National Roofing Contractors Association

ROOFING SPEC

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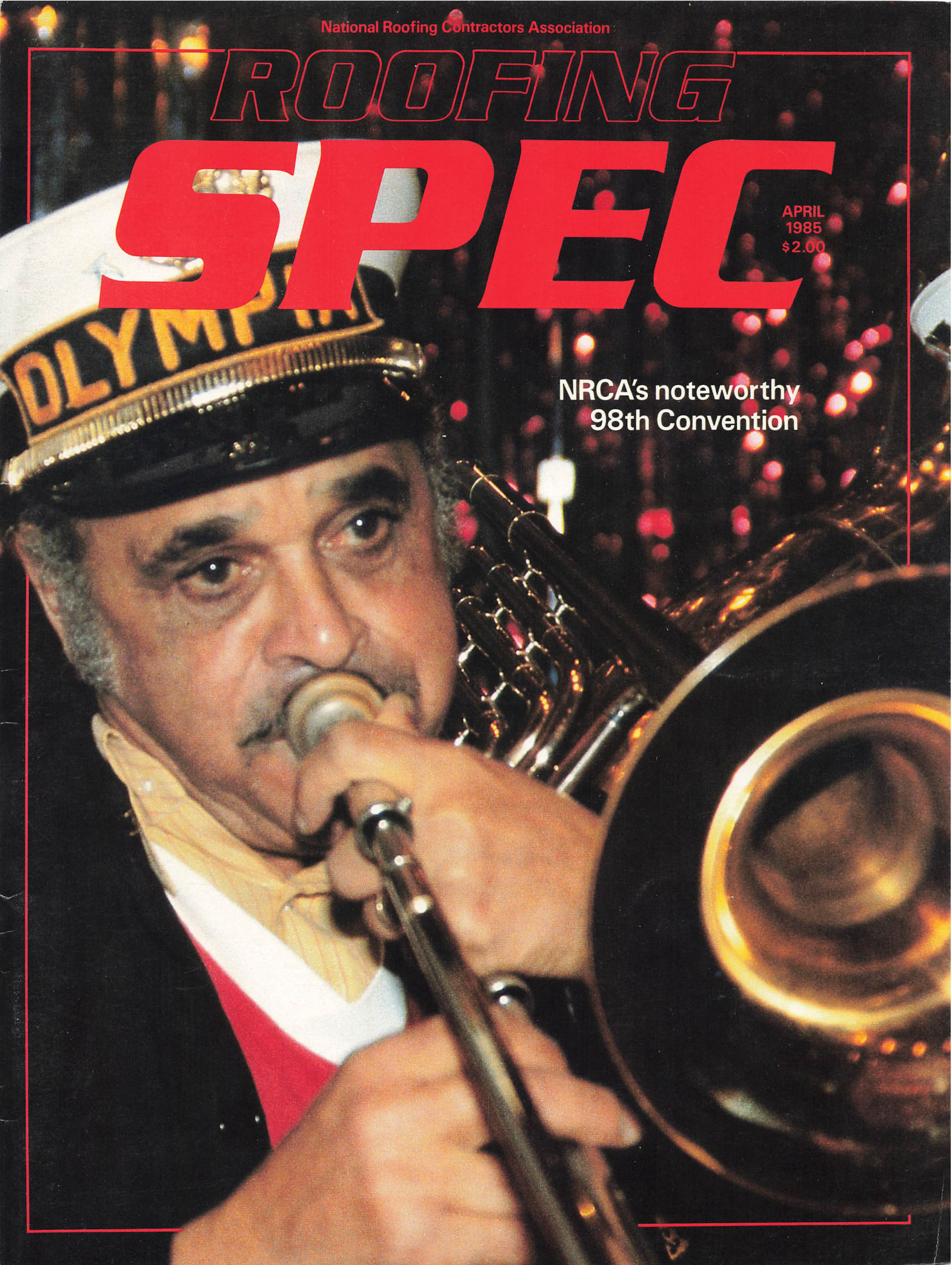

NRCA's noteworthy 98th Convention

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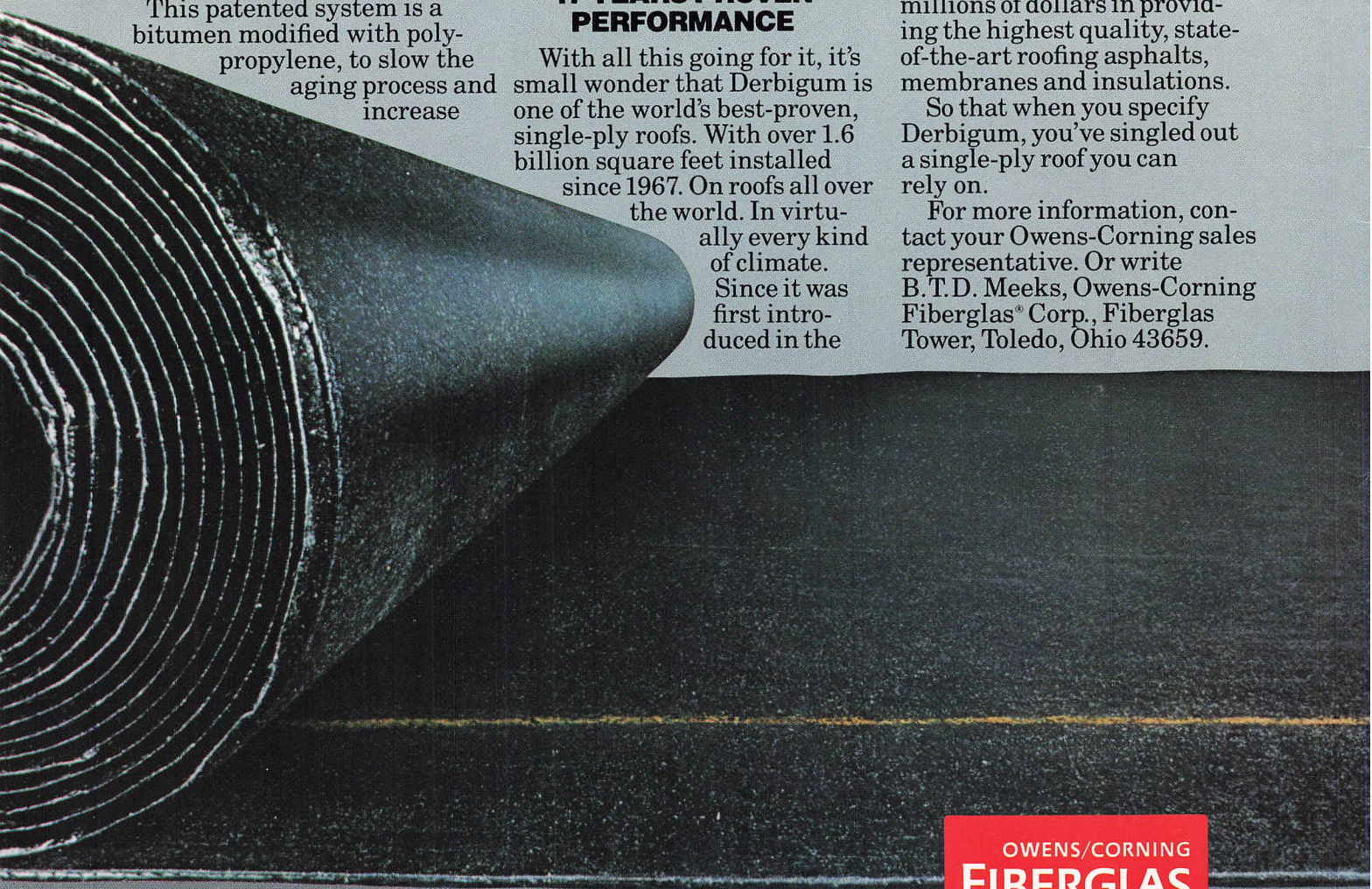

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ROOFING SPEC

Vol. 13, No. 4 April 1985

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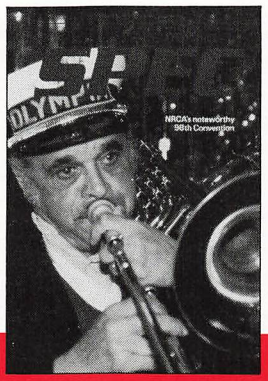

COVER

From the blare of the Olympia Brass Band's horns to the croon of Pete Fountain's clarinet, jazz, New Orleans style, set the tone for NRCA's noteworthy 98th Annual Convention and Exhibition.

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SOCIETY OF NATIONAL ASSOCIATION PUBLICATIONS

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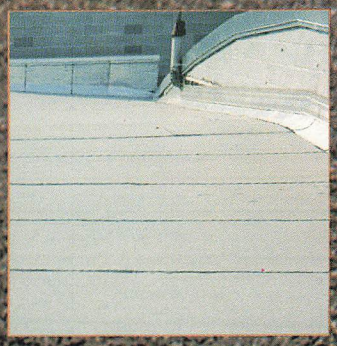
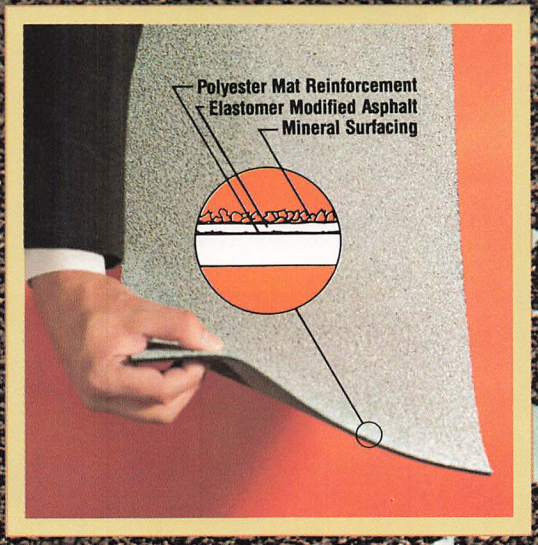
Parafor 50 LT

Siplast quality in a single ply elastomer modified bitumen roofing system.



Siplast's world of experience has been applied to the single ply needs of the roofing industry. The result is PARAFOR 50 LT, a single ply system that gives architects and specifiers a better choice. Siplast engineers and chemists have developed an elastomer modified bitumen that provides needed elongation and elasticity characteristics together with excellent resistance to the sun's ultraviolet rays, thermal shocks and extreme low temperature. They have also included a polyester mat to give the material both strength and a puncture resistance seldom found in a single ply.



PARAFOR 50 LT is engineered in such a manner as to give architects and specifiers great design flexibility. It can be applied with hot asphalt, cold adhesive or by torch to all slopes with drainage and over all standard roof decks and insulations.

PARAFOR 50 LT combines strength and flexibility with superior resistance to sun, freezing temperatures and other traditional causes of roof degradation. In addition, the granular surface of PARAFOR 50 LT gives you a choice of a wide variety of colors in a lightweight single ply that needs no gravel. It is guaranteed for a full ten years.

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LETTERS TO THE EDITOR

Roofers Mart news release prompts competitor's response

Dear Editor:

I am glad to see that *Roofing Spec* finally recognized the role of the roofing distributor, even if it is with an article about Roofers Mart of America (RMA). (See January *Roofing Spec*, page 10.)

In the article Greg Faherty is quoted to say, "Each distribution center will be a full-service roofing materials distributor offering credit, warehousing, sales promotion, product specification and delivery services." I think you will find that if Mr. Faherty lives up to his commitment to be a full-service distributor, that the projections he is giving out to prospective members in the RMA prospectus are not realistic. Greg is showing financial projections for a branch of $10 million in sales. Some of these projections show that salaries and wages will be $154,000. Our typical salaries and wages in a $10 million branch are $400,000. I think you are going to find the parent RMA doing well while an investment in the local Roofers Mart will prove to be unprofitable because of the high continuing consulting fees paid to the parent.

Barry Segal, president
Bradco Supply Corp.

Greg Faherty, RMA president, replies:

A Roofers Mart distribution operation differs from other distributors in one major way. A Roofers Mart is owned by a group of professional roofing contractors. This fact allows for a slightly different operating formula than a typical roofing distributor.

Overall, we feel we are on pretty firm ground with our estimates. In the first place, we have had 6½ years of operating experience in South Carolina and two years of experience with our company in Georgia. The expense estimates we're using were generated in large part from that experience. We are not guessing at this information.

Secondly, since each Roofers Mart is operated independently, actual expenses will vary by location by category. While our estimates may be low in one category, such as salaries, in a particular location, we may find we are high in another area, such as rent. All in all, our estimates for operating expenses have proven to be fairly accurate.

A note from Fred Good, NRCA executive vice president:

I would like to remind readers that NRCA is not connected in any way with Roofers Mart of America and the Association is in no position to judge the company's operations.

ICA president adds meat to franchise information

Dear Editor:

You have done us a grave injustice. Naturally, we thank you for the coverage of the Independent Contractors Association of Illinois (ICA) in the January edition of your journal. The problem, however, is the elusive cost comparison of ICA to the franchise concept. Where is it?

For some time we offered a better organization than the franchises could ever hope to provide. Yet we find our greatest impact has been a cost comparison. ICA's costs are approximately 3 percent of those charged by the franchises and less than 0.5 percent of the average contractor's annual sales.

Now, please feel free to "sandwich" ICA between anyone. And remember, it's the "meat" of the industry we provide.

John Neron, president
ICA

Roofing Spec replies:

We regret the omission of the cost comparison chart referenced in our January article on property service franchises. However, as you can see from the reprint of the chart below, ICA's information was not included in the original chart. We thank you for the additional information.

UPFRONT COSTS	Dial One	Mr. Build
Initial franchise fee	$3,000	$4,400
National promotion fund	300	300
Consumer protection fund	150	200
Total	$3,450	$4,900
MONTHLY COSTS		
National promotion fund	$300–1,600*	$300
Continuing franchise fee		350
Total	$300–1,600	$650
ANNUAL COSTS		
Consumer protection fund	**	$300

*The Dial One monthly national promotion fund fee is 2 percent of gross sales; the continuing franchise fee is 3 percent of gross sales. The minimum payment for both these items is $300 with a $1,600 maximum per month.

**Based on a percentage of the total annual service fee.

Quite frequently, Warren Edwards receives the highest compliment in all of business: repeat customers. "They just keep coming back for more of the same," explains Warren. And "the same" includes two important components.

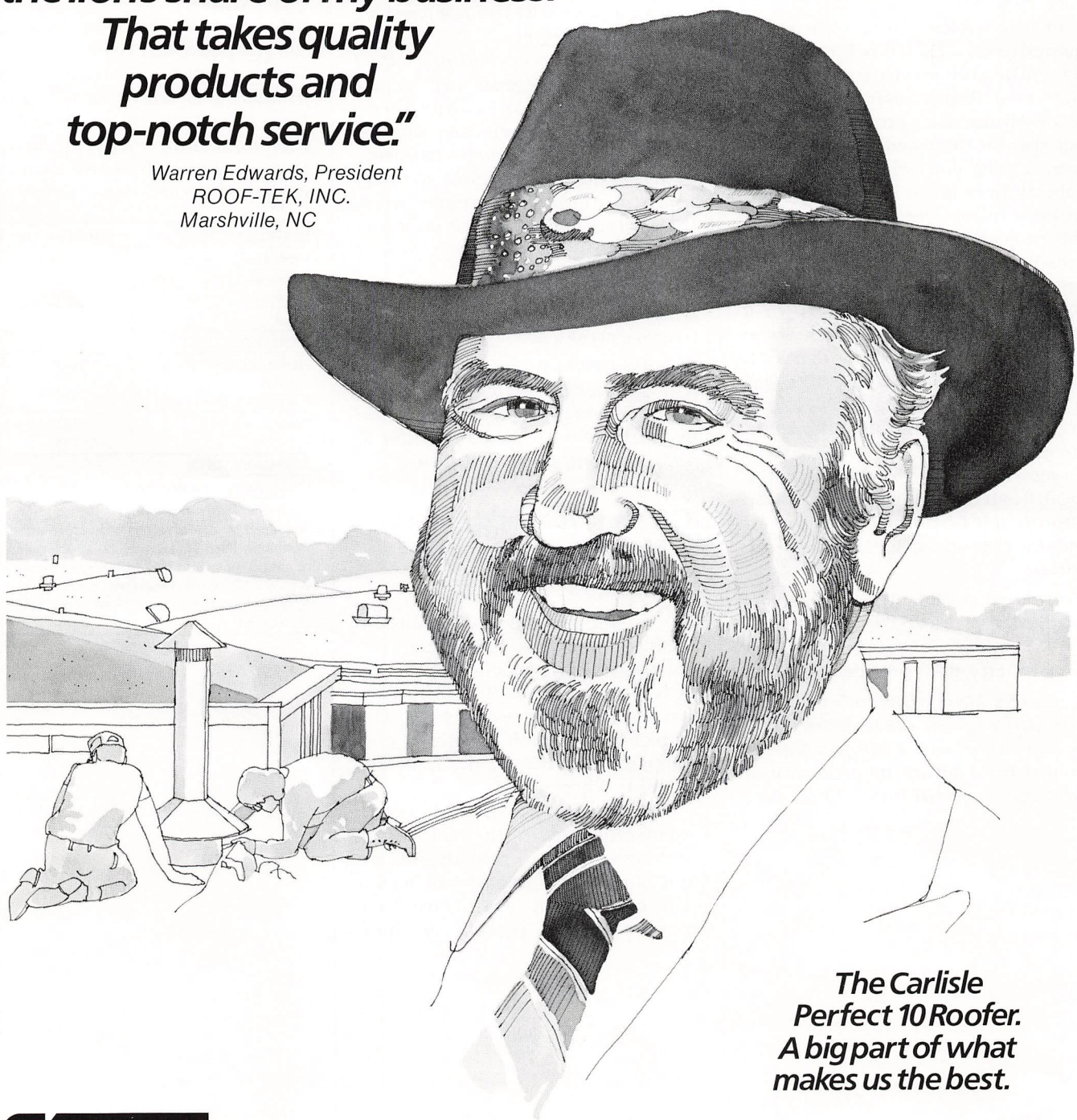
First, top-notch service. Warren sees teamwork as the key. "All our people—in the office and out in the field—share a common attitude. They really care and try hard at their jobs," says Warren.

Top-quality products are the second component. That's why Warren recommends Carlisle Sure-Seal® roofing systems whenever he gets the chance. That is, "...whenever Carlisle hasn't already been requested by name," he explains. Warren feels Carlisle offers the best roofing systems available.

And Carlisle recognizes Warren as one of the top roofers around. With over 110 *perfect* roofing installations, as judged by Carlisle technical inspectors, he's a roofer we look to with pride.

"Repeat customers are the lion's share of my business. That takes quality products and top-notch service."

Warren Edwards, President
ROOF-TEK, INC.
Marshville, NC



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Check #5 on Reader Service Card

1984's decline in non-residential building may signal a trend for 1985, says Christie

Contracting for new construction advanced 2 percent in January to a seasonally adjusted annual rate of $215.1 billion, the F.W. Dodge Division of McGraw-Hill Information Systems Co. reported.

The Dodge Index, which compares the current rate of construction contract value to 1977's base rate of 100, was 153 in January, up from December's 150. The final 1984 Dodge Index average was 149, a new annual high.

"Gains in homebuilding and public works construction during the opening month of 1985 were largely offset by a decline in contracting for non-residential building," George A. Christie, vice president and chief economist for F.W. Dodge, said.

"Following last year's 24 percent surge of commercial and industrial building, January's shift could be signaling a change of direction in favor of homebuilding for the year ahead.

"Non-residential building contract values retreated 12 percent in January to $70.6 billion (annual rate) from December's $80.4 billion. Contracting for stores and shopping centers will be well supported through 1985 once the anticipated recovery of homebuilding becomes a reality," Christie noted. "Office building, on the other hand, is highly vulnerable and may already be on the way to an extended correction for the over-building that has been encouraged by accelerated depreciation," he added.

In the institutional sector of the non-residential building market, contracting for schools gained in January, while hospital and health care construction declined.

The value of new residential building increased 6 percent in January, reaching a $96.8 billion annual total, as housing starts reversed their recent decline.

The housing market appears to be turning around," Christie pointed out, "but we haven't yet seen the response to lower mortgage rates that everyone is waiting for. With January's gain confined to multi-family building, the interest rate-sensitive single-family side of the housing market is still where it was several months ago. Recovery won't be sustainable until one-family building is on the way up," he said.

Contracting for hotels and motels rebounded a strong 17 percent in January to $6.1 billion.

January's $47.7 billion annual contracting rate for non-building construction, water supply and sewage treatment facilities, and public works projects was the source of January's improvement. As in most of 1984, utility construction remained dormant in January.

"Compared with recent experience, January's contracting for non-building construction was a substantial improvement," Christie said. "The combination of retrenchment by the electric utility industry and budgetary restraint on public works spending by federal agencies, however, has depressed heavy construction through most of the 1980s. Even an outstanding month like January barely exceeded the level of contracting for non-building construction that prevailed before 1980," the Dodge economist explained.

For the month of January, the unadjusted total contract value of all newly started construction was $14.8 billion, a gain of 6 percent over the January 1984 value.

Revised bulletin released following discussions with W.R. Grace

The following technical bulletin has been released by the Roofing Systems Technical Committee (RSTC). This document is a revision of a bulletin issued early last year (see February 1984 Roofing Spec*). The Committee revised the wording of the bulletin after a series of discussions with W.R. Grace & Co. The Committee's recommendations, outlined in the bulletin, remain the same, however. For more information, see "Tech Talk" on page 58 of this issue.*

Lightweight insulating concrete decks, which are placed as a slurry, contain more moisture than other roofing substrates. RSTC believes that retained moisture may contribute to problems with the roofing system installed over such decks if proper precautions are not taken.

Where these decks are used as a substrate for BUR, RSTC recommends the following:

- The lightweight insulating concrete deck should be installed using form boards or galvanized slotted deck to provide underside venting. Topside pressure relief is also suggested.
- The base ply of the roofing system should be attached using appropriate mechanical fasteners.
- The deck applicator and deck manufacturer should certify in writing that the deck was installed in accordance with the deck manufacturer's recommendations and is satisfactory to receive the roofing system.
- The roofing contractor should install the roof in accordance with the roofing manufacturer's recommendations for application over lightweight insulating concrete decks.

Silverdome roof tossed in bounds by winds and snow

March 12's high winds destroyed 23 roof panels on the Pontiac, Mich., Silverdome, according to a UPI wire report. The stormy weather left more than half of the stadium's 100 fiber glass roof panels in need of repair and complicated the Detroit Pistons' playoff plans.

By nightfall, 52 of the 100 Teflon-coated panels that make up the inflatable roof required replacement. Officials have said replacing each panel could cost as much as $135,000 to $200,000.

More than 3,000 of the 80,000 stadium seats have also been damaged.

The roof was first deflated March 3 by a heavy snowfall, in which several feet of snow accumulated on the dome's panels.

continued on page 10

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For top value, Class A re-roof insulation, you can't beat Manville's new, low cost ½″ Retro-Fit Board.

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That means you can use ½″ Retro-Fit board to maintain or upgrade an existing roof to a UL Class A rating to meet city and state re-roof requirements—something you can't do with any other ½″ roof insulation product.

Because ½″ Retro-Fit Board is perlite based, it also offers superior strength and dimensional stability.

½″ Retro-Fit Board is available in 2′ × 4′ and 4′ × 4′ sizes. 2′ × 4′ boards are protectively wrapped in 18-piece bundles for easy handling in the warehouse and at the job site and are available with plastic "Fes-Covers" for extra weather protection.

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ASA talks to Senate about prompt payment, trust fund, Miller Act

The American Subcontractors Association (ASA) has prepared testimony for a senate committee that outlines legislative proposals aimed at correcting unfair payment practices on federal projects.

The proposals attempt to tighten existing federal law loopholes, strengthen previous legislation and ensure that the government's intent to pay subcontractors is carried out, Jessie M. Pickett Jr., chairman of the ASA Legislative Committee, said.

"We aren't asking that more money be spent, and we aren't seeking undue governmental involvement in free enterprise. These carefully conceived priorities for ASA simply help the federal government tighten its own laws and allow it to make certain that previously approved legislation has the intended impact," Pickett said.

The proposals focus on three areas: prompt payment for subcontractors, criminal penalties for diversions of trust funds and amendments to the Miller Act.

"For a big corporation, delay in payment would undoubtedly cause some consternation in the bookkeeping department, but business would go on as usual," Pickett said. "For a small firm the size of most construction subcontractors, however, one payment might mean the difference between survival and disaster," he explained.

The prompt-payment bill would require contractors who work on federal projects to pay subcontractors within seven days of receipt of 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," Pickett 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.

The legislation would also require the prime contractor to make adjustments in the subcontractor's pay request at the time of certification.

The trust fund legislation would make it a crime to divert federal money intended for subcontractor payment to other self-serving uses.

Several state legislatures have passed legislation requiring owners

or contractors to maintain payment in a trust until the deserving parties are paid. Criminal sanctions have virtually made this law self-enforcing.

This trust fund concept is often used in the private sector and is evident in the widely accepted American Institute of Architects Document A201, "General Conditions of the Contract for Construction," which requires the contractor to pay the subcontractor "upon receipt of payment from the owner, out of the amount paid to the contractor on account of such Subcontractor's Work."

The ASA proposal also calls for amendments to the Miller Act, legislation passed in 1935 that provides a performance bond to protect the government and a payment bond to protect the subcontractor or supplier.

"Regardless of what Congress may have intended, the protection afforded by the Miller Act is a snare and a delusion," Pickett said.

ASA called for amendments that would prohibit the waiver of Miller Act rights, extend the coverage to progress payments, increase the bond to 100 percent, allow for the payment of interest and the reasonable cost of legal fees for a successful claimant, place affirmative obligation on the government to enforce the act, and eliminate certain unfair defenses now available to the prime contractor and his surety.

Pickett noted, for instance, that litigation costs often are so high that no subcontractor will put the law to use. In other cases, an agreement between the subcontractor and the general contractor requires the subcontractor to waive his rights to use the law—provisions such as "pay when paid" or requirements about arbitration that can cause the dispute to extend beyond the one-year limit of the law.

In another area, the Miller Act requires government prime contractors to protect the government with a 100 percent performance bond, while the payment bond is only 50 percent or less of the total.

The Act also does not require the government to be ultimately responsible for enforcement of the law and presents a loophole if, for instance, both the contractor and government ignore the bonding requirement—a loophole that can hand the subcontractor a significant financial loss.

"Subcontractors on federal construction often have severe problems when trying to collect payment for completed work," Pickett said. "In light of these ongoing problems and the failure of federal agencies to find adequate solutions, ASA believes that the time has come for congressional action."

continued on page 13

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Informal agreements' cost and performance are effective

The U.S. General Accounting Office (GAO) has found that Reagan administration efforts to avoid court cases in disputes between federal health and safety inspectors and employers have cut expensive litigation and relieved dangerous working conditions.

GAO also found that the Occupational Safety and Health Administration's (OSHA) informal settlement agreements are not illegal.

For four years, OSHA has allowed its managers to meet informally with employers to discuss OSHA-imposed penalties. Generally, OHSA supervisors meet with employers after the employers have objected to an OSHA citation or fine. This process was not widely used until the Reagan administration changed the tone of OSHA's work. The agency is now looked upon as an advisor to businesses rather than a policeman.

GAO said that the 1970 law creating OSHA didn't prohibit informal negotiations and that recent court cases upheld the agency's right to conduct them.

In 1983, the agency, resolved 16,736 of the 111,735 violations issued through the informal settlement procedure, statistics show. Fines were reduced by this procedure from $4.1 million to $1.8 million.

In turn, these employers promised OSHA, either verbally or by letter, that they would fix the health or safety problem.

OSHA officials claim that informal settlements save the federal government both the expense and bother of litigation. Critics charge that the conferences allow the employers too much opportunity to browbeat inspectors and make inspectors reluctant to issue citations.

Representative Barney Frank, D-Mass., reportedly has suggested that the report is incomplete and that the subcommittee he chairs, the Manpower and Housing Subcommittee of the House Government Operations Committee, will hold hearings on the matter to examine the process.

GAO criticized OSHA for not conducting adequate follow-up inspections, but said that in a random check, the employers had kept their promises to correct the hazards.

Bird sells plants to Genstar, lessens debt; Genstar-made shingles keep Bird name

Bird, Inc., has agreed to sell seven of its eight roofing materials plants to the Genstar Corp. for approximately $50 million. However, Bird will continue to sell shingles produced at the plants, a recent *The Wall Street Journal* article said.

The sale is part of Bird's strategy to redirect its business and reduce its debt. In addition, the move marks the first major consolidation in the roofing materials business, where overcapacity has led to price cutting.

The sale of the plants and inventories, and the transfer of certain liabilities allow Bird to make a fourth-quarter write-off of "a few million dollars," Joseph J. Giordano, senior vice president of finance, said.

The assets being sold account for about $130 million of Bird's 1984 sales of about $300 million, Giordano said. Bird expects to recoup some of this revenue by selling Genstar-made shingles to roofing contractors under the Bird America brand.

One Bird roofing materials plant in Norwood, Mass., will remain open. About 1,000 out of 2,000 Bird employees will remain at the plant. The other 1,000 will be transferred to Genstar.

Genstar plans to keep the Bird plants open in addition to its six presently operating roofing materials plants.

Proceeds of the Genstar sale and other previously announced cash generating moves will reduce Bird's bank debt to the mid-$20 million range from more than $60 million. The company's debt-equity ratio will fall to about 20 percent from 47 percent and bank agreements will be restructured to allow the 190-year-old company more flexibility.

Reagan cuts budget; no longer funding NBS' building technology and fire research

President Reagan has sent to Congress the Commerce Department's National Bureau of Standards (NBS) fiscal year 1986 budget proposal. The $120 million proposed budget eliminates funding for several programs, among them the Center for Building Technology, a $3.1 million reduction, and the Center of Fire Research, a $5.1 million reduction.

The government believes that both programs are more properly the responsibilities of the private sector and state and local governments.

The budget request is $4 million less than the Bureau's fiscal year 1985 appropriation of $124 million. Included are program increases totaling $16.4 million and cost-of-living and other built-in changes of $4.9 million. The request also includes proposed program reductions totaling $16.5 million and decreases of $8.8 million, attributable to the President's deficit reduction program.

"This proposed budget is the result of the administration's careful evaluation of the Bureau's programs and priorities. It reflects the minimum resources we need to continue serving industry, government and academia," NBS Director Ernest Ambler said.

"The U.S. economy is increasingly dependent on industry's ability to advance and exploit science and technology, and it is NBS' responsibility to lay the measurement foundation that is needed to get this job done," he added.

Goodyear marketing plan puts fiddler on the roof

Goodyear will be marketing its Insta-Seam roofing system to roofing professionals this spring with an adaptation of the Broadway musical "Fiddler on the Roof."

The production includes songs, skits and humor based on the musical, while detailing the advantages of Insta-Seam. The marketing program will play in 13 U.S. cities to audiences of architects, engineers and building owners.

"The fiddler in the original production of 'Fiddler on the Roof' represented long life, good fortune and happiness," Richard J. Collins, Goodyear's Roofing Systems Division manager, said.

"Insta-Seam provides durability, successful performance and freedom from maintenance. To someone concerned with roofing, those are very similar characteristics to the one symbolized by the fiddler," he explained.

Insta-Seam eliminates four of the seven steps required to install a mechanically fastened single-ply membrane roof, Collins claimed. It is the first such system in the single-ply roofing industry to offer EPDM sheets with factory-applied adhesive. A hot air gun is used to weld seams, forming a bond and seal that are stronger than the membrane itself, Collins said.

The system's attributes will be presented at special trade breakfasts and luncheons in Boston; Pittsburgh; Chicago; Dallas; Philadelphia; Atlanta; St. Louis; Detroit; Washington, D.C.; Newark; New York City; Houston and Denver.

Alsco and Amarlite move to centralize operations

Alsco, a subsidiary of ARCO Building Products, has announced that it is moving its headquarters from Akron, Ohio, to join ARCO in Philadelphia later this year. The move is part of ARCO's efforts to centralize operations. Amarlite, another ARCO company now in Atlanta, will be joining Alsco in Philadelphia. ARCO's Airtron subsidiary will remain in Dayton, Ohio.

"This move strengthens our marketing and manufacturing resources and signifies ARCO's expanding commitment to the building products industry," Richard F. Marsh, Alsco vice president, said.

ARCO Building Products headquarters will be in the Atlantic Richfield Tower in Philadelphia's Centre Square. The ARCO Chemical Co. is already located in the building.

Gardner opens new plant to expand distribution

The Gardner Asphalt Corp. has announced plans to merge with the Overall Paint Co. of Bedford Heights, Ohio. This merger increases Gardner's number of production facilities to 11 and expands its Midwestern distribution capabilities.

The Overall Paint plant will produce Gardner's entire line of products, including asphalt coating, aluminum coatings, asphalt paint, foundation coating and the company's newest product, professional grade premium roof cement.

"The new plant will increase our overall national production capability and allow us to offer greater product distribution and servicing to our Midwest region," Raymond T. Hyer, Gardner Asphalt president said.

The Bedford Heights plant is Gardner's second acquisition in the Ohio area since the company opened its Cleveland production facility in 1978.

The Overall Paint Co. has produced its own line of asphalt-related products for nearly 50 years. Gardner Asphalt will use existing equipment at Overall's facility to produce its own product lines.

ARC makes donation to NRCA PAC auction

The American Roofing Corp. (ARC) donated a truckload of modified bitumen membranes to the NRCA Political Action Committee auction. The auction took place at the NRCA 98th Annual Convention PAC party, Feb. 10, 1985, in New Orleans.

The donation was valued at a little more than $20,000 and was purchased by George Moeller, A.J. Shirk Roofing Co. president, Kansas City, Mo., for $13,500. The sale's proceeds went to the NRCA PAC.

When asked about his purchase, Moeller replied, "I was pleased to have this opportunity to support the NRCA PAC because I believe wholeheartedly in their work. And besides, it was a bargain." Moeller claims he has already installed the membranes on several jobs.

Two executives named to Tru-Fast's Ohio plant

John Stecovich is the new Tru-Fast Corp. manufacturing operations manager for the Bryan, Ohio, plant.

The plant manufactures roof insulation fastening systems.

Also joining Tru-Fast, as materials supervisor, is Tom Morr.

Midland Engineering names vice presidents

The Midland Engineering Co., South Bend, Ind., has named James F. Scott and Charles W. Frazier vice presidents, and promoted William G. Collins to senior vice president.

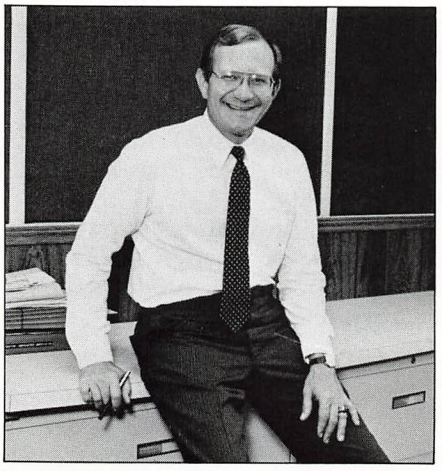
Scott, who has been with Midland since 1974, will serve as the firm's vice president of finance and administration. He is also a vice president and director of the Indiana Roofing Contractors Association.

Frazier, who will be vice president of operations, joined Midland in 1959. He has served as head of the firm's roofing, sheet metal and interior systems divisions. He is also president of the Michiana chapter of the sheet metal and air conditioning contractors national association.

William G. Collins, former vice president for construction services, has been named senior vice president. He joined Midland in 1961.

William R. Steinmetz will remain chairman of the company's board of directors.

Charles W. Frazier



James F. Scott

Roofers Mart affiliate opens in Wisconsin

Ken Hadfield, formerly with the Owens-Corning Fiberglas Corp., has been selected as general manager of the newly formed Roofers Mart of Wisconsin, Inc., located in Milwaukee.

Roofers Mart of Wisconsin is a locally owned distribution center affiliated with Roofers Mart of America (RMA), St. Louis. RMA provides its affiliates with management services such as accounting and computer systems, personnel training programs, facility selection analysis and sales promotion support, Hadfield claims.

"We are one of a network of Roofers Marts across the country," says Hadfield, "and will be aggressively establishing our reputation in the Milwaukee area. Like other Roofers Marts, we will offer a full line of commercial and residential roofing products for contractors in the area. Among our services will be credit terms, product warehousing, sales assistance, specification support and delivery."

The company will operate out of its new facility at 12210 W. Silver Spring Road, Milwaukee, Wis.; 414/462-9600.

Swiss Co. continues marketing through Atlas

Statements made in a recent Illinois Tool Works, Buildex Division, news release may have misled readers, Atlas Bolt and Screw Co. claims.

Contrary to the conclusions some readers have drawn from the news release, The Swiss Co., Mage, SA., located in Courtaman, Switzerland, will continue to market its roofing products through the Atlas Bolt and Screw Co.

There will be no interruption in the flow of these products nor will there be any changes in the products, Atlas assures its customers.

Ontario Association elects new leaders

G.W. Lambert was elected president of the Ontario Industrial Roofing Contractors' Association for a second term. The election was held at the Association's annual meeting, Feb. 7, in Toronto. G.W. Lambert is president of Eady Bros. & Co., Ltd., Mississauga.

Other officers elected were: P.J. Uglow, Provincial Industrial Roofing & Sheet Metal Co., Ltd., Concord, vice president; and E.G. Commeford, Fiberglas Canada, Inc., Toronto, treasurer.

New directors, elected for three-year terms, include: R.J. Barclay, Bar-Lei & Co., Ltd., Toronto; P.R. Harding, Amherst Roofing & Sheet Metal, Kingston; M.W. Read, Sarnafil Canada, Ltd., Toronto; and R.D. Walden, Walden Roofing & Sheet Metal Co., Ltd., Kitchener.

W.H. Ashby, Parr/Koppers Industries, Ltd., Weston; R.J. Crawford, T.P. Crawford, Ltd., Ottawa; L.K. Keller, Exeter Roofing & Sheet Metal Co., Ltd., Exeter; J.S. Seeback, Seeback & Sons (1979), Ltd., Toronto; and S.J. Walton, Semple-Gooder Roofing, Ltd., Toronto, will continue as directors.

Texas announces convention and trade show

The Roofing Contractors Association of Texas (RCAT) will hold its 10th annual convention and trade show, June 19-22, 1985, in Austin, Texas. The theme of this year's convention is "How to survive and prosper in the construction market."

Almost 100 exhibitors will participate in this year's show, RCAT says. In addition, the Roofing Industry Education Institute will present a technical program on changing materials, and PROOF (Profit Research on Operating Factors) will lead a management seminar titled "Overhead recovery, bid strategy and pricing methods." PROOF is a management consultant firm located in Richmond, Va.

For more information about the festivities, contact Sandra Smith, RCAT, 1235 North Loop West, Suite 419, Houston, Texas 77008; 713/869-3279.

continued on page 21

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Minnesota group expands; sends lobbyist to capitol

The Northern Contractors Association's Board of Directors has decided to merge the Association, which represents contractors in North and South Dakota, with the Sheet Metal, Air Conditioning & Roofing Contractors Association of Minnesota, Inc., (SMARCA).

Although all major services will be provided by the Minneapolis SMARCA office, a branch office will be established in Fargo, N.D., to coordinate communication between the groups during the first phase of restructuring.

The articles of incorporation, bylaws and other SMARCA regulations will pertain to the North and South Dakota areas with some variations.

North and South Dakota contractors will also be included in SMARCA's soon-to-be-published membership brochure.

SMARCA is also beginning lobbying efforts in Washington. The Association's Board of Directors hired the firm of Spano, Lennes, Dean & Ewald as full-time representatives of the contractors' legislative interests. SMARCA will be coordinating its lobbying with the Plumbing, Heating & Cooling Contractors of Minnesota (PHCC). Spano, Lennes, Dean & Ewald will represent both groups on Capitol Hill.

SMARCA had worked with Spano-Lennes in the past through the Regional Congress of Construction Employees (RCCE). The lobbying firm was hired on a temporary basis to concentrate on unemployment compensation legislation for the construction industry.

After SMARCA's Board decided to hire a full-time lobbyist, it contacted PHCC, and the two groups agreed to share the firm of Dean-Ewalds & Associates, whom PHCC employed last year. Since that tentative decision was made, Dean-Ewald and Spano-Lennes merged. SMARCA and PHCC will retain the newly merged firm, with Doug Ewald, a former state representative, as SMARCA's representative.

Georgia's *Buyers Guide* now available

The Roofing and Sheet Metal Contractors Association of Georgia's Newsletter Committee is marketing the first edition of the Association's *Buyers Guide.* This reference book contains a comrehensive listing of materials, goods and services offered by participating supplier members.

Both contractor and supplier members will receive free copies of the *Guide* as soon as the booklets are available.

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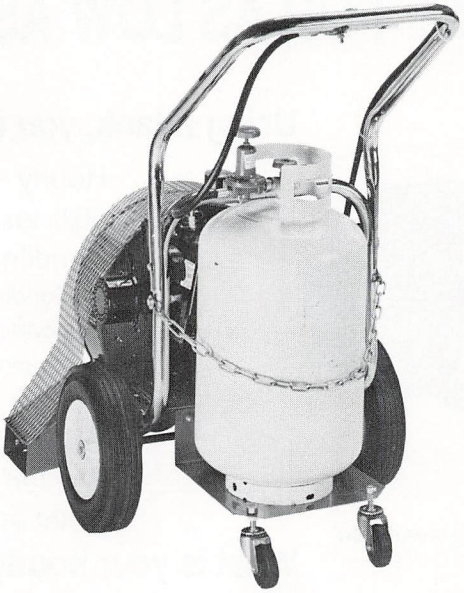

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NRCA's noteworthy 98th Convention brings industry to New Orleans

Surrounded by Mardi Gras preparations, NRCA held its largest Convention yet. A record 6,827 people passed through the Convention trade show, visiting 300 exhibitors, and attended a full schedule of business sessions, rap sessions, luncheons and evening social events.

This year's meeting may be remembered for its Great Single-Ply Debate, a general session that brought six industry experts with widely divergent views together for a spirited discussion of the new membranes. The "party-animals" among the attendees, on the other hand, may consider the highlight of the Convention to be Tuesday evening's riverboat theme party, where Convention-goers got the chance to sample the best of bayou cooking and New Orleans jazz during a toe-tapping trip down the Mississippi.

Industry news and Cajun cooking weren't the only items on the Convention agenda, however. Government waste was also a topic of discussion at a couple of meeting events. J. Peter Grace presented some sobering statistics about government overspending at the opening luncheon, while Dr. James Boren, speaking at the member breakfast, poked fun at the government's bureaucratic appetite. Tom Sullivan inspired contractors attending the recognition luncheon to reach beyond their limitations.

As entertaining and informative as this year's convention was, the best is yet to come, according to Gale Kiesel, the Association's meetings and convention director. "Centennial excitement will continue to build over the next couple of years," Kiesel said. "Next year's show will be in Vegas, a city designed to accommodate Convention attendees. The meeting's sessions and events will also be tailored to the contractors' needs. It's a sure bet that the Vegas convention will be one of the Association's best."

Good times in the city that care forgot

A member of the Krewe of Aquila shows off her finery at the Convention theme party.

Spirited single-ply discussion highlights business sessions

How long will single-plies last? According to the six panelists at the Convention general session "Single-Ply: Past, Present and Future," industry inexperience makes the question of single-ply longevity a hard one to answer.

"You cannot guarantee a roof for 10 or 15 years when you have two years of experience with it," said panelist Werner Gumpertz, a consultant with the firm of Simpson, Gumpertz & Heger, Arlington, Mass.

Gumpertz wasn't the only panelist with strong opinions about the single-ply industry. Contractors Larry Carlson and Burton Karp, manufacturers' representatives Ruth Warshaw, Michael Reed and Don Backenstow, and consultant Ed Schreiber all forcefully presented views that sometimes drew applause, moans or heated responses from other panelists and the audience.

Schreiber, president of Construction Consultants, Inc., Detroit, whose published remarks about roofers' ineptitude provoked many contractors, attempted to clarify his remarks during the session. "The single-ply roofers are not cheating," he said. "They're doing a fairly good job with the installation of their single-ply. But they don't understand the flashings, they don't understand the drains, they don't understand the role of the insulation, they don't understand the role of the decking, and there's where our failures are perceived."

Some debate was sparked by the question of single-ply warranties and their relation to roof durability. Warshaw of Sarnafil, Inc., Canton, Mass., said it was a mistake to equate the length of a warranty with a roof system's expected life. Schreiber disagreed, saying, "I think you have to be a little naive to not relate warranty to life expectancy." Gumpertz said that owners, architects and some roofing contractors have an unfortunate tendency to buy a guarantee rather than a roof.

Consultant Werner Gumpertz shares opinions with single-ply general session attendees.

Almost all panelists agreed that laboratory tests alone were inadequate to predict how long a single-ply system would last. Gumpertz called laboratory aging "a shell game," and said that the only thing that counts is what people can see with their own eyes. Backenstow of Carlisle SynTec, Carlisle, Penn., suggested that manufacturers should take membranes that have performed well in the laboratory out to the field and watch them for two or three cycles. "To take laboratory results . . . and not run a system out in the field is a prescription for disaster," he said.

The panel proceeded with its discussion in a question-and-answer format. For the first part of the session, most of the questions came from moderator Larry Carlson of Carlson Roofing Co., Inc., Rockford, Ill., who asked questions prepared by NRCA's Technical Operating Committee (TOC).

Several of TOC's questions concerned the effects on the membrane of moisture trapped in a roofing system. Karp, of The Eagle Group, West Hartford, Conn., said that even though some manufacturers claim their membranes can be installed over wet or deteriorated roofing, good practice dictates that existing roofing should be ripped off if there is moisture in it.

Warshaw and Gumpertz both agreed with Karp. Warshaw said experience has shown that it is not possible to dry out an old membrane after a new membrane has been installed over it. Gumpertz said, "If a roofing system is bad enough to fail, it's also bad enough to remove."

The audience had a chance to question the panelists during the second half of the session. Most questions concerned specific systems or problems. One questioner, however, attempted to pin the two consultants down about their opinion of single-ply systems. Schreiber and Gumpertz, both known for their outspoken criticisms of

the roofing industry, were asked, "Would you specify any single-ply roof at this time?" Both consultants said they would. Schreiber said that he found single-plies useful for jobs where weight considerations or the local roofers' lack of experience made traditional roofing impractical.

Warshaw followed up the question by asking Schreiber if he had experienced any problems with the single-ply systems he had used. The audience applauded when Schreiber admitted that he hadn't.

Judging by their questions, the contractors in the audience weren't only concerned with how long single-plies would last on the roof. They also wanted to know how long the products would last in the marketplace. Reed of Euroroof, Ltd., Cheshire, England, said that more than 50 percent of Europe's roofing market would be single-ply in two or three years. Schreiber said that in the United States the smaller jobs used single-plies but that the major jobs were still BUR.

Marketing general session needed dose of its own medicine

It's hard to say why it happened. Whether it was the fact that the audiovisual support broke down, or the lighting was poor, or the wrong speaker was chosen, the fact is Monday's general session titled "Marketing for the professional roofing contractor" was a study in disorganization and poor preparation.

"A description of the presentation could be included in NRCA's own marketing manual under the chapter heading, 'Don't let this happen to you,' " Chris Taylor, director of communications, said flatly.

Dr. Neil Miller, a management consultant with a doctorate in psychology, was chosen last December to address the contractors on marketing strategies. "I had heard him speak, and I was very impressed," Taylor commented. "I spoke with him, and told him exactly what our topic was. Later, he submitted an outline of a speech on marketing that he would develop for our group," she said. "He told me he would work with the audience, walking the floor and asking questions about contractors' businesses. And we photocopied a test for the registration packets that the members were to fill out and bring to the session to discuss."

Instead, Miller never left the podium; the test was not even mentioned; and the subject of his talk was management, which was to be addressed in a workshop the following day by another speaker.

"I'm not sure what he actually planned to cover originally," Taylor said. "But at the outset of the presentation, whatever hope remained for a successful session disappeared when the slide projectors failed, killing his speaker support. Of course, we had removed some lights from the stage area earlier so the audience members could see the slides; when the AV failed, he ended up standing there in the dark for an hour," she said.

"For whatever reason, he gave the exact same talk I had heard before, which was not on marketing. Much to their credit, most of the contractors stayed in the room," Taylor concluded. "Those who left were probably searching the hotel for the marketing session they thought was scheduled."

Early bird session attendees learn that details bring dollars

Contractors attending the early bird program, "A way to increase your profits, increase your business," were told they are responsible for a roof drain's performance.

"Do you know that the plumbing code and the building code never refer to the roof drain as a plumbing accessory? It is always written as a roofing accessory," Jerry Eason from Tech Specialties, San Francisco, told attendees.

Eason said there are about five major cast-iron manufacturers who control the roofing accessory business. However, that side of the roofing industry really belongs to the contractors, Eason asserted.

The roofing contractor is responsible for a roof drain's performance.

The longest yard. Contractor John Carruth prepares to help himself to the last three feet of a submarine sandwich at one of Monday night's many hospitality suites. Several exhibitors sponsored suites to get a chance to meet with contractors in more relaxed and informal settings.

"Most bosses treat employees like mushrooms"—Weldon.

Because the roofing contractor will be the one called to fix a leaky roof drain, Eason suggested that contractors take control of their destiny and install the drains themselves. "It is easier to control water flow than it is to insulate or insure against it," he added.

The average plumber charges $380 to $400 to drop a drain in place, Eason said. He claimed to have heard profit figures of $1,200 for installing a drain.

"Experience has shown," said another early bird panelist, Max Baker of the Research Council of Canada, Vancouver, British Columbia, "that whether we are talking about water-shedding steep roofing or waterproofing flat roofing, roof problems are more often related to detail than to the fault of the basic roofing material or system.

"If roofing contractors don't take advantage of all or some of the roofing accessories, they are probably missing out on a good opportunity to improve their roofing application," Baker continued.

"There are a number of ways in which we can include these items in our bids," the program's moderator, Dick Baxter of Carolina Roofing Service, Inc., Monroe, N.C., said. "Even in union areas we can certainly put in a plumber if that's what the local requirements are. If there isn't one on the payroll already, hire one. If nothing else, you may want to work with a plumbing contractor that will work with you and install these things along with your crew," he suggested.

All the panelists agreed that roofing is in a transition stage, and that if contractors don't use new methods or developments, it is unlikely that they will have businesses tomorrow.

Weldon management workshop tip: invest in positive reinforcement

Joel H. Weldon, Joel H. Weldon Associates, Inc., Scottsdale, delivered a high-voltage workshop on management techniques during this year's Convention that kept contractors on the edge of their seats for 90 minutes.

Weldon was back by popular demand, talking this year about "Achieving excellence through effective management."

"Catch your people doing something right," Weldon stressed. "William James, the father of modern psychology, says that the greatest need human beings have is to be appreciated. Look for the good. Decide on methods to gain employees' commitment, not their compliance."

Weldon went on to give specific examples of what supervisors could do for their people. "Compliment them dramatically," he said. "Give them titles. Get them business cards with those titles on them. Remember, it's not your intentions that count; it's your actions.

"Most bosses treat employees like mushrooms," he theorized. "They keep 'em in the dark, cover 'em with manure, and when their heads pop up, they cut 'em off."

Weldon urges participants to look for one "ah-HA" in his sessions. "An ah-HA is a mind-grabber," he commented. "It's an idea that strikes you as being useful and valuable. They're like slippery fish—if you don't gaff them with the point of your pen, they'll slip away and perhaps never return."

About 400 people attended Weldon's session, the largest workshop group at the Convention.

Workshop offers legal advice: roofers must get smart to get paid

There is no excuse not to receive full payment when a job is done correctly, other than a subcontractor's incompetence. According to Steve Phillips, NRCA counsel and speaker at the Convention workshop "What to do when you don't get paid," contractors who plan for payment receive their just rewards. Primary in payment planning, Phillips told attendees, is having an appropriate contract.

According to Phillips, contracts should contain the following payment provisions:

- a clear unequivocal statement requiring full payment upon satisfactory completion of contracted services;
- a limitation on retainage and progress payments at the rate being retained by the owner;
- prompt pass-through of payment from the general contractor; and
- a guarantee of payment, assuming that the subcontractor's work is satisfactory, even if the general contractor hasn't been paid.

"The progress payment entitlement clause," Phillips emphasized, "should not only include payment for work in place, but also for stored materials that have been purchased and paid for by the contractor and are intended to be incorporated into the project."

Clauses concerning lien rights and waivers, indemnification, owners' rights to withhold set-offs, retainage, time for payment and contingent payment provisions should all be studied carefully before signing an agreement, Phillips said.

If a subcontractor does the work correctly and still doesn't get paid, he can stop work seven days after he's given notice that his payment is seven days late, Phillips said. He may also want to incorporate into his agreement a clause stating that the warranty is conditional on full payment, Phillips added.

Phillips also discussed steps contractors can take to obtain payment as well as practical guidelines and ideas for increasing the likelihood of getting paid promptly.

Workshop panelist Trosper says computers stupid but obedient

"The best computer in the world without decent software is the most expensive paperweight you ever bought," panelist Milt Trosper of Scientific Educational Business Software, Fort Worth, told those attending the workshop "Preparing job estimates: can a computer help you?"

Other panelists who presented their views were: Bennett Hutchison III of Tip-Top Roofers, Inc., Atlanta; B. Jack Williams of Twin City Insulating Decks, Inc., Wahpeton, N.D.; and Bob Bellitt of Arapahoe Roofing & Sheet Metal, Inc., Broomfield, Colo.

"Remember that the computer is a super-stupid employee," Trosper continued, "but very willing and obedient." He went on to describe the difference between turnkey and do-it-yourself operations.

Jack Williams talked about specific aspects of bidding, reminding the contractors to include all elements of the roofing job, before he moved on to computer bid development. He stressed the importance of homework in selecting and working with computer estimating. "The computer must have the right information to calculate costs," he stated.

Participants' questions focused on how to start up computerized estimating, including specific queries on costs, staffing and equipment. One person asked if the estimating computer should be different than the accounting computer used in the business.

"Initially, you'll have the time to do both functions on a personal computer, but six months downstream, you're going to do a lot of estimating through the system," Trosper responded. "Having several dedicated machines for certain functions is a good way to go. Then if one of them does happen to go down, and they're compatible, you have the ability to keep up the system."

Aged thermal value research presented at RIC/TIMA workshop

The Roof Insulation Committee of the Thermal Insulation Manufacturers Association (RIC/TIMA) was formed to tackle the problem of BUR blistering over urethane foam board insulation. The Committee's work wasn't over once it solved the blistering problem, however. According to former NRCA President Melvin Kruger of L.E. Schwartz & Son, Inc., Macon, Ga., one controversy after another concerning the use

"The best computer in the world without decent software is the most expensive paperweight you ever bought"— Trosper.

Oh crap! While this contractor gave the dice a tumble, others were playing roulette or trying to beat the dealer at blackjack at the NRCA PAC casino party. The event turned out to be a "packed" party as hundreds of Convention-goers streamed in to try their luck at the gaming tables. All proceeds from the tables and sale of food and drinks went into NRCA's Political Action Committee coffers.

Pigg predicted that OSHA would not release a separate standard for the construction industry.

of polyisocyanurate and polyurethane insulation have kept the Committee busy.

At the Convention workshop moderated by Kruger, "Insulation: R's, U's, Do's and Don'ts," three RIC/TIMA manufacturer members and an independent researcher told contractors about the Committee's most recent activities.

According to Kruger, RIC/TIMA has tried to work closely with NRCA through the years. Kruger said, "It seems that we can always accomplish the most when contractors and manufacturers combine their resources and work together for the common good." This liaison has not only helped answer the industry's questions about BUR blistering, it has also led to the development of standard product specifications and aged thermal value testing procedures for polyurethane and polyisocyanurate foam board insulation.

Session panelist George Norman of International Permalite, Inc., Ontario, Calif., said the Committee's aged thermal value testing procedure determines the amount of thermal resistance polyisocyanurate and polyurethane boards will lose over time, a phenomenon Norman called "thermal drift." At some point after an insulation board has been installed this thermal drift stops, according to Norman, and the board's thermal resistance stabilizes at a lower-than-manufactured level. This lower thermal resistance is the product's aged thermal value. RIC/TIMA's procedure accelerates thermal drift to simulate field conditions over a short period of time, allowing a board's aged thermal value to be measured in the laboratory.

Two years ago, RIC/TIMA began a field study to see if insulation boards subjected to the Committee's procedure experience any more thermal drift in place on a roof, panelist Ron Scott of RoofTech Consultants said. Scott presented the study's preliminary results. According to the field tests, polyisocyanurate boards that had been subjected to RIC/TIMA's procedure experienced no more thermal drift in the field than perlite and fiber glass panels that were subjected to the same conditions, he said. The preliminary test findings indicate that "these RIC/TIMA programs offer for the first time the potential to characterize in-place thermal performance of insulations," according to Scott.

Scott said additional tests would be performed and regular updates would be released by RIC/TIMA on the results. Future tests will include polyurethane insulation and possibly, phenolic foam insulation boards, the contractors were told.

Workshop presents experts' ideas on asbestos safety and regulation

Asbestos products, including asbestos roofing felts, have been used in the construction industry for many years. Recently, however, research has linked airborne asbestos exposure to cancer. These findings have prompted the Occupational Health and Safety Administration (OSHA) to consider strengthening its regulation of asbestos exposure in the workplace. Contractors have become concerned for the safety of their workers exposed to asbestos products and their compliance with OSHA rules.

To answer some of these concerns NRCA invited Robert Pigg of the Asbestos Information Association (AIA), Arlington, Va., and Dr. Jacques Dunnigan of the Institute of Research and Development on Asbestos, Sherbrooke, Quebec, to present their findings at the Convention workshop "Airing it out: the latest on OSHA and asbestos."

At the workshop, Pigg made some predictions about the new OSHA asbestos standard. "We will not see a revised asbestos standard prior to late summer," he said. Pigg also predicted that OSHA would not release a separate standard for the construction industry. Pigg's association would like to see a separate construction standard because of the transitory nature of the industry's workforce and worksites.

Dunnigan said his institute has been conducting studies to measure the amount of asbestos fibers that are released into the air during the application and tear-off of asbestos roofing products. The Institute's work is being sponsored by NRCA and Cascades, Inc., a Canadian company that still markets asbestos roofing products.

The Institute studied worker exposure to asbestos at two sites, according to Dunnigan. One site was a new roofing installation at the Cascades plant in Canada. The other site was an asbestos roof tear-off performed by NRCA Vice President Zachary Ellis' company in New Orleans.

In both the application and tear-off operations the amount of airborne asbestos found was well below the strictest proposed OSHA limits, Dunnigan said.

Contractor William Fort Jr. of Fort Roofing & Sheet Metal Works, Sumter, S.C., also a member of the session panel, spoke to workshop attendees about the methods his company uses to reduce asbestos exposure during an asbestos roof tear-off. Fort suggested:

- roping off a larger than usual area around the worksite to keep the building's occupants as far away from the asbestos products as possible;
- using an enclosed chute to drop asbestos-containing trash to the ground;
- wetting the old roof before cutting into it to reduce the amount of dust the tear-off work will produce;
- wearing some type of respirator while cutting into the old roof;
- transporting and disposing the asbestos-containing trash in covered containers;
- keeping workers downwind of the tear-off operation; and
- checking local laws to discover regulations concerning asbestos disposal.

UL changes workshop name and asks contractors, "Why us?"

Of course Underwriters Laboratories (UL) is a friend, UL's Tom Castino told workshop attendees as he requested that the session's theme be thought of as "Why UL?" instead of "UL: friend or foe?"

Through a lecture and slide show, Castino and colleague Robert Donahue explained what UL's product safety certification program means to the roofing industry. Castino told attendees that "unless we take notice of what those basic elements [of product safety] are, we may find that the level of safety in this country and internationally may drop off."

UL's certification, Castino explained, is based on the premise that "safety relates directly to people and property, and the reduction of reasonably foreseeable hazards and risks to an acceptable level."

UL's product investigations, inspections and labeling "are based on a comprehensive, multi-faceted certification program inseparably coupled with the safety objective," he said.

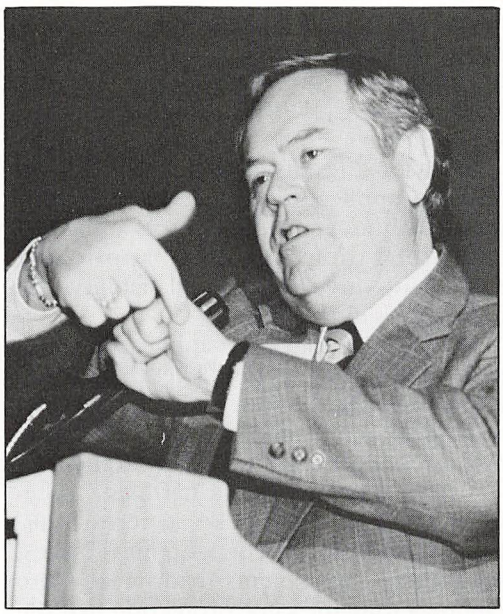
According to Castino, UL certification also means:

- application of computer automation and advanced analytical sciences;
- coordinated planning;
- expanded personnel training;
- assistance for continuing staff education; and
- use of state-of-the-art equipment and facilities.

UL takes measures to promote objectivity and preclude conflict of interest, Castino said. And, to further protect the integrity of the program, he explained, UL's investigation application states that the lab does not guarantee that a submitted product will be UL-listed, classified or recognized. Product listings are contingent on compliance with all specifications and requirements; manufacturers are required to establish and maintain a program of inspection and testing, according to Castino.

If UL standards change, then already-certified products must also change if they are to maintain the UL rating, Castino said.

UL takes measures to promote objectivity and preclude conflict of interest.



Food for thought. Member breakfast speaker James Boren (left) had listeners rocking with mirth as he shared bureaucratisms. And, recognition luncheon speaker Tom Sullivan (below) shared his accomplishments and philosophies, and entertained with song and piano accompaniment.

Contractors tackle suppliers and other problems at rap sessions

Roofing contractors must stick together as a group if changes are going to be made, Mike Beldon, NRCA vice president, told manufacturers and contractors during the Convention rap session "Legal relations and claims between roofing contractors and manufacturers."

A panel of manufacturer and contractor representatives, including NRCA's legal counsel, Stephen Phillips of Hendrick, Spanos & Phillips; Gerry Hoffschmidt of the E.W. Olson Co., Inc.; Donald Walts Jr. of The Koppers Co., Inc.; Dennis Jarvella of Owens-Corning Fiberglas Corp.; David M. Bailie of Firestone Building Products; Ric Kethcart of the Manville Corp.; Jim Foley of George H. Duross, Inc.; and Hugh Kenny of Carlisle SynTec Systems, helped attendees gain a better understanding of the problems that can occur between manufacturers and contractors. James McBrady Jr. of James A. McBrady, Inc., moderated the session.

Most of the discussion centered on licensed applicator agreements and warranties. Although manufacturers at the session felt their licensed applicator agreements involved mutual liability, the contractors didn't agree.

"I've read most of the applicator agreements in the country, and I get the distinct impression that I'm not reading a partnership agreement," Jim Foley said. His statement was applauded by session attendees.

"If I'm going to sign a harmless agreement, at least let's make it reciprocal," Foley continued. "For goodness sakes, read those agreements and make sure you're getting the same protection that the agreement is asking you to provide the manufacturer."

Beldon urged contractors to stick together to get the agreements they want from the manufacturers. "Stephen Phillips convinced me a few years ago that we contractors should stop signing those agreements [applicator agreements] and read what was in them. And now, everytime I go to negotiate with the manufacturer, they say that everyone else is signing it. We, as roofing contractors, are digging our own graves."

According to Beldon, Firestone's agreement is an exception to the collection of non-reciprocal documents in use. Firestone made an agreement several years ago, Beldon explained, that was produced through negotiations with Phillips and another roofing contractor.

According to David Bailie, Firestone's agreement says, "If you get in trouble because of something we do negligently, then we will indemnify you. If we get in trouble because of something you do negligently, then you must indemnify us." By working together, Firestone believes that contractors and manufacturers should not have to go to court to solve their problems.

Session manufacturers and contractors both agreed that contractors should be responsible for workmanship and manufacturers for the state of materials.

Contractors in the audience were warned against dangerous, one-sided wording that might appear in manufacturers' agreements. They were told to avoid agreements that say the contractor must guarantee the material for the duration of the manufacturer's guarantee or agreements that allow the manufacturer to change prices without notice or at the time of delivery. An agreement in which the manufacturer takes no responsibility for its materials' performance or won't warranty the materials' fitness should also be left unsigned, session panelists said.

Contractors were urged to not sign agreements they didn't like even if the manufacturers say to them regarding an agreement clause, "Don't worry about it. That wasn't written for you. We would never enforce that against you."

Manufacturers at the session said their most serious problem with contractors was a lack of communication. The manufacturers complained that contractors have difficulty completing and submitting preinstallation documents before beginning their projects. A proper guarantee can't be given if the paperwork is submitted after the job is complete, Koppers' Don Walts reminded contractors. "Contractors should understand the necessity of the manufacturer receiving construction specifications, details and possible deviations before the job is started," Walts added.

"We don't like deviations, but we recognize that there will have to be some. We want to be aware of them, however, before the job is started and before we sign the contract, particularly if there's a question of the warranty on the job. If it's not our standard warranty, we need to know up front. And, you need to know if we're going to grant the deviation necessary," a manufacturer explained.

Contractors, responding to the manufacturers' paperwork concerns, asked that the manufacturers try to develop forms that are easier to complete. Providing more room to answer questions would be one way to do this, according to contractors.

At the end of the session panelists were asked what they see as the cause of the most serious roof problems. Four panelists answered bad workmanship, two said inconsistencies between the architects' and manufacturers' specs and one said a lack of communication between manufacturers, architects, consultants and contractors.

The family that communicates stays in business, says Blue

The ability to communicate is important for any business, but according to Gaylord Blue of Blue's Roofing Co., San Jose, Calif., it is especially important in a family business. "Communication is not just talking to each other, but being able to understand what the talker is really saying, what he really means, and what his philosophy and thinking behind that statement are," Blue explained during a Convention rap session about family businesses.

During this session, titled "A family affair," members of the contractor audience exchanged tips and ideas about how to run a peaceful and productive business. Panel members were Patricia and Gaylord Blue (daughter and father) and Marie and John Haug (wife and husband) of Roof-Top Engineers, Phoenix.

Gaylord Blue, Marie Haug, Patricia Blue and John Haug (from left) talk with session attendees about their family affairs.

Presidential pitch. Tramex Electronics President Michael Messmore (third from left), extols the virtues of Tramex's electronic moisture detectors. Tramex was one of 300 exhibitors at the Convention trade show.

Hiring with care helps prevent unnecessary and sometimes messy firing.

"The other very important part of communicating is being able to listen," Blue continued. "There are a lot of people that carry on conversation, but they really haven't listened to what the other side has said."

Blue emphasized to attendees that it is very important for senior family members to listen to junior members. Not listening to the younger members' ideas is a great disservice to the person and to the company, he explained. "The junior people do need an opportunity to express themselves, to share what they can do, and if needed, given enough rope to hang themselves," Blue stressed. It is important to let them make mistakes while there are senior members to correct or compliment them, he added.

A number of attendees seemed concerned about the best way to "leave" a business to inheriting family members. Blue suggested that as early as the beginning stages of a business a buy-sell agreement be arranged.

Other topics covered during the session were requirements for joining the business, use of outside consultants and non-family board members, female family member roles and potentials, and management succession. Blue stressed that the time to determine succession should not be on the way home from daddy's funeral.

Bill Hamlin Jr. motivates rap session attendees to inspire employees.

Employer responsible for productive work environment

McDonald's Ray Kroc once said that if you can create an environment where your people can learn and grow, where they'll stay and advance in the company, and where they can earn dollars, you won't need to worry about uninspired people, William Hamlin Jr. of The Hamlin Cos., Garner, N.C., told roofing contractors at the Convention rap session "Personnel: hiring, inspiring or firing."

To keep employees motivated, Hamlin suggested a job description for each position as well as a salary range so that employees can see themselves advancing both in their tasks and financially. And, employees should be rewarded for work done well, he said. Hamlin also suggested that managers get together for occassional forums to discuss projects, behavior and policies. Managers and crews should also be responsible for setting goals and objectives, he added.

The other panelists, Joe Adler of J.L. Adler Roofing, Inc., Joliet, Ill., and Donald McNamara, NRCA senior vice president-elect, discussed hiring and firing.

Adler suggested that job interviews take place in a comfortable environment, preferably not in the office. The candidate should do most of the talking in the interview, he stressed. Employers should try to get candidates to talk about their home, how they spend their free time, and how their spouse deals with the business' sporadic work hours, Adler told attendees. "A man is no better than his or her family life," Adler philosophized.

Hiring with care also helps prevent unnecessary and sometimes messy firing, McNamara said. Termination at will is a privilege of the past. Courts are now ruling in favor of the terminated employee, he warned.

Successful maintenance programs prevent premature roof failures

A preventive maintenance program attempts to prevent premature roof system failures rather than simply fix leaks as they occur, former NRCA President John Bradford of Bradford Roofing & Insulation Co., Billings, Mont., told contractors at the Convention rap session "Maintenance agreements."

During the session Bradford and contractors Kurt Carlson of Roofing Systems, Inc., Loves Park, Ill., and Joedy Becker of Modern Roof & Insulation Co., Pocatello, Idaho, described their companies' maintenance programs and fielded questions from the audience.

In more cases than anyone would like to admit, building owners are only getting about half the life they have a right to expect from their roofs, Bradford told attendees. To remedy this, Bradford's company has developed a maintenance program that includes regularly scheduled roof surveys. Problems discovered during each survey are entered into a computer program developed by Bradford's company, and a computer printout that lists the repairs necessary and their cost is prepared for the building owner.

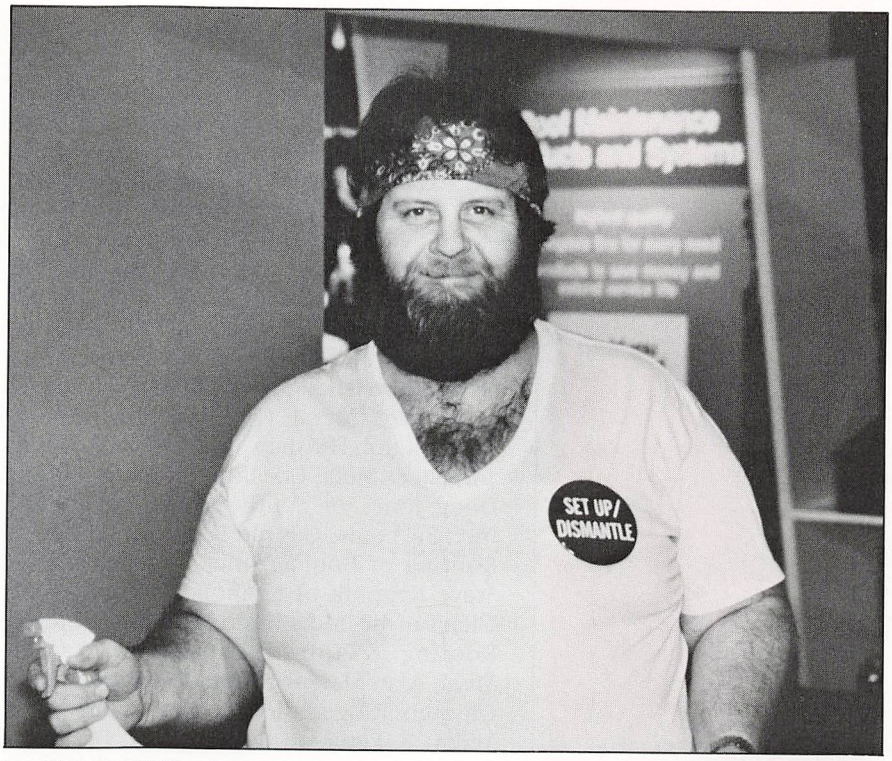
Both Bradford and Carlson said they bill repairs on a hourly basis. Building owners who sign maintenance agreements with the contractors are guaranteed a certain hourly rate for work performed under the agreement.

Becker stressed the importance of developing a professional maintenance program. "A haphazard, part-time program will not only fail, but it will harm your overall image," he said.

To create a successful program a contractor must devote sufficiently qualified workers to it, according to Becker. Estimators must be able to accurately gauge the cost of maintaining a roof, and only the most skilled roofers should be allowed to perform repairs. Detailed records and reports are also necessary to let the owner know what work is covered by the program and what work is to be performed during each repair.

All three contractors agreed that it is a mistake to sell building owners the idea of a maintenance-free roof. "We've got to convince the public that they have to maintain their roof just like they maintain any other part of their building," Becker said.

Building owners are only getting half the life they have a right to expect from their roofs.



Exhibitionist. With cleaner in hand, a member of the trade show crew prepares to put the finishing touches on a booth.

McNamara to serve as senior vice president; Stephenson receives Piper Award

Don McNamara of F.J.A. Christiansen Roofing Corp., Milwaukee, Wis., has been elected NRCA senior vice president. His nomination was announced at the NRCA Convention Dinner Dance, Feb. 13, 1985. He will begin his one-year term June 1, 1985, and prepare for the NRCA presidency in 1986. He was first elected an NRCA officer in 1973.

McNamara has served on the NRCA Executive Committee and chaired the Management Conference Committee. He is a past president for both the Association of Greater Milwaukee Roofing Contractors, Inc., and the Midwest Roofing Contractors Association (MRCA).

McNamara is also a recipient of MRCA's highest service recognition award, the James Q. McCawley Award.

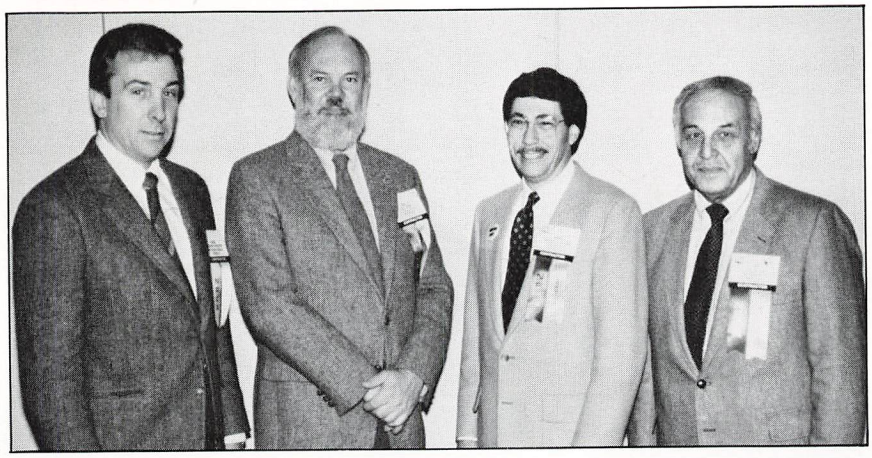
Mike Beldon of Beldon Roofing and Remodeling, San Antonio, Texas; Billy Fort of Fort Roofing and Sheet Metal Works, Sumter, S.C.; and Rick Rosenow of Hans Rosenow Roofing Co., Chicago, were elected to two-year vice president terms. Cy Tilsen of Tilsen Roofing Co. was elected vice president for one year.

The following directors are serving three-year terms: John Carruth Jr. of Carruth Roofing Co., Inc., Miami; Zachary Ellis of Z. Ellis Roofing Co., Kenner, La.; Harry Esbenshade Jr. of Tri-State Roofing and Sheet Metal Co., Inc., Davisville, W.Va.; Ralph Hinshaw of Hinshaw Roofing and Sheet Metal Co., Inc., Frankfort, Ind.; Doug Jones of South Side Roofing Co., Inc., St. Louis; Conrad Kawulok of B & M Roofing of Boulder, Inc., Boulder, Colo.; Steve Krupnik of Krupnik Brothers, Inc., Glen Burnie, Md.; Mitch Mauldin of United Roofing & Construction, Inc., Laurel, Miss.; Alan Meier of Ameier Roofing, Inc., Chicago Ridge, Ill.; Charles Peterson of Malott & Peterson Roofing Co., Berkeley, Calif.; John Probst of J.F. Probst & Co., Inc., Butler, Wis.; Mike Promen of Clark Roofing, Chicago; William E. Reynolds of ESMAC Industries, Enterprise, Ala.; Joe Rutkoski of Roofing Southeast, Tampa, Fla.; Robert F. Shea Jr. of John F. Shea Co., Inc., Mattapan, Mass.; and Alan Wolf of the Zero-Breese Co., Cincinnati.

Jim Gentry of Young Sales Corp., St. Louis and Randy Denchfield of the Denchfield Corp., Washington, D.C., were elected to two-year terms as directors.

Jerry J. Campbell of the John J. Campbell Co., Inc., Memphis, was elected to a one-year director's term.

Robert T. "Country" Harrison of the Greenville Roofing Co., Greenville, S.C., will assume NRCA's presidency June 1. Harrison currently serves as senior vice president.



NRCA's new vice presidents (from left): Rick Rosenow, Billy Fort, Mike Beldon and Cy Tilsen.

George Stephenson honored with 1985 Piper Award

"It is impossible for any of us to explain the pride, the emotion and the honor each of us have experienced when we received this special tribute," Johnny Zamrzla, 1984 Piper Award recipient and this year's presenter, said. Indeed, there wasn't a dry eye in the house when George Stephenson, Stephenson Roofing and Sheet Metal Co., Maryland Heights, Mo., accepted NRCA's J. A. Piper Award at the Feb. 13 Dinner Dance.

The event was the highlight of the Association's 1985 Convention in New Orleans. The Piper Award is NRCA's highest honor, given to a contractor who has demonstrated outstanding devotion to the industry and his community.

Stephenson has been an NRCA member since 1958. He served on many committees and was named to the Board of Directors in 1969. Following three years as an NRCA officer, he was elected president of the organization in 1976.

This year's Piper Award winner is a longtime member of the Masonic Fraternity. In 1984, he served as Potentate for his temple, leading 10,000 Shriners. He was chairman of the Annual Shriner Circus, which raises money to help disabled children.

Stephenson has also experienced physical disability. In July 1979, he fell from a roof; doctors said he would not walk again. In his presentation speech, Zamrzla mentioned Stephenson's "family and friends, religious belief and personal strength" as factors in his recovery.

"His courage in overcoming hardship should be an inspiration to all of us," Zamrzla added.

The Piper Award is presented annually. It is named for J. A. Piper, who led the NRCA through very difficult years during the Depression.

Coal tar overruns: tests help clear up controversy

The Koppers Co., Inc., and the National Roofing Contractors Association (NRCA) are conducting a two-phase joint program to determine the relationship between heating and application temperatures, application viscosity and the amount of interply moppings of hot-applied coal tar products used in the construction of built-up roofing membranes. The first phase, using hand-mopping application techniques, has been completed and the results are given in this interim report. The second phase will address mechanical application procedures, which probably account for the majority of the roofs applied.

Twenty-four test-roof sections, 3 feet wide by 16 to 20 feet long, were constructed. Three major variables were studied: temperature at point of application; materials (coal tar pitch, which for this report refers to ASTM D-450, Type I and coal tar bitumen, which refers to ASTM D-450, Type III); and application methods (broomed roofing was compared with not-broomed roofing). All other variables were held constant.

A total of 144 1-foot-square sample coupons were cut from the test roof panels. These coupons were weighed and the applied weight of the coal tar material was calculated. Other tests, including physical properties, viscosity, tensile strength and elongation, were conducted for control and comparison purposes.

The data show that application temperature ranges of 300F to 425F resulted in average interply mopping weights of 15.2 to 31.3 pounds per 100 square feet, depending on the material, temperature and whether the felt was broomed or not broomed.

The test results indicate that the viscosities of coal tar roofing products in the temperature range of 300F to 425F varied from about 10 to 100 centipoise (7.9 to 79.4 centistokes).

NRCA and Koppers present interim report

A report prepared jointly by representatives of The Koppers Co. and NRCA's Task Group—Bill Cullen, Bob First and Bob LaCosse.

Based upon the data presented, the viscosity range for coal tar products at the point of application to achieve appropriate interply quantities would be 15 to 35 centipoise (11.9 to 27.8 centistokes). This equates to an equiviscous temperature (EVT) for coal tar bitumen of 375F ±25F and for coal tar pitch of 360F ±25F.

Introduction

NRCA has received complaints of overruns during the application of coal tar products, that is, more material being required than was specified. Overruns as high as 45 percent above the specified amount have been reported. This led to claims that manufacturer-published coverage specifications appeared to be too low to be achievable at the recommended application temperatures. This point has been the subject of controversy in the industry.

In an effort to clear up this uncertainty, NRCA and Koppers have joined in carrying out a two-phased test program on coal tar bitumen and coal tar pitch to determine the relationship of temperature, viscosity and interply rates during the application of built-up roofing membranes, using both hand-mopping and mechanical laying techniques. The tests and their results and conclusions of the hand-mopping phase are presented in this interim report.

Prior test experience

The NRCA/Koppers test program was precipitated by a laboratory test program sponsored by NRCA at Chicago Testing Laboratory, Inc. The test results were published as "Contractors prompt coal tar tests; results show ASTM standards inadequate," by William C. Cullen, NRCA research associate, in *Roofing Spec*, February 1984. The NRCA program objectives were: 1) to provide leads to the cause of the apparent overruns and other alleged problems associated with the use of coal tar

Three variables studied under consistent test conditions

Three variables were examined in the NRCA/Koppers study—materials, temperature and application method. Samples were prepared and tested using identical equipment, procedures and personnel.

Variables

Materials—two materials were included in the program: coal tar roofing pitch, ASTM D-450 Type I and coal tar bitumen, ASTM D-450 Type III.

Before 1970, coaltar built-up roofing systems were installed in the United States using roofing pitch described in ASTM D-450, Type I.

Since 1970, an increasing number of installations have used coal tar bitumen, ASTM D-450, Type III, a modified formulation developed by Koppers for low-fume evolution and to improve environmental and working conditions during application.

Temperatures—tests were conducted at six point-of-application temperatures, two below Koppers' recommended range and one above the recommended range. These point-of-application test temperatures were: 300F, 325F, 350F, 375F, 400F and 425F.

Application methods—in the test, built-up roof specimens were constructed in two ways: 1) with the felt rolled in; 2) with the felt rolled and broomed in.

To cover several possible combinations of the variables (material, temperature and application methods) under study, 24 built-up roof specimens were prepared (2 bitumens x 2 application methods x 6 temperatures = 24).

Test equipment

Site—the tests were conducted in Building 37 at Verona, Pa., an auxiliary unit of Koppers Science & Technology Center, Monroeville, Pa., both in the vicinity of Pittsburgh. This test site is an enclosed area capable of controlling inside air temperature between 60F and 80F.

Kettle—a 125-gallon Garlock kettle was selected. It was large enough to supply adequate quantities of bitumen for each test, generate the typical heat history, and easy to maneuver or empty when changing from one type of bitumen to the other.

The primary objective was to determine the relationship between application temperature, viscosity and interply mopping weight.

products; 2) to measure the physical property differences between coal tar pitch and coal tar bitumen and how the differences relate to on-the-roof performance; and 3) to investigate the strengths and weaknesses of the current ASTM Standards Specification ASTM D-450 as they relate to performance under service conditions.

NRCA/Koppers study objectives

Cullen's article noted the need for additional field research to address the overrun complaints. The subsequent NRCA/Koppers study addressed the overrun problem. Therefore, the primary objective was to determine the relationship between application temperature, viscosity and interply mopping weight application rates of coal tar products.

Study parameters

Three fundamental variable factors affect the application rate of hot-applied interply roofing coal tar products:

- physical characteristics of the material;
- point-of-application temperature; and
- method of application.

The application temperature is dependent on several other factors that occur on the jobsite. Ambient temperature, wind velocity, nature of the substrate, atmospheric conditions, kettle temperature, speed of application and insulation of luggers and pipes are among the important factors that influence the application temperature. Method of application, experience and teamwork of the work crew, and competence of supervision are also important factors.

Test procedures

Specimen preparation—before the start of the tests, 24 four-square rolls of felt were prepared by removing the first 50 feet, then sequentially numbering the rolls one through 24 (one roll for each test). From the last 15 feet of each 50-foot section, 10- to 12-inch-by-12-inch samples were removed, weighed, labeled, packaged and retained for later examination. Felt weights used in calculating interply quantities were based on the actual weights of these samples.

Mop handle—the mop man used a 10-foot aluminum mop handle, which allowed him to spread the bitumen with mop strokes commensurate with his on-the-job experience.

Mop head—a 2 1/2-pound, single-ply cotton mop head was selected by the mop man. Each mop head was weighed before use to insure uniformity.

Mop cart—a round insulated mop cart was used to maintain the bitumen temperatures at the desired mopping temperature.

Brooms—brooms 36 inches wide were used for brooming in the felts.

Template for cutting coupons—a 12-inch-by-12-inch, flat, steel template with a handle was positioned flat on the membrane and the coupons were carefully cut with utility knives.

Digistrip temperature recorder (Kay Instruments)—this temperature recorder had a capacity to measure and record temperatures at up to 16 locations on an intermittent basis. The temperature and locations were recorded on tape, and could be fed into a computer programmed to analyze the recorded temperature at each location as a function of time.

Thermocouples—J-type thermocouples were used for their quick response to temperature change.

Scale—a Sartorious 30,000-gram balance with two-decimal accuracy was used to weigh the bitumen, felt and membrane samples.

Test surface

The deck was 22-gauge steel with a 2 1/2-inch-wide flute on wood framing. Flake board 1/2 inch thick was laid over the steel decking and nailed to the wood framing through the steel sheet. No. 15 coal tar saturated felt was rolled out and stapled at each end to serve as a separator sheet. Overall dimensions of each test strip were approximately 36 inches wide and 16 feet long.

Roofing personnel

The roofing crew consisted of a mop man, roll man and kettle operator. All were employees of Pennsylvania Roofing Systems, Inc., a member contractor of NRCA. All crew members were experienced in hand-mopping of felts for built-up roof systems and belonged to the United Union of Roofers, Waterproofers, and Allied Workers Association, Local No. 37 (AFL/CIO).

The test sequence provided a broomed and not-broomed membrane at each temperature. Application was started at the low temperature and progressed to the high temperature.

In preparation for each test, the kettle temperature was raised to approximately 25F above the designated point-of-application temperature. The bitumen was transferred to the insulated mop cart and allowed to cool to within 5F of the application temperature. While the bitumen was cooling, a thermocouple was placed on top of the separator sheet and the first layer of felt was rolled into place. When the bitumen in the mop cart reached the desired temperature, mopping began. For all even-numbered tests the felt was broomed in.

Additional thermocouples were placed between subsequent plies (see Figure 1), and the temperature was recorded at 10-second intervals by the recorders. The membrane consisted of one ply of No. 15 coal tar saturated felt stapled to the deck

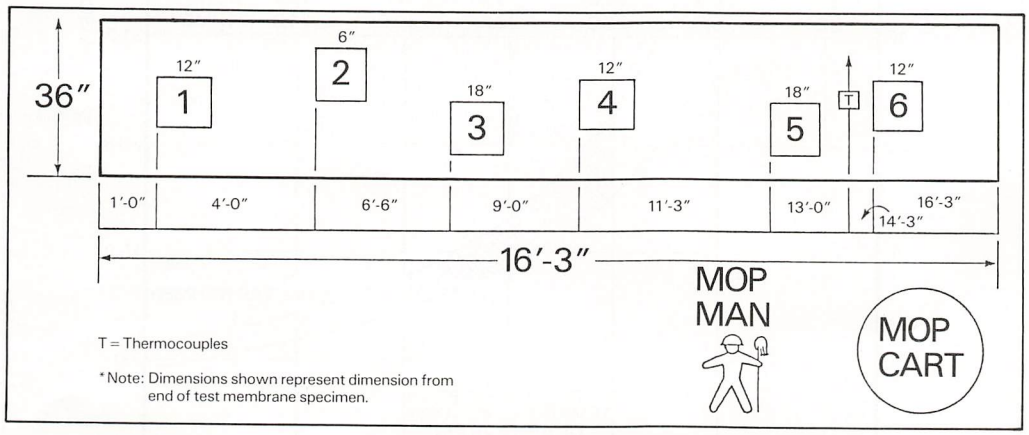


FIGURE 1:
Sample coupon locations

Measurement of the interply bitumen by the optical method was found to be difficult.

and three additional plies of No. 15 coal tar saturated felt mopped on with hot bitumen (either coal tar pitch or coal tar bitumen) and recorded. When the membrane was completed, 1-foot-square test coupons were cut from the membrane and labeled so their locations could be identified (Figure 1) and weighed. These coupons were packaged and retained for laboratory evaluation. The average interply quantity was calculated by subtracting the known felt weight from the total coupon weight.

Optical measurement of interply thickness—a machinists microscope was used in an attempt to make thickness measurements of the bitumen from the test coupons. A cross section of each membrane was cut to fit the stage of the microscope.

Thickness measured by the optical method did not agree with the theoretical thickness calculated from the quantity of interply bitumen as determined by the weight method. Measurement of the interply bitumen by the optical method was found to be difficult and could possibly be misleading because the interface between the felt and bitumen was not clearly defined due to the texture of the felt and the penetration of the bitumen into the felt. Membranes produced at the higher temperature have a measured (optical) thickness lower than the thickness calculated from the interply quantities by weight. The membranes produced at lower temperatures measured closer to the theoretical. It was concluded that the actual amount of coal tar interply quantities is better measured by determining the weight of the sample coupon and subtracting the weight of the felts from the coupon weight and dividing by the number of layers of bitumen.

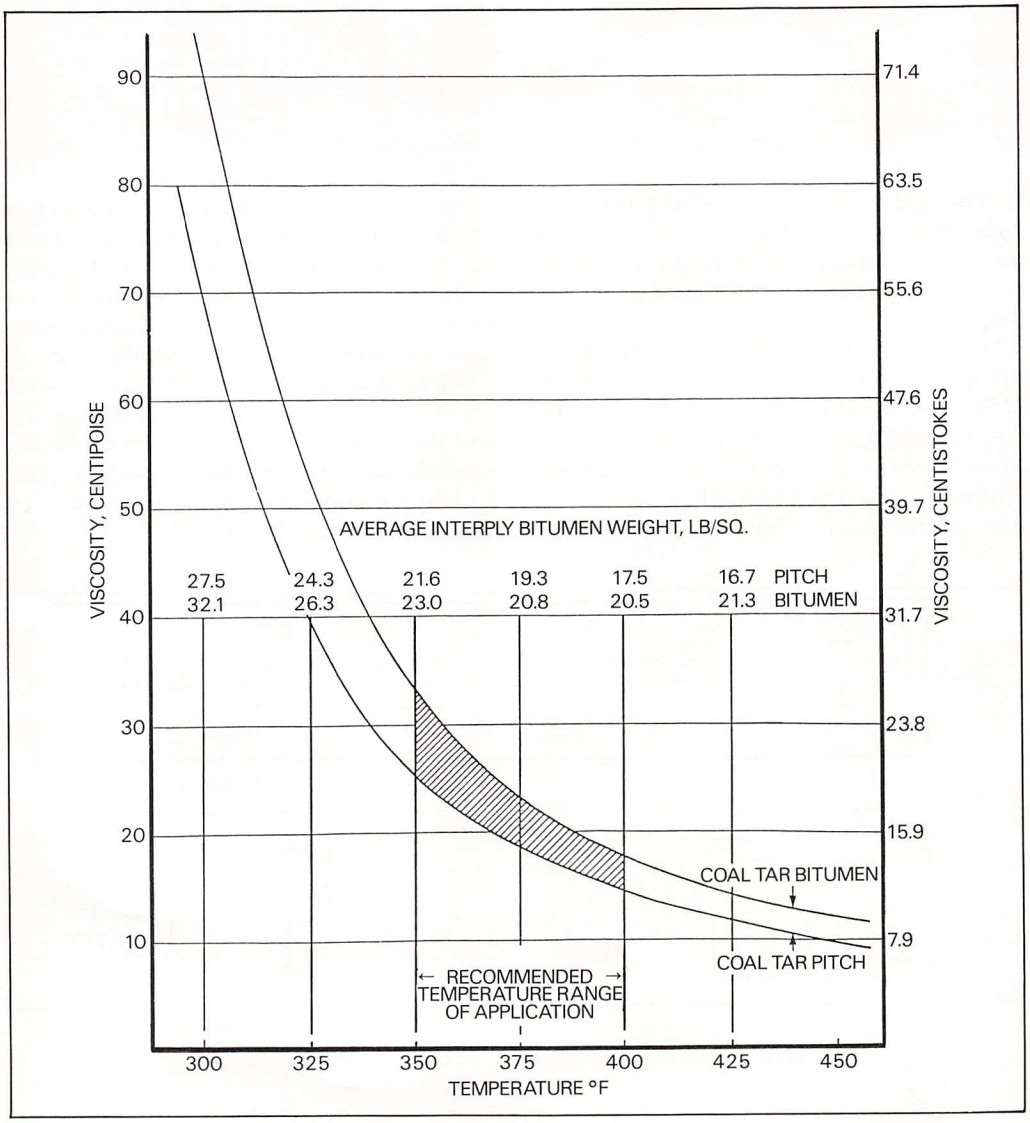


FIGURE 2: Viscosity at recommended application temperatures

Test results

Physical properties—Table 1 shows that both Type I and Type III materials essentially met the requirements of ASTM D-450-78 except that:

- Type I material exceeded the ASTM maximum for total percentage of bitumen soluble in carbon disulfide by .5 percent; and
- Type I was not tested for specific gravity of distillate due to insufficient residue sample derived from the distillation.

Viscosity determinations—results of viscosity determinations over the range of temperatures used in the test program for both coal tar pitch and coal tar bitumen are plotted in Figure 2. It is noted that both materials demonstrate similar viscosity curves over the temperature range of 300F to 450F.

The viscosities of the respective coal tar products at the Koppers' recommended application temperatures between 350F and 400F are shown in the shaded areas of Figure 2, that is 18 to 34 centipoise (14.3 to 27 centistokes) for bitumen and 13 to 25 centipoise (10.3 to 19.8 centistokes) for pitch.

The values for the average interply mopping weights at the six mopping temperatures, which are superimposed in Figure 2, show that the Koppers' recommended application temperature, indicated by the shaded area, resulted in interply mopping weights of about 18 to 22 pounds per square for pitch and 21 to 23 pounds per square for bitumen.

The rates at the lower temperatures of 300F and 325F resulted in interply mopping weights of 25 and 30 pounds per square for coal tar pitch and bitumen, respectively.

An analysis of the data with respect to the viscosity/temperature relationship of coal tar bitumen shows a viscosity of 25 ±10 centipoise (20 ±8 centistokes) is required to attain interply mopping weights of somewhere between 18 and 23 pounds per square. Assuming this is a valid conclusion, the EVT range for coal tar bitumen used in this study would be from 350F to 400F.

For coal tar pitches, the viscosity is somewhat lower at a given temperature, which is reflected in the lower interply quantities. Therefore, based upon a viscosity of 25 ±10 centipoise (20 ±8 centistokes) the EVT for coal tar pitch would range between 335F and 385F.

Discussions with the mop man during the sample preparation phase revealed that it was a difficult and tiring task to mop these coal tar products at the 300F and 325F temperatures where the materials have viscosities somewhere above the 50 centipoise (39.7 centistokes) range.

Discussion with the mop man revealed that it was difficult to mop these coal tar products at the 300F and 325F temperatures.

REQUIREMENTS/ASTM D450-78			TEST DATA		ASTM TEST
	Type I	Type III	Type I	Type III	METHOD
Water, max., %	0	0	0	0	D-95
Specific gravity, 25/25C (77F)	1.22–1.34	1.22–1.34	1.26	1.26	D-70
Softening point (R&B), °C	52–60	56–64	58.5	62.0	D-36
Softening point (R&B), °F	126–140	133–147	134	146	D-36
Flash point (COC), min., °F	248	248	420	415	D-92
Total bitumen soluble in carbon disulfide, %	72-85	72–85	85.57	82.90	D-4
Ash, max., %	0.5	0.5	0.14	.06	D-2415
Total distillate:					
0–300C, max., % (32–572F, max., %)	10	0	0.99	0	
0–315C, max., % (32–599F, max., %)	—	0	—	0	
0–360C, max., % (32–680F, max., %)	—	5	—	2.0	
Specific gravity of distillate from 0–300C, min., (32–572F min.) 38/15.5C	1.03	N.A.	*	N.A.	
Softening point (R&B) of residue from distillation to 300C max.,	80°C	—	61.9°C	—	
to 572F max.,	176°F	—	142°F		

N.A.—Not applicable
*Insufficient sample for test from distillation

TABLE 1:
Physical properties of bitumen

Larger quantities of both bitumen and pitch were applied as the temperature decreased.

Application rates of interply mopping material—Tables 3a and 3b give the interply weight of bitumen and pitch for each coupon prepared at the respective test temperature. The weights are expressed in pounds per 100 square feet per ply. Figure 3 illustrates that a definite correlation exists between the interply mopping weight and the application temperature. As expected, larger quantities of both bitumen and pitch were applied as the temperature decreased. Further, slightly larger quantities of bitumen were applied at identical temperatures to those of pitch. Figure 3 also shows no apparent correlation between interply mopping weight and whether or not the sample was broomed during the application procedure.

Table 4 summarizes the average interply mopping weights of bitumen and pitch at the test application temperatures.

A rather interesting finding from the data in Tables 3a and 3b was the nonuniformity of weights among the individual test coupons taken at preselected locations from the test samples in spite of the close control of temperature and other variables, which are often not controllable on an actual jobsite. Since the tests were performed under carefully controlled conditions, with accurate measurement methods, the weight differences between

TABLE 3:
NCRA/KOPPERS coal tar bitumen/coal tar organic felt four plies—three interply moppings

TEST NO.	1	2	3	4	5	6	7	8	9	10	11	12
Temp. at mop (°F)	300	300	325	325	350	350	375	375	400	400	425	425
Broomed	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Interply, lb/100 ft.^{2}												
Cut #1	27.9	40.1	19.9	22.5	15.3	20.1	20.4	20.8	20.4	22.6	33.2	12.6
Cut #2	27.2	31.3	28.2	31.3	26.6	23.0	22.6	22.6	19.9	21.6	17.6	17.4
Cut #3	39.8	44.4	27.3	39.6	33.0	32.0	22.3	22.1	26.1	26.0	26.0	27.5
Cut #4	32.2	31.0	27.2	33.1	25.9	19.8	20.6	21.8	16.0	17.1	18.5	22.1
Cut #5	21.5	27.4	25.4	22.8	20.0	22.5	16.1	14.8	13.1	16.9	18.1	20.6
Cut #6	–	–	20.4	17.6	17.5	21.1	23.4	21.8	22.4	23.4	21.1	21.2
Average	29.7	34.5	24.7	27.8	23.0	23.1	20.9	20.6	19.7	21.3	22.4	20.2

TABLE 3:
(continued)

TEST NO.	13	14	15	16	17	18	19	20	21	22	23	24
Temp. at mop (°F)	300	300	325	325	350	350	375	375	400	400	425	425
Broomed	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Interply, lb/100 ft.^{2}												
Cut #1	18.3	30.2	28.3	19.1	15.1	14.3	15.1	16.1	12.7	16.0	16.9	16.4
Cut #2	24.6	33.6	25.8	23.0	21.8	21.4	19.7	20.0	19.1	16.8	17.6	14.6
Cut #3	28.7	38.9	32.7	35.0	31.0	21.0	24.0	23.4	21.6	22.8	26.4	20.2
Cut #4	26.5	30.6	22.1	19.3	23.0	21.9	16.4	19.0	13.9	16.6	11.4	14.1
Cut #5	24.9	33.6	23.6	22.4	25.6	21.1	20.1	22.2	18.4	13.4	18.3	15.0
Cut #6	18.7	21.0	20.8	18.7	20.7	21.3	17.6	17.8	19.54	19.3	18.8	10.8
Average	23.6	31.3	25.6	23.0	22.9	20.2	18.8	19.8	17.5	17.5	18.2	15.2

TABLE 4:
Consolidated interply applied weight averages

	BROOMED		NOT BROOMED	
Temp. °F	Bitumen Type III	Pitch Type I	Bitumen Type III	Pitch Type I
300	34.5	31.3	29.7	23.6
325	27.8	23.0	24.7	25.6
350	23.1	20.2	23.0	22.9
375	20.6	19.8	20.9	18.8
400	21.3	17.5	19.7	17.5
425	20.2	15.2	22.4	18.2

samples from some sections indicate the difficulty of applying roofing material with any degree of uniformity, particularly under jobsite conditions where the other factors, which were held constant in the test, will also affect the application rate.

Tensile properties of membrane specimens—as an additional benefit of the research program, tests on tensile properties were measured on selected specimens taken from the samples prepared at the test temperatures. The specimens were selected on the basis of those whose weights were closest to the group average interply weight. The specimens were tested in accordance with ASTM method D-2523 in the across-machine direction at a temperature of 0F. Table 2 reports the test data as well as other pertinent information on the test specimens.

The test data indicate that there was little scatter in tensile strength properties regardless of the application temperature, the interply mopping weights, or whether or not the samples were broomed during application. All values essentially met the suggested 200-pound-per-inch requirement described in National Bureau of Standards Building Science Series No. 55, "Preliminary Performance Criteria for Bituminous Built-up Membrane Roofing."

The tensile strength of the coal tar bitumen specimens averaged approximately 212 pounds per inch, which was slightly higher than the value of 205 pounds per inch for coal tar pitch specimens. On the other hand, the average strain for the pitch specimens was 2 percent as opposed to 1.6 percent for the bitumen specimens. All specimens exceeded elongation values generally accepted by the roofing industry as adequate for bituminous built-up roof membranes.

Summary and conclusions

- The application of coal tar pitches and bitumens in a viscosity range of 15 to 25 centipoise (11.9 to 27.8 centistokes) resulted in interply mopping rates of 18 to 23 pounds per square, which approximates the minimum average mopping weights of 20 pounds per square as currently recommended by Koppers.
- The EVT for coal tar products may be considered as that temperature at which the viscosity of the material is 25 centipoise (19.8 centistokes). For the products used in this study, the EVT for coal tar bitumen would be 375F ±25F, and the EVT for coal tar pitch, 360F ±25F.
- Hand-mopping of hot-applied coal tar products at viscosities exceeding 50 centipoise (39.7 centistokes) is difficult and tiring for the mop man.
- Point-of-application temperatures in the range of 335F to 400F appear to be an acceptable range for hand-mopping operations involving coal tar products, depending on the specific material used.

The weight differences indicate the difficulty of applying roof material with any degree of uniformity.

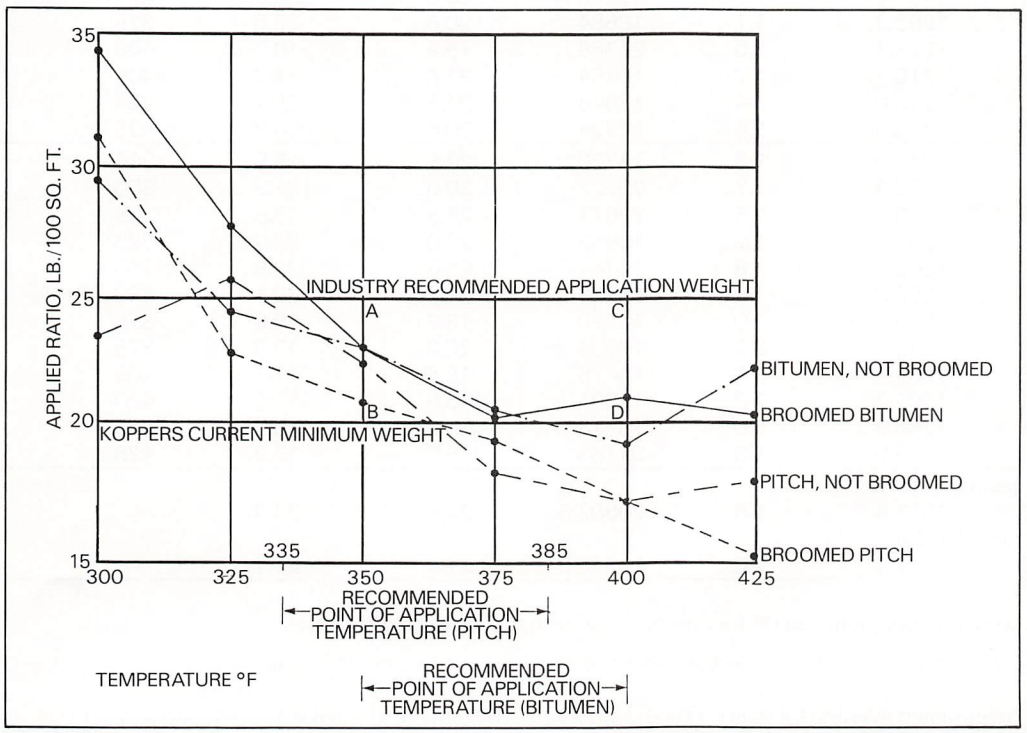


FIGURE 3

NRCA and Koppers plan to conduct additional tests involving mechanical equipment.

- The lower the point-of-application temperature, the greater the quantity of interply mopping material.
- The variances in interply mopping weights among specimens taken from same run were considerably higher than anticipated.
- When the "roll-in" felt application technique is used, there are no apparent differences in interply mopping weights between those broomed and those not broomed at constant application temperatures.
- Essentially all specimens prepared at the six mopping temperatures met the 200-pound-per-inch breaking load requirement described in NBS BSS 55.
- The average ultimate breaking load for the 12 bitumen specimens was approximately 212 pounds per inch, while the 12 pitch specimens averaged about 205
- The average ultimate elongation was 2 percent for the pitch specimens and 1.6 percent for the bitumen specimens. pounds per inch.
- The amount of interply mopping material had no significant impact on the value of the breaking load.
- Optical measurement performed in the laboratory of interply material thickness is not practical.

Additional tests and data to come

The data presented here apply to hand-mopping techniques only. Coal tar membranes applied by mechanical means may well produce different results. Therefore, NRCA and Koppers plan to conduct additional tests involving mechanical equipment used in the application process.

In addition to the application temperature/viscosity data, this study produced more information such as bitumen cooling rates, etc. The data are being analyzed and evaluated in order to provide a better understanding of built-up roofing application characteristics.

TABLE 2: BUR membrane tensiles @ 0°F (1)

	Membrane ID(2)	Peak load lbs.	Tens. prop. @ peak load stress lbs./in.^{2}	Tens. prop. @ peak load strain, %	Modulus @ break, lbs./in.^{2}	Interply mopping, lbs/sq. @ test cut	Interply mopping, lbs/sq. test avg.	Membrane application test temp. °F
Coal Tar Bitumen ASTM D-450, Type III	1-NB-1	217.2	1357.7	6.7(3)	19619	27.9	29.7	300
	2-B-2	202.0	1262.4	1.7	22877	31.3	34.5	300
	3-BN-5	204.0	1274.9	1.5	20594	25.4	24.7	325
	4-B-5	211.1	1319.4	1.7	25174	22.8	27.8	325
	5-NB-2	218.4	1364.7	1.8	23049	26.6	23.0	350
	6-B-2	212.1	1325.7	1.7	21664	23.0	23.1	350
	7-NB-4	225.1	1407.0	1.6	25255	20.6	20.9	375
	8-B-1	207.7	1298.3	1.7	18684	20.8	20.6	375
	9-NB-2	203.5	1271.7	1.6	21388	19.9	19.7	400
	10-B-2	210.6	1316.3	1.7	19754	21.6	21.3	400
	11-NB-6	209.6	1310.0	1.4	18649	21.1	22.4	425
	12-B-5	216.1	1350.8	1.6	14124	20.6	20.2	425
Coal Tar Pitch ASTM D-450, Type I	13-NB-2	199.6	1247.5	1.8	18720	24.6	23.6	300
	14-B-4	203.0	1268.8	1.7	20722	30.6	31.3	300
	15-NB-2	212.8	1329.7	1.6	23617	25.8	25.6	325
	16-B-2	205.3	1282.8	1.7	19843	23.0	23.0	325
	17-NB-4	208.4	1302.3	1.8	15744	23.0	22.9	350
	18-B-3	205.3	1282.8	1.9	13728	21.0	20.1	350
	19-NB-2	205.4	1283.6	2.0	14229	19.7	18.8	375
	20-B-2	200.0	1250.0	2.1	17034	20.0	19.8	375
	21-NB-5	205.8	1285.9	1.7	14478	18.4	17.5	400
	22-B-2	186.1	1163.3	1.9	17591	16.8	17.5	400
	23-NB-5	205.8	1285.9	5.0(3)	18213	18.3	18.2	425
	24-B-5	216.4	1352.3	1.8	21163	15.0	15.2	425
	Avg. for Type III CT bitumen, test no's. 1–12	211.5	1321.6	1.6	20902.6	23.5	24.0	—
	Avg. for Type I CT pitch, test no's. 13–24	204.5	1277.9	2.0	17923.5	21.4	21.1	—

Notes:

(1) BUR membrane samples were preconditioned at 0F for two hours prior to testing in cold chamber.

(2) Sequence in Membrane ID represents test number—brooming/not brooming—sample no. ("B" = broomed); ("NB" = not broomed).

(3) These values not used in determining average for coal tar type (sample insufficiently restrained in the test equipment).

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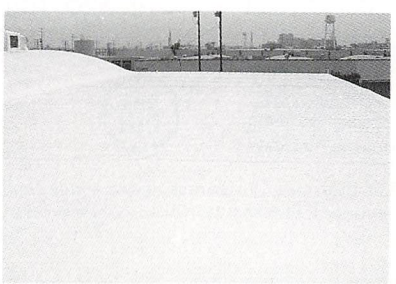

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BUR quality control guidelines due soon

NRCA's quality control guidelines for built-up roofing are in their final stages of review, according to Fred Good, NRCA executive vice president. The guidelines will be published in a booklet titled "Quality Control in the Application of Built-Up Roofing." The work is presently being reviewed by members of the Asphalt Roofing Manufacturers Association (ARMA).

Calling built-up roofing "an art more than a science," the version of the document now being circulated for review recommends competent inspection of the roofing application rather than "quasi-scientific measurement techniques" to insure good roof performance.

Good said that when the document was first being developed it was believed that guidelines could be based on the measurement of test cuts. The guidelines' authors quickly realized, however, that there was no reliable data available that equated test cut measurements with roof quality.

Instead of test cuts, NRCA's guidelines recommend inspecting the roofing procedure. "The most effective means to evaluate quality installation is by thorough, continuous visual examination at the time of application, conducted by a person knowledgeable in roofing technology and good workmanship practices," the introduction to the present version of the document says.

By following the steps and recommendations in NRCA's quality control booklet, a person examining a roof should be able to conduct a thorough visual roof inspection.

Specification variances listed

To help judge workmanship, the booklet lists acceptable variances from specifications for several roof components. "The ranges presented are guidelines to assist in the visual examination. A deviation from variances is not an indication that the roof will not perform its intended purpose or that a roof problem will ensue," the booklet says.

This section of the book gives the proper procedure for examining each roof component, the anticipated range of variances that may be encountered and the suggested corrective actions that should be taken should a wider-than-anticipated deviation from the specifications be found.

Good is optimistic that all groups, including NRCA affiliates, will endorse the Association's BUR guidelines.

As an example, the book says that various manufacturing and environmental factors may make it impossible to firmly butt one insulation board against another. Gaps as wide as 1/4 inch may be expected and are acceptable. The booklet suggests that if out-of-square boards create gaps wider than 1/4 inch, the insulation manufacturer should be apprised of the problem.

Similar guidelines are given for fastener spacing, interply bitumen rates, plies and laps in membrane construction, and surfacing bitumen and aggregate.

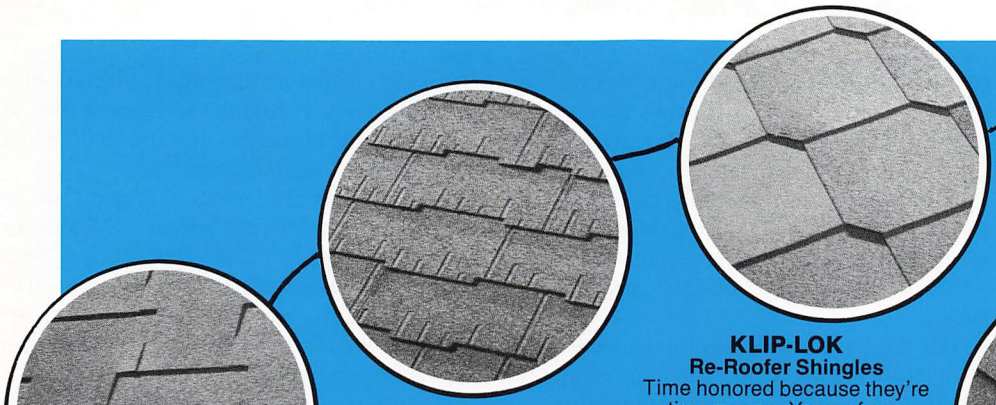
Test cut guidelines offered

A third section of the guide discusses the proper way to evaluate tests cuts should they be requested by building owners or consultants. Even though this section is included in the booklet, the authors emphasize that a visual examination is the preferred way to monitor roof application.

The booklet recommends that test cuts be prepared in accordance with the American Society of Testing and Materials standard D-3617-83, "Sampling and Analysis of New Built-Up Roof Membranes." The authors warn against using ASTM's standard D-2829 to evaluate the test cuts, however, saying that the standard is not intended for new BUR and its precision and accuracy has not been established in independent testing. Instead of the ASTM standard, the booklet lists NRCA's own guidelines for evaluating test cuts.

Work earns industry endorsement

Good is optimistic that all groups, including NRCA affiliates, will endorse the Association's BUR guidelines. NRCA's Board of Directors approved the general thrust of the document at its meeting at this year's NRCA Convention, Good said. The Board gave its approval with the understanding that modifications would be allowed before the booklet went to press. ARMA has also indicated that it is in favor of the document in concept, and Good believes that NRCA should be able to accommodate any changes ARMA might make in the guidelines. According to Good, this widespread approval should make the work a very powerful industry document.



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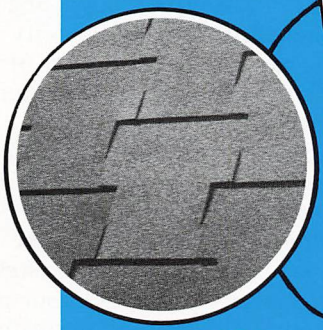

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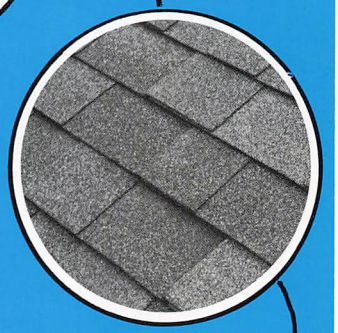

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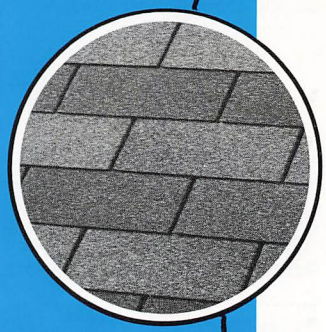

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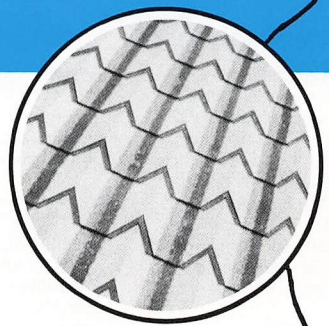

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US Navy puts glass asphalt system on hangar

Dirigible Hangar One is a dominant feature of California's Santa Clara Valley landscape. Located at the U.S. Navy's Moffet Field, Hangar One is constructed from a network of steel girders and sheathed with galvanized steel. Its concrete floor covers eight acres and could easily accommodate six football fields.

The hangar is 1,138 feet long and 308 feet wide. Its curving walls form an elongated dome 198 feet high. Hangar One's interior is so large that fog sometimes forms near the ceiling. Electric motors open and close the two massive doors.

During the 1930s and 1940s, the hangar housed one of the largest airships in the world, the USS Macon. The Macon barely fit inside the structure. The dirigible's horizontal stabilizers cleared the sides by only 6 to 12 feet. Rail tracks that ran the length of the hangar and extended across the apron and the field to the mooring mast were used to move the airship in and out.

The hangar's usefulness ended in 1947, however. During that year, the last blimp was deflated inside Hanger One and lighter-than-air (LTA) operations at Moffett Field passed into history.

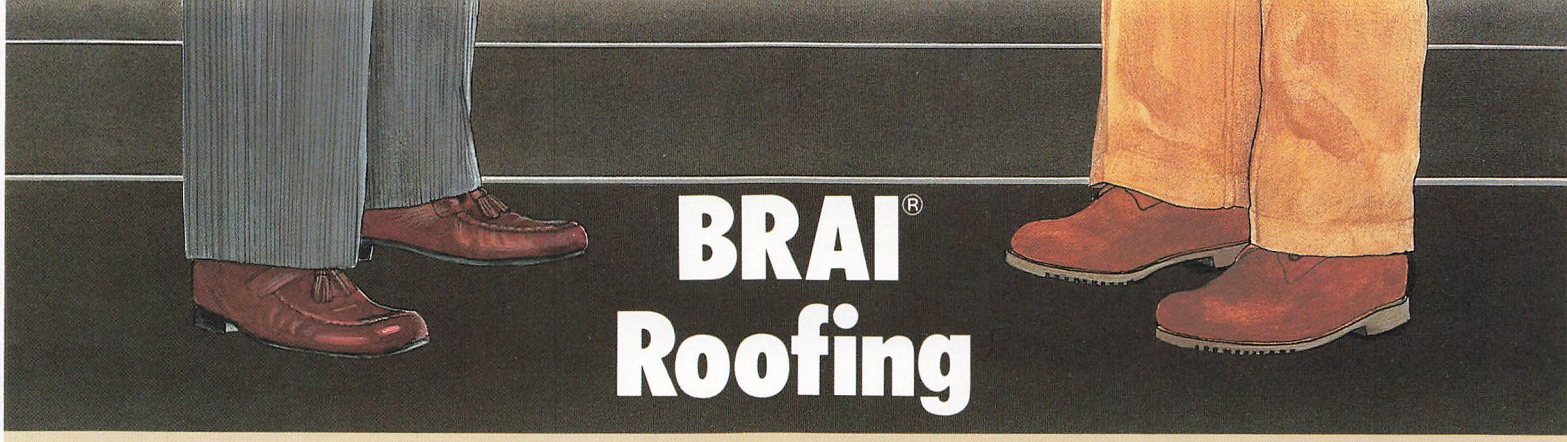
On January 14, 1966, Hangar One was designated a Naval Historical Monument. In December 1979, the Navy began restoring the facility. The first priority in renovating the hangar was taking care of its redwood roof, which was badly deteriorated by the area's high humidity.

Construction Consultants, Inc., (CCI) of San Francisco, the firm that surveyed the reroofing job, chose Celotex's Series 80-G.A.-1-W built-up roof for the project.

The Series 80-G.A. glass asphalt system, with aggregate surface, features a four-ply membrane with Celo-Glass VI inorganic fiber glass ply sheets. The felts meet ASTM D-2178-81, Type IV requirements.

One of the reasons the Celotex product was chosen was that CCI was looking for a system that could be mechanically fastened to the hanger's surface, Howard Tegland, CCI consultant, said.

continued on page 50



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A workman applies tapered edge strips to the edge of Hangar One's roof.

The hangar's original roof consisted of two layers of 1-inch-by-5-inch redwood and four plies of asbestos. All felt was nailed directly to the redwood to prevent slipping on the roof's steep 20- to 25-degree slope.

The retrofit project began July 1984. Although it was completed in only two months, the job was far from easy, Kermit Macaulay, a Celotex representative said.

"The job called for 900 squares of BUR application. But because of the many tight corners on the hangar's roof, such as near the 600-ton doors, only 20-foot sheets could be applied at any one time," Macaulay said. These conditions also made it necessary to hand carry the hot bitumen.

A 320-foot pipeline was constructed to carry the hot bitumen from the kettle to the roof. A custom-made pump had to be installed in the kettle to move the bitumen through the pipeline.

All felts were broomed in on the roof's surface. This step was necessary to prevent vapors from being trapped beneath the sheets. Brooming in while the mopping asphalt is hot enough to act as an adhesive minimizes the formation of blisters in the system's membrane.

All materials were stored inside the hangar during the project to protect them from moisture.

Hangar One is a renewed building today, thanks to its new top deck. The facility houses the Navy's P-3c anti-submarine aircraft. Certain ground-support operations such as maintenance shops, flight simulators and offices are also housed in the giant hangar.

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COMING EVENTS

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

April 14-16
1985 Legislative Conference
Associated Specialty Contractors
Washington, D.C.

April 19
Building Materials Selection
Construction Specifications Institute
Houston, Texas

April 25
Update
Roofing Industry Educational Institute
Las Vegas, Nev.

May 6-10
Infrared Scanning Course
Infraspection Institute
South Burlington, Vt.

May 12-15
Annual Meeting & National Conference
Canadian Roofing Contractors Association
Toronto, Canada

May 13-15
Asbestos Abatement Training Course
Association of Wall and Ceiling Industries International
Washington, D.C.

June 9-12
AIA National Convention
American Institute of Architects
San Francisco, Calif.

June 9-15
11th Annual Convention & Trade Show
Western States Roofing Contractors Association
Reno, Nev.

June 12-15
Convention
Florida Roofing, Sheet Metal and Air Conditioning Contractors Association
Orlando, Fla.

June 21-23
29th Convention & Exhibit
Construction Specifications Institute
Orlando, Fla.

July 22-26
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Manville introduces new membrane

Manville has unveiled its new modified bitumen roofing membrane, Dynakap™.

Dynakap is the first truly domestic modified bitumen product, Manville says. Unlike other products, it is manufactured to American dimensions rather than metric dimensions.

Dynakap is a cap sheet modified by a synthetic polymer or rubber additive known as styrene-butadiene-styrene (SBS), making Dynakap an elastic and flexible roofing product. The modified asphalt is reinforced by both polyester and glass mats to resist roof movement and stress. The top surface is protected by a reflective white, granular surface coating.

For maximum performance, Manville recommends hot mopping or mechanically attaching a ply of Manville's GlasBase™ (an asphalt-coated glass base sheet) to the deck. A ply of Dynakap should then be hot mopped to the glass base sheet.

SBS also allows Dynakap to maintain its flexibility even in cold winter conditions, which embrittle many other membrane types. The polyester and glass mat reinforcements combine to provide dimensional stability and tensile strength as well as fire and puncture resistance, Manville claims.

Because Dynakap is an asphalt-based product, roof repair can be done using standard BUR repair techniques and asphalt-based materials.

Dynakap can be used over concrete or other non-nailable decks. The product can also cover BUR membranes with smooth, gravel or mineral surfaces.

Check #38 on Reader Service Card

Manual teaches risk management

The International Risk Management Institute, Inc., has announced the availability of its construction risk management manual. The manual includes two comprehensive volumes of risk management and insurance information prepared exclusively for construction and insurance professionals. In addition, quarterly updates are provided free to first-year subscribers.

The manual presents information on avoiding uninsured losses, compiling comprehensive bid specs, establishing a risk management program that increases your bond line by understanding your underwriter's needs, covering construction loss exposures, improving communication with your construction clients, and opening up and identifying more markets for construction risks.

Check #39 on Reader Service Card

Kalwall markets curved systems

Kalcurve™, manufactured by the Kalwall Corp., Manchester, N.H., is a curved panel system that can be used with or in place of the Kalwall® insulated, light-transmitting panel system. Kalcurve can also complement the flat Kalwall wall/roof system or be used independently as a wall, roof or skylight.

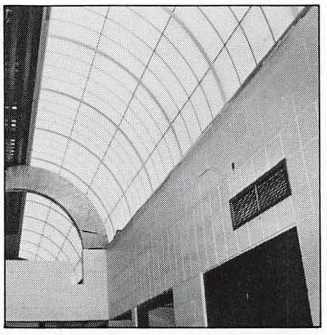
The Kalcurve System, like the Kalwall system, is manufactured specifically for each project. Its light-transmitting insulating and solar-screening properties are equal to the flat system's.

Kalcurve systems can be manufactured with any radius down to 18 inches in custom or standard 4- and 5-inch modules. Up to 180-degree curves are also possible with the product. Clear spans may be created with Kalcurve panels in widths that exceed flat panel capabilities.

Kalcurve installs with the Kalwall Clamp-tite installation system.

Complete preliminary design detailing and engineering assistance for individual projects is available from Kalwall.

Check #40 on Reader Service Card



Ardex introduces product network

The Ardex Corp., Santa Fe Springs, Calif., is introducing a computerized construction product information network designed exclusively for the construction industry. The CPI-Network, came on-line in the first quarter of 1985.

The CPI-Network will service construction professionals, manufacturers, construction specifiers, and the construction management community and constituents.

Steve Kaufmann, Ardex president, stresses that his firm is not in the computer industry. The CPI-Network "is a service, not hardware. It should be thought of as an electronic catalog, precisely compiled and constantly, continually updated," Kaufmann said.

CPI-Network subscribers will be supplied with a computer terminal and hands-on training. The user-friendly terminal accesses the network's on-line data base, and makes it possible to search and retrieve information.

The data base includes up-to-date product availability, price and technical specification news, tailored to 14 different regions of the United States.

Network subscribers will receive a news bulletin that will alert them to new product information.

Manufacturers who pay for a listing will receive monthly reports that name subscribers who have inquired about their products during the month.

Check #41 on Reader Service Card

Apple introduces Macintosh tool

An Apple Computer project management tool, MacProject, is now available for the Macintosh™ personal computer. MacProject is a business program that offers enough flexibility to easily design and schedule projects.

MacProject enables the user to draw a project schedule on the screen and enter project beginning dates and required task completion dates. Each task may be assigned resources and fixed or variable cost data. MacProject then calculates the beginning and ending dates for each task as well as for the entire project.

MacProject can:

- represent project schedules and status through schedule, task, resource and tabular charts;
- calculate and adjust fixed costs, variable costs and income with tabular display of total costs and net cash flow;
- calculate the critical path or the succession of tasks that determine the project's final completion date;
- recalculate dates, resources and costs if new variables are introduced;
- graphically modify project tasks and dependencies;
- cut and paste project sections into other project schedules or into files created with MacWrite; and
- transfer cost data to Multiplan™ for further analysis.

MacProject accommodates up to 200 tasks on the Macintosh 128K and up to 2,000 tasks on the Lisa 2 or the Macintosh 512K. The program can handle up to six resources per task with a maximum of 50 resources per project.

MacProject is available from authorized Apple dealers.

Check #42 on Reader Service Card

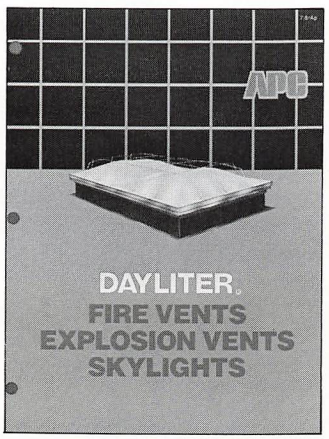
Industrial skylights described in catalog

A new 12-page catalog from the APC Corp., Hawthorne, N.J., describes the company's complete line of automatic fire vents, explosion relief vents and industrial skylights.

The catalog features the Dayliter™ series of vents with improved safety cage structures. These products, designed for both industrial and commercial buildings, are Underwriters Laboratories-listed and Factory Mutual-approved.

The catalog also includes the MB vent series for metal buildings. The MB vents are designed to fit standard roof panels or high standing seam configurations.

Check #43 on Reader Service Card



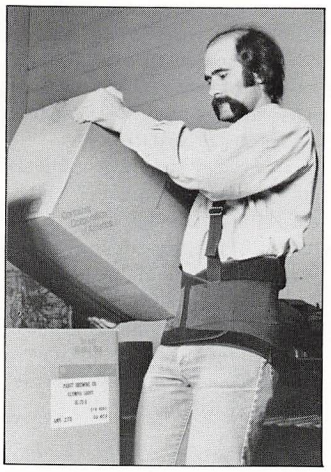
Safety garment reduces back injuries

The Comp Equipment Corp., a Minnesota occupational safety firm, has introduced the CompVest™ back support. This lightweight fabric safety device is designed to reduce the frequency of lower back injuries.

The clinically tested CompVest provides both lower back (lumbosacral) and abdominal support during heavy lifting. It uses durable fasteners, adjustable shoulder straps and four plastic stays to limit pelvic flexion and widen the base support across a broader portion of the back. The vest's fit encourages wearers to use proper body mechanics while lifting—bending the knees and using leg muscles when lifting heavy items.

CompVest is designed to be worn over clothing for convenience. It is available in six sizes (extra-small to double-extra-large) and comes in two colors. It weighs one pound and is machine washable.

Check #44 on Reader Service Card



Armco brochure explains program

Success, profit and support are three reasons "why it pays to be an Armco roofing contractor," according to an eight-page brochure available through Armco Building Systems.

The brochure details the advantages of joining the Cincinnati-based metal roofing systems manufacturer as a roofing contractor. Some of the advantages mentioned in the brochure are:

- the opportunity to market a complete roofing system as part of an established construction organization;
- the ability to build a new, profitable line of business with expanded market potential; and
- the availability of programs developed by the Armco Building Institute, offering professional, promotional and practical support to Armco roofing contractors.

In addition, the brochure describes with text and illustrations the Armco CF roof, Steelox roof and ARW-IV roof.

Free copies of the brochure are available from Armco.

Check #45 on Reader Service Card

Buildex introduces new flashing system

Buildex, a division of Illinois Tool Works, Inc., has introduced Flashdek, a new flexible silicone flashing system for roof flashing applications. Flashdek is a fiber glass-reinforced silicone material with thin, pliable 1-inch-wide aluminum bands inside each edge.

Flashdek's flexibility allows it to go around corners, into depressions and over profiles. It is also easy to install, saving labor costs, reducing in-place costs and eliminating callbacks, the company claims.

The Flashdek kit includes the Flashdek material, Buildex 995 silicone sealant, 300 series Scots stainless steel fasteners, termination strips and a splice connector. Kits are available in 9-, 12- and 18-inch widths and 50- and 150-foot lengths.

Check #46 on Reader Service Card

Flame torch available for modified bitumen

Flame Engineering, Inc., the LaCosse, Kan., manufacturer of Red Dragon roofing torches, has introduced a product for torching modified bitumen seams. The Red Dragon Simple Seamer allows seams to be worked from a standing position rather than a stooped position.

The seamer's dual-handle design allows the operator to apply ample pressure when troweling in laps. In addition, any corner of the trowel plate can be used to search for voids under laps. And when specifications require, corners of the trowel plate can be used to finish or dress the seams. A simple squeeze of the trigger valve quickly heats the trowel.

An SS500C Simple Seamer kit includes an adjustable trowel plate, dual-grip handle, adjustable torch, pilot trigger valve, 25 feet of Underwriters Laboratories (UL)-approved LP-gas hose, UL-approved adjustable regulator, pressure gauge, spark lighter and wing nut P.O.L. Assembly is required.

Flame engineering is also promoting the safe use of its products. The company has published a pocket-size card that crew members can carry as an immediate LP-gas safety reminder. The card contains a suggested daily check list for properly inspecting torching equipment.

The company also provides knowledgeable seminar speakers for training sessions, contractor days and sales meetings. There is no charge for this service.

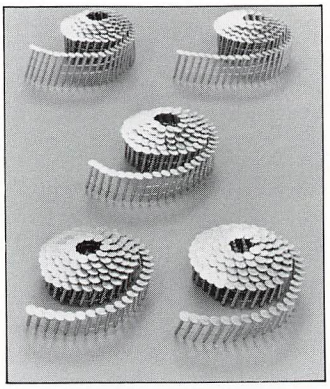
Check #47 on Reader Service Card

Bostitch introduces new nail sizes

The Bostitch Division of Textron, Inc., has expanded its range of standard galvanized roofing nails to include 7/8-inch and 1-inch nails for new roofing applications. This new line of nails can double the speed of new or reroofing work, the company claims.

Bostitch's expanded nail line fits the company's N12 pneumatic nailer. The nailer holds a 120-nail coil, enabling an operator to lay a full bundle of shingles in a single loading.

Check #48 on Reader Service Card



Met-Tile introduces complete system

Met-Tile, Inc., Spokane, Wash., has introduced a complete metal roofing system for new construction, reroofing and remodeling applications. It is designed specifically for the residential and commercial industries.

Met-Tile incorporates a number of design concepts that make application easy and error-free, the company claims. Special engineering features include:

- accumulation grooves at each step;
- alignment ridges that run parallel with the panel length;
- fastener dimples at each alignment ridge lap; and
- sinusoidal end cuts to provide invisible end laps and pleasing eave appearance.

The metal panel features six 1 1/2-inch-high hill configurations at 7.2-inch pitch. The 39-inch-wide panel provides a wide 36-inch coverage when side-lapped. The steps in the panel are 0.7 inches deep and spaced 12 inches on center along the length of the panel. The panel is available in 2-foot to 16-foot lengths, in increments of 2 feet. In most cases, a single panel will run from ridge to eave. The panels are accompanied by trim accessories and flashings.

This stucco-embossed metal system is manufactured from 26-gauge, hot-dipped, G90 galvanized (1.25-ounce zinc) steel sheets. Panels are painted with a Glidden Nubelar fluorocarbon system, which prevents chalking, cracking and fading for years. Available colors are white sandstone, morocco red, gallery blue and ranchwood brown. Other colors are available on request.

Met-Tile's system has completed Underwriters Laboratories' fire retardant roof test series and has received Class A, B, and C ratings for new construction and a Class B rating for reroofing applications. Met-tile is recognized by the National Research Board of the Council of American Building Officials under NRC Report No. 278.

Check #49 on Reader Service Card

NEW IDEAS

Arcal produces asphalt emulsifier

Arcal Chemicals, Inc. has begun production of Arcal Tar-Go. Tar-Go is a ready-to-use, liquid-solvent compound that helps clean up spilled or splashed asphalt, tar and other petroleum products.

Applied by brushing, Tar-Go instantaneously penetrates surface deposits. Once treated, the deposits may be washed away with a liberal water flush.

Tar-Go has strong emulsification properties as well as wetting agents to assure optimum performance. It performs well on both vertical and horizontal surfaces, Arcal says.

Arcal recommends Tar-Go for use on concrete, brick masonry, metal (unpainted), ceramic tile, aluminum, paving equipment, trailers, heavy construction equipment, tools, trucks, sidewalks and curbs, and roofing. Tar-Go can also be used for some cleaning and degreasing operations.

Tar-Go can be applied by brush, mop or pressure sprayer. It is packaged in 55-, 30-, 15- and five-gallon drums or in one- to six-gallon cases.

Check #50 on Reader Service Card

PVC roof drains available from Sloane

R & G Sloane, manufacturer of thermoplastic pipes, valves and fittings, now manufactures a complete line of PVC roof drains.

With approved connections, Sloane's PVC drains can be used with any piping system, whether its ABS-DW, cast-iron, galvanized steel or copper. The product is available with a 2-, 3-, 4-, 6- or 8-inch outlet.

Sloane roof drains hold up against rough treatment during installation and in use, the company claims.

The roof drains can easily be installed in minutes, reducing manpower costs substantially, Sloane says. The entire drain is made to resist rust and corrosion. Sloane has designed the drain to prevent high volume run-off.

Check #51 on Reader Service Card

CLASSIFIEDS

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

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Check #15 on Reader Service Card

Lightweight concrete deck bulletin tops RSTC's agenda

By Bob LaCosse

In January, NRCA and the Asphalt Roofing Manufacturers Association (ARMA) sat down once again at a meeting of the Roofing Systems Technical Committee (RSTC) to discuss topics of mutual interest.

RSTC was formed in 1975. NRCA and ARMA each seat six members on the committee. The group meets twice a year to discuss its ongoing research and projects such as the evaluation of current roofing products, procedures, tests and reports, and the publication of roofing information.

At the January meeting, the Committee finalized its revisions to a technical bulletin on roofing over lightweight insulating concrete decks. RSTC released its original version of this document in December 1983.

RSTC was prompted to revise the original document after several segments of the roofing industry questioned its wording. The introduction to the bulletin claimed that "roof membrane systems installed over lightweight insulating concrete decks have a greater potential for problems than do systems installed over substrates which contain less moisture." The bulletin also listed recommended procedures that RSTC hoped would prevent many of these problems.

One of the most vocal critics of the original bulletin was W.R. Grace & Co., manufacturer of the lightweight insulating concrete Zonolite®. In a letter written by Grace Vice President John A. Danneker to NRCA and reprinted in the September 1984 *Roofing Spec,* Grace attempted to refute many of the technical bulletin's claims. "Data to date show that thermal performance of lightweight insulating concrete systems is less affected by moisture, air-infiltration, board joints, insulation fasteners, and thermal short-circuits than dryboard insulation systems," the letter claims.

RSTC met with Grace in September to discuss the bulletin. Members of Grace's management, marketing and research departments presented ARMA and NRCA representatives with background information on Zonolite and gave Committee members a tour of the Grace facility. The meeting ended with Danneker requesting the opportunity to submit to the Committee Grace's revisions to the original bulletin, a request the Committee granted.

Once completed, Danneker's revisions were sent to RSTC for review. A Committee meeting was called in October to discuss the changes Danneker had made to the original document. Using his suggestions, RSTC prepared its own revision of the original bulletin. This revision was sent to Danneker for review. The final revision, approved by the Committee in January, contains only a few changes from the version sent to Danneker.

Readers who compare the final revision of the document to the original will find that RSTC's recommendations remain the same. These recommendations represent good roofing practice and carry the full endorsement of Grace and Danneker. Only the bulletin's opening statements have been changed.

RSTC also discusses UL and ASTM

At the January RSTC meeting, Committee members also discussed several issues involving Underwriters Laboratories (UL). NRCA and ARMA are working with UL on revisions to the Lab's BUR and shingle fire-safety standards, and its *Building Materials Directory.* RSTC is also involved in UL's efforts to define the difference between reroofing and re-covering, and obtain UL's Class 90 rating for base sheets mechanically attached to plywood decks.

Other topics discussed at the January meeting included:

- the American Society for Testing and Material's (ASTM) new standards regulating the viscosity of roofing asphalts and BUR tolerances as well as revisions to ASTM's present asphalt standards;
- changes to sections covering roofing and waterproofing in the Architectural Institute of America's *Masterspec*;
- activities of NRCA's Technical Operations Committee, including its BUR quality control document;
- revisions to the roofing code found in the International Conference of Building Officials' Uniform Building Code and the development of a new chapter on roofing for the Building Officials & Code Administrators' Basic/National Code;
- ARMA's performance criteria document and its stabilizer and rheology studies; and
- the Occupational Safety and Health Administration's roofing regulations, including revisions to its asbestos standard.

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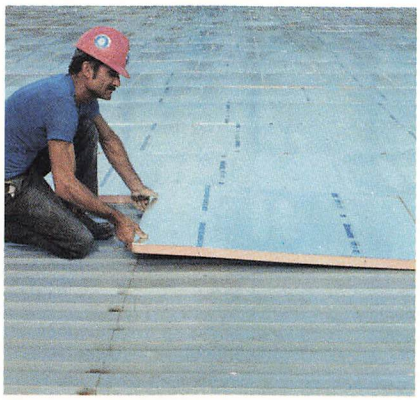

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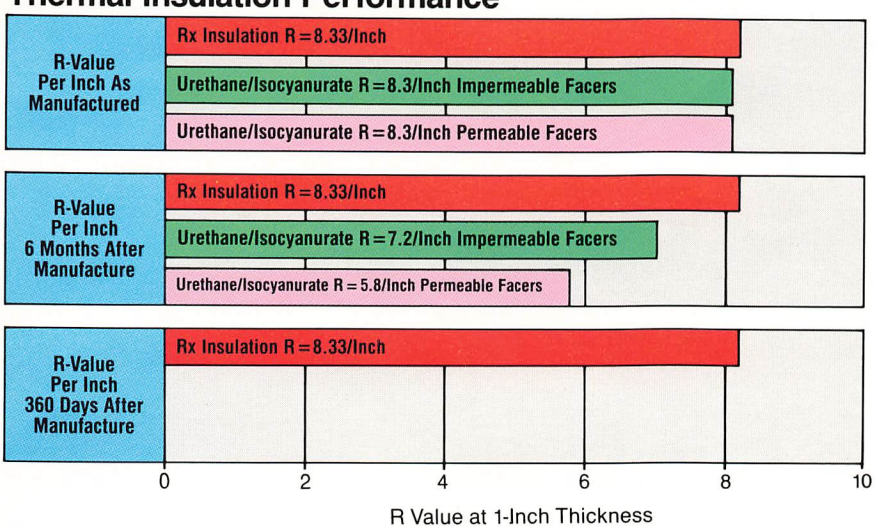

For data to substantiate aged R value, contact Koppers Company, Inc., Pittsburgh, PA.

☐ Please send literature on Rx Roof Insulation.

☐ Please have a representative call.

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