National Roofing Contractors Association

ROOFING SPEC

MARCH
1986
$2.00

Applying modified bitumens takes new skills and procedures

128 MILLION SQ. FT. OF BRAI ROLLED OUT ACROSS AMERICA IN 1985

U.S. Intec is the world's largest producer of A.P.P. modified bitumen, used to manufacture our Brai single-ply roofing systems. And Brai is being used more everyday.

There are loads of reasons for Brai's acceptance, from its extraordinary heat resistance and low-temperature flexibility, to the exceptional warranties and ease of application and inspection. But what's made us the tops is Brai's performance.

Our roofing systems have proven they can stand up to virtually all climates and the most difficult design projects. Brai is a clean, cost-effective choice.

Brai has passed the tests of time and the demands of the most demanding architects, contractors and building owners. Our company and our product are on a roll and here to stay.

u.s.intec/
brai

We're on a roll

ROOFING
AND WATERPROOFING
PRODUCTS

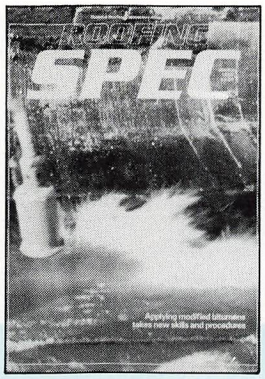
For technical information, call
1-800-62INTEC.

Check #33 on Reader Service Card

ROOFING
SPEC

Vol. 14, No. 3 March 1986

ADVERTISERS



COVER

Modified bitumens have brought many new tools and techniques to the rooftop. Some of these procedures will be unfamiliar to contractors and workers who are used to traditional roofing methods, and training will be necessary to gain the proper skills.

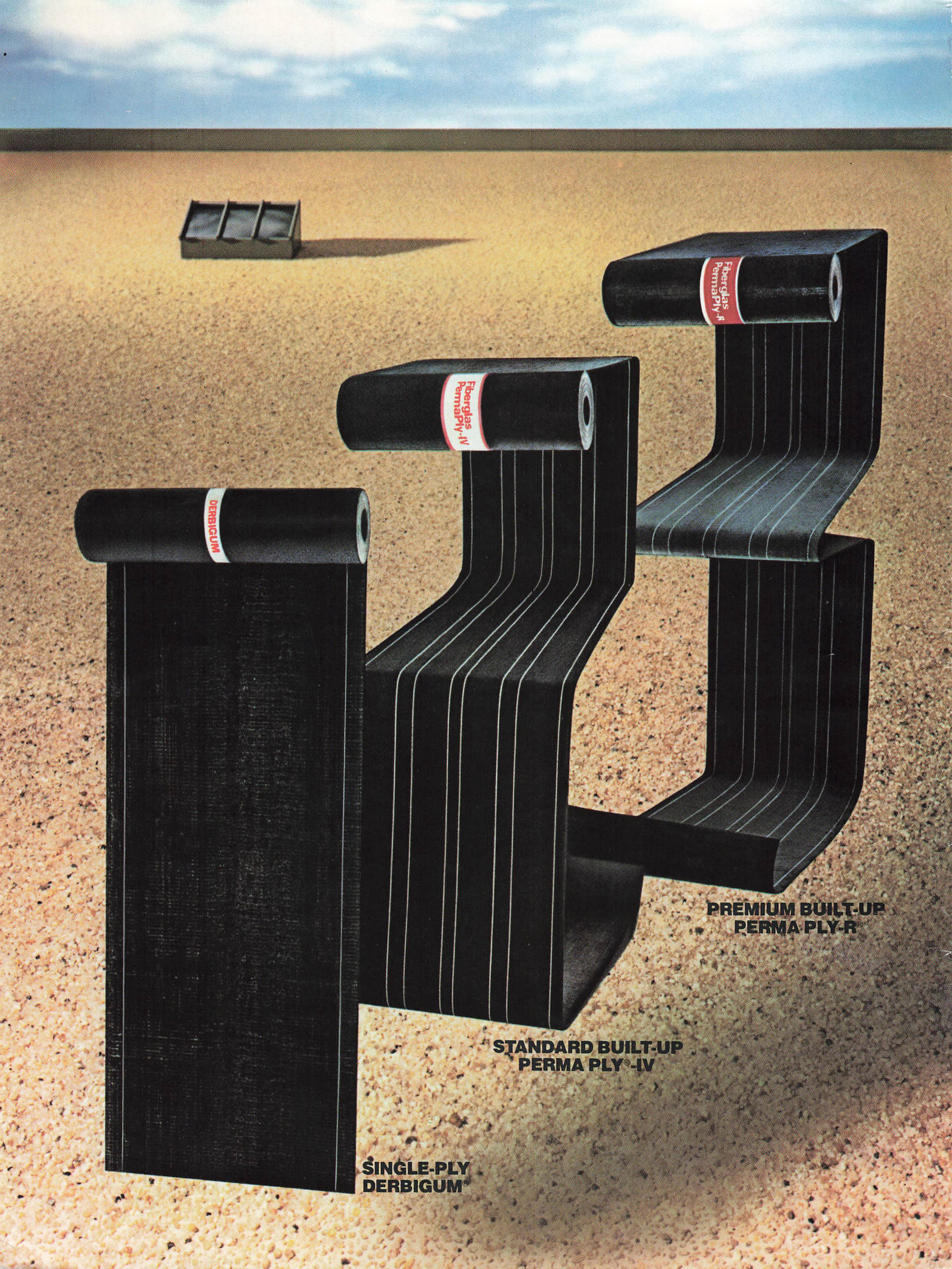
FEATURES

DEPARTMENTS

NATIONAL ROOFING CONTRACTORS ASSOCIATION
8600 Bryn Mawr Avenue
Chicago, Illinois 60631
(312) 693-0700

SOCIETY OF NATIONAL ASSOCIATION PUBLICATIONS

ROOFING SPEC (ISSN 0199774 2) is published monthly for an annual price of $20 for NRCA members, $15 for additional copies for member firms and $20 for non-members, $65 outside United States (excluding Canada) by the **NATIONAL ROOFING CONTRACTORS ASSOCIATION,** 8600 Bryn Mawr Ave., Chicago, Ill. 60631. Second-class postage paid at Chicago, Ill., with additional mailing offices. **POSTMASTER:** Send address changes to ROOFING SPEC, 8600 Bryn Mawr Ave., Chicago, Ill. 60631.


Fiberglas PermaPly-R
Fiberglas PermaPly-IV
DERBIGUM
PREMIUM BUILT-UP
PERMA-PLY-R®
STANDARD BUILT-UP
PERMA PLY®-IV
SINGLE-PLY
DERBIGUM®

NO MATTER WHAT YOUR ROOFING BUDGET, WE'VE GOT YOUR NUMBER.

The right roof at the right price is easy to find when you come to the experts—Owens-Corning.

With three membranes and three types of insulation to choose from, you can simply custom-design the roof that's best suited to your project.

THREE OUTSTANDING MEMBRANES

Choose DERBIGUM® roof membrane for the performance of a 3-ply roof in a single layer. A proven success in Europe and the U.S. for 17 years, it's the largest selling modified bitumen membrane on the market. Excellent for all roof types—dome, barrel, peaked or flat.

PERMA PLY®-IV roofing felt gives you quality plus economy in a built-up roof. It meets or exceeds every industry standard. At a competitive price.

And PERMA PLY-R® roofing felt delivers a premium built-up roof of exceptional strength. You can count on its continuous strand construction for long lasting high performance. The proof? Over 6 billion square feet successfully installed since 1964.

THREE EFFECTIVE INSULATORS

You've picked the right membrane. Now mix 'n match with a quality insulation at the right price.

You can't beat FIBERGLAS® roof insulation for a truly superior roof. Available in a range of thicknesses and R values, it's the standard of excellence in the industry. It conserves energy. Helps reduce operating costs. And can save on initial equipment costs as well.

Choose OCFOAM™ roof insulation for exceptional resilience and dimensional stability. You'll find it in a full range of thermal values. At a price that's reasonable.

And if you want an inexpensive roof insulation that's also versatile, you can't do better than Owens-Corning WOOD FIBER. For roof leveling, reroofing and recovering, it's simply the finest wood fiber insulation you can buy.

Of course, we back all our roofs with the best warranties and guarantees in the business. So if you're in the market for roofing, contact Owens-Corning. Where finding the perfect roof for your needs and budget is as easy as 1, 2, 3.

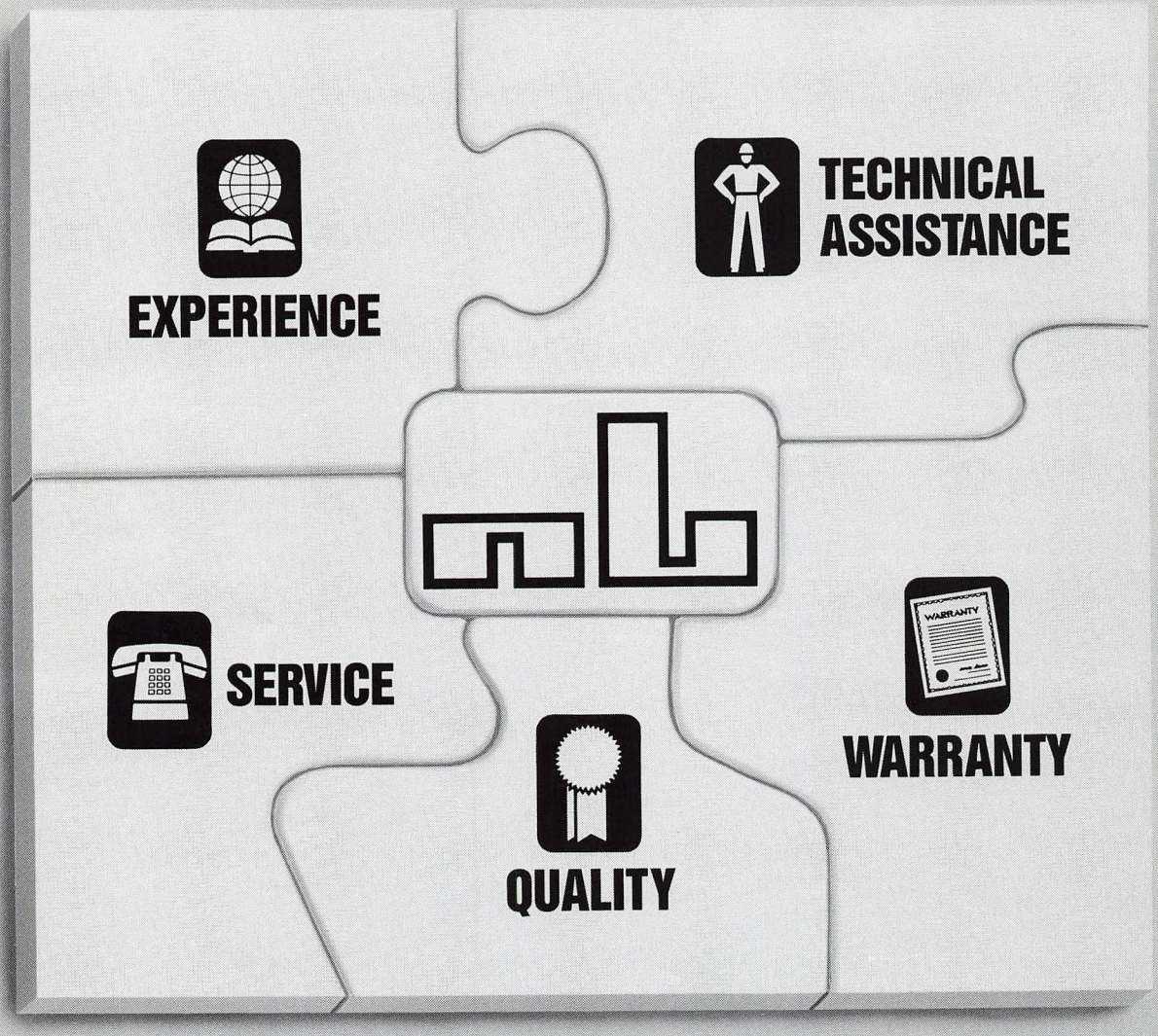
Call your Owens-Corning sales representative. Or write B.Y.L. Meeks, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

From top to bottom:
Wood Fiber roof insulation
Fiberglas® roof insulation
OCFoam™ roof insulation

OWENS/CORNING
FIBERGLAS
TRADEMARK ®

Check #23 on Reader Service Card

Only Nord Bitumi Puts All The Pieces Together



Modified asphalts can be a real puzzle. Only Nord Bitumi can complete the puzzle using all the pieces. No other modified manufacturer can do that. What you get is a total commitment to provide the best product with the best service — solving the puzzle.

Nord Bitumi U.S., Inc.

966 South Springfield Ave. • Springfield, NJ 07081 • (201) 467-8669

Check #22 on Reader Service Card

Nord Bitumi U.S., Inc.

Pitch pan procedure helps solve problems

Dear Editor:

In responding to Bob LaCosse's comment that a perfect pitch pan is impossible (December *Roofing Spec,* page 42), I would have to say that it's difficult, but the word impossible is not supposed to be in the roofing contractor's dictionary. We are charged with making the roof watertight, period. However, Bob's remarks regarding continuous maintenance of settled pitch pans can be confirmed universally.

About a dozen years ago, we worked on a federal building with about 150 penetrations that were undoubtedly the major source of leakage. If we had used a standard detail (much like the picture in the December issue) the owner would still be having problems.

We knew that the bulky mechanical equipment resting atop the supporting steel allowed a large face area to be subject to wind forces. This created movement within the structure that, along with the vibrations and resonance of the mechanical equipment, had to be compensated for in order to maintain the watertight integrity of the roofing system.

For this project, we developed a simple pitch pocket to achieve the desired results.

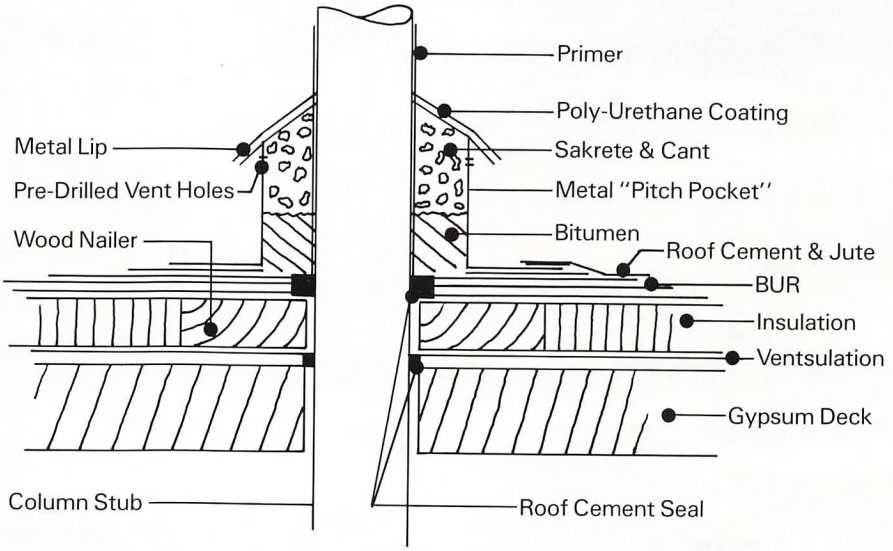
The following installation procedures were used:

1. At the base sheet, the penetration was sealed with roof cement.
2. The supporting column was primed with asphaltic cutback.
3. After the roofing membrane was applied, the penetration area was again sealed with roof cement.
4. The pitch pan was installed and double-stripped with roof cement and jute.
5. About 2 inches of hot bitumen was poured into the form.
6. Sakrete was installed to provide a bona fide cant on top of the pan.
7. After the concrete cured, we went back and coated the top surface, including the column and metal edge, with a polyurethane monolithic coating (when the solvents evaporate, it results in a solid sheet of elastomeric).

Please note that holes were introduced under the lip to permit maximum evaporation of trapped water. Actually, the canted concrete by itself permits dispelling of the elements by gravity, while the urethane coating provides the ultimate seal to withstand vibrations and movement.

In the 12 years since these pitch pans have been installed, no problems have occurred at these critical points, nor in the rest of this huge project.

Sydney Kane, P.E.
S. Kane & Son, Inc.
Philadelphia



Kane Pitch Pocket

This new roof will cut energy bills 20%, 30% or more. And also stop leaks!

When you specify a polyurethane foam roof system, you're not only selecting a long-lasting, high-performance roof, you're writing big energy cost savings into the specs. Heating and cooling bills regularly drop 20 to 30 percent, or even more, when a polyurethane foam roof is installed. A seamless, monolithic polyurethane foam roof stops leaks, installs quickly, and is easy to repair and maintain. And no other roof will outlast a properly specified, installed and maintained polyurethane foam roof. For more information about polyurethane foam systems for new construction and reroofing applications contact the Urethane Foam Contractors Association, 4302 Airport Boulevard, Austin, TX **78722. Telephone: 512/454-0041**

Polyurethane Foam

The roofing system of the future ...time-proven through decades of use!

Check #31 on Reader Service Card

Construction contracting down 5 percent, says Christie

Contracts for new construction projects declined 5 percent in November, to an annual rate of $225.8 billion, reported the F. W. Dodge Division of McGraw-Hill Information Systems Co.

November's setback followed a four-month period of record building activity. An 11 percent drop in nonresidential building in November brought the Dodge Index down to 160 from its all-time high of 169 in October. This represents an annual contracting rate of $78.7 billion in November, down from the $88 billion rate that was sustained in September and October.

According to George A. Christie, vice president and chief economist for F. W. Dodge, "Compared with the past few months, November's reduced rate of contracting was more consistent with current market requirements, and was in line with expectations for 1986.

"Not surprisingly," he added, "it was office building that led the latest month's decline, while housing and public works construction remained within a few percentage points of their recent levels."

Christie also sees November's drop as a reflection of the tax reform program's lost momentum. With current depreciation rules, commercial real estate developers felt less urgency to start projects, he explained.

In November, contracting for office projects fell 18 percent. Industrial construction, on the other hand, held even with October's value.

November's residential building contracts declined 4 percent to $105.6 billion as both starts for single-family and multi-family starts sagged.

"The persistent lack of response to lower mortgage rates throughout 1985 is an indication that the backlog of housing demands carried over from the depressed early 1980s has been satisfied," Christie said.

Contracting for hotels and motels also fell 11 percent in November.

Non-building construction (public works and utilities) advanced 3 percent in November to a rate of $41.5 billion. The month's gain was concentrated in water-related public works projects—water resource development and waste water treatment facilities—which rose 8 percent. Transportation-related construction remained steady in November while utility projects declined 11 percent.

In a departure from recent months, November's regional breakdown of total construction contracting showed modest gains in the Northeast and the South, but larger declines in the North Central and Western areas.

At the end of 11 months, 1985's unadjusted total contract value of all new construction was $211.8 billion, a gain of 7 percent over the same 1984 period.

ROOFING SPEC

Publisher
Christine Nolen Taylor, CAE

Editor
Martin Eastman

Associate Editor
Kathleen Aharoni

Contributing Editors
Amy Anson
Melody Beckman
Barb Dykema
Katie Shultz

Circulation Coordinator
Joan Kriete

Technical Advisors
Robert LaCosse, CAE
Jeff Lowinski

Advertising Sales Manager
Amy Kassel

Non-residential construction may drop if Reagan's tax reform proposals pass

A comprehensive study of President Reagan's tax reform proposals indicates that if the program passes, firms and employees in the construction industry could suffer. The study, commissioned by the National Construction Industry Council (NCIC) and conducted by Data Resources, Inc. (DRI), shows that new starts for non-residential construction would drop by 3 percent in the first year the tax reform is implemented and decline 4 percent the following year.

According to the study, commercial office building starts would be affected the most. The tax code changes would cause the starts to drop 12 percent in the first year and 16 percent in the second. Hotel construction would also be hard hit, declining 9 percent in the year immediately following the tax legislation's enactment and 16 percent the following year.

In 1988, the year of peak impact, an estimated 223,000 jobs would be lost in the construction industry, according to the econometric study. The construction industry currently employs 4.1 percent of the total workforce. The study estimates that this loss of jobs would raise the national unemployment rate by .3 percent.

Proposed changes in the completed contract method of accounting "would create serious cash-flow problems for many contractors," noted Richard Pepper, NCIC's chairman. When coupled with decreases in construction activity and reduced bonding capacity, contractors' cash-flow problems could become severe enough to greatly increase the risk of bankruptcy in the industry for the next five years, Pepper claimed.

In assessing the impact of the tax proposal on construction, DRI developed a comprehensive economic model of the industry in conjunction with DRI's model of the U.S. economy. This model allowed forecasters to detail the tax reform's impact on construction and its ripple effect throughout the entire economy.

"Congress must pay particular heed to the impact such changes may have on construction, if for no other reason than the size of the construction industry, which accounts for over 8.5 percent of the gross national product," Pepper said. "What's good—or bad—for construction has a definite and immediate impact on supplier industries, and on the nation's economy as a whole," he added.

Unions willing to give up 5 percent of pay for 3 percent staffing increase, says Allen

Union work rules are blamed frequently by construction industry executives for decreased productivity and higher construction costs. However, new research challenging that claim has been completed by Steven G. Allen, research associate for the National Bureau of Economic Research of Cambridge, Mass., and a professor of economics at North Carolina State University.

In a simulated typical office building project, Allen found that union-required factors resulted in excess staffing costs of 3.2 percent, excess labor costs of 5 percent, and excess costs of 2 percent. These findings are fairly consistent with findings in earlier academic studies, according to Allen.

Although the magnitude of additional union costs is by no means trivial, according to Allen, he said the results "create an impression quite different from that produced by journalistic horror stories or studies by 'experts' in the business community."

Interpreting the results a different way, Allen finds that unions are willing to give up 5 percent of their wages in exchange for a 3 percent increase in staffing.

Allen also found that, despite contractual provisions limiting prefabrication in some situations, union contractors are equally likely to use prefabricated components as non-union builders.

The research, funded by the Department of Labor and the National Science Foundation, is based on two sets of data. One set of data was for 83 commercial office buildings built in 1974, and the other was for 68 elementary and secondary schools built in 1979.

According to Allen, most research done so far on the effect of union work rules has found that:

- most union contracts are not riddled with provisions that seriously interfere with factor allocation;
- many work rules look more restrictive on paper than they are in practice; and
- most crafts seem relatively free of restrictive work practices, despite problem areas that surfaced in a number of studies.

The two most recent studies Allen reviewed concluded that the major work rule problem facing union contractors is exclusive jurisdiction. Contractors want to assign work outside a craft's jurisdiction and make greater use of unskilled and semi-skilled labor.

Considering his findings together with earlier research in this area, Allen came to three basic conclusions:

- Union work rules are restricted mainly to the allocation of different types of labor and tend to have little effect on the use of capital and materials.
- Although the cost of union work rules are not as alarmingly large as previous studies suggest, sizable increases in productivity would result from their removal.
- Forces linking unionism and efficiency are very complex, with tendencies pulling in opposite directions simultaneously. Allen cited his earlier research in which he found that productivity is sufficiently higher in the union sector to make unit costs competitive with open shop contractors in some cases. He added that superior training and reduced hiring costs seem to override the effects of work rules and wages.

Survey reveals subs bid lower when prompt pay is offered

Subcontractors are willing to trim their bids if general contractors pay promptly and offer a fair and equitable contract. This is the most significant finding of a 46-question survey sent last fall to 800 subcontractor members of the American Subcontractors Association (ASA). Responses were received from 25 percent of the members surveyed.

Also, 89 percent of the subcontractors surveyed said that they offer some contractors better bids than others either regularly or occasionally. Of the subs who offer some generals preferential treatment, 90 percent said they offer better bids to general contractors that follow prompt payment policies, and 88 percent said that a general's offer of a fair and equitable subcontract will affect their bid.

In addition to offering lower bids for prompt payment, 99 percent of the respondents said they would complete punch-list work without delay if they knew final payment would come promptly after completing such work.

Prompt payment, however, is not standard practice in the industry, the survey revealed. When asked if general contractors regularly paid subs within three days of receiving payment from the owner, 91 percent of the surveyed subcontractors said no.

The survey's results show that generals are not following the American Institute of Architects' Standard Form of Agreement Between Contractor and Subcontractor. This agreement states that general contractors should pay subcontractors within three days after receiving payment from the prime contractor.

A recently adopted joint policy statement of the Associated General Contractors, the Associated Specialty Contractors and ASA calls for subcontractors to be paid within seven days. However, 69 percent of the survey's respondents said they usually weren't paid even within this time period.

The survey also asked subcontractors to rank in order of importance specific contract articles. Unconditional entitlement to payment for work properly performed and materials suitably stored was listed most often as the most important article. Other articles listed by the subs in descending order were: payment within three days after the owner pays the general contractor; the percent of retainage withheld by the contractor; waivers of lien rights; ability to file a claim for changes and delays; liquidated damages; hold harmless and indemnity provisions; and length of warranties.

"The key to improving the relationship between subcontractors and general contractors clearly is prompt payment backed up with a fair contract that insures that payment," said Gene Marchbanks, ASA president.

ASA and ASC testify about unfair federal payment practices

Unfair payment practices on federal projects was the subject of testimony submitted to the Senate Small Business Committee by two leading construction trade associations.

The proposals submitted by the American Subcontractors Association (ASA) and the Associated Specialty Contractors (ASC) attempt to close an obvious loophole in existing federal law regarding prompt progress payments. The proposals are also designed to stengthen existing federal retainage policy and ensure that government subcontractors are paid promptly.

In their joint testimony, ASA and ASC expressed concern about federal agencies' claims that the Prompt Payment Act does not apply to construction contract progress payments. The two associations cited numerous references to this law in the hearing records and Committee reports that point out the need for such legislation to encompass progress payments as well as final payments in government contracts.

The two groups also called on Congress to include the federal government's current retainage policy in the law. According to current federal policy, retainage should be withheld only under special circumstances. ASC President Robert Wilkinson noted that "in order for the Prompt Payment Act to be truly effective for the construction industry, it must legislatively mandate an end to unnecessary retainage."

The ASA/ASC subcontractor prompt payment proposal would also require that a contractor on a federal project pay his subcontractors within seven days of receiving payment from the federal government or face the same interest penalties the federal government is required to pay under the Prompt Payment Act.

"Since the prompt pay legislation took effect in October 1982, the federal government's payment practices have improved dramatically," ASA's President Eugene Marchbanks said. "However, many prime contractors have not followed suit. The prime contractors are really only a conduit for transmittal of payments from the federal government. So, for the prompt payment philosophy to have its full effect, those funds must be subject to the same rules."

Wilkinson concluded the testimony by saying that "subcontractors on federal construction projects often have severe problems when trying to collect payment for completed work. In light of these ongoing problems and the failure of federal agencies to find adequate solutions, ASA and ASC believe the time has come for congressional action."

TARC encourages contractors to specify and use KDAT lumber

Members of the Middle Tennessee Council of the Tennessee Association of Roofing Contractors (TARC) is concerned with the quality of materials being incorporated into their work.

During recent years the use of pressure-treated "wolmanized" lumber has increased dramatically, bringing to light a problem that should be examined, according to the Council. By pressure-treating lumber, the wood's moisture content is greatly increased, causing problems when this wood is used as nailers or blocking within a roof system. According to the Standard Building Code, lumber used in this manner must have a moisture content of 19 percent or less. Excess moisture may cause the wood to warp and curl, which may eventually lead to a roofing system failure.

Problems that result from warped or curled wood blocking can be avoided by using pressure-treated lumber that has been kiln-dried after treatment. Lumber that is dried after treatment is stamped "KDAT." Many lumber dealers do not stock "KDAT" lumber because it isn't commonly used, according to the Council. By publicizing this problem and its solution, Council members hope to increase the specification, use and availability of "KDAT" lumber in roof-related applications.

Companies giving workers choice of paid holidays

How should a small company observe Yom Kippur if it has no Jewish employees? Or St. Patrick's Day and Kosciuszko Day if it employs no Irish or Poles? Many companies are solving the dilemna of which holidays to observe and which to ignore by leaving the decision up to the employees.

These companies close down for just a handful of the nationally observed holidays. The rest of the holidays are considered optional or "floating" holidays. Employees are allowed to observe these celebrations individually according to their respective religious or national affiliation or preference.

A 1980 survey by the Bureau of National Affairs found that two-thirds of the responding companies gave employees a total of at least 10 paid holidays a year.

Reichel & Drews to build first domestic modified bitumen plants

Reichel & Drews, Inc., has become the first domestic firm to build factories in the United States for producing modified bitumen membranes. The new facilities will incorporate advanced modified bitumen technology and manufacture a wide range of APP- and SBS-modified bitumen membranes using both polyester and fiber glass reinforcement. The membranes will come in a wide range of thicknesses and finishes.

Reichel & Drews is handling the the first plant's design and construction. The plant will be located in Mt. Vernon, Ind. "This is the most extensive project of its kind ever built by a U.S. firm," explained Curtis N. Maas, president of Reichel & Drews. "When completed, the factory will contain asphalt and bulk material handling systems that are among the most thoroughly automated in the industry." The Mt. Vernon facility, being built under contract for a leading domestic roofing material manufacturer, is scheduled to reach full production in the first half of 1986. Another plant will be completed three to four months later.

In addition to creating a complete manufacturing plant, Reichel & Drews offers roofing manufacturers advice and modified bitumen plant start-up services. The company's program includes:

- laboratory formulations and product specifications;
- comprehensive advice regarding raw materials specifications;
- seminars and field training for manufacturers' personnel on modified bitumen's uses; and
- a tour of an operating facility to learn modified bitumen production methods during a project's construction phase.

Reichel & Drews is also providing a unique rebranding program that supplies domestic roofing manufacturers with first-quality APP- or SBS-modified bitumen roofing membranes under their own brand names while their plants are being constructed. This gives manufacturers the chance to develop their markets for modified bitumen materials without waiting for their plants to be completed.

Economists at odds about housing's health in November

The pace of new single-family home sales is expected to increase following a strong gain in November, according to several economists, reported the *Wall Street Journal.*

The Commerce Department reported that new-home sales rose 7.7 percent in November, to a seasonally adjusted annual rate of 671,000 units following a revised 7.8 percent decrease in October. The original reported figure for October was a drop of 5.5 percent. The November gain, the largest monthly increase since August 1984, restored the tempo of new-home sales to close to September's adjusted annual rate of 676,000 units.

With mortgage rates continuing to drop, there may be further upward movement of new-home sales through the first quarter of 1986, said Lyle Gramley, chief economist of the Mortgage Bankers Association.

Other housing indicators, however, showed weakness during November. Housing starts fell 12.2 percent to their lowest annual rate in more than two years. And while sales of existing homes continued at relatively high levels in November, they were off 3.4 percent from October, according to a National Association of Realtors' poll.

By November, fixed-rate mortgages had dropped a full percentage point. The expected response to this decrease did not materialize, however.

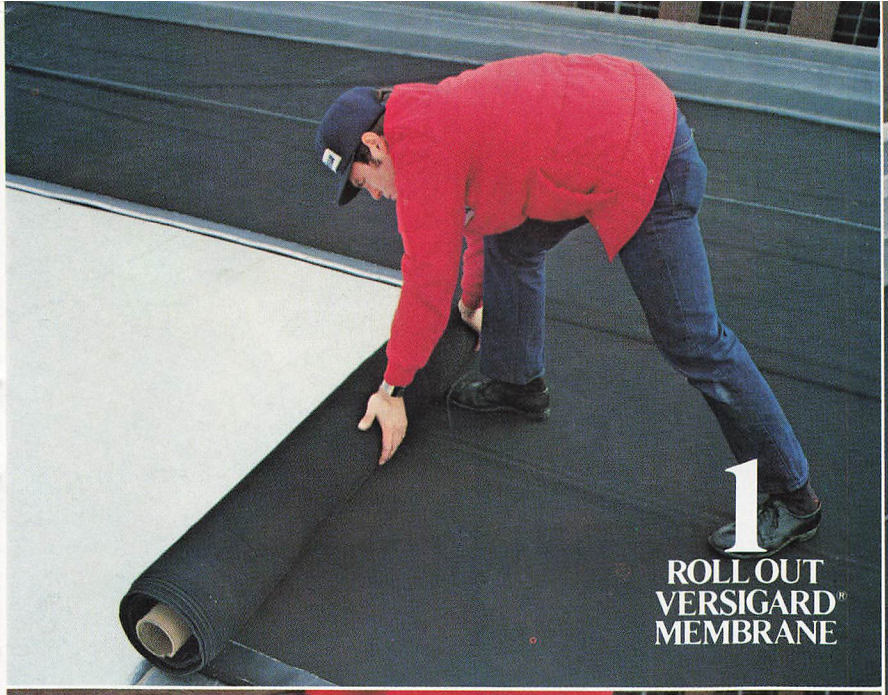
Many analysts believe the adjusted annual pace of new-home sales in the coming months could exceed 700,000 units before it begins to slow down about mid-year. A short-term, continued increase in new-home sales could help revive housing starts. However, Gramley cautioned that a real boom in housing activity shouldn't be expected. He cited tighter borrowing requirements for home buyers as one reason why sales will improve only modestly.

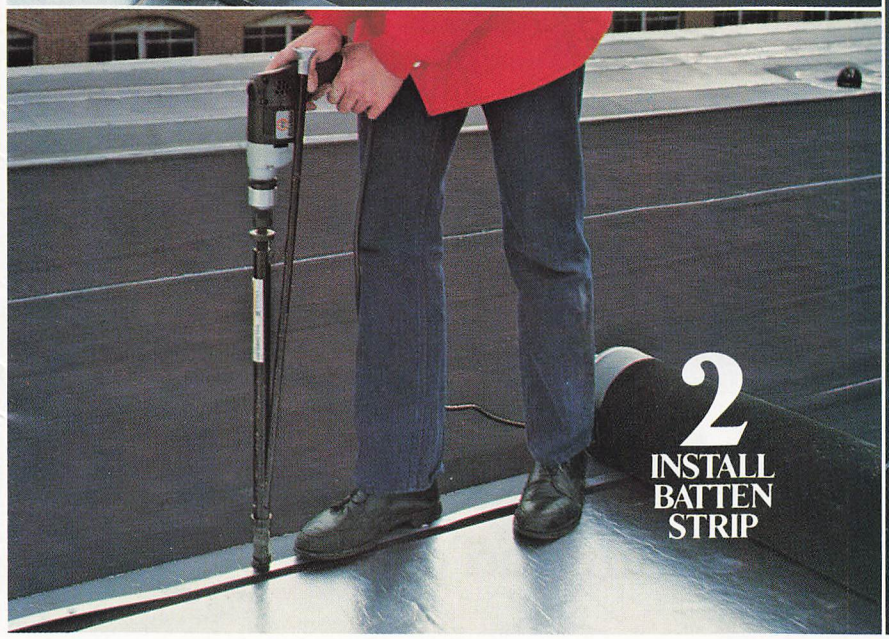
Several economists said they expect the level of new-home sales for 1986 to top last year's, which totaled about 5 percent more than 1984's 639,000 units.

The most dramatic gain in new-home sales during November occurred in the Northeast, where sales skyrocketed 48.1 percent from October's depressed level. Sales rose slightly in the South and fell in the West and Midwest.

The Commerce Department report also said that the median price of a new single-family home fell 0.9 percent in November to $84,700, from $85,500 in October. The average price edged up 0.1 percent from $102,400 in October to $102,500 in November.

In addition, the Department said the adjusted backlog of unsold homes in November was 357,000, up from October's 355,000. This backlog represents a 6.6-month supply.





INSTA-SEAM™...A Major Improvement In Roofing

Goodyear proudly announces a way to increase seam strength and lower roofing costs. New Insta-Seam factory-applied heat-sealable adhesives. Provided on 72″ x .045 or .060 Versigard membranes. For more information call toll-free 1-800-321-1692. Ohio 1-800-321-1688.

25 Reasons to Buy Versigard With Insta-Seam Adhesive

(1) FM-I60/90 approved. (2) Non-penetrating. (3) Small crews to install. (4) No heavy handling equipment required. (5) No ballast to purchase, spread or blow off. (6) No seam adhesives to purchase or apply. (7) No caulking of seams required. (8) Strongest seams in the industry. (9) No substrate adhesive required. (10) No plate bonding necessary. (11) No white gas necessary. (12) No talc to clean off. (13) No need for large tear-off exposures. (14) Install when cold or damp. (15) No primers or washes needed. (16) Easier material estimating. (17) Insta-Seam adhesive for use by Goodyear-approved applicators only. (18) No wrinkling created by installation method. (19) No stretching or forcing of the membrane necessary. (20) No water damming caused by protruding anchoring hardware. (21) No expensive or unproven anchoring hardware. (22) Safety tread surface on membrane. (23) No chalking of roof for placement of bars or fasteners. (24) In stock exclusively from local full-service Versigard distributor. (25) Goodyear leakproof warranty.

GOODYEAR

Check #16 on Reader Service Card

It's not easy being perfect.

Yet some succeed at it again and again.

It's a challenge to be perfect even once. It's an incredible feat to be perfect 100 times. Yet that's the hallmark of the Carlisle Centurion.

He's applied 100 or more error-free Carlisle roofing systems as judged by our technical representatives. That means every single detail of the installation was 100% perfect—the very first time.

Carlisle thinks that's quite remarkable. So we've honored these worthy roofing contractors as Carlisle Centurions. They're few and far between. And, without a doubt, they're among America's superstar roofers.

We're proud these men are associated with Carlisle. Their workmanship, coupled with Carlisle's reputation for quality, keeps Carlisle the name second to none.

For more information, call toll free **800-233-0551.** In PA, 800-932-4626. In Canada, 1-800-387-4990.

1. **Richard Greb** / Fettin Roofing Company, Inc., Lincoln, NE
2. **R.A. Potts, II** / Potts Construction and Roofing, Inc., Sedalia, MO
3. **Robert L. Bubenzer** / Henry C. Smither Roofing Co., Inc., Indianapolis, IN
4. **Mike Kusenko** / Mak-Lyn, Inc., Brackenridge, PA
5. **James Smithey** / Frost & Company, Inc., Wapakoneta, OH
6. **Robert Barr** / B&B Roofing & Construction, Inc., Chambersburg, PA
7. **Steven Pensinger** / B&B Roofing & Construction., Inc., Chambersburg, PA
8. **Brad Ream** / Cumberland Valley Roofers, Inc., Carlisle, PA
9. **Warren Edwards** / Roof-Tek, Inc., Marshville, NC
10. **Don Parsons** / Wood Roofing Co., Inc., Des Moines, IA
11. **Pat O'Neill** / Granite City Roofing Company, St. Cloud, MN
12. **Kim Schwickert** / Schwickert Company, Mankato, MN
13. **Kent Schwickert** / Schwickert, Inc., Mankato, MN
14. **Harlan Hanson** / Central States Roofing Company, Ames, IA
15. **Ronald Therrien** / A.W. Therrien Company, Inc., Manchester, NH
16. **Mark Sobeck** / The Sobeck Corporation, Wyoming, PA
17. **John Gooding** / Gooding, Simpson & Mackes, Inc., Ephrata, PA
18. **Ardell Porter** / Porter Roofing Company, Inc., Belton, MO
19. **Chris Wille** / Ak Sar Ben Roofing Company, Inc., Omaha, NE
20. **Jim Taylor** / Jim Taylor, Inc., Belleville, IL
21. **Don Largent** / Don Largent Roofing, Harrisonburg, VA

NOT IN PICTURE:

22. **Kent Nielsen** / Curran V. Nielsen Company, Inc., Minneapolis, MN
23. **Glenn Langer** / Langer Roofing & Sheet Metal, Milwaukee, WI
24. **Sam Roth** / Roth Brothers, Inc., Youngstown, OH

SILVER ANNIVERSARY 25 YEARS · 1961 · 1986

The Carlisle Centurion
There is no equal.

Check #8 on Reader Service Card

CARLISLE

Carlisle SynTec Systems
Division of Carlisle Corporation
P.O. Box 7000, Carlisle, PA 17013

Carlisle names contest winners

Carlisle SynTec Systems has named Great Lakes Systems, Inc., of Jenison, Mich.; Kelley & Carpenter Roofing and Sheet Metal, Inc., of Hamilton, Ohio; and the Richland Co. & Associates of Defiance, Ohio, "Perfect 10" award winners.

The award is presented to contractors that achieve consistent technical excellence in single-ply roofing applications. Contractors must complete 50 error-free roofing applications. The applications are judged by Carlisle technical representatives.

The award program is part of Carlisle's national roofer training and inspection program. In order for a roofing project to be warranted by the company, the installing contractor must have undergone a three-day training program at the Carlisle SynTec Technical Center in Carlisle, Pa.

International manager named at Elco Industries

Elco Industries of Rockford, Ill., has added Donald C. Baxter to its corporate staff as manager of international operations.

In this newly developed position, Baxter will assist Elco in identifying sources of supply for its consumer, construction and OEM divisions.

Baxter has 19 years of experience in various international sales and purchasing functions with a major fastener company.

Armco forms contractor advisory group

The Roofing Products Group of Armco Building Systems has formed a roofing contractor advisory group.

The members of this group for 1985-86 are Ronny E. Barnett of Port Enterprises, Inc.; Lee T. Burch of Dunn Design/Build; Richard W. Dohm of Tri-State Roofing & Sheet Metal; Rex Edmunds of Ellington Miller Edmonds, Inc.; W.R. Hughes of Norstok Building Systems; Frank Poley of Unicorn Associates; Ronald V. Sharpe of Jedco Construction, Inc.; Jerry Teitsma of Styro Systems, Inc.; James Henry of Holz and Henry, Inc.; Chuck R. Howard of Howard & Ruscilli, Inc.; and Harry E. Wendlandt of Harry E. Wendlandt Co., Inc.

The group will be responsible for long-range goals and strategies designed to stimulate growth for Armco Building Systems and Armco roofing contractors. The group will also provide communication between contractors and Armco management.

Advisory group members are Armco builders who are also Armco roofing contractors, independent roofing contractors and members of manufacturer organizations. Each member serves two consecutive years and membership will be limited to 12. Members are recommended by Armco profit center managers.

Dow plans to add to plant's capacity

The Dow Chemical Co. has announced plans to build an addition to its Louisiana division plant.

The plant's addition, which is scheduled to be completed in July 1986, will be the site for Dow's chlorinated polyethylene resins production. When on stream, it will increase production capacity by 15 million pounds per year, bringing Dow's U.S. production capacity to 100 million pounds per year.

"This added capacity will help us satisfy customer needs for quality chlorinated polyethylene products going into a variety of applications—such as single-ply roofing membranes, automotive elastomers, vinyl siding, wire and cable, and in polyvinyl chloride (PVC) impact modification," said R.M. Baughman, general manager.

Fabco makes new appointments

Jeffrey M. Davis has been appointed sales manager for Fabco Fastening Systems, a Townsend division of Textron, Inc., Stanfield, N.C.

In this new post, Davis will be responsible for planning and controlling worldwide sales efforts for Fabco's lines of fastening and assembly systems for commercial, industrial and institutional structures.

Davis has been with Fabco since 1980, first as a field sales engineer and more recently as product manager for roof insulation fasteners.

William R. Bodine has been named manager of Fabco's roof fastening systems.

Bodine has more than 25 years of fastener marketing and sales experience. Between 1980 and 1982, Bodine was instrumental in establishing Fabco as a full-line supplier of fasteners to the roofing market. His sales management experience for two single-ply roofing producers gives him in-depth knowledge of one of Fabco's largest markets.

Alkor announces CPE price increase

Alkor, a division of the Hedwin Corp. of Pearl River, N.Y., has announced a price increase effective Jan. 1, 1986.

"As a result of an increase in the cost of resin, in addition to increased production costs, we will be raising the price of Alkorflex CPE single-ply roofing membrane as of the first of the year," said Cees Franken, Alkor's marketing and commercial director.

Beiber named manager of sales department

Construction Fasteners, Inc., has promoted Roy Bieber to manager of the sales service department at its corporate headquarters in Wyomissing, Pa.

Bieber's new duties will include coordinating the company's departmental customer service activities with its nationwide network of service centers and district sales managers.

Alsco names marketing supervisor

Curtis P. Johnson has been named residential marketing communications supervisor for the ARCO Building Products unit of ARCO Chemical Co., a division of the Atlantic Richfield Co.

In the newly created position, Johnson will be responsibile for promoting and marketing Alsco residential building products.

He previously served as a vice president of Weightman Advertising of Philadelphia.

Cooley names Smith president

John W. Smith has been appointed president of Cooley Roofing Systems (CRS), a Cooley Group company.

Smith's appointment as president of CRS from vice president and general manager is part of an executive restructuring program designed to decentralize management.

Smith joined CRS in December 1981 as national sales manager. He later became vice president of sales and then vice president and general manager. Prior to his employment at CRS, Smith held the position of national sales manager with the Fortifiber Corp. of Attleboro, Mass.

Evanite Permaglas announces staff changes

Rodney D. Walker has joined the technical department of Evanite Permaglas, Inc., Corvallis, Ore., as a roof systems analyst. Walker's duties will include handling inspections and technical product questions in addition to assisting with the bonding program.

Walker most recently worked with architects and contractors as an estimator for Rooftop Engineers, Inc.

In addition, James R. Daniels has been named sales representative for Southern California. Daniels has more than 25 years experience working with roofers and specifiers. For the last nine years, he managed Western Roofing and Equipment Supply Wholesale Co. in Medford, Ore. Previously, he handled outside sales for Cal-Roof Wholesale in Medford.

JGA Corp. hires roofing consultant

The JGA Corp. has hired Drew Heidler as a commercial roofing systems engineer. Heidler will be employed by JGA on a consulting basis. He can be contacted at the company's Atlanta office.

Heidler brings to JGA 15 years of experience in built-up roofing systems. He previously worked for the Manville Corp., where he gained extensive experience working with architects, general contractors and roofing contractors.

Dow manager elected to NIBS Board of Directors

Harvey J. Sorum, construction industry manager of Dow Chemical U.S.A., has been elected to the 21-member Board of Directors of the National Institute of Building Sciences (NIBS).

NIBS was authorized by Congress to provide, through building community input, an authoritative national source of findings and advice on the use of building science and technology. Its primary functions are to improve the regulatory environment for the building community and facilitate the introduction of new and existing technology into the building process.

Sorum represents primarily the Styrofoam™ brand insulation business for Dow with national trade associations and federal agencies in Washington, D.C. He also has corporate level sales responsibility for four major home building firms.

ASC Pacific names market analyst

ASC Pacific, Inc., of Federal Way, Wash., has named Kathleen Keele to the new post of marketing and business analyst. She comes to ASC Pacific from the Weyerhaeuser Co., where she was a new business development analyst.

Keele will be responsible for ASC Pacific's strategic planning and forecasting. She will also be responsible for projects in product line development and expansion, market development and expansion, and business development opportunities.

Ryser to head tile manufacturer

Edward E. Ryser Jr. has been elected president of the Ludowici Celadon Co. of New Lexington, Ohio. He has also been named a director of Ludowici's parent company, CSC, Inc.

Before joining the company in 1974 as plant manager, Ryser was plant superintendent of the Clow Corp., Sommerville, N.J. He was promoted to operations manager of Ludowici Celadon in 1977 and to vice president and general manager in 1980.

Celotex names roofing plant manager

John J. Anderson has been named manager of the Celotex Corp.'s Fremont, Calif., roofing products plant.

In his new position, Anderson is responsible for the management of all plant operations at the Fremont facility.

Anderson joined Celotex after six years with the Malarkey Roofing Co. of Portland, Ore. Previously, he worked at Johns-Manville as superintendent of the company's Fort Worth, Texas plant.

VARC schedules roofing school

The Virginia Association of Roofing Contractors (VARC) has set the time and date for its 1986 session of the "Roofing personnel school." Member contractors are invited to send their staffs to the Charlottesville Ramada Inn March 1 to hear a discussion of modified bitumen torching safety.

Don Sheppard and Bill Chitty are the VARC members in charge of the event. For more information, contact VARC.

Virginia association moves headquarters

The Virginia Association of Roofing Contractors has announced that its address has changed.

The new address is: 10806 Trade Road, Richmond, Va., 23236. The phone number is 804/379-2099.

Florida Forum celebrates 25

The Florida Roofing, Sheet Metal and Air Conditioning Contractors Association (FRSA) has announced the 25th anniversary of its official publication, *Florida Forum.*

Florida Forum's January 1961 issue marked the first time that the organization's pamphlet-style newsletter appeared in magazine form. Since that time, the publication has grown to a circulation of more than 10,000 and is commonly referred to as the voice of Florida's roofing, sheet metal and air conditioning industries, according to FRSA.

"We're extremely pleased and proud," said Glenn Warren, FRSA president, "most associations aren't 25 years old, much less their magazines." According to Jerry Dykhuisen, editor of the magazine, "Stability has been one of the keys, and our advertisers have been unflagging." Dykhuisen is the magazine's fourth editor since its founding. The magazine's other three editors were Frank Wesley, C.C. Dockery and Steve Munnell.

Florida Forum celebrated its silver anniversary with a special January issue that highlighted major stories from each of the years the magazine was published.

Blue installed as president of Santa Clara group

Dan Blue of Blue's Roofing in San Jose was installed as president of the Associated Roofing Contractors of Santa Clara County and Vicinity on Dec. 13. He is serving a second term.

Dale Lewis, San Jose, vice president; Ron Hogue, Santa Clara, secretary-treasurer; Scott Radonich, San Jose, director; and Dale Carnahan, San Jose, director, were also installed that evening.

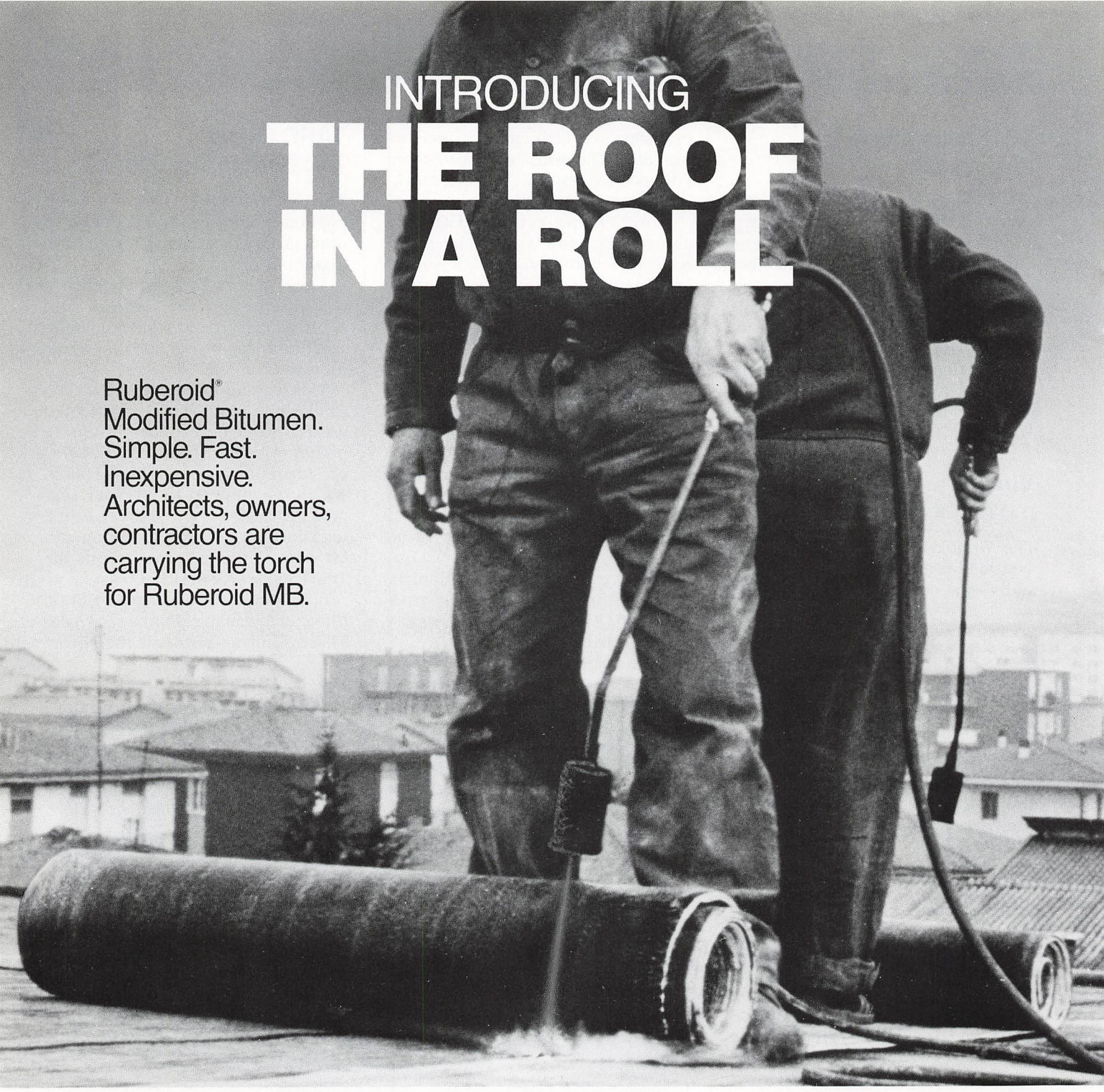
TARC forms Tort Reform Coalition

The Tennessee Association of Roofing Contractors has affiliated with 15 other groups to form the Tort Reform Coalition.

The Coalition has been established to initiate the introduction and approval of legislation that would put a statutory cap of $15,000 on awards for non-economic damages.

This legislation is patterned after a similar bill in Mississippi and would greatly influence liability insurance premium rates. According to TARC president Bill Rackley, "this is a bill to which we all need to give our support. It will be an uphill battle." Rackley expects that the bill's greatest opposition will come from the Trial Lawyers Association.

Ben Longley, R-Cleveland, will be filing the bill in the Tennessee Senate. There is still no sponsor in the House.



INTRODUCING THE ROOF IN A ROLL

Ruberoid® Modified Bitumen. Simple. Fast. Inexpensive. Architects, owners, contractors are carrying the torch for Ruberoid MB.

And no wonder! It's a complete roof, all rolled up and ready to install. Ruberoid Modified Bitumen is a top-quality, modified asphalt, water- and weather-resistant membrane based on a puncture-resistant, non-woven, spun bonded polyester mat. It's lightweight but tough, resilient but durable.

Superior melt flow characteristics make it easier to handle, and useable over a wider temperature range than competitive products. And applying it is simplicity itself.

Just heat the underside with a propane torch as it's being unrolled. Seal the seams the same way. Nothing on the market is easier to apply, and no expensive equipment is needed. It can often be an efficient and extremely economical alternative to single ply or conventional built-up roofing. Work in progress is clean, and the finished job is a snap to inspect.

Modified Bitumen is the state-of-the-art in roofing technology; but only one is Ruberoid, the most respected name in roofing.

Contact the authorized GAF distributor nearest you, or write: GAF Corporation, Building Materials Division, 1361 Alps Road, Wayne, NJ 07470.

GAF® RUBEROID® MB

GAF 100 ANNIVERSARY

Check # 14 on Reader Service Card

Applying modified bitumens takes new skills and procedures

The growing use of reinforced modified bitumen (RMB) has made it important for contractors and their workers to understand proper RMB application procedures and techniques. These procedures may vary from job to job because of differences in materials or conditions. The wide variety of RMB products makes it impossible to write one set of application procedures to cover all situations.

Some practices, however, can help assure a safe and durable installation regardless of the materials used or the conditions encountered. The following procedures and guidelines are some of the techniques I have found helpful in working with RMB systems.

RMB use rises steeply in 10 years

Before discussing RMB applications, it may be useful to review the expansion and diversification of the industry. The number of RMB products available to U.S. contractors has grown from the handful that was marketed in the '70s to the host of brands and formulations being offered today. The first RMBs were introduced into this country in late 1975 from Europe, where they were developed in the mid-1960s.

My first encounter with an RMB product was at the 1974 NRCA Convention in New Orleans. I was part of a small group of roofing contractors that was invited to witness a demonstration of an application during the show. The following year, RMBs entered the U.S. market.

Ray Johnson is the retired president of Empire Roofing & Insulation Co. of Tulsa. He is currently a roof consultant in Manford, Okla. He has been active on NRCA committees and is a past president of the Midwest Roofing Contractors Association.

BUR knowledge helpful but not enough

by Ray Johnson

The products caught on quickly in this country. Contractors found that RMB systems performed well, and application was less labor-intensive than traditional BUR. One of the few hindrances to the products' growth in the United States was the length of time it took to receive the materials from Europe. This problem diminished in 1978, when the first manufacturing plant was built in this country.

Today, according to the figures I have seen, there are more than 22 plants manufacturing RMB in the United States. Some of these plants are owned and operated by U.S. built-up roofing manufacturers, some are operated by European companies, and some are operated by new companies formed exclusively to manufacture RMB.

The rapid growth of the RMB industry probably will not diminish soon. RMB is the fastest growing roofing product currently marketed in the United States. Some estimate that by the year 1987, sales of RMB will surpass all other types of single-ply or built-up roofing.

RMB offers diverse choices

The RMB products being marketed today offer a wide assortment of bitumens, modifiers, reinforcements and surfacings in varying combinations. Most RMB products are modified with either atactic polypropylene (APP) or styrene-butadiene-styrene (SBS).

The most common reinforcements are polyester mats, fiber glass felts or fabrics, thermoplastic rubber sheets and plastic film. Some manufacturers combine these reinforcements to add one product's performance advantages to another's. Polyester and fiber glass are the two reinforcement materials most commonly combined.

Surfacing is another component that may vary from one product to another. Surfacing products may be either factory- or field-applied. Granules, metals such as aluminum or copper, liquid-applied surfacings and gravel are used to protect the membrane from traffic, ultraviolet radiation and the elements.

Even workers with a thorough knowledge of built-up roofing must be further educated in modified bitumen techniques.

The large number of RMB materials available has made it difficult for contractors become familiar with all of the products or manufacturers currently in the marketplace. The February 1986 edition of NRCA's *Commercial, Industrial and Institutional Roofing Materials Guide* lists 40 RMB manufacturers and 129 different products. To add to the confusion, there are manufacturers dropping out of the market and others adding RMB products to their lines on a regular basis. Even the products that have been on the market a while have been modified and improved with new bitumen formulations or reinforcements.

All systems not applied alike

RMB roofs also differ in the way they are installed. Some membranes are designed to be welded to the substrate with their own bitumen, which the applicator melts with a hot-air or propane torch. Other membranes are applied with hot asphalt. A third type, known as a "peel-and-stick" membrane, is adhered with mastic that has been factory-applied to the modified bitumen product. Some RMB membranes may be applied in a variety of ways, while others offer more limited choices. The manufacturer's instruction should be checked carefully if there are any doubts about the correct way to proceed.

Contractors may also choose to partially adhere a system, vary the underlayment or change other installation techniques in an effort to accommodate design or safety considerations.

New techniques must be learned

Regardless of the type of membrane or installation method used, worker training is essential to ensure proper RMB application. Even workers with a thorough knowledge of built-up roofing must be further educated in modified bitumen techniques. Although the differences between modified bitumen and BUR application procedures may seem minor, they may result in mass confusion in the field unless the workers are educated before application begins.

Some workers may find the changes in application methods very difficult to master. They may have difficulty adjusting to the new techniques or the smaller margin for error an RMB installation presents. Contractors can help their crews make the transition by carefully explaining to them the RMB installation's specific requirements.

Before attempting to train the workers, however, the contractor and his supervisors should review the manufacturer's requirements for the application. It should not be assumed that the procedures learned for the last RMB job will apply to the current job. During training, the workers must be made to understand that the installation techniques they are learning may be peculiar to the product being used.

Contractors who fail to review the manufacturer's requirements before the job begins may end up with embarrassing callbacks. One contractor learned this lesson the hard way when he was called back to an RMB job installed on a sloping roof. Upon investigation, he discovered that his crew had adhered the APP-modified bitumen membrane with mopped hot asphalt rather than torching it on as required. The mistake could have been easily avoided if the crew had checked and followed the manufacturer's instructions.

While studying the RMB product's requirements, the contractor should also determine its compatibility with the system's other components. Should either the materials or the application techniques being used be incompatible with other elements, it may result in damage to the entire assembly. Installing a torched-on membrane directly over a combustible insulation, for instance, could cause a serious and costly fire.

Some field-applied surfacings may also be incompatible with the RMB membrane. I have had a difficult time finding liquid-applied white coatings that may be used successfully with APP-modified sheets. Most of the products tend to peel and flake after a period of time. My only suggestion is to check the manufacturer's specifications and use only a recommended surfacing with the RMB product.

On to the roof

Once everyone is thoroughly familiar with the job's requirements, the RMB installation can begin. Before the modified bitumen membrane can be installed, however, the surface must be prepared. As with any type of roofing, RMB systems require a clean, dry and smooth substrate. The most durable systems are the ones installed over sloped surfaces that provide positive drainage.

Usually, BUR equipment may be used satisfactorily for an RMB application. It should be remembered, however, that a roll of RMB weighs much more than a standard roofing felt, sometimes tipping the scales at more than 100 pounds. Handling these cumbersome materials requires extra care. Workers should make sure that the carts and hoists they are using to move the rolls are capable of withstanding the added weight. The workers themselves must be careful when lifting or carrying the materials to use the proper equipment, if available, or employ the correct lifting techniques when hand-carrying is necessary.

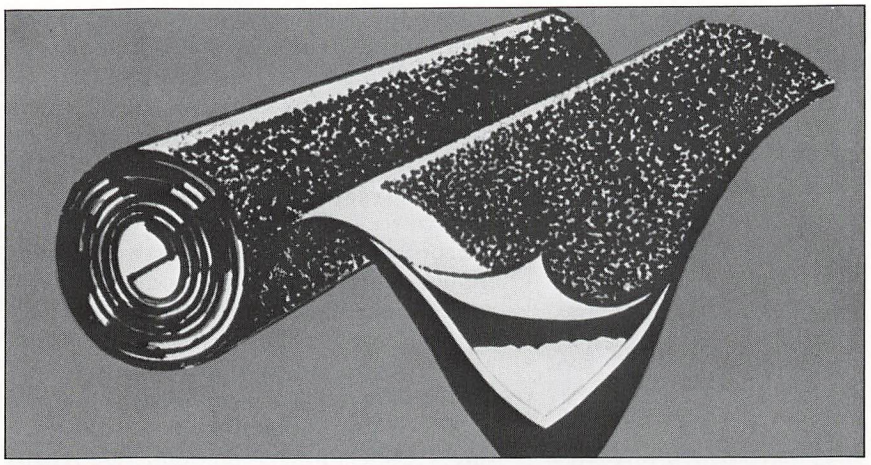
Properly handling and storing RMB materials before they are installed will help avoid damage that could affect the products' performance. One of the most important rules to remember is to always store the rolls on end to keep the ends from being flattened. Workers should also remember to:

- make sure the building's structure can handle the weight of the rolls if they are to be stored on the rooftop;
- keep the materials dry, both in the warehouse and at the jobsite;
- avoid mashing the rolls, which could make them difficult to unroll; and
- avoid practices such as dropping or throwing rolls that could lead to punctures or other damage.

Take precautions during work

During the actual RMB application, the workers must observe certain procedures. Especially careful attention must be paid to the seams if a successful RMB installation is to be achieved. The seal at the seam must be continuous or the roof will fail. One way to produce a strong, watertight seal without applying a great deal of additional heat is to weld the seams together while the membranes are still hot from the torch.

Any application in temperatures below 40F presents its own problems. Some RMB products may actually crack when unrolling under very cold conditions. If an RMB system is to be applied in cold weather, the manufacturer's instructions should be followed carefully.



A modified bitumen membrane has at least one sheet and sometimes several sheets of polyethylene, polyester or fiber glass sandwiched between bitumen layers.

Carrying a torch for RMB

Torched-on systems require special care to prevent under- or overheating the membrane. My experience indicates that more heat is required to apply an SBS-modified system than an APP-modified product. An underheated membrane will be poorly adhered to the substrate. Overheating may damage a polyester-reinforced sheet or cause a fiber glass-reinforced sheet to separate. Too much heat may also cause the factory-applied surfacing, especially if it is a granular surface, to slip or distort. One way to evenly distribute the heat and increase worker productivity is to use a multiple-torch machine.

If the RMB product that is to be torched is backed with a polyethylene film it should determined if the film may be melted during the application. If the melted polyethylene will cause problems in the completed roof, it may be necessary to peel the film off before applying the product.

Fire a hazard of torched systems

Fire is an ever-present hazard during a torch application. Torching an RMB roof directly over an untreated fiberboard product such as a cant, edge strip or roof insulation is extremely dangerous and should be avoided at all costs. When these products come in contact with fire they may smolder and burn like a punk for several hours before bursting into flames.

A propane torch is one of the most dangerous items used in the application of RMB roofing.

Even the slightest exposure of these fiberboard products to the torch's heat poses a potential threat. I was involved in one reroofing project where a very small split in the membrane covering a gravel stop joint allowed torch flames to enter and ignite the fiberboard tapered edge strip used in the original roof. Fortunately, we were still on the roof when the fire was discovered, even though it was several hours after we had torched over the area with the RMB roofing.

Torching directly over polyurethane and polyisocyanurate roof insulations should also be avoided. The Roof Insulation Committee of the Thermal Insulation Manfacturers Association has recommended that a base ply or a layer of roof insulation acceptable to the RMB manufacturer be placed between the insulation and the RMB membrane to protect the foamed insulation from the torch's heat.

Expanded polystyrene roof insulation must also be protected from heat of any kind. Whether the RMB membrane is to be installed using hot asphalt or a torch, it is necessary to lay another type of roof insulation on top of the EPS before the RMB roofing is applied.

To handle fires should they occur, workers should keep fire extinguishers near the work area at all times. Soda acid or water extinguishers should **not** be used under any conditions because they tend to spread the fire. Foam or dry chemical extinguishers will be more effective. When using a foam-type extinguisher, workers should cover the entire burning surface with a blanket of foam. A chemical-type extinguisher should be used to apply the chemicals to the base of the fire. Before the work begins, workers should be told which type of extinguisher will be at the jobsite. They should also be trained in the proper use of the equipment.

Propane requires special care

A liquified petroleum gas (or propane) torch is one of the most dangerous items used in the application of RMB roofing. The following safety precautions should be observed whenever propane equipment is used:

- Local fire codes should be checked before proceeding. Some areas prohibit the use of propane on building roof areas. The size and type of fire extinguishers may also be dictated by fire codes in some localities.
- All equipment should be checked at least once a day for defects. This inspection should include all hoses, valves, gauges and connections.
- Burners should never be lit when the odor of propane is present. Before proceeding, the workers must locate the source of the odor and make the necessary repairs.
- Propane valves should be opened slowly and completely before the burners are lit. The flame should be adjusted by adjusting the valve.
- A flint or electronic lighter should be used to ignite the burner. Matches or disposable lighters are unsafe substitutes.
- The entire system should be examined again for leaks after the burner is lit.
- All propane containers should be securely anchored. They should also be transported, stored and used in an upright position. Propane containers that are near the burners should be protected by a heat shield.
- Propane should be used only in well-ventilated areas.
- Propane burners should never be used near stored canned materials, chemicals or explosives. Propane hoses should also be kept away from burning torches.
- A torch should never be pointed at another person. It should always be aimed at the material being applied.
- A lit torch should never be left unattended. The flame is difficult to see, and it may be difficult to hear the burner if other noise is present.
- When the burner is turned off, the valve on the propane bottle should be closed first to allow all the propane to burn out of the hoses.

Modern roof maintenance depends on up-to-date techniques

The use of contour maps is not at all complicated. The moisture contours graphically displayed on a contour map indicate the location and the degree of roof deterioration. Because roof deterioration and moisture penetration are closely related, it is possible to determine the amount of moisture present in a roof using the maps. When consultants, roofing contractors and building supervisors have this kind of information available, they are better equipped to make maintenance decisions.

Understanding the internal moisture penetration of roof structures is the key to understanding the use of contour maps. To illustrate the moisture penetration of a roof, the contoured areas are shaded progressively darker. The shading indicates the relative severity of moisture penetration and roof damage; the darker the shading, the greater the penetration and more severe the roof damage.

Visual inspection not enough

Before 1974, the presence or absence of internal roof moisture was generally determined by sight or touch. The eyes and hands are quite insensitive devices for determining moisture penetration, however. Moisture in roofing materials is generally not apparent to sight or touch until the moisture content exceeds 45 percent to 65 percent by weight. Small amounts of moisture, which would indicate a roof problem in its early stages, cannot be detected by visual inspection.

Richard Anderson is president of A-Tech, Inc., of Appleton, Wis. The company conducts roof moisture surveys.

Contour maps may reveal hidden problems

by Richard G. Anderson, P.E.

A moisture detection system such as A-Tech's can distinguish minute changes in moisture content. This improves both the quality and the amount of roof moisture information available. Problem areas can now be located long before they would be suspected using visual inspection techniques. Using these modern methods, it is possible to locate areas where moisture problems are just beginning. Many of these areas, because they do not look or feel wet, would remain undetected if the old sight-and-touch method were used.

With early moisture detection and more precise information, it is now possible to greatly improve decisions concerning the type of maintenance needed for each situation. In the past, the standard recommendation of roofing consultants was to remove all wet roofing material and replace it with new, dry material. It is true that large areas of insulation and membrane that are very wet certainly should be removed and replaced. But it may not be necessary to take such drastic measures with every roof where moisture has been detected. In many cases, it is both sensible and economical to allow smaller, less wet areas of roofing, where the moisture penetration is just beginning, to remain after the moisture entrance points have been repaired. Minor repairs to prevent the spread of internal damage may be all that are needed.

A moisture detection and mapping technique such as A-Tech's provides information that has not been available in the past concerning the degree of moisture penetration in a roof. As a result, consultants, contractors and maintenance personnel can better judge if roofing materials that contain moisture should be removed. It is also possible to determine with more accuracy the extent of repairs or maintenance required.

The contours indicate roof areas that contain moisture at levels higher than levels found in normal dry roofs.

What the moisture contours reveal

The contour lines drawn on a roof moisture survey map call attention to areas containing moisture that are hidden from sight and touch. The contours indicate roof areas that contain moisture at levels higher than levels found in normal dry roofs. (The level of moisture that may be found in a dry roof is called its ambient moisture.)

The moisture contoured areas should be examined closely to determine the cause of moisture entry. Once the source of moisture is located, repairs can be made to prevent further entry and damage. Levels of moisture higher than ambient moisture may be caused by:

- general deterioration of the protective membrane;
- physical damage to the membrane;
- flashing imperfections;
- dew point condensation; or
- wet materials built in during construction.

Flashing problems and membrane damage are by far the major sources of internal moisture found in built-up roofing systems.

During the follow-up visual examination of the roof areas that contain moisture, the extent of repair or replacement necessary may be determined. If the visual examination finds the membrane's condition generally sound and the area of moisture-containing insulation relatively small, localized repair and reinforcement of the moisture entry points may be all that is necessary. Limiting the extent of the repairs in this way is an acceptable and economical method of preventing the further spread of damage and greatly extending roof life.

However, the visual examination may reveal problems such as delamination or rotting. This would indicate unacceptable physical deterioration of the membrane or insulation. In this case, tearing off and replacing the deteriorated materials is the preferred method of repair.

Good roof maintenance is the best way to avoid situations where extensive roof replacement is necessary. The key to good maintenance is the early detection and repair of moisture entry points. Small moisture entry problems in their early stages are the easiest to repair. When these problems are corrected promptly, a premature roof replacement costing thousands of dollars may be avoided.

"Dry" and "wet" defined

A-Tech has conducted extensive studies to establish when roofing materials should be considered dry or wet. For each individual roofing material A-Tech has determined a range of values for the product in its dry and wet states. When a moisture content is detected in a product that is above its normal ambient range, it indicates a roof problem. The amount of roof moisture detected above the ambient range indicates the degree of the problem.

If a roof is said to be entirely dry, it means that the total roof is within its normal ambient range. The amount of moisture in a wet roof may range from slightly above the roof's ambient level to saturation.

Some moisture present in all roofs

All roof assemblies and the materials used in their construction contain moisture. The normal moisture content of the insulation, membrane and deck is governed by the moisture content of the surrounding air. As the relative humidity of the ambient air increases, the moisture content of the roof's components increases. Lower relative humidity will decrease the moisture content of the roofing materials.

This range of normal moisture levels varies with the roofing materials used. A dry range that is normal for one roofing material may not be normal for another.

Roofing materials that contain moisture above normal ambient levels are defined as wet. When it is determined that a roof contains wet materials, it does not necessarily indicate the need for replacement of those materials. It does, however, indicate roof problems.

TABLE 1

Roofing Material	Approximate Maximum Equilibrium Moisture Content	Approximate Maximum Moisture Content (Saturation)
Organic Felt Membrane	1.0 %	20%
Glass Felt Membrane	NK	NK
#15 Organic Felt	4.0 %	75%
#15 Asbestos Felt	2.0 %	25%
Glass Felt	1.0 %	19%
Insulation		
Fiberboard	12.0 %	430%
Perlite Board	3.5 %	460%
Fiberglass	2.0 %	690%
Lightweight Concrete	6.0 %	60–110%
Cellular Glass	0.01%	30%
Urethane	6.0 %	1000%
Expanded Polystyrene	3.0 %	2000%
Extruded Polystyrene	0.5 %	10–15%
Dry Asphaltic Fills	0.1 %	60%
Deck		
Concrete	2.0 %	
Gypsum	2.5 %	105%
Wood	16.0 %	60–100%
Tectum	10.0 %	97%

Approximate Percent Moisture By Weight

APL3/144

The moisture level in wet materials may range from slightly above the maximum ambient level to saturation. Each roofing material has its own wet moisture content range. A-Tech studies have established the limits of these ranges for each individual roofing material.

The ambient dry range and wet range of various roofing materials is shown in Table 1. The table indicates, for example, that the moisture level of dry fiberboard may range from 0 percent to 12 percent by weight. Wet fiberboard may contain 12 percent to 430 percent moisture by weight, according to the table. By comparison, the table lists the normal dry range of fiber glass as being 0 percent to 2 percent, while the wet range varies from 2 percent to 690 percent.

Five levels of moisture indicated

A built-up roof is a structure composed of a membrane, insulation, and a deck. When one part of the structure is wet and contains moisture above the ambient level, it does not necessarily follow that the remaining layers are wet or equally as wet.

On a moisture contour map these varying levels of moisture content are indicated. The levels are divided into five distinct ranges to show the extent and seriousness of the moisture penetration.

The lowest level of moisture penetration is indicated on a moisture survey map by the **high-ambient-moisture contours.** Areas represented by these contours are still in the dry range. But, because the moisture level of a dry area can vary from near zero to the product's maximum ambient level, it is frequently possible to detect moisture within this dry range. While the high-ambient-moisture contours do not indicate excessive wetness, they frequently indicate a problem area in its early stages.

A dry range that is normal for one roofing material may not be normal for another.

Stack venting is an inefficient means of removing moisture.

The lowest moisture level within a membrane's wet range is indicated by the **first-stage moisture contours.** These contours designate minor moisture penetration into the membrane. Areas represented by first stage contours may contain weakened spots that are susceptible to further physical damage.

More severe moisture penetration of the membrane is indicated by the **second-stage moisture contours.** Second stage contours point to problems that are similar to the problems encountered with first-stage moisture penetration. The only difference is that there is a greater amount of moisture present in the membrane. At times, the damage caused by this level of moisture penetration may be quite severe. Delamination, ridging, blistering and extensive loss of tensile strength may occur when the membrane is this wet.

Where the moisture has penetrated the insulation, the area is marked on the contour map by **third-stage moisture contours.** When moisture penetration is this severe, extensive horizontal migration of the moisture can weaken the insulation and lower its thermal resistance. Eventually, the moisture reaches the surface of the deck, allowing moisture to leak into the building wherever a crack penetrates the deck.

The last stage indicates the **area of greatest moisture content.** This is an area where moisture penetration is most severe. These contours can indicate one of two conditions:

- flashing and membrane problem areas where moisture entry occurs from damage such as tears, splits, punctures and flashing imperfections; or
- low areas of the roof, such as around drains, where internal moisture collects.

Contours indicate repair needs

There are two courses of corrective action that can be taken when moisture damage has been discovered in a built-up roof. Either the damaged area can be replaced and rebuilt with new, dry materials, or the area may be reinforced with high-quality materials to restore as much of the strength as possible and prevent further moisture entry.

A-Tech's studies indicate that when first-stage wet membrane areas are properly repaired and sealed, the areas will dry within approximately one year. Second-stage wet membrane areas will become considerably dry in a year or two.

Third-stage wet insulation areas in roof structures dry much too slowly. Leaving the wet insulation in place provides little practical benefit because the material's insulating properties do not improve. The area also remains a weak spot and the continuing expansion and contraction of the trapped moisture causes further damage.

Stack venting is frequently suggested as a method of drying out moisture trapped in roofing insulation. But this is an inefficient means of removing moisture and is not of practical benefit. Recommendations for venting usually stipulate the use of one vent per 1,000 square feet of roof area. Studies under controlled conditions indicate that 25 to 70 years would be required to successfully dry wet insulation with this method. Single-ply membranes applied over wet roof structures also do not effectively vent trapped moisture. Effective drying of the insulation depends upon exposing large segments of surface area to a flow of dry air.

Repairing moisture penetration areas in their early stages is a key component of a planned predictive maintenance program. A program that can detect and repair problems before further damage occurs reduces the possibility of building leaks, expensive repairs, premature roof replacement and heat loss due to wet insulation.

Aerial roof surveys prove to be accurate and fast

Army's tests show system can fly

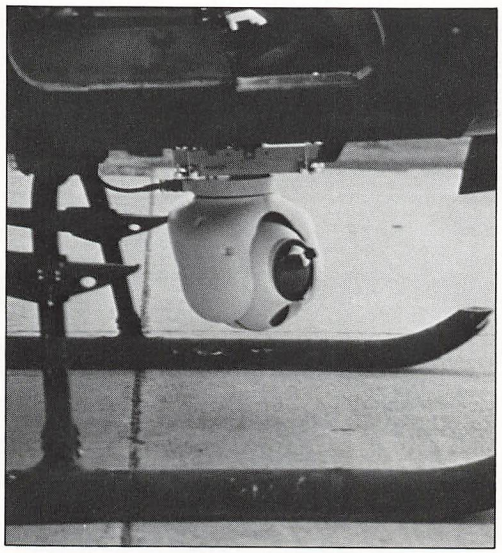
by Wayne Tobiasson, P.E.

The U.S. Army has 300,000 buildings to maintain, many of which have low-slope membrane roofs. Membrane roofs have had many problems over the past two decades. Moisture is the primary enemy; it commonly enters through flaws in the waterproofing membrane, most of which occur at flashings and penetrations. Even if these roofs are inspected periodically, it is often impossible to locate flaws visually. This is why non-destructive roof moisture surveys are useful.

Technically speaking

Commercially available nuclear, capacitance, and infrared devices[1] can detect moisture in roofs. In the Army, most roof moisture surveys are conducted by walking on roofs with hand-held infrared scanners. This technique allows 100 percent of the roof's surface to be examined. The scanner can find small areas of wet insulation that a nuclear or capacitance grid survey may miss.

Infrared surveys are also much faster than the other two methods. For several years, an Army team has used this technique to survey millions of square feet of roofs. But the Army's roof inventory is so large that a more rapid survey technique is needed.



A helicopter-mounted infrared imaging system.

Several airborne infrared scanning techniques were evaluated some years ago. This included surveys using infrared line scanners in aircraft and hand-held systems angled out of the window or open doorway of helicopters. The consensus of these early studies was that airborne roof moisture surveys were valuable for reconnaissance, but follow-up, on-the-roof surveys with hand-held infrared scanners were needed to accurately locate all wet areas.

In 1983, additional studies were conducted by the Army's Cold Regions Research and Engineering Laboratory (CRREL) to determine the value of airborne infrared surveys with scanning systems that look straight down. Because the detectors in the hand-held scanners were cooled with liquid nitrogen in vented dewars, it was not possible to simply point them straight down; the liquid would spill out of the dewars. A system of mirrors was devised to obtain straight-down imagery of mapping quality.

A new scanner, designed for external mounting on helicopters and fixed-wing aircraft, was also evaluated. This scanner's detector is cooled by pressurized argon, allowing it to be used in any orientation. It is gimbal-mounted and can be pointed in different directions from inside the aircraft by an electronic joystick control.

Wayne Tobiasson, P.E., is a research civil engineer with the U.S. Army's Cold Regions Research & Engineering Lab in Hanover, N.H. This article was adapted from an article that originally appeared in the August 1985 issue of The Military Engineer, *a publication of the Society of American Military Engineers.*

Airborne infrared roof moisture surveys appear to be cost-effective where numerous roofs in close proximity need to be surveyed.

The new system accurately located 82 percent of the wet areas found by subsequent on-the-roof infrared surveys; the other airborne techniques detected only 60 to 75 percent. It was concluded that, with practice, the best airborne techniques would be about as effective as the much slower on-the-roof method. Details of this study are presented in a CRREL paper[2].

The only drawback of this system was that, to achieve the spatial accuracy necessary, the helicopter had to fly so low and so slowly that the flights were on the fringe of being hazardous.

A gimbal-mounted, joystick-controlled airborne infrared system with better spatial resolution was ordered in 1984 to allow higher altitude airborne surveys. This improved system has a normal lens and a narrow-field-of-view (i.e., telephoto) lens. The normal lens is used to spot the proper building some distance away. Once the helicopter is overhead, a flick of the switch allows a detailed roof moisture survey to be conducted with the narrow-field-of-view lens.

Allow us to demonstrate

CRREL demonstrated airborne roof moisture surveys at Fort Wainwright, Alaska in the spring of 1984. A total of 78 roofs were surveyed in a couple of hours—a job that would have taken about a month by walking on the roof with an infrared scanner. The roofs were then inspected visually, and 247 2-inch-diameter core samples of the membranes and insulations were taken to verify the infrared findings. Several roofs were also cross-checked with an infrared scanner on the roof. The airborne findings proved to be excellent. Based on these findings, plans were initiated to repair and replace the deficient roofs.

Another demonstration involved a private firm for follow-up work on 16 roofs at Fort Detrick, Md. CRREL conducted an airborne infrared survey on these roofs in January 1985. The survey findings and the location of potential core samples for verification were then overlaid onto the roof plans. The contractor used this information to complete the survey and draft a report.

During the spring of 1985, CRREL conducted repeat airborne roof moisture surveys at Fort Wainwright and Fort Greeley, Alaska. The objective of this ongoing work is to determine how often repeat surveys should be conducted. A demonstration at an Army installation in the South is planned to show that airborne roof moisture surveys are not limited to cold regions.

Just pennies per square foot

Roofs cost several dollars a square foot to replace. No new or replacement roof is perfect; periodic roof moisture surveys, which cost a few pennies a square foot, are effective in detecting problems. The techniques developed for mapping-quality airborne infrared roof moisture surveys appear to be cost-effective where numerous roofs in close proximity need to be surveyed. By periodically investing a small amount of money in roof moisture surveys, visual inspections and preventive maintenance, the cost of replacing membrane roofs that fail prematurely can be avoided.

Resources

Numerous research and case study reports on roof moisture surveys are available from several agencies. Information on these reports can be obtained from the author at CRREL, 72 Lyme Road, Hanover, N.H., 03755-1290. A brochure on "Roofing Systems Analysis" is available from Al Knehans, FESA-EB, Fort Belvoir, Va., 20060. The Roofing Industry Educational Institute (RIEI) offers a short course on "Roof Inspection, Diagnosis and Repair" several times a year at various locations. Contact: RIEI, 6851 S. Holly Circle, Suite 100, Englewood, Colo. 80112.

Notes

1 "Roof Moisture Surveys: Yesterday, Today and Tomorrow," CRREL Miscellaneous Paper, Sept. 1985.

2 "Comparison of Aerial to On-the-Roof Infrared Moisture Surveys," CRREL Miscellaneous Paper, Oct. 1983.

EPA proposes ban on asbestos-containing products

In January, the United States Environmental Protection Agency (EPA) announced a proposal to immediately ban five major asbestos products, including saturated and unsaturated roofing felts. The proposal also called for a phaseout of all remaining uses of asbestos in the United States over the next 10 years.

In announcing the proposed ban, EPA Administrator Lee M. Thomas said, "This proposal starts us down the path that will eventually rid asbestos from our environment.

"The proposal would immediately prohibit the importation, manufacture and processing of five asbestos products for which substitutes are now readily available," Thomas continued. "These asbestos products accounted for about half of current asbestos consumption in 1981."

The 10-year phaseout is almost a carbon copy of a proposal EPA made nearly 18 months ago. The Office of Management and Budget (OMB) turned thumbs down on that proposal, however, saying it was not warranted and too expensive.

Thomas said his agency's latest proposal not only has OMB's blessing, but that OMB has also suggested the labeling requirement for products containing asbestos that are not subject to immediate ban.

Door number 1, 2 or 3

In addition to the main proposal, EPA also offered several options for consideration.

"We are asking for comment on a number of alternative ways of achieving the same goal: the ultimate elimination of widespread asbestos use in this country," Thomas said. One option would immediately ban asbestos construction products such as asbestos-cement sheets and shingles as well as felts, floor tile, A/C pipe and asbestos clothing.

A second option would ban all asbestos construction products in five years, and ban the remaining asbestos products in 10 years.

Option three would ban asbestos construction products and asbestos clothing immediately and phase out the remaining products over a 10-year period.

"Finally," Thomas said, "we are proposing that all products not immediately banned be labeled as containing asbestos." He said labeling would ensure that persons working with asbestos products would know that the products contained asbestos, enabling them to take steps to reduce the likelihood of exposure.

Asbestos roofing felts would be banned as well

by Jim Matthews

Asbestos ban would make itself felt

If the EPA's proposal to ban asbestos roofing felts were to become reality, what would the probable effect on the roofing industry be? Kenneth Nyquist, a spokesman for the Asbestos Information Association (AIA), characterized the impact as primarily a concern of industry suppliers. "This is really a manufacturers' war," he said.

Only one company, Cascades, Inc., still produces asbestos felts. Other felt producers have substituted fiber glass for asbestos.

Cascades, a Canadian company that purchased the Manville Corp.'s asbestos roofing business several years ago, is represented in the United States by Power Marketing. President Jim Power is convinced his product does not pose a health hazard and will vigorously oppose EPA's efforts to implement the ban.

Some producers ready to protest

EPA's proposal also applies to asbestos-cement roofing products. Three companies—Supradur, Atlas Turner and Atlas International Building Products—make and distribute asbestos-cement shingles and siding. EPA's primary proposal wouldn't ban these products immediately, as all three companies have been quick to point out to their customers. However, EPA's options would, if approved, immediately ban these products as well as asbestos felts.

President Alfred Netter of Supradur believes the ban doesn't apply to his product because during the manufacture of the

Jim Matthews is a free-lance writer living in Chicago. He is a frequent contributor to Roofing Spec.

At this time, the ban is no more than a proposal and will not take effect immediately.

product the asbestos fibers are "permanently bound into the cement base."

Don Stevenson of Turner Brothers, a Canadian asbestos-cement shingle distributor, said, "Our response to EPA is that the ban doesn't apply to us. Even if our product is pulverized, the asbestos fibers can't be released into the atmosphere."

Jack Coombs-Payac of AIBP, another Canadian company with a significant U.S. market, said, "We plan to attend the hearings and will lobby through AIA. Our belief, which we're prepared to support with documented evidence, is that our locked-in-cement asbestos roofing tiles are not a health hazard."

What now?

At this time, the ban is no more than a proposal and will not take effect immediately, despite the wording EPA used in its announcement. In fact, Thomas said EPA wants "public comment" on the proposal, which he believes will be "widely and actively debated."

That raises several questions. First, when will the ban take effect? Second, what form will the ban take, i.e., will it be Option 1, 2 or 3, or something else? Finally, is a ban likely?

Although the battle lines surrounding this controversial issue have been firmly and unmistakably drawn, both sides agree on one thing: it will be many months before the proposed ban or any of the options becomes binding.

"The [EPA] administrator has forecast that it could be a year from now," Luke Hester, EPA's press officer, told *Roofing Spec.* AIA's Nyquist thought two years might be necessary to resolve the issues.

While the exact lead time is debatable, it is known that federal procedures dictate a 90-day period for interested parties to comment on the proposal. That comment period began Jan. 29, 1986, and will extend to April 29.

Beginning May 14, according to Nyquist, EPA will hold public hearings on its proposal, probably at several locations around the country. An announcement as to the exact time and place(s) of the public hearings will be made later, most likely in the *Federal Register.* In the meantime, EPA has established an Asbestos Hot Line for those who want to stay abreast of developments. The toll-free number is 800/424-9065; District of Columbia residents can call 544-1404, and residents outside the United States can call 202/544-1404.

What will they go for?

Right now, no one knows what form the ban will take. At first glance, it appears that EPA seeks no less than an immediate ban on the five specifically mentioned product categories, with all other asbestos products to be gradually phased out over 10 years.

But that's not necessarily the case. "The ban is the ultimate, but there are several lesser things EPA might go for," said Nyquist. "One of those is just labeling all products without banning anything. It's a graduated proposal. In addition to the all-out immediate ban, they've announced a possible ban after so many years for groups of products and labeling. And of course, there are combinations of these."

Netter's thoughts on the probable end result paralell Nyquist's. "It's not a take-it-or-leave-it proposition," he said. "Anything can still happen, and certain things will happen. Any regulations proposed by any federal agency must be ruled on by OMB for their cost effectiveness and economic impact. To some extent, certain aspects of this proposal are intended to be horse-traded during the process."

No one can say with certainty that EPA will be able to implement a ban. Nyquist did say, "The industry's position is that EPA can't support its case to come out with an outright ban."

At this writing, EPA has yet to announce what penalties will be imposed on persons or businesses that disregard the ban. Nor has EPA said how it will enforce the ban, or what plans it has for disposing of existing stocks of banned products when the ban takes effect.

What should contractors be doing now? According to EPA's Hester, until the EPA announces an *actual* ban and how it will be implemented, "It's business as usual."

How to express your views

Public comment, whether pro or con, will have some influence on the EPA's final decision. If you want to express your views to the EPA on the proposed ban and how it might affect you, write to Edward Klein, director, Office of TSCA Assistance (TS-799), Room E543, 401 M St., S.W., Washington, D.C. 20460.

You can contact the Asbestos Information Association, the asbestos industry lobby organization, by calling 703/979-1150.

Bear Facts

Big roof or small . . . Depend on Dibiten

The clean, easy, odor-free application of Dibiten modified bitumen roofing membrane is a fact — but Dibiten's proven durability is what makes it the number one choice.

Reborn in the USA. After almost 20 years successful use in Europe and seven years of experience in the states, Dibiten is manufactured here in America in an all new state-of-the-art processing plant, assuring availability and consistently high quality product.

With a warranty of up to 12 years, Dibiten is best for big jobs . . . or important smaller ones. Bare facts.

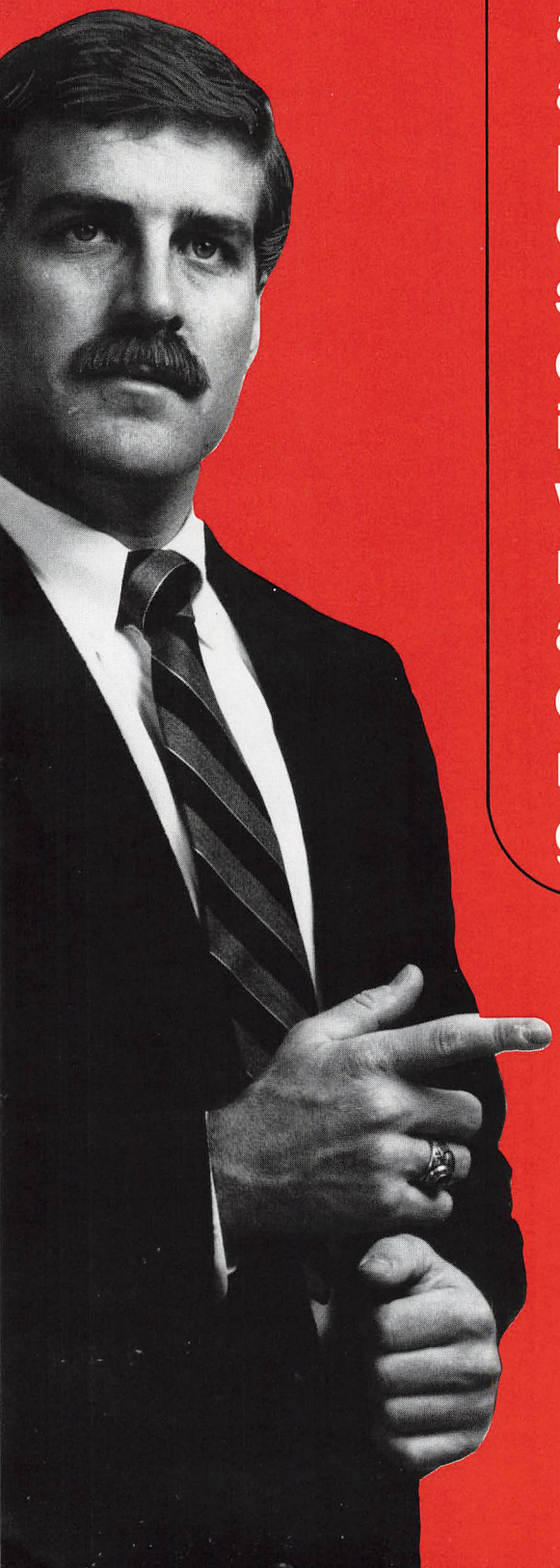
dibitenUSA

4301 E. Firestone Blvd.
South Gate, CA 90280
213-564-7220
Telex #5101000179

Toll Free:
1-800-DIBITEN
1-800-367-8315 (Calif.)

Check #11 on Reader Service Card

DO YOU KNOW THIS MAN?



He's the man architects, school districts, chain stores and roofers call for sound advice on roofing. Few people in his field have his experience. He works for the second oldest manufacturer of fiberglass roofing products in the U.S. He can help you with today's most innovative roof insulation, maintenance and specification needs. Rely on him to get you the right roof, within your budget, and guarantee it.

don't go on your roof without him!

call the professionals!

CONGLAS®

CONSOLIDATED FIBER GLASS PRODUCTS CO., INC.
3801 STANDARD STREET/BAKERSFIELD, CALIFORNIA 93308/PH. (805)323-6026

BUR
Built-Up Roofing, A System Above The Rest

Check #10 on Reader Service Card

PR program turns officers into media personalities

The grey marble building looked no different than its neighbors on M Street in downtown Washington. Only the chrome-plated words "National Public Radio" mounted near the entrance gave any indication that the facilities inside could offer a person the power to speak to people all across America. For a few brief minutes last September, that power was granted to NRCA President Country Harrison, who used the opportunity to tell the nation about the Association and the roofing industry.

Harrison was invited to the radio network's studios to be interviewed for the nationally syndicated news program *All Things Considered.* The program's host, Susan Stamberg, began her interview by asking what the plural of roof was. "Roofing I suppose," was Harrison's off-the-cuff response. The interview continued with various questions about Harrison's views on roofing and the roofs he has seen throughout the world.

The interview wasn't Harrison's first. As NRCA president, he has been called upon to do many interviews on radio, TV and in newspapers. Each one gives him the opportunity to talk about the Association and the importance of insisting on a qualified professional roofing contractor.

Harrison's appearances in the media are part of NRCA's public relations program. The interviews are arranged by the Association's PR staff. Other NRCA officers are also asked to speak on local radio and television programs as they travel across the country, attending industry-related meetings. In the past year Harrison and the other officers have spoken to the media in Atlanta; Seattle; Salem, N.C.; Washington D.C.; and Las Vegas as well as in other cities across the country. Interviews are often booked around a special conference, meeting or convention. Harrison's appearance on *All Things Considered* was scheduled during the Second International Symposium on Roofing Technology.

As spokespeople for the Association and the industry, the officers are asked to address a variety of topics. At the same time that Harrison was discussing roofing grammar with Stamberg, NRCA director John Van Wagoner was leading a Washington TV

NRCA President Country Harrison talks with Susan Stamberg on the nationally syndicated radio program *All Things Considered.*

crew on a tour of one of his company's reroofing projects to show viewers how the work is performed. Meanwhile, up in Georgetown, past president Wayne Mullis, appearing on a home improvement segment of a local radio show, was carefully outlining some important criteria for selecting a professional roofing contractor.

Most interviewer's questions, however, focus on the procedures home or building owners should follow when they suddenly find their roof leaking. "We find that media people are mostly interested in providing their listeners, viewers and readers with consumer tips," NRCA Public Relations Manager Rob Eiseman says.

An editor from the Atlanta Journal-Constitution explained the public's fascination with roofing this way: "All homeowners are going to be faced sooner or later with having their roof replaced. A new roof for most homes is going to cost a minimum of a thousand dollars. For that kind of money most homeowners want to know they are getting what they are paying for. We welcome the opportunity to talk to a roofing expert who can share his expertise."

Using the media to educate the public about roofing is key to the success of NRCA's public relations campaign. It is the only way to reach millions of people in their homes, offices and cars. And, as an added bonus, the exposure is usually free.

Florida contractor goes after alligatoring

Blistering and alligatoring on two five-year-old built-up roofs in Florida's Leon County School District caused the District's construction administration branch to initiate a regular maintenance program.

The roofs' deterioration was attributed to the hot Florida sun, which had forced the floodcoat of asphalt put down during reroofing to begin bleeding through the protective aluminum roof coating. Dissatisfied with the short lifespan of the first aluminum coating application, the construction administration department was open to ideas that might reduce the frequency of repairs.

Robert Dove, president of Dove, Inc., and the project's low bidder, did have a suggestion for the school district. "We suggested to the school construction administration that it let us try the Celotex Corp.'s Bright 'n White™ elastomeric roof coating on the two school roofs needing repairs, and the response was very favorable," he said. "We tried a small amount of Bright 'n White Roof Coating on a softball dugout at Florida State University just to see what would happen, and it's working very well."

Before applying Bright n' White to the two school roofs, Dove's crew cut and patched blistered areas with cold adhesive. The crew then applied three plies of fiber glass felts over the patches. Alligatored areas were brushed over with a topcoat of Celotex® Flatt-Topp™ emulsion. Blisters on the two roofs were caused by poor felt adhesion, Dove said. Voids in the adhesive were found where the felts were not properly mopped.

Once repairs were made, the roofs were vacuumed free of excess dirt and leaves and then hosed down with a power washer. Bright 'n White was then applied directly over the old aluminum paint substrate.

The application was quick and easy, said Dove. The contractor was also pleased with the product's safety. "The Celotex Bright 'n White roof coating is a nonhazardous, asbestos-free product that requires no special care in application or handling," Dove said. "I sat for two years on the health committee of the National Roofing Contractors Association, which

"It's reassuring to know that my crews can use the product without endangering their health."—Dove

wrote the health manual for the industry. I know what some of the products containing hazardous chemicals can do to you. It's reassuring to know that my crews can use the product without endangering their health," he explained.

The school district seems happy with Celotex's performance, too. Three or four of the 12 schools yet to be worked on will undergo repairs this year, and there is a good chance that Celotex's product will be specified for these projects as well.

Roofers apply Celotex's Bright 'n White™ roof coating directly over the old aluminum roof paint, which weathered severely during the last five years.

After raising complaints from almost every segment of American business for its "contemporaneous recordkeeping requirements," Congress repealed the legislation last year. The original law, passed in 1984, required taxpayers to keep detailed daily records of their business use of vehicles and home computers. Under the current tax laws, taxpayers are only required to substantiate business use with adequate records or sufficient corroborating evidence.

Temporary and proposed regulations issued by the Internal Revenue Service (IRS) in November further interpret the new recordkeeping laws. According to the IRS, taxpayers must be able to prove the date, the amount and business purpose of each expenditure for listed property, which includes passenger automobiles; other property used for transportation, recreation or entertainment; and computer equipment. Acceptable proof would include a written record such as a book diary, a log or a statement of expense.

Oral recollection of the business use of equipment is considered the least valuable type of proof, according to the new law. Although a day-to-day log is not necessary, the IRS regulations state that "written evidence has more value than oral evidence alone, and the value of written evidence is greater the closer in time it relates to the expenditure or use." In other words, the IRS will look more favorably on documentation that was recorded shortly after a vehicle was used. A log that is updated every week is more valuable to the IRS than a log updated every quarter.

It will not be necessary for taxpayers to document each and every use of their vehicles and equipment, however. If the use follows a regular pattern, records need only be kept for a representative period of time. For example, the IRS may find that detailed records maintained for one week out of each month are adequate proof of business use as long as that period of time is sufficiently representative of the vehicle's use for the entire taxable year. The IRS will also allow repetitious expenditures such as repairs and gasoline to be aggregated and prorated for the business use of the property.

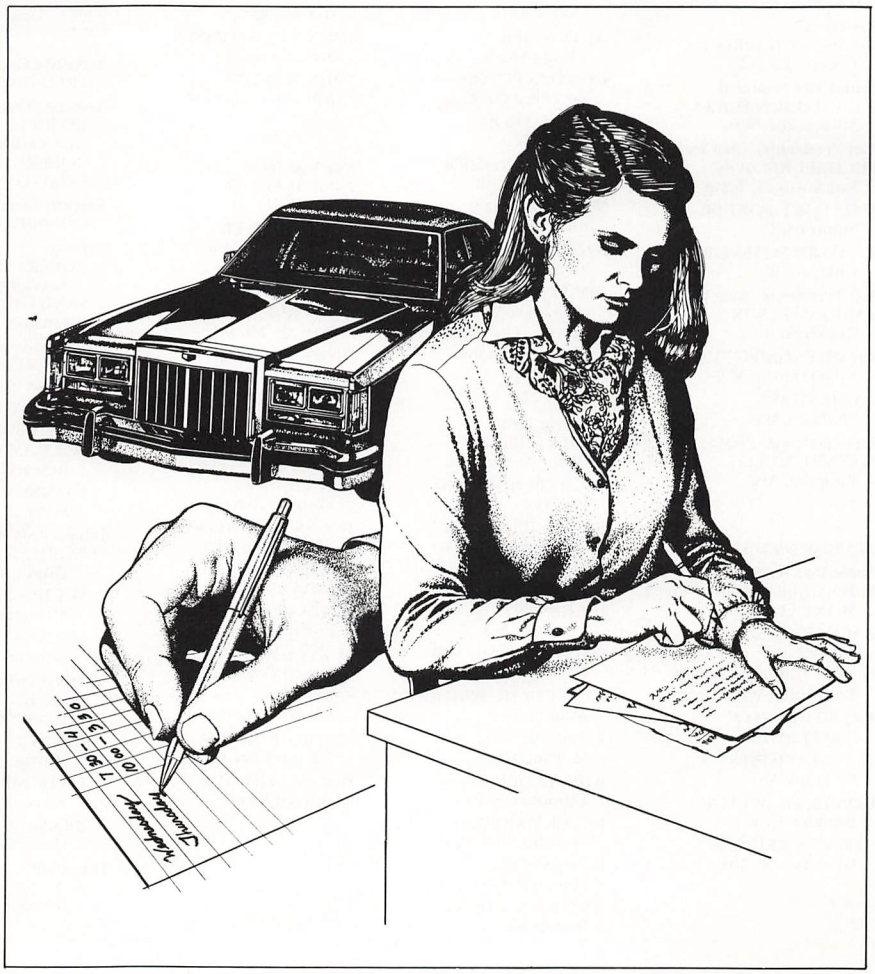
Some taxpayers may be exempt

In some cases the current recordkeeping rules do not apply. If the taxpayer's vehicles are obviously not intended for personal use, records on their use need not be kept. The list of vehicles that are currently exempt from recordkeeping requirements include:

- any vehicle designed to carry cargo with a loaded gross vehicle weight of more than 14,000 pounds;
- bucket trucks;
- cement mixers;
- cranes and derricks;
- delivery trucks with seating for only the driver or with a folding jump seat;
- dump trucks; and
- qualified specialized repair trucks.

In addition, employers may avoid recordkeeping requirements if their vehicles are not used for personal purposes other than commuting. To take advantage of this exemption, the taxpayer must show that the employer has a written policy stating that vehicles are not to be used for personal purposes or only for commuting. Corroborating evidence must also be shown. This exemption is not available to company officers or directors or anyone who owns 1 percent or more of the firm.

Vehicle use must still be documented



COMING EVENTS

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

March 18-19
Single-Ply Roofing Systems and Design Specifications
Roofing Industry Educational Institute
Los Angeles, Calif.

March 20
Design and Specification of Roofing Systems
Roofing Industry Educational Institute
Los Angeles, Calif.

March 31
Roof Maintenance & Roofing Seminar
University of Lowell
Lowell, Mass.

April 1
Roof Maintenance & Roofing Seminar
University of Lowell
Lowell, Mass.

April 1-2
Roof Inspection, Diagnosis and Repair
Roofing Industry Educational Institute
East Windsor, N.J.

April 3
Roofing Update
Roofing Industry Educational Institute
East Windsor, N.J.

April 7
Roofing Seminar
Western Michigan University
Livonia, Mich.

April 7-11
Infrared Scanning Course
Infraspection Institute
Burlington, Vt.

April 8
Roofing Seminar
University of Toledo
Toledo, Ohio

April 8-11
Basic Roofing Technology
Roofing Industry Educational Institute
Indianapolis, Ind.

NRCA OFFICERS & DIRECTORS

NRCA OFFICERS

President
ROBERT T. HARRISON
Greenville, S.C.

Senior Vice President
DONALD McNAMARA
Milwaukee, Wis.

Vice Presidents—Two Years
MICHAEL BELDON
San Antonio, Texas
WILLIAM T. FORT JR.
Sumter, S.C.
RICHARD ROSENOW
Chicago, Ill.

Vice Presidents—One Year
LARRY CARLSON
Rockford, Ill.
CHARLES GRIFFITHS JR.
Binghamton, N.Y.
CYRIL TILSEN
Madison, Wis.

Immediate Past President
WAYNE I. MULLIS
Phoenix, Ariz.

BOARD OF DIRECTORS

Three Year Term
JOHN CARRUTH JR.
Miami, Fla.
ZACHARY L. ELLIS
Kenner, La.
HARRY ESBENSHADE JR.
Davisville, W.Va.
RALPH HINSHAW
Frankfort, Ind.
DOUGLAS JONES
St. Louis, Mo.
CONRAD KAWULOK
Boulder, Colo.
STEPHEN KRUPNIK
Glen Burnie, Md.
MITCH MAULDIN
Laurel, Miss.
ALAN MEIER
Chicago Ridge, Ill.
CHARLES PETERSON
Berkeley, Calif.
JOHN G. PROBST
Butler, Wis.
MICHAEL PROMEN
Broadview, Ill.
WILLIAM E. REYNOLDS
Enterprise, Ala.
JOE RUTKOSKI
Tampa, Fla.
ROBERT F. SHEA JR.
Mattapan, Mass.
ALAN WOLF
Cincinnati, Ohio

Two Year Term
ROBERT BELLITT
Broomfield, Colo.
MICHAEL BOWLING
Louisville, Ky.
JOHN L. BROWN JR.
Delray Beach, Fla.
RANDY DENCHFIELD
Washington, D.C.
JIM GENTRY
St. Louis, Mo.
WILLIAM HAMLIN JR.
Garner, N.C.
BENNETT HUTCHISON III
Atlanta, Ga.
VERNON LARSON
St. Paul, Minn.
JOHN LLOYD
Uniontown, Pa.
BRUCE MARTIN
Woodinville, Wash.
JERRY STEED
Huntsville, Ala.
ANTHONY TARESCO
Baltimore, Md.
ROBERT THERRIEN
Keene, N.H.
JOHN VAN WAGONER
Sterling, Va.
JOHN WRIGHT
Albuquerque, N.M.

One Year Term
JOSEPH ADLER
Joliet, Ill.
JOEDY BECKER
Pocatello, Idaho
GAYLORD BLUE
San Jose, Calif.
THOMAS E. BROWN JR.
Detroit, Mich.
JERRY CAMPBELL
Memphis, Tenn.
CHRISTOPHER CRONIN
Harvey, Ill.
THOMAS DRAKE
Winter Park, Fla.
JOHN HAUG
Phoenix, Ariz.
FRANK MANFREDONIA
Philadelphia, Pa.
JAMES MANSFIELD
Lyons, Ill.
JAMES McBRADY JR.
Portland, Maine
MONTY MOORE
Seattle, Wash.
SAM PIPER
Greenville, S.C.
HOLLIS PORCHER
Corpus Christi, Texas
ROGER STEYER
Warren, Mich.

STAFF

Executive Vice President
FRED GOOD, CAE

Associate Executive Directors
PATRICIA APPELHANS
ALAN GRAYSON
ROBERT LaCOSSE, CAE
CHRISTINE NOLEN TAYLOR, CAE

Executive Secretary
CONNIE LESSNER

Finance
ROBERT O. LEWIS
Accountant
SANDY HOSHELL
Finance Secretary

Technical Services
ROBERT LaCOSSE, CAE
Director
JEFF LOWINSKI
Manager
WILLIAM CULLEN
Research Associate
JOANNE WAWRZYNIAK
Secretary

Information Management
NORMAN BULLOCK
Director
SUE BUCZKIEWICZ
Manager
LUANNE KOENIG
Administrative Assistant

Meetings and Conventions
GALE KIESEL
Director
BENNETT BROWN
Manager
LINDA METHLING
Administrative Assistant
BEA McSHEFFREY
Coordinator

Education
ALAN GRAYSON
Director
JAN THOMPSON
Assistant Manager
MARIA DEMES
Secretary

Administration
ROBERT McADAM
Director
BARBARA DYKEMA
Administrative Assistant
STEVE JUDSON
Service Center Assistant
PATTY KAZEOS
Receptionist

General Operations
JOANNE JAMESON
Clerk

Association Services
PATRICIA APPELHANS
Director
CONCHITA ALVAREZ
Administrative Assistant/
Legal Resource Center Manager
LYNN KEEFE
Administrative Assistant

Membership Development
CARL GOOD
Director
KATIE SHULTZ
Administrative Assistant
SARA ANDERSON
Secretary

Communications
CHRISTINE NOLEN TAYLOR, CAE
Director
MARTIN EASTMAN
Editor
KATHLEEN AHARONI
Associate Editor
ROB EISEMAN
Public Relations Manager
AMY KASSEL
Advertising Sales Manager
JOAN KRIETE
Circulation Coordinator

OSHA change would reduce paperwork

The Occupational Safety and Health Administration (OSHA) has proposed a change in its regulations that would reduce employers' paperwork documenting equipment tests and inspections. The change would make it unnecessary for employers to keep detailed records of the tests and inspections. Instead, employers would be permitted to certify that they have conducted the necessary procedures.

The reduced recordkeeping requirements would apply to inspections of manlifts; portable fire extinguishers; crane hooks; hoist chains, brakes and ropes; derrick ropes; mechanical power press safeguards, clutches and brakes; forging machine guards and point-of-operation protection devices; welding, cutting and brazing equipment; material and personnel hoists and elevators; and trucks used for underground explosives transport.

Only OSHA's recordkeeping requirements will be affected by this change, however. Employers will still have to perform the testing procedures and maintenance routines OSHA requires for this equipment. The agency will request a signed and dated statement from the employer certifying that these procedures have been carried out.

OSHA estimates that the change in recordkeeping requirements would eliminate 8.5 million hours of paperwork and save $20 million.

OSHA's proposed change appeared in the Jan. 3 edition of the *Federal Register.* The agency is asking for comments to determine if the change in recordkeeping requirements will significantly reduce employers' paperwork without reducing employees' safety.

Dickey's first-place Safety Star idea keeps first-aid kit handy

Ed Dickey, a superintendent for Giffen Roofing Co., Miami, won first place in NRCA's safety contest at the Association's Convention in February. For his first-place idea, Dickey received $500.

In his entry, Dickey suggested bolting a first-aid kit to each daily project clipboard and assigning the tankerman the responsibility for keeping the kit stocked. Dickey believes this is an excellent way to keep the first-aid kit handy because the clipboard remains with the crew throughout the entire day.

Dave Michon of Buck Roofing Co., Inc., New Lenox, Ill., received a second-place award of $250 for his safety idea. Michon submitted a design for a safety line that attaches to an existing deck or vent and hooks onto a worker's belt.

NRCA also presented a third-place award of $100 as well as five runner-up awards of $50 each. Other Safety Star contest winners were Michael Rooney of the LEA Group in Boston; Terry Cochran of Empire Roofing in Chicago; Sam Roth of Roth Brothers, Inc., in Youngstown, Ohio; Bill Steinmetz Jr. of Midland Engineering in South Bend, Ind.; Alan Meier of Ameier Roofing in Chicago; and Douglas Jones of South Side Roofing Co., Inc., in St. Louis.

NRCA's Health and Safety Committee sponsored the safety contest. "The contest was open to anyone involved in the roofing process, including secretaries, truck drivers, salesmen and contractors," said Carl Good, director of member services at NRCA. "Our idea was to get everyone thinking about the importance of on-site safety, especially the guys on the roof."

IN BRIEF

A total of 71,371 inspections were carried out by the Occupational Safety and Health Administration (OSHA) in fiscal 1985, according to the agency. The agency also said that 55 percent of its inspections were in the construction industry and 72 percent were inspections of targeted high-hazard industries and workplaces. The agency cited 119,706 violations and imposed fines of nearly $9.2 million.

The Environmental Protection Agency (EPA) has broadened its regulations concerning the storage and disposal of hazardous wastes and products. The Agency will now require anyone generating more than 220 pounds of hazardous waste per month who ships the waste away from their premises or jobsite to fill out a Uniform Hazardous Waste Manifest. An expansion of another EPA program brings products as well as wastes stored underground under EPA regulation.

Brochures detail Tri-Ply systems

Tri-Ply, Inc., has announced the availability of two new brochures. The brochures describe the company's single-ply modified bitumen roofing systems, TP-4 and Shell Cariphalte E.R.®

TP-4 is a torch-applied membrane manufactured by Tri-Ply. This system carries a six- or 12-year warranty. Shell Cariphalte E.R. is a hot-mopped, SBS-modified bitumen manufactured by Weathercoating, Inc., and marketed in the United States by Tri-Ply.

Check #34 on Reader Service Card

GAF releases membrane specs

The GAF Corp. has published a 12-page specification guide that introduces its new modified bitumen membrane.

The Ruberoid® MB membrane is based on a non-woven, spunbonded polyester mat. A thermoplastic-reinforced asphalt coat makes the membrane water-resistant. The membrane can be applied by heating its underside with a propane torch as it is rolled on the roof. Membrane seams should be torch-welded.

The Ruberoid MB membrane is available in 1-square rolls. Each roll weighs approximately 90 pounds.

Check #36 on Reader Service Card

Consolidated adds to Conso-Gard line

The Consolidated Protective Coatings Corp. has added two new single-ply roofing systems to its line of maintenance engineered products.

The Conso-Gard III system is a heat-applied modified bitumen containing Flexene. The additive is an elastomeric polymer designed to provide high flexibility and elasticity to cope with roof movement stress. Conso-Gard III is also reinforced with a polyester core to provide resistance to thermal and mechanical shock. The company recommends that the membrane be topcoated with reflective triple-duty aluminum.

Conso-Gard IV is similar to Conso-Gard III except that it is surfaced with light-colored mineral granules to prevent ultraviolet degradation and damage from foot traffic. The granular coating eliminates the need for any other reflective topcoating.

Consolidated has also developed a patching cement that can be applied on wet or damp, horizontal or vertical surfaces, or under ponding water.

Plasti-Glas Cement contains glass and mineral fibers that interlock to form a fibrous mat when cured, eliminating the need for reinforcing membranes. The cement, applied by trowel, can be used in freezing temperatures.

These and other Consolidated products are described in the company's *Building Maintenance Product Guide.*

Check #37 on Reader Service Card

Video explains roofing techniques

H.C.I. Roofing is marketing a new videotape that demonstrates the application of torch-applied SBS- and APP-modified bitumen roofing membranes.

The videotape, *Modified: A Contractor's Viewpoint,* covers a variety of topics, including standard roof applications, flashing methods, tie-offs over old gravel roofs at the end of the day, safety, working in high winds, and reusing roof scraps.

The 45-minute videotape is available in BETA and VHS formats.

Check #38 on Reader Service Card

Honolulu Roofing names co-division managers

William H. Christensen and Thomas S. Conger have been promoted to co-division managers of the Honolulu Roofing Co. (HRC), a subsidiary of Watkins Pacific.

According to an announcement made by HRC President Dennis B. Conway, Christensen will now head the company's roofing operations, which include commercial/industrial and residential work. Conger will oversee the company's specialty contracting and Maui operations division.

Christensen, who helped found the Hawaii Roofing Contractors Association in the 1970s and was its first president, joined Honolulu Roofing in 1984. Prior to that, he was in charge of roofing for Oripac, based in Guam.

Conger, who has more than 20 years of experience in construction-related sales and administration, re-joined HRC last November. Previously, he worked for the Home Owners Warranty Corp. of San Francisco.

Beldon names quality control coordinator

Bill Johnson has been named quality control coordinator for the Roofing Division of Beldon Roofing and Remodeling in Texas.

Johnson, author of the *Roofer's Handbook,* will be responsible for maintaining correct procedure and proper material application during roof construction.

Johnson has 26 years of experience in the roofing industry. Before joining Beldon, he was affiliated with a Houston-based construction company.

ACADEMY OF ROOFING CONTRACTORS

NATIONAL ROOFING CONTRACTORS ASSOCIATION

A Continuing Education Recognition Program

The NRCA Academy of Roofing Contractors program fosters the pursuit of excellence in roofing systems installation by encouraging participation in education and training programs by all levels of roofing contractor company personnel. Companies whose employees are involved in a specified amount of training are awarded a plaque in recognition of membership in the Academy of Roofing Contractors.

It is the program's basic tenet that education and training of company personnel lead to improved job performance. To remain competitive in the industry is to install quality roof systems, and this can only be achieved through knowledge of the systems and through good workmanship. Attainment of the membership in the Academy of Roofing Contractors attests to a company's commitment to this goal.

For a detailed requirements brochure and an enrollment application, contact the NRCA Education Department.

Members, Academy of Roofing Contractors

AAA Roofing Company
Indianapolis, Ind.

Abernathy & Clark, Inc.
Tupelo, Miss.

Ameier Roofing, Inc.
Chicago Ridge, Ill.

Harold J. Becker Co., Inc.
Dayton, Ohio

Bradford Roofing & Insulation
Billings, Mont.

G. Brouillette & Son, Inc.
Raynham, Mass.

Carolina Roofing Service, Inc.
Monroe, N.C.

Clark Roofing Company
Broadview, Ill.

Consumers Roofing Co., Inc.
Hammond, Ind.

Culbertson Company
Manassas, Va.

Eagle Roofing Systems Corp.
Dallas, Texas

Enterprise Roofing & Sheet Metal
Dayton, Ohio

Charles F. Evans Co., Inc.
Elmira, N.Y.

Everett Roofing, Inc.
Baltimore, Md.

Fick Bros. Roofing Co.
Baltimore, Md.

N.L. Freedman, Inc.
Springfield, Mass.

Gentry Industrial Service
Dublin, Ind.

Gooding, Simpson, & Mackes, Inc.
Ephrata, Pa.

Graham Roofing Co., Inc.
Columbus, Miss.

George Groh & Sons, Inc.
Emporia, Kan.

Industrial Roofing Co., Inc.
Lewiston, Maine

L.R. Lloyd Company
Uniontown, Pa.

Mid Hudson Pam Corp.
Kingston, N.Y.

Midland Engineering Co., Inc.
South Bend, Ind.

Peninsula Roofing Co.
Salisbury, Md.

Port Enterprises, Inc.
Port Lavaca, Texas

Primo Roofing Co.
Huntington Beach, Calif.

Prospect Enterprises, Inc.
McLean, Va.

Quad City Roofing Co.
Madison, Ill.

Reston Roofing Corp.
Herndon, Va.

Roth Bros., Inc.
Youngstown, Ohio

Wm. Schaus & Sons, Inc.
Manitowac, Wis.

Scholten Roofing Service
Mission Viejo, Calif.

L.E. Schwartz & Son, Inc.
Macon, Ga.

The Sobeck Corporation
Wyoming, Pa.

Star Roofing Company
Oakland, Calif.

Upstate Roofing, Inc.
Rochester, N.Y.

Valley Roofing Corp.
Roanoke, Va.

Western Pacific Roofing Corp.
Lancaster, Calif.

NEW MEMBERS

The following have been approved for NRCA membership for January.

CONTRACTORS

Advanced Roofing & Construction
804 Clinton Ave.
Newark, N.J.
Allen E. Sears

Alderson Roofing & Sheet Metal Co.
2965 Southwide Drive
Memphis, Tenn.
Barbara M. Alderson

Atop Roofing
527 Breezewood Court
Brea, Calif.
Phil DeBlasio

E.G. & G. Florida
P.O. Box 21267
Kennedy Space Center, Fla.
Rhett Jones

Empire Roofing Co.
5150 J Edith N.E.
Albuquerque, N.M.
D.H. Davis

Ford Construction
1921 N. 57th St.
Superior, Wis.
David Ford

Great Lakes Roofing, Inc.
52 Dover Center
Cleveland, Ohio
J.E. Vetrovsky

Lake Shore Roofing & Siding
2942 N. Rhodes
Melrose Park, Ill.
Donald M. Eakley

M & M Roofing, Inc.
22 W. 168th St.
South Holland, Ill.
Michael E. Yadron

Ohio Building Restoration, Inc.
830 Mill St.
P.O. Box 574
Tucson, Ariz.
Ray Leyerle

R.C.I. Roofing, Inc.
847 N. Milwaukee Ave.
Chicago, Ill.
Michael Delnagro

Reader Tinnine Roofing & Furnace Co.
676 E. 152nd St.
Cleveland, Ohio
Michael A. Reader

Roofing & Sheet Metal, Inc.
105 Green Cove Road
Huntsville, Ala.
James F. Ratliff Jr.

Simon Roofing & Sheet Metal Corp.
436 W. Midlothian Blvd.
Youngstown, Ohio
Alex J. Simon

Sunrise Service Corp.
7302 E. 22nd St.
Suite 102 Tucson, Ariz.
J. Michael Schmitt

Thompson Roof Co., Inc.
2301 Curry St.
Long Beach, Calif.

AFFILIATE CONTRACTORS

Associates Roofing
2357 Thomas St.
Hollywood, Fla.
Art Herrman

Bornor Restoration
525 Filly St.
Lansing, Mich.
Berniece Daman

Capital Roofing Systems, Inc.
4330 Midlothian Turnpike
Crestwood, Ill.
Floyd Overgaard

Conway Roofing Co.
4 Silversmith Way
North Billerica, Mass.
Kevin Conway

Deerland Corp.
355 W. Main St.
P.O. Box 454
Norristown, Pa.
Robert Blom

K & B Roofing, Inc.
369 Main St.
P.O. Box 146
Laurel, Md.
Bernard L. Conway

K.R. Roofing Co.
d/b/a The King's Roofing Co.
10319 N.E. Marx
Portland, Ore.
Jan Weinstein

L.W. Miller Roofing, Inc.
176 Armour Drive
Washington, Pa.
Michael M. Silich

Paul J. Rys Roofing, Inc.
3216 Amber St.
Philadelphia, Pa.
Paul J. Rys

ASSOCIATE

Bend Industries, Inc.
2929 Paradise Drive
P.O. Box 178 West
Bend, Wis.
Robert Whitson

Flex-Shield Corp.
P.O. Box 200
Gilbert, Ariz.
Charles O. Carroll

Futura Coatings, Inc.
9200 Latty Ave.
Hazelwood, Mo.
G. Schenke

Pre-Engineered Products, Inc.
Route 5, Scuffletown Road
Simpsonville, S.C.

Western Textile Products
Box 7139
St. Louis, Mo.

ASSOCIATE MEMBERS/JOBBERS

Pawelko Frenzel, Inc.
750 Richard Lane
Elk Grove, Ill.
Robert Pawelko

INDUSTRIAL/INSTITUTIONAL

State of Hawaii, Dept. of Accounting & General Services
P.O. Box 119
Honolulu, Hawaii
Teuane Tominaga

INTERNATIONAL

Cetem, S.A.
Mijia Lequerica, No. 10
28004 Madrid, Spain
Jose Antonio Merin

N.V. Lummerzheim & Co.
Zeeschipstraat 107
B-9000 Gent, Belgium
Frank Louwers

ARCHITECTS/ENGINEERS/CONSULTANTS

Grainger Associates, Inc.
307 E. Third St.
Flint, Mich.
Martin S. Schlicht

Thermo-Scan Engineering, Inc.
Box 2327
Littleton, Colo.
H.Z. Lewis

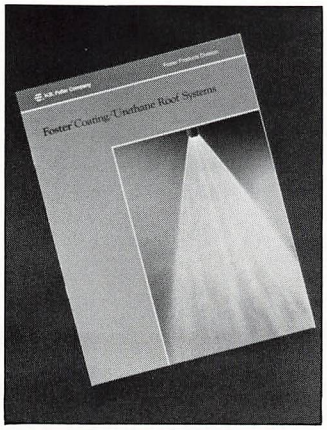
NEW IDEAS

Foster coatings top urethane foam

The Foster Products Division of the H.B. Fuller Co. has published a brochure describing the company's protective coating for sprayed urethane foam roof systems.

The publication includes information on Foster's elastomeric coating, which is applied over urethane foam with airless spray equipment to provide a weather-resistant seal. This system is fully adhered and requires no ballast. It will support foot traffic, yet weighs less than 1/2 pound per square foot, according to the brochure.

Check #39 on Reader Service Card



DeckDri prevents ice, water damage

The Owens-Corning Fiberglas Corp. has developed a new waterproofing membrane for use between the roof deck and shingles or other surfacing materials.

The DeckDri™ membrane prevents water damage from ice buildup by providing a water barrier that is concealed by the finished roof. The membrane consists of a modified asphalt underlayment surfaced with polyethelene. The bonding layer on the underside of the membrane is covered with release paper that is peeled away for installation. The modified asphalt seals around staples, nails and small penetrations. Adhesive strips at the top of each roll provide watertight lap seams.

Each roll of DeckDri covers two squares. The membrane, which is suitable for new or reroofing applications, should be installed when air and deck surfaces are above 35F. Shingles or other surfacing materials may be installed immediately.

The DeckDri membrane is currently available in the North Central United States.

Check #40 on Reader Service Card

NEW IDEAS

Koppers delivers bulk resaturant

The Koppers Co., Inc., has instituted a new bulk delivery service for roof resaturants.

The Profit Pumper direct delivery service uses a 4,500-gallon capacity tank truck to deliver resaturants to the job site, where they are applied to the prepared roof using spray wands. The Profit Pumper has built-in heating coils to keep the resaturant at the proper temperature. Because the chemical is stored in the tank instead of in drums, inventory costs and storage and disposal problems are eliminated. The volume purchase of resaturant in tank truck loads also allows for a lower per-gallon cost.

Check #41 on Reader Service Card

Report examines insulation hazards

The National Bureau of Standards has released a report on the use, properties and performance of urea-formaldehyde foam insulation.

The report, titled *Urea-Formaldehyde Foam Insulations: A Review of Their Properties and Performance,* covers such issues as the release of formaldehyde from the insulation, shrinkage, corrosiveness to metals, effects of moisture, and resistance to fungus. Standards for urea-formaldehyde foam insulations developed in North America and Europe are also reviewed.

In addition, the publication provides information on measures being developed in Canada to reduce or eliminate formaldehyde levels in foam-insulated homes. Some of these measures include reducing moisture in walls, sealing air leak paths, ventilating the residence and removing the foam insulation.

Check #42 on Reader Service Card

continued on page 50

Roofers who recommend Hi-Tuff™ are right on the money.

"Hi-Tuff sold itself on the basis of its performance properties."

—Greg Wallick
General Roofing Industries, Inc.
Casselberry, Florida

"It's the best Hypalon*-based (roofing system) on the market. One of the best single-ply systems, if not the best."

—Bo Browder
Weldon Roofing & Sheet Metal, Inc.
Weldon, North Carolina

"It's a trouble-free system—one that I can feel secure with."

—Ed Bedard
Brattleboro Roofing & Sheet Metal Co., Inc.
Brattleboro, Vermont

"We like Stevens because of the technical support they provide. They are responsive in terms of answering questions and deliveries."

—Wayne Mullis
Universal Roofers, Inc.
Phoenix, Arizona

"The Stevens Hi-Tuff system measures up to our standard for quality and reliability."

—Bill Taylor
D.C. Taylor Co.
Cedar Rapids, Iowa

"The support we got from Stevens' technical staff on a real problem job was outstanding."

—Larry Barnard
Eagle Roofing Systems, Inc.
Dallas, Texas

"The bottom line is that we get very good production with J. P. Stevens."

—Kevin Kennedy
Charles F. Evans Co., Inc.
Elmira, New York

Successful roofing contractors know it pays to recommend and install the Stevens Hi-Tuff Roofing System.

They can count on Stevens for the technical and sales support which makes their selling job easier, for a solid distribution network which provides prompt, dependable deliveries.

And for a quality single-ply membrane with physical properties that allow for a longer, more profitable construction season.

Recommend the Stevens Hi-Tuff Roofing System. And be right on the money.

J. P. Stevens & Co., Inc.
Stevens Elastomerics/
Roofing Systems
395 Pleasant Street
Northampton, MA 01061-0658
Tel: 413/586-8750

Show me how it pays.

- ☐ Please send me more information and a Hi-Tuff™ sample.
- ☐ Please have a Stevens representative contact me.
- ☐ I would like to become a Stevens approved applicator.

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip _____
Telephone (_____) _____
Ext. _____

STEVENS

*Hypalon is a registered trademark of Du Pont.

Check #29 on Reader Service Card

Foamglas resists moisture damage

The Pittsburgh Corning Corp. has released a brochure that includes information on moisture-resistant Foamglas® roof insulation systems.

Foamglas is a cellular glass insulation designed to resist damage from moisture absorption. The product is recommended for installations in which high interior humidity or the presence of water vapor may adversely affect roofing insulation.

Foamglas flat insulation may be installed on flat or sloped decks. It is compatible with both BUR and single-ply systems, and can be cut and shaped with hand tools. Tapered Foamglas is available in a variety of systems to meet differing drainage requirements. Positive drainage takeoffs are also available from the company.

Foamglas systems carry a 20-year warranty.

Check #43 on Reader Service Card

New software offered by A-Systems

The A-Systems Corp. has released a systems construction management program for contractors.

The *Contractor III* program manages government, bonding and union reports, multi-state payrolls, worker's compensation by craft, subcontracting, and other functions. Programs include job costing, general ledger, equipment costing, payroll, accounts payable, accounts receivable and estimating.

The software, which can be expanded to accommodate companies employing more than 500 people, is designed to have a start-up time of less than two months.

Check #44 on Reader Service Card

TermBar fastens roof flashings

JBD Supply is marketing a new aluminum device for securing single-ply flashings.

The TermBar is designed with three bends for increased rigidity. Two contact points provide positive spring-type pressure and also form a caulk trough. TermBar features prepunched slot holes that allow for movement after installation using standard concrete fasteners.

JBD also markets the Bar Anchor for mechanically fastened roofing. The Bar Anchor's edges and ends are treated to eliminate sharp edges and burrs that can damage roofing membranes. The anchors are available with countersunk holes.

Check #45 on Reader Service Card

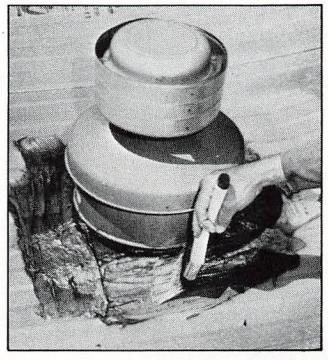
Kool Seal offers repair system

An emergency repair system for black and aluminum roofs has been developed by Kool Seal.

Emergency Black and Emergency Aluminum patching cements are designed for application over wet or dry surfaces, and can be used in rain or snow. The cements, which may be applied with a brush, trowel or by hand (using an old glove), can be used to plug leaks and fill voids around flashings and stacks, and in seams.

The patching cements are available in quart and gallon cans.

Check #46 on Reader Service Card



NEW IDEAS

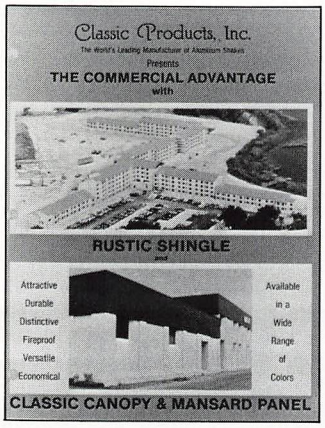
Booklet details shingles, panels

Classic Products, Inc., has published a new four-color brochure detailing commercial applications of the company's aluminum shingles, and canopy and mansard panels.

The publication contains information on the company's line of Rustic Shingles, which may be used on roofs or sidewalls. Details on the 12-inch-wide canopy and mansard panels, which are designed to duplicate the look of board and batten siding, are also included.

Architectural specifications for all the products are provided in the brochure.

Check #47 on Reader Service Card



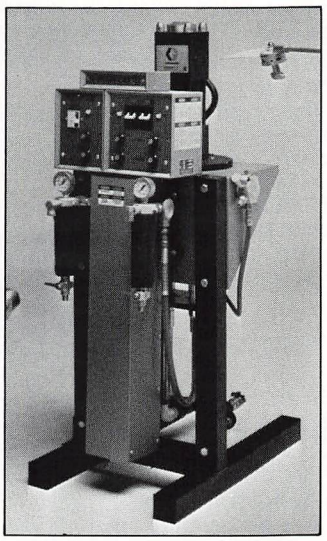
Foam-Cat holds steady temperature

Graco, Inc., has introduced a new spraying system with a fluid temperature control that adjusts to ambient temperature changes and holds the fluid temperature within a three-degree range.

The Foam-Cat system maintains the proper temperature by using direct heating elements in the fluid. Sensors in the heater and hoses monitor the temperature and provide for rapid adjustment.

The sprayer delivers up to 30 pounds of material per minute while maintaining a 1,500 psi reserve pressure. Spray guns are available in six nozzle sizes and feature self-aligning valved rods, filters on both fluid inlets, and a mechanical purge to reduce maintenance time.

Check #48 on Reader Service Card



CLASSIFIEDS

Roofing Spec Classified Rates:

Standard Classified

75 cents per word. $1.50 per bold-face word (in headline only).

Display Classified

$55 per column inch (we will supply a border and include your logo, if requested).

Blind Box Numbers $10
Minimum Charge $25

For information on how to place an ad, call Joan Kriete at 312-693-0700.

Services and Equipment

'73 GMC DIESEL
LIQUID ROOFING ASPHALT TANKER
14-ton capacity with 318 Detroit engine completely rebuilt.

Asking $18,000

Phone: 415/881-1670

ROOFER TRUCK CRANE

1981 RO Stinger TC125-2; 12.5-ton capacity; 93-foot boom mounted on an IHC tandem-rear-axle truck with 210 HP cat. diesel engine and 18-foot body. 75,000 miles. Excellent condition. Call Pringle Equipment in Florida at 305/684-3600.

ROOFER SPECIAL
HYDRAULIC TRUCK CRANE

Like-new, 1986 JLG Series 1000 hydraulic truck crane; 10-ton capacity; 95-foot boom. Hydraulic clam bucket mounted on a like-new 1986 IHC diesel truck with 16-foot body loaded with extras. Complete new unit in September. 4,000 miles. We want to sell fast! Also available without attachments at a lower price. Call 414/761-2300. $59,900.

ROOFERS CRANE FOR SALE

National Series 600 truck-mounted crane; 101-foot reach; 12½-ton capacity; on 1981 GMC L800 diesel truck. $59,500. Runnion Equipment Co., 7950 W. 47th St., Lyons, Ill. 60534. Large inventory of new and used equipment available. 800/824-6704, in Illinois 312/447-3169.

ROOF CORE

Roof core sampler; "C.R.R.E.L"-type; 1⅞-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

We specialize in placing only competent and reliable personnel for the roofing industry nationwide (contractors, manufacturers, distributors and consultants). 100 percent satisfaction and guaranteed results. All information held in strictest confidence. Call 800/752-ROOF or 404/373-4585. Lanta Enterprise, Inc.

MAILING LIST AVAILABLE

Mailing list of schools, government agencies, industries with leaky roofs in United States and Canada. Sulmac, manufacturer of water diverters; 413/533-5347.

PROCOUNSEL
ROOFING PLACEMENTS
NATIONWIDE

Sales, sales managers, estimators, tech reps, quality control, R&D, manufacturing engineers, general managers, presidents. I place professionals with roofers, distributors, roofing manufacturers, rep organizations and consultants. Fees paid by employer. All information handled in strictest confidence. Contact Buzz Taylor at **800/545-5900** or 214/741-3014. In Texas call **800/441-0806.** Also 214/741-3014. 24-hour answering.

FLASHBAND
Solar Reflective
Aluminum Self-Stick Tape
Stops Water, Mold, Rust and Leaks
Buy Direct:
3E Corp., 609-866-7600

Positions Available

ESTIMATOR/SALESPERSON

Well-established Ohio roofing contractor (40 years in the business) needs an experienced estimator/salesperson. Must have industrial and commercial reroofing background—BUR, shingle, single-ply, modified bitumen and metal. Excellent salary and benefits for qualified individual. Send resume to Jim Smithey, Frost & Co., Inc., 9 Broadway St., Wapakoneta, Ohio 45895; 419/738-9625. Equal opportunity employer.

SALES REPS/DISTRIBUTORS

Manufacturer of Hi-Tec spray-applied elastomeric roof coatings currently expanding to nationwide sales. Need experienced reps to add our product to their current line. Also looking for new distributors. All areas. Send resume to Davlin Coatings, P.O. Box 2308, Berkeley, Calif. 94702.

SALES REPS WANTED

Come on down. Come on down to Florida and help us sell roofing! Call: Peter G. Nazaretian on weekends at 813/962-4803.

SALES REPS WANTED

National manufacturer of single-ply, resaturants, coatings, cap sheet systems, floor repair and a full line of paint products for industrial, commercial and institutional markets. If you are experienced in these product areas and want to represent one of the most complete lines in our industry, answer this ad. We offer leads, established accounts, excellent commissions, company support and a proven product line for year 'round selling. We're in our 38th year of consecutive increased sales and earnings—become a part of it! Republic Powdered Metals, Inc., P.O. Box 724, Medina, Ohio 44258, Attn.: Sales Manager.

CONSTRUCTION SALES REPRESENTATIVE

Location: 60-year-old roofing and sheet metal company has immediate openings for sales people in the mid-South.

Background desirable: college degree or its equivalent; one or more years of sales experience. On-job training will supplement your natural ability to meet and communicate. Applicant needs to be able to organize, prepare and present proposals. This is a professional sales position that could lead to management.

Benefits: competitive starting salary commensurate with experience and ability. High incentive profit-sharing program. Company car. Retirement plan, medical, surgical, disability insurance. Regular salary reviews.

All replies kept confidential. Send letter of application and resume to Box 3A, *Roofing Spec,* 8600 Bryn Mawr Ave., Chicago, Ill. 60631-3502.

Once Again, New Rawl Anchors Solve Your Problem...

What's your problem?

Contrary to popular opinion, the solution usually comes before the problem. There was no problem with the horse until somebody invented the car as a solution!

Rawl-Drive and Rawl-Spike™ expansion bolts are now available in new lengths and new finishes to solve a multitude of new problems.

Holding power...tensile and shear strength...are amazing. Pullout load tests of ¼″ Rawl-Drive exceeds 2000 pounds in 3000 psi concrete, and 3/16″ Rawl-Spike holds over half a ton. Because they are positive expansion anchors they continuously resist pullout tensile load and are extremely vibration-resistant.

Short Rawl-Drives have been available for many years. Now we bring them to you in lengths to 14″. The Rawl-Spike™ is available up to 10″ long. They are made of tempered steel (the equivalent of Grade 8 bolt material) so they can be used overhead as well as in walls and floors wherever permanent, vandal-proof fastening is needed. The Rawl-Drive comes in a variety of head styles. Both the Rawl-Drive and Rawl-Spike are available with corrosion-resistant Perma-Seal™ coating. The Drive is also made with standard zinc electroplate or yellow dichromate finish while the Rawl-Spike is regularly furnished mechanically galvanized.

We have a whole new set of solutions, all we need is your new problems.

For complete specifications and samples, contact your Rawl Distributor. Call 1-800-243-8160 for the name of the one nearest you.

Rawl

The Rawlplug Company, Inc. • Two F. B. Powers Square, New Rochelle, NY 10802 • (914) 235-6300

Check #24 on Reader Service Card

Roofs need maintenance to survive

by Bob LaCosse

The roof may have a lazy time lying in the sun, but it also leads a rugged and punishing life. Flat, sloped or steep, a roof receives the full brunt of the weather. And while it may enjoy the pleasant breath of spring, it must also endure the scorching heat of summer and the cold blasts of winter.

Over the course of a year, a roof may have to shed torrential rains, resist winds of gale force, stand up to hail and support a blanket of snow. And the destructive forces of freezing and thawing cycles and attacks by fire, salt air, acid fumes, foot traffic, abuse and vandalism may further test its qualities.

To withstand nature's onslaughts, a roof needs all the help it can get. A maintenance program that includes scheduled inspections, tests and overhauls is the best way to keep a roof from falling victim to exposure. Proper roof maintenance is just as important to a roof as frequent tune-ups are to an automobile. Maintenance and inspection extends the service life of a roofing system and keeps it operating at peak efficiency.

Owners often ignore the need for routine maintenance, however. Because the roof is out of sight, it suffers from neglect until it develops serious and expensive problems or fails completely. This is a sure road to disaster; even a perfectly designed and applied roofing system will fail without proper inspection and maintenance. When exposure takes its inevitable toll on the roof, it is absolutely imperative that minor repairs be made immediately to prevent further deterioration of the system.

The roofing contractor shouldn't be the only one on the building team concerned with proper roof maintenance. While complex and major repairs and some of the maintenance procedures should be performed by a qualified roofing contractor, the building owner can help by keeping the rooftop free of debris. The designer and roofing contractor should make the owner aware of these cleanup procedures before the roof is completed.

Publications offer maintenance tips

The *NRCA Roofing & Waterproofing Manual* contains inspection and maintenance recommendations for both owners and roofing contractors. These procedures can be used just as effectively with the many new roofing systems and products that have come into the market as with BUR systems. All involved with the maintenance, inspection and repair of roofs should follow the *Manual's* recommendations.

Another publication that many have found helpful is the *NRCA/ARMA Manual of Roof Maintenance and Roof Repair.* In addition to roof inspection and maintenance, this booklet describes maintenance and repair procedures for aggregate and smooth surfaced roofs, flashings, vent flashings, drainage systems, gravel stops, metal roof-edge strips, and other roof projections.

The *NRCA/ARMA Manual* also includes sample recordkeeping forms to help contractors and owners set up files that record a roof's maintenance and inspection history.

Other useful inspection and maintenance recommendations may be found in literature published by the roofing manufacturers. NRCA encourages contractors and owners to consult these publications and use the recommended procedures.

By following the recommendations of NRCA and other organizations, a maintenance program can be established that will add many trouble-free years of service to all types of roofing systems. The most important thing to remember, however, is that all roofs are subject to stress and deterioration. A program of inspection and maintenance is a *must* to obtain the best performance of the system and avoid costly and extensive repairs.

Elastomeric Design

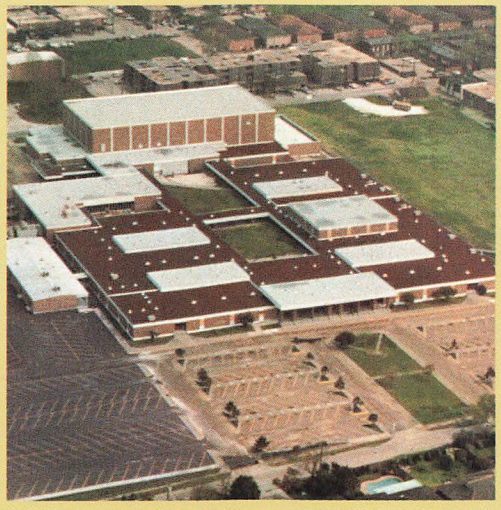
Paradiene 20/30 includes two component plies, each composed of an elastomeric asphalt blend, reinforced by a light fiberglass mat. This allows exceptional elongation/recovery characteristics, while providing superior dimensional stability.

Multi-ply Practicality

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

ROOF COVERING MATERIAL CLASSIFIED BY UNDERWRITERS LABORATORIES, INC.

CLASSIFIED UL



siplast

proven performance

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

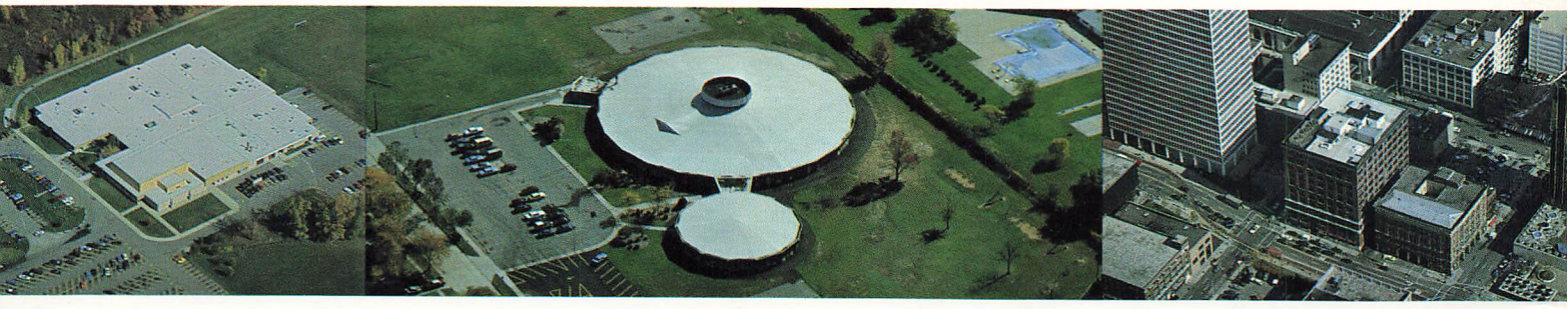
Call Today

For more information on any of our roofing systems, call
1-800-922-8800
In Texas, call Collect:
214/869-0070
SIPLAST
Xerox Center, Suite 1840
222 West Las Colinas Blvd.
Irving, Texas 75039

Check #28 on Reader Service Card.

Holiday Inn/CROWNE PLAZA, Atlanta, Georgia. Southeastern States Roofing (Orlando, FL).

THE TOUGH GOT GOING.



Dickinson Center and Cass School, Livonia, Michigan. Single Ply International (Livonia, MI). Marquette Building, Detroit, Michigan. WBC Roofing (Detroit, MI).

BOND COTE SYSTEMS

West Point Pepperell

P.O. Box 71 West Point, Georgia 31833 800-368-2160

The word is getting around.
Bond Grey 35® mechanically-attached single ply membrane system installations are nationwide on new and retrofit projects. Commercial, industrial, hospital, resort and school and university applications are being protected by our 15-year watertight protection plan.
The Bond Cote Systems applicator has been carefully selected and trained to install the Bond Grey 35® system to our strict, exacting standards. You receive the full support and financial backing of our multi-billion dollar corporation.
Our network of representatives will be happy to show you more.

Bond Cote Systems' Bond Grey 35® mechanically-attached roofing system qualifies, without additional treatment or surfacing, for FM Class 1, I-60 and I-90, UL Class A (new and retrofit insulated constructions), SBCCI Compliance Report 8426, and Metro-Dade [84-0831.1(83), exp. 1/9/87.] Member, NRCA, SPRI and RCI.

Check #35 on Reader Service Card