



Roofing Spec

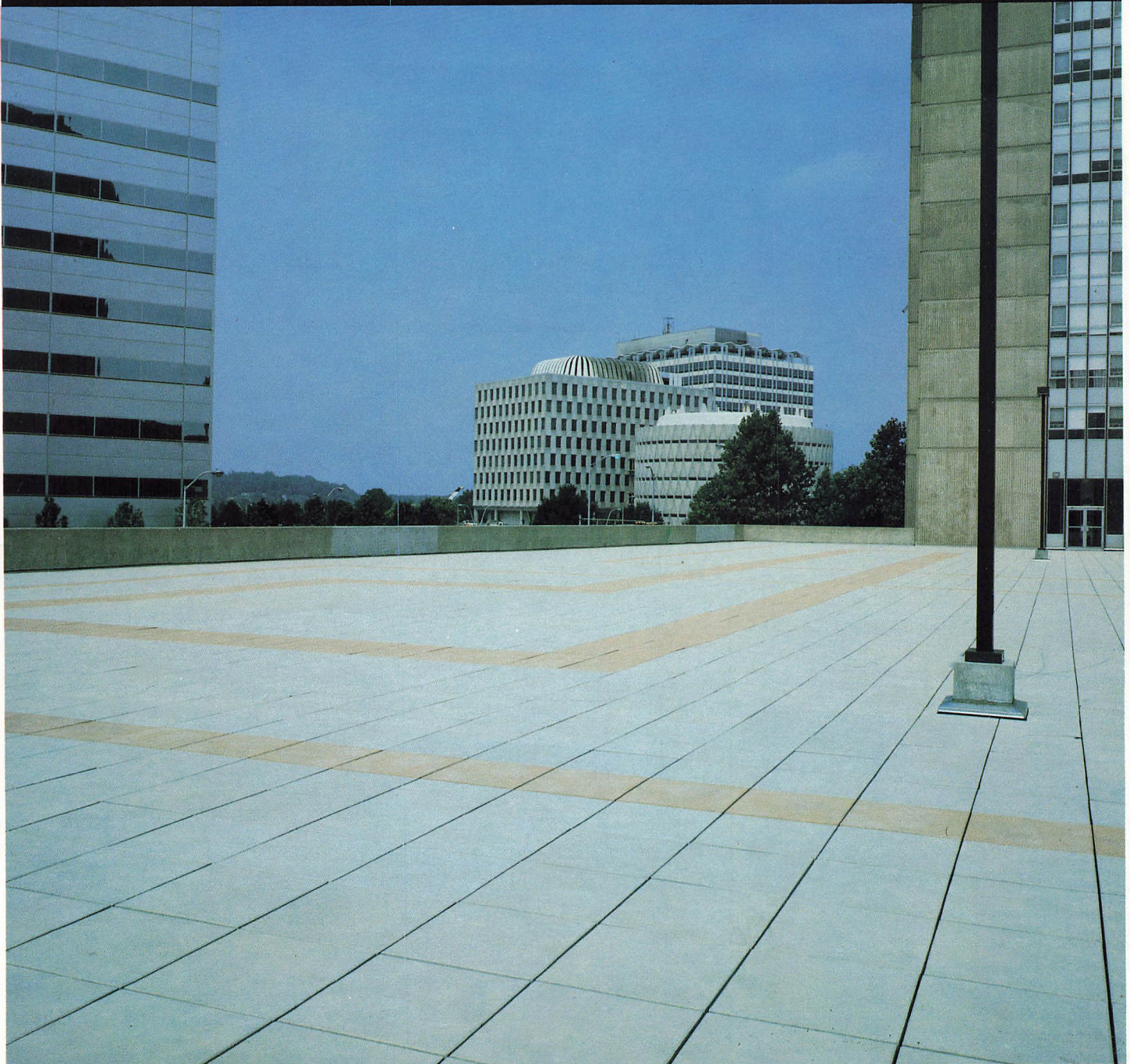
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National Roofing Contractors Association

May 1984

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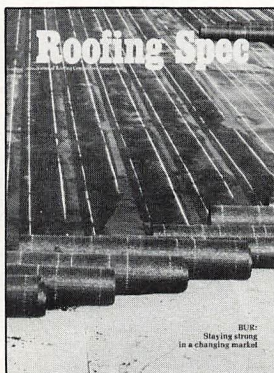
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Staff

Christine Nolen Taylor,
Director of Communications
Constance Arkus, Assistant
Director of Communications
Martin Eastman, Managing
Editor



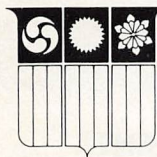
This month, *Roofing Spec* examines built-up roofing's strengths in a fast-changing market.

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NATIONAL ROOFING CONTRACTORS ASSOCIATION

8600 Bryn Mawr Avenue
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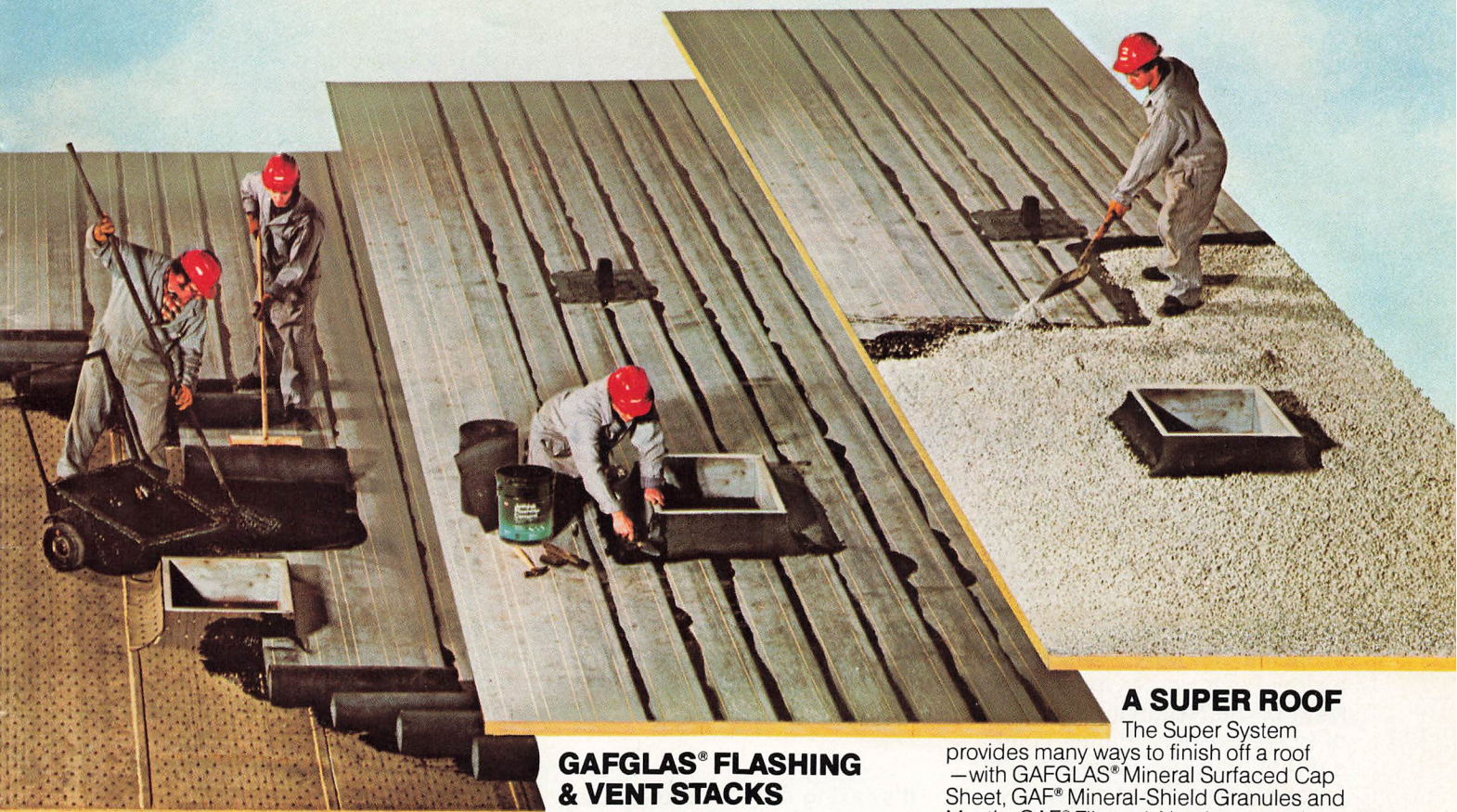
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Ideas, notes and random thoughts

"Housing is the linchpin of any economic recovery." said Tucson builder Peter Herder, incoming president of the National Association of Home Builders. Herder points out that housing was responsible for about 30 percent of total economic growth in 1983 or \$20 billion of the \$70 billion real increase in the Gross National Product. Also in 1983, housing generated 2.4 million worker-years of employment in construction and related industries; \$47 billion in wages; \$25 billion in federal, state and local taxes; and \$86 billion in new economic activity.

Staff change . . . Carl Good has been named manager, Member Services, succeeding Anna Leonhardt who moved to Washington, D.C.

Professionally produced and narrated, a 15-minute slide presentation highlights the value of *The NRCA Roofing and Waterproofing Manual* and the *NRCA Roofing Materials Reference & Guide*. The slide program is available at no cost for local chapter meetings, seminars and conferences. To sched-

ule a showing, contact Lynn Keefe, NRCA, 8600 W. Bryn Mawr Ave., Chicago, Ill., 60631-3502; 312/693-0700.

It's taxing here and abroad. . .

"On a per-person basis, Americans paid \$3,832 in taxes during 1981, fourth highest among the Big Seven industrial lands," according to *U.S. News & World Report*. The comforting news: "For every \$1 of tax paid by Americans, the French paid \$1.18; Canadians, \$1.09 and the West Germans, \$1.08." The distressing news: "The British paid only 87¢; the Japanese, 69¢ and the Italians, 54¢."

More taxing news . . . The Tax Foundation reports that in 1929, the average person worked 52 minutes out of an eight-hour day for the government. By 1983, it took two hours and 49 minutes to fulfill tax obligations. And if that news isn't bad enough, if all earnings since Jan. 1 were turned over to federal, state and local governments for taxes, 1929 workers would have fulfilled their duties by February, while the 1983 worker wouldn't have been solvent until May.

Notebook-size computers? Kaypro Corp., a portable-computer company, plans to market a tiny computer made by Mitsui Co., the Japanese trading group. Similar computers are understood to be in development at several other companies, but the Kaypro-Mitsui machine is the first to be even partially disclosed, reports the *Wall Street Journal*.

The deadline to "decipher" a 150-piece jigsaw-puzzle cryptogram—worth \$100,000 to the person who solves it—has been extended one year. Over 150,000 people purchased the game, sold at department stores, but only 533 have offered solutions—all wrong. Decipher was developed by Warren Holland, Jr., who quit the construction business two years ago "to do something different."

"Even if you're on the right track, you'll get run over if you just sit there."

Will Rogers

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NATIONAL NEWS

Contracting still up in February

January's near-record level of construction contracting was sustained in February, despite a setback in commercial and industrial building. Continuing strength in housing and a surge of public works projects were the main cause, according to McGraw-Hill's; F.W. Dodge Division.

Newly started construction of all kinds in February totaled \$14.2 billion. The seasonally adjusted Dodge Index was unchanged from January's strong 150 (1977 = 100). "Compared with last year's average index of 138, the 150 rate of contracting reported during the first two months of 1984 shows that there's still plenty of life in the building market's recovery," said George A. Christie, vice president and chief economist for F.W. Dodge.

"As the current cyclical upswing approaches its second anniversary, contracting for new construction has improved by 60 percent since recovery began. This year's good beginning confirms our expectation of a further 9 or 10 percent advance

over the 1983 total, before rising interest rates dampen the expansion," Christie said.

February's \$6.8 billion of new residential building eased 2 percent from January's record-setting value after adjustment for seasonality. "But that was due to a sharp decline in contracting for hotels/motels," the Dodge economist pointed out. He noted that "with this exception, both January and February were remarkable months for homebuilding. It leaves you wondering how much of this early 1984 surge of housing demand has been motivated by the fear of rising interest rates."

February's nonresidential building contracts, valued at \$4.2 billion, fell 16 percent on a seasonally adjusted basis. In the latest month, contracting for stores and shopping centers remained firm, demonstrating the close tie between retail building and housing. Office and industrial construction dipped sharply, however.

"With manufacturers' capacity uti-

lization now on the high side of 80 percent, February's dip in industrial construction should soon be reversed," Christie noted.

Cautioning that "office building is a different matter," the Dodge economist said, "A 15 percent decline of contracting for offices is expected this year, and February's retreat is likely to be only one step in an extended adjustment that is due in this seriously overbuilt market."

Paced by a 66 percent leap in contracting for highways and bridges, total nonbuilding construction contracts rose to \$3.1 billion in February, a seasonally adjusted gain of 44 percent from January's value.

"The release of a portion of the \$5 billion of blocked federal money has opened the way to a surge of delayed transportation work," Christie pointed out. "With still more of these funds to be released in the near future, highway contracting is expected to be unusually high for the next month or two before settling back to normal in 1984's second half. And even 'normal' has become a very large number since last year's five-cents-per-gallon fuel tax was enacted to finance a four-year, \$20 billion program of highway, bridge, and mass transit construction," he said.

Regionally, February's construction gains were concentrated in the "frost belt" where generally mild weather prevailed. The Northeast and Midwest reported construction increases of 22 percent and 32 percent, respectively, while the South showed a decline of 11 percent and the West held even with January's rate of contracting.

At the end of two months, the value of all new construction started in 1984 was \$28 billion, a gain of 23 percent over the same 1983 period.

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

	February 1984 Construction Contract Value (000,000)	Seasonally Adjusted Percent Change From Previous Month	
Nonresidential Building	\$ 4,249.2	- 16	
Residential Building	6,799.8	- 2	
Nonbuilding Construction	3,105.7	+ 44	
Total Construction	\$14,154.7	-	
	2 Mos. 1984 (000,000)	2 Mos. 1983 (000,000)	Cumulative Percent Change
Nonresidential			
Building	\$ 9,565.5	\$ 8,490.5	+ 13
Residential Building	13,418.4	10,022.6	+ 34
Nonbuilding			
Construction	4,995.0	4,198.3	+ 19
Total Construction	\$27,978.9	\$22,711.4	+ 23

DODGE INDEX

(1977 = 100, SEASONALLY ADJUSTED)

December 1983	134
January 1983	150
February 1984	150

continued, page 10



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NATIONAL NEWS

continued from page 8

BUR is innocent victim in war of words

A war of words is being waged between the metal and masonry people, and one of the innocent bystanders hit by the shrapnel seems to be built-up roofing.

The latest salvo was fired by Sam

W. Milnark on the front page of the March *Metal Building News*. In the article "Masonry Council Attacks Metal Buildings in Ad," Milnark lambastes the Masonry Advisory Council (MAC) for its ad "Why put a

tin can behind the brick" in the December 19 issue of *Dodge Construction News*. According to Milnark, MAC's ad "compares its best brick wall to a tomato juice can that is supposed to represent a metal building."

Milnark's answering volley to this big MAC attack is a list of metal's shining achievements. He refrains from mentioning any drawbacks to brick. He does, however, make an oblique reference to BUR's allegedly poor track record. Referring to MAC's ad copy he writes, "Certainly nothing was said about how good the built-up roofing systems are."

Apparently, Milnark wants to suggest that a built-up roof is a liability on a brick building. In speaking against unfair criticism Milnark writes, "One thing is for sure: Our industry should not laugh it off." Perhaps the metal industry isn't the only one who should head Milnark's rallying cry.

Uniroyal, Inc. raises prices

Uniroyal, Inc. has joined other manufacturers in raising the price of its single-ply roofing, adhesives and sealant products.

The company's Adhesives and Rubber Specialties Department announced an 8 percent hike for its roofing products and a 4 percent increase for roofing adhesives and sealants. The increases became effective with the April 2 shipments.

"The rising cost of raw materials has forced us to raise our costs, following other manufacturers who have already increased their prices," said William F. Harrington, Market Development.

General Tire Building Products and Firestone Industrial Products Co. announced price increases for their products last month.

continued, page 12



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

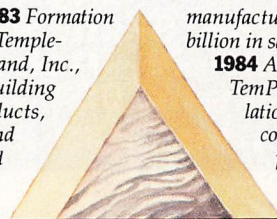
1980 Opening of Temple-Easttex rigid foam insulation plant in Diboll, Texas.



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

manufacturer with \$1.2 billion in sales.

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



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NATIONAL NEWS

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Revised steep roofing manual available

The new edition of NRCA's Steep Roofing Manual is now available, according to Jeff Lowinski, manager of the Association's Technical Services Department. This revision con-

tains completely rewritten sections on asphalt roll roofing; asphalt shingle; clay, cement and slate tile; and wood shingles and shakes.

The revised manual offers reor-

ganized criteria on roof slope limitations, underlayment and fastening requirements. The accompanying illustrations have been changed, as well. Criteria for sheet metal drip edge and valley flashing has also been added.

The Steep Roofing Manual, which may be purchased as a separate publication, is also incorporated into the NRCA Roofing and Waterproofing Manual.

Manual pricing and ordering information may be obtained from the National Roofing Contractors Association, 8600 W. Bryn Mawr, Chicago, Ill. 60631-3502.

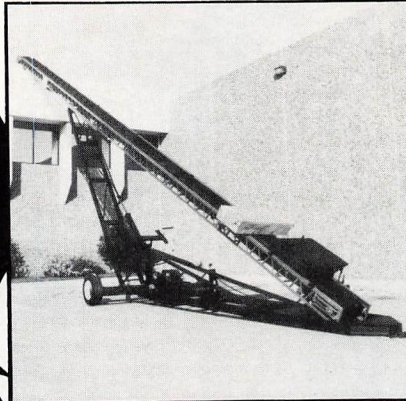
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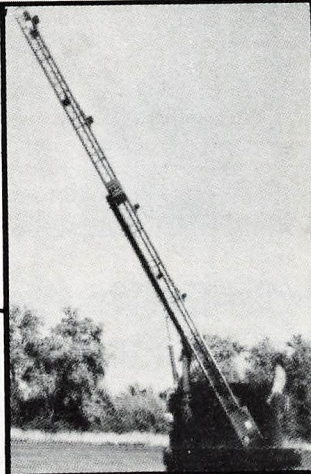
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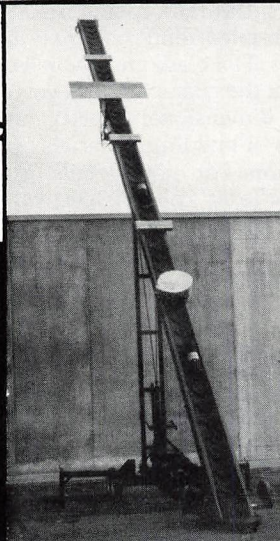
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RCI elects 1984 officers

Officers for 1984 were elected at the first national conference of the Roof Consultants Institute (RCI). The conference was held in Atlanta Feb. 16-17.

Elected president of the Institute was Robert W. Lyons of Charlotte, N.C. Richard P. Canon of Spartanburg, S.C. was elected first vice president; Michael J. Kelleher of Pleasanton, Calif. was elected second vice president and Robert W. Phillips, Jr. of Cary, N.C. was elected secretary treasurer. A Board of Regents was also established.

Members from all five of RCI's regions heard presentations on topics ranging from the recommendations of the priority committee to regional roof design differentials.

As part of the conference, members of the RCI/NRCA Liaison Committee discussed the organizations' concepts and common goals.

More information on RCI may be obtained from William C. Correll, executive director, RCI, 7424 Chapel Hill Road, Raleigh, N.C. 27607.

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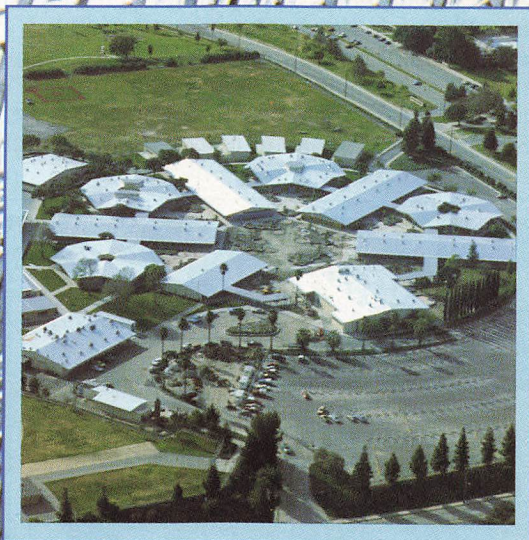
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NATIONAL NEWS

continued from page 12

AGC form is condemned by subcontractors

A standard subcontract for building construction, introduced by the Association of General Contractors (AGC) at its annual convention, has been condemned by the American Subcontractors Association (ASA) and the Association of Specialty Contractors, Inc. (ASC).

The subcontract, called Form 600, was adopted by AGC after long-term negotiations with ASA and ASC on a joint standard subcontract broke down.

ASA, at its convention, adopted a resolution which states that the new AGC form is "even more unfair than earlier AGC-proposed standard form sub-contract drafts" submitted during the unsuccessful joint negotia-

tions between AGC, ASA and ASC. "The AGC form is strongly biased against subcontractors," Robert L. Wilkinson, president of ASC, said. Wilkinson pointed out that ASC and ASA had tried for eight years to reach an agreement with AGC on such a form.

ASC's objections to the form include the following points:

- The general contractor would not have to pay the subcontractor until

the general contractor received payment, even if the delay in payment is the general's fault.

- Procedures for job scheduling are unfair and impractical.
- It requires the subcontractor to buy a performance bond at his own expense without an opportunity for reimbursement in order to avoid having a higher retainage percent than that retained by the owner.

Philly affiliate pledges \$10,000

The Roofing and Sheet Metal Contractors Association of Philadelphia and Vicinity has pledged its support for NRCA's centennial campaign in a very concrete and positive way, according to Bill Good, NRCA's executive director.

The Board of Directors for the Philadelphia chapter has endorsed a \$10,000 contribution to the program. The gift will be divided into three yearly payments, with the last payment being made in 1986, the 100th anniversary of NRCA.

NRCA's centennial efforts are centered around a national public relations campaign which will include outreach to industry professionals and consumers. The program, which was introduced at the 1984 NRCA Convention, has already produced a short film and a theme song.

The Philadelphia contractors have always been strong supporters of NRCA. Several leadership posts at the national organization have been filled by members of the Philadelphia affiliate.

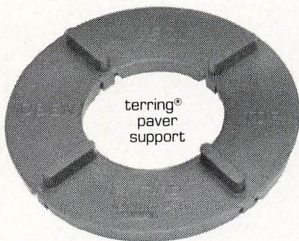


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Associate News

Manville promotes from within

The Manville Corp. recently promoted Wilber "Woody" Earl to market manager for Roof Insulations and Richard Cunningham to director of research, Roofing Technology.

A 13-year veteran with Manville, Earl previously served as sales representative in Kansas City, Mo., as a staff manager for acoustical products and as an advertising manager.

In his new position, Earl will be responsible for marketing the company's complete line of roofing insulation products.

Cunningham joined Manville in 1972 as senior industrial engineer at the Ohio plant and was promoted to senior staff process technologist.

His new duties include product and process development for shingles, built-up roofing, roofing insulation, roofing accessories and other products.

GAF closes New York headquarters; relocates

Effective June 1, 1984, GAF's complete headquarters will move from New York City to the company's Administrative and Research Center located at 1361 Alps Road in Wayne, N.J.

The consolidation will reduce corporate overhead, eliminate duplicate functions and create a more cohesive organization, according to GAF.

The move will reduce corporate staff by 10 percent (approximately 160 employees) and occupancy costs for GAF.

Adler elevated to new post at Simpson



David L. Adler has been named senior associate at the consulting engineering firm of Simpson Gumpertz & Heger, Inc.

Adler has worked for the firm for six years. He develops and designs roofing and waterproofing systems, investigates roofing and waterproofing failures and remedial designs.

Prior to joining Simpson, Adler served as general manager to a New England roofing and sheet-metal contracting firm.

Managers appointed at Koppers

James P. Weideman and William F. Spencer, Jr. have been promoted to management positions with Koppers Co., Inc.

Weideman was named manager of customer services for the Building Materials Department. His responsibilities will include customer-oriented services such as recommendations for unique applications and product specification consulting.

Spencer was appointed marketing manager for the Building Materials Department. He oversees the marketing, promotion and planning activities of Koppers' built-up and waterproofing systems, Exeltherm Xtra® phenolic insulation and the company's complete line of roof maintenance materials.

Changes at Du Pont

Wilfred P. Schmoe was named an executive vice president of the Du Pont Co. He was also appointed to the executive committee of the firm.

William G. Simeral, also an executive vice president, will assume the additional post of vice chairman of the subsidiary Conoco, Inc., succeeding Schmoe.

Davis-Festa named manager for Leigh



Marcia Davis-Festa was named marketing services manager for Leigh Products, Coopersville, Mich.

Davis-Festa will plan, direct and coordinate the company's marketing services programs. She will also supervise the company's advertising and promotion programs.

Elk promotes Staten

John C. Staten has been named corporate marketing manager for the Elk Corp., Dallas, Texas.

Staten is in charge of the company's advertising, sales promotion, market research, public relations and product management. He joined Elk in 1977.



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

Federal government decisions have not always helped subs

Eichley lives

This has not been a good year judicially for contractors. Recent case decisions have strictly enforced "no damage for delay" clauses, absolving owners of responsibilities in coordinating multi-prime contracts.

Where one prime was contractually charged with coordinating the contract, the "Eichley" formula was rejected as an acceptable method of calculating "extended home-office overhead" in work claim delay or suspension. However, there is good news on the Eichley front—at least for the moment.

In its recent decision in *Capitol Electric Company v. United States*, the Federal Circuit Court of Appeals overruled the General Services Administration (GSA) board of Contract Appeals, which had rejected the Eichley method of proving extended home-office overhead. The GSA Board's ruling was a clear reversal of its own precedent and the Court of Claims. The Board joined a growing body of other Courts and Boards questioning or rejecting Eichley or extended home-office overhead in general.

In fact, the Federal Appeals Court considered another appeal from the Armed Services Board of Contract Appeals at the same time. This was the Savoy Construction Co. case.

The Federal Appeals Court held that the evidence in both the Capitol Electric and the Savoy appeals supported using the Eichley formula to calculate a daily contract overhead rate that would extend through the delay period and constitute a recoverable element of delay damages. The Court, whose decision will now

be a binding precedent in all Board of Contract Appeals cases, noted that the Eichley formula was derived from a decision of the prior Court of Claims. (The federal Judiciary Improvements Act recently divided the Court of Claims into the Claims Court and the Federal Circuit Court of Appeals.)

The Board's ruling was a clear reversal of its own precedent.

The Court also recognized that Court of Claims precedents are binding and "can only be overruled by the Federal Circuit sitting en banc" (i.e., with all judges of the Court participating, instead of a panel of three in this case).

The panel of judges stated, "We do not believe these precedents should be overruled. They are of such long standing and have been followed in so many decisions of various boards that such action should more properly be taken by the Congress."

Thus, at least in delay and suspension claims on federal projects, Eichley has been given a new lease on life. There are still a few caveats for the formula's application:

1. The contractor should take care to demonstrate that he could not take on additional jobs, even if they were available, during the delay periods. This is due to the uncertainty of the delay and its impact on home-office staffing

and facilities, bonding capacity or financing capabilities.

2. The contractor must still prove that the delay suffered was a compensable one under a contract adjustment clause or other legal source.
3. It is still open to the owner to counter with proof that the contractor suffered no loss in extended home-office overhead.
4. In nonfederal contract disputes the courts are not bound by this ruling and may be influenced by the growing bias against uncritical application of Eichley.
5. Finally, even this recent ruling is subject to change by the Federal Circuit Court sitting en banc or by legislation.

SBA size standards

The Small Business Administration recently amended its size standards for SBA set-aside contracts. Starting March 12, 1984, new size standards will apply to all industries, including construction.

For a contractor to qualify for SBA's general construction set-aside work, the average annual gross receipts for the contractor's three most recent fiscal years must be less than \$17,000,000. Under former regulations, this limitation was \$12,000,000. A contractor can now qualify for specialty trade work (plumbing, HVAC, electrical, roofing) if average annual gross receipts for the three most recent fiscal years are less than \$7,000,000. This was \$5,000,000 previously. The SBA said this increase addressed the effects of inflation on gross receipts.

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²**pant** n. 1) a: a panting breath. b: the visible movement of the chest accompanying such a breath. 2) a throbbing or puffing sound.

³**pant** adj.: of or relating to pants <a~leg>.

²**pant-** or **panto-** comb form [MF, fr. L, fr. Gk, fr. pant- pas more at PAN-]: all <pantology>.

Pantasote (pǎn'tə-sōt') n. [Gk. meaning: covers all] 1) a company with over 70 years of experience manufacturing membranes (e.g., top for Ford Model T; see Ford, Henry J.). 2) manufacturer of membrane for one of the world's largest membrane liner installation (i.e., Utah, 400 acres). 3) a pioneer in manufacturing single-ply roofing membranes. 4) expertise in manufacturing **PVC; CPE; Hypalon®; Hypalon®/CPE** membranes. 5) manufacturer of **Flexhide®** roofing systems (i.e., exposed mechanically fastened, light-weight and energy saving white. 6) creator of **Flexhide® 2001**, integral built-in weatherproofing seam (patent pending). 7) product approvals: **UL; FM; Dade County; MEA; HUD; BOCA; ICBO; SBCCI**. Synonyms: experience, technology; quality; service. For further definition see: **Many Satisfied Customers.**

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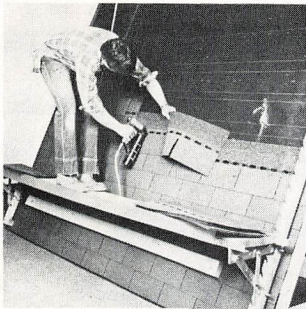
The SBA also stated that the limits for the construction industry were significantly lower than for other industries because the industry is highly competitive. The SBA observed that the average construction firm has three employees and \$300,000 in annual sales. Thus, because many construction firms are

"small businesses" according to the SBA standards, the SBA does not consider small business set-asides to be as important for the construction industry as they are for less competitive fields.

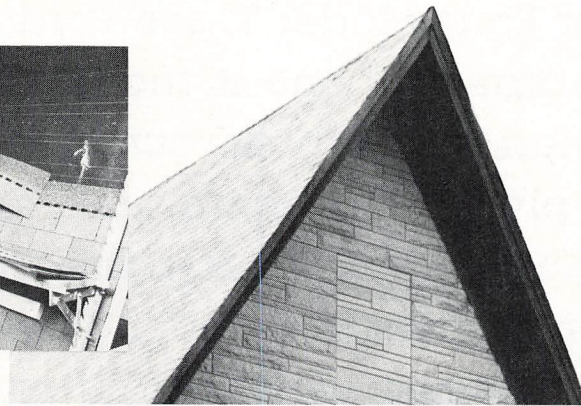
Government contracting regulations

All contractors who submit bids for federal government construction projects or procurements are required to follow complex regulations for bid formulation, cost and pricing methods and other issues.

Starting April 1, 1984, all federal contracting and procurement regulations have been included in a single codification called the Federal Acquisition Regulations (FAR). Before, Defense Department and civilian agencies, such as the General Services Administration, had two primary sources of procurement regulations. The Defense Acquisition Regulations and the Federal Procurement Regulations conflicted on many points. Now, all regulations governing federal contract procurement are consolidated into the FAR. The new regulations will apply to all federal contracts entered into after March 31, 1984. The change should make regulatory compliance less burdensome.



demonstration unit



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GSA's subcontractor listing

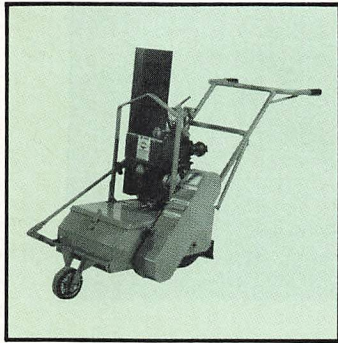
In February 1984, new General Services Administration regulations eliminated the subcontractor listing requirement in submitting prime contractor bids on public buildings. GSA had long been a proponent of subcontractor bid listing, more so than the other federal public contracting agencies. With tremendous opposition from various subcontractor groups, the GSA's final regulations were issued on Feb. 15 (49 Federal Register 5754). The regulations eliminated the long standing requirement for future prime contract bidding. The GSA found "no

FAR should make regulatory compliance less burdensome.

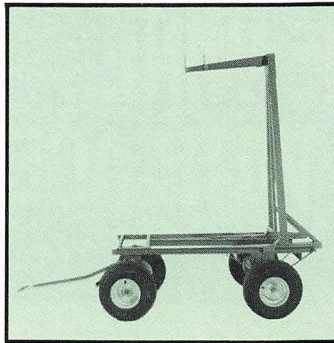
evidence that the elimination of the subcontractor listing requirement would cause 1) the prime contractors to bid shop, 2) those few subcontractors now covered by the listing to provide inferior work or to submit inflated bids or 3) the prime contractor to reap a windfall at the expense of the subcontractor or the government."

Whether or not these findings are correct or properly substantiated, these changes in GSA's policy may lead to a second look at subcontractor listings in all jurisdictions. 

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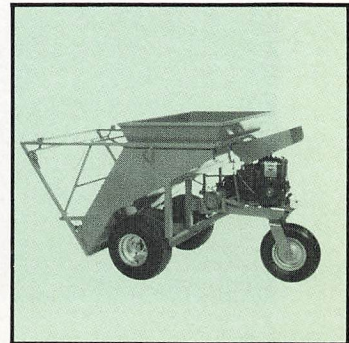
NO. 30 SCRATCHER



LITTLE GIANT TRAILER



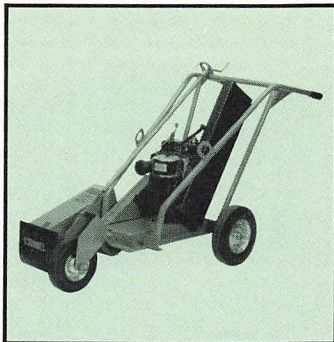
MODEL 600 WORKHORSE



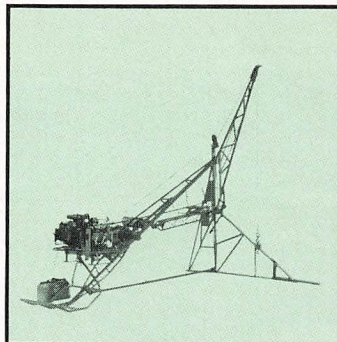
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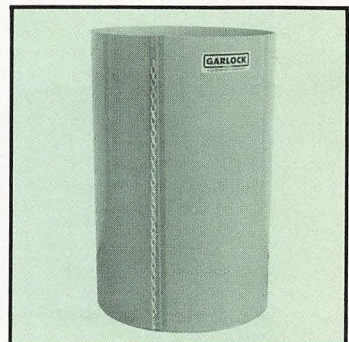
ROTARY PLANER



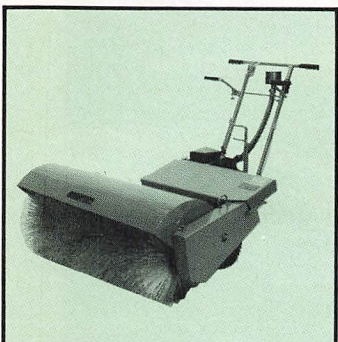
POWER ROOF CUTTER



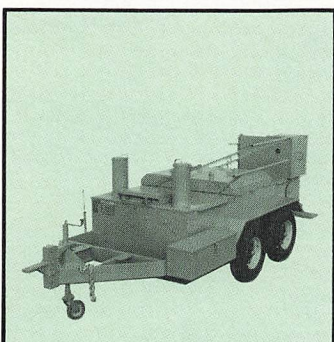
HYDRAULIC HOIST



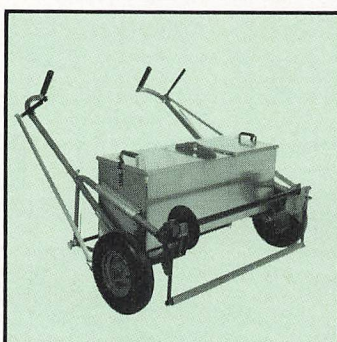
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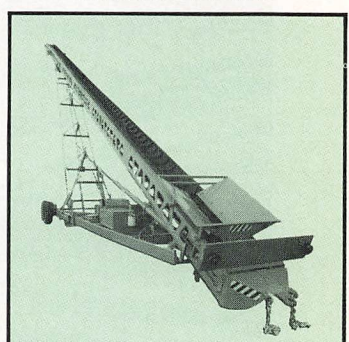
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The future of BUR

It's tough to make a comeback when you've never been away

By Connie Arkus

Single-ply, shake, polyurethane foam, solar, metal, clear-span, cold-applied, polyester scrim. . .

Contractors can't open a magazine these days without reading about their increased roofing options.

Like the popular television commercial, however, some folks are asking, "Where's the beef?" or more appropriately, "Where's the BUR?"

Is built-up roofing a casualty of the roofing revolution that has dramatically shaken up the industry in the last decade?

"Rumors of the death of built-up roofing have been greatly exaggerated," said Ack Blocher, vice president and general manager for the Lake Central District, Shelter Materials Group of CertainTeed Corp.

Built-up roofing, once the dominant rooftop, now finds itself in the less enviable position of defending its reputation against a variety of young and not-so-young upstarts.

A PR potpourri

The Asphalt Roofing Manufacturers Association (ARMA) is going to the trenches to battle for position. With the theme "Built-Up Roofing: A System Above The Rest," ARMA has launched a multi-year promotional program, intended to boost the image of the "granddaddy" of roofing.

Equipped with a specially-designed logo, trade magazine advertisements, buttons, bumper stickers and brochures, ARMA is getting the word out. ARMA is also taking its show on the road with audio-visual presentations and staffing information booths at industry-related conventions and exhibits.

"Establishing a positive image for

a performance-proven product is our objective," said ARMA's Executive Vice President Richard Snyder.

The public relations push began in July 1983 when ARMA executives and the National Roofing Contractors Association's (NRCA) officers met to evaluate the future of built-up roofing.

As a result of the session, ARMA accepted the following five challenges, according to Snyder:

- to develop and implement an effective BUR promotion program;
- to promote an overall team approach from the point of manufacture to the point of application—quality roofs are obtained by combining quality materials, good workmanship and design;
- to commit to an educational effort especially with designers and owners on what must be done to achieve superior roof performance;
- to commit to reasonable and workable application techniques and application tolerances; and
- to develop a built-up roofing performance criteria, providing the industry with definitive guidelines for BUR system specifications

known to provide long-term performance.

Taking the BUR by the horns

The publicity part of the promotional campaign is in full-swing. The 1983 efforts "were geared toward specifiers and building owners," Blocher said, "with greater emphasis on roofing contractors and distributors in 1984."

Advertisements placed in trade magazines "describe ARMA's purpose in the public relations program as well as its sponsors," Blocher explained.

"Built-up roofing delivers the protection you want," proclaims the ad. A list of BUR's attributes are identified:

- has three or more plies for protection against nature and people;
- meets code requirements;
- meets Underwriters Laboratories' (UL) fire ratings;
- meets Factory Mutual (FM) wind uplift requirements;

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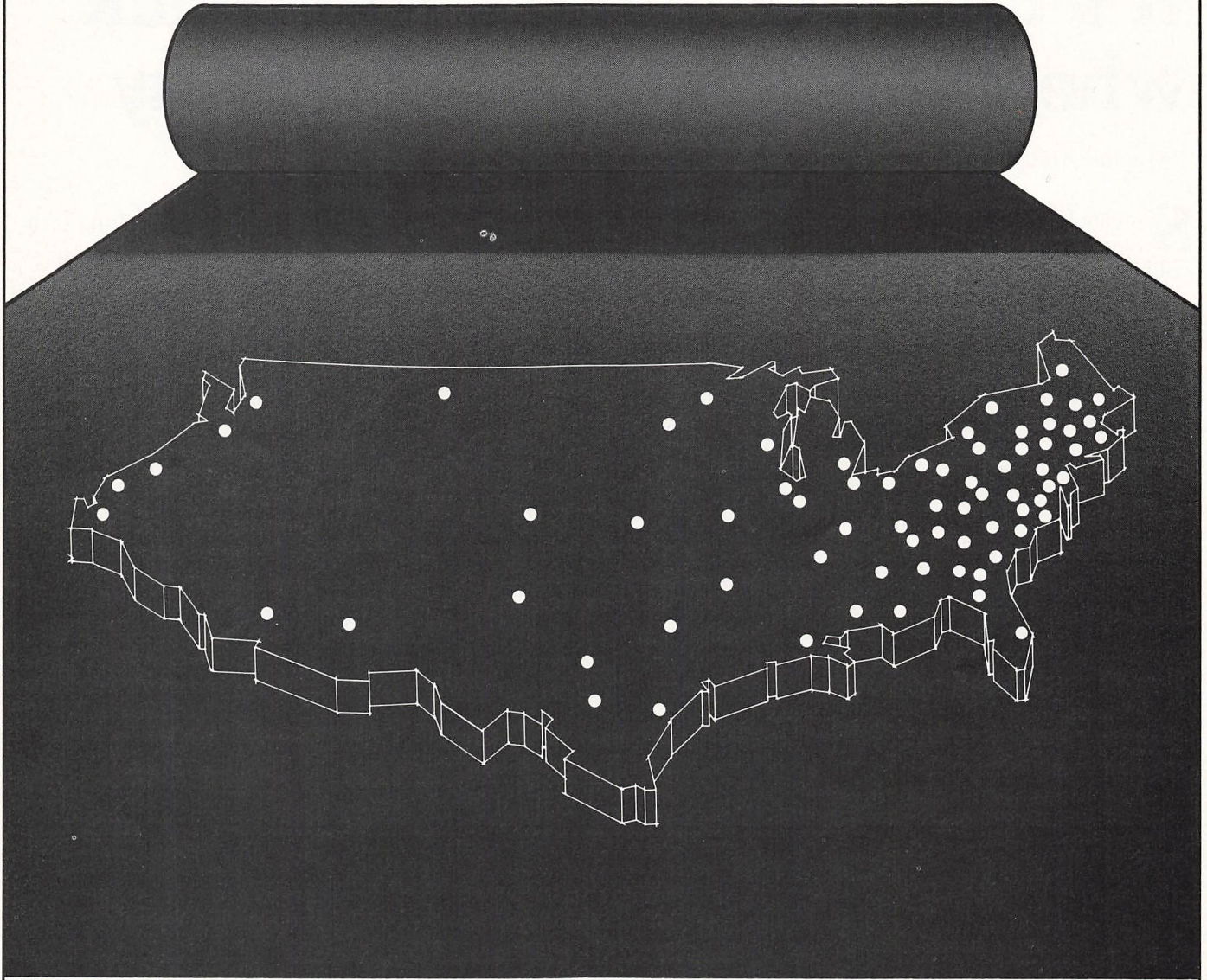
Built-Up Roofing, A System Above The Rest.

Artwork for ARMA's BUR promotional program

#1

Reason **1** to roof with Versigard from Goodyear.

FULL SERVICE DISTRIBUTORS.



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like cost-saving talc-free edges. Make sure materials, including insulation, are available when you need them. Offer advice and service once the job begins. And be there when the job is done.

For more good reasons to roof with Versigard, contact Bill Vobbe at (216) 796-4421 or write The Goodyear Tire & Rubber Company, Roofing

Systems,
1144 E. Market
Street, Akron, Ohio
44316.

BUR

continued from page 23

- backed by companies experienced in roofing; and
- installed by reputable, professional roofing contractors.

"More than 50 ads (will be placed) with key BUR-influencers in 1984," Blocher said. Readers who want more information on the system can fill out a request form included in the ad and return it to the ARMA office for a free brochure.

He began by citing six major changes affecting roofing, which have occurred in the last 10 years:

- increased insulation requirements have resulted in roofs that are hotter in the summer and cooler in the winter;
- fiber glass mats have replaced organic felts, often resulting in one less ply on the roof;
- the development of urethane and

crude oils make quality asphalts, but most quality crudes are used to make paving asphalts. As a result, a lesser quality crude may be used for roofing grade asphalts.

He pointed out that asphalt suppliers committed to the roofing industry have been able to turn many crudes into high-quality materials.

"The most serious problems, in our view, are those caused by substandard roofing asphalts that are being dumped in some markets," Heddens said. "It's these asphalts that can give the good quality material a very bad name."

Trumbull has adopted an identification procedure to ensure that only high-quality asphalt leaves its plants. All Trumbull asphalt cartons are labeled with the following information: equiviscous temperature (EVT, the recommended temperature of asphalt at mop stage), average flash-point, type of asphalt, date and location of manufacture.

Manufacturers should be responsible for the materials they produce and for applying the proper labeling, but roofing contractors need to take an active role in the quality process, Heddens said.

"Contractors should order and use only asphalts that are made to conform to ASTM D-312," he added. "Contractors have a responsibility

Establishing a positive image for a performance-proven product is ARMA's objective.

ARMA has already purchased booth space at both the NRCA and the National Maintenance & Plant Engineering conventions. Representatives plan to set up at the Construction Specifications Institute's (CSI) national convention, key regional CSI shows and the Midwest Roofing Contractors Association's annual event within the year.

The audio-visual program, which debuted at NRCA's February convention, is available for purchase to interested groups. The 20-minute slide presentation describes the merits of BUR, emphasizing that "the best reason for choosing a built-up roof is that today's built-up roofing products and specifications meet today's building needs."

Is it too early to rate the success of the promotional program? Not if you ask Snyder.

"The response to our ads, our special articles and other publicity items to date has been overwhelmingly favorable," he said. "We have received over 8,000 inquiries."

"Hot" topic

Robert Heddens, vice president and general manager of the Trumbull Asphalt Division of Owens-Corning Fiberglas Corp., addressed the team approach to BUR, involving manufacturers, contractors and mechanics.

other foam plastic insulations demand different application techniques;

- increased amounts of rooftop equipment cause more penetrations, potentially resulting in flashing problems;
- changing health and safety requirements have affected application techniques; and
- asphalt itself has changed.

The quality of asphalt is a hot topic with contractors. Attend a roofing seminar, rap session or convention and talk soon turns to asphalt problems.

Contractors shouldn't be lured to an inferior product because the price is low.

"We're pretty convenient whipping boys," said Heddens about BUR manufacturers. "BUR is better than it has been."

Not too many contractors would concur.

Heddens qualified his statement somewhat. "I will concede that there have been instances of asphalt that has not been up to spec."

Heddens explained that quality

to their customers and to their industry."

Heddens said that contractors shouldn't be lured into purchasing an inferior or suspicious product because the price is low.

A team effort is truly the only way to approach any roofing system. "If the contractor and the workcrew on the roof don't do quality work

continued, page 27

DuPont Sontara® newest way to cut labor costs on gravel reroofs.

Soft SONTARA Roofing Fabric conforms to gravel, speeds preparation and installation.

SONTARA is strong—yet so soft, it hugs every stone of gravel. That means faster preparation, because you don't have to clean off as much old gravel. Only loose material.

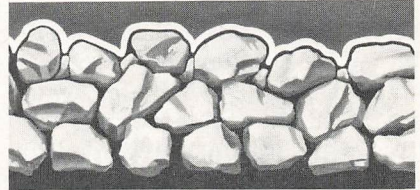
SONTARA spunbonded polyester absorbs cold asphalt faster than fiberglass. Asphalt soaks through SONTARA for better adherence to peaks and valleys. You get a tough membrane without the voids and bridges that are vulnerable to puncture.

And because SONTARA is 40% lighter than fiberglass, it's easier to get up to the roof.

SONTARA also results in profit protection after it goes down. It's 6 times stronger than fiberglass, and has 50 times more stretch. That adds up to a more trouble-free roof with less chance of call-back.

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BUR

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through inexperience, carelessness or cost-cutting, then the reputation of all materials suppliers and the contractor, himself, will suffer," Heddens said.

Goal: zero defects

The proposed built-up roofing performance criteria document and application to tolerances will cover the latter two goals of ARMA's promotional program.

The document will be "a set of criteria, easily measured and understood, defining a quality built-up roofing system," Snyder said.

"Our goal is zero defects in roofing performance," said Roger Bengtson, vice president and general manager of the Roof Systems Division of Manville Products Group and task force chairman.

"Performance criteria focus on the longevity, serviceability and durability of the entire roof system, while application tolerances concentrate on workmanship and job-site quality control," said NRCA's Technical Manager Jeff Lowinski.

"When you're constructing a built-up roof, you are attempting to hold to an exact set of mopping weights, lap dimensions and other criteria necessary for the performance of the roof system," Lowinski said. "Holding to these criteria exactly, without variance, is impossible."

This is where application tolerances come in.

"There must be a range established for the performance weights and measures within which roof system performance is not significantly affected," Lowinski explained. "This range must also account for the ability of the roofing mechanic to measure and control the roof system assembly."

Impact resistance, systems compatibility, dimensional stability, fire resistance, durability, puncture resistance, tensile strength, fastener pull-out resistance and drainage will be investigated.

"The standard will use common references from various governing bodies within the industry, UL, FM, ASTM, NRCA and specific manufacturers if ARMA agrees with manufacturer's recommendations.

The data has been collected and a rough draft has been prepared. A final draft will be ready in July, Snyder reported.

"Our objective is for contractors and specifiers to identify performance characteristics, appropriate testing and measuring procedures and suitable limits of acceptability for roof systems in general so that any given BUR system, including its materials and equipment, may be effectively evaluated," said Bengtson.

He would also like to see the document used as a model for building codes, government agencies and services.

Command performance

"With performance guidelines, proper application tolerances, a team approach attitude and a positive image-building program, BUR can't help but become more successful," Snyder said.

"We have made constructive technological advancements; we have taken a more aggressive marketing stance because the system, itself, has a track record second to none."

The short-term effects of the public relations effort have been positive. Built-up roofing manufacturers and contractors are taking a critical look at their system.

It is hoped that the performance criteria document with application tolerances will bolster the system's sagging reputation.

Only time will reveal the lasting effects of the program.

Where's the BUR? ARMA wants it to return to the spotlight for a long-running engagement.



The industry is called to attention

Quality BUR is no accident

by William J. DeBerry, vice-president Testing Engineers—San Diego

Built-up roofing systems have received much criticism over the years, focusing on the problem roofs that have commanded the most attention. There are, however, many examples of successful built-up roofs. Unfortunately, a roof doing its job doesn't get noticed the way a problem roof does.

This information or publicity gap fosters the idea that most built-up roofing systems have problems. It has led many to believe that built-up roofs are inherently failure-prone.

Despite this adverse publicity, quality BUR roofs do exist and can be built. Their success results from careful attention to four elements: design factors, materials, application and workmanship, and maintenance.

We are all too familiar with the types of problems that occur in built-up roofing. In most instances, an investigation of a roofing failure will uncover an inadequacy in one of the four factors named. For instance, the investigation may reveal that the design specifications are correct but the material or application is not as specified. On the other hand, it may be discovered that a roof was applied according to specifications but the design was improper.

Careful attention to all four factors is essential for a successful built-up roof.

Good roofs start with good design

No matter how good the materials are and how well they are applied, if the basic design specifications are not suitable for a particular application, the system may fail. The de-

signer must pay attention to many details, such as:

- the type of structure the roof is supposed to protect,
- the type of structural deck,
- the type, thickness, size and R-value of insulation if it is used,
- the use of a vapor retarder and
- environmental and climatic conditions.

All too often, the designer relies on "canned" specifications that have been used on other jobs. The roof system is designed with little or no change to reflect the current situation. Frequently, the design firm is not familiar with local conditions where the building is to be constructed and does not take these regional variations into account.

Often, specifications fail to address particular conditions found on a given roof. When this happens, the roofing contractor must improvise the omitted details on the job. The roofing contractor's solution may not always be the best for an application, since it is being devised under field conditions in the most expedient manner.

The right materials must be used

There are a number of different types of materials available to construct a built-up roof. Most of the materials must meet various American Society for Testing and Materials (ASTM), federal or military standards. The proper selection of the materials is a design function. However, proper roof performance demands

that the materials that were specified are, in fact, used on the job without substitution. Testing of the materials at the job-site should be done to be certain that the materials meet the standards required.

Application quality depends on variables

The application factor is perhaps subject to the largest degree of variability. Both the roofing design and the manufacturing of the materials are performed under controlled conditions, while the application is usually performed at the job-site under less-than-ideal conditions. Some of the factors that affect the application include:

- inclement weather,
- scheduling and budget pressures,
- faulty or improper application equipment and
- the degree of experience and training of the personnel.

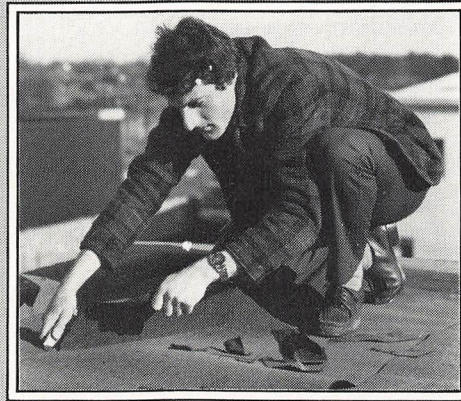
Agencies are making progress in emphasizing the importance of educating the roofing personnel. The people applying the roofing membrane must understand the importance of resolutely following design specifications. It is also imperative that the personnel realize their material's performance limitations.

Maintenance avoids premature failure

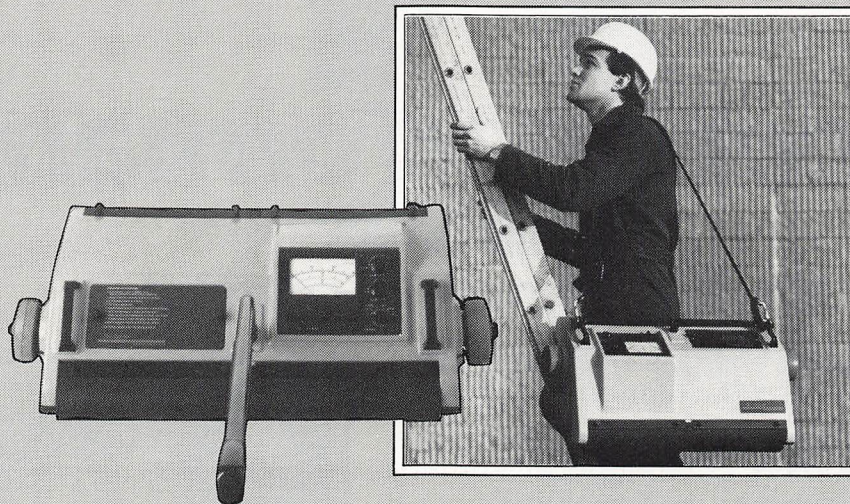
The final factor to affect the quality of the roofing membrane is maintenance. Proper maintenance involves controlling access to the roof, as well

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Quality

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as the typical functions of keeping drains clear and removing debris from the membrane surface. Too often mechanical or electrical tradespeople install their equipment and inadvertently damage the membrane or fail to flash their equipment properly. This may cause premature failure of an otherwise quality roof.

The maintenance function must ensure that all equipment is properly flashed and that all damage is corrected to prevent minor problems from growing into major ones.

Consultants monitor the whole process

Producing a quality BUR system requires a great deal of effort from the design stages through material application and maintenance. There are a number of different parties involved who are responsible for the various phases of the process.

Typically, no party monitors the process throughout all of the stages unless a roofing consultant has been retained for this purpose. A roofing consultant can review the roofing project plans and specifications to ensure that the design details are proper and complete and fit in with the overall structural design of the building. He or she can also verify that the right materials are being used and the design is suitable for the local climatic conditions.

During the application phase, the consultant can check the materials to be certain that the appropriate standards are adhered to. The consultant can also monitor proper asphalt temperature in the kettle and during application.

Finally, the consultant can assist in establishing a regular inspection and maintenance program. This should begin after the last trades

have finished their work on the roof. Any damage or improper equipment flashing or mounting can be discovered and corrected before more serious damage occurs.

Numerous agencies have taken steps to include the use of a professional roofing consultant on their roofing projects. This is a positive step toward ensuring a quality end product.

The program must be more widely encouraged to obtain the maximum benefit from it, however. Quality control must begin with a review of the specifications and continue throughout the entire process to be effective. Once this is done there will be a much higher probability of obtaining a successful roofing system.

Quality roofing is no accident.



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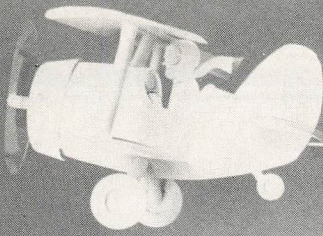
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Interview with Wayne Mullis

“You lead, you follow, or you get the hell out of the way”



Wayne I. Mullis is the owner of Universal Roofers in Phoenix, Ariz. Universal employs 350 people; 35 percent of its work is residential, 65 percent commercial/industrial. On June 1, Mullis will become president of NRCA.

Wayne I. Mullis is a man in control—of his business, of his future, and most of all, of himself.

In an interview for his association's magazine, he sticks to the company line and avoids discussing his private life. When he is asked to take off his suit coat he does so politely, but his image and his manner remain impeccable.

His friends in the industry don't know a great deal about his personal history; this article won't enlighten them.

They kid him occasionally about his wardrobe, which is top-of-the-line and carried off with no small amount of aplomb. He has a perpetual tan and appears calm and fit.

Mullis' voice has a slight Southern twang and is surprisingly soft, even when he's saying things like, "The roofing business is very exciting." What's even more surprising is, you believe him.

What's a nice guy like you?

"I went to visit a musician friend of mine in Phoenix after I got out of the Navy. I needed a job, and I was introduced to a roofing contractor," Mullis explains when he's asked how he got started in the business.

"He was looking for a salesperson to train to sell roofing. I went to work.

"I really liked it," he says, smiling. "You know, it's great to be providing a service everybody needs. It's not like insurance. You build a roof and you get a sense of completion. That had a certain fascination for me."

Apparently, it still does. Mullis has a knack for conveying his enthusiasm about the industry to others, a priceless commodity in marketing his services. He started Universal with \$750 in 1968; this year he expects to bill \$24 million.

Easy entry?

"I had practically nothing," Mullis says of that inauspicious beginning, "but I don't know if you can do that today. Not with some of the systems coming out. Manufacturers are getting more sophisticated about who they sell to; a lot of things are happening that weren't happening then. This business has come a long way in the last 15 years," he says thoughtfully.

"We live in the age of the specialist. That's the way you come off when you describe a new system," Mullis observes. "Owners expect you to be able to explain that system's attributes. They don't expect you to give them a history of built-up roofing. So, in terms of finances it may not be easy for some people to break into the business, but in terms of experience—yes."

Changing our image

The traditional ease-of-entry in the roofing industry was part of the impetus for the Association's new public relations program, "Changing Our Image, Protecting Our Future," which will be in full swing during Mullis' term. The Long-Range Planning Committee, on which he served as NRCA senior vice president, conceived of the campaign; an agency was hired to help promote roofing contractors as professionals.

Mullis has chosen "the realization of the professional roofing contractor public relations program" as the project for which he'd like his presidency remembered. As he talks about it, there's a barely perceptible rise in his voice; he starts playing with a ballpoint pen. This is as overtly excited as Mullis gets during the interview; you know this subject is very, very important to him. "We are on the threshold of the most fantastic plans," he says fervently. "We

are going to educate the public and improve the position of the roofing contractor."

Mullis believes he has reason to be concerned about the public's image of roofing contractors. "I have never been to a cocktail party in my town where, when someone asks me what I do for a living and I tell them, they don't look at my shoes to see if I have tar on them. Then they tell me a horror story about roofing. I have yet to hear someone say, 'You know, I had a roof put on my building and it's just fantastic. It never leaks.'

"We're going to start telling people about the roofing contractor's ability, his service to the customer and his role in the business community.

"This is a fast-moving age. Some of the old-timers seem to think things just creep, but we're not creeping anymore," Mullis flatly states.

Future trends

"I'm not a visionary; I don't have a crystal ball," Mullis says, smiling, "but there's plenty of room for growth, refinement and improvement in this business.

"It would be short-sighted to think there aren't other systems out there that will come along and change the industry. I've seen spectacular change in my business. You change with it or you die. For those who really want to grow, they'll have to fasten their seat belts.



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Mullis

continued



"I don't think built-up roofing will disappear," he continues. Some people think I'm wrong about that, but BUR has been performing for 100 years. We don't hear enough about the great BURs, but they are there. It will be around for a while. It is a major part of history," he says.

"We've come further in the last two years than we have in the last 50, but compared to other industries we're still a baby.

"The general building people know a lot more about business and are much more technical than our members. We are going to have to be more professional and continue to set higher standards for ourselves to move forward.

"We are already setting these standards for materials, applications and business practices," he adds.

"To survive in the future, roofing will have to be managed by business people," Mullis predicts. "I am not a roofer, I am a businessman who just happens to be in the roofing field. That makes a big difference. The people that will survive and do well will keep up with the sophisticated technology and advances in information systems."

Those who can, teach

"You know, it works both ways," Mullis comments. "The same information that we have to keep up with is also going to be more readily available to our customers. That makes them far more knowledgeable and demanding people. Education is going to be offered more formally in the universities, through RIEI (Roofing Industry Educational Institute) and through NRCA.

"That's our second big project for the year," he states. "We have started to get into the educational field and we have to keep it up."

Specialty of the house

It sounds as though Mullis is describing an age of intense specialization, in which a chief executive officer hires those people who have expertise in clearly defined areas.

"No question about it," he says. "This is already happening in the big construction companies today, and it's going to be happening in roofing. There is going to be greater sophistication and diversity of talent. We'll need experts in sales, personnel management, promotion, application and other technical areas."

The big guy syndrome

Mullis seems to be comfortably certain about this potential growth and specialization. But others in NRCA perceive these predictions as an awesome threat to the contractors with smaller businesses, some of whom already claim that the Association caters to the "big guys" and overlooks their concerns.

"It's easy to be intimidated by an organization that's doing some of the things NRCA is doing," Mullis admits. "We are a high-profile organization, and our leaders are part of that profile. I think that's what leadership is all about. You lead, you follow, or you get the hell out of the way.

"We need those small contractors," he says earnestly. "I'm going to do my very best to improve our communication with them.

"It's not true that we lack an understanding of these people. They do not have the budgets to hire the specialists, the large staffs. This contractor has to be everything to his company. So where can he get the help he needs? From a single source—NRCA," Mullis states.

"We are a cafeteria organization. I think we have something for everybody. To avail themselves of these services, the contractors just have to call us. The Association should be considered a large body of knowledge."

Attracting new members

"Out of the 20,000 or so roofing contractors out there, we consider about 8,000 potential members," Mullis says. "I'm not sure we are offering everything we could be to this audience right now. We might have to change some services and produce new ones."

"We have to more specifically answer the needs of the residential contractor. There are plenty of problems and situations associated with residential work that are different from commercial work. Different customer relations, different service required, more attention to detail—a completely separate mentality. These are things we have to understand if we are going to serve this segment of roofing contractor management."

Affiliate relations

In conjunction with his efforts to reach the grass-roots members, Mullis is planning to travel extensively during his term as president. He has added increased communication with affiliate groups to his list of program priorities.

"There is competition for dollars here," Mullis observes, "but we need the input and cooperation of local associations. Information sharing goes both ways. By working together, we can enhance the image of the total industry."

"Last year we invited the affiliates to Chicago and tried to lay a foundation for better understanding," Mullis continues. "We're going to work harder at it this year. We're going to make ourselves more availa-

ble; we want to sit down with the elected leaders and the directors, roll up our sleeves and find out how we can work with them. I think we'll learn a lot."

You want to be a what?

Talk to Wayne Mullis for five minutes and you'll come away believing that, next to movie-making or cliff-diving, roofing is just about the most thrilling line of work one could hope to pursue. But surely, long ago and far away, he dreamed of something else. What would he want to be if, God forbid, he couldn't be a roofing contractor?

"A salesman," he says, and his eyes light up. "Selling is very exciting. It's a creation. You're converting people to your way of thinking."

In control. Definitely.



Polyester suits BUR just fine

by Seymour Sands,
E.I. Du Pont de Nemours and Co.



Figure 1: Applying a polyester system

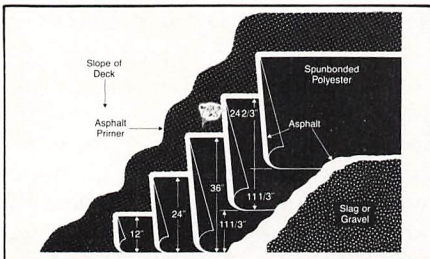


Figure 2: Three plies of spunbonded polyester in a built up roof

Spunbonded polyester fabrics, which contractors have begun using as a reinforcing felt for built-up bituminous membranes, may ultimately solve two major problems: membrane splitting and flexural fatigue cracking.

The polyester fabric-reinforced membrane is in a class by itself. In tests its breaking strain ranged up to 20 times the breaking strain of conventional membranes; flexural fatigue resistance ranged from 100 to 1,000 times as high.

Note, however, an important current limitation: the tested membranes were cold-process, with interply mastic adhesive applied at the rate of 2.5 to three gallons per square (see figures 1 and 2). High temperatures cause dimensional changes to polyester fabric, a consequence of its thermoplastic nature. For this reason, the standard BUR practice of hot-mopping, with its temperatures of 450F to 465F, cannot be used on spunbonded fabrics.

However, a polyester-reinforced membrane, using Type II asphalt applied at 400F, has been constructed

with no dimensional changes. The hot-applied, polyester-reinforced membrane, now 3½ years old, is still giving problem-free service (see Figure 3).

Most cold-applied, polyester-reinforced membranes, however, use a cold-applied asphalt cutback (per ASTM D2823) or an asphalt emulsion (per ASTM D1227) as an interply adhesive.

The polyester-reinforced BUR system may be used for re-covering existing membranes, for new membranes or for replacing old roofs requiring tearoff. In most instances, re-covering requires one or two plies of the spunbonded fabric, while new or retrofit BURs require two to four plies, depending on design requirements and fabric weight.

In use and application, these newer membranes are much like the conventional cold-process membranes, except that spunbonded polyester fabrics are substituted for the organic or glass-fiber coated felts normally used.

Cold-mastic or cutback asphalt has been used as a binder and waterproofing medium in built-up membranes for many years. Spunbonded polyester fabrics have also been available for many years, but their use in roofing is relatively new.

Fabricating the fabric

Polyesters are polymers formed when bifunctional glycols and bifunctional acids react to form long molecular polyester chains. Heated to high temperatures, the thermoplastic polyesters become fluid

enough to pass through tiny spinneret holes, forming continuous fibers (see Figure 4). These fibers are collected in a web of random orientations on a moving belt. They are bonded together with heat and pressure to form a spunbonded fabric.

Spunbonded polyester fabrics are strong, tough, extensible, flexible, tear-resistant, non-biodegradable,



Figure 3: Hot-mopped polyester roof

non-water-absorptive and lightweight. One limitation of the fabrics, however, is their low resistance to ultraviolet degradation.

To protect the fabric, polyester fibers must be covered in all outdoor applications that require long service life. In roofing, the asphalt top-coat provides the ultraviolet radiation barrier. A top layer of mineral chips applied at the rate of 60 pounds per square or gravel applied at 400 pounds per square, as in conventional BUR practice, provides additional protection to the whole roof.

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DuPont rolls out the strongest reinforcement ever for BUR: new Reemay® Hot

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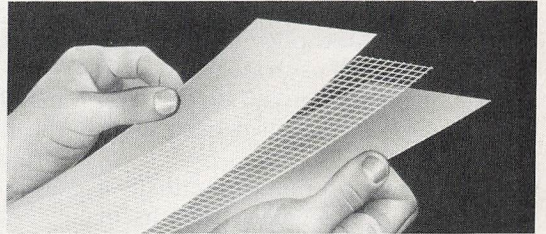
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REEMAY Hot combines the stability of fiberglass (middle ply) with the stretch and flex of polyester.

Actual demonstration shows that one ply of REEMAY Hot supports the weight of two men. Note the remarkable stretch and strength.



Polyester

continued from page 36

Polyester adds toughness

The benefits of spunbonded polyester fabric enhance the properties of the finished BUR membrane. The table shown in Figure 5 compares the properties of three roofing systems, all using cold, cutback mastic as the binder and waterproofing medium.

The first system charted is built with three plies of uncoated spunbonded polyester fabric, each weighing 1.5 pounds per square. The second has three plies of an uncoated, wet-process glass fiber mat weighing 1.4 pounds per square. The third system has three plies of 15-pound organic asphalt-saturated felt. All test membranes had 2.5 to 3 gallons per square of mastic in each layer and top coat.

After drying for one month in a laboratory, the tensile strengths of all three composites are approxi-

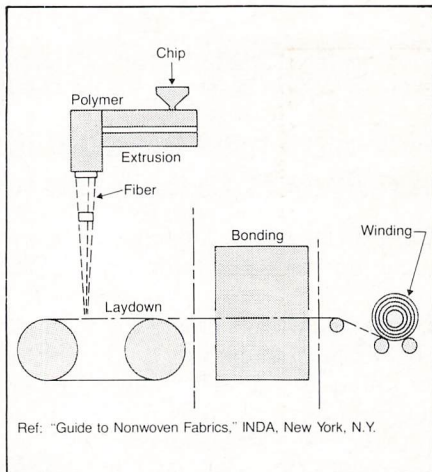


Figure 4: The spunbonded process

mately the same. But compared to the other membranes the breaking strain of the polyester membrane is 20 times greater.

The polyester felts' high breaking strain is correlated with toughness

or high work-to-break. This characteristic is represented by the area under the stress-strain curve, as in Figure 6, and referred to in ASTM D-865. Toughness combines both tensile strength and elongation.

The work-to-break or toughness of a polyester membrane always rates very high (see Figure 7). High toughness indicates that much work must be expended on a polyester membrane before failure can occur.

According to the tests, flexural fatigue of the polyester membrane is 100 to 1,000 times that of the other two membranes. Its trapezoid tear strength is two to three times that of the membrane made with uncoated glass mat reinforcement. The greater elongation, flexural fatigue resistance and tear strengths provide spunbonded polyester-reinforced membranes with the potential for long service lives.



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**MD/XD - Machine Direction/Cross Direction.
¹ ASTM D-2523
² ASTM D-813-59
³ ASTM D-1117
⁴ N.D. Not Determined

Figure 5: The properties of roof composites with cold mastics

Spunlaced provides flexibility

Where the graveled surfacing of an existing roof is irregular, spunlaced polyester fabric provides a workable

alternative. Spunbonded fabric is too stiff to conform to the contours of such roofs without bridging (see Figure 8). The more flexible spunlaced polyester will conform better

to irregular surfaces, resulting in less threat from punctures.

Spunlaced polyester fabrics are made with stable polyester fibers hydraulically entangled to form a fabric (see Figure 9, Reference 1). Elongation and flexural fatigue resistance are similar to spunbonded polyester, but because it is held together by fiber entanglement, it is more drapable.

Application technique is the same for spunlaced polyester as for spunbonded polyester, except that more cutback asphalt (about seven to nine gallons per square) is needed in the first ply when re-covering an irregular aggregate-surfaced membrane.

Polyester's not just for BUR

The combination of materials that can be used with spunbonded poly-

continued on following page

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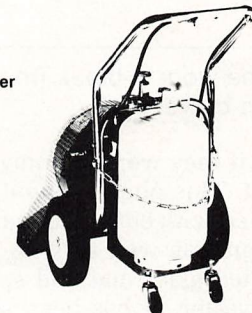
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- Produced Heat When Regulator Set At:
5 Lbs. Pressure — Up to 360°F*
10 Lbs. Pressure — Up to 510°F*
*At 70° Ambient Temperature

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Polyester

continued

ester is limitless. Modified bitumen systems probably offer the best opportunity for exploiting the unique properties of the fabric as reinforcement in cold-process membranes. The relatively high breaking strain and elasticity of modified bitumen sheets should compliment polyester's qualities to produce exceptional performance in membranes made with a cold solution (cutback) or emulsion adhesive.

The use of glass fiber products with spunbonded polyester apparently combines the best of two worlds. There is some commercial use of cold-asphalt roofing systems in which a glass fiber product is used as a base sheet with one or two plies of spunbonded polyester as the upper layers. The fiber glass provides stiffness and gives a level surface. The spunbonded polyester provides high breaking strain and toughness. If the glass fiber base sheet develops a crack the polyester layers would pick up the load and

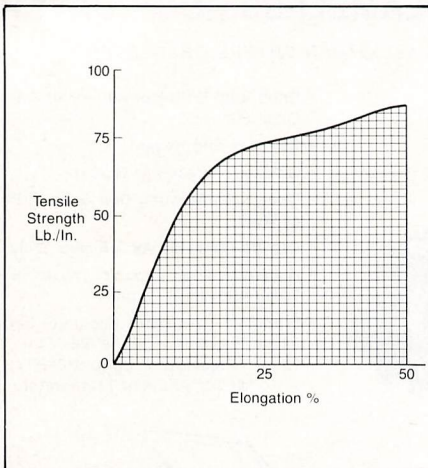


Figure 6: The work-to-break from a stress-strain curve

function as if they were the only reinforcement. This phenomenon has been observed with both cold-mastic binder systems as well as with hot asphalt coated glass mat and spunbonded polyester. It has been seen with glass scrim and polyester where the polyester fabric continued to reinforce the membrane after the glass scrim had fractured.



3 Plies of:	Work-to-Break (ASTM D-885)
	MD/XD**
Spunbonded Polyester	23/23
Glass Fiber Mat	0.7/0.8
15 Lb. Felt	0.9/0.9

*3 Gallons/Square of Cut-Back Used Per Layer of Product.
** MD/XD – Machine Direction/Cross Direction.

Figure 7: The work-to-break of 3-ply roofs

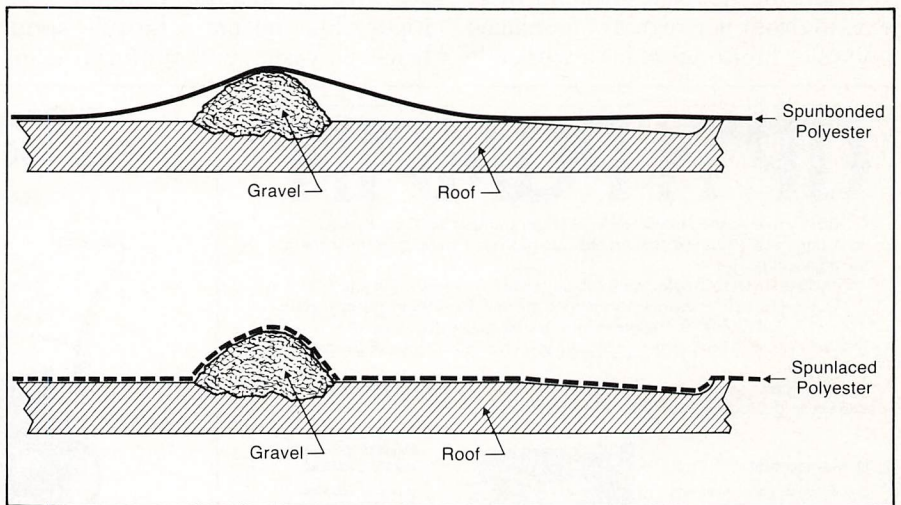
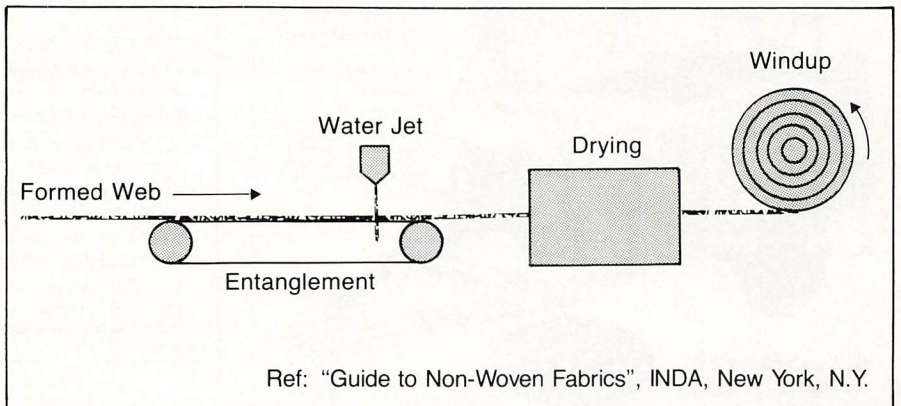


Figure 8: The relative conformability of spunbonded and spunlaced fabrics on a gravel roof

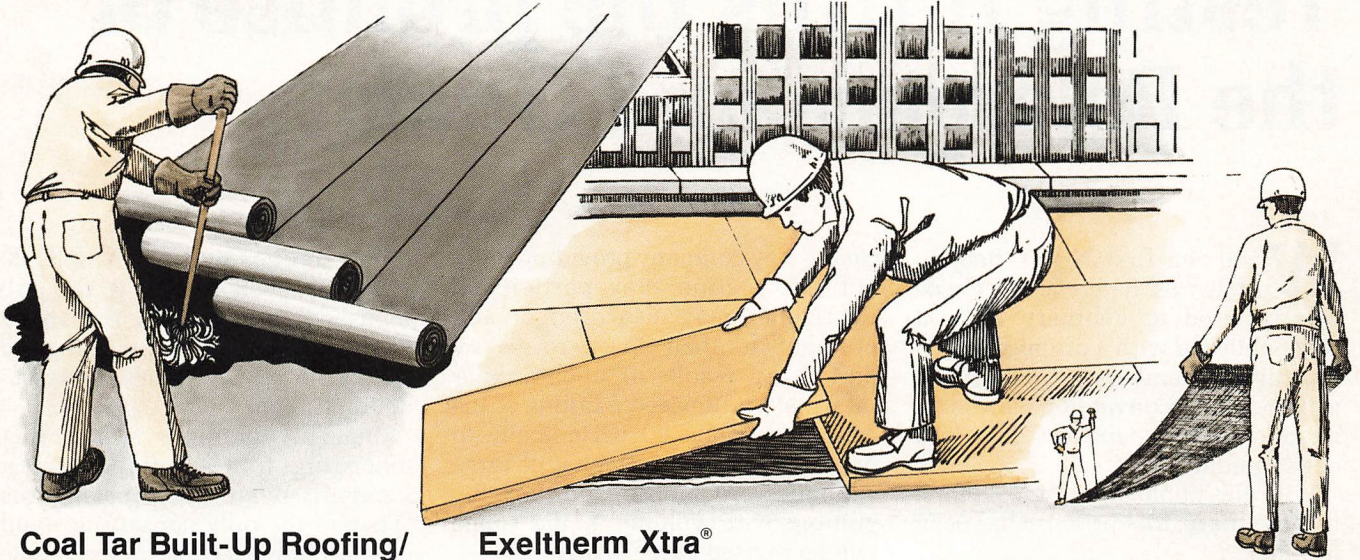


Ref: "Guide to Non-Woven Fabrics", INDA, New York, N.Y.

Figure 9: The spunlaced process

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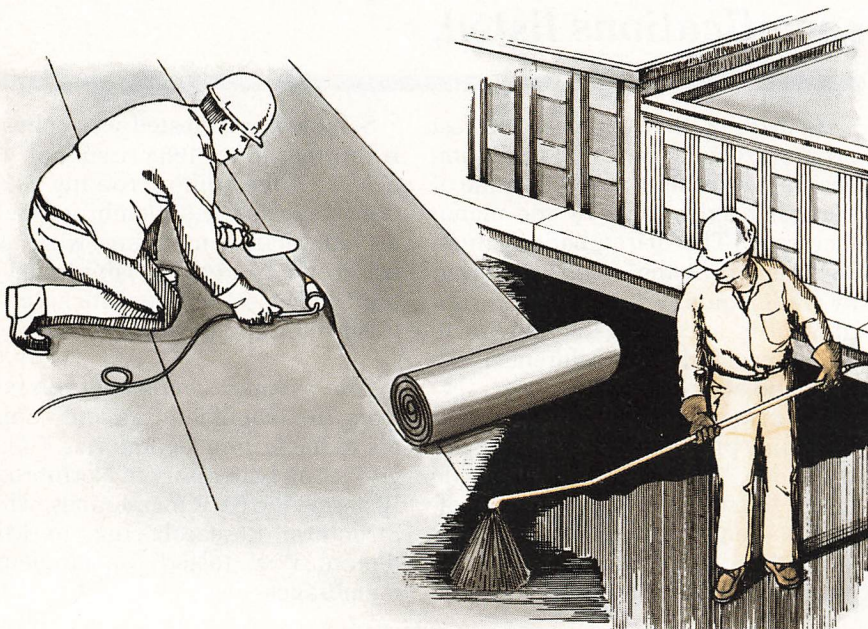
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Construction Materials

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Testing fulfills the promise of the *Reference and Guide*

When the first *NRCA Roofing Materials Reference & Guide* was released in February 1983, it was published with a promise. *Guide* committee members introducing it at last year's convention vowed to include independent test data in a coming edition.

With the publication of Volume 4 this February, that promise has been fulfilled.

The *Guide* has always contained useful information on built-up and prefabricated single-ply roofing products. But the independent test data in Volume 4 adds even more power to the reference work, according to Norm Bullock, director of NRCA's Listing Services.

At present, the *Guide* lists built-up roofing, modified bitumens, polyvinyl chloride (PVC), ethylene propylene diene monomer (EPDM), neoprene products and other prefabricated single-ply. The materials' physical properties, specifications and test data and other information are arranged side by side in columns stretching from the top to the bottom of each page. Reading across the columns makes comparison of similar products from different manufacturers easy.

Since it was first published, the *Guide* has both shrunk and doubled in size. The first volume of the *Guide* contained product information from 44 manufacturers. It was, literally, a towering work, measuring 17 inches tall. Since then, many more companies have joined the program. The current volume includes 78 companies and more than 400 built-up roofing specifications and single-ply products.

Bullock is continually recruiting new companies and products for the

Guide. Any company providing product information may participate. Companies may also drop or add products to their lines, revise reported test results or update other information. Revised editions of the book are published periodically to note these changes. A total of three volumes were published in 1983. Beginning with Volume 4, the *Guide* will be revised twice a year.

Testing declares its independence

As useful as the first three *Guides* were, they still offered only the information the manufacturers released. Volume 4, for the first time, includes independent test results for many of the products and specifications listed.

Volume 4 includes independent test results for many of the products and specifications listed.

As part of this comparative test program, *Guide* users will find numbers in parentheses beneath some of the test results listed by the manufacturers. The parenthetical numbers represent the results achieved by independent laboratories running tests according to the procedures specified in the referenced criteria and standards.

The criteria and standards used in the *Guide* program are, according to the *Guide*, "the better ones available in the U.S. today." For built-up roofing, National Bureau of Standards (NBS) BSS #55 Preliminary Performance Criteria for Bituminous Mem-

brane Roofing was used. BSS #55 was chosen because it is the only published and generally recognized criteria for BUR membranes, according to NRCA Research Associate Bill Cullen.

Single-ply products were tested according to Canadian General Standards Board (CGSB) standards. "They're the only consensus standards currently available for these materials in North America," Cullen said.

Figure 1 shows what tests and what standards were used on each type of material. The properties tested by these procedures are listed on page B of the most recent *Guide*. "The tests were selected because they represent basic properties most often referred to in making membrane product evaluations," Bullock said.

Samples to be tested were chosen from the June 1983 issue of the *Guide*. Of the built-up roofing listed, only glass fiber felt membranes with asphalt interply moppings were tested. Products added in later issues of the *Guide* also were not included in this first round of testing.

The samples were sent directly from the manufacturers and suppliers to the testing laboratories. Chicago Testing Laboratory in Northbrook, Ill. tested the BUR membranes, while Structural Research, Inc. in Middleton, Wis. tested the single-ply membranes.

All seven of the BUR manufacturers sent samples. Though their numbers seem small, "Each of the manufacturers has a multiple number of specs," Rene Dupuis of Structural Research said. The fact that the comparative test program tested so many different specs attests to its thoroughness and validity, he added.

The manufacturers who did not send samples gave a variety of reasons, according to Bullock. Some manufacturers did not accept the CGSB standards. They believe that domestic standards, when they become available, will be more appropriate for the tests.

Other manufacturers did not send samples of the products because the material was to be changed or withdrawn from the market before the February publication of the book.

In the *Guide* those manufacturers who were asked to participate but failed to send samples are indicated by empty parentheses in the test results section of the *Guide*.

Some manufacturers, however, sent in materials even if they disagreed with specific tests because they believed in the program, according to Bullock. In some instances, the comparative test data is the only test data listed in the *Guide* because the manufacturers did not submit any data of their own.

In one example a company sent no test data for its built-up membranes. Instead, it states, "BSS #55 is not an accepted industry standard." The company did, however, submit product samples to be tested by the independent lab under the BSS #55 standard. The comparative test results are included in the *Guide* even though there are no company test results published.

The comparative testing program was adopted to add credibility to the *Guide's* data. However, as it states in the forward to Volume 4, "Comparative testing is not intended either as a validation procedure or as an indicator whether the property values reported for specific products agree or do not agree with those provided by the manufacturers/suppliers or

those values suggested in the referenced standards or criteria cited in the *Guide*."

"Comparative testing provides an added dimension in selecting roof products," Bullock said.

Cullen emphasizes further investigation when the comparative test results do not coincide with the manu-

ply materials. He believes the manufacturer didn't correctly interpret the breaking strength test procedure and performed the test differently than the other manufacturers. Or possibly, the manufacturer reported results in units of measure not specified in the test procedure.

When Dupuis's laboratory tested

Physical properties tested for each membrane type.

	BUR	Modified Bitumen	PVC	Elastomeric
Tensile Strength	X	X	X	X
Thermal Expansion	X			
Thermal Shock	X			
Thickness			X	X
Elongation		X	X	X
Load Strain Product		X		

Criteria and standards test procedures were derived from:

BUR: National Bureau of Standards BSS #55

Modified Bitumen: Canadian CGSB standard 37-GP-56M

PVC: Canadian CGSB standard 37-GP-54M

Elastomeric: Canadian CGSB standard 37-GP-52M

facturer's data "We're not saying ours are correct and theirs are not," he said.

According to Dupuis, the comparative testing program does provide one thing the manufacturer's test results can't—uniformity. All of the materials were tested with the same procedures, using the same set of standards.

As the term comparative testing implies, the most useful way to use the results is by comparing one product's results to another. Testing different materials uniformly makes these comparisons valid and useful, according to Dupuis. An example from the current edition of the *Guide* illustrates this point.

One modified bitumen company has had its own test results published in the *Guide* since Volume 2. When these test results are compared with other manufacturers' data, the breaking strength of the product appears to be twice as high as the average. However, comparing independent test results shows a breaking strength only half as high as the others.

This disparity was explained by Dupuis, whose laboratory performed the independent tests on the single-

the product, they used precisely the same test procedures they used on the other membranes. Because of this, the disparities found between products in the independent test results are caused by membrane differences and not testing differences, according to him.

The *Guide* presented the first opportunity for some products to be tested under the NBS or CGSB standards, Dupuis said. He believes the program helped manufacturers understand the standards better and highlighted the need for domestic standards.

The comparative testing program won't stop with Volume 4. More manufacturers and products will be added, with test results published in later *Guide* editions. The 1984 edition of the *Guide* will also include homogeneous and composite board roof insulation. Bullock said this will enhance the value of the *Guide* for all users.

To obtain more information on the *Guide* or *Guide* subscriptions contact NRCA, 8600 W. Bryn Mawr, Chicago, Ill. 60631.



A New Products, Ideas, & Publications

Manlift offers self-propelled work platform

A new, telescoping-boom, self-propelled work platform has been introduced by Manlift, Inc.

The Model MZI-50 platform has a 50-foot working height and a load capacity of 600 pounds. It has been designed with "zero tail-swing" for close-quarter operation. Overall width of the chassis is seven feet and the superstructure rotates within that width.

The new unit is powered by a 37-horsepower, four-cylinder engine, which may be fueled by either gas or propane. A diesel engine is also offered.

Complete details on the MZI-50 are available from Manlift, Inc.

Check #166 on Reader Service Card

Heat gun and vacuums are new B & D products

Black & Decker Professional Products division is offering two new products for the contractor.

One product is a light-weight, heavy-duty heat gun that delivers 800-degrees an inch away from the nozzle.

The 750-watt gun weighs only 1 3/4 pounds. It has a standard diameter nozzle of 3/4 inches. Accessory nozzles of 1/2 inch and 1/8 inch are also included.

A new line of professional vacuum cleaners is also available from Black & Decker. All are AC/DC and equipped with a two-stage bypass motor/fan system that keeps dust and grit out of the motors.

Another feature of the vacuum cleaners is a Never-clog® filter that sheds dirt to the bottom of the tank.

The different models in the line vary in capacity. Four of the vacuum cleaners handle both wet and dry tasks. One model features a wet/dry head that fits on top of a standard 55-gallon drum.

More information on these products is available from Black & Decker.

Check #167 on Reader Service Card



Hoover's roofing treated for fire resistance

Hoover Universal's cedar shingles and shakes, treated with Exterior Fire-X®, are accepted as Class A, B and C roof coverings by building codes and insurance companies throughout the United States and Canada.

The Exterior Fire-X fire resistance treatment is pressure-impregnated into the wood and will continue to protect the shingles even through rain and weathering.

The shingles and shakes are kiln dried after treatment to minimize shrinkage. The fire retardant also adds years of life to the roof by protecting the susceptible sapwood of the shingles.

A color-coded tagging system indicates the fire resistance of the product. Blue-tagged shingles and shakes may be used for Class C roofs, red-tagged products may be used for Class B roofs. Red-tagged shingles and shakes may also be used in a Class A roof assembly if exterior-grade gypsum board is incorporated into the deck.

A catalog describing the products and the fire resistance treatment is available from Hoover.

Check #168 on Reader Service Card

New publications offered by UFCA

Three publications are being offered by the Urethane Foam Contractors Association (UFCA) to help polyurethane foam contractors market their products and services.

The *Advertising and Merchandising Program Kit* helps contractors customize a Yellow Page or newspaper ad to suit their services. All the elements needed to create personalized ads, including easy-to-follow grid guides, are included in the kit.

Sprayed Polyurethane Foam: The Best Insulation Money Can Buy is a four-color brochure that sells the advantages of a urethane foam thermal insulation system to potential customers. It is available in quantities from the Association.

The *Estimating Guide* is a reference source for computing insulation requirements. The brochure includes engineering data, conversion tables and charts and formulas for computing the areas of various surfaces.

Prices and ordering information for these publications may be obtained from UFCA.

Check #169 on Reader Service Card

Gulf States Asphalt produces a full line of roofing products

A full line of asphalt-based roofing products is available from Gulf States Asphalt through its subsidiary, Gulf-Seal Corp.

The company manufactures everything from hot-mopped roofing asphalt to cold-applied coatings for new roof construction and maintenance of existing roofs.

All Gulf-Seal products are formulated from various base asphalts and blends selected for plasticizing, binding and waterproofing qualities.

Technical data sheets describing product specifications and applications are available from the company.

Check #170 on Reader Service Card

Data sheet details Carlisle's Sure-Seal rubber membrane

A new Spec-Data® sheet published by Carlisle SynTec Systems provides technical data on Carlisle's Sure-Seal™ EPDM rubber membrane.

The data sheet, a copyrighted publication program of the Construction Specifiers Institute, contains information on basic applications, compositions and materials, sizes, properties, installation and maintenance of the membrane.

Sure-Seal is made in sheets up to 50 feet wide and 150 feet long. Precut and prefabricated shapes and special sizes are available on special order.

The Spec-Data sheets on Sure-Seal as well as other Carlisle products are available from the company.

Check #171 on Reader Service Card

Quality Assurance Program instituted by Associated Foam

Associated Foam Manufacturers (AFM) has instituted a new Quality Assurance Program for its EPS insulation products, including its Contour Taper Tile System.

The program is based on an in-plant quality control process and includes unannounced inspections by an independent laboratory. Further testing by the testing agency at its laboratory will evaluate the R-value, flame retardancy, density and flexural strength of the products.

Check #172 on Reader Service Card

McGraw Hill offers estimating guides

A four-volume series of cost-estimating guides has been published by the Cost Information Systems Division of McGraw-Hill Information Systems Co.

The integrated reference guides, *Construction Cost Information from Dodge*, provides architects, engineers and contractors with information on building materials, labor rates and project listings. The information comes from McGraw-Hill's F.W. Dodge database of construction cost information.

The four volumes may be purchased as a slip-cased set or individually.

A full-color brochure describing the contents of the volumes is available from McGraw-Hill.

Check #173 on Reader Service Card

Coming Events

May 30-31

Commercial Application of
Solar Conference
Mid-Atlantic Solar Energy
Association
Philadelphia, Penn.

May 31-June 1

Construction Claims
Battelle Seminars and Studies
Programs
Los Angeles, Calif.

June 4-5

Roof Inspection,
Diagnosis & Repair
Roofing Industry Educational
Institute
Ann Arbor, Mich.

June 6-7

Elasto/Plastic Sheet Applied
Roofing System
Roofing Industry Educational
Institute
Ann Arbor, Mich.

June 6-8

10th Annual Convention
and Trade Show
Western States Roofing
Contractors Association
San Diego, Calif.

June 13-16

62nd Annual Convention
Florida Roofing, S/M & A/C
Contractors Association
Orlando, Fla.

June 14-17

Summer Convention
Tennessee Association of
Roofing Contractors
Nashville, Tenn.

June 14-17

31st Annual Convention
Roofing & S/M Contractors
Association of Georgia
Destin, Fla.

(For inclusion of events, address
all correspondence to:
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Member Supplement

Congressional visits, White House briefing highlight Legislative Conference

A spirit of optimism pervaded the NRCA's second annual Legislative Conference, held in Washington, D.C. April 1-4. Republican Rep. Guy Vander Jagt of Michigan summed it up when he spoke to the 30 contractor participants during the Monday luncheon: "Many of your members couldn't make it to this meeting because they're too busy at home, working."

The group was small but enthusiastic. "We went for quality, not quantity," Government Relations Director Ken Nyquist said. The group's size made congressional visits more manageable and question-and-answer sessions on such topics as OSHA regulations and SBA set-aside programs more informal.

The conference began with a reception Sunday, April 1 in NRCA President Burton Karp's suite at the J.W. Marriott Hotel. The Marriott, located on Pennsylvania Avenue three blocks from the White House, was the site of the business sessions.

Johnny Zamrzla, Government Relations Committee member, welcomed the attendees Monday morning and introduced the speakers.

Wayne Valis, Washington lobbyist and formerly special assistant to President Reagan, talked to the contractors about how they could make a difference in the legislative process.

"When I first started working on the Hill, there were a lot of lobbyists," Valis said, "but business people did not come here, as you're doing. Then business people started getting mugged by the government.

"Because of all these regulatory schemes, American business started to collect itself. Businessmen were tired of being bag men for the regulators. It is suicidal for business not to participate in this process."

Valis went on to describe the presidential candidates.

On Jesse Jackson: "He's not running for president; he is trying to register masses of people. The Democrats are registering enough people

to swamp the margins the Republicans saw in 1980."

Gary Hart: "He's never had any legislation passed," Valis said. "He's taken an empty vessel and let people pour into it whatever they want. Not very well-known. Very cerebral, very cool. Perfect for the media."

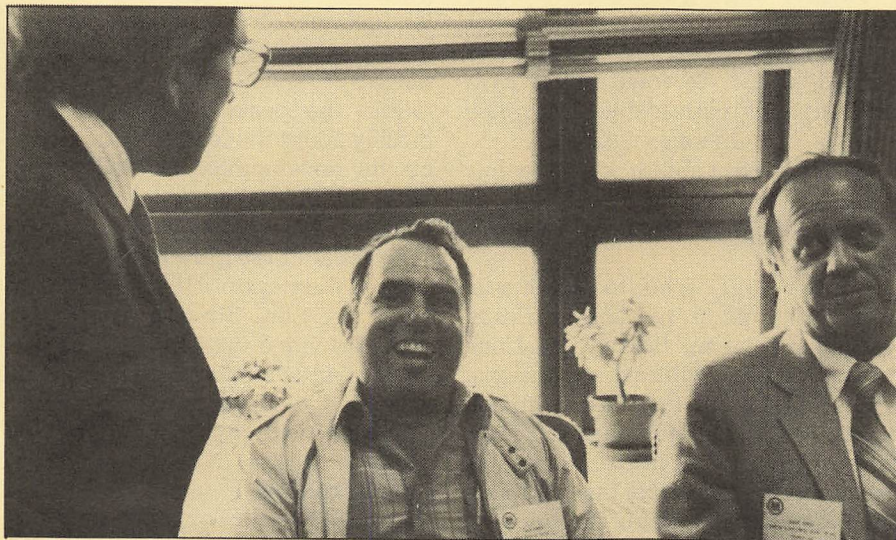
Walter Mondale: "...an impressive organization. He has labor, NEA, a good chunk of the civil rights groups and the foo-foos—the gays," he said.

Ronald Reagan: "He has the ability to walk through a lot of stuff and come out smelling like a rose," Valis commented. "They call him the Teflon president—nothing ever sticks to him."

Randall Schumacker, director of the Chemical Manufacturers Association, followed Valis on the program. His presentation on hazardous chemical labelling laws elicited a number of questions from the audience.

"The most recent regulation, passed in November, applies to manufacturers, not users," Schumacker reported. "But you should take precautions. Make sure you collect materials safety data sheets from manufacturers, which they are required by law to supply. Examine your own hazards communication procedures. Write them down. And take a close look at product labels," he warned. "Labor unions are going to want to know what you're doing about these materials."

The Small Business Administration (SBA) was represented by Andrew Canellas, director of the Size Standards staff in SBA's Office of the Administrator. Canellas explained how the SBA determined what businesses were eligible for set-aside contracts.



Glen Brannon and Bob Thomas share a chuckle with Georgia Sen. Sam Nunn in his office.

continued on following page

Legislative

continued

The contractors commented that it was not uncommon for million-dollar jobs to be set aside for small businesses; larger contractors, who might be better equipped to handle the work, were prevented from bidding on these jobs.

"When smaller contractor businesses get this work, they sometimes need hand-holding," one contractor said. "We think this is an industry that's so competitive, there should be no size standards and set asides."

"Our final rule, which was implemented March 12, was based on 2,500 comments from the private sector," Canellas responded. "We heard from 630 different firms and trade associations. More than 70 percent agreed our standards, based either on number of employees or receipts, were fair."

Following the SBA discussion, the participants received a rundown on the 1984 House and Senate races from Don Kendall, political analyst for BIPAC, Business/Industry Political Action Committee.

"The Republicans lost 26 seats in the House in 1982; they'd like to get those back," Kendall told the group. "The Democrats have a 100-seat margin. They're talking about obtaining an additional 10-15 seats."

"There are 33 Senate races this year," Kendall continued. "The Republicans are in the majority for the first time in 26 years. People generally believe the Republicans will keep the majority, but lose a couple of seats," he said. In response to contractors' questions about their individual state races, Kendall commented on several that were particularly close, and the potential effects of each candidate's victory.

Mervin "Smitty" Smith, executive secretary of the Roofing Industry Promotion Fund, Warren, Mich., introduced Guy Vander Jagt at the Monday luncheon. Vander Jagt gave an inspiring speech on the current economic and political climate, saying with a smile that what's good for the construction industry is good for America.



Rep. Guy Vander Jagt

"There's a war going on out there right now," Vander Jagt stated, "between those who do believe in free enterprise and those who don't. And the decisions we make here on the Hill will affect your business more than the decisions you make in your own companies."

Vander Jagt quoted President Reagan who, in his State of the Union address after his tax-cut package was passed, said, "We voted not to save free enterprise but to free enterprise so that America can save itself."

"Government should stand by our side helping us, not ride on our backs, dragging us down," Vander Jagt added.

Vander Jagt, who in 1980 was mentioned as a possible running mate for Reagan, fielded questions about his own political aspirations. He made it clear that he is a strong supporter of the Reagan-Bush ticket, but added: "I've been in politics long enough to realize that you never know what's going to happen. You just keep on working, doing the best you can."

Monday and Tuesday afternoons, conference participants broke into small groups and visited their congressmen. A tour of the Pentagon Tuesday morning culminated in a luncheon at the Dirksen Building, where Republican Sen. Orrin Hatch from Utah sent his legislative aide to update the contractors on the Davis-Bacon Act.

"Davis-Bacon is a sacred cow with organized labor," Aide Jim Stevens commented. "They'll fight to preserve it. Unfortunately, it seems fairly well-entrenched at this point. Unless there's a dramatic shift in Congress, we won't see any tampering with the Act."

"Reagan has established regulations that lessen the impact in this area," Stevens continued. "But if the Democrats gain power, they will repeal these and we're back to square one."

A White House briefing was on the agenda for Wednesday morning. The group proceeded to the Executive Office Building, adjacent to the White House, and was escorted to the briefing room after clearing security. Mary Jo Jacobi, special assistant to the president for public liaison, introduced Edwin Dale, assistant director for public affairs, Office of Management and Budget; Gary Strobel, special assistant to the assistant secretary of labor for occupational safety and health; and Jacqueline Tillman, deputy director for Latin American affairs, National Security Council. After their presentations, the speakers were questioned closely about the federal budget deficit, the development of OSHA regulations and the current situation in El Salvador.

An elegant reception Monday evening at the Capitol Hill Club and the musical "42nd Street" on Tuesday night provided opportunities for the participants to socialize with congressmen, their aides and each other.

"Those who attended got a lot out of the program," Nyquist said. "But for the roofing industry as a whole to achieve a similar degree of success, we need a larger turnout."



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TO SAVE
YOUR
LIFE.**



First-aid kits are fine for some emergencies. But what if you were choking? Having a heart attack? Or a stroke? This kit would be useless. Call the Red Cross. We'll teach you and your employees how to save a life. From work-safety to CPR, you can count on the Red Cross. We'll help. Will you?



A Public Service of This Publication



New Members

The following has been approved for NRCA membership between March 8 and April 5.

CONTRACTORS

- AFC Roofing & Insulation, Inc.
P.O. Box 539
Novi, Mich. 48050
S. Scott Evett
- F.H. Boehm & Associates, Inc.
4917 James Drive
Metairie, La. 70003
Frank H. Boehm III
- Chaffee Industrial Roofing
200 South Main St.
Providence R.I. 02903
Steven H. Chaffee
- Chamberlin Waterproofing, Inc.
2606 Couch St.
Houston, Texas 77008
J.M. Kafka
- Downing Roofing & Sheet Metal, Inc.
5810 Wade Road
Baytown, Texas 77521
O.E. Downing Jr.
- Robert Fredericks Contractors, Inc.
431 Burtwell Road
Lake Worth, Fla.
Robert Fredericks
- The Hadlick Co.
429 F E. Diamond Ave.
Gaithersburg, Md. 20877
Sandy Hadlick
- HR General Maintenance Corp.
2021 Shannon Place S.E.
Washington, D.C. 20020
Ramesh Butani
- Industrial Roofing Systems, Inc.
P.O. Box 1586
140-A Toney Penna Road
Jupiter, Fla. 33458
Elroy Talley
- Massie Rfg. Co.
1090 N. Lake Ave.
Pasadena, Calif. 91104
Kenneth R. Winschel
- Pioneer/Service Roofing & S/M Co.
P.O. Box 523
Wilmington, N.C. 28402
Glynn Robinson
- Register Construction Co., Inc.
P.O. Box 40706
Jacksonville, Fla. 32209
Gary Register
- Slavik & Butcher Const. Co.
2149 Avon Industrial Drive
Auburn Heights, Mich. 48057
Patrick J. Butcher
- Southwest Products, Inc.
1723 Eldridge
Sugarland, Texas 77478
Bill Hughes
- Statewide Roofing, Inc.
1582 Fifth Ave.
Bay Shore, N.Y. 11706
John B. Barry
- Surety Contracting Corp.
P.O. Box 78
230 Askin St.
Crawfordville, Ga. 30631
Garry L. Todd
- United Roofing Co., Inc.
P.O. Box 508
Kenner, La. 70063
Joe Prescott
- Winston Roofing Co.
3701 Thomasville Road
Winston-Salem, N.C. 27107
John Rumley

ASSOCIATES

- Harvey Industries, Inc.
43 Emerson Street
Waltham, Mass. 02154
Robert K. Morrison
- Milliken & Co.
Box 1926-MS-455
Spartanburg, S.C. 29304
Warren Hayslip
- Wausau Tile
Box 1520
Wausau, Wis. 54401
Dave Spangler

INDUSTRIAL/INSTITUTIONAL

- Burlington Industries, Inc.
P.O. Box 21207
2407 Doyle St.
Greensboro, N.C. 27420
Harold E. Sexton

INTERNATIONAL

- Pirelli Sacic
Chaussee de la Hulpe-181
bte 2
1170 Brussels Belgium
Rene Bonne

Now available from NRCA is a worker training program — **Kettles, Tankers and Bitumen Heating**. This four-part audiovisual program covers everything workers need to know for correct bitumen heating and operation and maintenance of heating equipment.

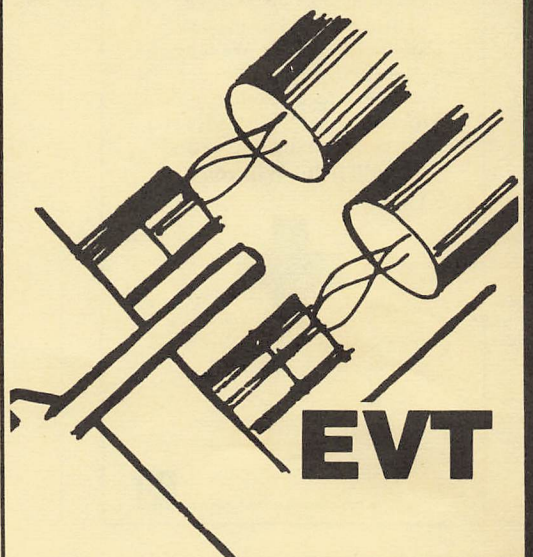
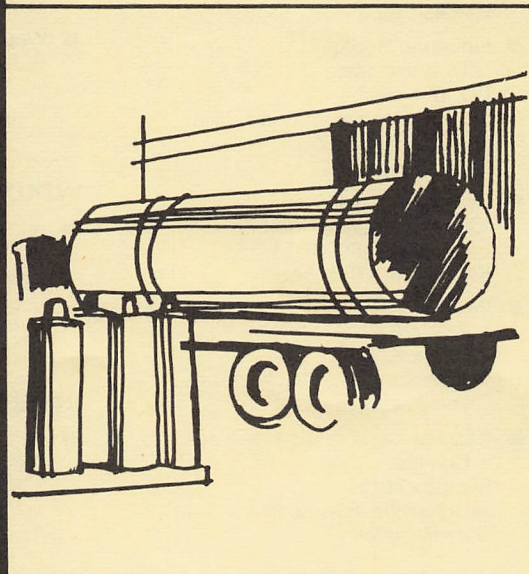
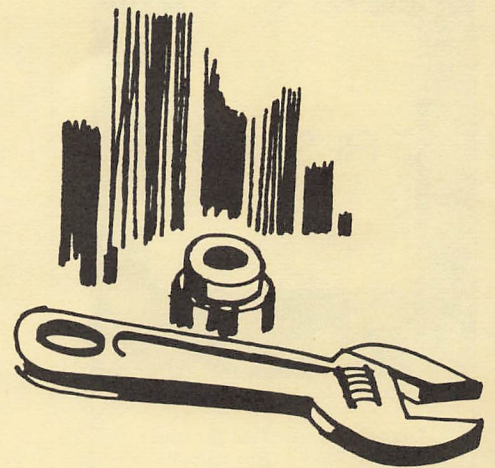
The program, with over 300 slides and a 40-minute soundtrack, depicts the correct procedures for kettle set-up and loading, safety considerations, thawing lines in cold weather, pump operation, the importance of preventive maintenance, and much, much more.

In addition, a comprehensive workbook contains a complete outline of the program with quizzes and tests to gauge worker knowledge.

The program can be used for earning field worker credit in NRCA's Accredited Roofing Contractor program, good for up to five-hours credit.

For more information on **Kettles, Tankers and Bitumen Heating**, contact Alan Grayson, NRCA Director of Education, 8600 Bryn Mawr Ave., Chicago, Ill. 60631.

Kettles, Tankers, and Bitumen Heating



EVT

 NATIONAL
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ASSOCIATION

What makes the NRCA-sponsored Business Insurance Program a Smart Buy?

The Alert Protection Program

The NRCA-sponsored Business Insurance Program from CNA Insurance is tailor-made for the way you do business—and the Alert Protection Program is one reason why.

Created specially for the roofing industry, the NRCA-sponsored program is the only general business insurance your association sponsors. It offers the kind of comprehensive coverage you need—and, very importantly, it offers this coverage with renewal protection.

Here's how Alert Protection works: If your loss experience takes a sudden turn for the worse, with a serious loss that jeopardizes your insurability, CNA won't just cancel your coverage. Instead, you'll

receive an alert list notification, and you'll be granted coverage for a full year so that you can work with CNA's professional loss control staff to improve your loss record. That's simply one of the features that make the CNA program the choice of your association!

To learn about the other features that make the NRCA-sponsored program a smart buy—features like comprehensive coverages, program stability and group buying power—talk with your NRCA Insurance Advisor, today:

Walter Derk or Dick Lietz
Fred S. James
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Chicago, Illinois 60606
1-312-346-3000

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The NRCA-sponsored General Business Insurance Program is underwritten by Continental Casualty Company or Transportation Insurance Company, two of the CNA Insurance Companies.

Check #693 on Reader Service Card

SAFE & SOUND



Sound advice on roofing safety by the members of the National Roofing Contractors Association (NRCA).



"Have a five-gallon bucket of clean water next to the kettle on the ground and the roof. Any burns can be immediately doused with clean water."

*John R. Ward
Ward Construction, Inc.
Danville, Calif.*

"Make sure that all hot bucket handles are tightened every day before hoisting or lifting. All unions on pipes used for pumping kettles should be heated and double tightened before set up. Any kettle left on a job-site must be locked up before leaving for the night—children are curious!"

*Kevin O'Connor
Kevin & Sons Roofing Corp.
Evergreen Park, Ill.*

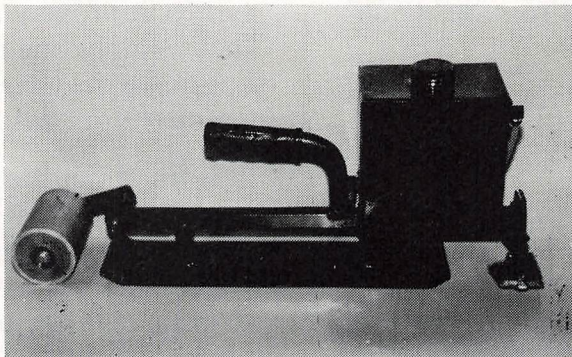
"Wear a cotton uniform for protection. For years our employees wore company uniforms made of synthetic fabrics. However, hot asphalt and welding sparks will often melt the fabrics. We changed to heavy-weight cotton uniforms—long sleeves only—with gloves. Both are available at minimal cost."

*Richard L. Dille
Brenham Roofing & Sheet Metal Co.
Brenham, Texas*

SOLVENT SEAMING MADE SIMPLE

Ten reasons you should be using the Edge Seamer

1. Save 50% or more on labor costs doing gravel stops and base metal
2. Save on material, solvent stays clean in the reservoir (no more waste)
3. Eliminates possibilities of spills from open container
4. Eliminates hazards to roofers from skin contact with solvent
5. The Edge Seamer is lightweight (only 20 lbs., filled with ½ gal. solvent)
6. The Edge Seamer can be used either right or left handed by simply swinging the brush
7. The cloth covered skid plate absorbs any excess solvent, thus eliminating possible membrane damage
8. The solvent spreader has a built in membrane guide to give an even flow between PVC sheets
9. The heavy wheel holds even pressure on the skid plate keeping membrane's free of voids
10. The Edge Seamer is built rugged, keeping maintenance at a minimum

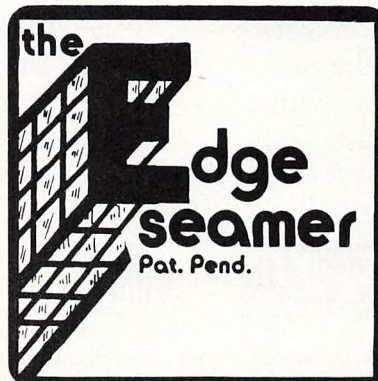


Get the Edge at walls, curbs, gravel stops and field runs.

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

Seam 40 to 80' per minute in the roof field.

Use the Edge Seamer wherever you use a brush and sandbag.



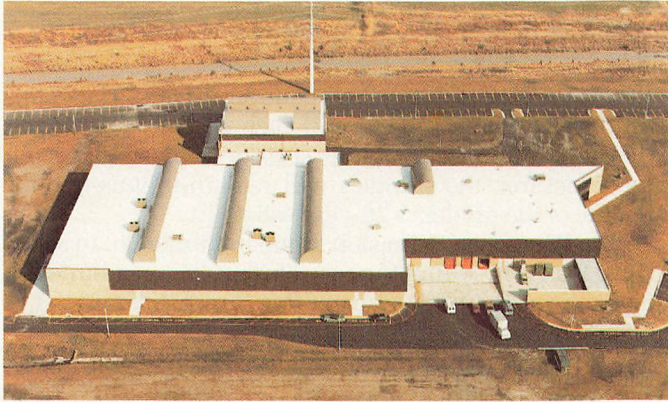
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(303) 842-5959

Distributor Inquiries Welcome

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Is it ordinary single ply membrane, or is it CoolTop?

Sure, your next roof will be single ply membrane. Why put up with the design limitations and quick deterioration of a built-up roof? Single ply membrane is the obvious answer. But which one? An EPDM, a PVC... Or CoolTop?

CoolTop is different. Here's why: **1)** It's made from pure CPE* – chlorinated polyethylene – so it has no

plasticizers to leach out and weaken the membrane structure. Moreover, no other roof resists weather, fire, oil or chemicals as well. **2)** CoolTop has a tough, Fortrel® polyester fabric reinforcement. So it outlasts, and outperforms, other roofing membranes. **3)** CoolTop saves energy. In fact, it's actually 85% heat reflective. So you save on air conditioning costs and reduce thermal shock on the membrane. **4)** CoolTop weighs only 5 oz./sq. ft. and it's mechanically fastened so it installs easily on just about any roof: sloped, curved or flat. **5)** CoolTop is a roofing system.

CoolTop Sheets are pre-marked to save installation time. Plates and screws are 25 times more rust resistant than even coated fasteners. And: the seams are heat welded to eliminate adhesive and solvent problems. All this for one reason only. So the ultimate roof is on your building.

For technical information, write or phone: Cooley Roofing Systems, Inc., 50 Esten Ave., Pawtucket, Rhode Island 02860. Tel: (401) 724-0490. **Cooley Roofing Systems.**

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

A membrane this tough simply lasts longer.

On The Roof

Celotex offers special shingle for Seattle's creeping crud

Seattle's humid conditions and frequent rains make it a lush garden of green and growing things.

Unfortunately, some of those growing things can end up taking over an organic roof. Like a drive-in movie monster, fungus finds a comfortable home in the damp shingles covering Seattle houses. In a short time it spreads, completely discoloring the top of the residence.

The stains aren't merely ugly. The dark patches can also destroy a lighter roof's reflective properties, increasing the roof's heat absorption and raising cooling bills.

The Celotex Corp. is offering Seattle residents a shingle, called the FRS™ Fiber Glass Asphalt Fungus Resistant Shingle, that can help stop this menace.

FRS Shingles, which are manufactured at Celotex's Fremont, Calif. plant, are a fiber glass mat-based shingle specifically designed for structures in coastal areas with high humidity. A band of zinc granules in the shingle

releases a fungus deterrent whenever it rains. The deterrent washes across the face of each shingle, preventing the formation of stains and streaks. According to the manufacturer, the shingles will remain fungus-free for the life of the product's 20-year warranty.

Tom Waggoner's Kingston Lumber Supply Co. in Kingston, Wash. is selling the new shingles to area builders. He believes the product can offer several advantages to Seattle homeowners.

"FRS Shingles are much easier to maintain in this area than other types of shingles," Waggoner said. "The owner doesn't have to continually get up on the roof to clean off the shingles."

FRS Shingles are available in three colors, Golden Brown, Surf Green and Tropical White. They have earned the UL Class A rating against fire exposure, as well as the UL Wind Resistant label.



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 - Vacuum Engineering Roof Vacuum
 - Liquid Asphalt Systems tankers, yard storage & job tanks
 - Smith Hoist, Clearfield & Garlock Conveyors, R & G Hoists
 - "Power Claw" Roof Remover, JET SPRAY, Louisville Ladders
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NEW! ROCK-BUSTER The Roof Gravel Scratcher

The Industry's first Self-Propelled Gravel Scratcher attachment, easily attaches to a self-propelled tractor. You will scratch more squares per hour because of the 24" cutting width and the power drive feature that permits the operator to walk and steer.

Due to the unique Cutter Blade design, you will experience far less damage to felt and other roof membranes.

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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.

ROOFING SUPERINTENDENT

Roofing superintendent for architectural and roofing consulting firm. Minimum 10 years field and technical experience. Ex-rep or retired contractor considered. C.B. Goldsmith & Associates, 13303 US Hwy. 19 S., Clearwater, Fla. 33546, 813/536-0456.

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Roofing hydraulic truck crane, RO Stinger TC50-4, 6-1/4 ton cap., 62-ft. boom, hydraulic clam bucket, roof top hopper, pallet fork and nylon belts mounted on a 1978 Ford LN800 truck, V8 engine, 5 sp. + 2 sp. transmission, 18-ft. body. Excellent condition. Want to sell fast, \$29,500. Call Dave or Tom, 414/761-2300.

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Wish to hire experienced single ply roofing superintendent. Will be based out of Birmingham or Mobile, Alabama. Must be willing to travel throughout the Southeast weekly. Guaranteed salary and good benefits. Call 205/836-8111 or write All-South Subcontractors, Inc., P.O. Box 54, Alton, Ala. 35015.

ROOFING SALESMAN

Southern California Roofing Company, located in Los Angeles County, established 1926, is in need of a roofing salesman thoroughly experienced and successful in commercial, industrial and public works reroofing sales. Only energetic, self-starters who are interested in a profitable and successful future through hard work should apply. Please send resume to: Harold R. Provin, C.E.O., Southern California Roofing Co., 9623 Imperial Highway, P.O. Box 158, Downey, Calif. 90241, 213/803-5583.

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Roofing and sheet metal business in 10th year of operation. One of the industry leaders in booming Colorado community. Volume of \$1 million plus. Available with or without office, warehouse, and yard. Please forward replies to: Ralph L. Skinner, Skinner Roofing & Sheet Metal, Inc., 6135 Lake Shore Court, Colorado Springs, Colo. 80915.

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Reputable roofing manufacturer interested in competent dealer-installer for a superior, reinforced, thermo-plastic, UL/FM approved single-ply roofing system. Send company history, etc. to Dan Hayes, Technical Services Director, **Bond Cote Systems**, 38 Third St., Pulaski, Va. 24301.

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Roofing company, booming Houston, Texas. Reputation second to none in the industry. Best personnel and equipment available. Over 20-year flawless track record in all types roofing installation. Specializing in BUR systems. Gross in excess of \$2 million with little or no sales effort. Growth potential unlimited. Professional only please reply. Minimum \$5 million to invest will buy lock, stock and barrel. Balance negotiable. Box 5B, *Roofing Spec*, 8600 W. Bryn Mawr Ave., Chicago, Ill. 60631.

RESIDENTIAL SALESPERSON WANTED

Wish to hire top sales personnel for residential reroofing. Must have experience and willingness to relocate to sunny Arizona. Top compensation plus auto and company benefits provided. Send resumes or call Universal Roofers, P.O. Box 20627, Phoenix, Ariz. 85036.

PERSONNEL WANTED

Roofing field superintendents, foreman, estimators wanted for built-up and single-ply roofing. Minimum five years experience. Must be willing to relocate to east coast Florida. Send resume to P.O. Box 2646, Youngstown, Ohio 44507.

ROOFING MANAGER

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

BRANCH MANAGER WANTED

Wish to hire individual as branch manager for large Arizona contractor. Must have roofing and strong business or marketing experience. Applicant must be willing to relocate to sunny Tucson, Ariz. Good salary, incentive comp plan, auto and company benefits. Send resume or call Universal Roofers, P.O. Box 20627, Phoenix, Ariz. 85036.

COMMERCIAL/INDUSTRIAL SALESPERSON WANTED

Wish to hire experienced commercial/industrial reroofing salesman. Applicants must be willing to relocate to sunny Arizona. Good salary, auto and company benefits furnished. Send resumes or call Universal Roofers, P.O. Box 20627, Phoenix, Ariz. 85036.

SALES REPS—COPPER ROOF DRAINS

Some territories available for new line copper roof drains and overflows. Send or call for brochure and information. THUNDERBIRD PRODUCTS, 1150 N. Marshall, El Cajon, Calif. 92020, 619/448-3567.

BUSINESS FOR SALE

Well-established roofing business in southeastern Arizona. Strong gross and net. Potential for strong growth. Priced with real estate which includes large three-bedroom residence. Call or write David Cote, Andy Anderson Realty, 484 E. Wilcox, Sierra Vista, Ariz. 85635. Phone 602/458-6100 or 602/378-6248 evenings/weekends.

SALESMEN WANTED

Experienced commercial roofing estimator/salesperson. Excellent opportunity for ambitious person looking for advancement. We are looking for someone with the ability and desire to become part of management or someone with management experience. Wages are negotiable depending on experience and ability. Send resume to G.L. Kautz, Inc., 318 N. Marshall St., Lancaster, Penn. 17602. All resumes will be held confidential.

ROOF VACUUM HOSE FOR SALE

Flexible lightweight hoses, for roof vacuum applications. Hoses are a proven success in the removal of pea gravel from the roof. Hose for vacuum machine to the roof is available in 4-in., 5-in., 6-in. I.D. x 100-ft. lengths. Styles 180AR, 220RS & 110CL. Whip hoses 4 I.D. x 100-ft. lengths. Styles 180BL or 155Gray. Hose is in stock for immediate delivery. We ship anywhere. For more information and pricing call 414/272-2141. Milwaukee Rubber Products, Inc. 1117 N. Water St., P.O. Box 92896, Milwaukee, Wis. 53202.

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Independent reps calling on roofing contractors and roofing supply contractors.

- Many states open.
- High commission.
- No cash outlay required.

Call 219/326-1851, or mail inquiries to: Fast Deck, P.O. Box 1541, LaPorte, Ind. 46350.

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Collect calls accepted: 312/447-3169.

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Roofers Mart of America, Inc. is seeking career oriented individuals who possess experience and skills for positions available in the areas of general management and sales of roofing distribution operations. Opportunities available in several locations nationally. Send resume in confidence to: 111 West Port Plaza, Suite 523, St. Louis, Mo. 63146.

FOR SALE

1975 trailer-mounted Mrs-T cold process machine—excellent condition. Includes: Sullair 175 CFM compressor, two Alemite pumps, self-winding mastic reel with 200-ft. mastic hose, granule hopper with 200-ft. granule hose, airless spray gun, air spray gun, hydraulic arm hoist. Also one 1974 Aeroil hoist ladder—good condition—62-ft. reach. Call 207/784-4551 or 207/934-2671. Ask for Dick.

ROOFING EXPERT

Central Virginia roofing manufacturer seeks individual with strong knowledge of pitched roofing systems to manage claims and adjustment department. Must be capable of organizing and developing claims processing system, and analyzing and evaluating claim data. Successful candidates will have an architectural, engineering, or construction management background, and possess excellent communication and human relation skills. Salary commensurate with knowledge/experience. Excellent company benefits. Send resume, including salary history to: Box 5C, Roofing Spec, 8600 Bryn Mawr Ave., Chicago Ill. 60631. EOE M/F

RESIDENTIAL SALES MANAGER

Immediate position available. Baltimore-based roofing concern needs aggressive person to manage Residential Department. Duties include estimating, sales and scheduling. Must have some knowledge of the roofing industry and estimating experience. Excellent benefit package. Send resume and salary requirements to: Box 5A, Roofing Spec, 8600 Bryn Mawr Ave., Chicago, Ill. 60631.

FOR SALE

Excellent opportunity to gain substantial market share in southeastern Penn. Established full service commercial/industrial roofing and sheet metal business. Sales in excess of \$1 million. Owner financing for qualified buyer. Call Bud Harding, 717/299-7000.

ROOFING CONTRACTORS

Distributor for Duro Last Single Ply Roofing System is seeking experienced roofing contractors throughout the state of Wisconsin to install an exciting new product. Duro Last is a mechanically fastened, sheet roofing system that is Factory Mutual approved and carries a 20-year factory warranty. Unique opportunity to enter into the single-ply market. Robert Roy, R.D. #2, Dushore, Penn. 18614, 717/928-8819.



Long life is the true beauty of a modern roof system.

Contour Taper Tile® expanded polystyrene (EPS) combines high insulating value with drainage for dead level roof decks. Small roofs or thousands of squares, economical Contour Taper Tile lengthens roof life and cuts energy costs.

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TECH TALK

By Bob LaCrosse, CAE
Director of Technical Services

Fiscal '84 busy for Tech. Dept.

The NRCA fiscal year will end on May 31, and I would like to update readers on NRCA's technical activities for the past 12 months.

- The NRCA Technical Operations and Executive committees approved application tolerances for BUR, EPDM, modified bitumen and PVC membranes. The tolerances were sent to NRCA affiliate contractor associations. All comments and recommended changes will be reviewed by NRCA before preparation for release.
- NRCA recommended BUR Application Tolerances were submitted to the United States Air Force for inclusion in the Air Force Manual, AFM 91-36, "Real Property Operation and Maintenance for BUR Management Program." The tolerances have Asphalt Roofing Manufacturers Association (ARMA) endorsement and include interply mopping, insulation joint criteria, interply void and lap and surfacing tolerances.
- NRCA Research Associate Bill Cullen analyzed the coal tar bitumen and coal tar pitch tests at Chicago Testing Laboratory for a February 1984 *Roofing Spec* article.
- A joint outline between the Koppers Co. and NRCA was drafted on coal tar bitumen and coal tar pitch field tests to resolve the "overruns" problem.

In addition, the Technical Operations Committee:

- Released a new updated listing of roofing consultants.
- Released a second, expanded list of liquid cold-applied product manufacturers.
- Published a joint article with ARMA on the Asphalt Sampling Test Program, appearing in the January 1984 *Roofing Spec* (member supplement).
- Released a joint Technical Bulletin with ARMA, "Roofing over Lightweight Insulating Concrete Decks."
- Released a report to members on $\frac{15}{32}$ " thick performance-rated plywood decking for low-sloped roofs, prepared by the American Plywood Association, in lieu of nominal $\frac{1}{2}$ " plywood decking for low-sloped roof decks.

- Established liaison with the Roof Consultant Institute and the Institute of Roofing & Waterproofing Consultants.
- Assisted National Roofing Foundation with its Clemson University roofing course on testing modified bitumen.
- Cooperated with Florida Roofing, S/M & A/C Contractors Association in obtaining approval of revisions to the Southern Building Code Congress, "Standard for the Installation of Roof Coverings".
- Joined Bill Cullen as members of the BUR Insulation Study Advisory Committee for the U.S. Air Force document, "Development of Insulation Selection Criteria for Low-Slope, Built-Up Roof Systems." The project, coordinated by the Oak Ridge National Laboratory, investigated all board type insulations instead of only one insulation product for Air Force Manual revisions.

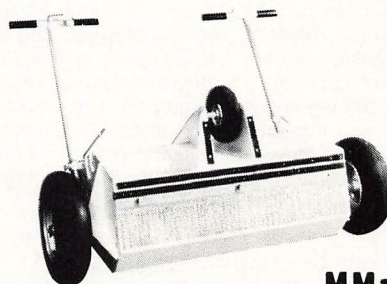
The Manual Update Committee completed:

- revisions to *Steep Roofing Manual*; approved by Executive Committee.
- revisions to BUR and HARK Sections of the *Manual*; approved by Executive Committee.
- prepared second draft of low-sloped section in *Manual* which includes BUR, EPDM, PVC and modified bitumen.



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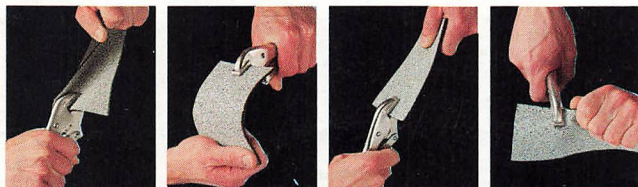
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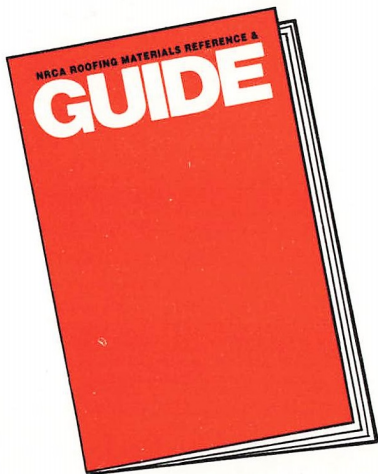
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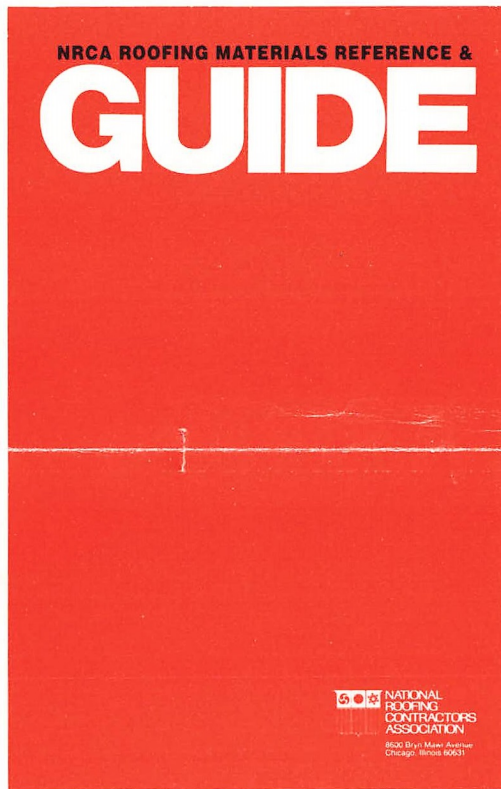
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- Lap joint methods
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- Use restrictions



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The collage shows several overlapping pages from the guide, including:

- Modified Bitumens Part 2: Test Results** (See Part 1 for General Information)
- PVC Part 2: Test Results** (See Part 1 for General Information)
- EPDM Part 2: Test Results** (See Part 1 for General Information)
- Other Single-Ply Pre-fabricated Sheet Applied Membranes Part 1** (See Part 2 for Test Results)
- Other Single-Ply Pre-fabricated Sheet Applied Membranes Part 2** (See Part 1 for General Information)