added the new products to their lineup. They let the systems manufacturers battle for the hearts and minds of the architects and building owners. Contractors find that offering a variety of systems allows them to bid on jobs regardless of the roofing specified.

But now a new contender has entered the fray, bringing its own troupes; contractors hoping to join this cause are scrutinized before being accepted into the ranks.

## Practical alternative

The new competitor is the standing seam metal roof, and the soldiers in the field are the contractors, builders and dealers who are already selling and erecting pre-engineered metal buildings. Though standing seam roofs have been used on pre-engineered metal buildings for 50 years, it is only recently that changes in design, application techniques and manufacturer marketing strategies have made the system a practical reroofing alternative for brick, block, bar joist or concrete buildings. At the urging of metal building manufacturers, pre-engineered builder/contractors are moving into these traditional roofing markets.

The growing use of metal roofing for retrofit has been noted by the metal building industry. *Metal Building News* calls metal roofing "the fastest growing product in construction," and says, "The metal roof is fast becoming the preferred choice in covering commercial and industrial buildings, and in some cases, even residential homes." This may be a bit of an overstatement by an

## Crimping BUR's style?

By Martin Eastman

industry booster, but it does seem certain that roofing contractors will be finding more and more metal roofs in their bid specifications.

The roofing industry has noticed the increasing use of metal as well. The early bird session at last year's NRCA Convention dealt with various brands of standing seam roofs and a new Roofing Industry Educational Institute seminar explores the technical aspects of the standing seam metal system.

Several recent innovations have made the standing seam roof a strong market competitor. In the basic standing seam roof the turned up edges of metal panels are butted and crimped together to form watertight connections. The most important advance in this design has been the incorporation of metal clips into the seams. The clips are used to attach the panels to the roof's substructure in a way that allows the panels to expand and contract. Using the clips, workers can attach the roof securely without punching screws through the metal skin.

Other design changes simplify installation. Crimping has been eliminated in some systems with seams that hook together or snap together with a long clip. Even the crimped systems install easier with machines that run along the seam and crimp it automatically.

According to H. C. McBay, a vice president of Beldon Roofing and Remodeling Co. in San Antonio, Texas, the pre-manufactured standing seam systems require little knowledge of specialized sheet metal forming to install. Manufacturers form the panels and hardware at the factory, and the complete system is delivered to the site ready to be fastened together and attached to the substructure. McBay says that flashing the roof requires the most sheet metal work, although when the roof is an integral part of a pre-engineered building, flashing is minimal.

*"We're in retrofit to compete with built-up and single-ply."*

## Retrofit competition

All of these improvements have helped metal roofing move off corrugated tin sheds and onto low-rise commercial and industrial structures. Most of the larger manufacturers are setting their sights on the reroofing market. "We're in retrofit to compete with built-up and single-ply," says Mark Workman, a marketing consultant with Butler Manufacturing Co. "We have a group that is devoted solely to that market."

Workman explains that Butler formed its roofing division in 1981 to market the company's standing seam metal roof. The group operates independently of Butler's pre-engineered building business. According to Workman, the roofing division provides marketing and technical assistance to Butler's builders, showing them how to "adapt a roof to a building, whether it's reroofing or new construction."

Several other companies have instituted similar marketing approaches. Both Warren Mueller of Armco Building Systems and Ken Cole of Binkley Co. say their companies have set up roofing divisions to tap the reroofing market. These firms are offering standing seam systems for new roofing as well, but generally, they see the greatest potential for sales and growth in retrofitting buildings originally covered with a built-up or single-ply system. Mueller estimates that only 15 percent of his division's work is new roofing.

The manufacturers are building a strong case for switching to standing seam metal roofing. As one might guess, industry representatives are eager to tick off metal's strong points. At the top of the list are the two attributes architects and building owners are happiest to hear—long life and low maintenance. "We have the long-term solution to a guy's roofing problems," Butler's Workman says.

Butler, like many other standing seam manufacturers, backs up its claims of roof longevity with a 20-year warranty. Paul Nimtz, an architect with Butler, says standing seam roofs require little maintenance to reach that 20-year mark. An occasional check for debris is usually all that's required. Nimtz adds that metal roof systems are not restricted to rigid board insulation; this permits higher R-values.

Armco's Halsell sees the light weight of the metal system as an advantage. The panels and substructure add only 2½ pounds per square foot to a roof, he says. For retrofit work, the light weight of the system can make tear-off of the old roof unnecessary, lowering the cost of installation. New roll-forming technology has also brought metal roofing's cost down, according to Halsell. With most parts pre-manufactured, the newer systems do not require as much labor to install as site-formed standing seam systems.

Metal roofing may not be ready to take over the world just yet, however. Most manufacturers admit that conventional roofing is still the best choice for a roof with several penetrations or pieces of rooftop equipment. And the metal roof does require some slope, though manufacturers are quick to point out that it is a simple matter to add slope to the roof's substructure.

## Building networks

But even with these few drawbacks, standing seam metal roofs are gaining ground in the reroofing market. What this means is that the conventional roofing contractor may find himself excluded from more and more bids because a metal roof has been specified. Or he may find himself competing against the Armco or Butler builder down the street for reroofing jobs even though the jobs do not involve pre-engineered metal buildings.

Armco and Butler are both urging their builders to get into the retrofit market. Nimtz says that Butler's builders have responded enthusiastically to the call. The builders see roofing as a way to diversify, insulating their fortunes from the ups and downs of the metal building business.

Some roofing contractors may wish to compete with the metal building builders on their own turf, but getting into the standing seam roofing business may not be as easy as getting into single-plys. Armco and Butler are offering their roofing business to their contractors first. Neither company is willing to work with roofing contractors in regions where their own builders are installing standing seam roofs. If the builders choose not to get into the market or if an area does not have a builder in it, the companies will consider contacting a roofing contractor to see if he is interested in the business.

The manufacturers are very selective about the roofing contractors they bring on board. "I doubt if we're going to throw it open to just anybody and everybody," Nimtz says. A roofing contractor must have the right mix of experience, reputation and personnel for the manufacturer to consider him.

One reason the manufacturers are so particular is so that they can maintain control of their product's quality. Nimtz believes a strength of Butler's roofing system is that it is a turnkey operation, with the manufacturer taking care of everything from fabrication to installation. There is also the fear that roofing contractors may not have the skills needed to put down a standing seam system. "It takes a different type of person to put on a metal roof," says one contractor who believes that even a pre-manufactured metal system requires more skill to install properly than a built-up or single-ply roof.

A further concern of the manufacturers is maintaining a good working relationship with their present network of builders. According to Workman, the manufacturers don't want to step on their builders' toes by setting up competitors in the same area. For a contractor to break into a metal building builder's market would be "tough to do unless he wanted to go in and work a deal with one of our dealers," Workman says. He suggests roofing contractors look into purchasing metal roofing components from a component manufacturer.

## Selling metal

The persistent contractor may find a way to market metal, however. There are several systems available, many more than can be mentioned here; some of these systems' manufacturers may be looking for dealers in areas not already covered. Butler has signed up a handful of roofing contractors on a trial basis, according to Nimtz. And Halsell said Armco is very interested in working with roofing contractors "where the (Armco) contractor has not elected to get into the business."

Armco is moving into the roofing business much the same way Carlisle did with its single-ply system, according to Halsell. The company is using contacts who know the roofing business, such as manufacturers' reps, to find the contractors with the skills and experience it is looking for. Becoming an Armco dealer is a matter of the company going to the contractor, Halsell says.

Armco is trying to adjust to the roofing contractor's needs. Halsell states: "I think the strength of our program is the people we have in our roofing division and their knowledge of the roofing market." The company has had to learn the roofer's language. "We don't talk tonnage, we talk squares," Halsell says.

Another manufacturer is bypassing its builders altogether to market its standing seam system. Ken Cole, vice president of the Binkley Corp., says, "The standing seam roof, as far as we're concerned, has nothing to do with pre-engineered."

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*Getting into the standing seam roofing business may not be as easy as getting into single-plys.*

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*Architects will name a system as a reference and then list the acceptable alternative systems.*

It is Cole's belief that standing seam system manufacturers and roofing contractors need each other. Roofing contractors will need to add metal roofing to their lines to remain competitive, Cole says, and Binkley needs the contractors' knowledge of roofing and the market to put down successful roofs.

Binkley is still selective about who it chooses to be installers, however. To become a Binkley dealer a contractor must be in business a certain number of years, have a certain number of employees, have a good reputation and have a sufficient net worth. In addition, the contractor must attend a three-day training session to learn the art of metal roofing.

Binkley isn't the only company training its metal roofing contractors. "What we're doing is setting up roofing contractors through a two-day training seminar," Halsell says of Armco's schooling. The program shows contractors the layout design and erection of the metal roof. Butler has two different seminars, one that concentrates on marketing and another that concentrates on installation and estimating.

Beldon Roofing and Remodeling Co. recently added the Armco system to its line. McBay says the company got into metal because it frequently received calls to reroof metal buildings. A pre-engineered metal building's design makes it costly to reroof with anything other than another metal roof, so Beldon needed a metal system for those particular jobs. The company also offers a site-formed standing seam metal roof, which McBay says company salespeople will sometimes suggest to clients. Beldon doesn't actively sell its premanufactured Armco system, however. "Preformed panels we normally wait for the architect to specify," McBay says.

Frequently, architects will specify a particular company's metal system, according to McBay. This doesn't necessarily prevent con-

tractors with other systems from bidding on the job. McBay says architects will name a system as a reference and then list the acceptable alternative systems or simply state that equivalent systems are satisfactory.

### **No offense**

Working with a manufacturer that also sells its roofing system through its own contractors takes a little extra care, according to McBay. "It's not difficult, but it gets tricky. They normally have a certain number of dealers set up in a certain area," he says.

Beldon tries to avoid competing directly with metal building contractors. A school reroofing job Beldon is presently bidding on is a typical example of the pre-manufactured metal roofing work the company goes after. The building is not a pre-engineered metal structure, and the reroofing, for which an Armco roof has been specified, is the only renovation the building requires. Consequently, the local metal builders are not interested.

McBay doesn't see the metal roof as a major threat to other types of roofing at this moment. He estimates his company's metal work to be less than 10 percent of its business. But he does see the use of metal roofing increasing. "People are looking for a roof they can put on and forget," he states. When it comes to moving into other roofing materials' territories, however, he doesn't see metal jeopardizing BUR's market dominance. "The big fight will probably be between metal roofing and single-ply," he says.

# RIEI forges new metal seminar

**I**n late April, 27 metal roofing industry representatives met in a Denver conference room. They came together to hammer out the rough shape of a new two-day Roofing Industry Educational Institute (RIEI) seminar, this one examining the materials and installation methods of standing seam metal roofing.

By the meeting's end, the participants had their assignments. They returned to their own companies to write the lectures and gather the slides that would give the seminar its final form. Six months later, in September, they would come together again to share their work and receive their colleagues' critiques.

During the time between the two meetings, the group grew. By the September session, about a dozen more metal roofing representatives had joined the original 27 seminar planners. The entire group met again in Denver under the threat of snow, one day ahead of the season's first major snowfall. But like a standing seam roof installation, the seminar planning was continued despite the approaching inclement weather.

## Raw material mined for information nuggets

The finished seminar will debut in Chicago Jan. 10-11. That first session's attendees will see only polished presentations; they probably won't be aware of the time and effort those presentations required. Hundreds of pages of text will have been written, rewritten and printed to support the lectures they will hear. Many job sites will have been visited and photographed, and at least 10,000 slides will have been reviewed and edited to select the 1,100 they will see. The two days of training the attendees receive will be the result of hundreds of hours volunteered by knowledgeable experts and over \$50,000 spent to develop the new seminar.

## Dress rehearsal brings it together

Much of this work was perfected at the September meeting in Denver. The plan-

## Standing seam roofs studied

By Dr. Frank M. Parrish,  
deputy director, RIEI

ners gathered to refine their presentations and put the finishing touches on the new seminar. Among the works presented at this dress rehearsal were talks covering metal roofing from the molecular level to complete systems.

Mark Asmus of Bethlehem Steel Corp. discussed the chemistry and technology of various metals. One major focus of his talk was Galvalume™, Bethlehem's corrosion-resistant, aluminum-zinc alloy coating. Asmus also reviewed other metal coatings and laminates.

Another presentation was prepared by two members of the roofing fastener industry. Ted Swift of Buildex and George Page of Elco Industries discussed the fasteners and clips their companies offer to secure metal roofing panels to a roof's substrate or framework.

The appropriate use of standing seam systems was covered by Joe Voelkert of American Building Co. and Paul Nimtze of Butler Manufacturing Co. The two reviewed metal's role in both new roofing and retrofit situations.

Insulation and vapor barriers were also discussed at this session. Denny Wenrick of Owens-Corning Fiberglas and Frank Mastalka of MATO covered the selection and installation of these two metal roofing system components.

The dress rehearsal continued for a second day with Rob Haddock of Seven States Steel. He focused on metal roofing installation and application techniques. Haddock is an experienced metal roofing erector and has had extensive experience with many different roofing systems.

Dick Fricklas, RIEI's director, also spoke on the second day. He examined the fire and wind codes that govern the design and installation of metal roofing. He mentioned Underwriters Laboratories' UL 60 and UL 90 wind-uplift ratings. They are important to the metal roofing industry, according to Fricklas, because they indicate a system's ability to resist high-wind damage.

As the meeting planners listened to their colleagues' presentations, they realized that a lot of work had been accomplished.

*Since RIEI's inception in 1980, nearly 8,000 participants have attended more than 120 seminars.*

At the same time, they recognized that a lot of hard work lies ahead. Presentations on flashings and accessories still need considerable work and additional information to be adequately developed. Chris Wahle of Rib-Roof Industries agreed to assist in this area.

#### **Inquiring minds want to know . . .**

Since the announcement of this seminar, there have been several recurring questions. How will the industry benefit from the training? Who will attend the sessions? Why is RIEI developing this course?

The answers to these questions lie in the history and purpose of RIEI itself. The Institute is a non-profit corporation, independent of any roofing organization, association or business. It is supported entirely by seminar tuitions and contributions from the roofing industry. Since RIEI's inception in 1980, nearly 8,000 participants have attended more than 120 seminars. This new seminar is part of RIEI's continuing effort to provide educational seminars to those concerned with improving roofing systems performance.

People who attend this new seminar will receive a better understanding of metal roofing systems. By the end of the second

day, they will know what materials and systems are available and the advantages and limitations of those systems; they will learn how to select, specify, use and maintain metal roofs; and they will see how to tie a metal system into an existing roof system when reroofing.

As people learn more about metal roofing, the entire industry will benefit. With better education, the market influencers, roofing contractors, building owners, architects, engineers and others will be able to make better decisions.

In the past five years, about one-third of RIEI's seminar participants have been roofing contractors, another third have been building owners and another third have been manufacturers' representatives. RIEI anticipates that most metal roofing seminar participants will be building owners, roofing contractors, government agencies, roofing manufacturers and other individuals interested in learning about the performance characteristics of the metal roof. On evaluation forms attendees at other RIEI seminars were requested to complete, building owners and government agencies have indicated a strong interest in understanding metal roof systems.



# Roofing with wood: for a fair shake, know the facts

**M**any developers, architects and homeowners believe that roofing with hand-split shakes cannot be matched for the all-natural, Currier-and-Ives look it gives the building or home. Shakes can be a desirable roofing alternative for either residential or commercial structures; according to some contractors, the material's popularity is rapidly increasing.

But the demand, costs, and local codes and ordinances for the product vary widely throughout the country. Before you decide that your business needs a whole lot of shaking going on, there are a few things you should know.

## You wood if you could

Shakes are widely used in the West, much more so than in the eastern portions of the country. Demand for the product drops markedly as distance from the nation's big lumber producers increases.

"About 80 to 85 percent of the market is west of the Mississippi River," Marshall Ritchie notes. Ritchie is marketing manager for the Red Cedar Shingle and Handsplit Shake Bureau. "It's never been a volume item in the East, mainly because of the additional freight cost.

"Many other materials are acceptable in the higher roofing grades. But in the West, people have shown a preference for shakes. And out here, we can be competitive in that market."

Hand-split shakes are certainly more expensive than other, more conventional roofing materials. And if they are weather- or fire-treated, the price climbs more.

"Fire retardants virtually double the cost of shakes and wood shingles," Andy Radonich, Radonich Insulation & Roofing, San Jose, Calif. says. (Wood shingles are machine-sawed from lumber; shakes are hand-split.) "I've always done a lot of wood in my business—about 50 percent—but the trend is toward more and more restrictions. Tile has taken away quite a bit of its market."

Radonich refers to the major problem

## Ignorance is risk

By Christine Nolen Taylor

contractors have with wood shingles and hand-split shakes today: the threat of fire.

## Yelling fire in a crowded suburb

"What really brought this to public consciousness was the big Bel Air (California) fire about 15 years ago," Radonich reports. "Everyone started thinking more about the danger."

Southern California is unique in its concentration of shake-roofed homes, severely dry climate, surrounding forest and brush and high winds. This proved a terrifying combination some years ago when burning brands resulting from raging forest fires ignited roof after roof in area communities.

The fires resulted in building code hearings and eventually, code changes. Contractors learned to check local codes and restrictions carefully before installing the materials. Predictably, the Asphalt Roofing Manufacturers Association developed statements on the use of wood shingles and shakes. And the Red Cedar Shingle and Wood Shake Bureau received a blow from the damaging publicity from which it is still trying to recover.

"About half of our industry is in California, historically," Ritchie notes. "That's where we've had problems because of the brush areas.

"This has affected us negatively, to a degree. We had so many eggs in one basket. We've tried to disperse our interests more widely, but the concentration of people who have shown a preference for our product is in California. We've been unable to recoup in other areas."

## Weighing the evidence

The Bureau employs an annual advertising budget of about \$1,000,000 to help tell its story, according to Ritchie. Ads are placed in trade and consumer magazines, and field service representatives call on potential customers. The concentration is on architects.

"The product appeals to a lot of architects," Ritchie comments. "It has an aura about it; it is truly natural."

*Following the Woodway Square episode, shipments to Texas of wood shakes and shingles dropped 60 percent.*

The Asphalt Roofing Manufacturers Association isn't buying it. According to Ritchie, ARMA is Bureau Enemy Number One.

"ARMA is very active in encouraging the inhibition of shakes and shingles," he says flatly. "We are limited in the use of this product; it's a natural resource. We represent less than 10 percent of the roofing market. We could never be a major force in roofing.

"The three national building codes all permit wood shakes and shingles on one- and two-family dwellings with no problems," Ritchie continues. "No fire treatment is necessary. And there are no insurance differentials for one- and two-family dwellings roofed with wood. Only one-half of 1 percent of all fires originate on top of roofs.

"But ARMA would still like to see us eliminated," he says.

John Brennan, assistant to the executive vice president of ARMA, is not quite as blunt: "We are in favor of building codes that require at least a Class C rating (from Underwriters Laboratories)," he states. "And we are opposed to restrictive ordinances that do not give the homeowner the choice of what kind of roof to put on the house."

John Lauderdale, Southwest regional representative for ARMA, adds: "The shake and wood shingle people are always saying we're trying to ban them from the market. If we really wanted to do that, we'd encourage a Class A rating. Class C still gives everybody access."

### **Restricted neighborhoods**

In some communities, particularly in Texas and Oklahoma, restrictive covenants allow developers to specify what kind of roofing will be applied to structures originally, and that the same kind of material must be used to reroof any structure within the community.

The reason for such restrictions is, of course, to make sure the continuity and attractiveness of these neighborhoods are preserved. But if the developer decides hand-split shakes are not only the order of the day but the order of tomorrow, that may take a bite out of any potential asphalt shingle business.

"Such a covenant was just declared illegal in Oklahoma City," Brennan reports. "Basically, we believe the homeowner should be able to replace the roof with whatever he wants, provided the material meets at least a Class C rating."

The city of Houston has been taking a closer look at its deed restrictions, according to O. C. Smith, executive director of the Houston Roofing and Waterproofing Contractors Association.

"We're different," Smith says. "We don't have any zoning laws, just deed restrictions. The roofing materials used all depend on what a developer wants a certain suburb to look like. Different colored shingles are generally considered a no-no. They all want wood and tile instead."

The Woodway Square apartment complex in Houston is used as a graphic example of what can happen as a result of such covenants and with an absence of a fire code. The complex included more than 1,000 units and covered two city blocks. It burned to the ground in August 1979, resulting in \$34 million in damage.

"They have not amended the building code in Houston," Smith says, "but an ordinance was passed that forbids the use of shakes on any residence, unless the shakes have an underlayment of asbestos."

Following the Woodway Square episode, which received international news coverage, shipments to Texas of wood shakes and shingles dropped 60 percent, while shipments of asphalt shingles increased.

### **Shake still rolling in Salt Lake**

Kink Clawson reports that in Salt Lake City, people are using shakes "like crazy." Clawson is head of Superior Roofing Co., Inc. in Salt Lake and a member of the Building Codes Committee of the Western States Roofing Contractors Association.

"I know in Southern California, they make it real tough on you if you want to use wood," Clawson comments. "But the use of it hasn't decreased in our area. Salt Lake City has no restrictions on these materials for homes. For the downtown area, the local code requires fire-treated shakes."

Clawson is not convinced, however, that the shakes labeled "fire-retardant" really measure up. He describes the attempts to satisfy the codes and protect the public as "half-hearted." When asked to describe his opinion of the treated materials, he says

he's not impressed.

"We've received some complaints that the fire treatment eats nails. And we're not sure how effective the treatment is after it weathers. It doesn't last but maybe five years, and it's not re-applied."



Some homeowners favor wood siding as well as wood roofing for a completely natural look.



"The crowning touch of quality"—the Bureau's logo.

## Bearing the burden

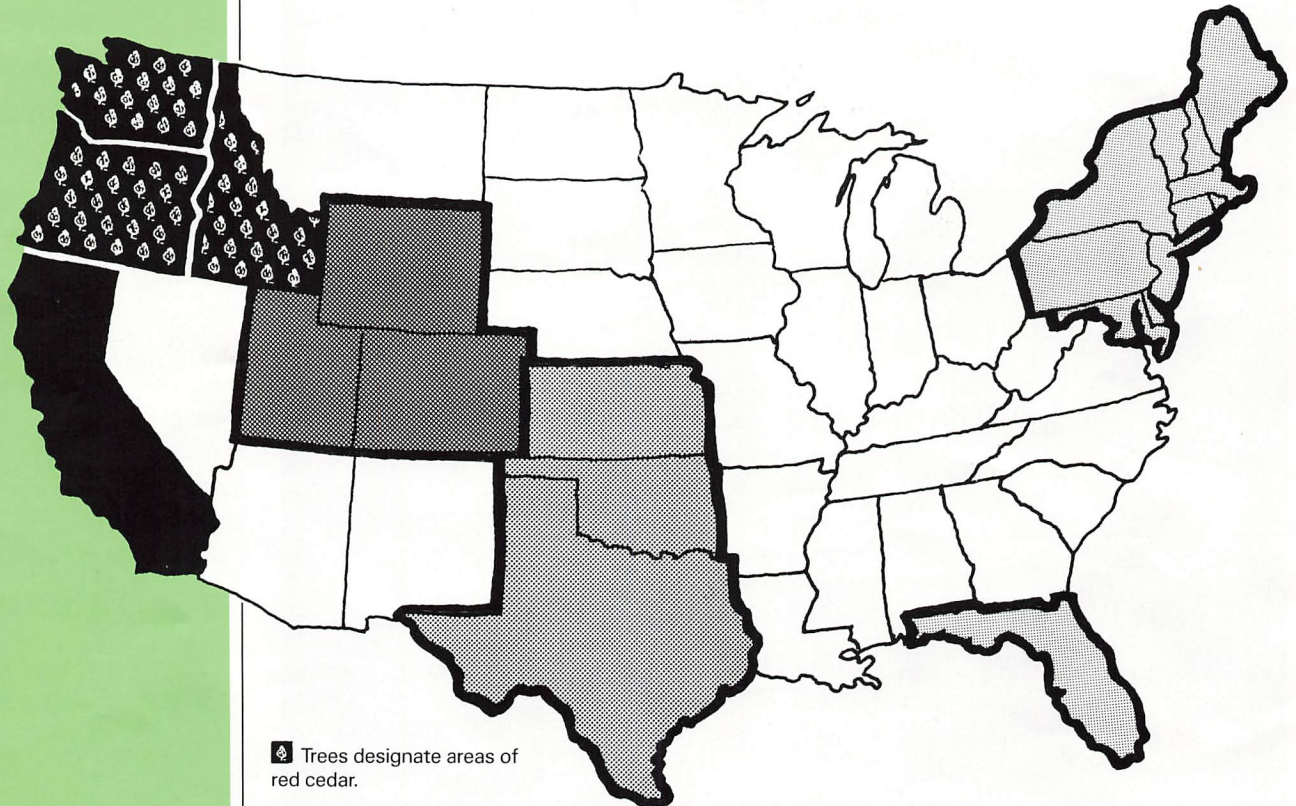
Although there is no evidence to suggest that the use of shakes and wood shingles is increasing nationally, Clawson believes that the questions raised in the West and Southwest will eventually concern many more contractors. "As California goes, so do we," he says. "Whatever action is seen out there in construction, we seem to see a couple of years down the road."


Clawson emphasizes the contractor's role and responsibility in the building code area. "Whenever we bid a job, we always have to get information from the owner on whether the structure's in a fire code area;

we have to ask if he's cleared specifications with the local code. It is the contractor's responsibility to meet that code, unless you have confirmation by letter that it lies elsewhere."

The situation is not helped by the fact that there are three national building code agencies and 1,100 state and city building codes that make widely varying demands. And, although the process is arduous, the codes do change regularly.

"In Utah, as in other areas, the guarantee on the roof starts when an error in building code conformance is discovered," Clawson says to clarify his point. "Ignorance is no excuse."



 Trees designate areas of red cedar.

The darker the area, the greater the use of wood shakes.

# Phenolic foam: problem-solver or problem?

**P**henolic foam roof insulation has recently entered the United States market. The product has been available in Canada for several years. Since phenolic foam's introduction, there has been much discussion about its qualities as a roof insulation and whether it has the best combination of thermal and fire resistance of any insulation available.

But it should be recognized that in some installations phenolic foam use has proved troublesome. There are apparently some other properties of the product that make it extremely friable and difficult to handle and fabricate in the field. Also, foam curing problems have produced some undesirable dimensional stability characteristics.

## Examining the claims

Phenolic foam insulating material is formed by the foaming of phenol formaldehyde. A rather uniform cell structure encapsulates the foaming gases. A thermoset process cures the foam, resulting in rigid insulation board stock.

Manufacturers of phenolic foam roof insulations have advertised very low and stable K-values. (There is no aging of the insulation value as there is with polyurethane foam.) They also claim their product is very dimensionally stable, that its fire resistance is superior to most other roof insulations and that its use will not cause the blistering problems common with polyurethane foams.

Phenolic foam roof insulations may be superior in fire resistance and insulating values. However, recent observation and evaluation of a roofing assembly constructed over the product bring into question phenolic foam's dimensional stability and its ability to withstand normal foot traffic or mechanical abuse during the roof's installation or lifetime.

These observations were made during a recent audit of a roofing assembly. The job was still in progress when a quality assurance representative noted that the roof did not feel "just right" and then called for the audit.

## In-place evaluation shows fractures and shrinkage

By Richard Baxter,  
Carolina Roofing Service,  
Inc.

The roof assembly consisted of a painted, intermediate-rib steel deck on steel-webbed bar joists and smooth-surfaced, glass-fiber-reinforced asphalt built-up roofing membranes, which measured 1½ inches by 48 inches by 96 inches. Bar joist spacing on the roof varied from approximately 6½ feet to 3½ feet on center, depending on the loading it was anticipated the structural assembly would receive from below. The bar joists that were spaced approximately 6½ feet on center approached the steel deck's maximum span capability.

Upon examination, the steel decking in all areas felt reasonably firm under foot traffic. Overall, the deck appeared to be flat and within most construction tolerances. There were the normal variations in elevation at the endlaps where the steel deck sections had not nested flush over the support members, however, the maximum difference in elevation observed did not exceed ⅛ inch. The steel sections' sidelaps had been mechanically secured with self-tapping screws approximately 16-inch on center to minimize roll between deck sections.

Most of the roofing membrane in place at the time of the inspection had been hand-mopped, although felt rolls had been kicked into the mopping asphalt in some areas where bitumen dispensers had been used. For the most part, the roof surface sloped well to perimeter gutters. The roofing assembly had been installed in hot, dry weather. There were no periods of precipitation during construction and approximately 4,000 square feet were installed each day.

All of the insulation was mechanically attached to the steel deck with screw-type fasteners, in accordance with Factory Mutual recommendations for this type of insulating material. The phenolic foam boards used in this assembly measured 48 inches by 96 inches by 1½ inches. They were delivered to the job site in polyethylene shrouds.

*The use of non-saturated organic felts in roof insulations presents its own problem—heavy organic felts and Kraft paper absorb moisture.*

The insulation consisted of phenolic foam sandwiched between a heavy layer of non-saturated felt on the bottom side and a layer of corrugated Kraft paper surfaced with aluminum foil on the top side. This is an example of how other materials have been used to compensate for some of phenolic foam's undesirable properties. Very early in the history of phenolic foam roof insulation, manufacturers learned that a cushion was required on the board's top surface to compensate for its friable cell structure. Without the cushion, mechanical traffic across the roof damaged the top cells of the insulation board and ultimately delaminated the roofing membrane from the insulation surface at a plane within the insulating board.

However, the use of non-saturated organic felts in roof insulations presents its own problem—heavy organic felts and Kraft paper absorb moisture. If enough moisture is absorbed from high ambient relative humidities and released as vapor when a hot roofing assembly is applied, separation between the roofing membrane and insulation can occur. To minimize the effects of moisture absorption and provide a water resistant surface, the manufacturer of the insulation used on this project added aluminum foil to the top layer of corrugated Kraft paper.

There were several different colors observed in the phenolic insulation boards. The color variations were exposed when the insulation was cut. The significant color variations in the foam in all areas indicated that it had not been fully cured; a fully-cured phenolic board is a light chocolate brown.

Colors from off-white through pink and pinkish-tan in the finished insulation can indicate non-uniform curing during the production process. Incompletely cured phenolic foam boards may shrink after installation. The overall cure in the factory and the amount of cure that must take place in the field will affect the rate of shrinkage.

The mechanics on this particular project had difficulty with the phenolic foam boards warping. When the boards were secured to the steel deck, using screw-type fasteners installed 6 inches from the insulation board edges, the insulating boards still curled significantly between the mechanical fastener and the edge. In an attempt to hold the edges of the board flush with the deck surface, mechanical fasteners were installed through plates between the insulation boards.

During the application of the built-up roofing membrane, the insulation boards broke at irregularities in the deck surface and around mechanical fasteners. Walking over much of the roof area after the installation of the membrane caused a crunching sound. It was this crunching sound that ultimately led to the roof audit.

### **Taking a closer look**

A superficial examination of the roofing assembly was conducted. Inspectors walked on all in-place roof areas and areas of exposed, installed roof deck. The roofing membrane did not appear to be adequately supported by the insulation in localized areas, high spots in the roofing membrane could be seen and minor picture-framing of the insulation board joints was apparent through the roofing membrane.

Approximately 20 samples were removed from the in-place roofing membrane at random and calculated locations. The membrane lying over insulation board joints where relatively severe crunching was detectable was sampled first. In these samples, the insulation boards were supported by the steel deck and board edges had not cantilevered over deck flute openings.

Other samples were removed from uneven areas, at adjacent insulation board joints, in the center of insulation boards, in deck areas where joist spans were approximately 6½ feet and in areas where joist spans were approximately 3½ feet. Mechanical fasteners were included in approximately 50 percent of the sample areas.

In each area where the built-up roofing membrane was removed, the insulation board had fractured, splintered and in general, degenerated to the point where the structural integrity of the board had been severely compromised. The boards were broken around each mechanical fastener, whether installed in the body of the board or at insulation joints. Foot traffic across the roof surface had ruptured, delaminated and moderately damaged the corrugated Kraft paper surface of the boards either during installation or later.

In all areas of sampling, insulation had been destroyed by fracturing. The fractured condition of the insulation boards was similar whether it was placed over steel decking supported by bar joists 3 1/2 feet on center or 6 1/2 feet on center. Fractures occurred in the insulation where it had cantilevered at deck endlaps with a 1/8 inch difference in elevation between the deck sections. The insulation board also had deflected and fractured into flute openings in the intermediate-rib steel deck, which was about 1 3/4 inch from radius to radius on the top deck surface.

In virtually all joint areas sampled, a 3/4 inch gap existed between insulation boards. Because roofing mechanics would have had difficulty spacing the insulation boards uniformly 3/4 inch apart, significant shrinkage of the phenolic foam was suspected.

Insulation board fractures around all mechanical fasteners uncovered in the samples made overall adhesion of the roofing assembly doubtful. The roofing membrane was not adequately supported in most areas where the phenolic foam insulation had fractured and broken down. On the other hand, there were no perceptible blisters between the roof insulation surface and the built-up roofing membrane any place in the installation.

This investigation also revealed that the insulation probably could not withstand a typical gravelling application. During the investigation, foot pressure in localized areas could delaminate the assembly. With mechanical application equipment creating even greater pressure, the bond between the roofing membrane and the insulation surface would certainly be destroyed.

The only way to protect the material from compressive damage after the time of installation may be to overlay it with a minimum thickness of heavy density rigid roof insulation board. The overlay material would prevent delamination within the foam and minimize the effects of shrinkage at insulation joints.

### **Smaller boards may help**

It was obvious from accounts of handling and attempting to secure the insulation that phenolic foam should not be manufactured or installed in large board sizes. Even 3-foot by 4-foot boards may be too large to eliminate the significant shrinkage that creates open insulation joints.

Use of the material in 24-inch by 48-inch board sizes would be more suitable. The smaller board sizes would be affected less by shrinkage and would conform better to irregular deck surfaces. Also, smaller boards cantilever much less than larger boards and will not break or fracture as easily.

### **Problems won't prevent use**

In general, it appears that the manufacturers of phenolic foam insulations have not cured all of the potential installation problems. In spite of this, specifiers may continue to choose the product for its economy, fire resistance and thermal efficiency. The problem facing contractors who must work with the material is keeping the insulation board intact during installation and making sure the insulation boards will not be destroyed by subsequent mechanical or foot traffic. It appears that increasing board thickness will not solve the problem. Even thicker boards cannot withstand minor cantilevering over irregular deck surfaces or bridging over relatively narrow unsupported sections in steel decks.

It would be wise to proceed with caution in the use and specification of phenolic foam insulations over most deck surfaces. It is obvious that manufacturers have some lessons to learn to make the material handle more easily in the field and insure its long-term integrity and in-place performance in the roofing system.

*The problem facing contractors who must work with the material is keeping the insulation board intact during installation and making sure the insulation boards will not be destroyed by subsequent mechanical or foot traffic.*

## Contractors testify to value of education

**P**rospect Enterprises of McLean, Va. hosted an Aug. 22 reception to celebrate fulfilling the requirements of the NRCA's Academy of Roofing Contractors (ARC). John D. Van Wagoner and Robert M. Barlow, the company's principals, planned the event at the Westpark Hotel in Tyson's Corner, Va.

U.S. Rep. Frank Wolf from Virginia's 10th district gave certificates to all employees who had participated in the firm's education programs. The ARC plaque was presented to the company by Alan Grayson, NRCA director of education.

The chairman of the Fairfax, Va. County Board of Supervisors and the minority leader of the Virginia House of Delegates attended, as well as representatives from the National Bureau of Standards, the American Institute of Architects, the D.C. Chapter of the Construction Specifications Institute and the Washington Area Roofing Contractors Association.

"We wanted to recognize the contributions made by all employees involved in our training sessions; they participated voluntarily and on their own time," Van Wagoner explained. "We feel that what we accomplished through the ARC program has made us a better company. I cannot stress enough the importance of education and training to a roofing contractor company and to the industry in general."

Prospect Enterprises is the third company to qualify as a member of the Academy since the program began in March 1983. The other two qualifying companies are AAA Roofing Co., Indianapolis and Clark Roofing Co. in Broadview, Ill.

The program's objective is to foster the pursuit of excellence in roofing systems installation by encouraging all levels of roofing contractor personnel to participate in applicable and timely education programs. A company qualifies by having an average number of its personnel in each of four categories complete a specified number of hours in education or training within the two years allowed for candidacy.

When the company completes the required hours of education or training, it is awarded a plaque designating membership in the Academy and issued certificates of participation for all employees involved in the training programs.

Attendance at any structured education or training program dealing with roofing installation, design, specification, management or related areas qualifies for credit. This includes local, state, provincial, regional or national association- or union-

sponsored courses, conferences, seminars and workshops or university, college or institute courses. Some manufacturers' application training programs have also been approved for credit. Generally, a program's credit value is equal to the actual number of hours devoted to instruction.

To date, there are 156 active candidates enrolled in the ARC program.

In support of the Academy, NRCA is developing a series of worker training programs that contractors can use for educating field personnel in house. These training packages consist of self-contained audiovisual presentations in both slide/cassette and videotape formats; a companion workbook containing a pre-test, drills, quizzes and a final examination; and a complete instruction guide on conducting formal training sessions and using the AV presentation and workbook. Each training program is divided into modules for sessions lasting no more than 90 minutes.

The cost for compensating employees for time spent in training sessions is often cited as a major deterrent in establishing a successful in-house education program. Under many union contracts, for example, there is no provision for workers participating in training without being paid. John Bradford, Bradford Roofing & Insulation Co., Billings, Mt., reports that his company's ability to establish a formal education program for ARC credit was improved by negotiating a contract with such a provision. The contract permits the company to hold employee meetings at its discretion for an hour or less and for no more than two hours each month without compensating the attending employees. The meetings must be for discussing safety, company policy and for educational purposes.

One approach to in-house training, which Clark Roofing Co. uses, is to develop and conduct a day-long comprehensive education program in which the entire company participates. This requires setting aside a day from work; in Clark's case, the workers were paid for their time.

A total of 17 workers earned a total of 162 hours, not including an additional 45 hours earned by superintendents, middle managers and the CEO. Of the 193 hours required for the workers at Clark, 80 percent were earned in this one-day session.

Prospect Enterprises, on the other hand, accomplished the majority of its training through a comprehensive program conducted over the course of 13 one-hour sessions. More than 450 hours of credit were earned for field workers in these sessions.

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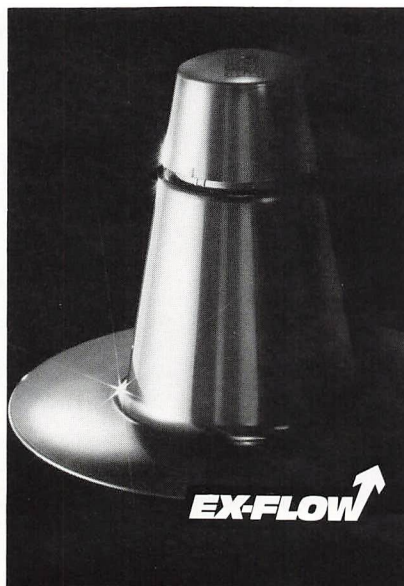
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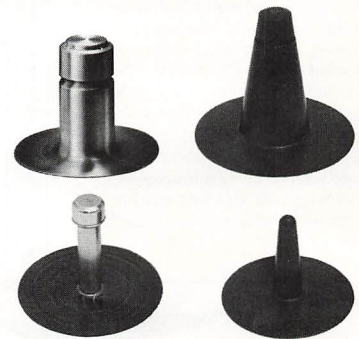
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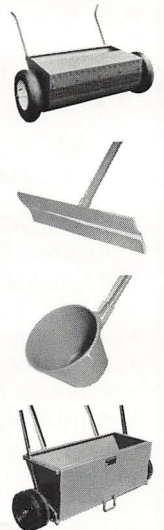
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## Some roof dangers can be shocking

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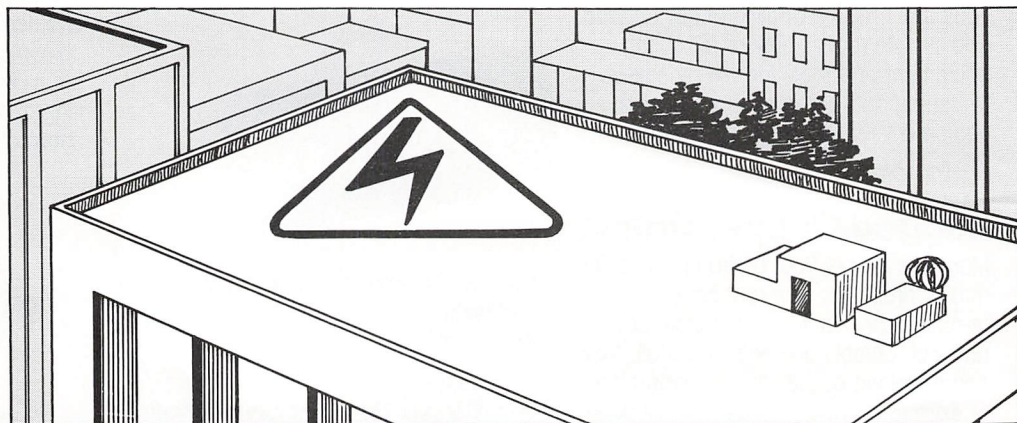
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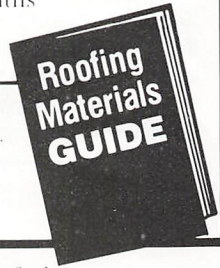
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## Spray-on system solves problem in Caribbean

**A**t one time a few woven palm fronds would have been traditional roofing on a West Indian island like Barbados. The organic membrane might not have withstood the occasional hurricane, but it would have provided enough protection to keep the islanders comfortable and the rattan dry.

But civilization demands more than a few creature comforts. Modern Barbadians expect to be as safe from the elements in their sweltering climate as their counterparts in more temperate zones.

Unfortunately, the roof that keeps them dry in Des Moines may not be the best choice for the Caribbean. In addition to torrid weather and heavy rainfall playing havoc with conventional roofing systems, the cost and hassle of hauling materials to remote islands makes bulky roofs impractical.

At one construction site in Bridgetown, Barbados, all of these problems were solved with one of the most recent roofing innovations—a spray-applied polyurethane foam insulation roof. Peter V. Hoyos of Sunpower, Ltd., a Barbadian firm, applied the material using urethane resins supplied by FCI, Inc. of Sarasota, Fla., a Reichhold Chemicals, Inc. distributor.

Reichhold believes the Barbados roof will last 15 to 20 years. The urethane system's thermal efficiency will also make it cheaper to cool the building, according to the company. The building's energy costs should be 25 to 35 percent lower than if it were roofed with conventional materials. The contractor and the building owner re-

alized further savings importing the system. The urethane roofing required less material, shipped from the mainland, than a conventional roof.

Reichhold reports that installation of the polyurethane roof was quick and easy, an added advantage in a place where a built-up roof can take five months from planning to execution. The 18,000-square-foot job was covered in approximately two weeks.

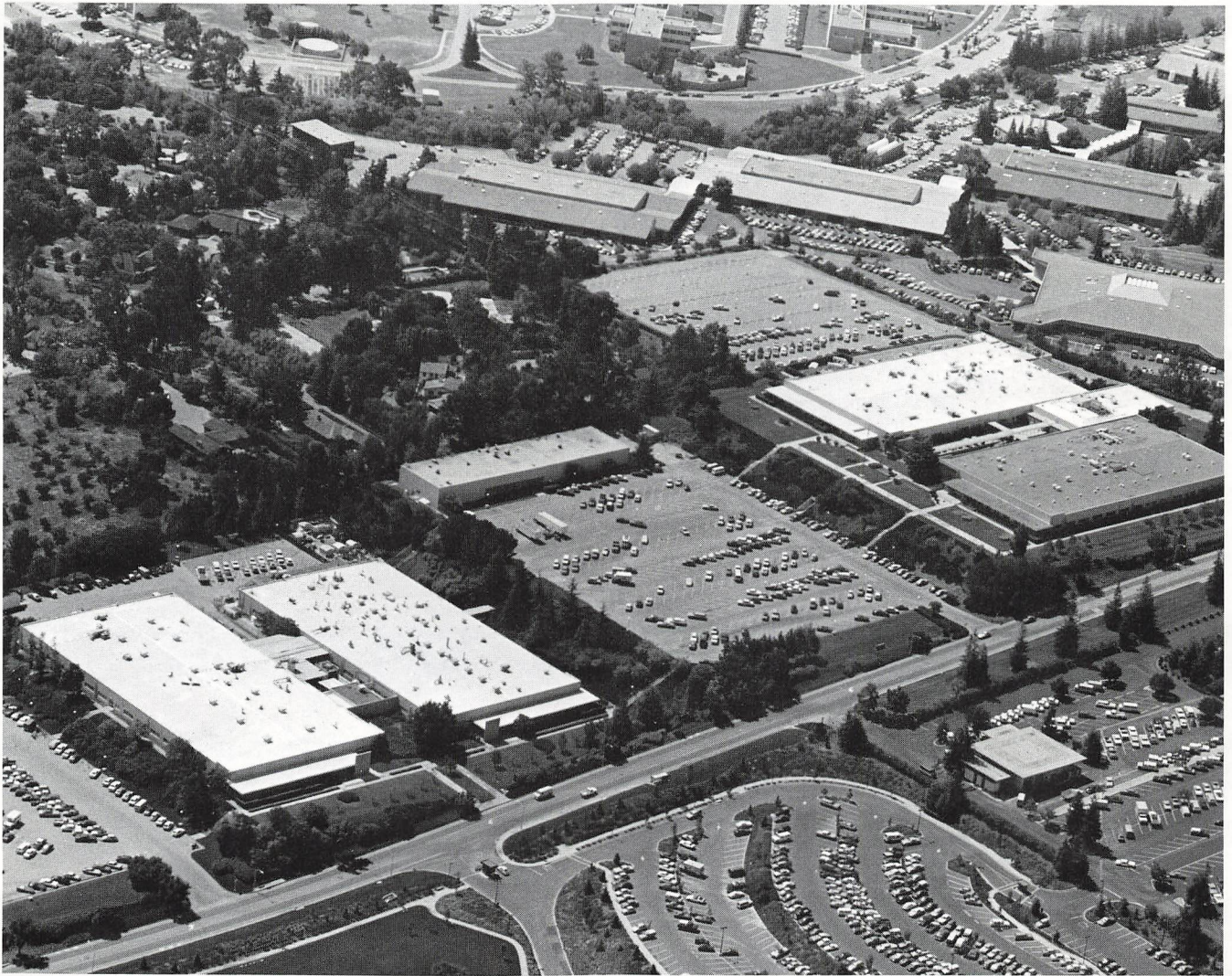
In addition to the island's unique roofing problems, Hoyos faced the usual rooftop challenges. The insurance company roof had 24 penetrations and air conditioners were roof mounted. According to Reichhold, the urethane membrane created its own flashings around the penetrations, reducing installation time.

After priming the substrate with a Futura Co. urethane, Hoyos sprayed on two inches of urethane foam. The foam was produced on-site by nozzle mixing the two liquid Reichhold polylite resins. When combined, the chemicals expanded, trapping freon in the small cells that give the foam its insulating properties. Three coats of 30-mil thick elastomeric membrane were applied on top of the foam to protect it. The finished roofing system weighed three pounds per square foot.

Other U.S. firms with facilities in Barbados are showing an interest in foam roofs, according to Reichhold. The company states that at least two other major manufacturers are considering this system to replace their metal roofs.



Workers from Sunpower, Ltd. in Bridgetown apply urethane foam insulation system to new insurance company building.



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# COMING EVENTS

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

## Nov. 13-16

Infra-Red Scanning Course  
Burlington, Vt.

## Nov. 14-16

Asbestos Abatement Training Courses  
Association of Wall and Ceiling Industries International  
Newark, N.J.

## Nov. 27

Putting the *One Minute Manager* to Work  
Daniel Management Center  
Chicago, Ill.

## Nov. 28

Putting the *One Minute Manager* to Work  
Daniel Management Center  
St. Louis, Mo.

## Nov. 30-Dec. 1

Annual Meeting  
Chicago Roofing Contractors Association  
Itasca, Ill.

## Dec. 3-5

Asbestos Abatement Training Courses  
Association of Wall and Ceiling Industries International  
Denver, Colo.

## Dec. 4

Putting the *One Minute Manager* to Work  
Daniel Management Center  
Atlanta, Ga.

## Dec. 5

Putting the *One Minute Manager* to Work  
Daniel Management Center  
Dallas, Texas

# NRCA OFFICERS & DIRECTORS

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Designed for architects, engineers, specifiers,  
general contractors, building owners, plant engineers,  
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### **Conference on Reroofing and Energy Conservation**

Los Angeles, Nov. 29, 1984  
Atlanta, March 21, 1985  
Detroit, April 11, 1985  
Milwaukee, April 18, 1985

### **Roofing Systems Conference**

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

#### **Program**

- Pre-Job Conference and Job-Site Conditions
- 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

#### **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.



## Baron/Wheeler promotes new spreader design

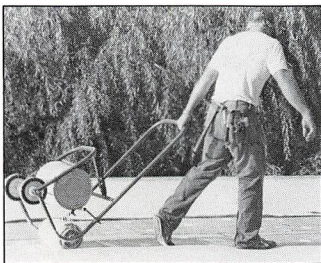
Baron/Wheeler, Inc. has introduced the Better Spreader, a new adhesive spreader that spreads adhesive directly from the can, eliminating the need to clean tanks or trays.

When the spreader is in use, adhesive runs from its original container in a controlled flow onto an easily changed 14-inch roller, which then distributes the adhesive evenly over the roof surface.

The elimination of valves and cranks in the spreader's design of the spreader prevents overflow, according to the company.

Detailed product data is available from Baron/Wheeler.

*Check #246 on Reader Service Card*



## Wall Stand-Off adds stability to extension ladder

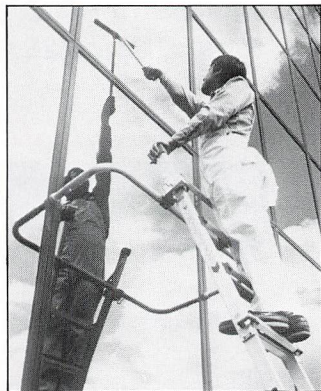
An attachment for extension ladders that adds extra stability for work on pitched roofs is being marketed by Little Giant Industries, Inc.

Along with its other applications, the Little Giant Wall Stand-Off can be used to anchor the ladder over the peak of the roof. It features universal jaw clamps, which fit any rung width and adapt the unit to most aluminum extension ladders.

The unit's legs extend to almost twice their minimal length and can be individually adjusted. The Stand-Off also allows the worker access to roofs without interference from shrubbery, windows, trees and other hazards.

The Wall Stand-Off is covered by a 12-month warranty. Further information is available from Little Giant Industries.

*Check #247 on Reader Service Card*



## Custom Curb expands line for metal roofs

A variety of prefabricated metal building roof curbs is available from Custom Curb, Inc. The curbs, which are designed and manufactured to mate with any panel configuration and roof pitch, are sized to match all manufacturers' skylights, fans, vents, intakes, air conditioning units and other rooftop equipment.

The curbs are made of mill-finish aluminum, galvanized steel or Galvalume™ steel with water-tight welding. The standard construction is heavy-gauge galvanized steel and features fully welded and mitred corner seams with integral base plates.

Several models feature 1 1/2-inch-thick rigid fiber glass insulation. Other options include: height additions; heavier metal gauges; aluminum, Galvalume or stainless steel construction; prime painting or special coating; damper trays; pitch or ridge mounting; and water diverters.

Additional information on Custom Curb metal building roof curbs is available from the manufacturer.

*Check #248 on Reader Service Card*

## Conam locates roof moisture with infrared

Conam Inspection has introduced a new infrared inspection system that locates leaks and moisture buildup in single-ply and BUR systems without damaging the roof structure.

The unit detects heat absorbed and retained in saturated insulation. Moisture is indicated by the presence of hotspots in an infrared scan. Once located, the problem areas can be marked directly on the roof surface.

The process eliminates the need to take up good roofing to locate a leak's source. It also extends the roof's life and reduces energy costs by pinpointing heat-conducting wet insulation and other sub-surface moisture.

Details on the infrared inspection system may be obtained from Conam Inspection.

*Check #249 on Reader Service Card*



## Cooley offers vent pipe boot, bronze metal

Cooley Roofing Systems has added two new items to its single-ply product line.

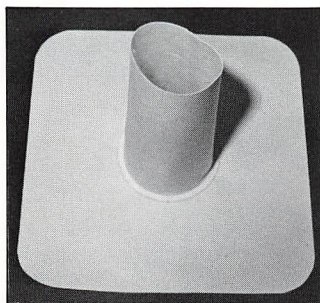
A prefabricated chlorinated polyethylene (CPE) vent pipe boot is now available for use with the CoolTop 40 mechanically attached roofing system. The boot can be heat-welded to the roof membrane and comes in 2-, 4-, 5- and 6-inch diameters. A slight taper on the boot aids installation and provides a snug fit at the top of the penetration.

Also available from Cooley is a new bronze, CPE-coated metal. The metal is intended for applications where a bronze color gravel stop is specified.

The galvanized metal comes in 4-foot-by-8-foot sheets treated on the back side with a corrosion-resistant primer. The CoolTop 40 membrane can be heat-welded directly to the 24-gauge CPE-coated metal.

Additional information on both of these new products is available from Cooley Roofing Systems.

Check #250 on Reader Service Card



## Combination tool now available from Sylvax

A combination level and angle indicator has been introduced by Sylvax Corp.

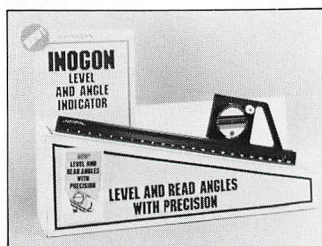
Designed to set or measure angles, the Inogon level and angle indicator provides direct numerical readings of angles within .2 degrees. Pitch rise can be converted to angles by a conversion table provided with the unit.

The tool consists of an angle indicator, calibrated in degrees, which fits into a rule, calibrated in inches and centimeters. Angle measurements are indicated by a change in visual patterns created by two superimposed optical windows.

The Inogon level and angle indicator is available in lengths of 10 inches, 24 inches and 48 inches, magnetic or non-magnetic.

More information on the tool may be obtained from the Sylvax Corp.

Check #251 on Reader Service Card



## Chemlok adds new primers and treatments

A new surface treatment and a series of new substrate primers has been added to the Chemlok line of primers and cyanoacrylate adhesives.

Chemlok TS 3155-57 is a solvent-based surface treatment for cured or thermoplastic polymeric materials. It chemically alters the rubber substrate, creating a surface with an increased affinity for most adhesives used to bond the material to other substrates.

The treatment can be used on natural rubber, SBR, nitrile and neoprene. It may be dip- or brush-applied; special equipment is required for spray application.

Several new substrate primers from Chemlok may be used, in some instances, as single-coat adhesives. The primers can bond some silicones, fluorocarbons and urethanes to various substrates. The primers may also be used to protect metal, rubber or plastic and can be spray-, dip- or brush-applied.

More details on these new products are available from the manufacturer, Lord Corp.

Check #252 on Reader Service Card

## Allied publishes new catalog on BUR systems

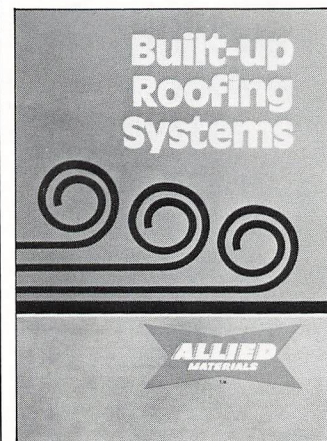
Allied Materials Corp. has launched the production and marketing of built-up roofing systems for the commercial roofing industry.

The systems are described in a 20-page catalog that details Allied organic and inorganic product systems. The roofing is available for nailable or non-nailable decks inclined up to 3 inches per foot.

Allied refines and produces its own asphaltic compounds. The Oklahoma-based firm concentrates its marketing in states contiguous to Oklahoma.

Copies of the Allied BUR catalog are available from the manufacturer.

Check #253 on Reader Service Card



## Mack markets wind-powered roof ventilators

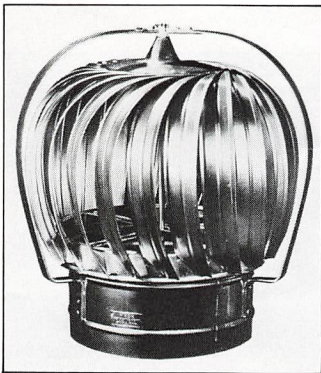
A line of wind-powered roof ventilators that come in a variety of sizes and CFM ratings is available from Mack Ventilator Co., Inc.

The Mack wind-driven rotary turbine features a weather-proof rotary head that operates on ball bearings. Providing 160 to 4,580 CFM ratings, the turbines come in 16 sizes from 4 inches to 36 inches.

The Mack wind-driven rotary turbine is made from prime sheets of galvanized steel. It is spot-welded throughout and finished with a high-grade, corrosion-resistant aluminum paint.

Literature is available on request from the manufacturer.

*Check #254 on Reader Service Card*



## Reemay Hot developed for three-ply systems

Du Pont's textile fibers department has announced the development of a new fabric for use in hot built-up roofing.

Reemay Hot consists of a fiber glass scrim bonded in between two layers of Du Pont's Reemay Cold spunbonded polyester fabric. The fabric is 50 percent stronger than type IV fiber glass and has a breaking strength of 300 pounds per square inch, according to the manufacturer. It is designed to provide the thermal stability and tensile strength of fiber glass along with high elongation and tear strength.

Du Pont also produces a spun-laced polyester fabric, Sontara Cold, which is appropriate for use over very rough surfaces such as gravel.

Additional information on Reemay Hot and Cold and Sontara Cold fabrics may be obtained from the manufacturer.

*Check #255 on Reader Service Card*

## Brochure gives information on Futura Coatings

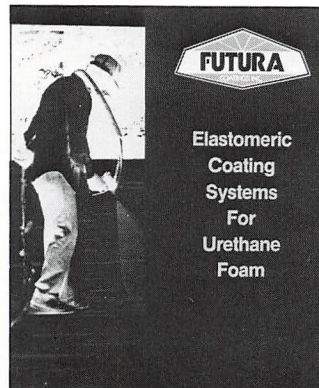
Futura Coatings, Inc. has published an eight-page brochure titled "Elastomeric Coating Systems for Urethane Foam."

The brochure compares elastomeric coatings and urethane foam to other types of roofing and tank installation systems. It also guides the contractor in the selection of elastomeric coatings to be used with sprayed-in-place urethane foam.

In addition, charts and data describe the performance characteristics of several generic elastomer types. These materials have a wide range of physical properties and can be carefully matched to a roof's design parameters.

For more information and a copy of the brochure, contact Futura Coatings.

*Check #256 on Reader Service Card*



## GS Industries develops crane for 3/4-ton truck

GS Industries has introduced a knuckleboom crane designed for use on 3/4-ton pickup trucks. A GVWR of 6,000 pounds provides the Series 14 crane with stability for lifting as much as 2,800 pounds at 5 feet.

The crane is hydraulically operated with driver-side controls for outriggers, rotation, inner boom, outer boom, and hydraulic extensions to over 13 feet. Manual extensions are available that give the Series 14 a total reach of more than 21 feet.

A transmission-mounted PTO or an electric pump operating off of the truck's 12-volt battery can power the unit. The GS Series 14 crane weighs 858 pounds, giving it an excellent weight/capacity ratio.

Further information on the unit is available from GS Industries.

*Check #257 on Reader Service Card*



# NEW IDEAS

## OSHA adds supplement to safety manual

To meet the new requirements of the federal hazards communications regulations, OSHA has added a special supplement to its *Reference Manual*. The supplement contains detailed self-inspection checklists and compliance program guides.

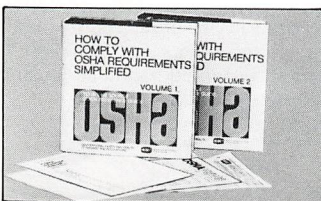
The supplement also features an overview of the new regulations for managers unskilled in technical safety matters. Key elements in the recommended program are employee training guides, warning labels and materials safety data sheets.

The OSHA *Reference Manual* outlines occupational safety and health compliance, loss control and loss prevention programs. Companies can adapt the *Manual* for their own use.

The *Manual* is applicable to all firms and operations subject to OSHA compliance requirements.

A subscription to the *Manual* includes the complete two-volume manual, supplementary update and revision service and a monthly newsletter with information on case histories, legislative activity and events of interest to employers and safety directors. Also included is the *OSHA Compliance Briefing Report*. For descriptive literature, or to order a *Manual*, write to the publisher, The Merritt Co.

Check #258 on Reader Service Card



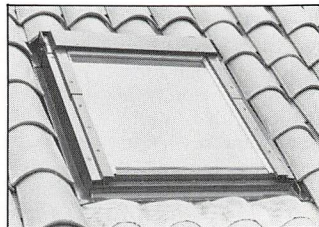
## Velux improves flashings for roof windows

Velux-America, Inc. has modified its prefabricated skylight flashing to replace its Type-U flashing. The new Type-H flashing can be used with high profile and 3/4-inch or thicker roofing materials, such as concrete tiles, flat tiles, Spanish tiles or corrugated roofing. The new product is designed for easier installation and higher resistance to leaking.

The flashing's improvements include a lengthened lead sill flashing with a corrugated pleated design. Another change is the side flashing gutter piece, which now incorporates four check-points against water penetration.

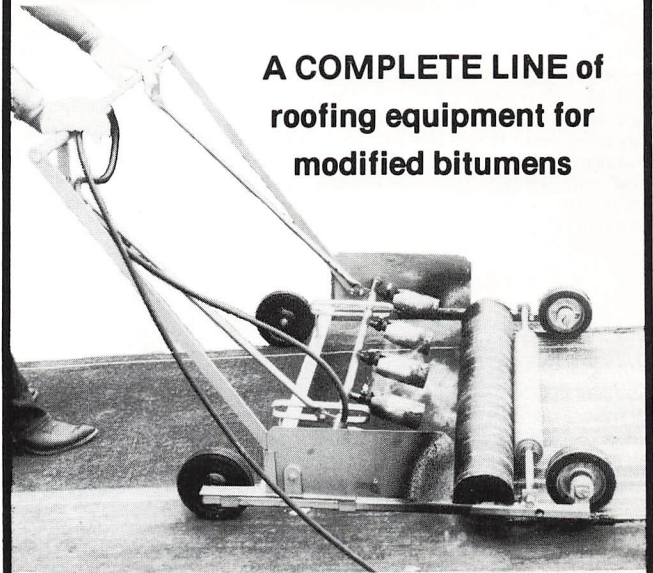
Further information on the new flashing is available from Velux-America.

Check #259 on Reader Service Card



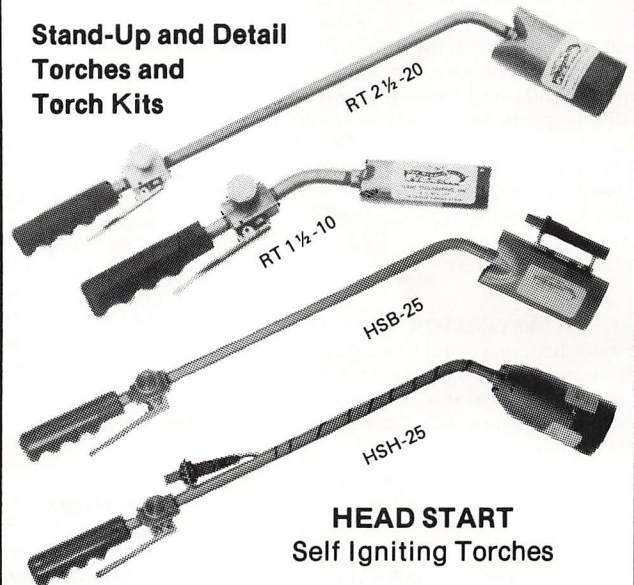
# RED DRAGON . . .

A COMPLETE LINE of roofing equipment for modified bitumens



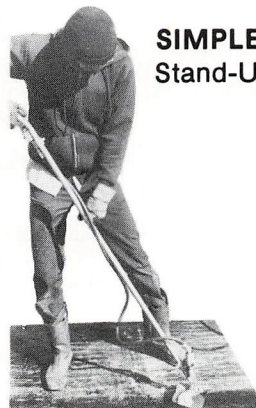
THE WAGON Full Roll Applicator

## Stand-Up and Detail Torches and Torch Kits



HEAD START Self Igniting Torches

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### PLUS:

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Check #904 on Reader Service Card

Place a classified ad in *Roofing Spec* for 50 cents per word. There is a minimum charge of \$20. Boxed or display advertisements are available in the classified section for \$40 per inch (one inch minimum). Ads using blind boxes available at no additional charge to NRCA members; non-members add \$10 to total order. Send ad copy and payment to: Advertising Manager, *Roofing Spec*, 8600 Bryn Mawr Ave., Chicago, Ill., 60631

#### CRANE FOR SALE

Roofer's special hydraulic truck crane; 1975 Telelect; 6-ton capacity; 50-foot boom; hydraulic clam bucket and gravel hopper mounted on a 1975 IHC truck with a 16-foot body. 35,000 miles. Want to sell fast! \$24,500. Giuffre Bros. Cranes, Inc. 9770 South Ridgeview Drive, Oak Creek, Wis. 53154; 414/761-2300.

#### ROOFING MANAGER

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.

#### ESTIMATOR WANTED

Established, successful roofing and sheet metal contractor in desirable central Florida seeks experienced estimator. Send resume and salary requirements to P.O. Box 8512-A, Orlando, Fla. 32856.

#### CRANE FOR SALE

Roofer special hydraulic truck crane; 1975 RO Stinger TC50-4; 6 1/4-ton capacity; 50-foot boom; 14-foot jib; 64-foot hook height; hydraulic clam bucket; pallet fork; gravel hopper and nylon belts mounted on a 1975 Ford F750 truck with a 14-foot body with steel sides. 31,000 miles. \$29,500. Giuffre Bros. Cranes, Inc., 9770 South Ridgeview Drive, Oak Creek, Wis. 53154; 414/761-2300.

#### ROOF CORE

Roof Core Sampler "C.R.R.E.L." type 1 7/8-inch core. Hardened steel jaws, compact weight less than 6 pounds. \$135 plus \$8 shipping and handling. For details contact Autrey Steel & Machine, P.O. Box 40304, Tucson, Ariz. 85717. Phone 602/623-3444.

#### PERSONNEL WANTED

**Roofing and waterproofing salesmen, management positions (previous business owners preferred), superintendents.** Growing Florida and Texas commercial roofing and waterproofing company seeking experienced personnel in all phases of commercial and industrial reroofing (hot- and cold-process and single-ply needed). Excellent opportunities for self-motivated individuals. Please send resume and salary requirements to Mr. Scott, 4420 N.W. 79th Ave., Miami, Fla. 33166.

#### INFRARED ROOF INSPECTIONS

It costs very little to be sure of roof condition over entire surface. Infrared scanning gives you the clear picture. Locate failure areas, make repair/replace decisions in confidence. Call us for very competitive rates. Infrared Imaging, Inc., P.O. Box 303, Richfield, Ohio 44286; 216/371-4379.

#### CRANE FOR SALE

Roofer's special hydraulic truck crane, 1979 RO Stinger TC85-2; 8-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. Giuffre Bros. Cranes, Inc., 9770 South Ridgeview Drive, Oak Creek, Wis. 53154; 414/761-2300.

#### FOAM ROOFING EQUIPMENT FOR SALE

Two tandem-axle trailers completely set up with Glas Craft and Graco equipment.

Major machinery: Glas Craft Probler T-3A—air-powered, three years old; Glas Craft Probler T-3H—hydraulic unit set up for dual-component coatings or foam, one year old; Graco Bulldog 30-1 pump—three years old; power wash machine—one year old; two Grover 2-1 transfer pumps; three Graco 2-1 transfer pumps; Monarch 5-1 transfer pump; two on-wheel air compressors—150 CFM; 200-foot hose on each Probler, Bulldog and power wash; three Probler foam guns; two 40-foot aluminum ladders; one power broom—three years old; one 1974 Ford one-ton dump truck.

Trailers are set up and ready to go. Much miscellaneous included: tips for all equipment; mixing chambers; electrical cords. Runaway shutdown on Bulldog. Off-ratio shutdown on T-3H. Everything complete and ready to pull on job and go to work. All equipment excellent and guaranteed. Call 816/632-2246 or 602/224-9259.

#### PROCOUNSEL

**ROOFING PLACEMENTS NATIONWIDE**  
I place roofing professionals with manufacturers, distributors, roofers and consultants. Fees paid by employer. All information handled in strictest confidence. Contact Buzz Taylor, 214/741-3014.

#### FOR SALE: ROOFERS CRANES

Used rentals and demos up to 140 feet high. Complete roofers' accessories available. Call 816/474-0448.

#### BUSINESS FOR SALE

Roofing and sheet metal contracting business in 10th year of operation. One of the leaders in booming Colorado Springs. Volume of 1 million plus. Available with or without office, warehouse and yard. Call or write Ralph L. Skinner, Skinner Roofing & Sheet Metal, Inc., 6135 Lake Shore Court, Colorado Springs, Colo. 80915; 303/596-2039.

#### COMPANIES WANTED

We have cash to buy roofing and sheet metal companies. They would have sales of \$1 million and some profit. Will tailor buyout to suit seller. All responses kept confidential. Send replies to Box 9B, *Roofing Spec*, 8600 W. Bryn Mawr Ave., Chicago, Ill. 60631

#### NORTHERN INDIANA ROOFING CONTRACTOR

Profitable; 25± years of experience with excellent reputation in industrial/residential markets; projected 1984 sales: \$350,000; excellent growth potential. Contact: Business Resource Network, 219/234-4045.

#### CRANE FOR SALE

Roofer's special hydraulic truck crane; 1975 Pitman; 8-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. Giuffre Bros. Cranes, Inc., 9770 South Ridgeview Drive, Oak Creek, Wis. 53154; 414/761-2300.

**"Do it right.  
From the start.  
Because your track  
record counts for  
everything in  
this business."**

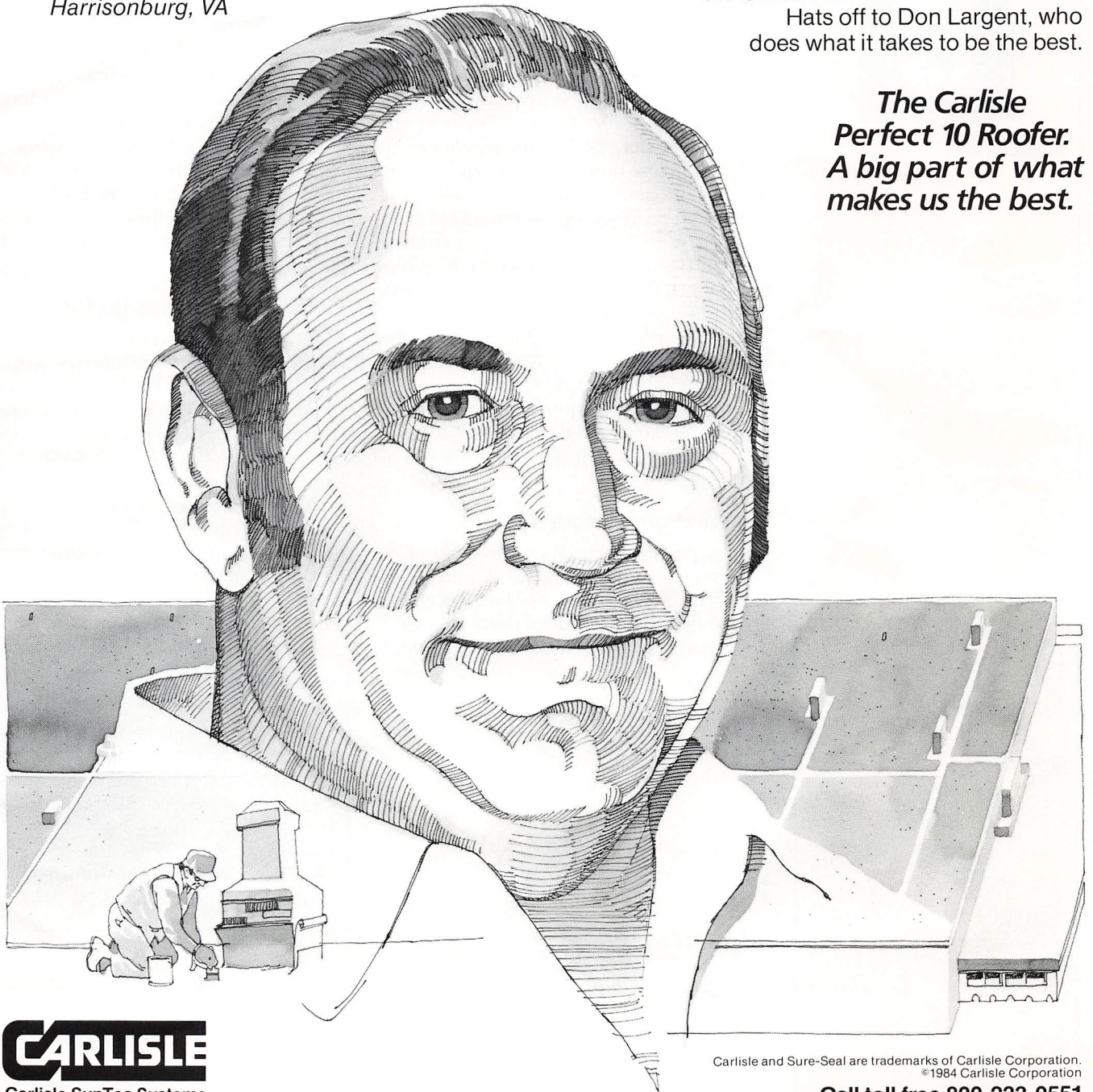
*Don Largent, President  
DON LARGENT ROOFING, INC.  
Harrisonburg, VA*

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.

And Don's workmanship, backed by Carlisle's quality materials, has resulted in roofs that have remained virtually maintenance-free for over a decade. That's a big plus with Don's customers. Both the new ones and the many who provide repeat business. It's no wonder Don's always proud to install roofs bearing the Carlisle name.

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

***The Carlisle  
Perfect 10 Roofer.  
A big part of what  
makes us the best.***



**CARLISLE**

Carlisle SynTec Systems

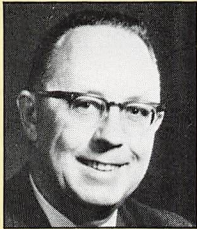
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## A little help from our friends

By Bob LaCosse



**N**RCA and its affiliate contractor associations have formed close bonds in the last few years, particularly in technical areas. It is NRCA's and the affiliates' hope that the groups will be able to cooperate further on future projects.

Several projects have already profited from NRCA and affiliate collaboration. By working together in such areas as standards development and product research the groups have served the entire industry.

### Affiliates make their voices heard

In 1984, NRCA circulated the NRCA Recommended Application Tolerances to the affiliates. The Association believes affiliate feedback adds substance and credibility to NRCA decisions and recommendations.

NRCA has also called upon the affiliates to work with the Association and the American Society for Testing and Materials (ASTM). A large number of producers, consultants and general interest groups are already well represented on the ASTM committees. With the affiliates' help, roofing contractors are able to make their voices heard as ASTM prepares roofing standards and test procedures.

For example, tests conducted under the auspices of the Chicago Roofing Contractors Association (CRCA) and NRCA resulted in up-graded requirements in ASTM D226, Standard Specification for Asphalt Organic Felt used in Roofing and Waterproofing.

### Midwest group active

In the past five years, the Midwest Roofing Contractors Association (MRCA) and NRCA have been assisting Factory Mutual, Kemper Insurance Co. and Underwriters Laboratories to revise and update their roofing stand-

ards, data sheets and guides. The updated FM Data Sheets 1-28 on Insulated Steel Deck, which requires mechanical fastening of the first insulation layer, was one result of the associations' involvement.

NRCA and MRCA are also working with the Block Molders Group of the Society of the Plastics Industry. The groups recently studied the application of expanded polystyrene roof insulation board (EPS). The final report of this two-year study, outlining proper application practices for all low-sloped roofs, will be available before the NRCA Annual Convention in February 1985.

### Code changes revised

Several national and local building code groups have received advice from NRCA and the affiliates. In 1981, NRCA formed a Building Codes Task Force to work with model building code agencies nation-wide. NRCA has asked the affiliates to help with proposed model building code changes. NRCA has also helped several affiliates who are working with code groups in their geographical areas.

### Cooperation solves problems

NRCA has also worked with a number of affiliates to solve industry problems. Applications that avoid blisters over urethane foam insulation were discovered through this type of cooperation. Tests NRCA conducted with the Western States Roofing Contractor Association and MRCA resulted in a technical bulletin describing good application practices that were acceptable to contractors and urethane insulation manufacturers.

### Correction

We've made a mistake. The Committee's name referred to in the second paragraph of "FM responds to data sheet criticism" (Tech Talk, September 1984) is the FM/UL/Kemper Committee. This is a joint committee of NRCA and MRCA representatives only, who provide FM, UL and the Kemper Insurance Co. with assistance and accurate information to benefit the roofing industry.

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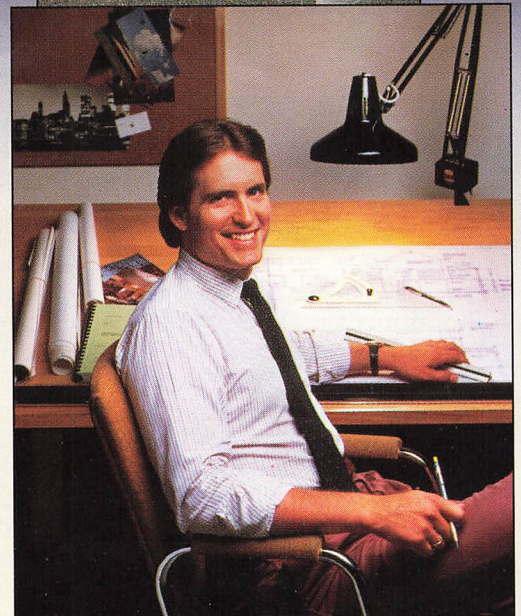
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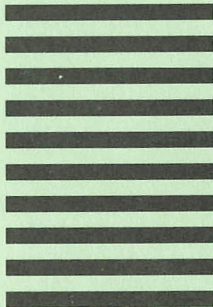
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