The

roofing spec

September 1981 $2.00
National Roofing Contractors Association

New from Marathon...

EX-FLOW Insulation Vents

Sealed-in heat, moisture and pressure are enemies of a roofing system. They can cause blistering, cracking and early roof failure. To help avoid this, Marathon has developed the Ex-Flow Insulation Vent.

Constructed of a strong, durable polyethylene, the Ex-Flow Insulation Vent incorporates a special silicone rubber valve which releases pressurized moisture-laden air outside and prevents its return. And it will stand up to years of rugged service. It's what you'd expect from Marathon...a tough product that meets the consistently high quality standards of all Marathon roofing products.

Consider all the advantages. Call or write for more information today.

EX-FLOW

367 Nagel Drive, Buffalo, NY 14225 - (716) 685-3340 Tlx.: 64-6214
Branch: 11630 Slater Ave., NE, Kirkland, Washington 98033 - (206) 823-0200
In Canada: Toronto, Montreal, Ottawa, Winnipeg, Edmonton, Vancouver

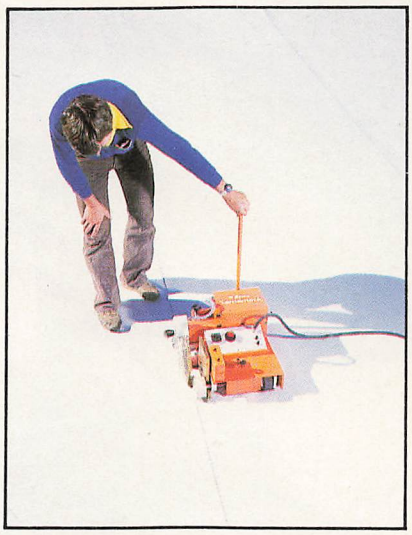
Marathon
Roofing Products Inc

single-ply roofing:
Five reasons why Sarnafil outperforms and outlasts other sheet roofing materials.

1 It won't shrink . . . ever. In conventional, calendered polymeric sheet roofing, longitudinal orientation of the polymer molecules causes shrinkage when the material is exposed to the sun's heat. Not with Sarnafil. It is manufactured by an exclusive process combining plastisol coating with non-woven glass-fiber reinforcement. Calendering is eliminated. In addition, top-grade plasticizers and stabilizers safeguard against embrittlement and shrinkage from aging. Sarnafil is dimensionally stable, and it stays that way.

2 It can't separate or de-laminate. Prolonged exposure to the elements can ruin laminated materials. Plies separate. Protection is destroyed. But not with Sarnafil. This unique non-laminated membrane is a single, homogenous layer with integral reinforcement embedded in the center. It cannot delaminate even under the most severe conditions of temperature, humidity, mechanical stress, or exposure to atmospheric pollutants.

3 It expands and contracts with the structure. Because of the glass-fiber reinforcement, the thermal expansion of Sarnafil closely approximates that of roof decks. When Sarnafil is installed even as a fully adhered membrane, expansion or contraction of the structural deck does not affect either the adhesive bond or the membrane itself. Everything moves at the same rate.



Sarnafil roofing requires no adhesive or sealants at the joints. Material is fused by means of hot-air welding to produce a continuous leak proof membrane.

4 You can use a variety of installation techniques. Sarnafil can be installed in a variety of applications: fully adhered without ballast, loose-laid with ballast, mechanically fastened, and in a protected membrane assembly. Sarnafil is available in a variety of colors besides the standard light gray, and in a variety of thicknesses to accommodate specific conditions, such as walk-on, drive-on, or plant-on roof decks.

5 It can stand years and years of exposure. Sarnafil is so highly stabilized that it can be welded to itself even after years of exposure to solar radiation and weather. So if a new penetration must be made in the membrane even after years of service, a new section of Sarnafil can be hot-air welded to the existing aged sheet with assurance of a watertight seal.

Insist on Sarnafil . . . The only non-shrinking PVC roofing membrane. There's no other single-ply roofing system with the stability, endurance, and reliability built into Sarnafil. It's the ultimate in polymeric roofing membranes. Proven world-wide for almost 20 years under all climatic conditions, with the same basic formulation.

New roof or re-roofing project . . . ballasted or unballasted system . . . big job or small . . . insist on Sarnafil. And be sure. Write for brochure.

Sarnafil ‹U.S.› **inc.**

Canton Commerce Center, Canton, Mass. 02192
Telephone: (617) 828-5400 Telex: 951625

Tapered FOAMGLAS® Roof Insulation Systems

Allegheny General Hospital, Pittsburgh, Pennsylvania

"...we know the owner has one of the best roofing systems he can buy."

Mr. George Mackey, Project Supervisor, MILLER, THOMAS, GYEKIS, Roofing Contractors says, "We've installed FOAMGLAS Insulation on lots of roofs over the years. We've found it to be a dependable, easily applied roofing insulation.

"But the main reason we like FOAMGLAS Insulation is its dimensional stability. We know that FOAMGLAS Insulation will not swell or shrink after it is installed. That's important for two reasons. One, this eliminates worry about splits or cracks caused by insulation movement. And two, we know the owner has one of the best roofing systems he can buy.

"On this roof, we installed a Tapered FOAMGLAS Roof Insulation System which consists of FOAMGLAS-Board and Tapered FOAMGLAS Insulation. This system is extremely easy to install. Tapered FOAMGLAS Roof Insulation is identified by section and direction of slope... there's no guessing."

Today, Pittsburgh Corning has Tapered FOAMGLAS Roof Insulation Systems to fit any deck. They are all made with FOAMGLAS cellular glass insulation...the only totally waterproof, noncombustible, dimensionally stable insulation available.

Improving Products and Systems

Since the introduction of FOAMGLAS Insulation in the early forties, the Innovative Insulation People of Pittsburgh Corning have improved and continually adapted it to meet a broad range of building insulation needs.

The latest improvement has resulted in an R factor of 2.85...an 8% increase in thermal efficiency. That's a major improvement to an insulation that's already got a lot going for it...and for you.

It means less FOAMGLAS Insulation for some applications or increased thermal efficiency with no additional material for others.

For more information, write Pittsburgh Corning Corporation, Marketing Department RF0781, 800 Presque Isle Drive, Pittsburgh, Pennsylvania 15239, (412) 327-6100.

PITTSBURGH PC® CORNING

THE INNOVATIVE INSULATION PEOPLE

RF0981,

Comment

A MATTER OF LEADERSHIP

In our last issue, NRCA President Johnny Zamrzla shared some of his thoughts on programs for the coming year. Forecasting, as most economists will attest, is an imprecise science. But one message is clear: the time is right, Zamrzla concluded, for NRCA to carry out its role of leadership in the roofing industry.

Since the time of that interview, the NRCA Board of Directors and a host of committees met in Chicago to plot the course for NRCA's next 12 months. Here are some of the things that you'll be hearing more about:

- Completion of a program, announced earlier this year, for certification of elasto/plastic roofing materials. The program has the potential of being the broadest in scope of any NRCA activity.
- Expanded efforts on the part of the Board to establish and maintain a liaison with the design profession.
- An effort to propose and promote federal legislation to offer tax incentives for the installation of roof insulation on non-residential buildings.
- Continuing technical activities, including a test program for glass fiber roofing felts.
- The anticipated introduction of a nationwide training program for roofers, under the auspicies of the Job Corps Administration.
- Increased activity in the area of worker health and safety, with the likelihood of an NRCA-sponsored alcohol and drug abuse program.
- An exciting program to broaden the base of NRCA membership by reaching out locally to non-member roofing contractors.

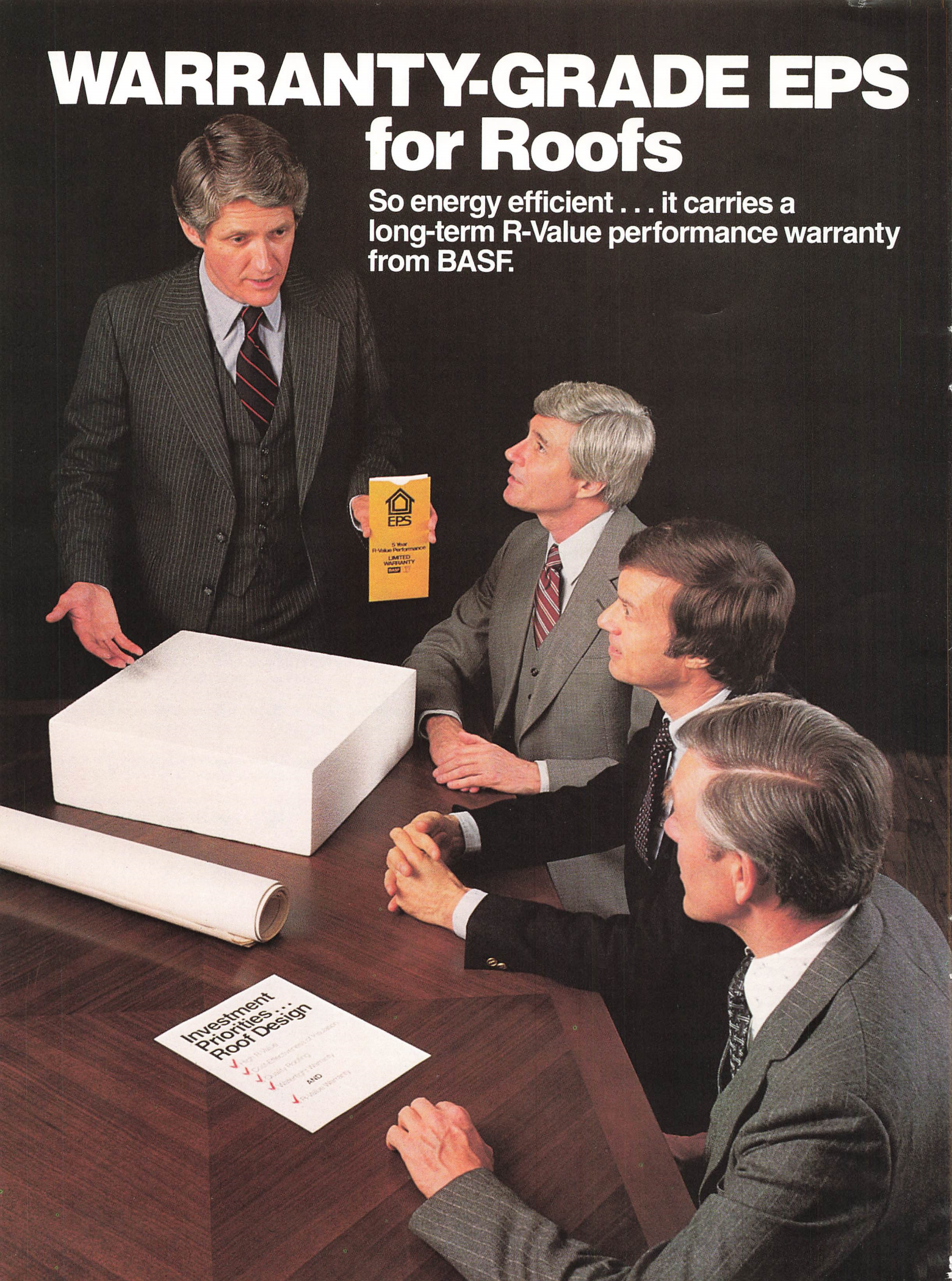
And those are just the highlights. NRCA members should expect an interesting year, underscored by the continuing emergence of NRCA as the leader in the industry.

The trend towards leadership has been developing, of course, for a long time. We all recognize the ramifications of that trend, and conclude: let's get on with it.

Bill Good

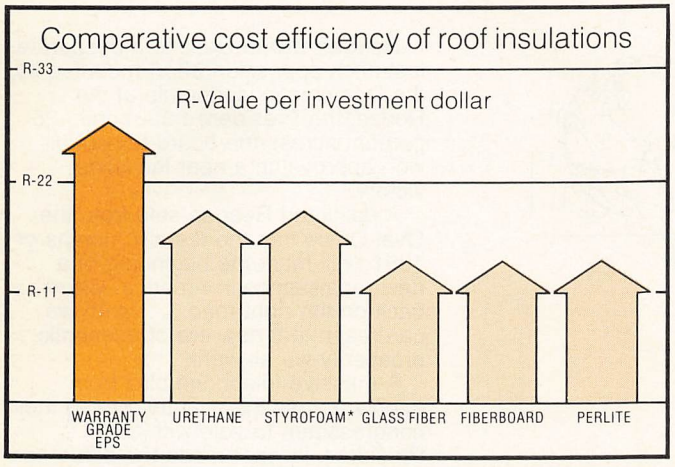
WARRANTY-GRADE EPS for Roofs

So energy efficient . . . it carries a long-term R-Value performance warranty from BASF.



We don't have to tell you the importance of high R-Values in your flat roof design. With today's high energy costs, a roof's insulation value has become just as important a design consideration as its water-tightness.

Yet all too often, the hard realities of new construction and re-roofing budgets force unfortunate compromises in the choice of insulation material and thickness. While everyone knows that high R-Values are absolutely vital, they're forced to settle for less . . . with high heating and cooling costs the penalty.



WARRANTY-GRADE EPS puts an end to this compromise.

Warranty-Grade EPS is a premium insulation material made from BASF Styropor® expandable polystyrene. It combines high R-Values with low costs . . . providing nearly twice the R-Value per dollar of many other roof insulation materials.

With Warranty-Grade EPS you can affordably achieve R-Values of 22, 33, or more in both new roofing and re-roofing installations . . . under either single-ply or asphaltic built-up roofing membranes.

Manufactured to a nominal 1.25 pcf density by a growing number of independent companies throughout the U.S., Warranty-Grade EPS is readily available in almost any thickness . . . as flat or tapered roof insulation . . . and as factory laminated composite roof insulation.

WARRANTY-GRADE EPS sets new standards for value.

Warranty-Grade EPS sets the standard for long-term thermal performance within roof insulation assemblies. Warranty-Grade EPS is among the most resistant insulating materials to adverse affects on thermal performance caused by moisture . . . or aging.

Manufactured to meet stringent physical property and quality control standards, Warranty-Grade EPS offers more R's to begin with . . . a value standard to compare against other types of roof insulation at equivalent investment . . . and more R's to keep insulating after years of service.

* Registered Trademark of Dow Chemical Company

†BASF Thermal Insulation Limited Warranty Agreement and Application Form available on request.

WARRANTY-GRADE EPS is backed by a special thermal performance warranty† from BASF

Many roofing membrane manufacturers provide building owners with a limited warranty that the roof will provide years of excellent weather-tight integrity.

But until now, it's been extremely rare for a roof insulation manufacturer to provide an *in-service* warranty on the thermal performance of the roof insulation . . . to go along with the roofing membrane guarantees. Yet with today's emphasis on long-term insulation effectiveness, this second guarantee is as important as the first.

Now BASF provides this positive protection with the only thermal performance warranty of its kind . . . guaranteed insulation value after years of service. Full details on this warranty of in-service R-Value are available from your Warranty-Grade EPS manufacturer.

With premium quality Warranty-Grade EPS . . . and the BASF in-service R-Value performance warranty . . . you now have the perfect answer for your flat roof designs. You achieve high R-Values . . . at affordable costs . . . with assured quality control . . . and warranted in-service thermal performance. Only Warranty-Grade EPS gives you all of this.

For full details and the name of the WARRANTY-GRADE EPS manufacturer nearest you, just mail in this coupon.

BASF

BASF Wyandotte Corporation
Styropor Division
100 Cherry Hill Rd., Parsippany, N.J. 07054

☐ Please send me more information on Warranty-Grade EPS.
☐ Please have the Warranty-Grade EPS manufacturer in my area contact me.

Name _____

Title _____

Firm _____

Address _____

City _____ State _____ Zip _____

Telephone _____

EPS
EXPANDED POLYSTYRENE INSULATION

EPS is combustible and should not be exposed to ignition sources during storage, installation and use. Consult your supplier for application recommendations and limitations.

Ideas, notes and random thoughts

It's official, finally! After months of planning and preparation, NRCA has completed the move to our new headquarters at 8600 Bryn Mawr Ave., Chicago.

The new offices are much closer to O'Hara International Airport, making your visits to NRCA more convenient. In addition, we now have the required workspace that has long been needed to serve the growing NRCA membership.

Incidentally, our new telephone number is 312/693-0700. We're looking forward to greeting you in our new "home."

Plans are rapidly taking shape for the NRCA Convention and Exhibit in Los Angeles, March 2–5, said Guy DiCara, convention and meetings director.

About 6,000 people are expected for what could be another record-breaking NRCA Convention, DiCara said. To date, over 250 exhibitors utilizing 50,000 square feet, have contracted to display in the Los Angeles Convention Center. Convention participants will be housed at the Biltmore, Bonaventure and Hyatt Regency hotels.

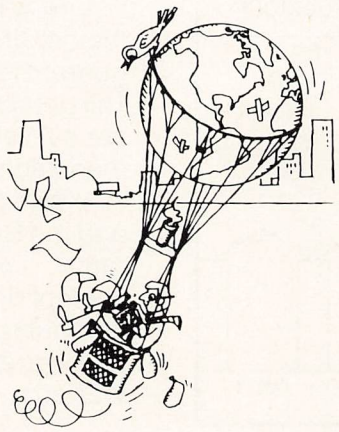
A special Solar Energy Program has been added to the schedule of seminars in an effort to meet the growing questions contractors have regarding the rooftop installation of solar equipment.

Other seminars and business sessions will deal with the NRCA Elasto/Plastic Certification Program, The Demographics of the Roofing Industry, Alcoholism and Drug Abuse and Public Relations for Roofing Contractors.

Information on the Los Angeles convention will be sent to members in early September. If you aren't already on the NRCA mailing list and wish to receive convention material, contact Melody Lejcar at NRCA.

Seagulls in Deland, Fla. have discovered a new culinary delicacy—a urethane foam roof.

The winged creatures are eating away at a foam roof atop a school. Nobody knows for sure why the gulls have found the roof to be such a delightful snack, but experts have speculated that the urethane is emitting a gas that smells appetizing to the birds.



It's not known if "fowl" play is involved in the case of the edible roof.

Friends Foundation

New Friends of the National Roofing Foundation are:

CBC Enterprises Inc.
Frederick E. Holland
Denver, Colo.

Giffen Roofing Co.
Joe Rutkoski
Tampa, Fla.

Sarnafil (U.S.) Inc.
Stanley W. Warshaw
Canton, Mass.

Speranza Management Consultants Co.
Sam Speranza
Rolling Hills, Calif.

Universal Roofers & Builders Inc.
Wayne Mullis
Phoenix, Ariz.

You can become a Friend by donating $50 annually to the Foundation. Your tax-deductible contribution will help provide scholarships and develop educational programs to improve the roofing industry. For information, contact NRCA, 8600 Bryn Mawr Avenue, Chicago, Ill. 60631.

Reagan did it. Despite a desperate, last-ditch opposition effort mounted by the Democratic leadership of the House, the President's 33-month, 25 percent across-the-board tax-cut bill won approval in a near landslide victory.

A delighted Reagan said from the Oval Office that the first six months of 1981 "will mark the beginning of a new renaissance in America. We're back on the right road . . . (and) we can reach that new era of economic prosperity we all want."

A massive telephone blitz from people across the country, urging their congressmen to vote with the President, is what made the difference in the vote outcome.

The tax-cut victory is the Administration's second major legislative and political victory since the Inauguration. On May 7, Reagan corralled another impressive majority of the House in winning approval of his budget cutbacks.

Many political observers are claiming that Reagan will emerge from his first legislative year with one of the most successful domestic records of any president in modern times.

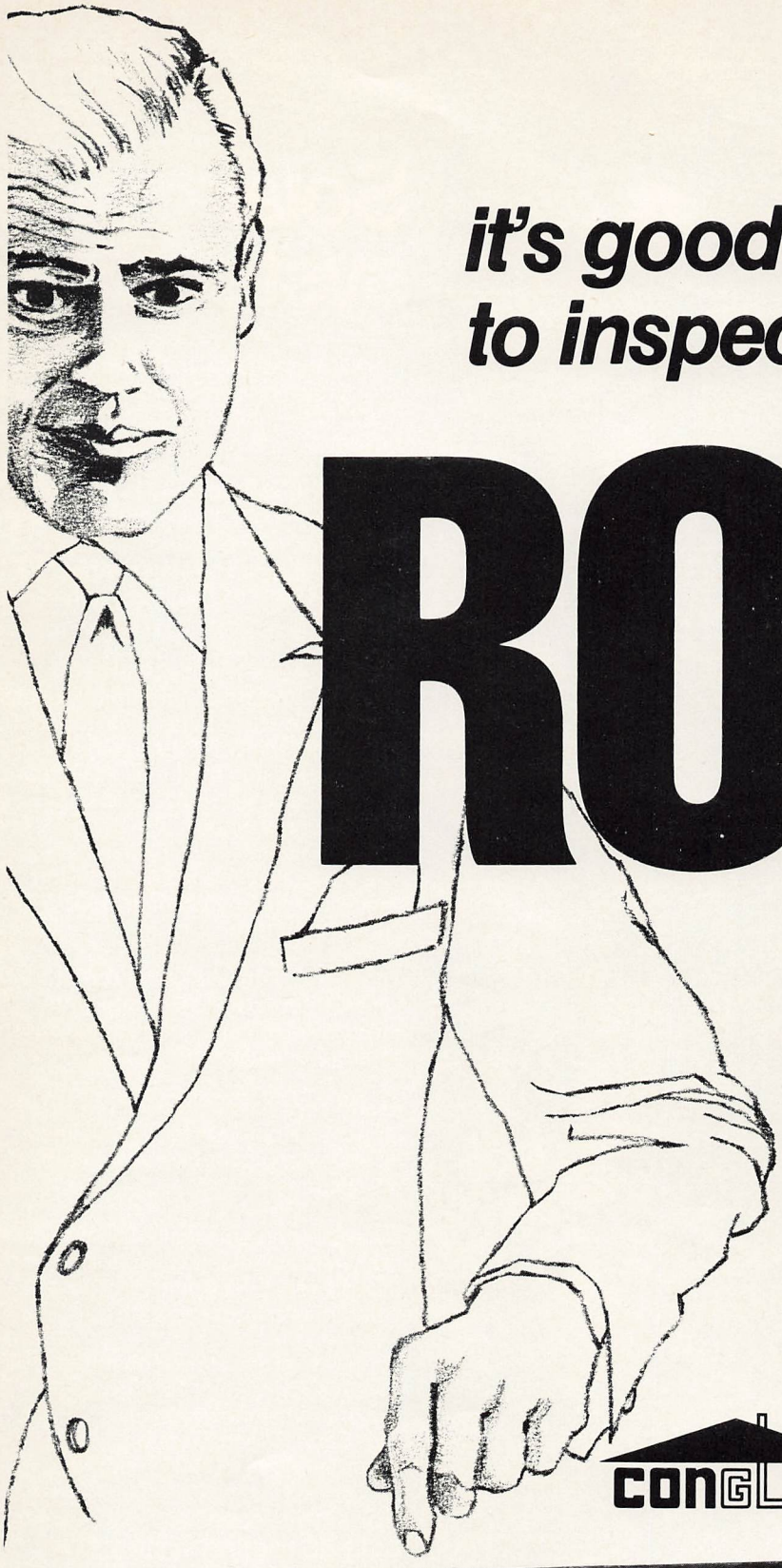
The job squeeze continues to plague the construction industry, despite an easing in the nation's overall unemployment rate, down .3 percent in June from May's mark of 7.6 percent.

June's 16.6 percent construction unemployment level was .3 percent higher than the previous month and only 1.5 percent below 1980's peak rate of 18.1 percent, which was the highest in five years.

The number of hardhats employed rose in June, after seasonal adjustments, with 60,000 more out of work.

At the same time, average hourly earnings in construction rose last month to $10.56, a four-cent increase from May and a 77-cent increase from a year ago.

ON THE COVER . . . Looking like an isolated, glassy lake at sunset is a conventional built-up roof in Oak Park, Ill., near the former headquarters of NRCA. Work was done by Hans Rosenow Roofing Co., Chicago.



it's good business to inspect your . . .

ROOF

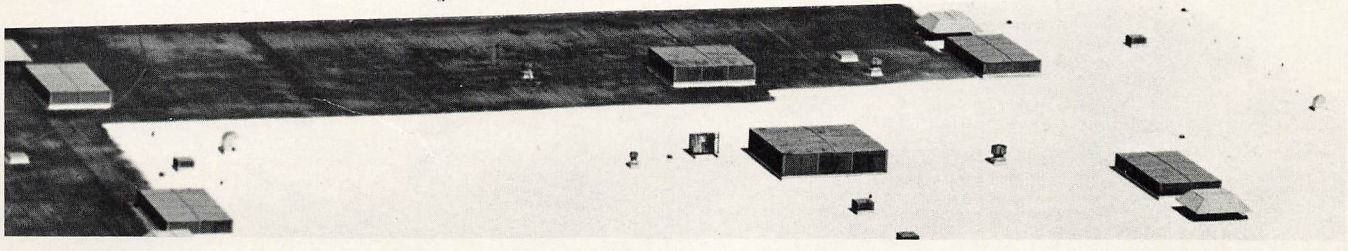
Many dollars have been lost due to water damage caused by a poorly installed or worn-out roof.

To better insure yourself against such losses, Consolidated Fiber Glass Products Co., Inc. has developed a program to make it easy for you to inspect your own roof. We have developed a **special self-inspection packet** in order to inform you of the basic things to look for when you inspect your roof. It will enable you to determine what should be done . . . such as re-roof, re-cover or establish a regular roof maintenance program.

Does not obligate you or your company in any way.

CONGLAS®

CALL OR WRITE FOR YOUR COMPLETE SELF INSPECTION ROOF PACKET!



CONSOLIDATED FIBER GLASS PRODUCTS CO., INC. P.O. BOX 5248 / BAKERSFIELD, CA 93388 / (805) 323-6026

Solar system.

Here's an easy way to help eliminate one of the major causes of premature roof failure—moisture in the roofing system.

It's the Johns-Manville FP-10 One Way™ Roof Vent. This solar operated venting unit is designed to release pressure caused by water vapor trapped within the built-up roofing system.

The vent works simply. And automatically. When the sun's heat causes trapped moisture-laden air in the roof to expand, the vent's one-way valve opens, releasing the moisture. When the roof cools, the valve closes, sealing damp air out.

The valve also keeps out snow and wind-driven rain as well as water, even if submerged.

The FP-10 Vent is ideal for roofs where internal moisture may enter the system because of a faulty vapor retarder or lack of one.

In addition to black Noryl, J-M FP-10 One-Way Roof Vent is also available in white acrylic for use with single ply systems.

It's easily and quickly installed on both new and existing roofs. And is eligible for coverage under the J-M Guaranteed Roof Program.

For more information, consult Sweet's. Or contact George Constantin, Johns-Manville, Ken-Caryl Ranch, Denver, Colorado 80217, (303) 978-3281.

For single-source built-up roofing systems.

JM
Johns-Manville

NATIONAL NEWS

CONSTRUCTION COSTS RISE 6.2%

The cost of construction materials and labor across the nation increased an average of 6.2 percent during a twelve-month period which ended in March, reported the Cost Information Systems Division of McGraw-Hill Information Systems Company.

The price information, in the form of individual Dodge Building Cost Indexes, is based on the Cost Information Systems Division's semi-annual survey of building trades unions, contractors and materials suppliers in 182 cities in the continental United States.

The latest survey shows that the Dodge Building Cost Index is rising at a slower rate than general inflation, as measured by the GNP deflator. According to the Dodge data, building materials prices increased 5.4 percent while hourly wage rates of building trades craftsmen went up 7.6 percent during the 12-month period. The lower rate of increases for construction materials and labor reflects the general slowdown in the construction market.

Greatest cost hike for the 12-month period was in the Metropolitan New York/New Jersey region (up 8.4 percent). The region covering the New England States had the lowest increase (up 4.9 percent).

The full report, containing additional information on Canadian construction costs, is titled "Dodge Building Cost Indexes for U.S. & Canadian Cities"; it may be purchased for $12 from Cost Information Systems Division, Department 1759, McGraw-Hill Information Systems Company, 1221 Avenue of the Americas, New York, N.Y. 10020.

CSI TO MOVE

The Construction Specifications Institute, Washington, D.C., in cooperation with Potomac Investment Associates announced plans for building a new headquarters in Alexandria, Va. Ground-breaking took place in mid-July.

A study of the Greater Washington Metropolitan area was conducted before selecting Alexandria as the most favorable site. Accessability to National Airport and a central location in the metropolitan area were important factors in the decision.

The new building, to be located at Madison and St. Asaph Streets, will be some 30,000 gross square feet. Plans for the four-story, rectangular, concrete structure with brick veneer design to be compatible with the area's colonial style architecture were two years in the making.

Completion of the new headquarters is expected to take place in mid-1982.

OUTLOOK TO IMPROVE IN '80s FOR HOUSING AND MORTGAGES

NEW YORK, June 26—The outlook for both the housing and mortgage markets is a healthy one for the balance of the 1980's predicts William E. Gibson, senior vice president—economics and financial policy, McGraw-Hill, Inc.

Pointing to six positive factors, Gibson forecasts that the next 10 years will offer considerably greater opportunities in the mortgage business than have the last five. He sees:

- Continued growth in the 25–44-age group will require housing for more than two million new households annually for much of the '80s.
- Population will continue to shift from the snowbelt to the sunbelt, resulting in more housing to be built in the South and more homes changing hands in all parts of the nation.
- Home ownership as an investment will continue to have strong appeal.
- The social desire to own one's own home will persist.
- Rising energy costs will cause some people to move closer to work and others to seek better insulated homes.

To these five reasons, Gibson said, "add the fact of life that most people cannot pay all cash when they buy a home so the outlook for the mortgage business should be strong."

There are, however, some negative factors, Gibson told a meeting of the Mortgage Bankers Association of America. He cited the continuing rise of housing costs in relation to income; sky high mortgage costs, and increasingly volatile interest rates which make fixed rate mortgages hard to come by.

While these clouds are still on the horizon, Gibson said we may be close to the "point of maximum pain now." He (said) "real estate mortgages should become more attractive now than ever before to lenders because for the first time usury ceilings are not generally binding and the yields are most attractive. Indeed, it is an excellent time to be loading up on high-yielding, fixed-rate mortgages."

For borrowers, Gibson said, "the mortgage remains an efficient way to secure a relatively enormous loan so that he or she can have the benefits of home ownership while setting aside the funds to pay for the home."

The growth of alternative financing methods by lenders has peaked, but is unlikely to disappear, even though market conditions should be more settled, declared Gibson.

SUMMARY OF U. S. BUILDING CONSTRUCTION COSTS

Prepared by
Cost Information Systems Division
McGraw-Hill Information Systems Company

Region	Metropolitan Areas	% Change 12 Months to March 1981
EASTERN U. S.		
Metropolitan N.Y./N.J.	16	+8.4
New England States	21	+4.9
Northeastern and North Central States	46	+6.5
Southeastern and South Central States	39	+6.9
AVERAGE EASTERN U. S.	122	+6.05
WESTERN U. S.		
Mississippi River and West Central States	35	+6.7
Pacific Coast and Rocky Mountain States	25	+6.0
AVERAGE WESTERN U. S.	60	+6.35
UNITED STATES AVERAGE	182	+6.20

AIA PROMPTS REPORT

In response to growing public and professional concern over long-span building failures in recent years, The American Institute of Architects has issued a comprehensive report calling for new involvement by architects, engineers, owners and codes and standards groups in the design and construction of buildings with large column-free interior spaces.

The AIA Long-Span Builders Panel, comprising four architects, two engineers and one contractor/engineer, urged owners of long-span buildings to accept responsibility for periodic inspections and to review inspection techniques to better control the post-occupancy process. The panel also called on owners to understand fully their roles as they choose one of various contractual arrangements among principal parties in the construction process and to develop a "good feel" for the risks and rewards of each arrangement.

The seven-member panel was formed in 1979 to review the practice of erecting long-span structures—e.g., sports arenas, auditoriums, theaters—and to recommend guidelines aimed at minimizing the risks of future collapses.

The panel received testimony from 10 professionals representing a broad cross-section of expertise in the construction industry. The team reviewed data on recent collapses.

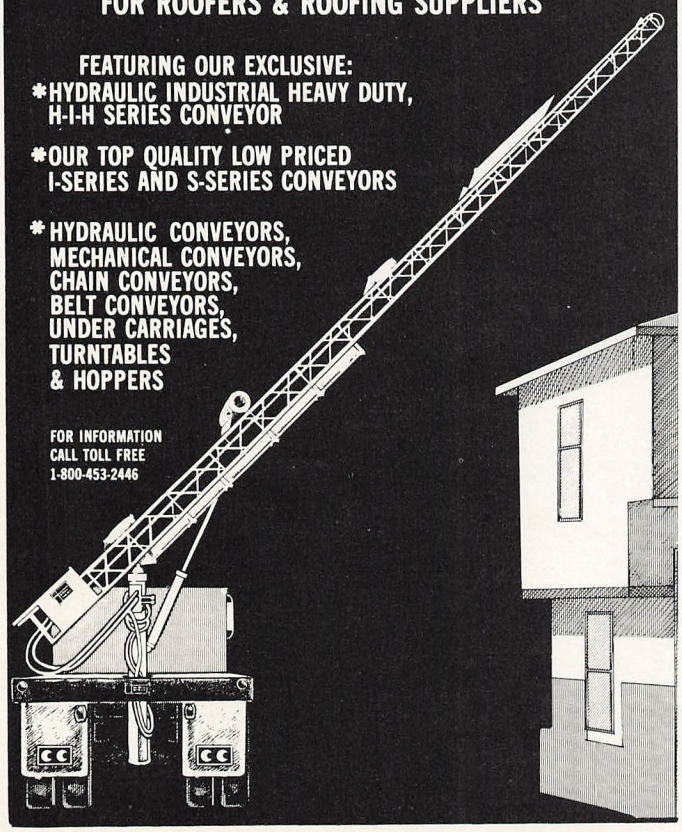
The panel's report, "Toward Safer Long-Span Buildings," analyzes a diversity of problems peculiar to long-span buildings and offers recommendations to guide all segments of the construction industry including owners. These recommendations do not, however, establish mandatory procedures or standards of practice and may not apply to every situation. The panel recognized that each long-span project has its own requirements, and those involved in the design and construction process must continue to use proper judgment.

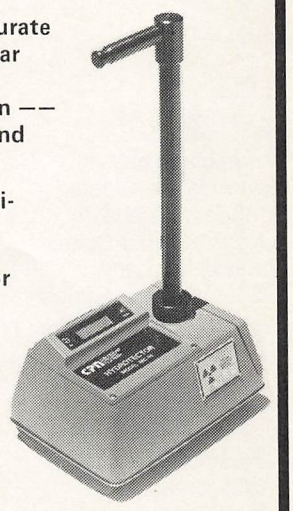
GAF INCOME RISES IN SECOND QUARTER

GAF Corporation reported in mid-June second quarter 1981 income from continuing operations of $4.3 million, or 25 cents a common share, compared with earnings of $1.5 million, or four cents a share, in the second quarter of 1980. Second quarter sales of continuing operations increased to $174.1 million from $159.8 million.

Building Materials sales increased from $90.8 million in second quarter 1980 to $98.2 million in the same period of 1981. Operating profits fell from $2.9 million to $1.8 million. These results were mainly attributable to sharply rising costs for asphalt and other materials, a decrease in unit volume of roofing products sold, increased expenses relating to built-up roofing and an inability to pass along cost increases.

Operating profits for the first half were $35.1 million, down from $39 million. Chemical profits improved and Building Materials profits fell sharply, as the first half were primarily affected by the same factors as the second quarter.



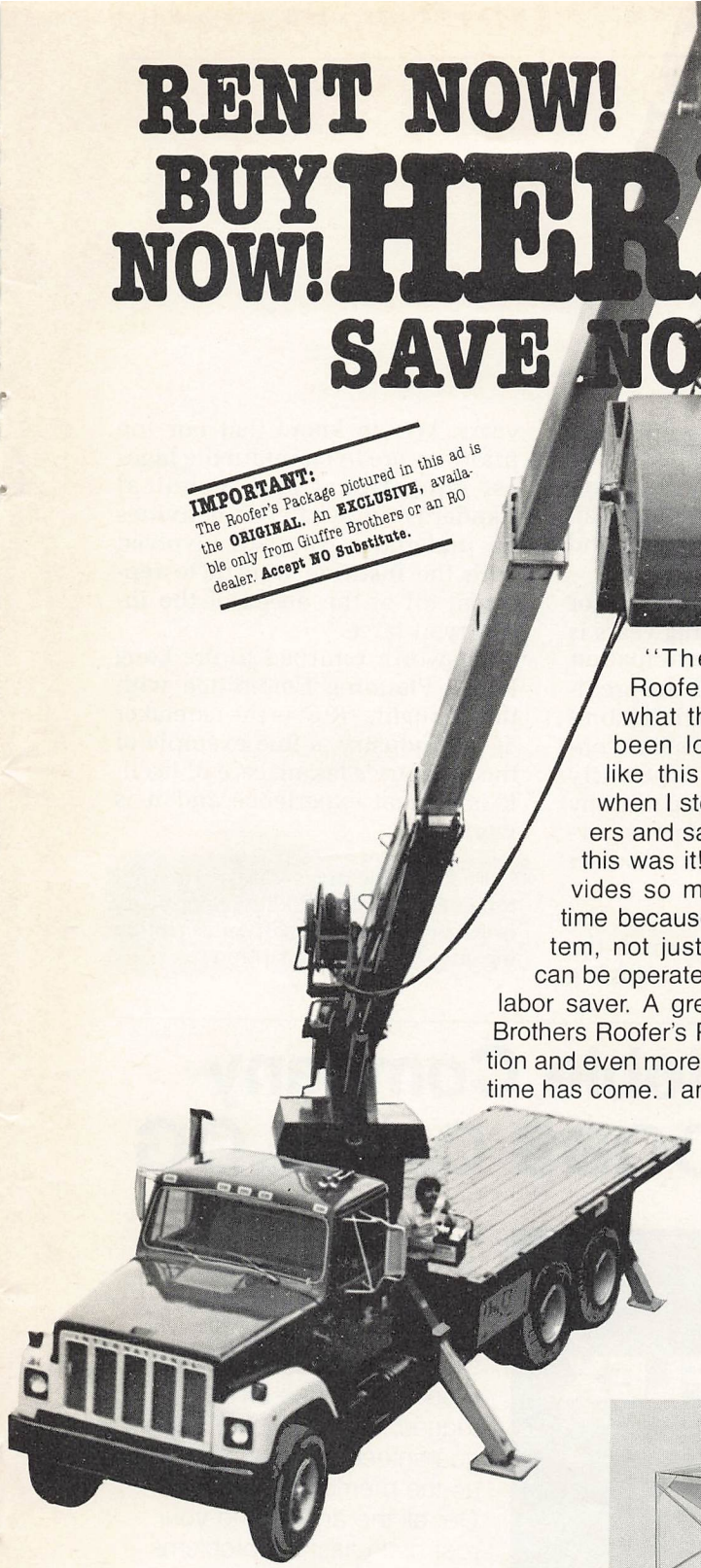


RENT NOW! BUY NOW! HERE'S HOW! SAVE NOW!

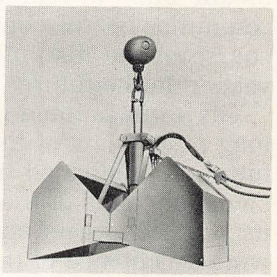
IMPORTANT: The Roofer's Package pictured in this ad is the **ORIGINAL.** An **EXCLUSIVE,** available only from Giuffre Brothers or an RO dealer. **Accept NO Substitute.**

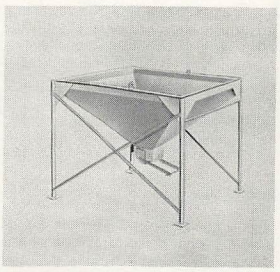
Just ask Dave Kielpinski of Cudahy Roofing Co. who recently purchased the exclusive Giuffre Brothers Roofer's Package from his local RO Distributor.

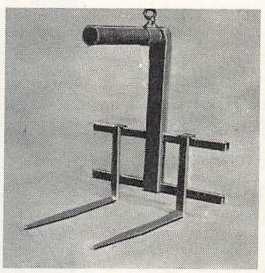
"The Giuffre Brothers Roofer's Package is exactly what the doctor ordered. I'd been looking for something like this for a long time and when I stopped at Giuffre Brothers and saw the set-up, I KNEW this was it! The combination provides so much versatility, saves time because it is an efficient system, not just individual units, and can be operated by one man — a big labor saver. A great investment on all counts. And since we've had the Giuffre Brothers Roofer's Package we are more productive, more efficient in overall operation and even more competitive when bids are submitted. This is truly an idea whose time has come. I am completely sold on the Giuffre Brothers Roofer's Package!"

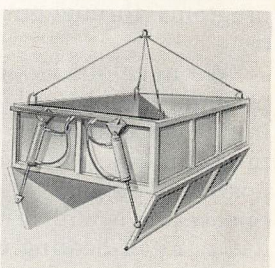


The **EXCLUSIVE Giuffre Brothers' Roofers Package** includes: a 1½ yard hopper for gravel/stone, a special adjustable pallet fork for shingles/insulation, etc., a ⅝ yard clam bucket and the patented 3½ cubic yard "Humpty Dumper" with hydraulic bottom doors — crane carried for one man operation.









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RIEI LONG RANGE PLANNING COMMITTEE PLANS THE FUTURE WHILE IT CONSIDERS THE PAST

At the Roofing Institute's Long Range Planning Committee meeting held in February in Orlando, E. J. (Ted) Titsworth, RIEI vice chairman, formerly director of marketing for Koppers Company's Building Materials Division and currently administrative director for its Organic Materials Group took the opportunity to reflect upon the future of the Institute. Titsworth has been a member of the Long Range Planning Committee from its inception and involved in Institute activities since its formation. he is currently a member of the Management Committee, the Curriculum Committee and the Long Range Planning Committee of the Institute.

"One of the most remarkable signs of the growth of the Institute," Titsworth noted, "is that we used to think long range planning meant only a year ahead. Our committee is now considering the course of the Institute five to 10 years into the future."

Titsworth pointed out that this long range view of the Institute's future is predicated upon the accomplishments of the Institute in its first two years and upon the wide acceptance of the Institute's programs throughout the industry.

"We have our five-day seminar program firmly in place and have initiated our first two-day seminar program 'Roof Inspection, Diagnosis and Repair.' By the end of this year we will bring our two-day seminar dealing with one-ply systems on line. In 1982 we will have established a two-day seminar especially for the architectural community on design and specification."

When asked why the Institute's programs should be so welcomed by the industry at large, Titsworth said, "Because I believe the depth of knowledge and experience represented by the Institute positions it as the most qualified authority to present the problems confronting the industry which people can turn for the most objective and solid answers."

Titsworth noted that a major goal of RIEI in the coming years is to achieve a broader participation in industry activities of the architectural and specification communities and by the general contracting groups. He especially hopes for greater participation by such other industry groups as government organizations and roofers unions.

"We really don't know yet the full scope of activities which the Institute will effect in the coming years. We do know that our top priorities are to maintain the highest educational and technical standards in whatever activities we undertake. All of us involved with the Institute want it to represent all of the needs of the industry at large."

Titsworth returned to the Long Range Planning Committee with this thought, "RIEI is the caretaker of the industry, a fine example of the industry's taking care of itself. It is a great experience and it is working!"

DODGE/SWEET'S LOWERS 1981 CONSTRUCTION RATE OUTLOOK

With the nation still relying only on austere monetary policies to shackle inflation, the construction industry faces another tough period for the remainder of this year, according to the F.W. Dodge Division of McGraw-Hill Information Systems Co.

Construction contracting is now expected to exceed 1980's depressed level by only 6 percent, half the amount predicted 6 months ago by the nation's leading construction market authority, and will total $155.8 billion for the year.

According to McGraw-Hill, which has just released the second scheduled update of its *1981 Dodge/Sweet's Construction Outlook*, housing is the market to watch in the second half. "The short-run issue is not whether housing will improve," said George A. Christie, the firm's vice president and chief economist, "but how fast and by how much." He anticipates improvement in the third quarter and a housing rate for the year of 1.35 million units, unchanged from 1980. Contract value will increase 9 percent to $68.9 billion.

In the other construction sectors, Christie sees nonresidential construction totaling $55.5 billion, a 6 percent gain over 1980 due primarily to inflation, and nonbuilding construction contracting at $31.5 billion, unchanged from last year.

"Just when recovery from last year's credit crunch was picking up momentum," said Christie, "a new round of monetary restraint sent building markets into a second tailspin." Measuring the extent of the drop, the Dodge Index of total construction contract value fell 22 percent from November through May 1981.

"This sharp decline translates into another lean summer on the job site for contractors and building materials suppliers," Christie said.

Christie explained that lower interest rates are clearly the key to the recovery of building activity for the rest of this year.

"In 1981, these rates will come down only because a stretch of economic stagnation will temporarily reduce business demand for credit," he said. "Under such circumstances, the benefits of lower interest rates are not likely to extend much beyond the housing market."

Detailed information from the latest update of the *1981 Dodge/Sweet's Construction Outlook* is contained in the following table.

1981 National Estimates of Dodge Construction Potentials — **Second Update July 1981**

Construction Contract Value (millions of dollars)		1980 Actual	1981 Forecast	Percent Change
Nonresidential Buildings	Office Buildings	$ 13,466	$ 16,700	+24
	Stores & Other Commercial	11,336	11,300	—
	Manufacturing Buildings	8,239	7,775	−6
	Total Commercial & Manufacturing	$ 33,041	$ 35,775	+ 8
	Educational	$ 6,766	$ 6,375	− 6
	Hospital & Health	5,396	5,800	+ 7
	Other Nonresidential Buildings	7,142	7,525	+ 5
	Total Institutional & Other	$ 19,304	$ 19,700	+ 2
	Total Nonresidential Buildings	$ 52,345	$ 55,475	+ 6
Residential Buildings	One-Family Houses	$ 41,474	$ 45,625	+10
	Multi-Family Housing	18,519	19,975	+ 8
	Total Housekeeping	$ 59,993	$ 65,600	+ 9
	Total Nonhousekeeping	$ 3,213	$ 3,250	+ 1
	Total Residential Buildings	$ 63,206	$ 68,850	+ 9
Nonbuilding Construction	Highways & Bridges	$ 12,282	$ 11,600	− 6
	Utilities	4,584	5,000	+ 9
	Sewer & Water	7,591	8,275	+ 9
	Other Nonbuilding Construction	7,156	6,600	− 8
	Total Nonbuilding Construction	$ 31,613	$ 31,475	—
Total Construction		$147,164	$155,800	+ 6
Dodge Index (1972 = 100)		162	171	
Floor Area of New Buildings (millions of square feet)				
Nonresidential Buildings	Office Buildings	244	270	+11
	Stores & Other Commercial	441	415	− 6
	Manufacturing Buildings	213	200	− 6
	Total Commercial & Manufacturing	898	885	− 1
	Educational	95	83	−13
	Hospital & Health	56	55	− 2
	Other Nonresidential Buildings	146	137	− 6
	Total Institutional & Other	297	275	− 7
	Total Nonresidential Buildings	1,195	1,160	− 3
Residential Buildings	One-Family Houses	1,284	1,300	+ 1
	Multi-Family Housing	545	550	+ 1
	Total Housekeeping	1,829	1,850	+ 1
	Total Nonhousekeeping	57	52	− 9
	Total Residential Buildings	1,886	1,902	+ 1
Total Buildings		3,081	3,062	− 1
Number of Dwelling Units (thousands of units—F. W. Dodge basis)				
	One-Family Houses	809	825	+ 2
	Multi-Family Housing	519	525	+ 1
	Total Dwelling Units	1,328	1,350	+ 2

Roofing Spec survey results

The Roofing Spec is expanding and to get a handle on how well the needs of its readers are being met, the *Roofing Spec* staff conducted a readership survey in late May.

The readership survey was sent to just over 4,000 readers of the magazine; and by mid-June almost 20 percent had been returned. Generally, the comments were favorable, with 95 percent of the respondents giving *The Roofing Spec* an excellent or good rating.

According to the results, the best read regular feature is "New Products, Ideas and Publications." Ninety-five percent reported they always or usually read that. Next in popularity are "Comment" and "Legal," with 87 percent and 84 percent respectively claiming to always or usually read those columns.

Advertisements are also well looked at. Only three percent said they seldom pay attention to ads.

The Roofing Spec's readership is generally new to the magazine. About 70 percent of the respondents have been reading it five years or less. Of these readers, 40 percent have been reading it for less than one year. The high rate of new readers is due to the magazine's rapidly growing circulation as well as the growth of association membership.

The Roofing Spec goes to a targeted readership of roofing contractors, architects, designers and engineers. Of those who responded to the survey, 52 percent are in the roofing contracting business; 21 percent are in architecture/engineering firms; 13 percent are in manufacturing; 8 percent are in the wholesale and distributing business and the remainder are in government and education.

The survey showed that each primary reader shares his or her copy with two or three other persons on the average. So, within a business, a number of others also read the magazine, including sales representatives, estimators, foremen and office managers.

By far, the subjects of new systems and products, particularly single-ply roofing, were mentioned most frequently in answer to questions on what articles and topics *The Roofing Spec* should cover in future issues.

Other topics suggested include: roofing inspection and maintenance, job costing, job histories, new performance criteria, vapor barriers, insulation, roofing failures and "what the roofing manufacturers are doing." These topics will be dealt with in future issues.

Several survey respondents asked that *The Roofing Spec* staff develop an index of articles. That index is in the works and will be published in *The Roofing Spec* early next year.

In 1982, the magazine will be monthly; this year it is being published eight times. Next year will also see another big increase in circulation, from 8,000 to 12,000. Two years ago circulation was just under 4,000.

The expansion of the magazine, said executive editor Bill Good, represents a conscious effort to reach not only roofing contractors but the architects and designers with whom contractors must deal with on a regular basis.

ARMA OFFERS PROMO PACK FOR ROOFING

With new housing starts down, contractors are taking a hard look at ways to improve reroofing merchandising techniques.

Asphalt Roofing Manufacturers Association reports that contractors interested in maximizing profits in reroofing jobs must first understand the psychology of selling home improvements. The knowledge that homeowners usually purchase what contractors promote is a basic prerequisite to successful selling. It's what separates order takers from "professionals."

Too often, home improvement contractors take the path of least resistance—contenting themselves with what comes their way. They don't go after add-on sales or promote such roofing materials as three-dimensional or fiber glass-based asphalt shingles.

Professionals immediately put themselves in the drivers seat. They increase sales volume with promotions stressing the esthetics and fire-safety benefits of quality roof coverings. Whenever possible, they include renewal rainware and energy-conserving attic ventilation systems in reroofing packages.

ARMA also provides promotional materials and sales aids, as do many of the roofing material manufacturers. Company sales representatives should be contacted directly for materials on a particular product line.

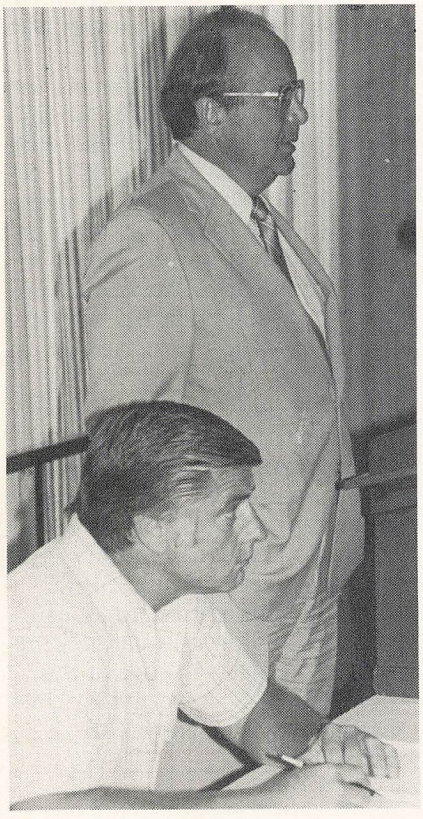
A free publication and audio-visual directory is available by writing ARMA, in care of Sumner Rider & Associates, 355 Lexington Ave., New York, NY, 10017.

Political Action Committee wins support of NRCA

Citing the need for increased association visibility in Washington, D.C., NRCA Political Action Committee Chairman Bud Padon asked for and got the endorsement of the NRCA Board of Directors for a rejuvenated PAC at the Board's July meeting in Chicago.

Joining Padon in his call for Board endorsement were NRCA Washington representative and former Congressman Robert Leggett and Government Relations Committee Chairman John Van Wagoner, McLean, Va.

Padon told the Board that while the PAC has been effective with its limited resources, the time and money required just to administer it are not worthwhile without a consensus of support for its activities. He said important programs like the PAC must generate their initial impetus from the leaders of the association before the membership at-large will respond.



NRCA President Johnny Zamrzla listens intently to Robert Leggett at July Mid-Year meeting.

Relying on his experience as a PAC recipient, Leggett told the group that political contributions are tools to be used in an overall government relations program. Don't suppose, he warned, that any elected officials vote can be bought; rather, said Leggett, it is only natural for members of Congress to look to their supporters for counsel and advice. Today's campaign costs are so staggering, he continued, that a successful candidate must rely on fund raising as a part of his job.

Leggett then explained to the Board some of the plans that the PAC has to revitalize. These include working more closely at the local level, and sponsoring a fund-raising party at the NRCA Convention in Los Angeles next March.

Van Wagoner, who also serves NRCA in its technical committees, suggested to the Board that those technical activities—and indeed all other NRCA programs—would be meaningless without a proper political environment in which to operate a successful business. Like the others, he urged the Board to show its support for the PAC.

Both Leggett and Padon then explained the federal election laws, saying that a company (or any NRCA member firm) must authorize the association-sponsored political action committee to solicit its executive and administrative personnel prior to the actual solicitation. Additionally, a company may authorize only one such PAC per year to solicit. They then distributed "authorization" cards and asked the Board to demonstrate its support by completing the forms before leaving the meeting.

And the Board responded—with near unanimity, as many members offered pledges to help get the PAC back on its feet.

PAC track record good

Formed in 1979, the National Roofing Contractors Association Political Action Committee collects contributions from the executive and administrative personnel of its member firms, and makes donations on a nonpartisan basis to candidates for the U.S. Senate and House of Representatives.

Prior to the 1980 elections NRCA PAC received donations in excess of $6000, and subsequently made contributions to 7 candidates for the Senate and 21 candidates for the House. Six of the Senatorial candidates and 20 of the Congressional were successful, in a year when the PAC contributed to many non-incumbent underdogs.

The PAC is governed by a five-person Board of Trustees, composed of four members appointed by the NRCA President and NRCA's general manager, who serves as treasurer.

Contributions are made to those candidates who have demonstrated their support of the business community in general and the roofing industry in particular.

Further information on the PAC is available by writing:

William A. Good, Treasurer
NRCA PAC
8600 Bryn Mawr Ave.
Chicago, Ill., 60631

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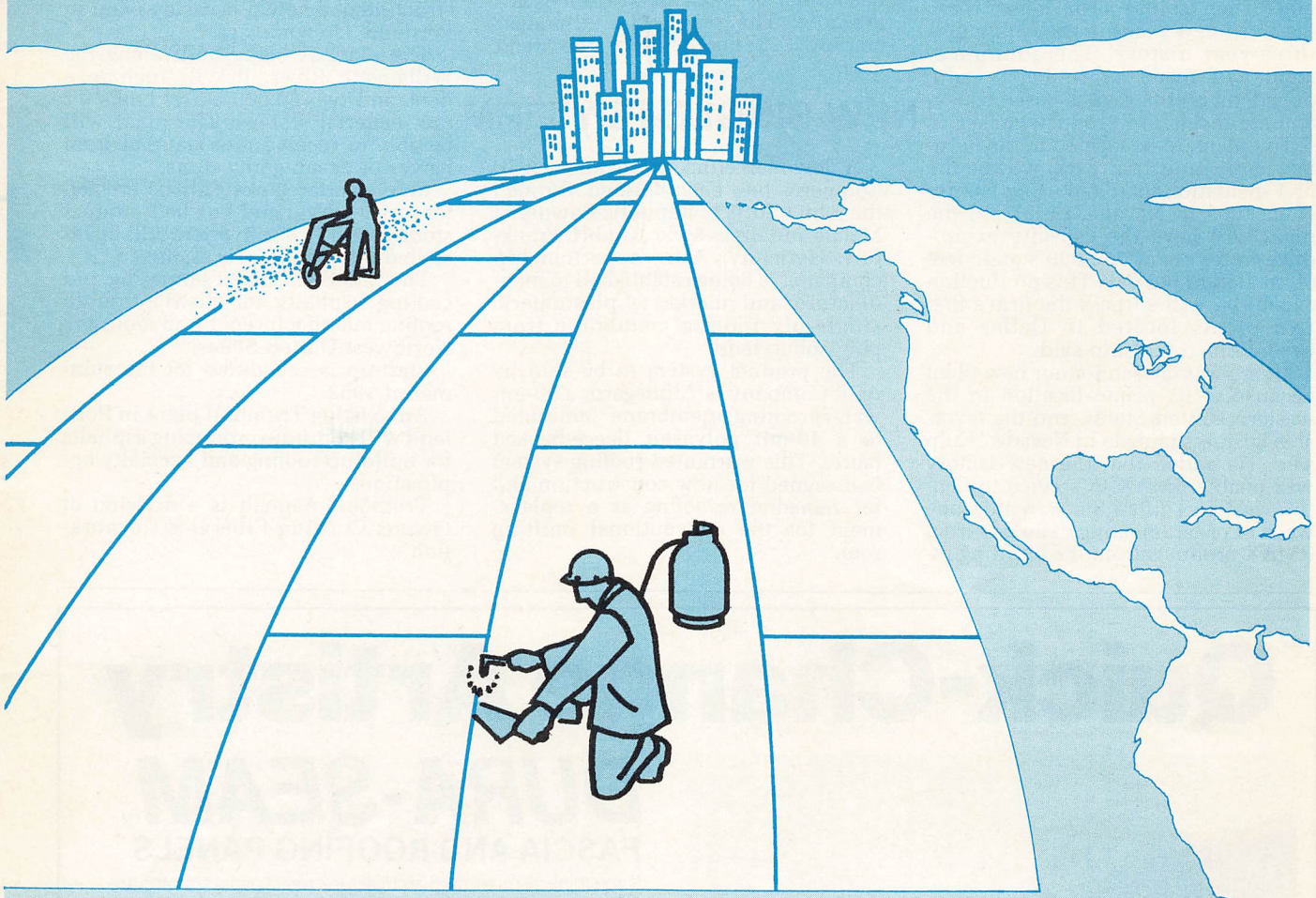

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Associate Member News

NEW RMAX PLANT

RMAX Inc., will open a new manufacturing facility near Reno, Nev., the third new plant in the company's three-year history. The announcement was made by G. Perry Culp, president of the Dallas-based isocyanurate insulation products maker.

The plant, to be located in the Fernley, Nev., industrial park, will be the first insulation manufacturing facility of its type in Nevada. Culp said the plant will have the capacity to produce in excess of 750,000 square feet of insulation per day. This production capability will surpass the firm's first two plants located in Dallas and Greenville, S.C., Culp said.

"Reno was chosen for our new plant because of its prime location in the western United States, and the favorable business climate in Nevada," Culp said. He added that the new factory will enable RMAX to service the entire western United States within one week of order, meeting demands from RMAX products from the building industry in the West. The Reno RMAX plant will also service Canada, Alaska and Hawaii.

"The Reno facility will give us completed coverage of the continental United States," Culp said.

All RMAX products will be manufactured at the Nevada facility, which has a total of 100,000 square feet under roof. The plant will ultimately employ 125 people from the Reno area.

NEW SINGLE-PLY FIRM

A new marketing organization, AGR Company has been formed through the joint efforts of Republic Powdered Metals and Brass & Co., GmbH, Frankfurt, Germany. AGR, a partnership company, is being established to manufacture and market a plastomeric single-ply roofing membrane from polyisobutylene.

The product system to be sold by AGR Company is Alphagard; a 60-mil waterproofing membrane laminated to a 40-mil polyester fleece-backed fabric. This warranted roofing system is designed for new construction and for remedial reroofing as a replacement for the conventional built-up roof.

TRUMBULL IN OREGON

Trumbull Asphalt has started construction of a new processing plant in Portland, Oregon.

The plant is being built along the Willamette River. It will include a dock and two 80,000 barrel tanks for raw material storage. The plant will be able to receive raw material from barges or ocean-going ships.

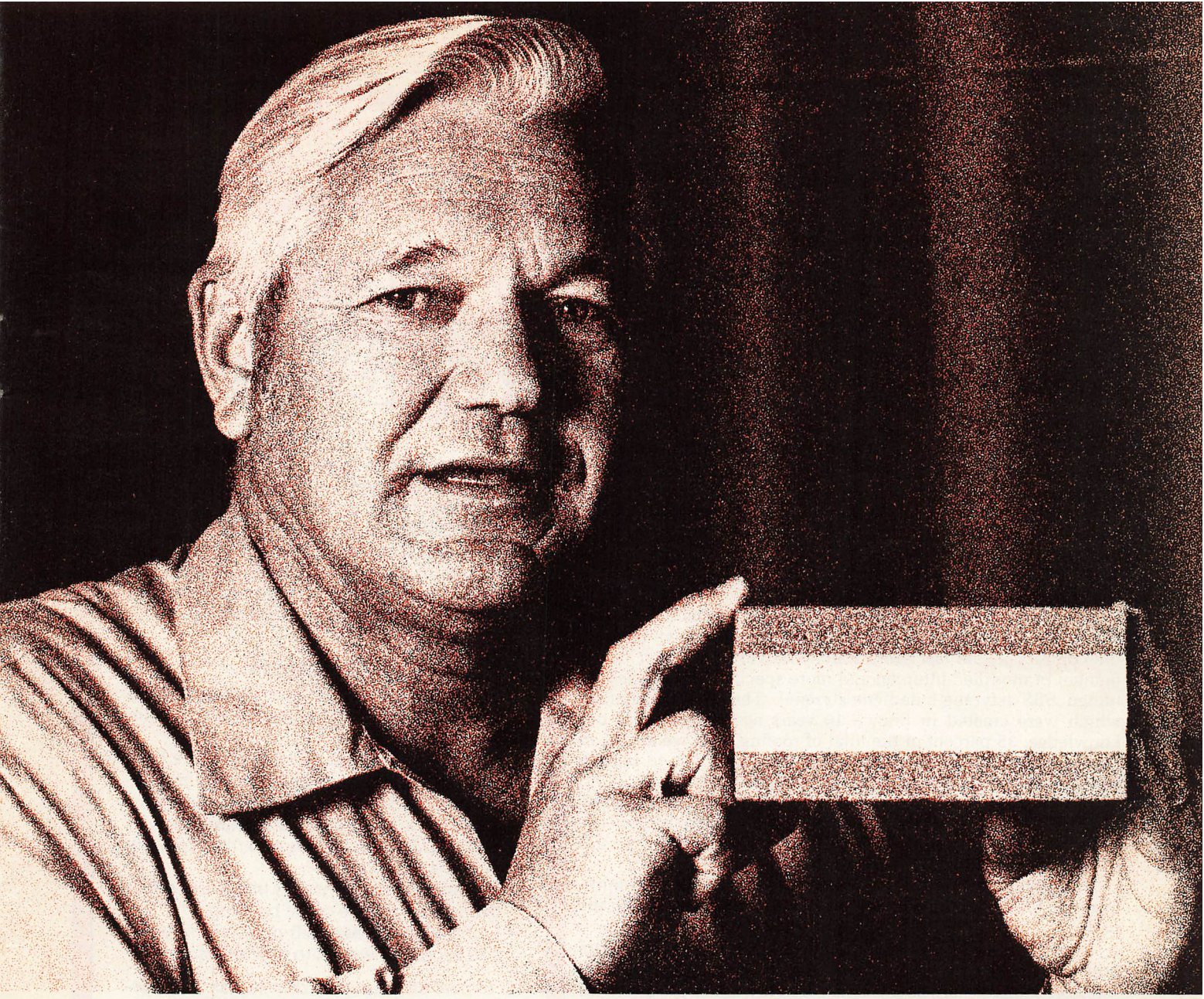
Five smaller tanks will be erected for raw material and finished product storage, and two converters will be installed for asphalt processing.

The plant will make saturating and coating asphalts for distribution to roofing manufacturers throughout the Northwest United States.

Start-up is scheduled for the summer of 1982.

An existing Trumbull plant in Portland will continue producing asphalts for build-up roofing and specialty applications.

Trumbull Asphalt is a division of Owens-Corning Fiberglas Corporation.



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Dear Editor:

I read very carefully and with great interest the article in the May issue of *The Roofing Spec* on the six contractors who visited Europe.

I recently had the chance to attend the 6th Conference on Roofing Technology, co-sponsored by NBS and NRCA. I enjoyed very much the meeting and the people I met.

According to my interest in the subject, I think it will be useful for you to have some supplementary data on European experience on roofing.

The information gathered and published by the six contractors is, generally speaking, right.

It is true, in fact, that among the countries visited if some single-ply roofings had a certain success some years ago, the situation actually is not the same due to the fact that many of them have declined in importance or have disappeared from the market.

But I fear that the way you presented the European situation, and particularly the French one, is not showing very clearly the current situation in roofing.

In fact, the French situation on roofing materials has deeply changed since the last 10 years.

If mastic asphalt is still about 10 percent of the market and if the real single-ply systems are rare (negligible), we have on the contrary in the last years watched a very important development of modified bitumen and more specifically modified bitumen SBS (styrène-butadiène-styrène). These later materials which were created in France 10 years ago represent, to our knowledge, 35 percent of the total of roofing. And we expect in the next years more development of these products to replace conventional French multilayers of oxydized bitumen.

Products reinforced by glass and/or polyester are generally used in two-layer systems. Use in single-ply system is also considered. But according to the quality of workmanship, the use in two layers is much more securing.

The use of these products has contributed strongly to minimize the too frequent water leakages in roofing we've met in the past.

I read in your article that European roofing products were not compatible with your current labor force, and the philosophical changes may be necessary if you were to prosper with these new European products.

Allow me to say at this point that current French labor quality in roofing does not present often the skillfullness required in roofing. But generally this current labor did not meet any real difficulty in using these modified bitumen SBS roofing in two layers as we have experienced it on the applications.

—*E. Farhi*

Editor's Note: *E. Farhi has been head of the Department of Roofings for more than 15 years at C.S.T.B. (Centre Scientifique et Technique du Bâtiment), a public establishment of French government which deals with research and is in charge of standards and codes of practice in building.*

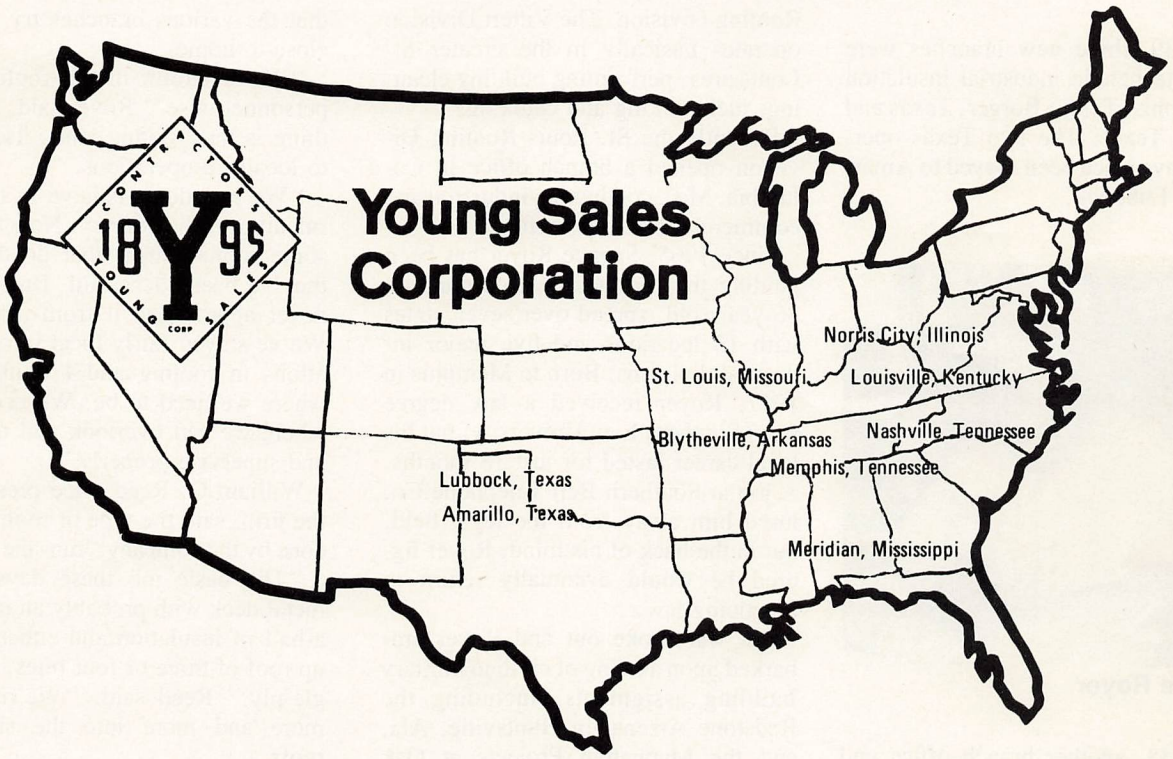
In the field of Research C.S.T.B. acts in a similar way to C.B.T. (Center of Building Technology) of the National Bureau of Standards.

Dear Editor:

. . . I would like to compliment you on your article, "Women in Roofing," as a very informative and well-written article.

Bob Wardle
Local #135
Pre-Apprentice Coordinator
(Phoenix)

86 YEARS YOUNG



by Mike Beightol,
assistant editor

A lot has happened at the Young Sales Corporation since the days back in 1895 when roofers had to heat pitch in huge metal barrels and haul up the hot stuff by hand.

Roofing has never been easy work. It's dirty, hot, backbreaking labor. The roofer of today, however, has come a long way compared to what was done around the turn of the century at the old C. Young Roofing Company in South St. Louis.

Days started early, with the workers readying the team of horses used to pull the wagon with tools and materials through the cobblestoned streets. Once at the jobsite, the men would prop their metal barrels filled with pitch atop stacks of bricks. A fire was built under the barrel using whatever combustible material that was found nearby.

After the pitch was melted, the men would scoop it out of the barrels with a large dipper and hoist the hot stuff overhand by rope to the rooftop.

A few years later, someone got the idea to put wheels on the bottom of the pitch barrels. By now, trucks that still looked very much like horseless carriages had replaced the horse-drawn wagons. The early tar kettles were still heated the same way; they were designed with an area beneath the kettle where wood and newspapers would burn to heat the tar.

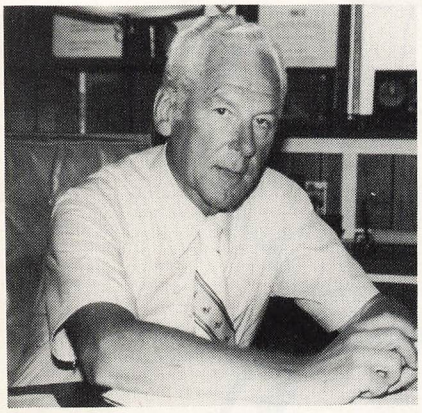
A visitor to the current headquarters of the Young Sales Corporation would probably be hard pressed conjuring up images of stables and old-fashioned metal pitch barrels used at the time of the Spanish-American War.

The Young Sales Corporation of 1981 employes between 700 and 800 workers and the assets of the very diversified firm total about $10 million. Christian Young started the roofing company 86 years ago, but significant changes didn't occur until 1937 under the leadership of William J. Young, the present chairman of the board, who took over the firm after the death of his

father in 1919.

In 1937, the offices and warehouse were moved to the firm's present location at 1054 Central Industrial Dr., St. Louis. During the same year, the company was incorporated and became known as the Young Sales Corporation. Before the end of the year, the Taylor Roofing Co., Nashville, Tenn., was purchased by Young. This event marked the first of many acquisitions and expansions into other areas of the country.

In 1939, three new branches were opened to handle industrial insulation in Memphis, Tenn.; Borger, Texas and Odessa, Texas. The two Texas operations have since been moved to Amarillo and Lubbock.



Spence Royer

In 1945, another branch office and warehouse opened in Louisville. That year, J. Spence Royer, now president of Young Sales Corporation, was hired to manage the Louisville branch. Four years later, in 1949, Royer was promoted to the position of assistant to the president in St. Louis.

In 1947, the Young family inherited the St. Louis Blow Pipe & Heater Co. from Young's father-in-law. Three years later, this company became another division of the much-expanded Young Sales Corporation. This division grew and grew and now has two branch fabrication plants in Meridian, Miss. and in Blytheville, Ark.

Continuing its expansion, in 1959 Young Sales purchased the St. Louis insulation contracting firm of Insulation and Materials Corporation. This is now a wholly-owned subsidiary with a branch office in Robinson, Ill.

The firm's growth slowed somewhat in the Sixties, but in 1977, Young Sales acquired the Skyline Electric Co. in Hopkinsville, Ky. This electrical division of the company performs all types of electrical work for commercial and industrial customers.

In 1979, the last major acquisition was made when Young Sales purchased the Vittert Building Restoration Co. and made it a part of the St. Louis Roofing Division. The Vittert Division operates basically in the greater St. Louis area, performing building cleaning, tuckpointing and caulking.

Recently the St. Louis Roofing Division opened a branch office in Columbia, Mo., conducting industrial and commercial built-up roofing.

Since 1965, Spence Royer has been guiding the fortunes of a corporation 86-years old, spread over seven states with 13 locations and five major industrial divisions. Born in Memphis in 1917, Royer received a law degree from Southern Law University, but his legal career lasted for just 18 months. A job at Southern Bell Telephone Co. lured him away from the legal field, but in the back of his mind, Royer figured he would eventually return to practicing law.

But war broke out and Royer embarked upon a string of civilian military building assigments, including the Redstone Arsenal in Huntsville, Ala. and the Manhattan Projects at Oak Ridge, Tenn., where the atomic bomb was developed.

As the war ended, Royer's career with Young Sales began. He was placed in charge of a new branch in Louisville for the distribution and installation of roofing materials.

"Soul-searching"

Although Young Sales is a diversified corporation involved in roofing, metal fabrication, industrial insulation, electrical contracting and other construction-related concerns, Royer said the firm's roofing division has the best potential for future growth.

Royer said he and his staff have done "a lot of soul-searching" on the future of Young Sales Corporation and its role in the roofing industry.

"We, at times, have had to change our outlook, but my guess would be at the present moment roofing is probably our brightest outlook," Royer said.

"We're primarily in the reroofing field," Royer said. "We lean that way, although we do do some new roofs, but we're primarily interested in the old market."

Royer attributes the firm's success in roofing to its workforce and to the fact that the various branches try to work close to home.

"We're strong in the roofing field personnel-wise," Royer said. Another thing is that roofing lends itself more to localized operations.

"We just don't believe in trying to run all over the country. Now there are some roofing firms that do that, and they've been successful. But we have never approached it from that angle. We've stayed fairly local in our operations in roofing and I think that is where we need to be. We need to be where we can overlook and take care and supervise properly."

William O. Reed, vice president of the firm, said the type of roofing work done by the company "runs the gamut."

"The basic job these days is still metal deck with probably an inch-and-a-half of insulation and either a built-up roof of three or four plies, or a single-ply," Reed said. "We're getting more and more into the single-ply roofs.

"Thus far this year here in St. Louis the single-ply roofs are running about 40 percent, which is much higher than last year. Last year it was probably more in the order of 15 and 20 percent."

Reed added that the firm is using single-ply materials manufactured by Alcor, Trocal and Carlisle, with each of the three roofing branches favoring one material over the others.

"We had a meeting recently specifically just to talk about roofing," Royer said. "The amazing thing was each of the three branches had a different idea as to what system to push. So we had to put our heads together. We don't like to play the field. We prefer to just get one and then push it—get a good one and then stand behind it."

continued on page 29

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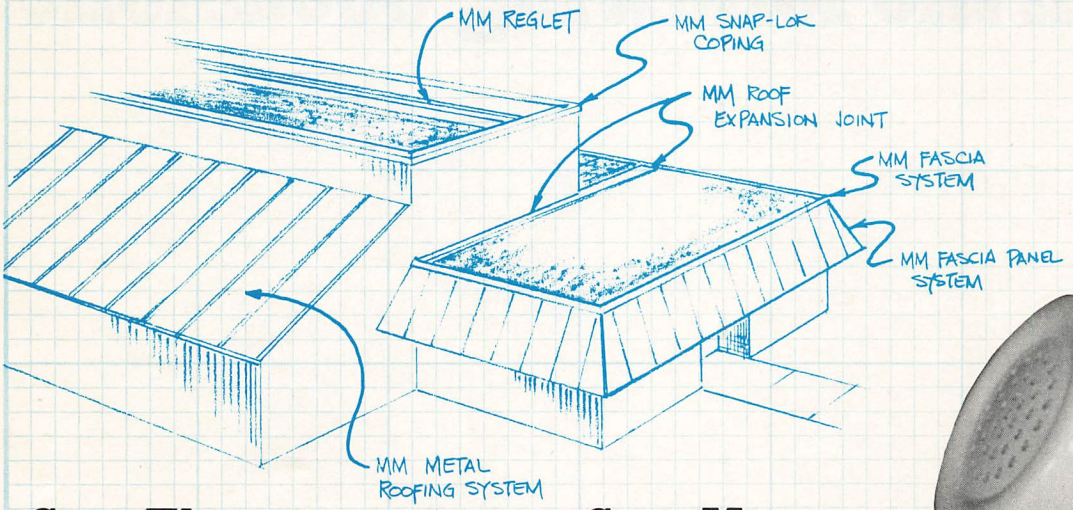

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Aside from some minor storm damage, all of the single-ply applications are performing well, but Reed cautioned that "we're all holding our breath like everybody else."

"I wish we had at least 20 years experience," Royer added. "We'd know what to expect then."

More single plys

Royer estimated that single-ply applications will continue to increase and that by 1983, 60 percent of all the roofing projects done by Young Sales will be with single-ply materials.

"It isn't so much that we are selling or pushing those products," Reed said. "It's the fact that people are asking for it despite the fact it costs more than a conventional roof."

"The owners are thinking, 'By golly it sounds great. Let's do it.' Even though it's new they seem to be willing to take a big chance on it.

"And I think the 10-year guarantee that most of them are offering is a big factor."

Royer agreed that the guarantees offered by the single-ply manufacturers play a big part in a customer's decision. But he said customers need to be more aware of what they are buying.

"We always say roofs don't work any better than the people that put them on," Royer said. "It doesn't make any difference what kind of guarantee you get, but some people would rather have that 10-year guarantee than a good roof."

The firm depends to a certain degree on securing business through competitive bidding, but Royer said there are invariably pitfalls which have to be recognized.

"Most jobs you have to bid, one way or another," Royer said. "We depend on straight selling to a big extent, but that doesn't mean we don't have to meet a certain price and certain range. You can't be completely out of line, so we are bidding all of the time. But we don't always depend on being the low bidder."

Young Sales is organized into 10 divisions. Each is headed by a manager, responsible for conducting a profit center. There exists a spirit of friendly competition among the divisions. A contest is conducted each year among the managers with a winner selected on the basis of return on annual investments. The winning manager and his wife are presented each year with tickets for a two-week cruise.

But the team spirit at Young Sales isn't confined to just those in management. Through the years, Royer said the firm's biggest asset has been its dedicated and hard working employees.

"It's like any other business," Royer said. "You have to keep young people coming along to step in and take over. If you lose a person for one reason or another, we have to have the right person to put in that spot that we can depend on."

"Our biggest problem is keeping the right people in the right place. The right person . . . the right peg in the right hole and it'll work."

Apparently, the right people in the right jobs makes for loyal employes. To date, 60 employes have earned 25-year watches and 108 employes have been the recipients of 15-year awards.

Royer said Young Sales first joined NRCA back in the mid-1950's. He said membership has been a valuable tool for the firm.

"NRCA membership has been of great value to us," Royer said. "We've been able to attend the annual conventions and seminars where we've been able to learn what other people have been doing in this field.

"I think the real value for the company, though, has been for the men on the firing line every day who have to get the job done. They've been able to share ideas with people from other companies.

"I think it would be impossible to get that kind of valuable information without there being a National Roofing Contractors Association."

William Reed and Spence Royer, Young Sales, St. Louis

Roofing experts met in Chicago this spring to discuss key issues facing BUR today. This is a continuation (and conclusion) of a report in the July *Roofing Spec* on the forum.

BUR TODAY

The outlook for built-up roofing material supply, quality and continued use is good, said the panel of architects, owners, engineers, manufacturers and roofing contractors at a symposium on "Built-Up Roofing: The State of the Art."

Bill Cullen, formerly deputy director of the Office of Engineering Standards at the National Bureau of Standards and now research associate with NRCA, moderated the symposium which covered all phases of built-up roofing. The day-long session was sponsored by the Roofing Systems Technical Committee, made up of representatives of the NRCA and the Asphalt Roofing Manufacturers Association.

Material quality, supply

Peter Nazaretian, built-up roofing product manager of the Roofing Products Division of Celotex Corporation, acknowledged there is question as far as the cost of transportation and the cost of converting raw materials, "but for the short and the immediate long run, there'll be plenty of roofing products available in the marketplace," he said.

He pointed out that 12 new conventional roofing facilities have been built in this country in the last 18 months. "That's an indication to me that many companies have made the commitment and believe that the market is going to continue to grow," Nazaretian said.

But what about the quality of the asphalt? Moderator Cullen, noting that this is one of the more important areas of concern, questioned the panel members, asking them to compare the quality of today with that used in the past.

Denver roofing contractor Bill Kugler suggested that the quality is different. He said, "We are finding more coking with asphalt than ever before and that would be the ash residue at the bottom of a heating unit."

Some of this may be due to the method of heating, Kugler said, and some may be due to the basic content within the crude asphalt.

Kugler's personal judgment is that the waterproofing characteristics of asphalt has not changed.

He pointed to the efforts of NRCA in educating the contractor to use the lowest softening point asphalt possible—less oxidized asphalt—commensurate with the slope of the roof and the location of the building.

This move to use lower softening point asphalt just during the last five years has been a major contribution to the improvement of roofs, Kugler said.

He also gave credit to Asphalt Roofing Manufacturers Association for the extensive research it is doing into the characteristics of the various crudes they are blending to make the product known as mopping asphalt.

Following up on Kugler's comment, Nazaretian added that ARMA is also looking at the coal tar pitch.

"From all indications, coal tar pitch and asphalt may be different, but they have not been found to be of lower quality," Nazaretian said.

He also pointed out that efforts are underway "to economize or save this energy source anywhere we can while still yielding a good roof."

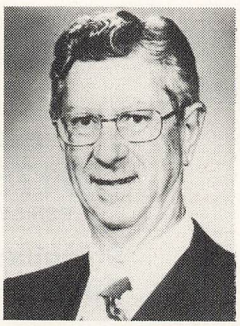
John Hopkins of Trumbull Asphalt said it's his opinion that "asphalt is at least as good as it

used to be and very frequently better.

"There is no way that all asphalts can be consistently the same . . . when Mother Nature created crude oil, she never used the same recipe twice so how can all fluxes and how can all finished products derived from those fluxes be the same?"

Hopkins cited a 1979 report by V. P. Puzinauskas of the Asphalt Institute which found, after extensive tests on asphalt, that the quality is equal to or frequently better than the past.

"Now, conversely, there's no doubt that there is a lot of built-up roofing asphalt on the market today, which for better or worse,



Bill Cullen

is of a reduced quality in my opinion," Hopkins said, "but this is something which is not a new phenomenon. This has been going on for many, many years."

As to the future, Hopkins said, "there's no reason to suspect that the condition is going to change except, I think, for the better because consumer demands will almost assure the winnowing out, if you will, of the good product."

Comparison to European Asphalt

Noting that some people have expressed the opinion that some of the European asphalt technology is superior to American technology, moderator Cullen asked for comments.

Hopkins suggested, "It's early in the game to come to any real conclusions." However, his opinion is that the European asphalts are really not much different from the domestic materials. The only real difference he can see so far is in the type IV where the penetration seems to be slightly higher than the typical United States penetration.

Roofing contractor Mel Kruger, who is a member of RSTC, said "definitive results" are expected by fall on research being conducted on European asphalts.

Commenting further on overall testing being done by ARMA, Cullen outlined three objectives of the research program:

1. Identify sources of asphalt or at least changes in sources of asphalt.
2. Determine some kind of method to determine the durability of a specific asphalt.
3. Determine what additives will make the current asphalts even better.

Continuing with comments on the quality of asphalt, Don Burris of CertainTeed Corp. said the concern over the quality of asphalt started with the oil embargo of 1974.

"I think the upset in the distribution is what caused the concern," said Burris. "A person who used to get mid-continent crudes that he's had all his life and is now getting Venezuelan crudes finds it's different—that doesn't mean it's not as good."

The important point, suggested Burris, is: All of the people who handle and process different and mixed crudes have to adjust to that fact. The mixing of crudes is where the real problem lies.

Picking up on that comment, Hopkins said the difference found in today's asphalts heightens the need for the EVT concept. With today's wide disparity of crude sources and blends, it is no longer safe to assume that all materials will have the same or similar softening points or flash points.

Other Changes

As to the quality of other roofing materials, the moderator pointed out there have been changes in the aggregates and in thermal insulations used as the base for roofing.

David Richards of Owens-Corning Fiberglas Corp. added that there has been a change to glass fiber felt. He said, "I think not only the change to glass but the change in the ASTM standards (D2178) and the type felt that they're complying with is certainly a big change in the glass felt

Bill Kugler

product."

Years ago, explained Richards, type I was the commonly used material. Type I, from a strength standpoint, was the lowest strength material.

Richards continued, "We went from type I to what they call type III, which was a set up—almost 50 percent more than type I. That became basically the standard in the glass industry."

More recently (1978), type IV became common so that today most manufacturers in the glass felt area are producing products to type IV.

As to aggregates, roofing contractor Mel Kruger said, "It's no secret that the supply of aggregate in certain parts of the country can be very different—thus driving up the cost of the finished product—many times unnecessarily so."

Kruger commented on the limitations of ASTM specifications with regard to moisture as well as sizing for aggregates and noted that research has indicated that some of these restrictions are neither practical nor necessary to produce a satisfactory product.

He said RSTC would be releasing a statement shortly saying that certain moisture characteristics will be acceptable as well as making recommendations on sizing characeristics and type of aggregate for the roofing industry.

Insulation

Switching to the subject of insulation, Cullen asked: How effective are composite roof insu-

Mel Kruger

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(See Federal Register dated November 14, 1980.)

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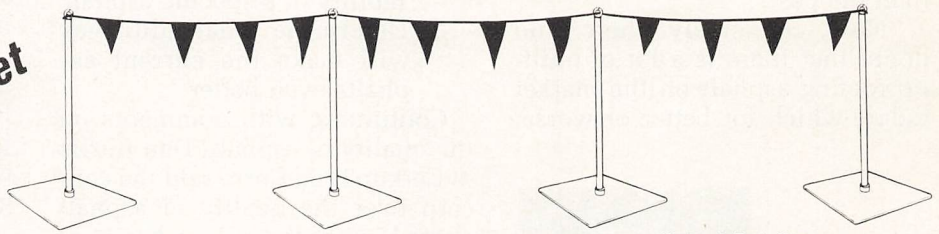

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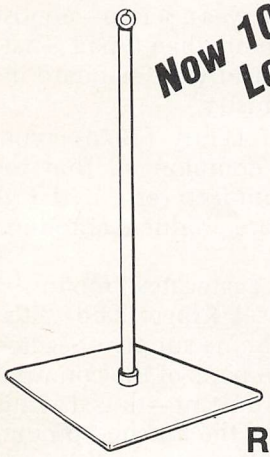

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RULES FOR OSHA STANDARD ON ROOF WARNING LINES

Taken from: Federal Register Vol. 45, No. 222, Dated Nov. 14, 1980, Page 75618.

"The system is not intended to serve as a positive restraint, but only as a warning system."

Warning lines may be used only on low pitched roofs with a height of greater than 16 feet. Warning lines shall be erected and maintained as provided in this standard.

Warning lines shall be erected around all sides of the work area and at access paths to work and materials storage areas. Warning lines are NOT to be used at roof edge materials handling areas.

When mechanical equipment is not being used, the warning line shall be erected not less than six feet from the roof edge.

When mechanical equipment is being used, the warning line shall be erected not less than ten feet from the roof edge perpendicular to the direction of equipment operation and six feet from the roof edge which is parallel to the direction of equipment operation.

OSHA REQUIREMENT	HILTS TESTED
16 lb. test at 30" on stanchion before tipping over.	19-20 lbs. before tipping over.
Flags or pennants to be 34"-39" from roof surface.	37"-39" from roof surface on stanchion (do not allow pennant to sag below 34")
Flag or pennant line shall have a tensile strength of 500 lbs.	Pennant line test 550 lbs.
Warning line shall be flagged at not more than 6 foot intervals.	Pennants every 13 inches.

The above is only a very brief outline of the published law and should not be the sole criteria for using or not using a warning line system.

It is suggested that you obtain a copy of the Federal Register mentioned above so that you can get the FULL scope of what is required by OSHA.

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The roofing spec SUPPLEMENT
For Members Only
Vol 1, No. 6 Sept. 1981

Your Association

NRCA Restructures Committees

The NRCA is operating under a new committee structure. Announced officially at the association's mid-year meeting in July, the new structure makes use of operating committees and task forces as well as standing committees.

In explaining the new set-up, NRCA President Johnny Zamrzla pointed out the need to streamline the many committee activities.

New this year is the use of operating committees in the key areas of health, education and technical programing. The operating committees will review all NRCA programing in their respective areas, determine needs and establish priorities, and recommend the establishment of appropriate committees and task forces to meet those needs. The operating committees will also provide coordi-

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National Roofing Foundation

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Bill Kugler, Chairman

Political Action Committee

Elasto Plastic Certification Task Force
Charles Griffiths, Jr., Chairman

New Committee Structure

nation in an effort to eliminate duplication of work and to facilitate communication.

While standing committees will still function in a number of areas, task forces have been and will be established to concentrate on specific issues for specific lengths of time.

Although partially in response to budget restraints, the reduction in the number of committees does not mean the elimination of programs, Zamrzla said. He is optimistic that the use of operating committees and task forces will facilitate the association's dealing with "hot" topics.

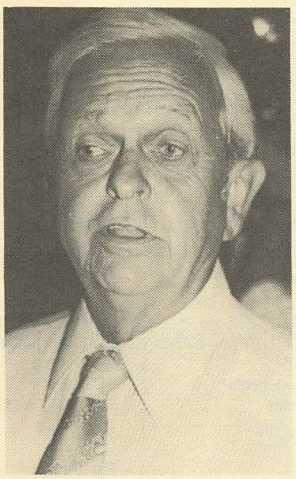
Among the task forces already established and which met at the mid-year meeting are contractor's certification, insulation tax credit and elasto/plastic certification. The Contractor's Certification Task Force, headed by Michael Beldon, is studying the feasibility of establishing a national certification program for roofing contractors. At its meeting, the task force agreed to cautiously pursue the program. Well aware of the difficulties involved, Beldon called on all directors to write to him about what problems they see with certification.

The Elasto/Plastic Certification Task Force, headed by Charles Griffiths Jr. continues the work started under the leadership of NRCA's immediate past president William Kugler. The thrust of the program was outlined to NRCA members in January and again at the convention in February. The first phase of the program is expected to be operational by early next year. It calls for the selection of criteria against which manufacturers can certify that their products meet the criteria. An independent board will be set up to monitor this.

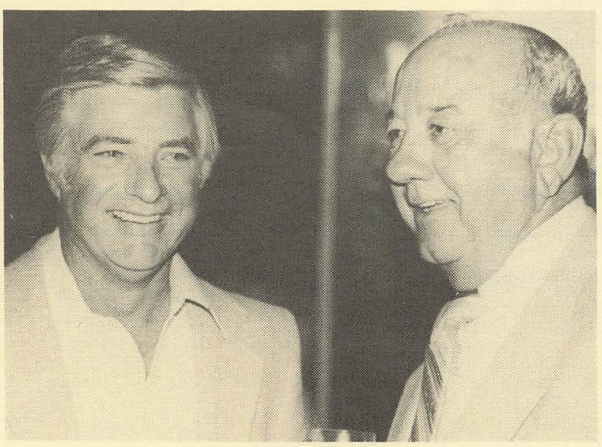
In connection with the association's Government Relations Committee, the Insulation Tax Credit Force, headed by Dick Baxter, is looking into introducing federal legislation which will offer tax incentives for the use of commercial/industrial roof insulation.

The accompanying chart on page one of the Membership Supplement outlines the new NRCA committee structure as established at the NRCA Mid-Year Meeting in Chicago.

Right—Country Harrison makes a point at the NRCA Mid-Year meeting held in Chicago this July.



Below—Presidents Present and Past, Johnny Zamrzla and Charley Raymond share a light moment at the luncheon break during the Mid-Year Convention held at Chicago's Continental Plaza.



Five Teams Kick-off NRCA Superbowl Contest

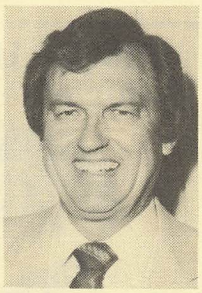
The National Roofing Contractors Association kicked off a membership recruitment contest at the mid-year meeting, July 18, that sends winners to the 1983 Superbowl in Pasadena, Calif.

The NRCA "Superbowl Game" involves five teams representing different regions. They score points by recruiting new members.

NRCA Membership Committee Chairman Mike Promen appointed seven captains chosen from the 2000 Club roll. (The 2000 Club is open to NRCA members who recruit at least five members within a year's time.)

Captain Gaylord Blue West Team Sunnyvale, Calif.

Each team has a budget of $1,500; every time a team recruits 50 new members, an additional $1,000 is added to its budget. Teams must hold local "huddles" with prospective



Captain John Carruth South Team Miami

members and show the NRCA membership film. A team's budget is spent mostly for these local huddles. The remaining money will be used for one day of marathon phone calling.

Captain Steve Krupnik East Team Glen Burnie, Md.

Teams must play by the rules established by player representative Promen. Game commissioner is Bill Good, NRCA general manager. He will officiate the team's play.

The teams will be putting together their best offense in hope of scoring touchdowns, extra points, field goals and bonus points.

A touchdown (six points) is scored by bringing in a new member. If the member pays his dues within 30 days, the team will get the extra point (one point). A field goal (worth an additional three points) is scored if the member is recruited through the local huddle. Also, if the member is a foam contractor, solar contractor or a member who has recently resigned, three points are awarded.

Teams may add "free agents" to their roster, and if the free agent joins the 2000 Club, the team will receive 10 bonus points. (These free agents, like anyone else, can join the 2000 Club only after they recruit five new members).

The team will get the two-minute warning at the beginning of the NRCA convention in Los Angeles, March 2. The game will then end at the Awards Luncheon on March 5.

At the Awards Luncheon, all teams with at least 500 points plus an average of 35 points for each free agent

continued, next page

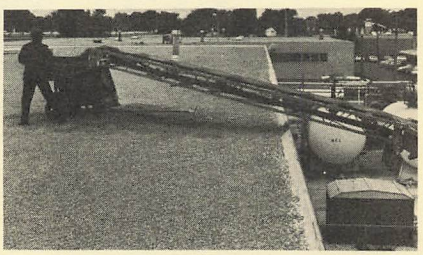
MORGEN Roofers Conveyor pays for itself in less than 6 months!

Beldon Roofing, San Antonio, TX, reports they have been able to reduce labor costs significantly by using Morgen Roofers Conveyors. Mike Beidon says his second conveyor paid for itself in less than six months.

Beldon feels the big dangers in working on roofs are reduced by the conveyor. The 18-foot articulating boom keeps men well away from the edge of the roof.

Since eliminating the hoist, Beldon has seen a significant reduction in back injuries. The work is not as tiring, and therefore workers are not as injury prone. Beldon expects the average length of employment to be lengthened by using the conveyor.

When asked how much gravel the conveyor could put up in an hour, Mike Beldon laughed and said "if we ever opened it up, we couldn't possibly use all the gravel that conveyor could move in one hour."



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Superbowl

will receive Superbowl rings. The team with the most points will win a trip to the 1983 Superbowl. However, each member of the winning team must have at least five new members in order to attend the Superbowl. The

Captain Stan Gerson Dixie Team Macon, Ga.

Captain Larry Carlson Midwest Team Rockford, Ill.

winning prize includes two nights of lodging, meals and game tickets. Also, winners will receive special seating at the NRCA banquet.

lation products such as urethane in combination with fiberglass or polyurethane and its use in built-up roofing?

Representing the insulation manufacturers, Ron Scott of Johns-Manville suggested Cullen's question brings up another question: How is the industry addressing the thermal-aging properties of these insulations as they pertain to built-up roofing systems?

He said, "Most of us know that the composite urethane roof insulation or their thickness in a given roofing situation is going to provide the most thermally efficient product that is on the market right now."

"Where we are really in the dark is what happens on the roofing system. To date, we have not had the mathematical models needed nor the technological equipment needed to measure the actual effectiveness of these products in the roofing system," Scott said.

Research is in the works for this, Scott added.

Continuing in the discussion on insulation, Cullen asked about the blistering phenomenon, its causes and solutions.

Hopkins of Trumbull Asphalt noted, "From an asphalt point of view, blisters can only be created by moisture in the asphalt itself."

Speaking from an insulator manufacturer's viewpoint, Scott said, "The bubbling and frothing, foaming, frying that we see above the insulation during the time of hot asphalt application we do not call blistering because blistering does not always result.

"When we speak of blistering, we speak of an involved separation occuring as the life cycle of the roof progresses."

Celotex's Nazaretian commented that whether or not the frothing, frying or "whatever you wish to call it" causes blistering in the finished membrane is something yet to be determined. "But the problem still exists, and there are remedies that can be used. There are tradeoffs in using this highly efficient foam insulation."

Design Problems

Another problem area that Cullen questioned the panel about was design.

John Robinson, a consulting engineer from Kansas City, Mo., brought up the problem caused by roof-mounted equipment.

"The next problem," said Robinson, "is making sure we can get enough slope and adequate draining, including overflow drains, above and beyond normal drain level."

The final problem, according to his perspective, is designing a really good system for construction traffic.

Looking at it from a broader perspective, South Bend, Ind., roofing contractor Bill Steinmetz pointed to the importance of considering the roof as a total system.

"Good design in the office can and will go down the drain in the field if there's not thought given to what is required, who is responsible and how will it be accomplished," he said.

Specifically, Steinmetz mentioned the need for good details, decks that are structurally sound and installed true and in alignment, and consideration for the construction equipment that has

continued on page 48

PVC

An expert examines polyvinyl chloride polymers and its role in the roofing industry.

by Stanley Warshaw
president, Sarnafil

Polyvinyl Chloride (PVC) polymers, originally produced in Germany almost 30 years ago, are among the most versatile of thermoplastics for industrial and commercial applications. They are produced by polymerization of vinyl chloride monomer, a gaseous product resulting from the reaction of ethylene (a petroleum-derived feed stock common to many basic synthetic materials) with oxygen and hydrochloric acid.

In its most basic form, the resin is a relatively hard substance which requires the addition of other compounds (commonly plasticizers and stabilizers as well as certain other ingredients) to produce the desired physical properties for its end use. For example, PVC compounds are used for automotive upholstery fabrics, wall coverings, exterior siding, housewares, electric cable jacketing, electrical tapes, cushioning materials and coatings. While all originate from the basic polyvinyl chloride polymer, each uses a different grade of PVC, different plasticizer and stabilizer combinations, fungicides, etc., to meet the necessary requirements of the finished product. The basic formulations are common knowledge in the plastics industry and the state of the art is fully developed. Very large quantities of these resins are produced annually in those industrialized countries with highly developed petrochemical industries.

It is not unusual, therefore, that such a commonly available raw material would be considered for a large volume use such as roofing. If 2.5 billion square feet of roofing for the United States is accepted as a reasonable estimate, then the conventional bituminous roofing market accounts for 6 million tons of product yearly. With single-ply membranes weighing approximately 50 pounds per roofing square, the potential for raw material sales for elastomeric roofing membrane products annually in the United States alone would be over 500,000 tons—an attractive market.

Obviously, to gain acceptance in such a marketplace, a product must have appropriate physical characteristics; and in order to replace, in any significant way, conventional materials, this product must excel in areas where the tried-and-true materials were deficient or at best marginal. The following is a partial list of desirable physical properties critical to a roofing membrane which polyvinyl resins, when properly compounded, are capable of imparting, and which its manufacturers believe to be superior to the properties of other membrane materials, conventional or otherwise.

- Suitably reinforced membranes of light-reflective polyvinyl chloride are available with low coefficient of thermal expansion. The ideal factor would be that which closely approximates the thermal movement of the surface to which it was most commonly attached. Glass mat reinforced PVC membranes have a coefficient of thermal expansion near enough to that of concrete, steel and wood, the most common structural building components, to respond to thermal changes of the substrate without induced shear stresses in the plane of attachment. These membranes also exhibit high dimensional stability without the shrinkage which has plagued earlier PVC roofing membranes. Membranes using polyester mat reinforcement have slightly higher coefficients of thermal expansion than those with glass mat. These are available for applications requiring high tensile strength such as those in which fasteners puncture the membrane to mechanically attach it to the substrate. Polyester reinforced systems are best suited to higher than normal wind conditions such as on roofs of highrise buildings or those located in high wind zones.

- The fire resistance of properly compounded PVC membranes is sufficient to pass both Factory Mutual and Underwriters Laboratories test procedures. In some cases, even fully exposed membrane systems available from certain manufacturers meet Class I and Class A construction requirements.

- PVC membranes are available (in the original and still current formulation) which have already provided up to 20 years of service life as exposed roofing without severe embrittlement or significant loss of plasticizer. Such products also have shown resistance to bacterial growth, industrial chemical atmospheres, root penetration and extreme weather conditions in locations ranging from polar regions to equatorial deserts.

- Water vapor permeability is a material physical constant of PVC which is higher by as much as 50 times that of other roofing materials. This attribute should be cited with caution, since moisture vapor transmission through any roofing membrane is dependent on many factors. At the least it can be said that moisture vapor can pass more easily through a PVC membrane under certain temperature and relative humidity conditions inside and outside of the structure than through membranes with lower water vapor permeability rates. The importance of this feature lies in the preservation of the insulating value of the increasingly more costly insulation and becomes most critical when one considers the life-cycle cost (including energy efficiency) of a roofing system.
- Repairability of any membrane is important, and certain PVC membranes have been available for a long enough time to show conclusively that, in practice, new material (new flashing for an additional penetration at a later time, for example) can be welded to an old PVC membrane with strength equal to that originally provided.
- Undoubtedly there are many other characteristics which could be added to this list, but probably none is more important than the manufacturer's thorough understanding of the theories of building dynamics and construction technology. Only then can effective installation techniques and procedures be developed and put to use.

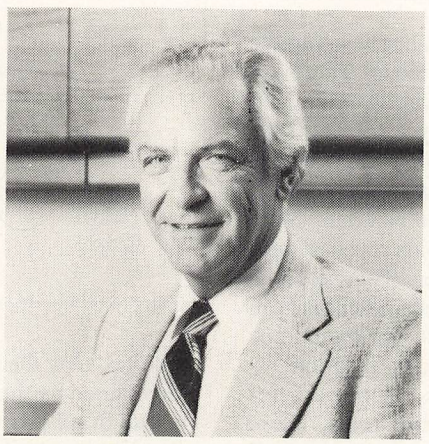
In addition to physical properties which are more attractive than other synthetic roofing membrane materials, the economics of material cost, installation, life expectancy, repairability and design must also be considered. It is interesting to note that many single-ply roofing systems have their origins in Europe. The reasons are primarily economic, although there are technological reasons as well.

All roofing membranes are petroleum based and are thus affected by energy costs which throughout the free world have, always been higher than in the United States. This is because of our reluctance to deregulate energy prices. Thus, the cost differential between the bituminous roofing components (which rely heavily on petroleum prices, availability and quality) and the synthetic elastomeric and polymeric components narrowed at a faster rate in Europe than in the United States.

In many cases, in Europe the installed cost of bituminous roofs is higher than PVC roofs. This is particularly true in Switzerland, Austria, Scandinavia and parts of Germany and other countries where bitumens are costlier because of lack of availability, transport and handling costs. Installation labor costs are also much higher on an hourly rate basis and, in many geographical areas, contractors are in much less competitive situations than in the United States. In addition, building construction is more closely regulated by codes, custom and desire for quality with the willingness to pay for it.

Thus, it was not coincidental that there was a strong effort to find alternative roofing systems. PVC sheeting received early attention because the manufacture of PVC sheet products was already well established as a precision industry and because of the relatively low cost per pound of PVC compared with other resins which could be processed on existing equipment. Higher cost resins had to be adulterated by fillers or laminated heavily with fabrics to produce the minimum thicknesses mandated by European government standard-setting agencies in order to minimize mechanical damage during construction. The resulting physical properties were not always satisfactory and many of these products were abandoned or exported to locations where there were no standards.

Synthetic rubber systems were not as extensively developed in Europe because of the high cost of elastomers and lower availability of production equipment. Contrast the size of the rubber-processing industry based on automobile tire production in the United States with that in Europe, and it is obvious why this current over-productive capacity is being used to produce rubber roofing. In the resulting product many of the desirable physical properties



Sarnafil President Stanley W. Warshaw has been with the company since 1975. He received both his bachelor's and master's degree in mechanical engineering from the Massachusetts Institute of Technology.

Warshaw is a member of the Massachusetts Foreign Business Council, the Construction Specifications Institute and the ASTM subcommittee on Standards for PVC Membranes.

cited above are sacrificed. Further, manufacturers who have production capabilities may not have the technical expertise needed to design and engineer roofing systems.

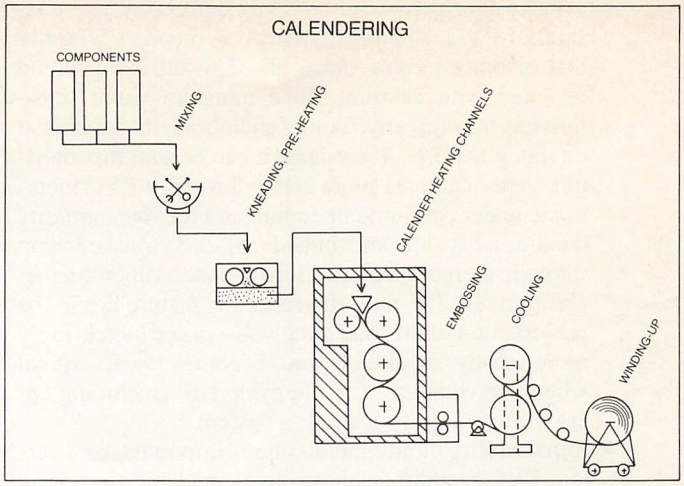
Over the years three basic methods for the production of flexible PVC sheet materials have been developed: calendering, extruding and coating. In addition, there are three basic types of PVC sheets: non-reinforced PVC sheets, PVC sheets with integral carrier and PVC sheets with reinforcement. The distinction between an integral carrier and a reinforcement shows in the physical properties of elongation and/or tensile strength.

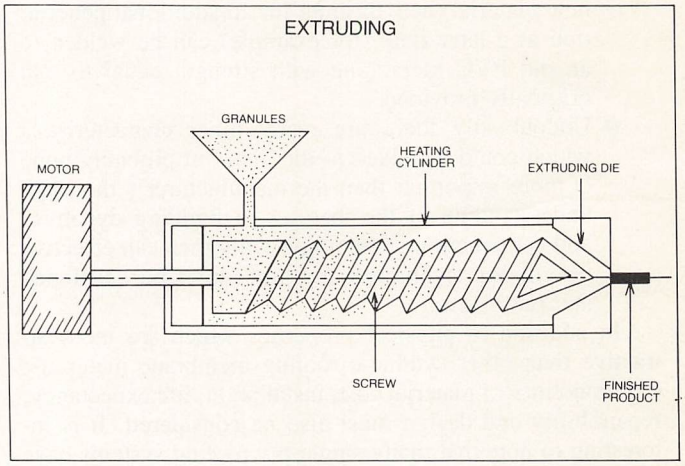
For PVC sheets with integral carrier, these properties are determined by the PVC compounds themselves, and for reinforced sheets they are determined by the reinforcing material. An example of a carrier is non-woven fiberglass, while that of a reinforcement is a polyester fabric. The method of manufacture is usually determined by establishing the type of membrane to be produced. Having only certain types of production equipment available limits the choice of membrane type which can be made. Thus, generally non-reinforced membranes are produced by calendering or extruding; subsequent laminating processes can convert these non-reinforced membranes to reinforced, but careful techniques are required to prevent delamination under conditions of use such as in roofing membranes subject to ponding water. Reinforced membranes are produced by coating or calendering; carrier membranes are produced by coating.

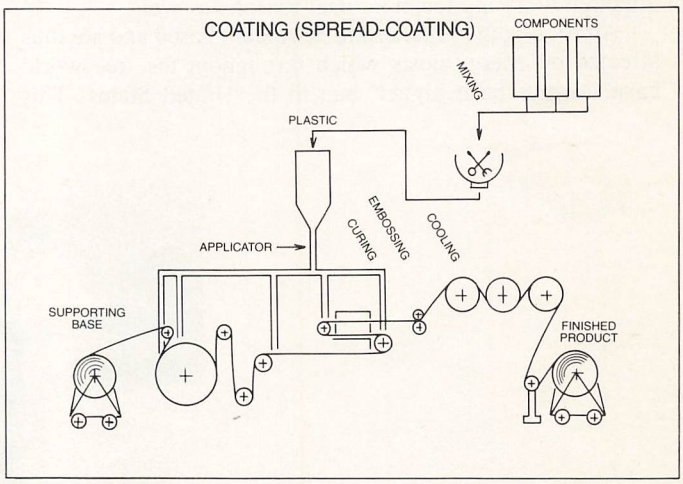
Without going into great detail, these three processes can be seen from the accompanying schematic diagrams. In simplest form the calender is similar to the squeeze rolls of a washing machine (more sophisticatedly, a steel rolling mill) while the extruder is like a sausage or spaghetti maker (polyethylene bag producer). Coating equipment (most similar to fine coated paper production equipment) impregnates the carrier with liquid plastisol which is later fused in an oven to a flexible solid state. Each process has advantages and disadvantages, but with proper compounding and quality control, all or nearly all of the previously listed desirable qualities can be obtained. Each manufacturer must decide on the relative importance of each of these qualities, since they affect the cost and consequent selling price as well as the product's life expectancy.

A discussion of PVC membranes would not be complete without mentioning joining or sealing methods. There are two principal systems currently in use: solvent welding and hot-air welding. The first involves inserting a solvent (usually THF [Tetrahydrofuran] in a liquid or a paste of the membrane compound) between overlapping sheets which are then weighted down for a period of up to 24 hours. Such welds are then checked for integrity and voids repaired and, finally, sealed with PVC paste joint sealer. This sealer is especially important when using reinforced membranes in order to prevent the wicking of water into the membrane which can later produce blistering and/or delamination.

The second method of bonding seams, by hot air, requires the use of electrically powered welding tools. These are available in a hand model for intricate detail work and as self-propelled automatic machines capable of welding at speeds of up to 15 ft./min. in the field of the roof. The use of hot-air welding equipment eliminates the risks associated with the solvent, both to material and personnel, and for membranes incorporating an integral carrier, eliminates the need for the sealant. Close control over the degree and constancy of the temperature of fusion (approximately 800°F), as well as the capability for accurate adjustment,







requires that the equipment be well engineered, and well maintained by the operating personnel. Needless to say, this is true of all processes, procedures and equipment in every construction trade. An understanding and respect for his equipment is demanded of any apprentice or journeyman in all crafts.

There are three principal systems of application for PVC roofing membranes, and they are not necessarily different from those offered by manufacturers of other generic types of single-ply systems. Each manufacturer, however, has developed installation methods and specific details for design according to the requirements of the particular type of

product, means of manufacture and his perception of the demands of a roofing assembly.

The most common system is that in which all of the elements, vapor retarder, insulation and membrane, are loosely laid in succession, joined at the seams, perimeter and penetrations and then ballasted with 10 to 12 pounds per square foot of gravel or other ballast. An alternative version provides protection for the membrane by placing it beneath the insulation or by dividing the insulation component so that one-third lies below the membrane with two-thirds above, thus reducing flotation and energy loss problems. If a completely wind-tight edge condition can be produced, it is theoretically possible to reduce the ballast load requirement by significant factors. The loosely laid system has the chief benefit of being relatively independent of structural and thermal movements. Its major disadvantage is the difficulty of locating accidental punctures and in some geographical areas the lack of availability of suitable gravel ballast.

The second most common method of installation is the mechanically fastened system. This is offered in two major forms. The first utilizes mechanically fastened insulation boards over a suitable vapor retarder. The roofing membrane is fully adhered to the insulation or spot-adhered to mechanically fastened discs cut from the membrane material. When the membrane is fully adhered to mechanically fastened insulation, a wind-tight edge construction must be designed and carefully installed so that the membrane is not subjected to peel forces due to wind overpressure. The concept of an anti-peel bar or equivalent design of fascia detail is useful in this situation as is the use of a vapor retarder.

The vapor retarder in this case serves not only to protect the insulation and its R-value from the effect of accumulated, annual-residual moisture in certain climatic areas, but also serves as a wind-seal or overpressure barrier which is especially critical over air-permeable deck constructions. The second type of mechanically fastened systems involves metal strips or structural bars which are secured by fasteners through the membrane and insulation. These are then made watertight by an overlap joint of the main membrane or by a separate strip of membrane material. PVC materials offered for such designs must possess long-term resistance to weathering and retention over the life expectancy of the membrane of those physical properties utilized in the design calculations: elongation, tensile strength, dimensional stability, seam strength, etc. PVC compounds that have experienced more than 10 years of exposure to actual conditions have been developed and show the following aging changes:

	As Manufactured	10 Years Exposure
Elongation at Break (%)	19	18
Tensile Strength (N/1 cm)	330	365

This particular membrane is reinforced with a woven polyester fabric. Similar non-reinforced materials would exhibit significantly greater changes of mechanical properties and, therefore, are not suited for the long term. Design parameters for consideration in properly specifying a mechanically fastened system include: wind uplift forces determined by building size and shape, geographical location (wind zones) and terrain; rupture strength of materials and seams; pull-out strength (and pull-through resistance) of fasteners and substrate; and stiffness of the mechanical construction. These systems offer excellent engineering solutions and minimum materials handling and minimum safety hazards when used with lightly-structured buildings or buildings in severe wind storm areas.

The third most common application is the fully adhered system in which the membrane is totally bonded with adhesive to the substrate. This is applicable only to solid substrates such as cast-in-place or pre-cast concrete, plywood or dimensionally stable and compatible insulation board over steel decks designed for minimal deflections. The entire roof assembly must be adhered with this system: vapor retarder to substrate, insulation and membrane respectively adhered in sequence. No gravel ballast or mechanical fastening is required, the latter being of special interest in situations where penetration of a cold-bridging element into an area of high humidity may result in development of condensation during cold weather.

Selection of the insulation material for fully adhered applications requires special care. Materials with the lowest possible coefficient of thermal expansion—less than 0.02 mm/m°C—should be used. The insulation should also have adequate initial interlaminar strength to withstand wind uplift pressures of at least 60 psf and should hold this ability throughout its life expectancy. An adhesive peel resistance of 0.1 Kg/cm^2 is considered a minimum requirement as well. There are fully adhered PVC membrane and adhesive systems that currently meet Factory Mutual I-90 requirements and have a history of over 15 years in service.

All of the above described PVC membranes and systems have been designed for maximum serviceability. There are manufacturers who can show the long-term results of their engineering, both manufacturing and installation, to anyone interested in direct and personal observation. However, none of this would have been possible without instruction

and training of contractor supervisory and application personnel. Some manufacturers offer introductory short training courses, field inspection and instruction, and follow-up advanced and quality control instruction, without which good cost control and satisfactory workmanship would be lacking. There are enough differences in materials from different suppliers to warrant special procedures and methods for each material.

The role of the owner or his agent, the architect/specifier, cannot be omitted from this discussion. From him must come the demand for the quality of materials suited to the application and for proper training of the installers. The offer and issuance of a warranty does not physically protect the property on which the roof is installed. Only through an understanding of the function of the roofing membrane, a willingness to investigate various alternatives and a decision based on life-cycle considerations rather than the initial cost of this major component of the structure, will an improvement in the state of the art be assured.

The RIEI, Roofing Industry Education Institute, offers a step in the right direction in opening its activities to all: manufacturer, contractor, owner.

Another important step toward proper design for PVC, as well as other roofing systems, should be the development of performance criteria and standards and their wide dissemination to owners, as well as specifiers, throughout the industry. In Germany these concepts are described as "Bauphysic," literally building physics or, perhaps more descriptively, building dynamics. They relate to the influences on building design of all climatic effects, both internal and external, on the structure. In our reference frame, applied to the roof, it would include the dynamics of thermal change, moisture diffusion, structural movements from winds, live loads, phenomena such as hail, etc. There are presently several different agencies in the United States which are attempting to create such standards. With the support of our industry, they would have a broader base of information from which to develop a single common standard.

In summation, the preceding has described the various systems generally available in the United States utilizing the thermoplastic resin, PVC. However, caution is urged in the choice of products and systems both to the roofing contractor, as well as the specifier, be he owner or architect/engineer. He must be sure to choose a proven material with a substantial history of use under actual condition from a supplier who has a dedicated interest in the dynamics of building construction and who has the capability to transmit the requisite application techniques to field personnel. Only then can he get the full value of the materials installed over the roof deck.

New products, ideas, publications

New Mopper Available

A 55 gallon capacity insulation mopper, named the MAXI-MOP, has been introduced by Mechanization Systems Company Inc., Laguna Hills, Calif.

One lever activates a rotary valve to dispense a 48-inch wide flow pattern that is in constant view of the operator.

The MAXI-MOP is of all aluminum construction and weighs 115 pounds. It is available through major equipment distributors in the U.S. and Canada.

Guide Assists in Insulation Decisions

Thermal Insulation Handbook: A Practical Guide for Engineers, Contractors, Architects, and Plant Managers covers the principles and the applications of insulation.

Showing how to solve a wide variety of insulation problems in all engineering and construction areas, this handbook offers detailed information on proper insulation in any facility where energy conservation and precise temperature control are required. It includes examples that demonstrate how insulation principles are applied in buildings and to equipment, pipes and lines.

This handbook also provides a guide for evaluating the requirements of specific situations and for selecting materials with the requisite properties. They include precalculated tables that allow access to data and the physical and thermal properties of most available insulation materials.

The book, by William C. Turner and John F. Malloy, was published by McGraw-Hill. Cost is $59.50.

SPI Guidelines

A revised bulletin, "Model Code Provisions Pertaining to Rigid Foam Plastics Insulation," has been issued by the Plastics in Construction Council in cooperation with the Polyurethane and Expanded Polystyrene divisions of The Society of the Plastics Industry, Inc. (SPI).

Stephan E. Klamke, Plastics in Construction Council, said the bulletin includes the changes in the three major model code provisions since the last bulletin was issued in 1977.

The bulletin, PICC-402, is available for $2 per copy from the Literature Department of SPI, 355 Lexington Avenue, New York, N.Y., 10017.

J-M Offers 30-page Book on Asbestos

Complete details on asbestos, ranging from composition and properties to mining, milling and applications, are provided in a new 30-page brochure from Johns-Manville.

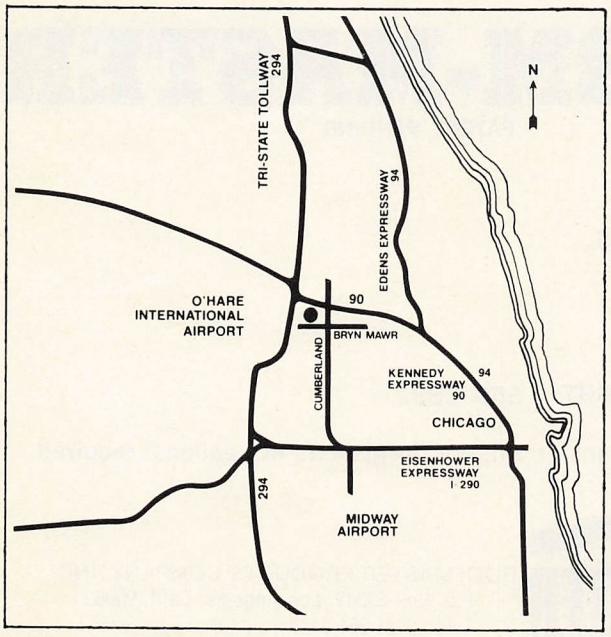
Data on the mineral are arranged in

continued on page 43

NRCA Relocates Headquarters

After months of planning, NRCA has moved its offices to the new Sperry-Univac Plaza, located only five minutes from O'Hare International Airport.

Our new location will make traveling to and from the airport much easier, and will allow more time for your business needs when you visit us in Chicago.



Affiliate News

New RIEI Seminar

The Roofing Industry Educational Institute will hold a two-day seminar on Elasto-Plastic roofing which will include sessions on modified bituminous systems, elastomeric systems and plastic materials.

The course will help students recognize each of the three groups of materials, and discusses the test procedures for each material and the significance of test results. This seminar will also help students better understand the terminology for Elasto-Plastic systems, most of which is new to the roofing industry.

The course will introduce the new application techniques for each material as well as the cautions for each system.

The RIEI seminar will address how each of the new systems handles the problems of moisture condensation, heat flow, fire and wind.

The first seminar will be held in Denver, Nov. 19–20. Persons wishing to attend should contract RIEI, 6851 S. Holly Circle, suite 250, Englewood, Colo., 80112.

Mid-Atlantic Convenes

Several NRCA directors participated at the First Annual Spring Convention of the Mid-Atlantic Association of Roofing Contractors, held May 29 and 30 in Arlington, Va.

John D. Van Wagoner of Prospect Industries Inc., McLean, Va., addressed the group with a talk on elasto-plastics. Van Wagoner also participated in a panel discussion with NRCA member Paul J. Eyerman, Nanticoke, Pa. and NRCA Past President Melvin Kruger, Macon, Ga. The panel spoke on a wide range of topics, including BUR and single-ply roofing.

Moderating the panel talk was Marlin Potteiger, NRCA vice president.

Carolina Elections

The Carolinas Roofing and Sheet Metal Contractors Association has elected William F. Hamlin Jr. of Hamlin Roofing Co. Inc., Garner, N.C., to serve as president for 1982.

Elected as first vice president and second vice president are Richard Watts of Fort Roofing of Columbia, S.C., and William Rodger Waters of Waters Brothers Contractors Inc., Rocky Mount, N.C., respectively.

The new secretary-treasurer is Nathan Pridgen of Davis Roofing Company, Florence, S.C.

In other CRASMCA news, the 1981 recipient of the Gordon M. Waters Distinguished Service Award is William P. Baker Jr. of Raleigh, N.C.

The award is the highest honor bestowed by the association and is given for outstanding service to the roofing industry in the two Carolinas.

Baker has been active in the roofing industry and the association for 35 years.

ARCOM To Meet In Las Vegas

The Associated Roofing Contractors of Maryland Inc. will hold their annual convention in Las Vegas Nov. 5–9.

ARCOM members interesting in attending should contact ARCOM Representative Martha Coroneos at (301) 837-8877.

New Members

The following have been approved for NRCA membership between May 27 and July 27, 1981.

CONTRACTORS

- **Aegis Construction Corporation**
  2600 Virginia Ave.
  Watergate 2600 Northwest
  Washington, DC 20037
  Scott Stupny
- **ABCO Roofing & S/M Inc.**
  1642 South Broadway
  Dayton, OH 45408
  Richard P. Center
- **R. J. Bruno Roofing Inc.**
  144 Walgrove Ave.
  Dobbs Ferry, NY 10522
  Richard Bruno
- **Checker Construction Corp.**
  1570 Burnham Avenue
  Calumet City, IL 60409
  C. Michael
- **Colonial Roofing Co. Inc.**
  120-10 15 Avenue
  College Point, NY 11356
  Barney Macnick
- **Cyclone Roofing Company**
  P.O. Box 6114
  615 Fugate Avenue
  Charlotte, NC 28207
  Robert Wayne Cooke
- **H. L. Gainey Roofing Co. Inc.**
  2291 Garrison Road
  Sumter, SC 29150
  Harvey L. Gainey Jr.
- **Greer Roofing Inc.**
  P.O. Box 311
  127 East Poinsett Street
  Greer, SC 29651
  Richard C. Howell
- **Helmich & Husman Inc.**
  Olean Road
  Holland, NY 14080
  Emil Helmich
- **J & J Roofing Co.**
  P.O. Box 19551
  511 Industrial Blvd.
  Austin, TX 78760
  James McKinney
- **Kenner & Son Inc.**
  Rt. 2 Box 147-A
  Colbert, GA 30628
  Michael Kenner
- **Lough Bros. Roofing & Siding Co. Inc.**
  P.O. Box 776
  1101 Lafayette Avenue
  Terre Haute, IN 47808
  Phil Lough
- **Mahone Roofing & S/M Co. Inc.**
  P.O. Box 32069
  11523 Jones Maltsberger Road
  San Antonio, TX 78216
  Dennis Revell
- **McLean County Roofing & Waterproofing**
  P.O. Box 285
  South Bunn at Kenmore
  Bloomington, IL 61701
  David A. Riddle
- **Porter Specialties Inc.**
  P.O. Box 9241
  825 College Street
  Jackson, MS 39206
  Richard G. Porter
- **R & R Roofing & S/M Inc.**
  P.O. Box 308
  1540 South Third Street
  Ironton, OH 45680
  Richard Botkins
- **The Roof Doctor Inc.**
  1108 North State Road 7
  Hollywood, FL 33021
  Harold F. Timmis
- **Rooftech Inc.**
  105 Frank Street
  Jeffersonville, IN 47130
  Lewis W. Newlan
- **Sealtite Roofing & Construction**
  3520 West Broward Blvd.
  #212
  Fort Lauderdale, FL 33312
  Bruce S. Atkins

New Members

- **Silvercool Service Co.**
  1145 East Glen
  Castlerock, CO 80104
  Stephen L. Payne
- **Standard Roofing Company**
  10536 Mersington
  Kansas City, MO 64137
  Donald L. Watkins
- **Don H. Tinsley Co. Inc.**
  P.O. Box 9061
  4338 Edington Road
  Knoxville, TN 37920
  Don H. Tinsley
- **Val-Tex Roofing & Supply Inc.**
  P.O. Box 1866
  McAllen, TX 78501
  Mrs. Don Hofland

ASSOCIATES

- **ABC Staple Company Inc.**
  6921 Northwest 77th Terrace
  Medley, FL 33166
  William H. Camp
- **The Goodyear Tire & Rubber Co.**
  1144 East Market Street
  Akron, OH 44316
  R. J. Collins
- **Ludowici-Celadon Company**
  Div. of CSC Inc.
  4757 Tile Plant Road
  New Lexington, OH 43764
  E. E. Ryser
- **Morco Inc.**
  P.O. Box 5505
  119 South Trade Street
  Matthews, NC 28105
  R. J. Morin

INDUSTRIAL/INSTITUTIONAL

- **Belk Stores Services Inc.**
  308 East Fifth Street
  Charlotte, NC 28202
  William H. Shields
- **Harford County Public Schools**
  Admin. Asst.—Maintenance Dept.
  45 East Gordon Street
  Bel Air, MD 21014
  Walter W. Burlin
- **Winn-Dixie Stores Inc.**
  P.O. Box B
  Jacksonville, FL 32203
  Thomas P. Grimball

INTERNATIONAL

- **Consolidated International BV.**
  Industrieweg 7/P.O. Box 24
  4233 ZG Ameide
  The Netherlands
  P. R. J. Smits
- **Lexsuco Canada Limited**
  85 Vulcan Street
  Rexdale Ontario
  Canada M9W 1L4
  A. D. Fulford
- **Vedag Gmbh**
  Am Springborn 1
  P.O. Box 801108/Cologne
  Federal Rep. of Germany
  Dr. Hans-Joachim Deimann
- **Woodhull Roofing Limited**
  227 Church Road
  Birmingham
  England B25 8UR
  John M. Woodhull

seven sections. Each covers a specific subject: Origin, Properties and Location; Mining and Milling; Testing and Standards; Technical Service Research and Development; Packaging and Handling; Fiber Uses; and Health.

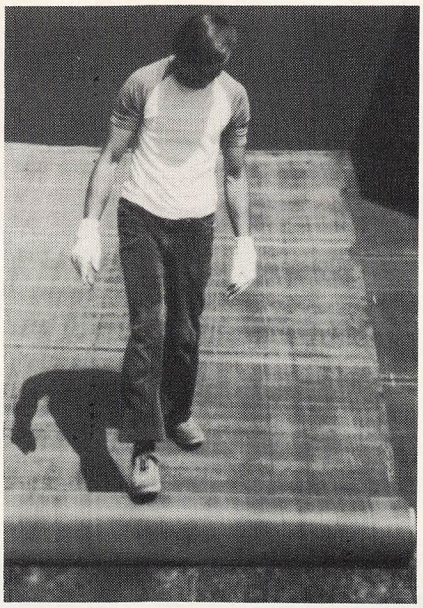
The brochure (AF-82A) is available from Johns-Manville Service Center, 1601 23rd Street, Denver, Co. 80216.

Celotex Re-enters Single-Ply Market

Celotex Roofing Products Division formally re-entered the one-ply roofing market in July with the introduction of an EPDM (ethylene propylene diene monomer) type roof membrane system.

Division President Sam E. Brasher announced the new Celo-1 System product line as "a logical addition to Celotex's commercial roofing products mix." At the same time, Brasher announced the appointment of Ted A. Nickelson, formerly marketing manager for a General Tire and Rubber Co. subsidiary, as product manager for the Celo-1 product line.

Celo-1, one-ply roof system



"We believe that EPDM roofing systems have a permanent position in the roofing market, and have developed a system that meets a high quality standard, facilitates application and reduces roofing costs," Brasher said.

The Celo-1 product line includes a 45-mil membrane for loose-laid ballasted application in standard widths of 10-feet, and 20-feet by 50-feet and 100-feet lengths, based on job requirements; 55-mil membrane for fully adhered, non-ballasted systems in a 10-feet standard width by 50-feet and 100-feet lengths, based on requirements; 50-feet long rolls of flashing sheet in various widths; and Thermax SP-1 Roof Insulation. Application products include RTR Adhesive for field splicing; Field Adhesive for cementing membrane flashing sheet to porous surfaces; Lap Caulking for back caulking field splices; Edge Sealant for caulking along flashing terminations and a Pourable Sealer for pitch pockets.

Celotex also offers a special caulking nozzle, patent pending, that facilitates field seaming. Applicator training materials also are offered including pocket-size visual guides. Approved contractor training seminars will be held to train applicators.

Celotex offeres a five year and renewable five-year service warranty on Celo-1 products when applied by an approved contractor.

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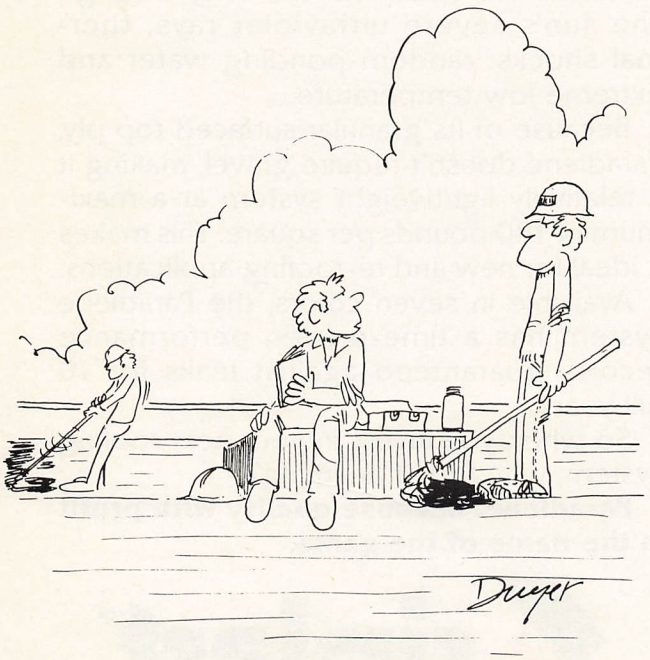

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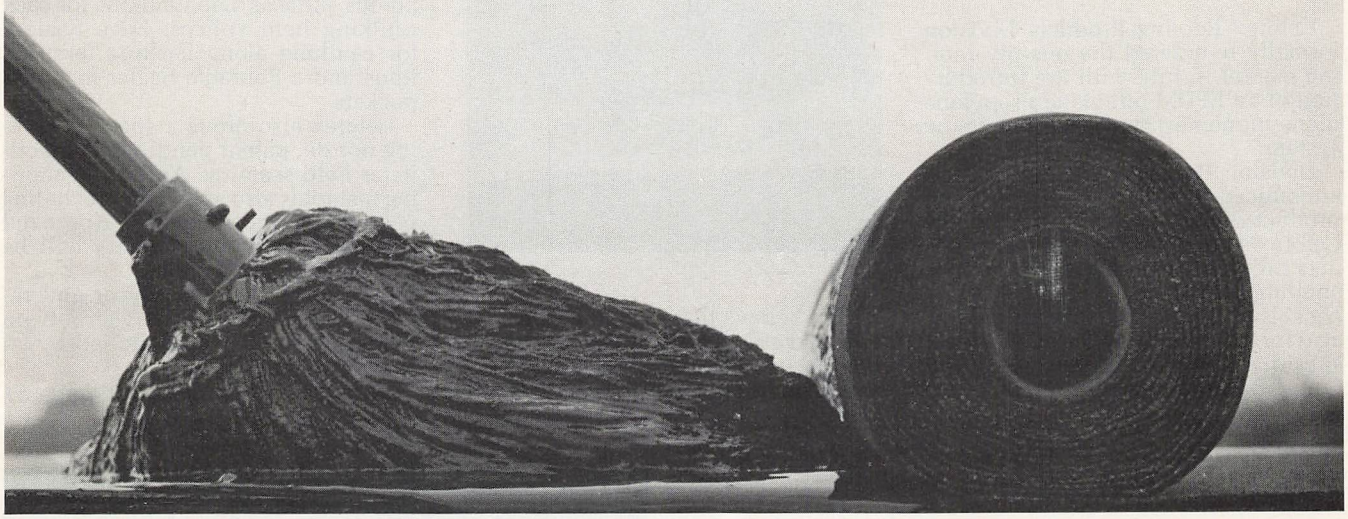
Shouldn't future profits consider past investments?



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NRCA's Single Ply Expedition

by Bill Cullen,
NRCA Research Associate

Since announcing plans for an elasto/plastic products certification program this past January, the NRCA—through staff and committee members—has been working primarily behind the scenes to get a program underway.

Rather than reinvent the wheel, we've been doing a lot of research to determine what in existence would be relevant to our program. That research included a trip by myself and two others to Ottawa, Canada in early May to learn about that country's standard program for elasto plastic roofing materials.

Accompanying me on the trip were NRCA Immediate Past President Bill Kugler, under whose leadership this program was initiated, and Bob LaCosse, NRCA technical services director.

We wanted to learn as much as possible about Canada's total National Standards Systems particularly its voluntary consensus standards development process and its application, qualification and certification procedures. We also wanted to evaluate the technical basis used in the development of the standards for the elasto/plastic materials.

We were aware that Canada's standards define generic materials and are not in anyway considered to be performance standards. Even so, we wanted to determine the suitability of those standards for use in our proposed qualification and certification program, at least initially.

Our host for the visit was Dr. Heshmat Laaly, a familiar face to many roofing contractors in the United States. Laaly, who is a materials scientist for the Division of Building Research for the National Research Council, has participated in a number of programs in this country.

The trip included three main stops:

- Division of Building Research/National Research Council
- Canadian General Standards Board (CGSB)
- The Canada Mortgage and Housing Corporation (CMHC)

At the Building Materials Section of the Division of Building Research, we were able to talk to the technical people and observe laboratory test procedures used for the elasto/plastics program. The Division employs approximately 250 people, with about half of them providing administrative and technical support.

Laaly described the technical work and the research results which provide the basis for the CGSB elasto/plastic roofing material standards. Four categories are used to define the available materials:

1) *Hot-applied, rubberized asphalts.* These are asphalts modified with elastomeric materials (types of rubber) of known molecular weight. The rubber-like materials constitute from 5 to 30 percent in the asphalts. Currently, 12 manufacturers provide these products in Canada, and they often recommend their use in inverted roof systems.

2) *Cold-applied liquid membranes.* These consist of bituminous materials which are cut back with volatile organic solvents or emulsified by chemical processes so that they can be applied in liquid form. In developing the technical basis for the standards for this category, 48 different properties were considered.

3) *Prefabricated elastomeric sheet materials.* These materials include EPDM, neoprene, hypalon, polyisobutylene, and the like. Also included in this category are the flexible polyvinyl chlorides. Thirty-five different products are on the market within this category, including plain, foam-backed and reinforced materials.

4) *Modified bitumen membranes.* These include materials which are available as reinforced and plain, surfaced and unsurfaced and range in thickness from .08 to .8 inches. There are about 60 of these materials on the market in Canada. Critical to the development of standards for these materials is the testing of lap joints, Laaly said.

Materials, representing all four categories, which are available in Canada are on display at the Division of Building Research.

In developing test methods to evaluate these materials, Laaly explained that an attempt is made to keep the procedures fast, simple and realistic. Further, he said, the test methods should be related to measuring: 1) mechanical capabilities, 2) moisture resistance, and 3) durability.

Testing procedures, and the apparatus used, were demonstrated in measuring the following properties of elasto/plastic roofing materials:

- Slippage
- Bridging
- Toughness
- Moisture Absorption
- Outdoor Exposure Weathering
  - —accelerated weathering techniques
  - —climate lab consisting of temperature and humidity exposure only
- Shrinkage
- Penetration
- Dimensional Stability
- Lap Joint Assessment
- Puncture
  - —static
  - —dynamic
- Flexibility
- Adhesion
- Wheel and Lever Twisting
- Small Torsion Puncture Test

Canadian General Standards Board

The second day Dr. Laaly accompanied us to the Canadian General Standards Board where David Bova was our host. We learned that the Standards Council of Canada, a quasi-government organization, is the hub of the wheel of the Canadian Standards System. Surrounding the system are:

1) Accredited standards-writing organizations

2) Accredited testing organizations

3) Accredited certifying organizations

4) Various Canadian national committees of the International Standards Organization (ISO) and the International Electrical Commission (IEC)

The CGSB is one of five standard-writing organizations in Canada, accredited by the Standards Council, to write national Consensus Standards.

In simplified form, the steps taken by CGSB in the development of standards are as follows:

- A need for specific standard is recognized.
- A balanced committee of technical experts representing various segments of the technical community is appointed by the Canadian Government Standards Board.
- A draft standard is developed and submitted to the technical committee for review and comment.
- The negative votes of committee members are resolved or satisfied in committee deliberations.
- The standard goes to the CGSB review board and is approved.
- The approved standard may be submitted to the Standards Council of Canada.
- If approved, the standard becomes a National Consensus Standard of Canada.

After learning about the standard development process, we visited with J. C. Wilson, manager, and Dave Tait, engineer, of the Qualification and Certification Division of the Canadian General Standards Board.

They described the National Qualification Program as a process by which a specific product is designated as conforming to the requirements of a referenced standard. The program includes audits and verifications to assure that the product once certified continues to meet the standards.

As I understand it, the qualification process requires four distinct steps:

1) A manufacturer certifies and provides supporting evidence that his product conforms to the requirements of the reference standard.

2) The evidence submitted by the manufacturer is assessed by a qualifications panel and on the basis of a consensus decision of that panel, the product is accepted or rejected for inclusion into the Qualification Program.

3) The accepted product is then listed on a qualification products list.

4) The manufacturer identifies the qualified product by incorporating both a certification statement and the CGSB qualification logo on the product and package he makes available to the public. He also is permitted to use the qualification statement and logo in relevant promotional or technical literature.

We saw specific examples of products, systems and services which are available in Canada and took home with us considerable literature describing the program.

Canadian Mortgage and Housing Corporation

Our next visit was to the Canadian Mortgage and Housing Corporation which is a government organization somewhat similar to the Federal Housing Administration of the U.S. Department of Housing and Urban Development.

Using the examples of the standards for elasto/plastic roofing materials, Ken Rauch, a CMHC materials evaluation officer, explained the corporation's procedures for the approval of the building materials and systems used on insured structures.

Once a manufacturer seeks approval of its product CMHC requires the company to have the product tested at its own expense to show that it meets the standards. CMHC personnel review the results, and if they are satisfied that the requirements are met, approve the material for use. Audits and verifications that the products continue to meet the standards are made periodically at the manufacturer's expense.

Based on the information obtained on our trip, we concluded that the CGSB standards for elasto/plastic roofing materials could be used as a basis for developing our own program. Manufacturers, including those in the United States who supply materials to Canada,

are participating in the Canadian program; and we believe it is feasible to ask manufacturers in the U.S. to supply similar results of sampling, inspection and testing for our proposed program.

In observing the tests and discussing with personnel at the Division of Building Research, we concur with their opinions that:

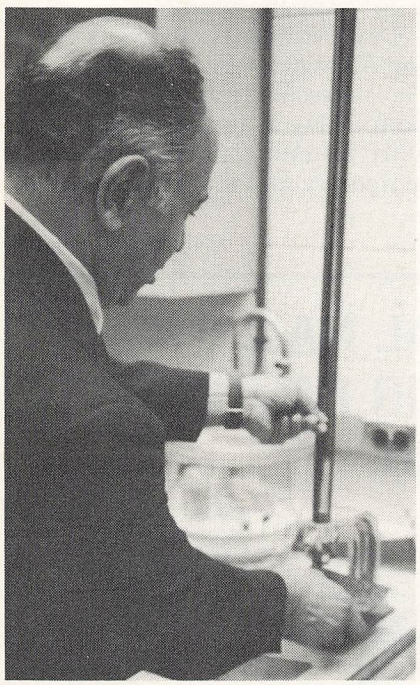
1) The evaluation of durability of the new roofing products is a complex task and cannot easily be determined by laboratory tests alone.

2) The definition of criteria for a roofing membrane in quantitative terms applicable to all of the variety of generic materials in use is not possible at the current state of the art.

3) The comparison of individual properties of plastomeric, elastomeric and modified bituminous materials cannot be made because of the wide variety of results from several of the test procedures.

4) At the present time, evaluation of generic materials should be done on an ad hoc basis to provide the technical base for standards to insure the consumer that the product meets the standards.

While we suggest using the Canadian program as an example for our own proposed program, we want to make sure that NRCA does not stop with what Canada has. We would like to see standards that are more than generic in nature; we would like to see the development of performance standards for these materials.



above—Dr. Heshmat Laaly tests roofing material for its dynamic puncturing strength.

right—Laaly, Cullen and LaCoss (partially obscured) observe the effects of weathering on several new roofing materials.

right—Laaly administers the "wheel-barrow" test to a roofing membrane. This test determines whether materials will easily rupture during installation.

to be used on the job.

New York City architect Michael Greenberg suggested that there are some basic problems that come out of the architect's office that are inherent in the drawings.

Specifiers, Greenberg said, "try to minimize or eliminate these problems that are designed in by virtue of ignorance or causal flamboyance or whatever you want to call it, but some basic problems recur."

Slope is one of the recurring problems. Greenberg said, "I don't care what the drawing shows as a slope, it's never built that way—that's not the roofer's problem—it's just that the structure as a matter of fact is never built with uniform slope."

Don Van Court, plant engineer for Western Electric, summed up the design problems this way: "When we look at the education process within the design industry, we find that little or no time is given during an architect's schooling to the more mundane subjects such as roofing."

Application Problems

"What about common application problems encountered in BUR?" asked Cullen.

Roofing contractor Kruger said, "We might as well call it like it is. The first problem that we have insofar as roofing application problems is with our own personnel.

"That may not be too popular among roofing contractors but roofing is a difficult, dirty business. It's hot in the summer and too cold in the winter and we don't work when it rains. That means we don't always have the opportunity to get the type of personnel who are motivated to try to do a better job.

"That means we need to do a better job of supervising and providing for internal quality control."

A second part of the problem, said Kruger, is "we don't achieve the proper respect among the crafts in connection with our work.

"We come to jobs that are not really ready for us to apply the roofs . . . We have to fight for a work place at the site, the proper storage facilities, get the building in the dry no matter what—that type of thing is tremendous pressure that we always don't stand up to."

Spencer of Koppers echoed Kruger's sentiments about the inherent problems of onsite work. He pointed to the importance of training.

Architect Greenberg spoke of the problems that develop after the roof is put on when wear and tear during continued construction cause problems.

Picking up on that, roofing contractor Kugler gave a pitch for the temporary roof. The temporary roof is a "viable solution, but we as a team need to put that idea in the owner's mind and have him help pay for that. It will give him value over the years."

David Richards of Owens-Corning Fiberglas agreed with Kugler. He suggested putting down the bottom layer and then mechanically fastening it. Next put on a temporary roof that can be used as

conclusion, page 50

BULLETIN 2A
CLARIFICATION OF BULLETIN 2
(12/15/77)
Equisviscous Temperature (EVT)

Editor's Note: The following was distributed as a clarification of Technical Bulletin #2. It is reprinted here for the benefit of those who did not receive the original.

Since the issuance of Bulletin 2, we have received numerous requests for a clarification of the EVT concept.

Equiviscous Temperature (EVT) is defined as the temperature at which asphalt will attain a viscosity (flow and adhesion) of 125 centistokes. This is the practical and optimum temperature for wetting and fusion at the point of application. (For practical purposes, the point of application is defined as the mop bucket or felt machine.)

A tolerance range is added for practical application in the field to accommodate the effects of wind chill, sunshine, or ambient temperature. This range is expressed as a temperature, plus or minus 25°F. Good practice indicates the use of this EVT range as the temperature range at which asphalt should be applied.

Asphalt should be sufficiently heated in the kettle/tanker and allow for typical handling procedures so to allow for and achieve this optimum viscosity/temperature range (EVT) at the point of application. Asphalt heating is subject to two restraints:

1. It should NOT be heated to or above the actual COC Flash Point (ANSI/ASTM Method D 92, Test for Flash and Fire Points by Cleveland Open Cup).
2. It should NOT be heated and held above the Finished Blowing Temperature (FBT) for more than 4 hours.

This concept emphasizes that the temperature of asphalt at the point of application is the main consideration and that kettle/tanker heating should, therefore, be based on reaching the desired application temperature.

The Roofing Systems Technical Committee, a joint committee of the Asphalt Roofing Manufacturers Association and the National Roofing Contractors Association, endorses and recommends the following identification system for mopping grade asphalts. This information should now be printed on all asphalt packages or bills of lading.

- **The Softening Point (SP) Range.** The temperature ranges of the asphalt determined in accordance with ASTM D-312 and D-36. (General)
- **The Flash Point** (FP). The flash point of the asphalt as determined by ASTM Method D 92. (Actual for specific run)
- **The Equiviscous Temperature (EVT) Range.** The temperature range at which a viscosity of 125 centistokes is attained, plus or minus 25°F. (Actual for specific run)
- **The Finished Blowing Temperature (FBT).** The temperature at which the blowing of asphalt has been completed. (Actual for specific run)

In the event EVT information is not furnished by the manufacturer, the following maximum heating temperatures should be used as guidelines. The same two restraints for asphalt heating previously listed (i.e. Flash Point and Finished Blowing Temperature) pertain to these temperatures:

- Dead Level Asphalt — Type I — 475°F Maximum
- Flat Grade Asphalt — Type II — 500°F Maximum
- Steep Grade Asphalt — Type III — 525°F Maximum
- Special Steep Asphalt — Type IV — 525°F Maximum

Coal tar roofing bitumens are produced by a limited number of manufacturers and have fewer material variations than asphalt. Although EVT has not been applied to coal tar bitumens for this reason, the same concept is applicable. Heating and application temperatures for coal tar are slightly lower than asphalt bitumens. Most manufacturers recommend a kettle temperature of 425°F with application temperatures ranging from 325°F to 400°F. As with asphalt, higher heating temperatures may be necessary to attain the proper application temperature, but higher heating temperatures should be maintained only for short periods of time.

a vapor retarder and as a surface upon which to put the next layer.

Other Problems

What about other problems having to do with built-up roofing?

Spencer of Koppers brought up the health area; and contractor Steinmetz commented on safety and labor.

"I think we, as manufacturers and contractors, must put at the top of our priorities health of our employes and that those purchasing our products are dealing with safe material," Spencer said.

Steinmetz said safety is an area we need always to be aware of in our "hot industry." The other general area he mentioned is "the long term labor implications of handling what we all agree is a hot, smelly material.

"I don't know what those implications are, but I suspect that over a period of time the general laboring man is going to become less inclined to handle those characteristics, and I think that may have some long-range application."

BUR Future

As a final question, Cullen asked the panel members: What is the future of conventional built-up roofing versus the so-called single-ply and elastomeric system?

Said Spencer of Koppers, "I don't think it's going to fade away. I think the built-up market has its place and there will be new uses and new demands for the single-ply, but I think you will see them both in a market competing with each other."

Plant engineer Van Court suggested that the owner really doesn't care.

"What the owner wants is a working roofing system. One that will give him reliable, long-term life that if it does develop defects, the defects will be easy to detect, and easy to repair," Van Court said.

Nazaretian of Celotex emphasized the importance of the systems approach for the future.

"Because we know that each product must not only perform its own function, it must also be compatible with other products in the total system."

He predicted that most of the future products will be more factory completed; they will not have so many components and the contractor will have fewer fabrication steps to perform on the roof.

Steinmetz said he expects "an increase in knowledge, education, technology and an increase in the understanding of the dynamics of our industry."

Van Court indicated optimism in the design area.

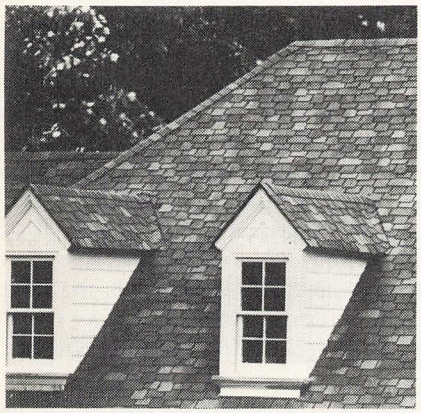
"While it may be due to all of the litigation, the design professionals—from the detailers and the designers to the architect partners—are all worrying more about roofing in the metropolitan New York area," Van Court said. "So I think even the architect may be helping us in these next two decades by not designing quite so many time bombs as they have in the past."

Agreeing with Van Court, contractor Kugler said, "Two important parts of the building are now being attended to with great detail—the foundation and the roof. . . ."

Rustic Fiberglas 30-year Shingle

Owens-Corning Fiberglas Corporation has introduced a high style, glass fiber roofing shingle with a 30-year limited warranty.

The shingle, called Chaparral, is made from a process in which specially formulated beads are embedded on the shingles' underside. Chaparral is a one-ply shingle and carries a U. L. Class A fire rating.



The shingles measure 39⅜ inch × 13 ⅝ inch and come 72 to a square. Five colors will be available: onyx black, bark brown, desert tan, autumn brown and weathered wood.

Chaparral shingles, manufactured at Owens-Corning's Atlanta plant, will be available initially in the Southwest and will be aimed primarily at the new construction market.

GTR Introduces EPDM Elastomeric Membrane for One-Ply Systems

GTR Building Products Co., a subsidiary of The General Tire & Rubber Co., Akron, Ohio, has introduced a new EPDM elastomeric rubber membrane for single-ply roofing systems.

Called GenFlex ACR (All-Climate Roofing), the new material gives GTR the capability of supplying construction specifiers, architects and contractors with either rubber or vinyl single-ply roofing systems as alternatives to conventional built-up roofing.

The vinyl material, GenSeal ACR, was the firm's initial product offering when GTR Building Products was formed as an operating unit of The General Tire & Rubber Co. in 1980.

GenFlex ACR was introduced during the 1981 convention of the Construction Specifications Institute, June 22–24, in St. Louis.

The new EPMD (ethylene propylene diene monomer) rubber material is suitable for installation on all types of roofing configurations—flat, high-pitched, domed, saw-tooth and hyperbolic. GenFlex ACR can be installed in either fully adhered or ballasted systems for either new roof or reroof applications.

Heading up the GTR Building Products Co. is newly named vice president and general manager Robert S. Moore.

Moore, 46, will be based at the company's headquarters in Toledo. He formerly was employed as National Sales Director for the Building Materials Division of Koppers Co., Pittsburgh. He is a member of CSI and the American Creosote Association.

Hard-nosed Drill Bits

Malso Products now offers Unibits in three sizes for drilling hole sizes from ⅛-in. to 1 in. in sheet metal and other thin materials without deforming stock or threading drill bits.

Unibits can be used to ream and also can be used to make round holes from slots, intersecting holes and hole deburring.

Malco Unibit's conical shape is graduated in steps up to ⅛-inch thickness, by counting the number of step penetrations and stopping at that count, the hole diameter can be determined.

Two Unibit sizes feature a single flute design which prevents both skidding and the need for center punching when starting a hole from solid material.

Disc Brake on New Aeroil Ballastmaster

A powered dispenser for roof ballast stone used on single-ply roofs has been introduced by Aeroil Products Co. Inc.

The Ballastmaster is mounted on high flotation tires and features a 9-cubic-foot carrying bin with a dispensing chute which directs the discharge of stone behind the wheels as the unit moves forward.

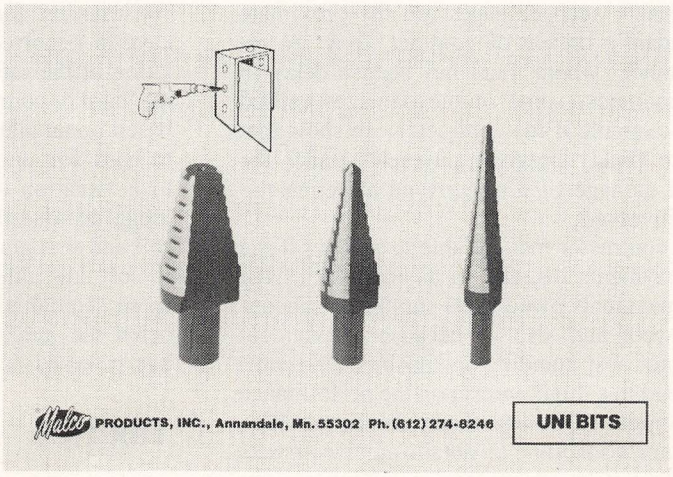
An operator-controlled metering gate allows for proper 36-inch wide coverage of ballast stone. The wheels are inset to permit spreading of the material directly against the edge of the previously laid ballast stone without wheel contact with the stone.

The Ballastmaster features an automatic engaging disc brake activated whenever the operator takes his hands from the controls. The carrying bin weighs 150 pounds and can be separated from the 200-pound power chassis for hoisting to the roof.

Hydrotech for New & Retrofit

HYDRO-SEAL Single Ply Membranes are used for both new construction and retrofit. Both the adhered and ballasted systems are available. The ballasted systems have an Underwriters' Laboratories Class A Rating.

For further information, contact American Hydrotech Inc. 541 N. Fairbanks Court, Suite 2208, Chicago, IL 60611. Telephone (312) 337-4998.



Malco offers versatile new drill bits for sheet metal

Legal

By McNeill Stokes, NRCA Counsel

(NOTE: This legal column presents information on legal matters of general interest. The text is necessarily generalized, and you are advised to consult with a professional legal advisor before taking any action.)

Taxes

The Supreme Court has invalidated a Treasury Regulation which included in the computation of taxable wages for FICA and FUTA purposes the value of food and lodging an employer provides its employees on remote job sites. While the value of the meals and lodging had not been included in computing the employees' individual income tax liability, they were considered ''wages'' for FICA and FUTA purposes. The Court held that ''wages'' should have the same meaning under FICA, FUTA and income tax withholding. Those amounts will no longer be considered wages for FICA and FUTA purposes where the food and lodging was provided to employees at remote job sites for the employer's convenience. Not only do employers no longer need to pay unemployment and social security taxes on the meals and lodging, the government is also now faced with millions in refund claims.

Damages may be available to contractor for owner delays in payments due under the contract

Consequential damages are such damages which do not flow directly and immediately from the act of the party, but only from some of the consequences or results of such an act. Although sometimes the term means damage that is so remote as not to be actionable; it sometimes means damage which, though somewhat remote, is actionable. The concept of consequential damages involves consideration of the type of loss foreseeable by the contracting parties at the time of their agreement. Where such damages are the proximate result of the defendant's breach of contract, they are recoverable. For instance, where there has been a delay in making contract payments, some of the damages caused thereby may be recoverable if the contractor can show that the failure to make timely progress payments under the contract resulted in damage of a direct type affecting the particular contract involved.

For example, a contractor may be able to recover if the delay in contract payments resulted in an inability of the contractor to meet payments owed to its suppliers, subcontractors and employees and also if, because of payment delays, the contractor lost standing in the business community which resulted in a direct impact on the performance of the present contract. However, those damages which involve the contractor's inability to obtain other contracts or work because of the delay in progress payments are too remote or speculative to qualify as compensable damages.

New restrictions on OSHA

Two recent court decisions have limited OSHA's use of search warrants for a job safety inspection. The first decision involved OSHA's ability to obtain a search warrant. The Tenth Circuit Court of Appeals ruled that when OSHA sought a warrant pursuant to employee complaints, OSHA must prove the reliability of the complaints. The Court stressed that OSHA must show that its request for a warrant is reasonable. Among other things, the affidavit which is the basis for the request should include the source of the complaint, facts and circumstances underlying the complaint, who received the complaint, and whether there was an attempt to verify the information. In summary, OSHA should be able to justify its request for a warrant with specific information.

In another decision, a U.S. District Court ruled that when there is probable cause for the issuance of a warrant pursuant to some complaints, the scope of the warrant must be limited to those specific complaints. In response to employee complaints of unsafe working conditions, OSHA attempted to inspect a copper refinery. The firm refused them access and OSHA sought a ''wall to wall'' inspection warrant. The court held that although there was probable cause for the warrant, the warrant's scope must be limited to the extent of the alleged violations.

The Tenth Circuit Court of Appeals placed another restriction on OSHA when it reversed an Occupational Safety and Health Review Commission order because the administrative law judge who heard the case heard the evidence and testimony in terms of one subsection of the regulations, yet found the employer guilty of another subsection. A construction company had been digging a trench when a cave-in occurred. OSHA charged the company with violation of the safety rules relating to the digging of trenches in ''hard or compact'' soil. The hearing which followed was based on an alleged violation of the trenching rules relating to hard soil and all the evidence and testimony pertained to a violation of that subsection. The administrative law judge decided that the company had been working in soft soil and was guilty of violating the procedures for trenching in soft soil although no evidence or testimony relating to those standards had been heard. The Court of Appeals labeled the judge's action ''clearly unfair and prejudicial'' and reversed that part of the order.

Tax tips

A new law now permits businesses to amortize start-up costs over a period of 60 months. A start-up cost is a cost

incurred in connection with the creation or acquisition of a new business, including costs such as market surveys, advertising, research and professional services and other costs which are incurred prior to the beginning of a new business. As such, they are distinguished from those costs which are necessary to the creation of the corporation or partnership itself. Previously start-up costs could not be deducted or amortized, however, where the start-up costs are incurred or paid after July 29, 1980, and are included in a tax return for the year in which the business begins, they may now be amortized.

An accumulated earnings tax is a tax imposed on a corporation when it retains its earnings and profits instead of paying out dividends to shareholders. The advantage to a corporation of accumulating income rather than paying it out to shareholders is that additional earnings are taxed at a maximum rate of 46 percent as opposed to 70 percent maximum rate it would be taxed if it were paid to the individual shareholders. However, to encourage the payment of dividends, an accumulated earnings tax is imposed on unreasonable accumulations of income. This tax, which is imposed in addition to regular income tax, is levied on the company's taxable income subject to some adjustments and adjusted by an accumulated earnings credit.

The accumulated earnings credit is a credit allowed for the earnings which a business must retain in order to meet its ordinary needs. Any accumulation which exceeds the $150,000 limit must be justified. The corporation bears the burden of proving that the excess accumulation was necessary for the reasonable needs of the business. In order to bear this burden, the corporation should document its plans for the accumulated earnings. Good corporate minutes should record expansion plans, anticipated expenditures, the need for equity to satisfy bonding company limits or any other needs which would justify the excess of accumulations. Any feasibility studies, written proposals or consultations with professionals should be retained as evidence of the corporation intention to use the accumulated earnings in a particular way. The funds may be accumulated if the corporation has a bona fide objective for the use of the earnings, however, in order to avoid additional taxation, careful planning and documentation is essential.

NLRB policy on construction subcontracting stands

The Supreme Court declined to rule on whether union signatory clauses which prevent the subcontracting of construction work to nonunion employers violate Taft-Hartley. In declining to review, the Supreme Court left intact decisions by the U.S. Court of Appeals for the District of Columbia and the Ninth Circuit which had held that the construction industry proviso to Section 8(e) protects those clauses in collective bargaining agreements which forbid employers from subcontracting work to a subcontractor who does not have a contract with the signatory union. The result is that these subcontracting clauses do not violate the Act's ban against "hot cargo" agreements. In addition, the Ninth Circuit held that although unions may picket or strike to get the employer to agree to such a clause, they may not enforce the agreement through picketing or strikes.

Wage discrimination claims

The Supreme Court has ruled that a sex-based wage discrimination claim could be brought under Title VII even if the claimants cannot satisfy the equal work standards of the Equal Pay Act. Until recently, courts have limited sex-based wage discrimination claims under Title VII to those that could be brought under the Equal Pay Act, in other words, on the basis of equal pay for equal work. Previously, a claimant had to show that compensation was not equal for jobs that required equal skills, effort and responsibility and that are performed under equal working conditions. The burden on the claimant is no longer so difficult. Under this theory claims can be brought for sex-based wage discrimination even though no member of the opposite sex holds an equal, but higher paying job where there is still intentional sex discrimination in the setting of wages for a particular job.

In this case, four female jail guards brought suit under Title VII claiming that the county was underpaying them in relation to its male jail guards. The county had determined that the female jail matrons should be paid approximately 95% of what male guards earned, but then it paid them only 75% while paying the male guards the full evaluated worth of their jobs. The females alleged that the failure of the county to pay them the full evaluated worth of their jobs while paying the men the full worth of their jobs constituted intentional sex discrimination. The Court held that the matrons were not precluded from bringing suit under Title VII to prohibit discriminatory compensation practices because they could not satisfy the equal work standards of the Equal Pay Act.

No right of contribution against union for backpay award

The Supreme Court has ruled that a union employer has no right to demand that a union contribute a portion of a backpay award which had been assessed against the employer for wage discrimination even if the discriminatory wages were determined by a collective bargaining agreement negotiated by the union. The suit arose as a class action filed against Northwest Airlines by female cabin attendants who challenged the legality of the wage differences paid to male and female cabin attendants. Both male and female attendants had been represented by the same union and the wages had been determined by negotiations with the union. The court found that the two positions required equal skills and responsibility, and, therefore, the higher wages paid to the males violated the Equal Pay Act, and assessed backpay damages and interest against the airlines. The Supreme Court held that despite the union's "significant responsibility" for the wage differential, there is no right of contribution. However, since the Court assumed that the discriminatees could have brought suit against either the union or the employer, it appears that the employer could have brought the union into the original suit and made them defendants in that action. If the union was also a defendant in the original action, EEOC would have examined their liability in the discrimination as well as the employer.

"THREE FOR THE SHOW"

by Glen Nelson,
communications department intern

editor's note: This is the first in a series of profiles on the NRCA staff. Next month, look for a sketch on the Member Services Department.

The 1982 National Roofing Contractors Association's annual convention is seven months away, yet it is constantly on the minds of NRCA's meetings and conventions department staff.

An abundance of manpower isn't necessary to organize meetings and conventions; however, it does demand strong organizational skills along with the ability to anticipate problems, said Guy DiCara, head of the department.

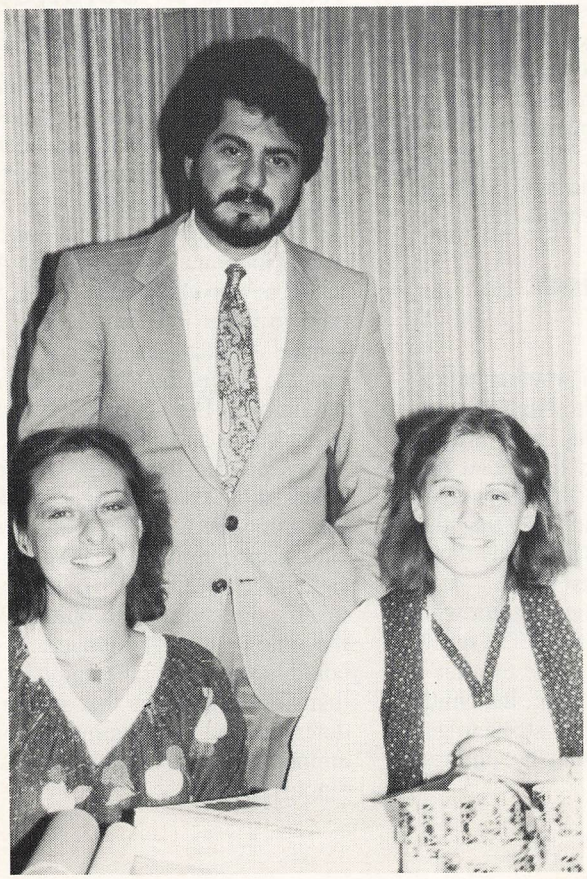
The department coordinates all convention activities including program development, promotion, exhibit sales and administration. In addition, the department handles all NRCA meetings and educational conferences. In one year the department will organize about 13 events; the largest being the convention.

"We live off of checklists," DiCara said while browsing through one of many recommended meeting planning aids. "A convention such as ours involves more than 10,000 details."

Among the many details are locating good restaurants, negotiating room rates and organizing the program timetable.

The 1982 convention will contain a well-rounded program, DiCara said. "The business sessions will highlight day-to-day concerns by complementing both technical and personal development."

In addition to learning different management styles, current issues and improvements affecting the roofing industry, conventioneers will view new supplies, equipment and products from the more than 200 exhibitor companies. Of the 457 available booths, 435 have been assigned (as of publication date), according to the Meetings and Conventions Manager Sandy Haberkost. Exhibitors are mostly manufacturers and distributors.



Melody Lejcar, Guy DiCara and Sandy Haberkost of the NRCA Meetings and Conventions Department.

She noted that this year is the first year solar energy companies have been actively solicited to participate as exhibitors. Since solar energy is a new and growing interest to the roofing industry, a solar program has been added to the convention agenda.

More than 6,000 conventioneers are expected at the Los Angeles convention. The registration packets are being prepared by department coordinator Melody Lejcar to be distributed in September and October to NRCA members and to those who have requested information. Lejcar also handles convention and hotel reservations and secretarial work.

Already secured for the convention program are Art Linkletter and Jack Anderson, appearing at the breakfast meeting and the awards luncheon respectively.

DiCara, Haberkost and Lejcar will be working on the convention every day up to and through the convention. Then work begins on the 1983 convention in San Antonio.

Time not devoted to the convention is spent planning other meetings and conferences. The department plans all meetings and conference activities. However, they don't decide seminar topics; NRCA committees and task forces make those decisions.

DiCara joined the NRCA staff in April. Previously with the Expocenter/Chicago and Westin Hotels, he holds a bachelor's degree in international business from St. Norbert College in DePere, Wis.

Haberkost has been with NRCA since 1979. In addition to her meetings and convention duties, she assists with the computer programming and Project Pinpoint.

Lejcar has been involved with meetings and convention planning since she joined NRCA in 1973. She has watched the convention grow from the 1974 total of 2,252 registrants to the 6,000 conventioneers expected this year.

RIEI Taps Cullen and Karp for Board

The Roofing Industry Educational Institute announced recently the election of William C. Cullen as chairman of the Board of Regents. Cullen has been a board member since its inception in 1979. He served as chairman of the Long-Range Planning Committee during that period.

Cullen is widely known and respected throughout the roofing industry. His career has been marked by many honors and awards from the industry, professional societies and the government. He recently retired from the National Bureau of Standards where he served as Deputy Director of the Office of Engineering Standards.

Since retiring, Cullen has worked as NRCA research associate from his home in Potomac, Md.

RIEI also elected Burton Karp to the position of Vice Chairman. Karp, NRCA vice president, served as past chairman of the RIEI Fund Raising Committee. He is the president of Eagle Moisture Protection Corporation, West Hartford, Conn.

Greg Faherty, of Owens-Corning Fiberglas, was elected to the position of Secretary/Treasurer. Newly elected regents are Benjamin J. Ammons, of Carlisle Tire & Rubber Co. and John Stenson, of General Motors Corporation.

AIA Blasts Reductions in Energy Conservation

The president of the American Institute of Architects recently told the Reagan Administration that federal energy conservation programs must continue funding research into improving building energy efficiency and must also continue disseminating information on buildings and energy use to the building industry.

R. Randall Vosbeck, FAIA, presented the AIA's views during the Environmental Protection Agency's public hearing on federal energy conservation programs. Vosbeck noted that current directions are guided by two principles: higher energy prices will "speed up" conservation efforts, and the private sector will be able to "pick up" activities previously carried out by the federal government.

Vosbeck described how two existing federal programs—research and information—"are beginning to experience the real impact of the new federal directions."

He said that since 1973 client demand for energy-efficient buildings has increased not only because of higher prices, but also as a result of "better and more widely available information." Most of this information is a "direct result of the federal energy conservation program."

"This information flow has speeded up innovation in the building industry—design manuals, seminars and computer programs provided tangible design solutions for designers willing to try new buildings," Vosbeck said.

Vosbeck said that this information flow "is about to be cut off." He told the EPA panel that "the fragmented building industry" cannot take over extremely technical research reports and turn them into design manuals nor reduce large-scale computer programs into simulation programs for hand-held calculators.

"The new direction calls for a more basic research and development approach for the building sector," Vosbeck said. "The stroke of a budget-cutting pencil has eliminated projects that have potential to help our industry solve its short and mid-term problems and has instead substituted research of a long-term nature."

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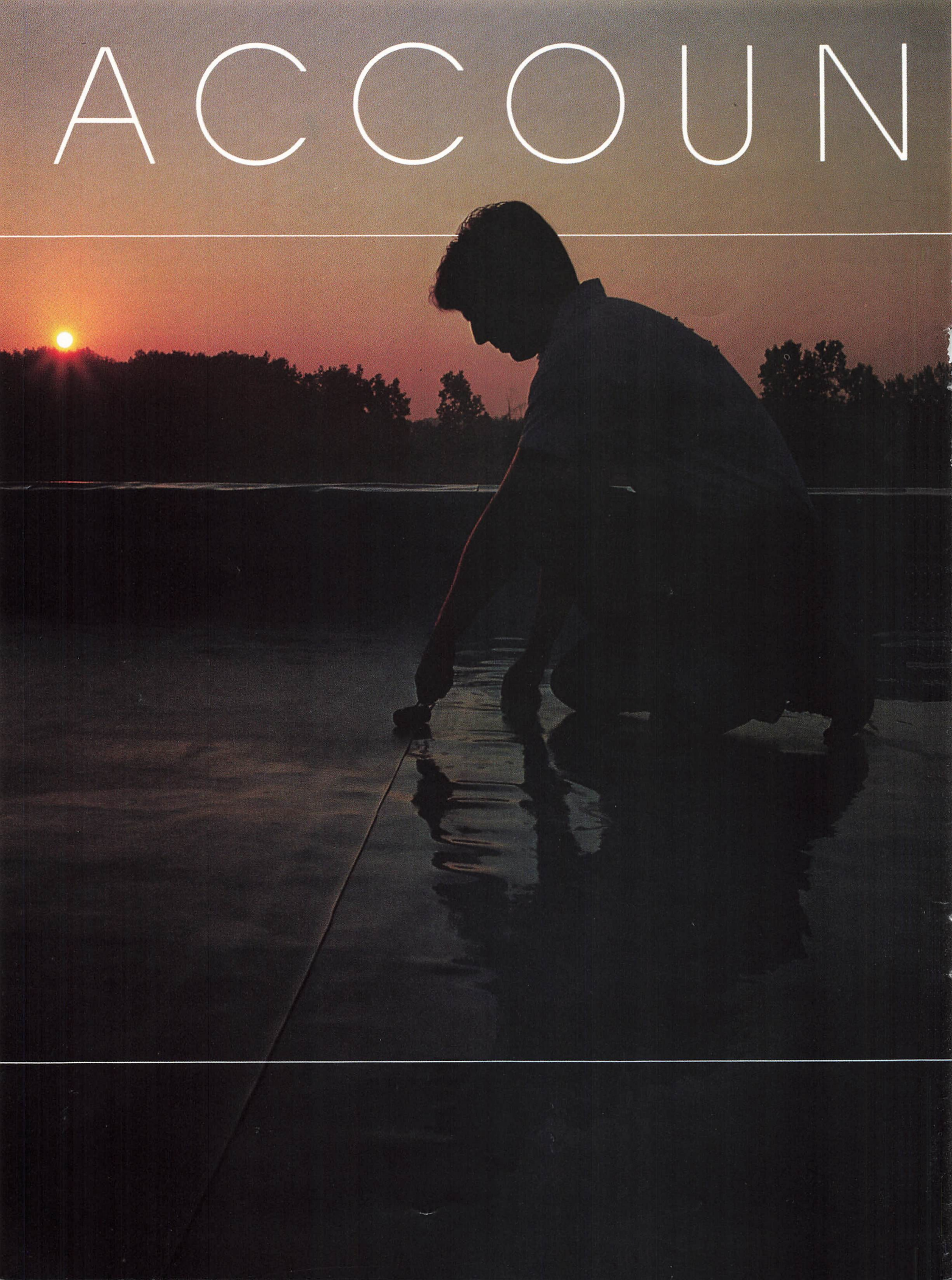

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Roofing Spec Seeks Most Unusual Jobs In Year-End Roofing Tilt

What is the most unusual job in which you have been involved?

Whether you're a designer or contractor, send *The Roofing Spec* a brief summary of that job, highlighting the uniqueness of it. Be sure to include costs.

At the end of November, *The Roofing Spec* staff will take all summaries, minus names and locations, and give them to a panel of judges to choose two winners in each of two categories: jobs costing under $100,000 and jobs over $100,000.

Cash prizes offered in two categories. Send entries now!

The top winner in each category will receive $100; the second place winners will receive $50. Plus, the winning jobs will be featured in *The Roofing Spec*. (Some of the so-called losing entries may also be feature in *The Roofing Spec*.)

Judging will not be based on how the summaries are written but on the uniqueness of the job. There is no limitation on when you did it or whether it was for new construction or re-roofing, just so you remember the details.

The "uniqueness" may be due to the cost, size, working conditions, materials used, time it took, personnel involved, location or whatever else. Consider any job you've told others about with pride or maybe with embarassment. Take the time now to jot down the basic information and send it to *The Roofing Spec*, National Roofing Contractors Association, 8600 Bryn Mawr, Chicago, Ill. 60631.

CSI Elects New 81–82 Officers

Terry L. Strong, CCS, Colorado Springs, Colo., was elected president-elect of the Construction Specifications Institute for the 1981-1982 term. Robert J. Schmidt, FCSI, CCS, who had served in that office has assumed the presidency.

Elected vice presidents were S. Steve Blumenthal, FCSI, Melville, N.Y.; Donald D. Meisel, FCSI, Philadelphia, Pa.; and Richard B. Solomon, FCSI, CCS, Miami, Fla.

Terry M. Wadsworth, FCSI, CCS, Austin, Texas, was elected secretary for a two-year term.

The Construction Specifications Institute is a national technical society, with headquarters in Washington, D.C. The organization has more than 15,600 members in 130 U.S. cities and is dedicated to the improvement of member construction documentation, specifications and communications and includes in its membership architects, engineers, specification writers, construction product manufacturers and contractors.

NRF Needs New Friends for the Future & Now

The National Roofing Foundation provides for the future of the roofing industry. Friends of The Foundation provide the essential link between the future and now: contributions.

The Friends of The Foundation program is the foundation's most important means of raising funds. Foundation Friends agree to contribute $50 or more per year.

To assure a regular yearly income, invoices are sent every year to these Friends.

Contributions to the foundation help to develop and improve educational courses, to create films and slide programs and to provide scholarships.

Donations, bequests and memorial gifts are also welcomed.

The newest Friend of the foundation is Giffen Roofing Co., Joe Rutkoski, Tampa, Fla.

For more information, contact NRCA at 8600 Bryn Mawr, Chicago, IL 60631.

Coming Events

Sept. 11–12
National Roofing Litigation Center Seminar, Chicago

Sept. 21–24
International Roofing Symposium, Brighton, England

Oct. 5–5
Roofing Industry Educational Institute Seminar, Denver

Oct. 19–23
RIEI Seminar, Kansas City

Nov. 2–6
RIEI Seminar, Cincinnati

Nov. 5–9
Associated Roofing Contractors of Maryland Annual Convention, Las Vegas

Nov. 8–11
Midwest Roofing Contractors Association Convention, St. Louis

Nov. 19–20
RIEI Seminar on Elasto/Plastics, Denver

Nov. 30–Dec. 4
RIEI Seminar, Charlotte, N.C.

Dec. 2–3
NRCA Roofing Systems Conference, Seattle

Dec. 9–10
NRCA Roofing Systems Conference, Phoenix

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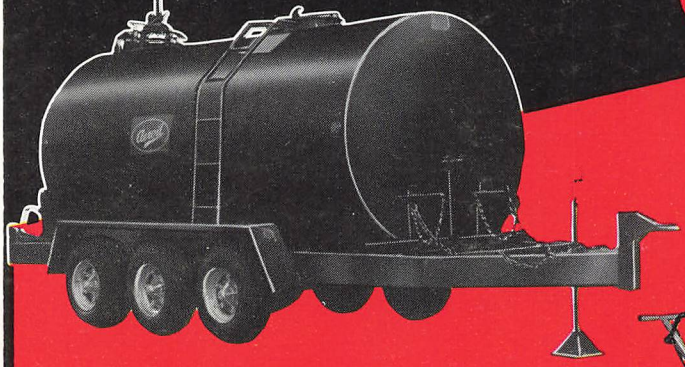

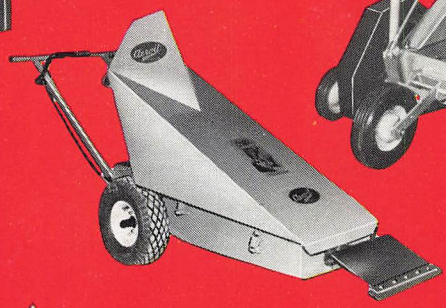

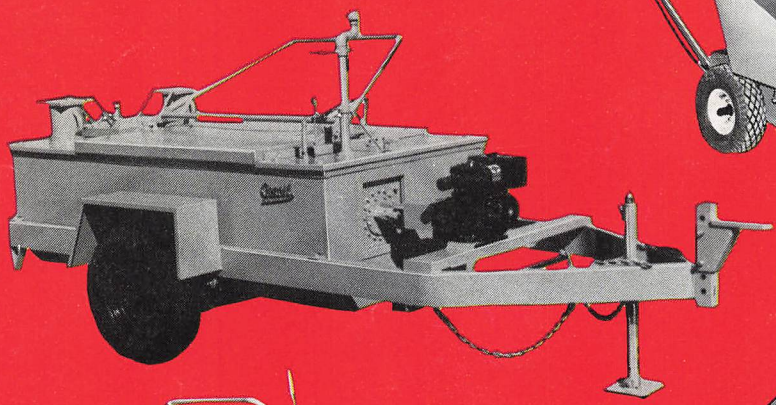

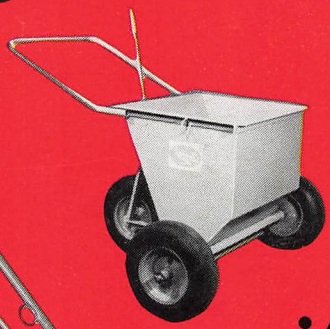

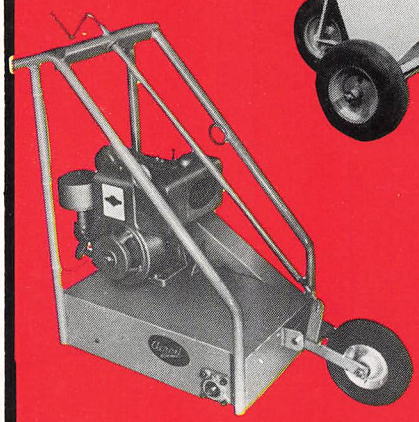

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