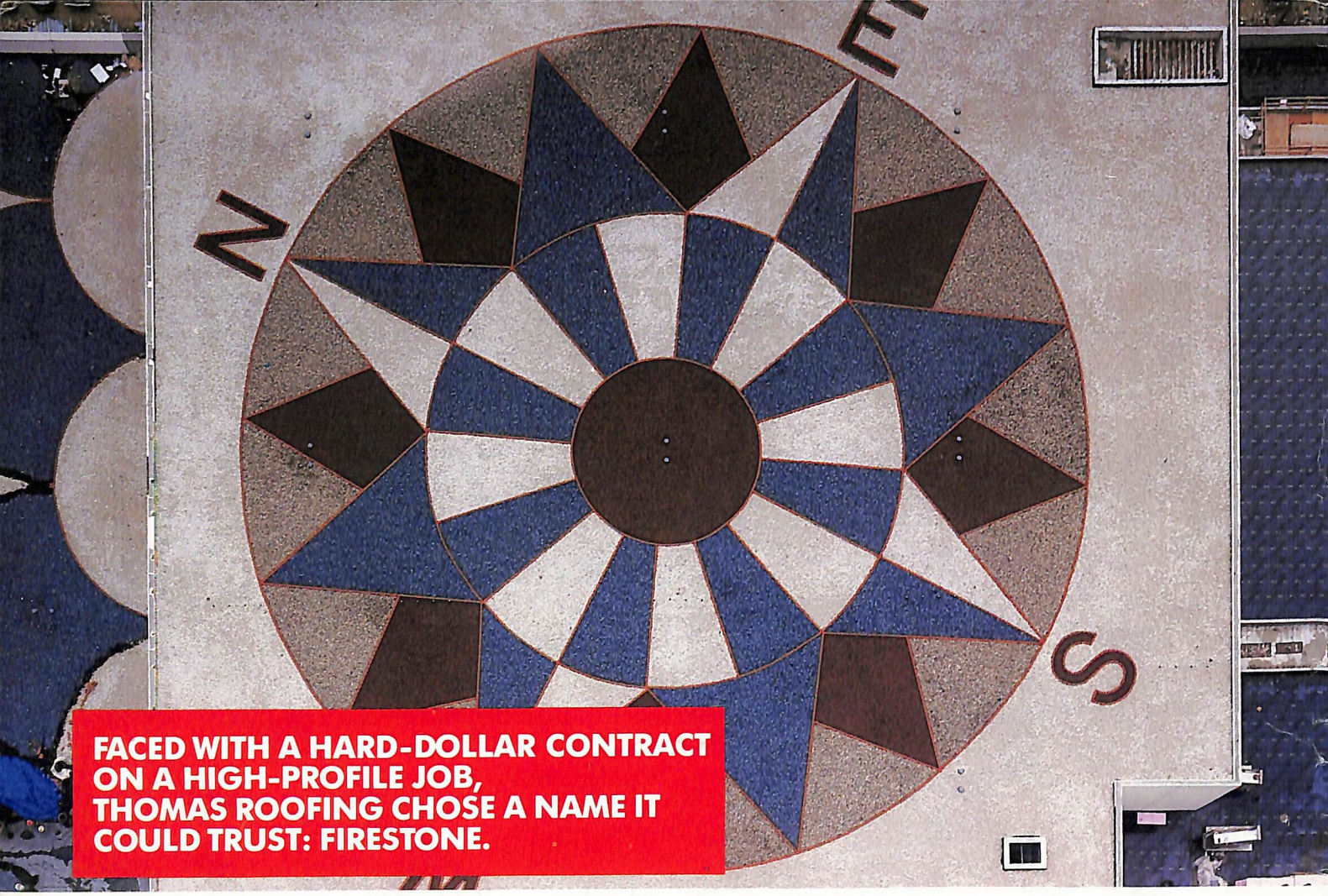
National Roofing Contractors Association

ROOFING SPEC

DECEMBER
1986
$2.00

The roofing industry: where we are; where we're going

Focus on alternative roofing see page 33.



FACED WITH A HARD-DOLLAR CONTRACT ON A HIGH-PROFILE JOB, THOMAS ROOFING CHOSE A NAME IT COULD TRUST: FIRESTONE.

Building and landscape architects designed a showcase roof for the new Showboat Hotel and Casino.

But the roof is no less of a showcase for Thomas Roofing & Sheet Metal, the Atlantic City contractor which won the bidding for the job with a value-engineered recommendation of Firestone RubberGard® EPDM.

"It would have been prohibitive to put down a built-up roof—more labor, more materials, more time," said Mike Thomas, of Thomas Roofing, explaining why he chose Firestone.

To carry out the nautical design of the casino, Thomas crews are laying down multicolored crushed stone to form bold graphics (such as the compass rose above). They are also installing live plantings, trellises and other traditional garden landscaping elements.

Underneath they're laying down 45 mil RubberGard EPDM, over Firestone-supplied Foamular® insulation.

Firestone field representatives are providing interim inspections as the job progresses, and will make the final warranty inspection at the anticipated end-of-summer completion date.

Like Thomas Roofing, contractors across America are choosing Firestone RubberGard for its strength, durability, economy, ease of installation—and Firestone's outstanding field support.

Firestone's good name insures your good name, even on the highest profile jobs.

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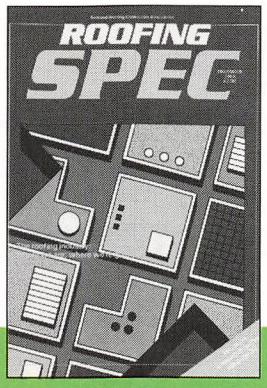
ROOFING SPEC

Vol. 14, No. 12 December 1986

ADVERTISERS



COVER

NRCA's staff has focused its attention on demographics, technological trends and insurance trends to bring you a detailed look at our industry.

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FEATURES

DEPARTMENTS

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Before.

Recently, as you are probably aware, another company made an offer to acquire the Owens-Corning Fiberglas Corporation.

The offer caused a lot of commotion. But now the dust has started to settle, and we are proceeding with an internal reorganization of Owens-Corning Fiberglas.

The changes will result in a simpler, more efficient selling operation. We'll actually be better able to concentrate on our core businesses which include commercial and residential roofing and insulation.

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This means you can expect continued strong support from your industry's leading supplier. Top-quality membranes and insulation. Well-tested new products. Unexcelled research. And the industry's best guarantees, including our programs for Certified Independent Insulation Contractors, Certified Roofing Contractors and Approved Derbigum Contractors. You can expect a continuation of everything, in fact, that reflects our deep belief that our own prosperity depends directly on yours.

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LETTERS

Performance now criteria for structural panels

Dear Editor:

I've just read Bob LaCosse's brave words in the September *Roofing Spec* magazine under "Tech Talk" (page 54). The same forces that are at work encouraging him to recommend performance standards prompted the structural panel industry in the mid-1970s to do the same thing. As a result, the American Plywood Association (APA) performance standards for structural-use panels were promulgated six years ago, and now enjoy widespread acceptance among code authorities, panel users and manufacturers.

The asphalt roofing manufacturers have not yet embraced this concept and continue to recommend minimum roof decks on the sole basis of thickness. We, of course, will continue to work diligently to secure recognition of structural panels on the basis of their performance capability.

Just as the single-ply manufacturers must rely on some sort of performance statement, we too will continue to advocate the performance concept for structural-use panels.

Daniel H. Brown, PE
American Plywood Association
Tacoma, Wash.

Scholarship's success will increase participation

Dear Editor:

I was very pleased to find the coverage afforded our "Honors and Scholarship" banquet in the September issue of *Roofing Spec* (page 16).

It was a great night with union and management people rubbing elbows, sharing stories and feeling good about helping these young people. We expect an increase in essay submittals for next year's awards. Some of the journeymen parents with children in junior high school are even looking ahead, and that's a five-year wait.

Thanks again.

John F. Stenson
Roofing Industry Promotion Fund
Warren, Mich.

Florida wind loads don't apply to roofing

Dear Editor:

The July issue of *Roofing Spec* (page 8) indicates that the Florida State Legislature, in the Coastal Protection Act, established a wind load requirement for roofing material of 140 mph.

The article is in error as the Coastal Zone Protection Act applies only to structural members and not such things as roofing. The Florida Department of Community Affairs, the agency responsible for administering the Act, has issued literature that specifies these exceptions.

Jerry Dykhuisen
Florida Roofing Sheet Metal & Air Conditioning Contractors Association, Inc.
Winter Park, Fla.

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August's non-residential building shows renewed signs of life

A spurt of commercial building in August boosted the month's total construction contract value to an annualized rate of $237.1 billion, a gain of 3 percent from July's rate of contracting, according to the F.W. Dodge division of McGraw-Hill Information Systems Co.

The August rebound of new construction activity brought the 1986 year-to-date total of project starts 5 percent ahead of the same period last year.

According to George A. Christie, vice president and chief economist for F.W. Dodge, "Renewed strength in contracting for new construction during August shows that the mid-'80s building boom isn't over yet. Despite concern about tax reform and federal budget cuts, 1986 is well on the way to breaking all records."

Contracting for non-residential building broke out of a three-month slump in August, increasing 10 percent to an annualized rate of $81 billion. Most of the increase was due to office construction, which bounced back from an extremely low July rate of contracting. Other types of non-residential construction—stores and warehouses, industrial facilities and institutional buildings—were either steady or down slightly.

Christie noted, however, that, "the August rebound of office building doesn't alter the fact that this category of construction has been declining in saw-tooth fashion for almost a year."

"On a regional basis, the 1986 retreat from several years of excessive building is anything but even," the Dodge economist said. "In the Northeast, contracting for offices is down 7 percent so far this year, less than half the national decline of 16 percent. In the North Central region, the last area to participate in the boom, building is still expanding—up 8 percent in 1986. The deep declines, reflecting adjustments to extensive overbuilding of offices, can be found where the boom began—in the South and West, down 27 and 20 percent respectively this year."

Residential building, which has slackened in recent months, stabilized in August at an annualized value of $116.1 billion. August showed single-family housing starts posting a small gain as apartment construction continued to decline.

Christie believes that stable mortgage rates and housing starts will lead to a strong 1.85-million-unit total for this year, but he sees multi-family building slipping further next year due to tax reform.

Contracting for non-building construction (public works and utilities) declined 3 percent in August to an annualized rate of $40 billion. A 5 percent dip in highway construction dominated the August results, while utility construction also remained at a very low level.

Through the first eight months of 1986, total contracting for new construction amounted to $163.5 billion, a lead of 5 percent over the value of a year ago.

ROOFING SPEC

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Monthly Summary of Construction Contract Value

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

MONTHLY CONSTRUCTION CONTRACT VALUE
Seasonally Adjusted Annual Rates, In Millions

	AUGUST 1986	JULY 1986	PERCENT CHANGE
Non-residential building	$ 80,987	$ 73,604	+10
Residential building	116,082	115,183	+ 1
Non-building construction	40,002	41,182	- 3
Total construction	$237,071	$229,969	+ 3

YEAR-TO-DATE CONSTRUCTION CONTRACT VALUE
Unadjusted Totals, In Millions

	8 MO. 1986	8 MO. 1985	PERCENT CHANGE
Non-residential building	$ 52,940	$ 54,557	- 3
Residential building	81,782	73,414	+11
Non-building construction	28,752	27,806	+ 3
Total construction	$163,474	$155,777	+ 5

THE DODGE INDEX
(1977 = 100, Seasonally Adjusted)

July 1986 163
August 1986 168

Roofing problems and maintenance highlighted in Florida report

The State of Florida has decided to do something about the enormous amount of money it spends annually on roof repairs, according to *Building Design and Construction.* The state's actions will be based on a study begun in 1978 by Robert Crosland and Luther Strange, the two University of Florida professors at the School of Building Construction in Gainesville, who were assigned to research the problem.

The researchers' report lists 23 common practices that lead to roofing problems. It also specifies maintenance procedures that, if followed, could save the state an estimated $15 million a year, according to Crosland.

Included with the report are two manuals, one titled *Roof Inspection Manual* and the other titled *Roof Maintenance Manual.* Together, the two publications present a clear picture of what is needed to produce a roof that will last the expected life span with no leaks or other problems.

Florida laws currently make it difficult to put the study's recommendations into effect, however. The state's present funding procedures require a county to pay for annual roof maintenance out of its limited maintenance funds. State funds are only available if the roof deteriorates and becomes irreparable. Consequently, many counties have been doing no roof maintenance whatsoever. This situation has shortened the average life of a 20-year, four- or five-ply built-up roof to eight years, Crosland noted. Crosland estimates that 60 percent of the state's failed roofs could be salvaged with proper maintenance.

New legislation has been proposed that will require districts to develop regular maintenance programs or else bear the entire cost of the roof replacement.

In addition to their report, the researchers have introduced two short courses at the School of Building Construction covering roof design problems and roof inspection and maintenance.

continued on page 11

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THE BEST INSULATION...THE BEST GUARANTEE.

Koppers Rx All-Purpose Insulation is guaranteed to retain its "R" value for 20 years. Our 8.3 "aged" "R" value per inch is the best in the industry.

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The standards of the Roof Insulation Committee of the Thermal Insulation Manufacturers Association (RIC/TIMA) require an evaluation period of 6-months for determination of "aged" "R" values of foam plastic insulations. The Midwest Roofing Contractors Association has sponsored recent studies which conclude that "the RIC/TIMA 6-month room temperature 'aged' 'R' values claims ...are not realistic to use as the basis for the design of 10 to 20-year roof life." (See RSI Magazine article, July 1986, p. 38).

Koppers Rx goes much further than the standard 6-month "aged" "R" value rating, guaranteeing its high in-service "R" value into the 21st century.

Other Rx Advantages

Koppers Rx phenolic foam Roof Insulation gives you and your customers much more than superior, long-lasting energy efficiency. For instance:

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T35-8607

New facility will be able to test roofs in simulated climates

The U.S. Department of Energy (DOE) is currently building a roof research center at Oak Ridge National Laboratory (ORNL) in Oak Ridge, Tenn. The center will allow the roofing industry to accurately measure roof performance under a wide range of environmental conditions.

The focal point of the center is the large-scale climate simulator (LSCS) currently under construction. When it is completed in 1988, the simulator will permit researchers to determine the combined effects of thermal, moisture and mechanical factors in controlled static or dynamic environments.

The LSCS operates by placing roof samples measuring up to 12 feet by 12 feet between environmental chambers, one simulating indoor conditions and the other a wide range of outdoor conditions. Using the simulator's sensor readings, analysts will be able to develop a fundamental understanding of roof system behavior.

The LSCS will be housed in a pre-engineered, 7,000-square-foot metal building. The building is designed to allow assembly, instrumentation, testing and postanalysis of several specimens simultaneously.

The roof research center has been designated a national user facility by DOE, which commits DOE and ORNL to involving the roofing industry in the selection and funding of center projects. ORNL has formed a roofing research advisory panel to review industry requests and make recommendations to the center director. To help the roofing industry use the facility, the center's capabilities will be described in a user's manual that is currently being drafted. In addition, a panel committee has written a roofing research agenda that, when approved by the full panel, will provide a guide to determine priorities and schedules for the use of the LSCS. This process is expected to be completed by March 1987.

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NATIONAL NEWS

Subcontractors' president preaching virtues of contracting directly with subs

American Subcontractors Association (ASA) President Jesse M. Pickett Jr. delivered the subcontractors' new message to the Building Division of the Associated General Contractors (AGC) on Sept. 29, and to the Construction Management Association of America (CMAA) on Sept. 30.

In both speeches Pickett acknowledged the traditional antagonism that exists between all members of the construction team, including owners, architects, general contractors, construction managers and subcontractors. He also asserted that as the team begins to work together, the industry's record on price, productivity and quality will improve.

"Far too often we work at cross purposes with one another," Pickett said. "We come to construction projects as adversaries, suspicious of one another. This attitude reaches from the owner to the lowest tier subcontractor."

Pickett told CMAA members that one way to improve relations between team members would be to provide multi-prime or separate contracts that put the construction project first and treat all members of the construction team equitably. Pickett asserted that separate contracts help reduce the subcontractors' greatest complaints: abusive bidding practices, unfair contracts and slow payment.

Pickett also spoke to CMAA of the significant savings provided by separate contracts. He said the practice eliminates bid shopping by allowing subcontractors to bid directly to the owner with their lowest, true price.

The separate contracts would also require that all building team members would be paid directly. This reduces slow pay, retainage, and slow progress on construction projects, according to Pickett, and allows the owner to gain more control and accountability over the construction project. At the same time, this payment system reduces the general contractor's administrative burdens, and provides greater cash flow for everyone, including subcontractors.

In both speeches Pickett said he believes that the ASA can help provide the momentum that will reverse the industry's long history of infighting. He said the Association will begin this effort with a plan to establish higher standards of practice for the subcontracting industry.

Pickett encouraged the members of both CMAA and AGC to rely on subcontractors for the information they can provide as the specialists in the construction process. He concluded by expressing hope that a true partnership may be created between all members of the construction team.

"Sure, subcontractors won't always agree with construction managers or general contractors or architects; in fact, subcontractors won't always agree among themselves about the best way to conduct business," Pickett said. "But we can agree here that we will treat each other as equals on one construction team. With that commitment, strengthened by our hope, we can be partners . . . not adversaries."

List of abbreviations is new feature in UL *Directory's* revised roofing category

Underwriters Laboratories, Inc., (UL) is currently reformatting the built-up roofing materials category in its *Building Materials Directory.*

The new category will be retitled "Roofing Systems," and the classifications will be grouped by nine generic roofing system types under each subscriber's name for ease of reference.

Also included in the revised category will be a cross-index that lists subscribers' names under each of the applicable system types. The index will appear at the end of the category's general information section. Other changes include a new list of abbreviations and shortened terms to be used in describing classified systems.

These revisions, which were brought about through the efforts of NRCA, should appear in the January 1987 edition of the *Directory.*

An educational program must grow with the industry it serves, at least that's the way the NRCA Education Department sees it. To keep pace with the roofing industry requires the Education Department to continually develop or update the Association's conferences, training packages, and audiovisual programs. In the coming year, this work will yield several important additions to the educational menu for both contractors and allied industry groups.

One program that has been revamped is NRCA's old standby the "Roofing Systems Conference." NRCA has sponsored these day-long conferences since 1979. The objective of the original program was to provide architects, engineers and specifiers with a firm understanding of a satisfactory roof system's basic requirements. In 1983, a second conference targeted to the building owner and maintenance supervisor was developed to address the specific problems of reroofing and energy conservation.

This year, the program was once again revised to reflect the industry's de-emphasis of the energy conservation issue. The result is the "Conference on Roof Problem Analysis and Reroofing Options." The new program emphasizes the investigative and analytical techniques that lead to the decision to repair or reroof. The conference also covers roof maintenance and repair techniques.

Two new programs have also been added to the NRCA Foremen & Superintendents Conference series. The first is a 1½-day conference to be held in Atlantic City Jan. 9-10 and in Chicago Jan. 30-31. The program, titled "Solving Job Problems: A Workshop," will deal with four case studies of actual roofing jobs. It will be the first such conference conducted entirely in a workshop format. Participants will work in groups to resolve problems with a variety of structures; roof job types; and membrane systems, including BUR, modified bitumen and single-ply.

The second new Foremen & Superintendents program will tie in to the Annual Convention's Centennial theme, and will outline the history of built-up, modified bitumen, and single-ply roofing applications and materials. It will also focus on current application procedures and their proven effectiveness. The program will be held in conjunction with the Convention on Feb. 25 in San Francisco.

Insurance crisis spawns programs

Another education program that will be part of the Centennial Convention will address the insurance crisis. The program is offered as part of NRCA's series of management conferences for roofing contractors and middle managers. Titled "Risk Management and Loss Control," the program will emphasize the importance of a roof safety program, and will give contractors tips on using risk management and accident prevention techniques to minimize insurance costs and control losses. Program speakers will include experts in the construction insurance and loss control field and a full-time risk manager for a roof contracting firm.

This management conference will feature a new concept in programming pioneered by NRCA's half-day "Surviving the Insurance Crisis: A Conference for Roofing Contractors" conducted in July. At this conference a videotape and study guide were produced for dissemination to the members. The availability of the videotape and study guide has added a new dimension to the conference concept by providing wide access to program information.

NRCA's newest worker training program also emphasizes the importance of roof safety. Currently under production, the program will be in three parts, covering general roof safety, built-up roofing safety, and single-ply and modified bitumen safety. The informaton is presented in 300 slides and a 35-minute narration. Like NRCA's other worker training programs, *Roof Safety* will be produced in slide/cassette and videotape formats with an accompanying workbook and study guide. Look for this program to be available in February 1987.

The Education Department has also begun work on a new series of audiovisual programs. Intended for architects, specifiers and building owners, as well as roofing contractors, these short, 80-slide programs will serve as excellent tools for both individual and group educational sessions. Four programs will be available by the end of 1986: *Roof Membrane Systems, Roof Problem Analysis: The Repair or Reroof Decision, Roof Construction Details,* and *The Modified Bitumen Membrane.* The completed series will eventually include 10 programs, sold in both slide/cassette and videotape formats. They will be an informative and worthwhile addition to any roofing library.

Growing education program keeps pace with industry changes

Contractors may not realize extent of vehicle liability

There's no doubt about it, roof contracting is a risky business. The potential for catastrophic losses exists in almost all phases of the contractor's operations, including the movement of workers and equipment from the yard to the jobsite or the sales force from customer to customer.

Any time a vehicle operated for the benefit of the company is involved in an accident, the contractor may be held liable. In some states, under certain circumstances, it doesn't even matter if the vehicle was owned by the company or if it was being used for its intended purpose.

Contractors' liability for vehicles they don't own may be established when employees are asked to use their personal cars for job-related purposes. In this situation, the vehicle owner's insurance company is often considered the primary insurer, but if the owner's insurance is inadequate to cover the costs of the accident, the contractor's insurer may be obligated to make up the difference.

The unauthorized use of a company-owned vehicle won't let a contractor off the hook either. Many states won't consider the purpose for which the use of a vehicle was granted when assigning responsibility. In these jurisdictions the contractor may be held liable as long as an authorized company representative originally gave the driver of the vehicle permission to use it. In other words, if your employees decide to head for the race track instead of the jobsite in the company truck, you could still end up paying for the accident they cause on the way.

Of course, most accidents will occur during the normal course of a job. To minimize the risks involved in the typical use of company vehicles, contractors must exercise care when selecting, training and supervising drivers.

NRCA's pamphlet "Fleet Safety Guidelines" suggests that all employees who drive as part of their job be given a road test, in traffic, in the type of vehicle they will be expected to drive. They should also be given a written examination on traffic regulations and a physical examination to assure that they will be able to operate the vehicle correctly. The "Guidelines" remind contractors that driver qualification files are required for federally regulated fleets.

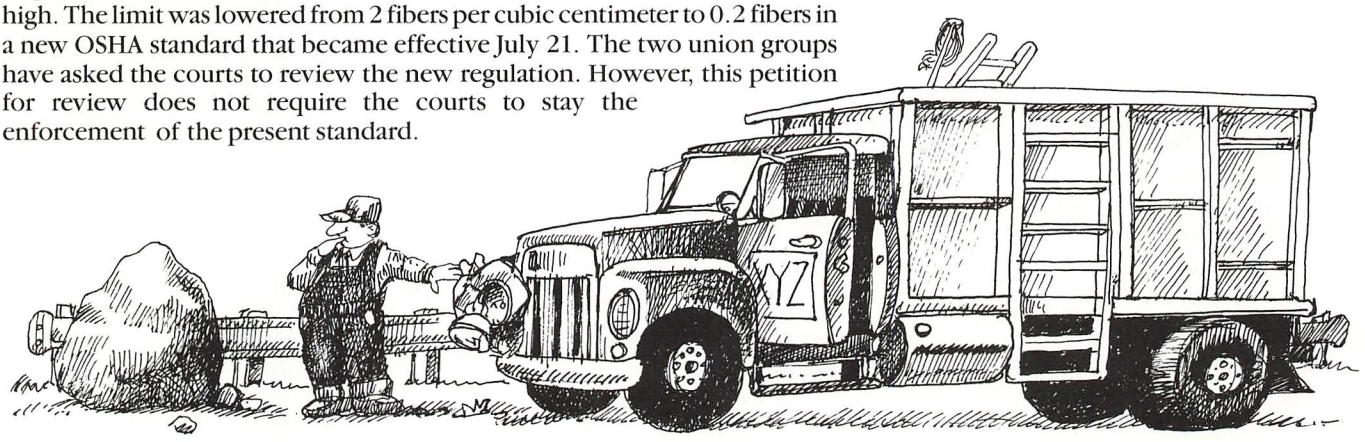
It is also essential to train drivers in the specifics of the vehicles they will be operating and the jobs they will be performing. This training should be repeated whenever performance evaluations indicate a need for a refresher course. On the job, supervisors should make sure the company's fleet safety policies are enforced.

When an accident does occur, it should be reported, investigated and reviewed, according to the "Guidelines." Accident data that should be kept on file includes medical reports, and reports from the police, insurance companies and internal investigations. By analyzing these reports, a contractor can determine if changes in policy or procedures can prevent similar accidents in the future.

Certain OSHA requirements may also pertain to vehicle operation. According to OSHA regulations, an injury from a vehicle accident must be entered into a log the same as any other occupational injury. OSHA also requires that vehicles used on a jobsite away from public traffic be checked for defects at the beginning of each shift.

IN BRIEF

■ **The new asbestos rule** is under fire from two labor groups of the AFL-CIO. The Building and Construction Trades Department and the Industrial Union Department are claiming that the rule's permissible exposure limit is still too high. The limit was lowered from 2 fibers per cubic centimeter to 0.2 fibers in a new OSHA standard that became effective July 21. The two union groups have asked the courts to review the new regulation. However, this petition for review does not require the courts to stay the enforcement of the present standard.



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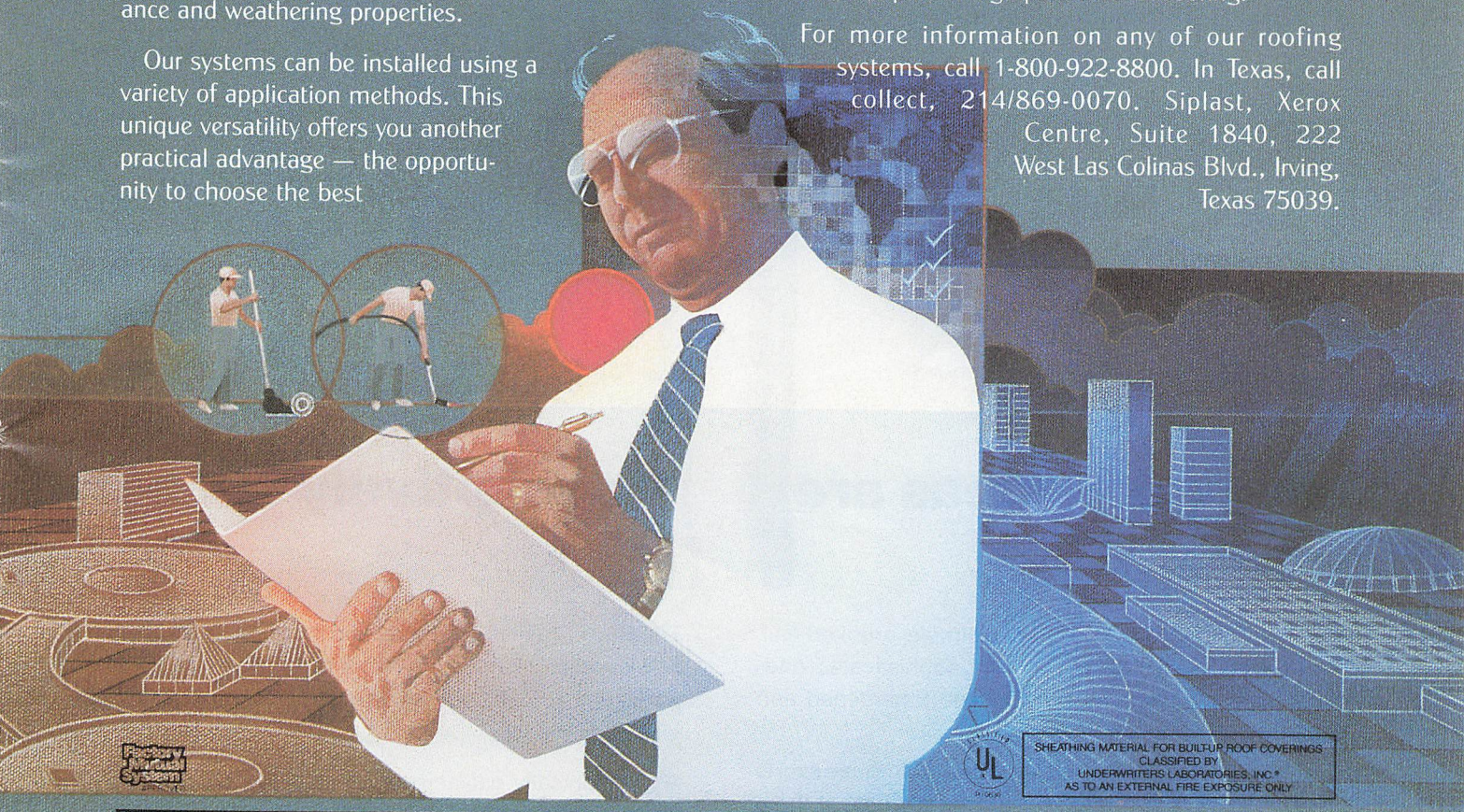

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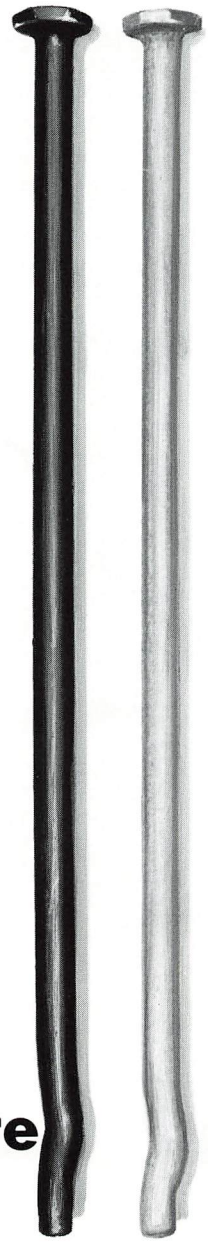

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The Rawl-Spike is used to attach membrane, insulation and wood blocking to structural concrete roof decks.

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The roofing industry: where we are; where we're going

"It's one of the best things we've ever done for directors."

"Terrifically informative."

These are typical comments from directors about a practice instituted just two years ago at our regular Board of Directors meetings. It goes something like this: at the beginning of the meeting each director introduces himself to the group and briefly summarizes his views on current business conditions, his own business, or his safety programs. In the past, we've also asked a variety of general, industry questions.

This informal information gathering proved so popular and useful that we decided to proceed in a more formal way at the next Board meeting and then share this information with all NRCA members. The result is the following series of reports describing where NRCA's leadership believes the roofing industry stands and where it is heading. The idea is very simply to share knowledge. NRCA has said for many years that one of its greatest assets is the experience and wisdom of its contractor members. These reports are one way for all NRCA members to tap this valuable resource.

Most of the information we are sharing with you was gathered at the July Board meeting, where each NRCA officer and director took 15 minutes to fill out a questionnaire. After studying this raw data, NRCA's staff was able to make some interesting observations about our industry. Supplementing this information are three reports the staff developed using outside resources. The report focusing on demographics was written by Chris Taylor, associate executive director. Major technological trends are discussed by Bill Cullen, research associate. And insurance and bonding trends are covered by Walter Derk, executive vice president of Fred S. James & Co.

Study taps members' knowledge and expertise

Sharing experiences, not statistics

As you study the following reports, please keep in mind that we are *not* attempting to reflect statistically valid industry information. The statistics we are working with were gathered only from the Association's officers and Board people, and it has *not* been categorized by the respondents' business volume or geographic location. You will find the information most useful if you analyze it in light of your own experience.

NRCA intends to conduct this study annually. The growing bank of data we will collect should become more valuable over the years as we establish a wide base of information for analysis and comparison. This data will help us to refine our questions so that we can extract more concise and meaningful information.

In the meantime, please bear in mind that this study is a first for the Association. In the coming years, as the process is sharpened and improved, I am sure you will find this information even more helpful to you and your business.

E.B. White, in an essay on "Bedfellows," said, "All writing slants the way a writer leans and no man is born perpendicular, although many men are born upright." The slant of this report, coming from your NRCA staff, is focused naturally toward the interest and view of the roofing contractor. We hope all readers will appreciate that while no bias is intended, we too are not able to stand perpendicular.

Contractors discuss systems' problems and procedures

One series of questions asked of NRCA's officers and directors at the July Board meeting dealt with the generic types of products and systems they and the industry use. The first two questions in this series asked the contractors to list the percentage of their businesses each type of roofing represented and estimate the percentage of their local markets these products commanded. The following chart summarizes the contractors' responses.

Built-Up Roofing	Average	High	Low
For the individual response	51%	90%	0%
Estimate for area	44%	n/a	n/a
EPDM			
For the individual response	30%	100%	0%
Estimate for area	35%	n/a	n/a
Modified Bitumen			
For the individual response	12%	60%	0%
Estimate for area	14%	n/a	n/a
PVC			
For the individual response	1%	30%	0%
Estimate for area	3%	n/a	n/a
Other			
For the individual response	6%	100%	0%
Estimate for area	4%	n/a	n/a

The contractors were then asked about the difficulties they had experienced with different systems based on the number of callbacks they had encountered. The contractors rated their callback frequencies on a scale of one to 10, with one representing no callbacks and 10 very frequent callbacks. Their average ratings for the different types of systems were as follows:

BUR—2.65 average call-back
EPDM—3.39 average call-back
Mod. Bit.—2.98 average call-back
PVC—4.79 average call-back
Other—3.0 average call-back

We also asked the question: "Of the callbacks, how many involved major repairs or alterations?" (By "major" we meant work that costs the contractor more than $5,000.) We found that the 52 contractors polled had made a total of 135 callbacks involving major repairs.

In this survey we did not attempt to categorize these major repairs by generic type; however, we will make this information available in subsequent survey reports. We also do not know the total number of jobs each respondent performed. Without these statistics to compare the number of major repair jobs to, it is difficult to draw any conclusions from these responses.

Another question about problem jobs asked the officers and directors for the number of these jobs that involved the threat of litigation. The results, broken down by system type, are as follows:

BUR—34
EPDM—18
Mod. Bit.—14
PVC—5
Other—9
Total instances—80

The contractors were also asked if there was a common trend such as lap adhesion, blistering or splitting in the problems they observed. Without question, the number one problem mentioned was lap adhesion. This was mentioned eight times in association with EPDM applications, five times with modified bitumen applications, three

Safety *continued*

concerns as well. The contractors' rankings don't necessarily indicate the relative costliness of these problems, however. According to loss control reports, falls are the most expensive loss to a contractor even though they occur less frequently than many other injuries.

The contractors are also becoming concerned about alcohol and drug abuse. Two-thirds of them believe that the use of these substances has been a factor in at least some of the accidents that have occurred at their worksites. Only one contractor surveyed is currently using a drug testing program to combat substance abuse, but as a result of an increased national awareness of this problem, we may begin to see more contractors using education, employee assistance programs and, possibly, blood testing to reduce substance abuse among their workers.

Asbestos no problem—yet

Asbestos removal, another health problem that has gained national attention recently, has had little affect on most of the contractors' operations, according to the survey. Only 13 percent of the respondents said they have encountered difficulties with obtaining permission to remove asbestos roofing. Apparently, federal regulators are not concerned about the asbestos in roofing felts and shingles because it is encapsulated and non-friable. The government's attention has been focused primarily on asbestos in the schools and federal buildings, where friable asbestos presents a serious health concern.

Contractors may have a more difficult time with asbestos removal in the future, however, especially if OSHA and EPA become more involved in various asbestos issues. The insurance companies may also play a role as they consider coverage of operations that involve asbestos. At some point, it may become difficult for contractors doing asbestos tear offs to obtain insurance.

Companies are revising their safety programs to get needed information to their workers.

Survey takes finances into account

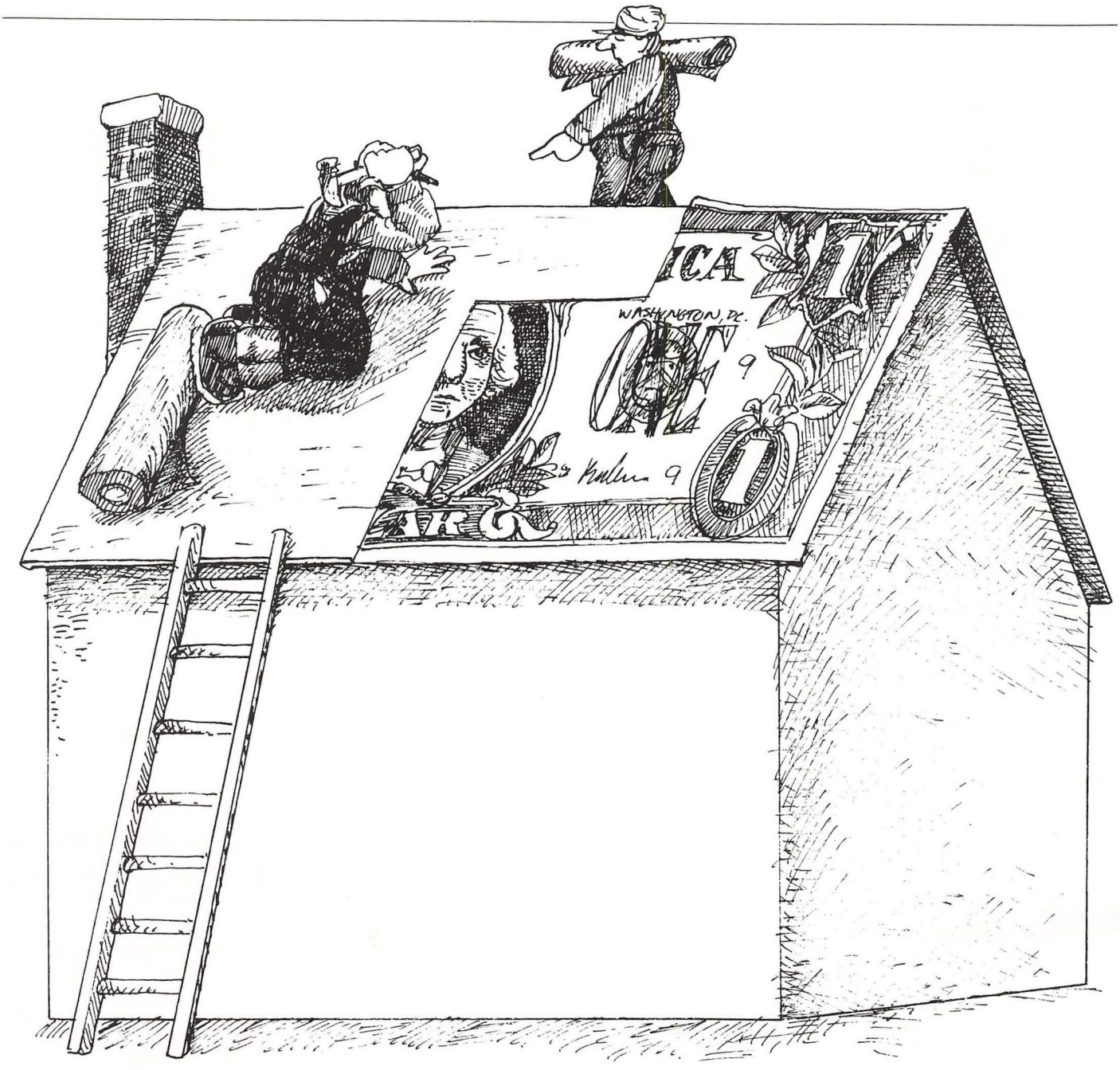
In the finance section of the NRCA officer and director survey the Association's leadership was asked how they handled receivables, payables and financing in their operations.

Collection of receivables, including retainage took about 96 days, according to the survey, or 48 days when retainage was excluded. A majority of the survey respondents indicated that this represents a slight rise in the length of receivables from a year ago, while 44 percent said their receivables had remained the same. Also, 41 percent of the officers and directors indicated that collections for government jobs do not seem to differ from those in the private sector.

On the average, it took about 88 days for these contractors to go after delinquent accounts. The median number of days was around 90. This is right in line with the procedures followed by most manufacturers. The respondents also reported that they recovered about 63 percent of the accounts that were put out for collections, while the median for recovery was 50 percent. About half of the leaders surveyed used in-house collection personnel, while 41 percent used an attorney.

Following generally accepted accounting principles, the respondents write off their bad debts after 368 days on the average with a median of 365 days, according to the survey.

Questions were also asked about discounts. The results indicate that 91 percent of the surveyed contractors don't give them. However, when discounts are



The preferred method of financing was commercial loans; most stated that they had benefited from falling loan interest rates.

offered, 85 percent of the respondents said they took advantage of them.

Leaders want to be left a loan

In the area of financing, only 31 percent indicated the use of long-term debt in the form of real estate mortgages. The preferred method of financing, according to the survey, was commercial loans. Unsecured loans were obtained by 56 percent of the respondents, while 33 percent obtained secured loans. Only 20 percent used personal loans. Almost all of the officers and directors said they had benefited from falling interest rates on loans.

Obtaining credit didn't seem to be a concern among the surveyed contractors, with 48 percent saying they didn't find credit any harder to get than before. Another 35 percent believe credit has actually loosened recently, according to the survey. Only 17 percent said they thought credit was tighter these days.

Almost all respondents said they use an outside CPA firm to figure their books. These CPAs are performing audits for 53 percent of the officers and directors, according to the survey. The remainder of the contractors had only a compilation done.

Maintaining a close dialogue with your local insurance pro is going to become more important than ever in the next two or three years. There are so many changes in the wind that bidding work without up-to-the-minute insurance information will put you at a distinct disadvantage.

The changes that will affect your coverage will be brought about by forces at work in the government and the insurance industry. The most influential legislative moves will be in the area of tort reform. Few would dispute that too many Americans are suing each other. To combat this, at least 35 state legislatures are putting limits on "pain and suffering" awards, punitive damages, frivolous lawsuits and the like. Most of these measures will help, but some state legislation is doing more harm than good.

Florida, for example, recently passed a bill that limits non-economic losses, punitive damages and penalties for frivolous lawsuits. Unfortunately, it also ties these changes to a 40 percent rollback of insurance premiums, and a freeze of 1987 premiums at the 1984 level without knowing the actual effects of the enacted changes. Predictably, every major insurer in the state has pulled out, and legislators on both sides of the issue have have filed suit to set the law aside.

Similar challenges to tort reform legislation have been mounted on Constitutional grounds in Colorado, Connecticut, Florida, Illinois, Kansas, Maryland, Michigan, New Hampshire, New York, Utah and Washington.

Federal legislation, which would be the most desirable way to deal with the problem, is still pending. One group pushing for federal action is the American Tort Reform Association, of which NRCA is a member.

A matter of form

The current changes in liability insurance will also complicate policy forms. Although the Insurance Services Office (ISO) has suggested the coexistence of occurrence and claims-made policy forms, reinsurance companies, which are dictating the terms under which they will reinsure primary underwriters to a greater degree, are demanding claims-made policies. This means that at least some liability coverage will be written on a claims-made basis in the future. With this type of coverage, contractors will have to be conversant with terms such as retroactive coverage date, claims-made and extended discovery. Above all, it will make it necessary for contractors to notify their insurance representative of any event or circumstance that may lead to a claim, especially when changing insurance carriers or policy limits.

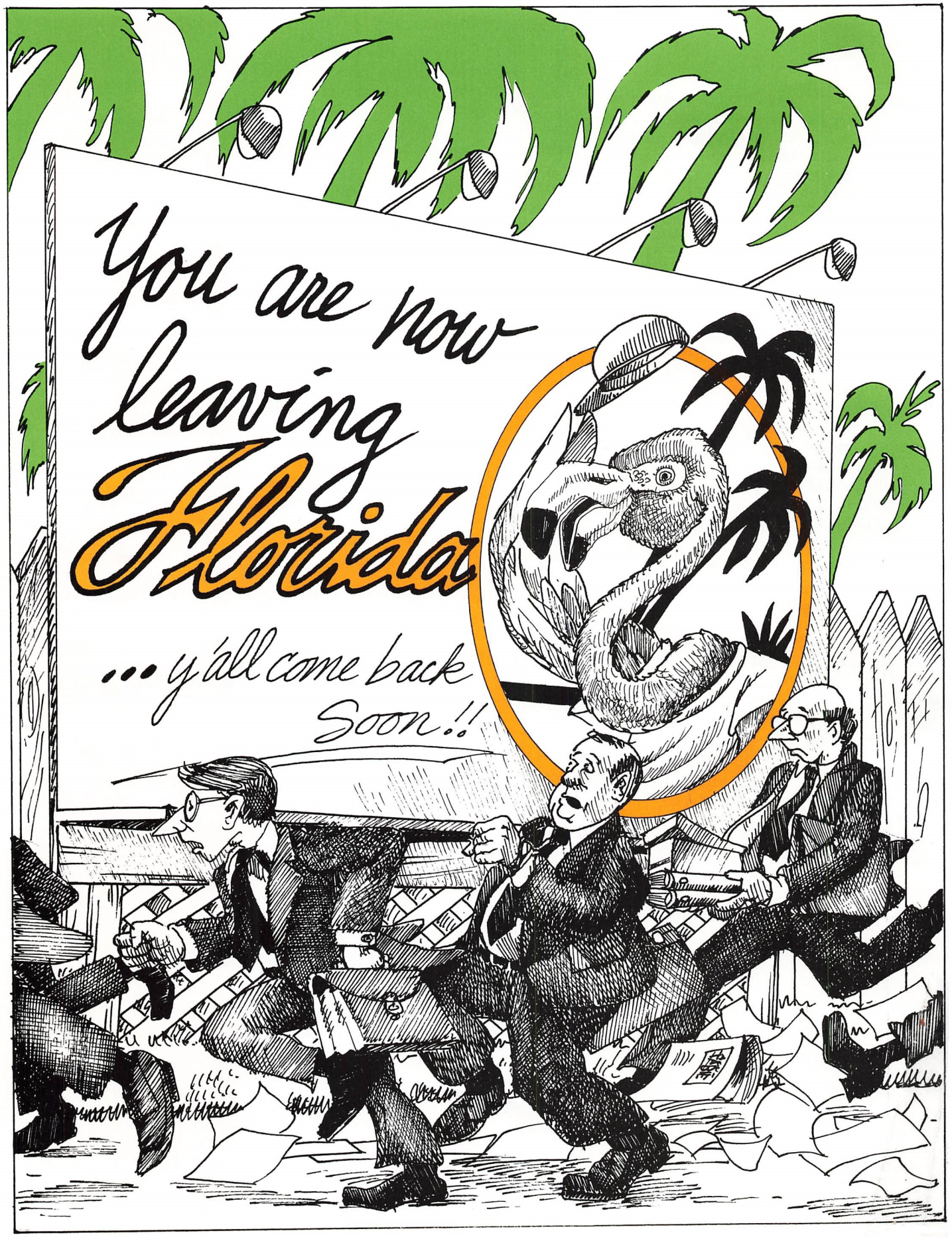
Insurance specifications in the contracts will become more complex to protect the owner, construction manager or general contractor in a variety of circumstances. The lawyers who draft these documents will insist on asking a lot of questions to find out more about the subcontractors' liability coverage.

One of the things these lawyers will want to know is if the policy contains an endorsement. This endorsement, called the Aggregate Limits of Insurance (Per Project), extends the new commercial general liability policies to provide stated limits for each project away from the contractor's premises. This endorsement is necessary because the new policies provide for a General Aggregate Limit, which is an absolute limit above which the policy will no longer pay regardless of the number of events causing loss or where they occur. Without an endorsement, which is available for the asking, there is no way to show a certificate holder how much liability insurance is available on a given project.

There is every indication that in the future umbrella excess policies will become more and more "following-form" excess policies, covering losses in excess of a high retention, whether insured or self-insured. It is also likely that the amount of that reten-

continued on page 25

To understand insurance trends will take professional touch


You are now leaving Florida
...y'all come back Soon!!

Insurance trends *continued*

tion will climb, meaning that more exposures will be treated as self-insurance business expenses rather than insured primary claims.

Property insurance in for changes

The ISO is also planning to make changes in property insurance policies. The agency has been working to replace the term "all-risk" with something less apt to be interpreted by the courts to mean that the policy covers specifically excluded losses. ISO is suggesting dual-policy formats as an interim solution, making it necessary to read each and every policy with care to determine the intent and extent of coverage. Again, a job for an insurance pro.

Most of these changes are the result of broader shifts in the underlying philosophy and purpose of insurance. More and more contractors will be relying on insurance only for the relatively rare catastrophe, and not for survivable economic loss. The more predictable the event, the less likely insurance will be available to respond in the future. This represents a return to the original intent of insurance.

New tax code to have an effect

Other changes will occur as a result of tax reforms. The new tax code promises to take away captive insurance companies' financial advantages, making domestic captives more attractive in the future. Association captives will remain a viable alternative for some. To make this type of arrangement successful, however, members must be willing to pay more than the going rate for coverage initially and then cast their lot with their competitors. They must also stay with the group even when market conditions make it less expensive to insure singly, and agree to pay a penalty to get out of the commitment.

One trend that bodes well for NRCA is the continuing growth of trade association group insurance plans. Because they concentrate on buying power and lend stability when the market changes, they will become an ever more important force in the insurance industry as time goes by.

Changes in insurance coverage will be brought about by legislative moves in the area of tort reform and by the insurance industry.

Every country approaches the roofing market a little differently. While some embrace innovative products and techniques, others shun them in favor of traditional materials. A recent survey by the Joint Committee on Elastomeric, Thermoplastic and Modified Bitumen Roofing assessed 13 countries' attitudes about single-ply and modified bitumen performance. The survey asked respondents to describe they types of materials used, the comparative percentage of use, application methods and experiences with performance.

The Committee is comprised of 37 technical representatives from 16 countries. It is sponsored by the International Union of Testing and Research Laboratories for Materials and Structures, and the International Council for Building Research Studies and Documentation.

The responses that were received for the Committee's survey are summarized in Table 1, which lists the percentage of each country's total commercial/industrial market the different types of roofing command. On the Table, the elastomeric category includes vulcanized and non-vulcanized elastomers such as EPDM, Neoprene, CSPE, CPE and PIB. The thermoplastic category is largely PVC, while the "other" category comprises bituminous built-up roofing.

It is interesting to note that in many countries conventional built-up roofing still accounts for most of the work done. This is particularly true for Australia, Canada, Denmark, Finland and Israel. On the other hand, the newer products have nearly taken over the markets in France, Switzerland, West Germany, Italy and Norway.

U.S. embraces elastomers

The survey suggests that elastomeric products are most popular in North America, primarily in the United States. This information, corroborated by other

Countries around world choose own mix of products

The survey assessed 13 countries' attitudes about single-ply and modified bitumen performance and use.

TABLE 1: Use of Elastomeric, Thermoplastic, and Modified Bituminous Roofing.

Country	Elastomeric %	Thermoplastic %	Modified Bitumen %	Other %
Australia	5	5	10	80
Canada	8–10	4–12	8–15	65–80
Denmark	2	3	5	90
Finland	0	0	15	85
France	0	<1	60	40
Israel	2–3	2–5	10–15	80
Italy	1	3	89	7
Japan	15	5	5	75
Norway	5	25	65	5
Switzerland	2	33	43	22
United Kingdom	1–3	2–5	30–35	60–65
USA	15–25	5–10	10–15	55–60
West Germany	5	20	35	40

sources, indicates that between 20 and 25 percent of all commercial roofing in the United States uses elastomerics. Japan reported the next heaviest use— about 15 percent. Further details provided by survey respondents indicated that EPDM was by far the most commonly used elastomer. Every respondent reported that most elastomeric installations used the loose-laid-and-ballasted attachment method. Mechanically attached systems were the next most widely used. Only Japan favored the fully adhered method. The survey also indicated that adhesives are much more frequently used for seaming than splices or tapes.

In countries where EPDM systems are used, their performance was said to be either excellent or good. Neoprene, butyl rubbers and uncured elastomers drew mixed reviews; ratings ranged from poor to good. Lap-seam deficiencies were the most common performance problems reported. Wind-related difficulties were also frequently mentioned.

PVC gains foothold in Europe

Significant use of PVC membrane material was reported by only three countries: Switzerland, Norway and West Germany. PVC commanded the largest market share in Switzerland, where it accounted for a third of the country's low-slope roofing. Frequent use of PVC was reported by seven additional countries, including the United States, which reported a 5 to 10 percent market share for the product. However, the survey's figures for the United States do not correlate with other surveys, which indicate PVC use in the neighborhood of 3 to 4 percent.

The majority of countries reported that the loose-laid-and-ballasted attachment method was most frequently used with PVC. Frequent use of partially adhered attachment was reported in Canada, France, Norway, the United Kingdom and the United States. Once again, Japan, which reported the dominance of fully adhered systems, was the only exception. All countries but Japan reported heat welding as the sole seaming method. In Japan, adhesives are used to join seams.

Three respondents rated thermoplastics excellent, seven rated them good and 10 rated them only fair. The most frequently reported problem was membrane shrinkage. Lap and seam deficiencies were also cited as problems by most of the respondents, but they did not indicate that this was a frequently occurring difficulty.

Italy takes to modified bitumens

Italy, France and Norway are the dominant users of modified bitumen, according to the survey. Almost all of the Italian market is modified bitumen; 89 percent of the roofs installed there use these products. Other significant users include Canada, Finland, Israel, Switzerland, the United Kingdom, the United States and West Germany.

SBS-modified bitumen was used most frequently in eight countries, while APP products were the dominant choice in only three countries. All respondents except Finland reported some use of both types of products. In Finland APP products are shunned.

Canada, Japan, Israel, Italy, the United States and Switzerland reported use of modified membranes in single-layer applications. Respondents from Denmark, Finland, France, Germany and the United Kingdom reported the use of a two-ply configuration. In Italy, modified bitumen membranes are torched on. Most other countries indicated that both torching and hot mopping were used. Australia, Japan, Finland and Norway do not use the torching method at all. Only Japan and Denmark reported some use of cold adhesives in modified applications.

Performance of SBS-modified products was rated good or excellent by all respondents from countries where these systems are used. APP products were rated good or excellent in all countries except Australia, Israel and Norway, where only a fair performance rating was given. Few serious or recurring performance difficulties were reported; however, lap deficiencies were reported by all respondents, and some cited shrinkage, blistering and delamination problems.

The survey suggests that elastomeric products (the most commonly used being EPDM) are most popular in North America, primarily in the U.S.

Social trends provide clue to roofing's future

It is 1952. John and Mary live in a small bungalow in the Highland Park neighborhood of Detroit. John is a union-card-carrying foreman in a plant. Mary is a full-time homemaker caring for two children, six and four years old, with another on the way.

Thirty-five years later, John is retired; he and Mary live in a condominium in Ft. Myers. Their oldest child, John Jr., is married and living in Dallas. He and his wife have decided not to have children. John and Mary's second child, Susan, graduated from law school and lives in the mountains outside of Denver; she is campaigning on the Republican ticket for a seat in the U.S. House of Representatives. She is divorced and has a daughter in day care. The youngest, Brian, is single and a hot-shot marketing director for IBM's Southern California office.

Running the pattern

What socioeconomic factors have led John Jr., Susan and Brian to lead different lives than their parents? And why should you care?

"We seem to be a society of events, just moving from one incident—sometimes, even crisis—to the next," John Naisbitt says in his best-selling book, *Megatrends.* "Yet only by understanding the larger patterns, or restructurings, do the individual events begin to make sense."

For the roofing contractor, making sense of these social forces is vitally important. The lifestyle choices influenced by these forces can affect a contractor's business in three distinct areas: the amount of work

A contractor's business can be affected by the clientele's life-style choices.

performed, the characteristics of the workforce and the roofing materials used.

Tinker, tailor, programmer, spy

The most influential trend is the United States' shift from an industrial to an information society. More than 65 percent of Americans now spend their working hours creating, processing or distributing information, as opposed to manufacturing goods. In 1950, it was 17 percent. We are facing an economy in which the strategic resource is not capital, but knowledge.

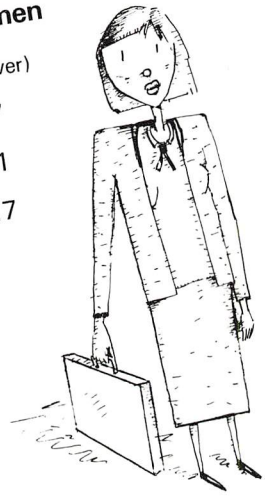
This pervasive trend resulted in a series of other key events such as the development of a technology that could store and massage the massive amounts of information created. "The automation of factories and offices, once a futuristic pipe dream, is becoming a reality," Naisbitt reports. "The potential of microprocessors is awesome."

The decline of American industry has also led to the decentralization of our cul-

The changed American family

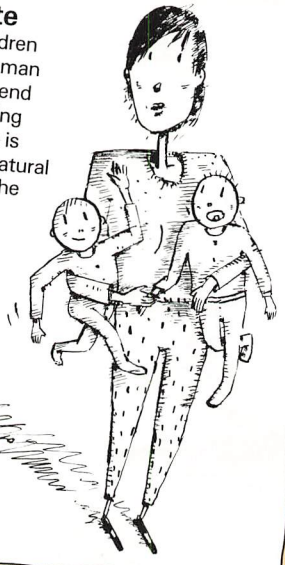
Working women
(percentage of all women 16 and over)

1965: 36.7
1980: 51.1
1985: 54.7



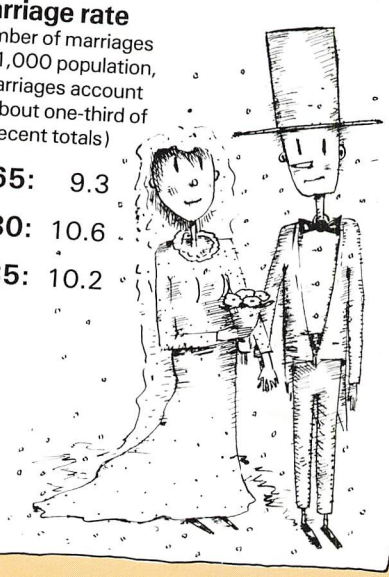
Fertility rate
(number of children the average woman will have at the end of her childbearing years; a 2.1 rate is needed for the natural replacement of the population)

1965: 2.9
1980: 1.8
1985: 1.8



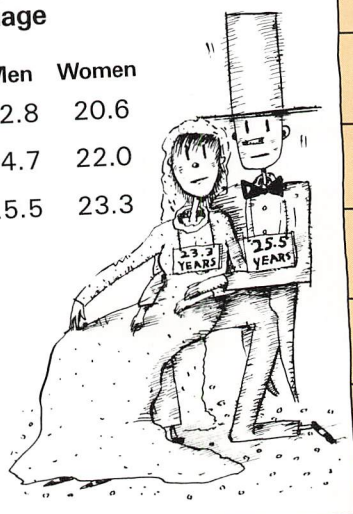
Marriage rate
(number of marriages per 1,000 population, remarriages account for about one-third of the recent totals)

1965: 9.3
1980: 10.6
1985: 10.2



Median age at first marriage

	Men	Women
1965:	22.8	20.6
1980:	24.7	22.0
1985:	25.5	23.3



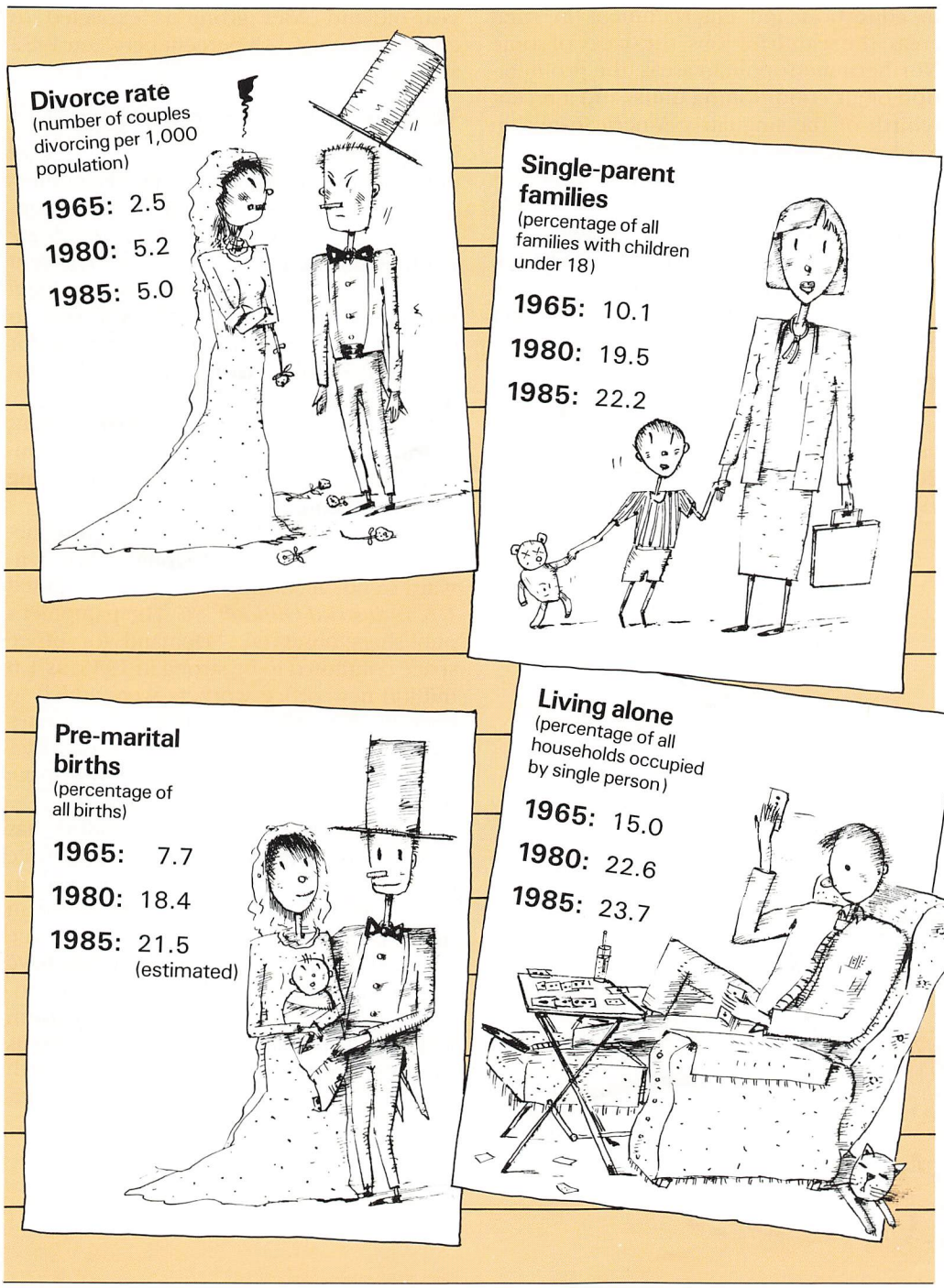
ture. No longer are we tied to a single, huge manufacturing facility; we can open a business anywhere.

A third ripple caused by the United States' current emphasis on services rather than goods may turn out to be more like a tidal wave. "U.S. manufacturers will continue to produce less and less in the world market while foreign manufacturers will make even stronger inroads with American consumers," Naisbitt states. He predicts that by the year 2000, the Third World will produce as much as 30 percent of these goods.

In search of a season

The second trend that directly affects the roofing contractor and everyone else in the building industry is the population's shift from the Frostbelt to the Sunbelt, and from the city to the country. The U.S. Bureau of the Census reported that, from 1970 to 1980, the Northeastern and North Central

Some types of construction, such as warehouses and retail shopping malls, have remained healthy—while the reroofing market has grown to be very strong.



Sources: Census Bureau; National Center for Health Statistics; Department of Labor.

The number of households with children will actually decrease by 2 percent between 1981 and 1990.

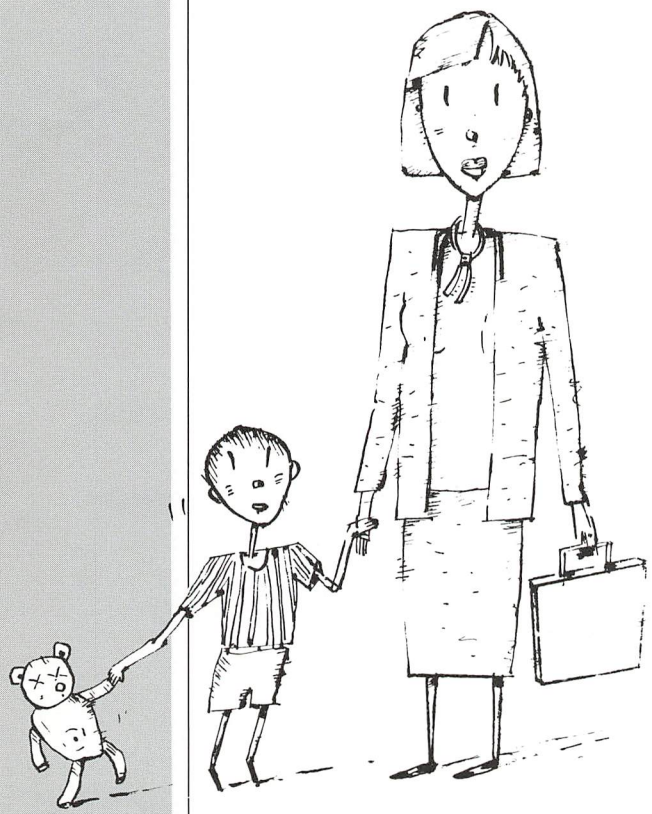
states gained 2 million people; in the same years, the Southern and Western states gained 21 million. California, Texas and Florida accounted for 42 percent of national growth in the 1970s, according to the Population Reference Bureau. Naisbitt reports, however, that only 3 percent of American businesses actually have closed in the North and reopened in the Southwest or West.

Ben Wattenberg, author of *The Good News Is The Bad News Is Wrong,* attributes the shift to several factors: the inherent mobility of our society and the transportation networks available to us; improvement in education and entertainment in rural areas; the search for jobs; the decay of some Northern metropolitan areas; the proliferation of air conditioning units; and a recent rebirth of the singularly American notion to search for the final frontier.

A disturbing corollary to this trend has become apparent. Census Bureau reports from 1982-83 show that the Midwest lost the largest number of college graduates. Young adults tended to move away from the Midwest and toward the West and South.

The birth dearth

The third trend could be the most devastating in the future economic picture. In the 20 years from the late 1950s to the late 1970s, according to the U.S. National Center for Health Statistics, we were in the grips of a baby bust, with a birth rate half of its former level. The Research Institute of America says that the number of households with children will actually decrease by 2 percent between 1981 and 1990. Within the last couple of years, more women have chosen to start families that have been delayed to establish careers, a trend that has coyly been termed the "Baby Boomlet," but it does not begin to make up for the 50 percent drop in U.S. population growth.



The corollary to this trend is that America will age considerably. The 55-year-old-and-older group is expected to grow at a rate of 113 percent between 1982 and 2050.

What it means to construction

These observations and chartings are all very interesting, but it's useless data unless we apply it to our own situations. In construction, many of these cultural trends are manifesting themselves in clear and present ways. The January 23, 1986, issue of *Engineering News Record* (ENR) describes in detail the current construction picture for the residential, institutional and commercial/industrial markets.

"The outlook for manufacturing plant construction is uncertain," ENR says cautiously. "There's little to suggest a big increase in contracts."

This decline in the rate of new construction appears to be part of a long-term downward trend, according to a pamphlet called *U.S. Industrial Outlook '86.* The pamphlet's publishers observed, "Demand for office space continued to be strong in 1985, as 1.6 million new office workers were added to payrolls. Nevertheless, office vacancy rates have continued to climb in most cities because of the record amounts of new space becoming available."

ENR confirms that office building has slowed just within the last year. Office developers are "taking to the sidelines" to wait for demand to catch up with supply in many overbuilt areas—particularly in the South and Southwest, where builders have been working until they drop to accommodate the influx of business and population. Dallas and Houston are frequently cited as the most overbuilt cities in the nation, with commercial vacancy rates as high as 20 per-

cent in some areas. Other areas of construction that declined significantly in 1985 include hospitals, nursing homes and similar institutions. In the long term, of course, the need for these facilities will increase as Baby Boomers age.

On the other hand, some types of construction have remained healthy. Roofing contractors will be happy to hear that the facilities that are still being built, such as warehouses, retail shopping malls and prisons, demand huge amounts of roofing.

In residential construction, housing starts have fallen since the beginning of 1986, when they were charted at more than 2 million a month, according to the Commerce Department. Many experts believe that the downward trend in starts from a peak rate of 2.2 million in February 1984 was only temporarily reversed when mortgage interest rates declined.

Multi-family housing starts were up, thanks to more single heads of households, more unmarrieds living together, and more people living alone, but they are now slowing. According to Joe Duncan, chief economist for Dun and Bradstreet, this is due to overbuilding, which is supported by regional statistics that bear out our original assumptions: overall, starts are up 17.7 percent in the Northeast, 2 percent in the West and less than 1 percent in the South; they're down 16 percent in the Midwest.

While the demand for new roofing has declined, the repair and reroofing market has grown very strong as more and more people elect to make plant and home improvements rather than build. The tax reform package will encourage this trend.

The social forces at work even affect the competitiveness of the roofing industry. "The transition times between economies are the times when entrepreneurship booms," Naisbitt says cheerfully. "We are now in such a period. Today, we are creating new businesses from scratch at the rate of more than 600,000 a year."

What it means to labor

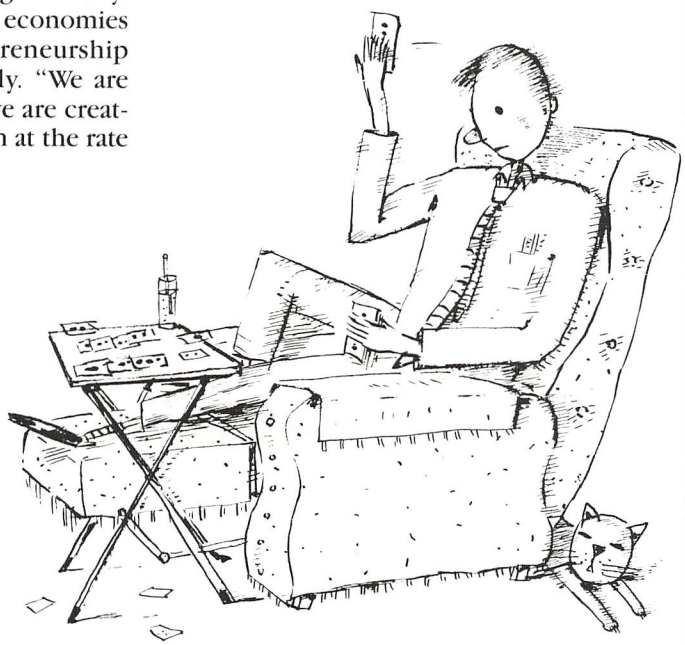
The arrival of the information age and the attendant increase in automation, the decrease in the blue-collar labor pool, and a booming economy are not factors that spell success for unionism.

John Kenneth Galbraith, in his book *The Industrial State,* points out that the union is much less necessary for the American worker than it used to be. Growth is frequently more important to what Galbraith terms the "mature corporation" than immediate profit, and new understanding of the importance of a positive image in attracting new talent leads to more conciliatory dealings between management and labor.

"While the task of the union is much easier, the union is also much less essential for the worker," Galbraith states. "What the technostructure gives to the union, it can also give without a union."

Naisbitt adds that decentralization and the growth of specialization are also reasons for the union's shrinking stature.

Current trends are also shrinking the labor pool. The Bureau of Labor Statistics predicts that the number of entry-level workers in the United States will decline from the current 17.4 million to about 14.2 million over the next 10 years. In the face of a diminishing pool of workers, business owners are making decisions to maintain the health of their businesses that include: stepped-up mechanization, and the hiring of more women and recent immigrants. In *The Good News Is The Bad News Is Wrong,* Wattenberg tells us: "Over the long term, immigration will be the key to continued American population growth."



The decline in the rate of new construction appears to be part of a long-term downward trend.

We will never again enjoy the total industrial independence we once took for granted.

What it means to materials

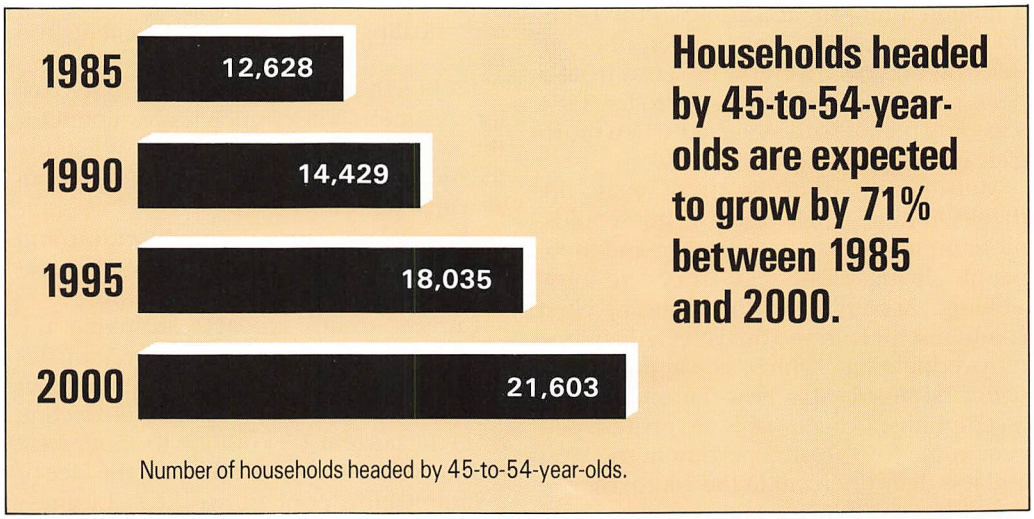
When we consider the burgeoning popularity of non-traditional roofing systems in light of socioeconomic trends, it all begins to make sense. We can see the relationship between the decline in U.S. auto sales and the acceleration of rubber roofing research. And single-ply roofing has some advantages that make it a natural choice for these times. It is a much less labor-intensive application process than building a roof on site, and we can produce the material domestically, instead of having to depend on foreign petroleum resources that shot from $6 to $36 a barrel in the 1970s.

But we will never again enjoy the total industrial independence we once took for granted. A microeconomic example of what Naisbitt calls our "global economy" is occurring right now with modified bitumen.

The system was developed in Italy and initially imported to the United States. As it became apparent that sales of the system had potential, cooperative manufacturing deals were struck, technologists wooed from Europe and distributorships established. Now, it is almost impossible to quote a statistic on how much of the material emanates from foreign shores and how much is considered domestic.

A bill that would place a tariff on the importation of these materials has now been introduced into the legislature. But Naisbitt cautions us on moves such as these. He suggests we embrace our interdependence and use it to our advantage instead of spurning it.

In general, the last 25 years have brought the development and increasing popularity of roofing systems that: can be applied with comparatively few workers; do not call for heating a kettle and standing over a steaming mop; are not tied to the whimsical nature of OPEC countries: and that are adaptable to flights of architectural fancy that, more and more often, do not result in acres of one-story physical plants. Every one of these developments is consistent with the demographic trends of the last three decades. In other words, if we had studied the scene, we could have written the script.



Some contractors going for the cold

Cold-applied roof coatings were first developed as a solution to one of the roofing contractor's most difficult and consistent challenges: the need to make quick repairs to existing roofs under adverse weather conditions. In the early days of cold-applied materials, maintenance crews simply used them for patching. Over time, this scenario evolved to one in which membrane-supported coatings, roofing sheets, cold-applied flashings, fluid-applied roofing and sophisticated preventive maintenance programs all played parts.

Now, some manufacturers and contractors believe that cold-applied roof coatings can be employed successfully in a variety of ways as long as the coatings are appropriately used, and the materials and workmanship are above reproach. But there are those who insist unequivocally that cold-applied roofing should have stayed in the quick-repair league where it belonged.

But success means being above reproach

Understanding the system

Before judging any system's merits, its components must be understood. Ken Kaiser, president of the Roof Coating Manufacturers Association, reports that cold-applied coatings can be classified by *function* or by generic *type*.

The two functions most often fulfilled by these products are repair and renewal. Plastic cements are the most common kinds of cold-applied repair materials. These products are used to stop an existing leak or repair damage. "It is interesting to note that while many professional contractors do not get involved, and do not believe, in cold-applied systems, they do use these materials in their conventional built-up work every day," Kaiser says.

Where coatings are used to bring a roof that has started to fail back to a waterproof, functional condition, the job is classified as roof renewal.

When classifying these products by type, most authorities group them into four major categories: asphalt cutbacks, tar-base coating cutbacks, asphalt emulsions and decorative coatings.

Asphalt cutbacks may be non-fibered, fibered, or filtered and fibered. Non-fibered products are composed of asphalt reduced with oil and solvent. They are usually used as a primer to satisfy the porosity of an existing roof repaired for topcoating with some other material.

Fibered products are also asphalts cut back with oil and solvent. They are then filled with an asbestos fiber or other fiber, and used as a topcoat to protect an existing roof, or to fill alligatoring on an aged roof. They can also be used with a membrane as an adhesive and/or topcoat.

A filled-and-fibered product is a heavier-bodied version of the fibered coating; it has additional filling. It can be used as a mastic-type application with membranes. A heavily filled formula is normally applied with a trowel and used as a patching or plastic cement.

The same three categories apply to tar-base coating cutbacks. These products' characteristics and uses are identical to their asphalt counterparts.

There are also fibered and non-fibered asphalt emulsions. The non-fibered versions of these products are broken up into small globules and suspended in water, a colloidal suspended agent or a chemical surfactant. They can be used for topcoating on existing roofs, usually after primer has been applied and allowed to dry, or to finish new roofs. The asphalt emulsion has superior weathering characteristics.

The fibered versions of the asphalt emulsions are similar to the non-fibered emulsions, but they have added fiber to meet specifications and viscosity needs during the application.

There are also trowel-grade asphalt emulsions, where the viscosity is increased substantially by using additional chemicals so that the material may be applied as a trial for special applications, such as one below grade, or as an adhesive.

Cold-applied roof coatings were first developed to make quick repairs to existing roofs.

Decorative coatings come in a wide variety, from aluminum-pigmented asphalts to the more sophisticated white and colored coatings. They are generally used as topcoats for existing roofs, or as part of a fluid system applied over urethane foam or on metal buildings.

Selective service

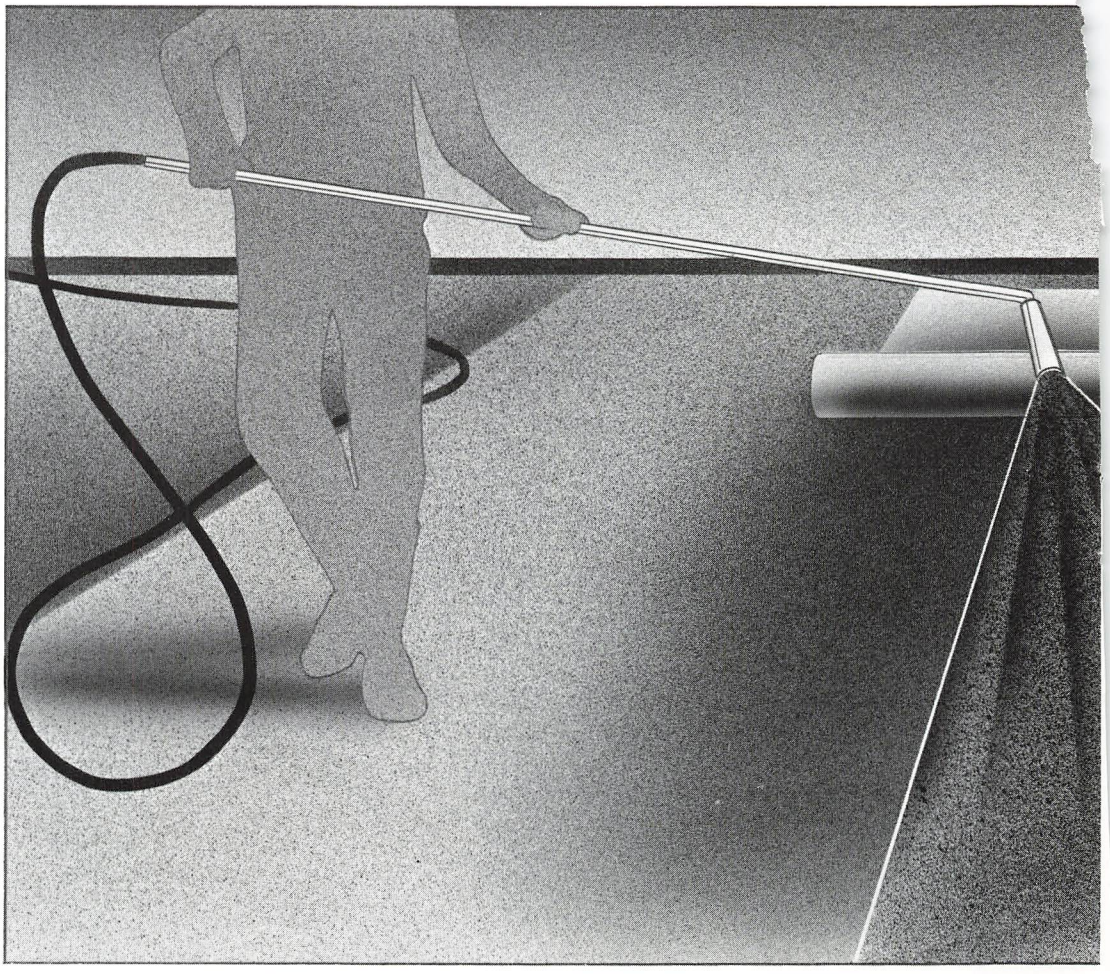
"With the wide selection of asphalts, solvents, oils, plasticizers and other fillers, the possible combinations and permutations are almost endless," Kaiser says. "And with the development of sophisticated synthetic fabrics, the capability of these materials has increased dramatically."

Kaiser also points out that new asbestos-free formulae for cold-process roofing makes it appear to be "the product of the future," particularly in light of recent concerns about liability insurance. "We suggest that contractors establish a relationship with a manufacturer who offers support, and has experience in the field with these products and their use in roofing systems," he concludes.

Richard Yohe of Maco Roof Systems, Inc., in Wheeling, Ill., serves on NRCA's Cold-Applied Liquid Systems Committee. Most of Yohe's work consists of some form of cold-process roofing. Like Kaiser, Yohe is obviously a supporter of this kind of roofing, and points out some advantages to this kind of application when it is used correctly.

"One attractive feature of the cold system is the time element," he notes. "Most work can be done quickly, with prompt payment. Most cold-applied work is for maintenance of existing roofs. Full payment, without retainers, is supplied. And a minimum of investment capital and storage capacity is needed.

"The equipment and tools needed for cold systems are uncomplicated, and can be used and maintained by all workers," he adds. "One contractor has noted that cold-applied systems require fewer workers, since they are all on the roof. Once the material is up there, the work can start, and continue. Each worker can perform any part of the work; the jobs are interchangeable. There are no large pieces of equipment to be hoisted, operated and removed from the roof."



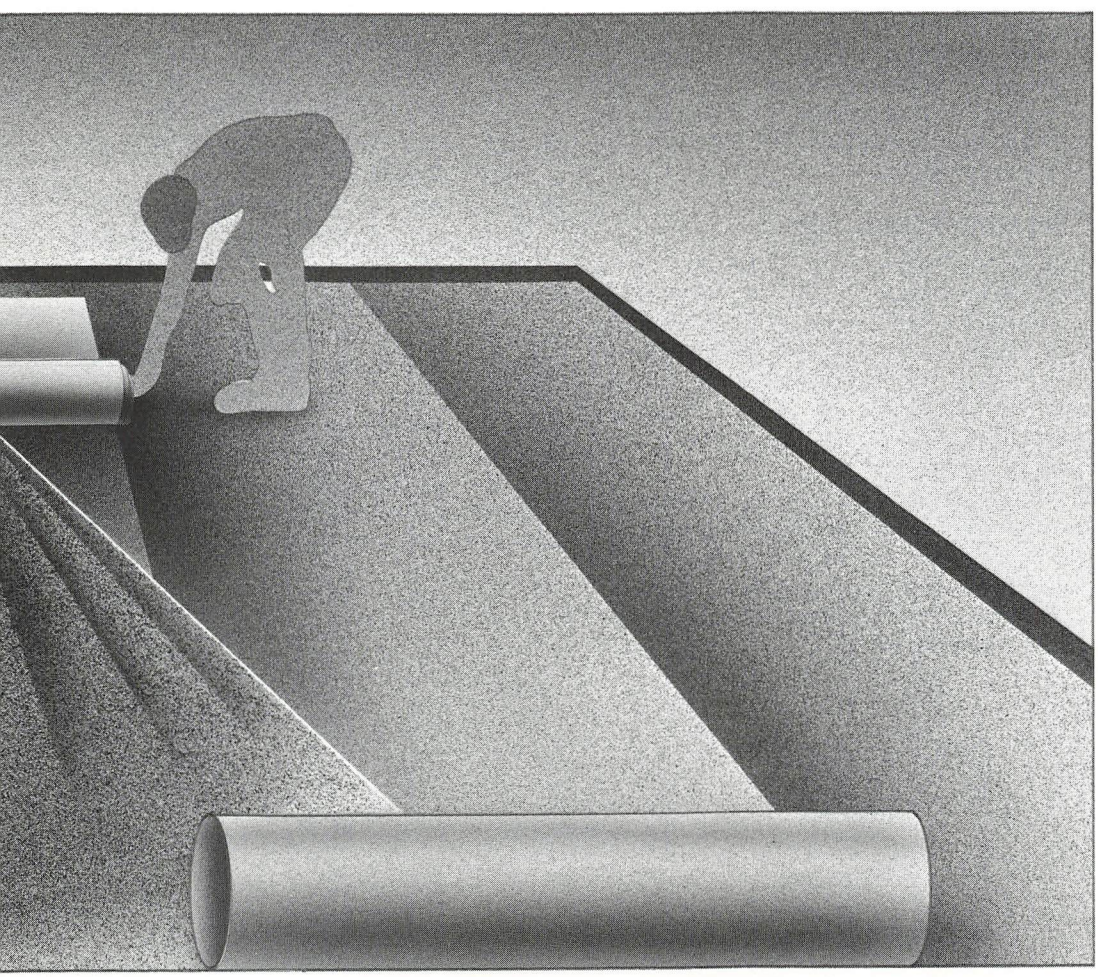
Yohe cites three cases in which contractors are now employing cold-process roofing very successfully: a contractor in Texas, using a tanker, is pumping the cold stuff onto the roof, which is reinforced with a polyester membrane over gravel; a Northern California contractor installs new BUR systems using asphalt emulsions as the interply mopping, a polyester fabric as the membrane, and the emulsion as a topcoat with a final aluminization; and an innovative contractor in Hammond, Ind., covers the seams and joints of the metal factory roofs in his area with polyester fabric, using cold materials as the adhesive, then coats the entire roof with an asphalt cutback rust-resistant layer.

"But to be successful in applying cold systems, the contractor must have a thorough knowledge of his products and roof conditions," Yohe cautions. "Cold systems are not as forgiving as other systems; the wrong material can create problems if the roof is not properly prepared. Or, cold materials can simply be unsuitable for a particular roof."

On the flip side, some considerations in cold-process roofing are:

- Asphalt emulsions require a four-hour drying period. They will wash off if it rains within that time. Emulsions cannot be applied on ponded roofs, either; they will break down rapidly.
- Asphalt-based coatings cannot be applied over a tar-and-gravel roof; the chemical reaction causes coating separation.
- Aluminum coatings cannot be applied on roofs with ponding water. The aluminum powder separates from the asphalt. Many white thermoplastic coatings also deteriorate under ponded water.
- The slow setting and drying time of cold materials can impair foot traffic for weeks, and they have a pronounced odor during application.
- Some low-quality plastic cements get hard and peel off the surface within one year.

Cold-applied coatings can be classified by function or by generic type.



Some manufacturers and contractors believe that cold-applied roof coatings can be employed successfully, others feel that cold-applied roofing should have stayed in the quick-repair league.

"Improper roof preparation will ensure cold-applied failure," Yohe adds. "On powdery, dry felts, a cold primer must be applied to ensure adhesion of the topcoating. If the insulation is wet, cold materials will induce blistering of the felts, creating a severe problem.

"A roof that is badly blistered; built with three plies that are splitting; has been leaking severely for several years; has one or two plies of cap sheets over the original; or has a weak, moving roof deck is not a candidate for any cold-applied material or system," he states. "Most contractors using cold systems share the Maco philosophy that we present another system to the building owner when it is applicable.

"We know that the conventional, hot roofing contractor will tell our prospect that 'cold materials do not work and resaturation does nothing for the roof.' We also know that if the conventional hot roofer tries to apply the materials, he will prove himself right, and it won't work."

The cold-applied systems are generally more expensive than other systems because the cost of materials is high and the application is slower. "But they will stand the test of time," Yohe asserts. "The trade-off is less maintenance and fewer roof problems over the life of the roof."

Experts agree that, like other retrofit systems, most cold-applied systems will not improve a roof beyond repair. They simply make a good roof better and extend the life of the existing roof.

The contractor's role

Yohe and Kaiser agree that one major drawback of the cold systems lies with the contractor; there is no formal training offered through associations or manufacturers. Most applications are done through trial and error or by reading from an instruction manual provided by the manufacturer, Yohe reports.

"The building owner must hope the contractor is experienced in cold systems and has graduated from his trial period," Yohe says. "A good written specification by the contractor or a consultant is a requirement for the building owner."

There are many creative roofing contractors installing cold-applied systems along with their other applications. Not every roof needs a replacement, single-ply coverage, or retrofit, nor do all owners want the various exotic systems offered today. Cold-applied systems satisfy a niche in the marketplace and the alert contractor will recommend it where it is to his and his customer's benefit. But the contractor must believe that the system is appropriate given the circumstances, and that he is the key player in the drama.

"The contractor applying cold systems can realize a good profit margin with a lower cost system and feel he has installed a good roof that he can live with," Yohe says. "With good workmanship, knowledge of materials and installation, quality materials, and a common-sense judgment of the roof condition, the success rate will be equal to any other system installed."

Contractors installing cold-applied systems should use the following techniques, according to Yohe:

- The system should be sold to the customer by clearly defining its process, the materials used, general specifications and the expectations.
- The contractor should provide a guarantee.
- The building owner should be informed about the alternatives to the cold-applied system and why it is recommended.
- The proper equipment should be available for installation.
- The contractor and his workers must know the materials and their application methods.

"The cold system must be sold as it is; it's not like one of the glamour systems that includes long warranties, expensive literature, instruction manuals, and applied samples demonstrating the product," Yohe concludes. "The manufacturers of cold materials are not equipped to provide this hype for the contractor. He has to sell his system on his own reputation and reliability."

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Comparison of Data Contained in Commercial Roofing Material Publications

COMMERCIAL ROOFING MEMBRANES

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	0	50	100	150	200
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1986 Handbook of Commercial Roofing Systems**	43				
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Modified Bitumen Membranes

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GUIDE*				134	
1986 Handbook of Commercial Roofing Systems**	15				
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Thermoplastic/Elastomeric Membranes

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GUIDE*				134	
1986 Handbook of Commercial Roofing Systems**	27				
Single-Ply Roofing: A Professional Guide to Specifications***	73				

ROOF BOARD INSULATION

	0	50	100	150	200
GUIDE*					196
1986 Handbook of Commercial Roofing Systems**	5				
Single-Ply Roofing: A Professional Guide to Specifications***	0				

WARRANTIES

	0	50	100	150	200
GUIDE*				116	
1986 Handbook of Commercial Roofing Systems**	0				
Single-Ply Roofing: A Professional Guide to Specifications***	0				

*Commercial, Industrial & Institutional Roofing Materials GUIDE, Volume #8; Published February, 1986 by the National Roofing Contractors Association, Chicago, Illinois.

**1986 Handbook of Commercial Roofing Systems; Published by Harcourt Brace Jovanovich, Inc., Cleveland, Ohio.

***Single-Ply Roofing: A Professional Guide to Specifications; The Single-Ply Roofing Institute, Glenview, Illinois.

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American Hydrotech Inc
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ON THE ROOF

Contractor cures splitting roof with cold-applied

Using cold-applied products, Stanislaus Roofing, Inc., of Modesto, Calif., was able to save one owner from a splitting headache. The 100,000-square-foot BUR roof originally installed on the retail store had been strip mopped to the 1/2-inch CDX plywood deck. Stanislaus found that in several places where there was a joint between plywood sheets the membrane had split.

"On inspection of these types of roofing problems we find that the old roofing is not worn out," said Stanislaus' F.R. Freudenthal. "They're simply split open because the membrane was adhered directly to the plywood deck."

Stanislaus had been responsible for the repair of the roof for several years. During that time, the company had noted that the roof was most likely to split during cold weather.

When it finally came time to re-cover the roof, Stanislaus removed the old hot-applied patches and loosely laid fiber glass base felts over all areas where splits occurred. The cold-applied system was then installed over the old roof.

Freudenthal said that the cold-applied membrane's flexibility, especially in cold weather, has allowed it to avoid the problems the original BUR roof experienced.

One problem with the new roof did surface after a period of time, however. After a couple of years, the roof began to split in some areas. When Stanislaus investigated, it found that the splitting occurred over areas where workers had troweled a mixture of lightweight concrete and cement into the deflected deck. "The thin mixture had a tendency to crack or break like the fractured surface of a dropped hard-boiled egg," Freudenthal said. "These cracks split the polyester reinforcing fabric, the emulsion and topcoating in some areas as much as 1/4 inch."

To remedy the situation, workers removed the concrete mixture and loosely laid a fiber glass base, recoating with two layers of polyester and standard emulsion.

According to Freudenthal, the company uses an 18-wheeler to transport two 3,000-gallon emulsion tanks from the supplier to the jobsite. For spray applications, a high-pressure piston pump operated by an air compressor and a 6-foot Moyno multiple cavity, low-pressure, high-volume pump are used. To save money and avoid handling 55-gallon drums, Stanislaus uses a bulk tank. "However, cut-back adhesives and specialty topcoatings still use those awful drums," Freudenthal said.

Cold-applied repairs prove easy on the budget

Financially speaking, it's never a good time to reroof. But with modern materials, owners can keep their old roofs in working condition at least long enough to budget for their replacement.

This was the strategy chosen by the Memphis Tire and Battery Co. on its warehouse and office area. The work was performed by Memphis' Allstate Roofing Co. Using a cold-applied polyester system from the Wilson Distribution Co., Inc., the company repaired Memphis Tire and Battery's immediate roof problems while it established a regular roof maintenance schedule to eliminate the need for expensive emergency repairs in the future.

Memphis Tire and Battery's facility is a major distribution center with more than 500,000 square feet of roof, including a 9,000-square-foot area over the company's offices. While it was necessary for Allstate to reroof the office area, the company was able to repair the 493,000-square-foot warehouse roof.

Allstate used Wilson's Wilflex polyester roof system to reroof the office area. The workers first cleaned the debris from the roof mat and then patched all splits, cracks and blisters with a sandwich of Wilson's mastic and a polyester reinforcement. After the roof mat was watertight, a three-ply Wilflex Proveil polyester system was applied with nine gallons of Wilflex mastic. A gravel coat applied at a rate of 450 pounds per square finished the job. Allstate also aluminized the flashings to prolong their life and minimize thermal shock.

To repair the warehouse roof, Allstate cut open the roof's blisters and filled them with mastic, top coating with the mastic/polyester sandwich. All flashings were rebuilt with Wilflex Super Elastic emulsion and Proveil polyester. The felts were resealed with an application of Wilflex polyester mastic at a rate of three gallons per square.

Rice's experience with cold-applied roofing has taught him the importance of good workmanship. "To ensure a good job without callbacks, proper preparation and patch work must be strictly adhered to," he advised. "Detail work will dictate how well the job will turn out."

Church relic still watertight

In the world of roofing and waterproofing, 15 years ago is ancient history, and any product installed during the Nixon era that is still performing today is as much a curiosity as fringed bell-bottoms or peace symbols.

One waterproofing product that is making a 15-year lifespan more commonplace is American Hydrotech's Liquid Membrane 6125. The company points to a project in Boston, completed about the same time a group of third-rate burglars were making political history in the Capitol, as a typical example of the product's longevity.

The job, completed in 1972, involved waterproofing the large plaza and reflecting pool of Boston's First Church of Christ, Scientist. Liquid Membrane 6125 was used on 400,000 square feet of the church's property. "The reflecting pool alone was 200,000 feet, one of the largest reflecting pools in the country," Dave Spalding, Hydrotech's president explained.

Liquid Membrane 6125 is a hot, fluid-applied waterproofing membrane formulated of refined asphalts, synthetic rubbers and extenders. The product can be applied on vertical or horizontal substrates.

"Unlike most other waterproofing materials," says Spalding, "Liquid Membrane 6125 is designed to bond absolutely and continuously to the substrate. It has a unique, self-healing property that guards against minor construction damage." The company claims the product will bridge cracks as wide as 1/16 inch.

American Hydrotech became the exclusive marketer of Liquid Membrane 6125 in 1977.

The waterproofing membrane protecting the plaza and reflecting pool of the 1st Church of Christ, Scientist in Boston is still sealed tightly 15 years after its application.

ON THE ROOF

Complex roof offers simple design solution

The Jacksonville Landing, in Jacksonville, Fla., confronts the observer with large expanses of standing seam roof.

It seems as if no one gets excited over shopping malls anymore. Gone are the days when communities proudly announced that they were cramming 200 stores into yet another sprawling suburban structure with all the charm of a cinder block warehouse.

Today's developers are building complexes instead. These establishments are most often located in the heart of the city, and they draw shoppers in with a fun and fashionable blend of quaint shops and eateries, and designs that borrow from their distinctly urban surroundings.

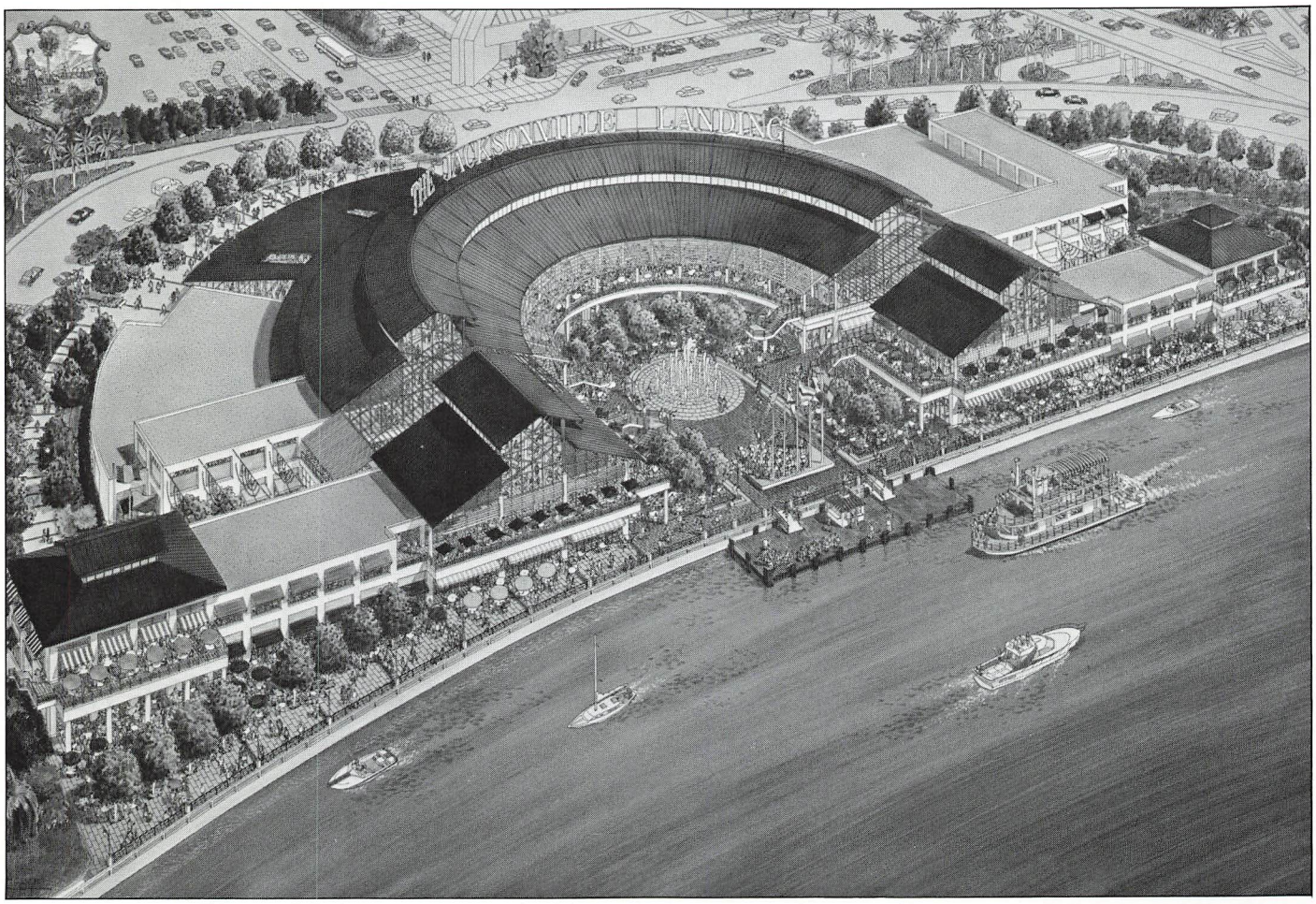
Jacksonville, Fla., is the latest metropolis to be graced with such an edifice. In the middle of the city, overlooking the St. Johns River, a retail/restaurant/market complex is being built that the community hopes will become the area's newest focal point.

The building, which confronts the observer with large expanses of standing seam roofing, was designed by Benjamin Thompson & Associates, Inc., of Cambridge, Mass. The firm's Hans Strauch explained the design by saying, "It was not our intent to make the building 'stylish.' We wanted it to assume the character of the Jacksonville area, to complement the region. Such architectural elements as pitched roofs, heavy overhangs, shaded areas and even the terra cotta color of the roofs are part of the region's history. we also designed the building to meet the developer's requirement of maximizing the leasable area."

More than 100,000 square feet of roofing was installed. ASC Pacific, Tacoma, Wash., supplied the 19-inch standing seam panels. NRCA member Ferber Sheet Metal Works of Jacksonville applied the product.

"Our original intent," Strauch said, "was to use tapered panels. But we were restricted by a tight budget so we selected ASC Pacific to supply the standing seam as an alternative. We selected them because we felt comfortable that they could deliver the quality required within budget. ASC also responded promptly to our needs."

The developers are hoping the project will be completed by the summer of 1987.



Kornylak markets new foam mixer

The Kornylak Corp. is marketing the new Model 100KTC Phenoflo system for mixing and dispensing phenolic foams.

The new model offers several features, including a system to control the temperature at the mixing head, which reduces frothing and foam degradation. A new wrap-around stainless steel cooling jacket helps keep coolant at a favorable phenolic mix temperature. The resin pump drive on the unit has also been improved to cope with variations in resin viscosity.

The 100KTC Phenoflo handles viscosities up to 100,000 cps. Its capacity ranges from 20 to 120 pounds per minute. Mixer motor power may be adjusted to accommodate a variety of formulations. Its speed may be regulated automatically. Maximum speed is 7,000 rpm. A precision pump drive maintains speed within 1 rpm, or 1 percent of a set point.

The unit's mixing head has provisions for fixed, traverse or boom mounting. All solenoid valves have been relocated within the pumping unit, eliminating electrical wiring from the head. Hand valves for flush, purge and air nucleation are still located on the head.

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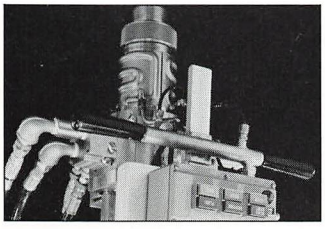

VIP introduces waterproof Hy-Flex

VIP Enterprises, Inc., has introduced a new elastomeric coating to complement its Last-O-Coat® and Ter-Polymer 7000 series products.

Hy-Flex 2100 is a smooth copolymer elastomeric waterproof coating designed for use over exterior masonry, stucco, precast or cast-in-place concrete, brick, and metal. It provides 300 percent initial elongation and has a spread rate of 75 to 100 square feet per gallon.

The product is available in 15 standard colors and white. It can also be tinted to match custom colors. It comes with a five-year limited waterproof warranty when applied according to the manufacturer's specifications.

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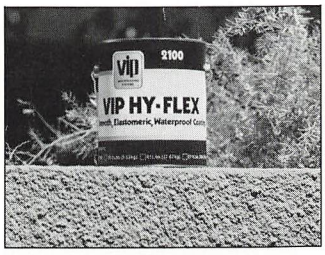


Cleasby's new sprayer eliminates lifting

The Cleasby Manufacturing Co, Inc., has introduced a new roof coating sprayer that is designed to eliminate the need for lifting heavy pumps into and out of drums.

Cleasby's portable cart sprayer requires no compressor and is completely self-contained. It can siphon from containers ranging from five to 55 gallons. The unit features a 5-horsepower Briggs and Stratton engine that will operate up to 3 1/2 hours on one gallon of gasoline. An 8-horsepower Honda engine is optional. The unit also comes with a siphon hose and return hose that combine to form a self-agitator, and a 50-foot hose with spray bar, swivel and tips.

Check #21 on Reader Service Card

Brochure details Imetco roof system

The Imetco™ division of MM Systems Corp. has published a four-page manual detailing its Series 300 architectural metal roofing system.

The standing seam system can be used directly over solid substrates or support framing and requires no seaming machinery. Panels and caps for the system are roll formed in continuous lengths; panels are available in widths of 12, 16 and 18 inches. The system comes in .032 and .040 aluminum, 22- and 24-gauge steel, 20-ounce copper and 24-gauge Galvalume®. Panels are finished with Kynar® fluoropolymer in a variety of colors.

The brochure includes application photos, load table data, technical drawings and specification information on the Series 300 system.

Check #22 on Reader Service Card

Varco-Pruden markets PR + system

Varco-Pruden Buildings has announced the development of a new roofing system that combines the cost-effectiveness of the company's economy-line roof with enhanced insulation and weatherproofing performance.

The PR + system's design allows its ribbed panels to move with temperature changes without panel and fastener distortion, retaining in-place integrity. The panel subpurlin and slider assembly can be erected using common construction equipment and integrated with current construction details. The design prevents roof fasteners from compressing insulation and allows builders to use up to 8 inches of faced blanket insulation.

The system is compatible with all design load requirements and is available with an optional 10-year warranty for weathertightness.

Check #23 on Reader Service Card

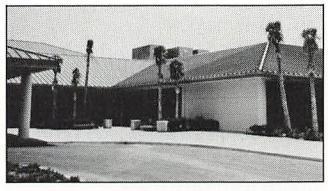
Joint effort produces coated panels

Steelite, Inc., manufacturers of metal building panels, and Roof Systems, Inc., manufacturers of the RS-18 standing seam roof panel, have combined efforts to design, produce and install roofing systems featuring the RS-18 panel protected by Steelite's Corrstan® coating system.

The multi-mil Corrstan coating is designed to withstand the stresses of the field bending that is used to extend the metal panels from pitched roofs into vertical fascia or wall sections. The coating provides resistance to moisture, abrasion, pollution, corrosive environments, thermal shock and ultraviolet degradation.

The standing seam system is designed for new and retrofit industrial, commercial and architectural applications. The coating for the panels is available in a range of standard colors; custom colors are also available on special order.

Check #24 on Reader Service Card



NEW IDEAS

Graco offers video on polyurethane foam

Graco, Inc., has released an informational video describing newly developed polyurethane foam roofing application techniques and equipment.

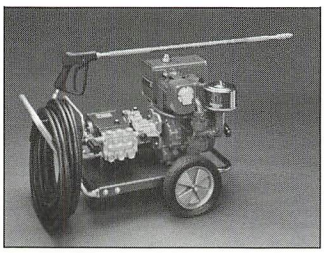
The 12-minute video documents a reroofing project completed on a factory owned by the company. The presentation follows workers as they remove the building's original tar-and-gravel roof and replace it with a seamless foam coating. The foam is applied with spray units that have been adapted to eliminate the clogging often associated with polyurethane foam. The units feature a new ambient heating system that keeps the temperatures of the catalyst and resin to within two degrees of the required temperature.

The video also shows the unit's purgable gun, which is designed for quick disassembly.

The application of a newly introduced elastomeric coating that is sprayed over the foam is also shown. The coating provides protection from moisture and ultraviolet rays.

Graco has also recently added several new sprayers to its product line, including the Premier Rigs. These airless sprayers come in three models and feature a 24-month warranty.

Check on Reader Service Card:
#25 Video
#26 Sprayers



Armco adds color to roofing panels

Armco Building Systems has added four new colors to its line of Steelox standing seam prepainted roofing panels.

In addition to white and bronze, the company now offers panels in Gray Cloud, which is designed to complement the look of unfinished concrete, and terra cotta, a color that reflects the architectural flavor of the Southwest. Aqua Marine and Kopper are also available.

The four new color panels have full Kynar finishes. The finishes will carry 20-year warranties against blistering, cracking, flaking, chipping, excessive color change, and chalking.

Check #27 on Reader Service Card

ARTech releases reflectivity study

ARTech, Inc., has released the results of a study on the reflectivity of its Sun-Gard aluminum roofing chips.

The study evaluated the ability of Sun-Gard chips and other roof coatings to reflect ultraviolet rays, which cause degradation of roof materials, and infrared rays, which raise the temperature of the base/substrate material and the interior of the building. Sun-Gard reflected 61 percent of the ultraviolet rays and 80 percent of the infrared rays. By reflecting this harmful radiation, the product alleviates wide temperature swings, which can cause thermal shock, and reduces blistering and loss of insulation efficiency.

Check #28 on Reader Service Card

United Steel Deck releases brochure

A 16-page brochure detailing a complete line of metal panels for wall and roof systems is now available from United Steel Deck, Inc.

The brochure describes mansard and roof screens, insulated and uninsulated exterior systems, fire wall panels, acoustical panels and explosion-relief panels. Load and span data for roofing and siding panels are covered along with profiles and sample architectural specifications.

The publication also includes a description of the process used to apply the company's three coatings—silicone polyester, Plastisol or Kynar® —along with results of product testing.

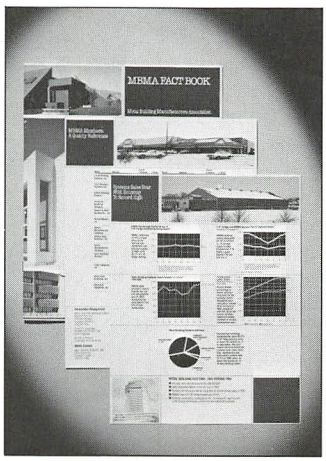
Check #29 on Reader Service Card

MBMA publishes new fact book

The Metal Building Manufacturers Association has published an eight-page fact book spotlighting the current trends in metal building system architecture and sales applications.

The report includes a statistical report on industry progress, including information on metal building sales, market share and end-use applications from 1978 to 1985. The booklet also contains a listing of the Association's 26 member manufacturers along with their addresses and telephone numbers.

Check #30 on Reader Service Card



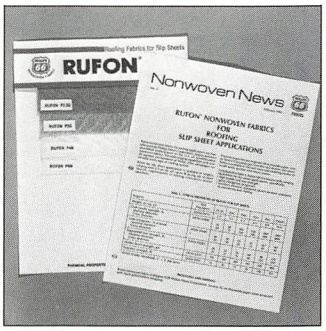
Phillips offers Rufon literature

Phillips Fibers Corp. has released literature describing the use of Rufon® non-woven fabrics for slip sheet and stone separator applications.

Rufon for slip sheet applications is available in weights ranging from 2.3 to 16 ounces per square yard. The fabric's physical properties are engineered to offer high tensile and tear strength along with good abrasion resistance and elongation.

Rufon P3B and P5B fabrics have been specifically designed as stone separator mats for EPDM, PVC and IRMA ballasted systems on either new or old roofs. The fabrics offer resistance to ultraviolet and chemical degradation, and allow the use of lower-cost angular ballast when river-washed stone is not available. The fabrics also protect insulation and provide a barrier to prevent stones from penetrating cracks and joints in insulation.

Check on Reader Service Card:
#31 Separator
#32 Slipsheet



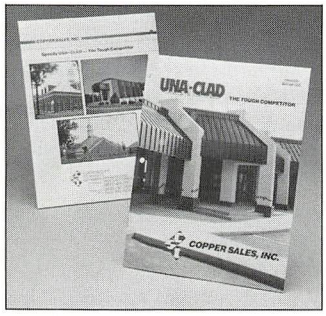
Brochure features Una-Clad panels

Copper Sales, Inc., has released an eight-page brochure describing Una-Clad architectural metal panels.

Una-Clad panels are manufactured from steel and aluminum, and are precoated with a Kynar 500, 70 percent full-strength paint system. The panels, which are designed for use in roofing, mansard, flashing, coping and fascia applications, are available in flat sheets cut to specified lengths, slit coils and three styles of roofing panel.

The brochure contains information on uses, installation, maintenance and custom fabrication of the panels. It also illustrates three new Una-Fab metal roofing systems, including detailed specifications, data on optional metals and benefits of each application.

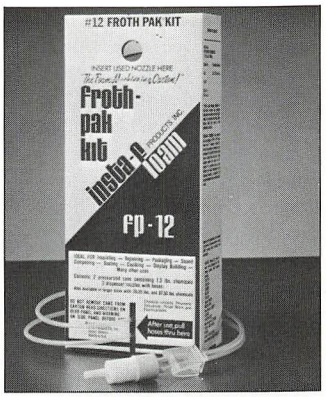
Check #33 on Reader Service Card



Insta-Foam expands product line

Insta-Foam Products, Inc., has expanded its product line with a larger size Froth-Pak Kit. The 12.0 kit offers a 26 percent increase in foam volume and features a pinch clamp that allows greater control of chemical flow.

Check #34 on Reader Service Card



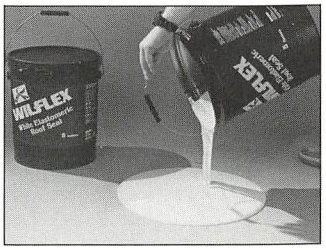
Wilson distributes Wilflex products

The Wilson Distributing Co., Inc., has begun carrying Wilflex elastomeric roof seal, an acrylic coating designed to resist ponding water.

The Wilflex coating is formulated with Rohm and Haas acrylic polymers and can be applied directly over new or existing roofs. Its white color reflects solar heat to keep the building cooler.

Wilson is also distributing the Wilflex polyester roofing system. This system carries a Class A rating by Underwriters Laboratories, making it suitable for hospitals, convalescent centers and schools.

Check #36 on Reader Service Card



Speeflo introduces HydraM 3000

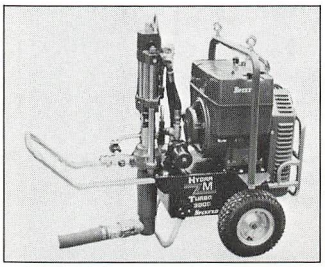
The Speeflo Manufacturing Corp. is marketing a new airless sprayer designed to deliver hard-to-atomize coatings at high volume.

The HydraM 3000 delivers up to six gallons of material per minute at working pressures up to 3,000 psi. The self-contained machine weighs less than 350 pounds and is powered by a 14-horsepower Kohler engine. The unit can serve two applicators simultaneously or a single applicator at the six-gallon-per-minute rate. It is designed to produce its full rating at 40 cycles per minute for long service life with minimum maintenance.

The HydraM 3000 is available in two models. Model 434-852 will siphon most sprayable materials from 30- or 55-gallon drums. The Model 434-854 is designed for highly viscous materials and features a drum mount that separates the HydraPac power module from the pump module. The pump is placed in a 55-gallon drum, and a hydraulic hose set connects the two modules.

Both models come with a two-year warranty against original defects. The metal pump parts are guaranteed against wear for one year.

Check #37 on Reader Service Card



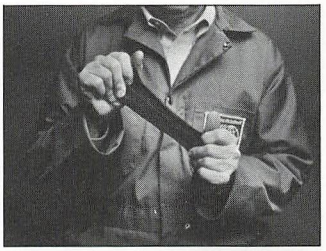
Consolidated unveils Conso-Lastic coating

Consolidated Protective Coatings Corp. is marketing a new general-purpose waterproof coating for use on asphalt and metal roofs.

Goodyear Conso-Lastic is a rubberized coating reinforced with glass for flexibility and high tensile strength. It may be applied with a brush or sprayed over a wide temperature range, and can be aluminized for extra protection and energy savings. Conso-Lastic is recommended for retrofit applications with Goodyear Poly-Con, a polyester membrane that is sandwiched between layers of Conso-Lastic.

A new four-page brochure highlighting Conso-Lastic's benefits and application is available from the company.

Check #38 on Reader Service Card



Company markets liquid membranes

American Hydrotech, Inc., has developed two new liquid cold-applied membranes for use with its PRM/6125 membrane.

The two products, Liquid Membrane 6090H and 6090V, are designed to allow waterproofing on the roof without a kettle. This makes it easier for the installer to maneuver in small areas and eliminates the need for bringing a kettle to the worksite when waterproofing retrofit work.

Liquid Membrane 6090H is designed for use on horizontal surfaces; Liquid Membrane 6090V can be applied by trowel to vertical surfaces. Both products are available in five-gallon cans and are designed to spread at 60 mils.

Check #39 on Reader Service Card

Standing seam roof offers options

A new standing seam roof system developed by Engineered Components, Inc., offers specifiers and contractors a choice of installation methods.

The ECI system features a panel with self-locking raised seams that can be snapped together into a weathertight roof. However, if codes require it, the panels can be seamed with a special tool supplied by ECI. No batten strips are required with the system in either of the options.

The panels give 24-inch coverage and are manufactured from 20-year Galvalume™. A variety of colors is available.

Check #40 on Reader Service Card

Atralar II protects urethane foam roofs

The Foster Products division of the H.B. Fuller Co. has developed a new coating for sprayed-in-place urethane foam roofs.

Atralar®II is a spray-applied, single-component system designed to offer early rain resistance, good elongation, high tensile strength and breathability.

The system is applied in two coats and carries an Underwriters Laboratories rating of 790. The base coat dries rapidly to a weather-resistant surface and can be recoated the same day. The topcoat offers protection from ultraviolet rays. Roof systems with the Atralar II coating are eligible for the company's 10-year Gold Seal or 5-year Silver Seal warranties.

Foster is also offering a 15-minute audiovisual program designed to help contractors introduce spray-applied urethane foam and coating roof systems. The program, *Above All Else, A Foster Roof,* is available for use by Foster Division-qualified roofing contractors in presentations to building owners and managers, engineers, architects and other prospects for new or remedial roofing.

Check on Reader Service Card:
#41 Coatings
#42 Program

Homemark offers aluminum panels

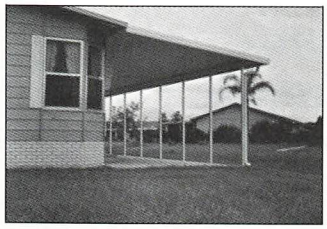
A new aluminum roofing system for mobile homes, patios, carports, porches and marquees has been introduced by Homemark.

The Weathermaster system is fabricated from heavy gauge aluminum with a white or almond PVC coating. The 12-inch ribbed panels have 3-inch vertical sides and are self-supporting. The panels are available with either two or five ribs.

The Weathermaster system features interlocking joints to resist water penetration. Structural anodized aluminum extrusions and fittings are available in either bronze or natural aluminum finish. The company also offers an optional concealed rain gutter.

For environments where the extra protection of PVC is not required, Homemark also offers Weathermaster II, the same system with a polyester finish in white, cream, brown or bronze.

Check #43 on Reader Service Card



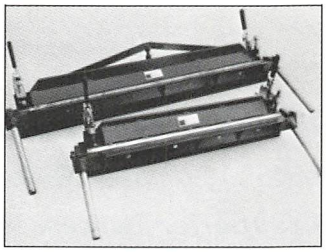
Bendito offers two brake models

Sheet Metal Services, Inc., has announced the availability of the Bendito hand bending brake in two models.

The Model 1824 brake will bend 18-gauge metal in widths up to 27 inches; widths up to 40 inches can be handled by the Model 1840. Both units can also bend 12-gauge metal in narrower widths.

The brakes are constructed of steel with bronze bearings and a machined bending edge that allows a 135-degree bending angle. The units may be bench mounted or mounted on an optional floor stand. The design permits simple or complicated formings; the brakes will open to 4 inches to make inserting and removing awkward shapes easier.

Check #44 on Reader Service Card



Unocal 76 adds versatile polymer

Unocal 76 Polymers has developed a new styrene acyclic polymer that retains flexibility while resisting water and alkalies.

76 RES 1019 is formulated with a fine particle size that allows greater penetration and improved adhesion to a variety of substrates. It features a high pigment binding capacity for flexibility in formulating coatings; 76 RES 1019 is compatible with conventional fillers and pigments currently used in the coatings industry.

Elongation and flexibility can be increased through careful selection of certain plasticizers without sacrificing water and alkali resistance. Coatings formulated with the polymer may be topped with conventional paints. If a fast-forming film is needed, coalescing aids can also be used.

Check #45 on Reader Service Card

Ecometal develops fire-proof roofing

Ecometal, Ltd., is marketing a non-combustible insulated roofing system in the United States.

The Ecometal system is based on insulation manufactured from high-density rock fiber. The material retains its structure in temperatures up to 1,100C, does not absorb water, and is rot-proof and inert. It also has good thermal and sound absorption properties.

Insulation panels are laid over purlins and then covered with a metal weathering sheet. There is no bond between sheet and insulation, reducing the problem of thermal movement differentials between the two elements.

The system is offered with a choice of aluminum or steel weathering sheets in a range of colors and finishes. Insulated aluminum gutters, double-skin GRP rooflights and a range of preformed flashings and accessories are also available. Impact-resistant surfaces are available where required.

Check #46 on Reader Service Card

ASC Pacific adds copper roofing

ASC Pacific, Inc., is now offering roll-formed copper for commercial and other roofing applications.

The 16-ounce, half-hard, pure copper panels are available in standing seam or batten profiles. The panels' finish may be smooth or textured. The company also offers several paint finishes that simulate the look of copper, including a metalescent fluorocarbon called New Penny Copper and an acrylic copper system called Thermo Aging Copper, which changes color as it ages.

Check #47 on Reader Service Card

Booklet details TARP coatings

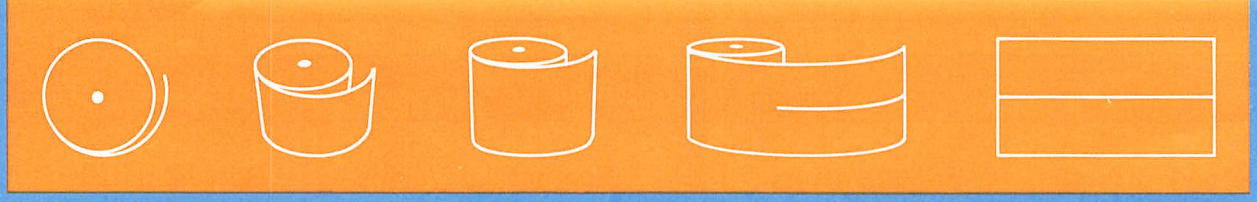
AC Products, Inc., has published an information packet detailing its line of TARP™ single-component, cold-applied elastomeric roof coatings as well as wallcoatings, primers and sealants.

The packet includes a reference guide that presents brief product descriptions and application information in chart form. The chart shows which products are compatible and indicates the type of surface each is suitable for.

An application manual describes selection and application of TARP products, including information on tools and surface preparation of different roof types. The use and application of mesh tape on flat surfaces, and on protrusions and parapets is illustrated.

A series of specification sheets for the TARP line of coatings includes information on reflective, fire-retardant, non-flammable and dual-purpose coatings. Technical sheets for wall coatings, sealants, primers, mesh and solvents are also included.

Check #48 on Reader Service Card



Petersen Aluminum Corporation

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Check #9 on Reader Service Card

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COMING EVENTS

(For inclusion of events, address all correspondence to: **Roofing Spec** "Coming Events" One O'Hare Centre 6250 River Road Rosemont, Ill. 60018).

Jan. 6-9
Basic Roofing Technology
The Roofing Industry Educational Institute
Tampa, Fla.

Jan. 8-10
Mid-Winter Convention and Trade Show
Virginia Roofing Contractors Association
Williamsburg, Va.

Jan. 9-10
Foremen and Superintendents Conference "Solving Job Problems"
National Roofing Contractors Association
Atlantic City, N.J.

Jan. 13-14
Structural Standing Seam Roofing
The Roofing Industry Educational Institute
Las Vegas, Nev.

Jan. 15
Roofing: Latest Developments
The Roofing Institute Educational Institute
Las Vegas, Nev.

Jan. 15-16
Annual Convention
Indiana Roofing Contractors Association
Indianapolis, Ind.

Jan. 16-19
Annual Convention and Trade Show
The National Association of Home Builders
Dallas, Texas

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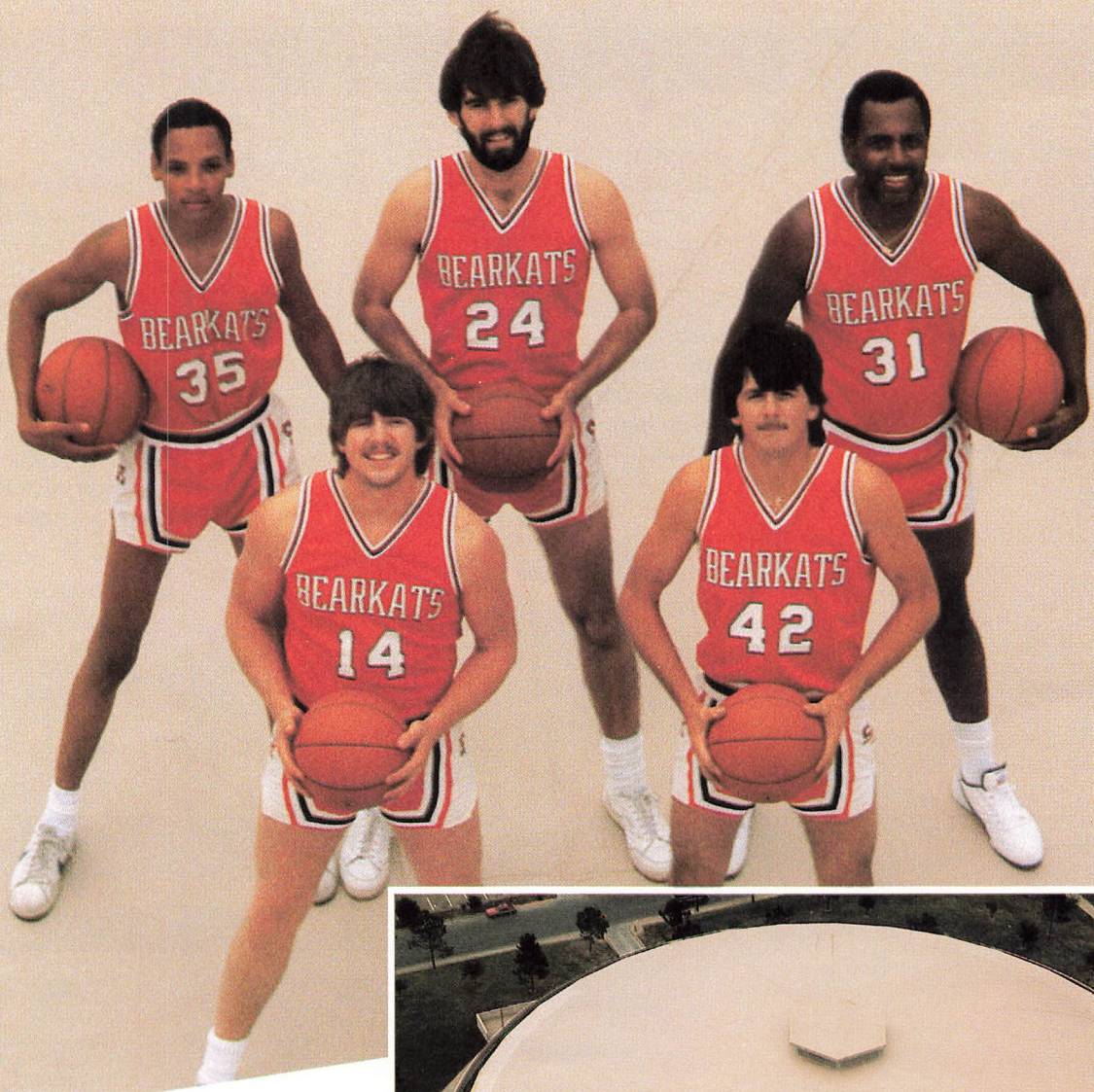
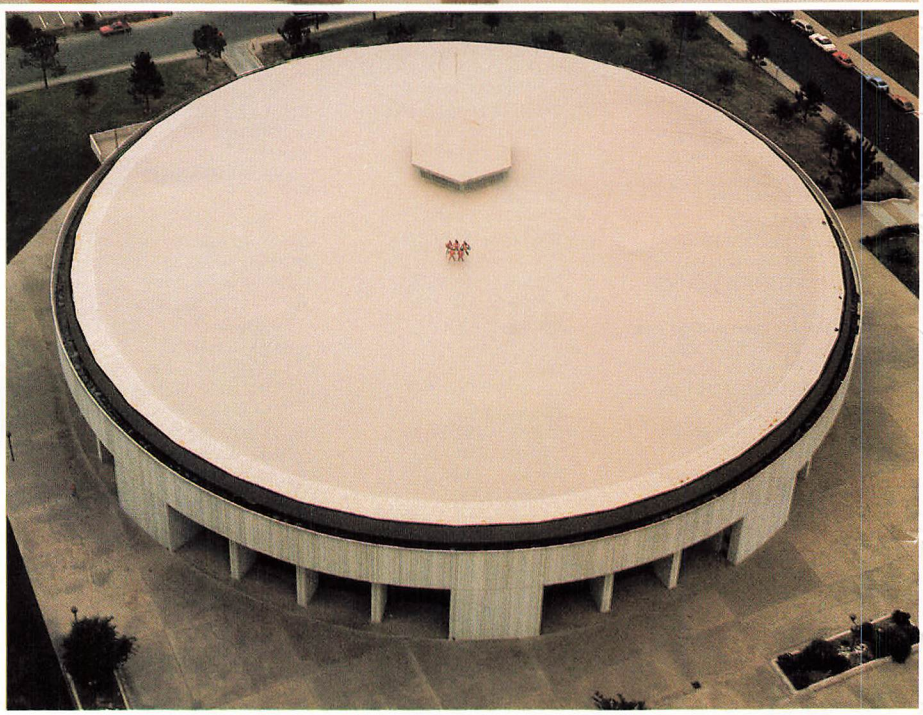


BRAI GIVES SAM HOUSTON STATE A HOME-COURT ADVANTAGE.



Sam Houston State University Coliseum - Huntsville, Texas

The special events center at Sam Houston State University required a special roof — a roof with definite advantages. It had to conform to a domed surface. It had to be pliable. The roof needed to go down fast then withstand a rainy, East Texas climate. This roof design called for a proven, modified membrane system and Brai SP-4 was the best choice. Call us to hear the advantages of Brai for all types of roofing applications.

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Owen's-Corning begins $1.5-billion reorganization

The Owens-Corning Fiberglas Corp. has reorganized its management, consolidating its eight main operating divisions into three units, a move that forced the company to dismiss two divisional vice presidents, says *The Wall Street Journal.*

Five of the company's divisions have been rearranged and consolidated under a newly formed Construction Products Group, which concentrates on insulation and roofing. Max O. Weber has been named president of the group. His businesses have accounted for about 70 percent of the company's 1985 sales. Weber was also named a senior vice president of the company and a member of the corporate policy committee.

The company's international division remains unchanged.

The third unit in the new structure is Industrial Materials, which has picked up some of the company's smaller businesses.

The Journal reported that the company's reorganization was part of a $1.5-billion recapitalization and restructuring plan. Owen-Corning announced that it was launching the plan to stave off a hostile tender offer from Wickes Cos. According to Owens-Corning officials, the company is trying to reduce costs and focus on its core businesses while selling its more recently acquired divisions.

Reichel & Drews names director of marketing

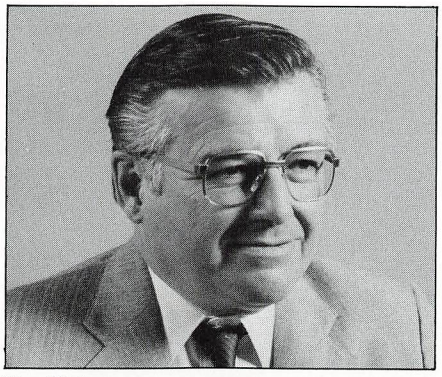
David M. Pasquinelli has been named director of sales and marketing for Reichel & Drews, Inc. In his new position, he will continue to strengthen the company's overall marketing and sales. Pasquinelli reports directly to Curtis N. Maas, Reichel & Drews' president.

Before joining Reichel & Drews, Pasquinelli worked as the Midwest regional manager for the John Zink Co., a subsidiary of Allegheny International. During his employment there, he reorganized an 18-state region, while substantially increasing sales.

Daly appoints Kaiser to top positions

Daly Protective Coatings Co., Inc., of Hammond, Ind., has named Ken Kaiser as the company's vice president as well as president of Daly Industrial Coatings, a wholly owned subsidiary.

In his new position at Daly Protective Coatings, Kaiser will be responsible for marketing and customer services for the company's nationwide sales and distribution network. He will also manage the growth of Daly Industrial Coatings, which markets specialty materials for commercial and industrial applications.



Ken Kaiser

GAF introduces Liberty Guarantees

The GAF Building Materials Corp. has announced the introduction of Liberty Guarantees, a limited warranty that covers both workmanship and materials that are built around GAF's GAFGLAS line of glass felt-based commercial roofing products.

The program consists of four types of coverage that vary in scope, cost and conditions of acceptance.

The Liberty Twenty Guarantee stipulates that GAF will support an installed roof for up to 20 years, replacing or repairing leaking portions of roofs to maintain watertight integrity.

The Liberty Two Plus Ten Guarantee is given free to the owner in the first two years after a membrane is installed. During this time period, owners may elect to renew the guarantee for an additional 10 years' protection.

The Liberty Ten Guarantee provides a full ten years' protection for schools as well as other buildings.

The Liberty Five Plus Five Guarantee covers the owner for an initial period of five years with the option to renew for an additional five years. This agreement has a maximum penal sum of $100 per 100 square feet of roof area. The coverage also applies to school installations.

Each of the guarantees is issued only when a roof is installed by a GAF-approved roofing contractor. GAF is responsible to the building owner for the entire guarantee's terms, which begin when the membrane installation is complete.

Carlisle opens distribution center

Carlisle SynTec Systems has opened a new distribution center in Fredricksburg, Va., located at 3990 Lafayette Blvd. The center will serve customers in Virginia, Maryland and Washington, D.C., with its stock of single-ply roofing membranes, adhesives and sealants.

Carlisle has also announced that the Midwest Roofing Sheet Metal Co. of Evansville, Ind., is its latest Perfect 10 award winner. The Midwest Roofing Sheet Metal Co. was given the award for completing 50 error-free installations, as judged by Carlisle field technical representatives. To qualify for the awards program, the company's roofers attended an intensive training program conducted by Carlisle, and each of its installations was inspected by a Carlisle representative.

continued on page 51

Rufon® stops roofing problems cold.

The #1 cold-applied polyester fabric that's tougher than fiberglass and organic felts.

Save time, money and effort and have a stronger roof that lasts longer with Rufon needlepunched polyester, and cold-applied adhesives.

Be on the safe side, too. Hot-applied roofing systems as well as torchdown systems can cause building fires and injury. With cold-applied Rufon, there is no such risk. No wonder more and more people are specifying cold-applied roofing systems.

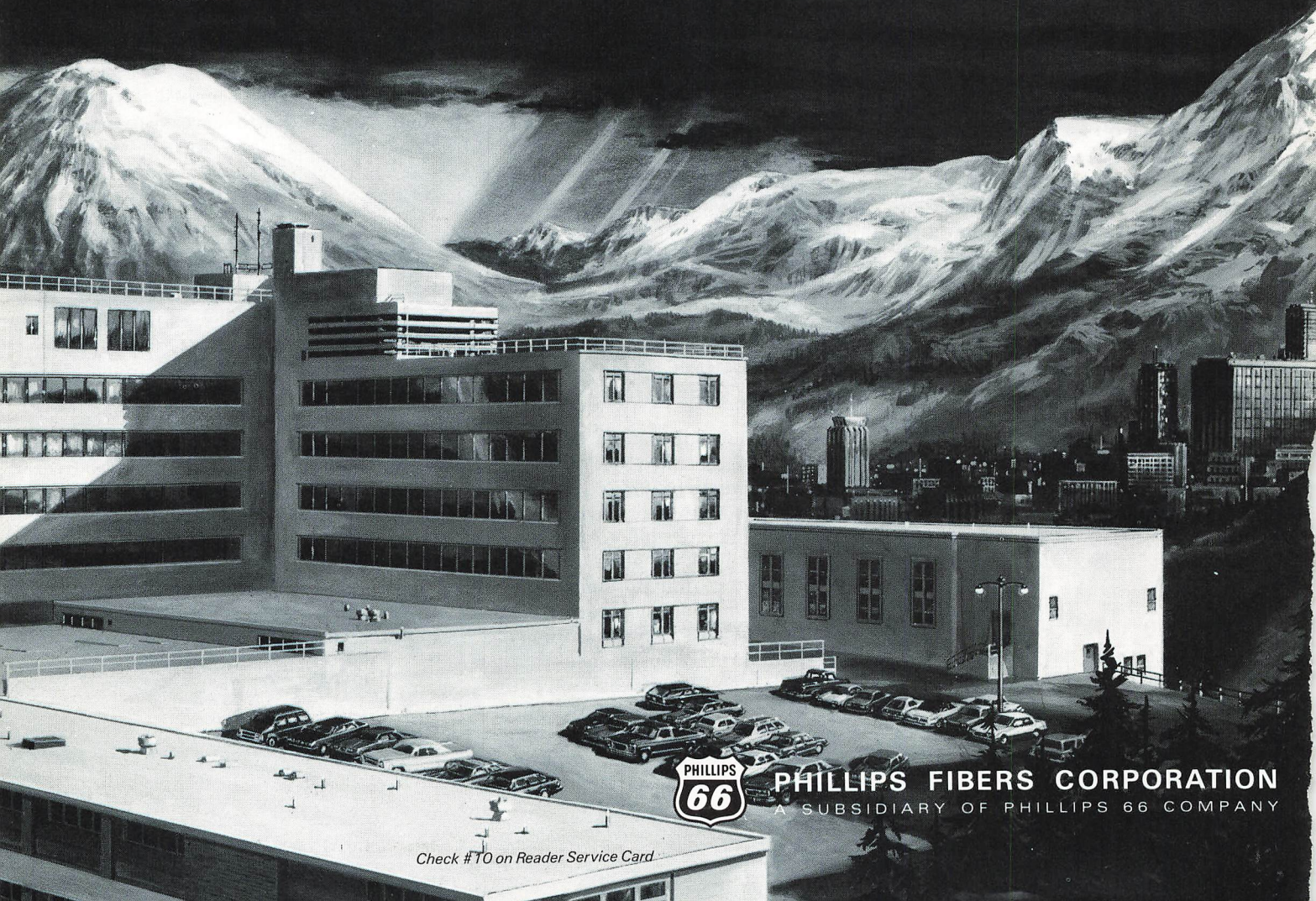
And because Rufon polyester fabric is lighter than fiberglass or organic felts, it's easier and faster to apply. Less manpower and equipment are required to install it, and Rufon goes down more uniformly. It won't rot, swell or mildew, either.

Talk about strength...just one ply of Rufon is as tough as three or four plies of some other felts. Rufon is also more resilient—unlike fiberglass, it stretches with the adhesive as the building shifts. This is because Rufon absorbs adhesive to form an integrated roofing system.

Use Rufon to improve your next roofing system. It helps keep the roof together, water out, and your cost down. It's the best polyester fabric on the market, and the best value for your money. A proven performer.

RUFON TYPICAL PROPERTIES

(Widthwise)	RUFON E3N	RUFON E6N	ORGANIC FELT	GLASS FIBER
Weight (yd^2)	3.0	6.0	21.2	16.3
Ultimate Strength (lb)	60	140	64	65
Tear Strength (lb)	25	40	.05	.02
Elongation (%)	55	50	.05	.01
Mullen Burst (psi)	130	225	30	19
Puncture (lb)	35	80	20	10



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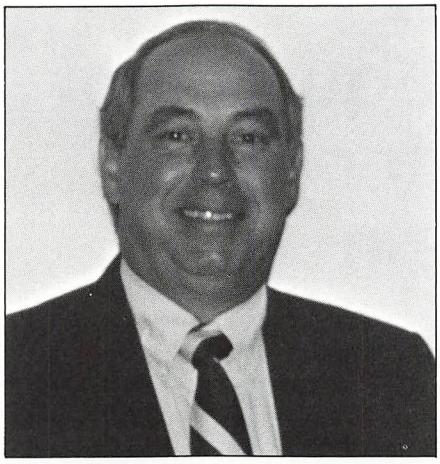
ASSOCIATE NEWS

ARC appoints Western regional manager

The American Roofing Corp. (ARC) has appointed John L. Greer as Western regional manager. Greer will be responsible for the company's complete line of modified bitumen roofing materials, and sales and technical support for the West.

Prior to filling this position, Greer was a partner in Godsey and Greer, Inc., Mesa, Ariz., a company that specialized in roofing product sales.



John L. Greer

Grace cuts jobs; sells engineering concerns

The W.R. Grace & Co. has cut 25 percent of its corporate staff in an effort to slash overhead costs. Company officials have also said that Grace tried unsuccessfully to sell its retailing business for the second time, according to *The Wall Street Journal.*

The company's job cutbacks will save some $12.5 million annually. Grace expects to save an additional $12.5 million annually in overhead costs by selling some of its corporate jets, cutting back on advertising and other moves.

Also, according to *The Journal,* Grace has sold two engineering concerns to the Paris-based Les Chantiers. The engineering concerns sold are the Milburn, N.J.-based Elson T. Killam Associates, Inc., and the Pittsburgh-based Duncan, Lagnese & Associates, Inc.

Since early this year, Grace has tried to sell the bulk of its retail operations to pay debt from the purchase of a portion of its stock from the Flick Group of West Germany. Grace has sold five home-improvement chains to Wickes Cos. and plans to sell the remaining 460 retail units to a group that includes Citicorp, Drexel Burnham Lambert, Inc., and Bernard R. Lossar, senior vice president of Grace's retail group.

Armco names new appointments

Armco Atlantic, Inc., has named a new national accounts manager and credit representative.

The new national accounts manager is Kevin B. Piatt. Piatt was previously district sales manager for Armco's San Antonio district. In his new position, Piatt's headquarters will be in New York.

Armco's new credit representative is Michael Smith, who will work at the company's Atlantic eastern profit center. Previously, Smith worked at Armco's national supply division in Tulsa.

Barra names sales representative

The Barra Corp. of America has named F. William Bell as the new sales representative. He will be responsible for the sale of Barra roofing products in North Carolina and South Carolina.

Bell comes to Barra from the Phillips Roof Technical Systems Co. He also worked 16 years for the Manville Corp.

FRSA asks members for help in insurance rate fight

The Florida Roofing Sheet Metal & Air Conditioning Contractors Association, Inc., (FRSA) has sent a letter to its members that asks them to fight workman's compensation rate increases.

FRSA is asking its members to write their legislators and the state insurance commissioner, call local newspapers and television stations, and make customers aware of how much workman's compensation costs them.

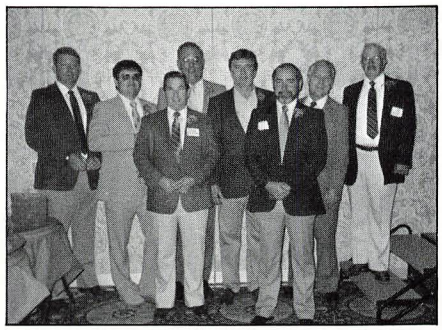
In addition, FRSA is continuing to fight the rate increases by urging local associations to form letter-writing committees. The Association is also preparing press releases for the media and testifying against the rate hike at hearings.

"We cannot sit back and let ourselves be priced out of business! The regulators, our legislators and the public must be informed about the cost that is being borne by our society because of the unconscionable insurance rates," says Bill Tucker, FRSA president in the letter to members.

WARCA honors its past presidents

The Washington Area Roofing Contractors Association (WARCA) honored its past presidents at a recent meeting.

Among the past presidents honored were: Jerry Colbert of Jerry Colbert Roofing Service, Springfield, Va.; Gary Doyle of G.W. Doyle & Co., Inc., Washington, D.C.; Ron Estes of Rayco Roof Services, Chantilly, Va.; Larry Rochester of Tacoma Insulators, Silver Springs, Md.; Bill Rose of Rose Roofing Co., Arlington, Va.; Ted Swaim of J.R. Roofing Co., Inc., Laurel, Md.; and Ron Wood of J.E. Wood & Sons, Inc., Clinton, Md.;



WARCA past presidents (from left to right): Jerry Colbert, Ron Estes, Larry Rochester, Ron Wood, Bill Rose, Gary Doyle, Keith Decker and Ted Swaim.

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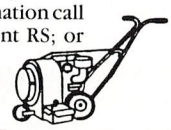

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COMPANIES WANTED

Sell or merge your roofing and sheet metal business. We are successful, financially strong operators, able to move fast. Candidates need to be profitable, have good marketplace reputations and sales over $1 million. All responses kept confidential. Send replies to Box 11A, *Roofing Spec,* One O'Hare Centre, 6250 River Rd., Rosemont, Ill. 60018.

MAILING LIST AVAILABLE

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

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Well-established, 20-year-old roofing company seeks qualified copper personnel for expanding field operations. Limited travel required. Definite potential for advancement and comprehensive benefit package. Interested parties, please submit resumes to SKYLINE ROOFING, INC., 861 Page St., Manchester, N.H. 03103; 603/669-0131.

PERSONNEL WANTED

50-year-old Southern California roofing contract company. Permanent positions available for single-ply applicators, built-up and shakes. Send resume and salary requirements to Bilt-Well Roof & Material Co., P.O. Box 65837, Los Angeles, Calif. 90065. Phone 213/254-2888; ask for Ron or Bob.

DISTRIBUTOR WANTED

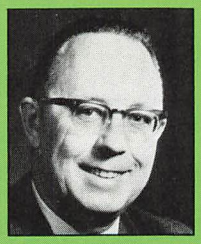
First generation manufacturer, complete line of high-standard MB single-ply membranes, seeks exclusive distributor, East Coast, with adequate financial means and warehouse. Replies to Box 12A *Roofing Spec,* O,Hare Centre, 6250 River Road Rosemont, Ill. 60018.

GENERAL MANAGER/ASSISTANT VICE PRESIDENT WANTED

Established roofing contractor would like to expand their operations into cities along the East Coast in 1987-1988. Candidates should be results-oriented and self-motivated. Should also have hands-on organizational skills and strong background of industry knowledge. This is an opportunity to own shares of a company commensurate with your entreprenurial flair. Please submit your resume of credentials to J & R Roofing Co., Inc., 1440 Cherry Lane Court, Suite 104, Laurel, Md. 2707, Attn.: J.R. Lilly.

Keeping contractors current a perpetual task

By Bob LaCosse

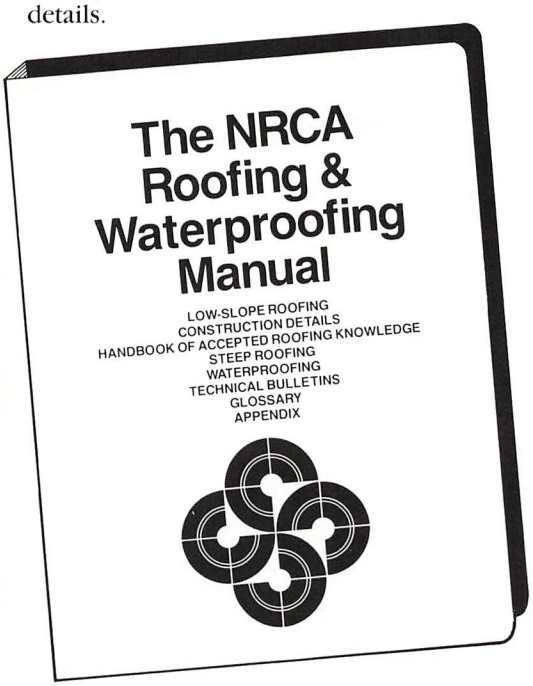


The ink had barely dried on NRCA's current *Roofing and Waterproofing Manual* before committees began the task of updating the information.

Trying to nail down the art of roofing in a manual or document is a never-ending task. Because the roofing industry is changing so rapidly, there will always be a need for updates, revisions and addenda to keep the information current and relevant for the widest possible audience.

One of the documents most sensitive to changes in roofing practices is the *NRCA Roofing and Waterproofing Manual.* Because this publication is the industry's guide to state-of-the-art roofing, it must contain information on the most recent innovations and practices. To prepare the latest edition of the *Manual,* released in the summer of 1985, almost every page was revised and expanded. But the ink was barely dry on this version before several NRCA committees began updating the information for the next edition.

One committee was appointed to revise the "Waterproofing" section of the *Manual.* The new section will include general design information, substrate descriptions and waterproofing product descriptions, as well as subsections on dampproofing products, protection boards and construction details.



Another revision was proposed by the Western States Roofing Contractors Association. The Western States members would like NRCA to develop an edition of the *Manual* that would include details unique to their region of the country. NRCA's Technical Operations Committee believes it may be able to satisfy the Western contractors without printing a separate manual by incorporating the Western practices into the present *Manual* as weather or climate considerations or alternate details.

Other details covering roof drains and piping are being revised by the *NRCA Manual* Update Committee.

The Steep Roofing Operating Committee is drafting a revised section of the *Manual* on the application of clay and concrete tiles. The revisions will describe three application methods for arid climates, hurricane-prone climates and cold areas.

Although many revisions are being planned, the current edition of the *Manual* is far from obsolete. The recently reactivated Specifications Review Committee is using the recommeded application procedures found in the current *Manual* to evaluate 42 BUR and single-ply roof membrane manufacturers' specifications. The Committee is working with NRCA's Board of Directors to see if the specifications' technical contents and application procedures are consistent with the *Manual's.* Committee members will contact the manufacturers when differences are found.

NRCA committees are preparing or revising other documents in addition to the *Manual.* One of these documents isn't so much a revision as a sequel to an existing publication. This work will outline quality control procedures for modified bitumen applications. The publication will possibly be patterned after the NRCA's *Quality Control in the Application of Built-Up Roofing.*

NRCA also sponsors several programs and conferences to keep industry professionals abreast of changes on an ongoing basis. One conference, held jointly with the National Bureau of Standards every two years, will next take place in Gaithersburg, Md., April 16-17, 1987. At this meeting, 14 speakers will present papers on fasteners, thermal performance and building codes; built-up, elastomeric and plastomeric roofing; and modified bitumen. The Conference proceedings will be published as a hardbound book that will be given to each attendee.

Another source of roofing information is being developed by NRCA's Technical Department. The plan calls for NRCA's technical staff to document reports of roof system problems and establish procedures for informing Association members of developing problems, their causes and their solutions.

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- The legal side of roofing
- Alternative roofing

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7	17	27	37	47	57	67	77	87	97	107	117	127	137	147
8	18	28	38	48	58	68	78	88	98	108	118	128	138	148
9	19	29	39	49	59	69	79	89	99	109	119	129	139	149
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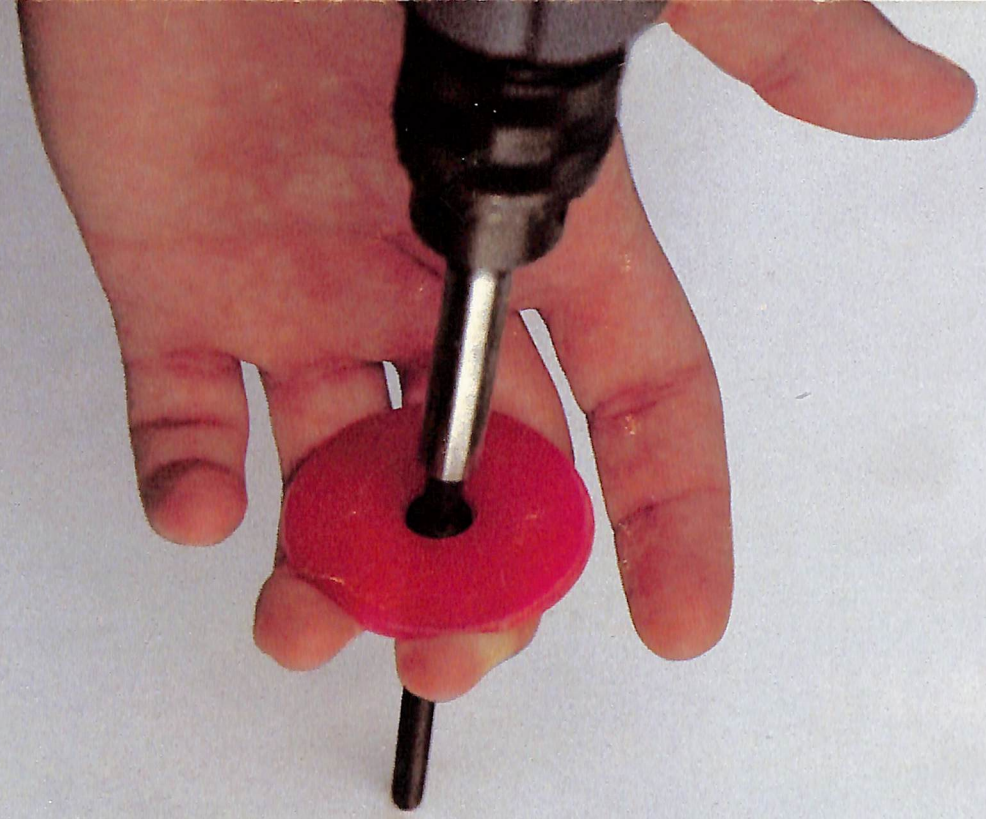

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