

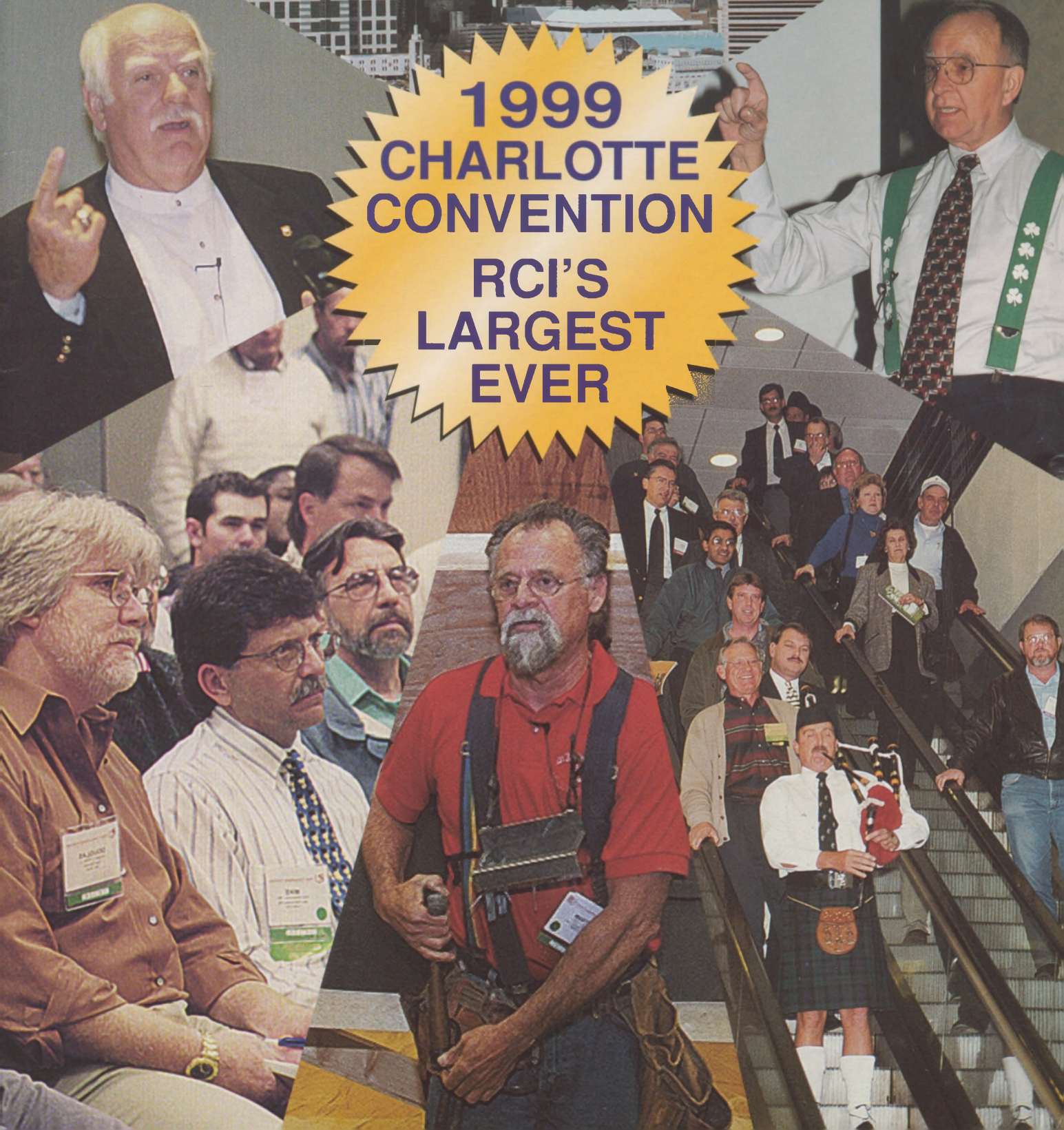


Journal of the Roof Consultants Institute

Interface

May 1999
Vol. XVII, No 5
\$7.00

**1999
CHARLOTTE
CONVENTION
RCI'S
LARGEST
EVER**



When you specify a Sarnafil roofing system, you can bet your John Hancock on it.

We hold these works to be self evident...

Sarnafil



Boston's John Hancock Tower had experienced the worst of ill winds when its operations management saw the need for re-roofing. They wanted long term life insurance: a time-tested formulation, a membrane system tough enough for the highest wind uplifts, pollution, and heavy maintenance foot traffic. They got it all with Sarnafil.

Free Sarnafil Roofing System CD!

For a free Sarnafil notepad portfolio and a CD detailing roofing and waterproofing system specifications, details and literature, call today at **1-800-576-2358**.

In an age of liability problems and finger-pointing, protect your clients, and your reputation with Sarnafil. The roofing solution with built-in life insurance. Sarnafil keeps on performing through rain, sleet, snow, winds, UV and pollution.

In fact, after more than 30 years and billions of square feet of Sarnafil installations, original Sarnafil roofing systems are still performing on world class structures as impressive and as challenged as the John Hancock Tower.

Thermoplastic membranes: Peak performance, best buy.

Sarnafil's life 'ensurance' lies in its unique formulation and construction and complete system solution approach. Swiss-engineered, American-made, Sarnafil's pliable, reinforced thermoplastic roofing membranes rank best in the industry against all types of roofing. Lowest in maintenance costs. And best in performance and life cycle costs.

Specify Sarnafil Roofing Systems. And give them the insurance policy that will protect their assets. From the top down. You can bet your John Hancock on it.


World Class Roofing & Waterproofing

Sarnafil Inc. A Sarna Group Company
100 Dan Road, Canton, MA 02021
1-800-576-2358 • Fax: (781) 828-5365
website: <http://www.sarnafilus.com/rci.htm>
e-mail: webmaster@sarnafilus.com



Features

- 4 ▶ Consolidation in the Roofing Industry
Robert W. Lyons

Convention Reports

- | | |
|--|-----------------------------|
| 10 ▶ RCI Holds Largest Convention Ever | 35 ▶ RCI Research Reports |
| 12 ▶ President's Banquet | 37 ▶ Auxiliary Seminars |
| 15 ▶ Nelson Hall Elected Treasurer | 39 ▶ Board Action |
| 16 ▶ Keynotes | 41 ▶ Annual Meeting |
| 17 ▶ Roundtable Discussions | 42 ▶ Artisan Demonstrations |
| 21 ▶ Committee Meetings | 45 ▶ Recreation |
| 26 ▶ Technical Sessions | 48 ▶ Trade Show |
| 30 ▶ Business Sessions | |

Special Interest

- 53 ▶ "Wind" Becomes "Weather" at RICOWI Meeting
Philip D. Dregger
- 55 ▶ Avoiding Algae Growth on a Roof

Departments

- | | |
|---------------------------|-------------------------|
| 2 ▶ President's Message | 58 ▶ Classifieds |
| 3 ▶ Letters to the Editor | 58 ▶ Advertisers' Index |
| 57 ▶ Industry News | 60 ▶ Industry Calendar |

RCI was chartered, in part, to bridge the gap between the seemingly disparate elements of the roofing profession. It is the intent of *Interface* to connect with these elements, educate and inform about roofing-related topics, establish a common ground for discussion, promote Institute programs, and branch out toward even more people. *Interface* is circulated monthly to over 3,000 people (nationwide and overseas) including RCI members, specifiers, facility managers, owners, industry contacts, and a growing number of highly placed professionals. *Interface* is frequently distributed at various trade shows, as well as educational and institutional functions. The articles contained in this publication are intended to provide information that may be useful to members of the Roof Consultants Institute. RCI does not necessarily endorse this information. The reader must evaluate the information in light of the unique circumstances of any particular situation and independently determine its applicability. Entire contents, © RCI.

On the Cover:

RCI's 14th Annual Convention and Trade Show in Charlotte, NC on March 12-16 was by far its most successful to date. Over 700 people came together to learn, network, share new concepts and have fun. The Roof Consultants Institute returns to the city of its birth with a flourish! Don't miss our 15th in Reno, Nevada, March 24-28, 2000.

RCI

RCI Officers

James P. Sheahan, RRC, President
William A. Cypher, RRC, 1st Vice President
Warren R. French, PE, RRC, CCS, 2nd Vice President
Albert Duwyn, RRC, Secretary
W. Nelson Hall, RRC, Treasurer
Michael Blanchette, RRC, RRO, Immediate Past President

Interface Staff

Kris Ammerman, Executive Editor
Lyle D. Hogan, FRCI, Senior Editor
Diana Michelotti, Designer

Peer Review

Gary Cattel, PE, RRC
Steven Eisenbarth, RRO
Donald Kilpatrick
William Rubel, RRC
Bruce Wittenbaum

Advertising Sales

William Myers
RCI Headquarters
7424 Chapel Hill Road
Raleigh, NC 27607
800-828-1902 • 919-859-0742
FAX 919-859-1328

RCI Staff

Francis A. Acquaviva, Executive Director
Kris Ammerman, Publications Coordinator
Ann Coughlin, Education/Meetings Coordinator
Sharon Dupre, Receptionist
Margaret Huels, Membership/Registration Assistant
Micki Kamszik, Membership/Registration Coordinator
William Myers, Marketing Coordinator
Margie Phillips, Finance Coordinator

RCI Headquarters

7424 Chapel Hill Road
Raleigh, NC 27607
800-828-1902 • 919-859-0742
FAX 919-859-1328
<http://www.rci-online.org>

President's Message

I WISH YOU HAD BEEN THERE

I wish you had been there. I hope you will be there next time. Where? the RCI Convention. It was a busy and fun event. Meetings of every sort occurred for almost a week. The board met, the regions met, committees met, people met at the trade show, at the banquet, and just with each other in some fun places in Charlotte, North Carolina. There were presentations of technical and business content. There were artisan demonstrations on specific roofing material applications. A mock trial used humor to get across the serious points about our profession. All these events were attended by over 700 people—equal to about half of our membership. That's pretty good, but we missed the other half. RCI conventions are designed to provide professional training in an efficient time frame and a pleasant atmosphere.

It was especially meaningful to me as I took the helm from Mike Blanchette as president of RCI. In one sense it is an honor, but having experienced a number of years on the Executive Council, I became aware of the responsibility associated with this position. For those who missed my remarks at the annual meeting, I'll summarize my thoughts and intentions.

RCI relies on a number of people, mostly volunteers, supported by our staff at headquarters. We have a handful of dedicated volunteers on the EC. They rely on another group of volunteers that make up the rest of the RCI Board—the Region Directors. Together we strive to provide direction to programs developed by committees. This makes for an efficient and aggressive organization.



James P. Sheahan, RRC

The weak link today is at the committee level. Not those committees that are manned and operating today—for they are doing an excellent job; but many committees are not fully manned. We need our professional and industry members alike to dedicate time to areas at which they are good, want to learn about, or for the simple satisfaction of accomplishing and completing useful projects.

Convention time is surely an enjoyable event, but it only happens once a year. Committee work is also enjoyable and rewarding. It takes a limited amount of time year-round but provides a necessary and valuable service to the Institute as well as enhancing individual growth.

We need to tell you more about committees so you can understand their value and their mandates. Toward that goal, we are publishing a monthly feature in *RCI*Items highlighting a different committee. In March, we featured the

Ethics Committee, chaired by Pat Downey. In April, Joe Hale wrote about the Education Committee. But don't wait to read about them all. We need you to join in. I urge you to consider how you can pay back a little and at the same time gain a lot. A president can't lead unless the troops are willing to follow. What do you say? Let's get moving!

A handwritten signature of James P. Sheahan in dark ink, written in a cursive style.

**James P. Sheahan, RRC
President**

RCI EXECUTIVE COMMITTEE

President James P. Sheahan, RRC Midland, MI (P) 517-832-7600 (F) 517-832-3640	Second Vice President Warren R. French, PE, RRC, CCS Houston, TX (P) 281-440-8284 (F) 281-440-8286	Treasurer W. Nelson Hall, RRC Monroe, NC (P) 704-282-0826 (F) 704-289-6956	Executive Director Francis A. Acquaviva Raleigh, NC (P) 919-859-0742 (F) 919-859-1328
First Vice President William Cypher, RRC Kirkland, WA (P) 425-822-8397 (F) 425-822-7595	Secretary Albert Duwyn, RRC Mississauga, ON (P) 905-607-7244 (F) 905-607-7288	Immediate Past President Michael Blanchette, RRC, RRO Dallas, TX (P) 972-980-3733 (F) 972-980-3736	



Dear Editor:

Dear Sir:

I've been attending RCI trade shows for about 12 years, and this was the best convention so far. The set up and show times—everything clicked. But the part that meant the most to us was that the consultants took the time to see what we had (that was new), and they gave us some feedback.

That's why we will be attending Reno in 2000. Exchanging ideas and hearing their comments is key to product improve-

ment and ultimately being in some specs.

Introduction of ChemCurbs four years ago was a lonely experience. This year we received some great praise, and we were able to talk about two other new products. Thanks for a great show in Charlotte.

Paul Graham
V.P. Sales
ChemLinkInc.
www.chemlink.inc.com

Purchase the Proceedings of RCI's 14th Annual Convention

\$20—Members • \$25—Nonmembers
Phone 1-800-828-1902



Comprehensive Laboratory Services

Built-Up

Roof Cut Analysis, Tensile, Void Count, ...

Modified

ASTM & CGSB Specification Testing

Single Ply

Tensile Properties, Low Temperature, ...

Shingles

Shingle Analysis, Tear Strength, ...

Polyurethane Foam and Coatings

Coating Thickness, Tensile, Compression, ...

Bitumen

ASTM Specification Testing

Insulation

Compression, Moisture Content, Density, ...

Hail Damage

Testing of All Roof Types

Miscellaneous

Photomicrography, Thermography, Uplift Testing, ...

3020 North Grimes Street • Hobbs, New Mexico 88240 • (505) 392-7676

Asphalt Roofing Manufacturers Association — COMING SOON —

ARMA's Complete ONE-STOP Publication Ordering Service
Residential and Commercial Roofing, Application & Design Manuals,
Technical Bulletins, Educational Brochures, VHS

ARMA's TOLL-FREE ACCESS 1-800-829-3572

For additional information or to learn more about ARMA, contact:

Asphalt Roofing Manufacturers Association
Suite 404 CenterPark, 4041 Powder Mill Road
Calverton, MD 20705-3106 USA
Telephone (301) 348-2002 Fax: (301) 348-2020

For complete publication listing, log on to the ARMA website:

Website: www.asphaltroofing.org

The Asphalt Roofing Manufacturers Association (ARMA) is the North American trade association representing the majority of the asphalt roofing industry manufacturing companies and their new material suppliers of bituminous-bound residential and commercial fiberglass and organic asphalt shingle roofing products, roll roofing, built-up (BUR) roofing systems, and modified bitumen roofing systems.



Momentum Technologies, inc.

Bringing Technology to the Roof Consulting Industry with Laboratory Services that make the consultants job easier.

*Roof Core Forensics — Asbestos Analysis — Expert Witness Services
Chemical & Mechanical Analysis of Materials — ASTM & ICBO Testing*

For more information contact us at
1-800-720-0261

Visit our web site at
www.momentum-tech.com



Momentum Technologies, inc.
1507 Boettler Road, Uniontown, OH 44685
An ICBO Accredited and ISO Guide 25 Certified Laboratory

CONSOLIDATION IN THE ROOFING INDUSTRY

BY ROBERT W. LYONS, FRCI

INTRODUCTION

It is the dawning of the New Millennium! And by all signs and forecasts, we are in for exciting times. We are seeing significant changes in technology and in the world markets that will be driving these changes. Here in the U.S., we are seeing new business philosophies, entirely new market opportunities, and demographic changes that are having a profound impact on what the consumer wants and expects in the future.

Consumers as a group are expecting more now than ever before from their suppliers and vendors. The most common demands include Bigger, Better, Faster, Cheaper and More Exciting. The dilemma of meeting the customer's often conflicting expectations reminds me of the old sign in the small-town barbershop that read "Good, Fast, and Cheap: Pick any Two."

Sooner or later these sweeping and accelerating national and international changes were bound to affect the roofing industry. Well, the time of significant change is here! It may have taken us 100 years to begin moving quickly, but it is likely that we will experience more change in our industry in the next 10 years than we have experienced in the past 100 years.

This paper will attempt to address a single dimension of this upcoming change, the consolidation of the industry. What is the who, what, where, how, and why of these consolidations?

BACKGROUND

In February of 1999, the National Roofing Contractors Association (NRCA) held its 112th Annual Convention in Phoenix. For over 100 years now, the roofing industry has been a very fragmented group of businesses. Barriers to entry have been few, resulting in an apparently endless supply of "newcomers" into this marketplace.

As building technologies have become more diverse, they have become more complex. The roof—"the fifth wall of any building"—is one of the more technically-demanding components to design and install correctly. There is little margin for error. Being 99% correct on a 100,000 square foot roof installation means you have the potential for 1,000 (1 square foot each) defects that could allow water to enter the building. Obviously this would create a serious condition unacceptable to any building owner or occupant.

In recent decades, as buildings have increased in size, with larger roofs and ever-increasing roofing budgets, the inherent demands for thorough technical due diligence, competent design and system selection, quality product and system manufacturing, and quality contractor application and support services, have become more customer-driven.

The roofing consumer has become not only more demanding but better educated. Increasingly, larger companies prefer doing business with larger vendors who are more solvent and stable providers. Consumers have become accustomed to the benefits of one-stop shopping and single-source providers. Roofing clients have been raising the bar on their expectations

for quality workmanship, construction schedules more convenient to building owners and occupants, and prompt service and support. Many of these expectations are being passed on by roofing contractors to their distributors and supplier/manufacturers. Without question, this has created higher expectations and demands throughout the entire roofing supply chain.

In response to these higher expectations and demands of the customer, there has been a gradual trend toward a more consolidated industry that can better serve its clients.

Change for change's sake is rarely good, but change for improvement is a positive step forward in any industry's evolution!

THE HISTORY OF CONSOLIDATION IN THE ROOFING INDUSTRY

The first major group in the roofing industry to experience consolidation was the distributors. In the mid-1960s, two of the three major distributors, Allied and Bradco, both in northern New Jersey, began their buy and build acquisition programs. Then, in the mid-1980s, ABC Supply (in Wisconsin) began its journey. Today these three companies have a combined total of hundreds of offices located in over 40 states and do approximately \$2B in sales. These distributor consolidations were generally driven by the economic benefits available through volume purchasing and discounting. Additionally, consolidation gave these distributors the opportunity to offer their customers one-stop shopping with more choices at better prices and with shorter delivery turnarounds.

Among roofing product and system manufacturers, there was significant expansion throughout the 1970s. Beginning in the 1980s, we began to see a movement toward acquisition and consolidation that has accelerated in the 1990s. The past few years have seen a significant realignment in the power base, with four major manufacturers—Johns Manville, GAF, Firestone, and Carlisle—holding the largest combined market share. Each of these manufacturers has made substantial acquisitions and has diversified its product lines significantly. In addition to a diverse product mix, most now offer more deeply integrated product lines that include decking, insulation, fasteners, accessories, and metal components. Driving these manufacturer consolidations were, typically, the prospects of long-term economic benefits resulting from a reduction of competitors, cross-selling, one-stop shopping, and name-branding. Additionally, there were financial synergies to be realized in manufacturing cost reductions, added production efficiencies, and savings in many areas of overhead due to the dilution effect offered through a larger corporate structure.

The latest efforts of consolidation are among roofing contractors. As of this writing, these are efforts still in progress. But for the record, there are a total of three (or possibly four) roofing consolidation efforts underway as of the beginning of 1999. The first two of these efforts were initially organized and structured for the recently popular IPO (Initial Public Offering) "roll-up."

The first of these consolidations was begun in 1998. Headquartered in Florida and going by the name GRS (General Roofing Services, Inc.), this firm is comprised of 13 roofing contractors in 12 states with total annual *pro forma* combined revenues of approximately \$195M. This group was close to making the date for their IPO when the markets turned very unfavorable for these types of roll-ups. As a result, the company took until January of 1999 to complete the merger.

The second of these consolidations was also started in early 1998, is headquartered in Houston, and goes by the name of INCOM Roofing Services, Inc. This firm was initially to be comprised of approximately 12 contractors with total annual *pro forma* combined revenues of approximately \$216M. This firm was also

structured as an IPO roll-up consolidation. They too were close to the date for their scheduled IPO when they were forced to pull back and regroup with a new financing plan involving private investors. As of this writing, rumors suggest this firm is in the final stages of consummating a smaller private transaction.

Due to the unfortunate timing of both these planned IPOs, significant time and expense were lost in the futile effort to go public during the unfavorable period beginning mid-summer 1998. Because of the delays, there was also a predictable loss of momentum and optimism on the part of some of the participants.

"I want companies with a real strategy, not just a consolidator that is trying to build revenue by just buying companies."

Richard Dowd, 1997
Partner—Ernst & Young

The final consolidation efforts that we are aware of, both still in the organizational stages, are one involving FMI (Fails Management), and a second involving New Millennium Roofing, Inc., based in Houston, Texas. It is our understanding that the FMI consolidation was also originally attempting to put together a group of contractors for an IPO. New Millennium Roofing, Inc. is the only group that plans to structure a true "buy-&-build" integration from the outset. This group is still recruiting potential partner firms and performing the due diligence review on the existing contractors who have expressed an interest in participating.

Based on the latest information (and an optimistic economic forecast going into the new year), it would appear that all of these firms could be functionally operational sometime during 1999.

At that time, a variety of factors will determine which of these firms come out with well-formulated, strategic initiatives and successfully implemented business plans.

Given the magnitude of both the customer base and the rev-



ROLLIN'...
Moving forward in continuous revolutions

THE HEAT IS ON WITH OUR NEW 10 FOOT WIDE SHEETS • THE HEAT IS ON WITH OUR NEW 10 FOOT WIDE • THE HEAT IS ON WITH OUR NEW

enue base in the industry, it is conceivable that all four of these consolidators could succeed and prosper.

WHY CONSOLIDATION?

The following represents a summary of the leading motivations that have typically spurred consolidations in other industries. These seem to be relevant and applicable to the current roofing contractor consolidations.

- Providing for a natural order of company progression
- Information technology driven
- Succession headaches and uncertainties
- Liquidity opportunity
- Opportunity to be a part of something bigger and better
- Opportunity to create "best practices"
- Opportunity to be part of a bigger team and talent base
- Opportunity to achieve parity with clients, manufacturers, service providers, all vendors, etc.
- Freedom for owners to focus on what they do best!

CONSOLIDATION CHECKLIST

The following is a list of the major criteria for a successful consolidation, regardless of industry:

- Sufficient size of industry (minimum of \$5B annual revenues)
- Solid organic growth opportunities
- Professional management available
- "First mover" advantage
- Ability to achieve synergies quickly
- A universe of potential sellers
- Ability to leverage brand name and technologies across partner firms

OVERALL ROOFING INDUSTRY SIZE

Based upon industry data available for calendar year 1997, the following is a summary of the domestic roofing marketplace:

More Than a \$20 Billion Market in U.S.
(\$14B Industrial/Commercial and \$6B Residential)
Roof maintenance market mostly unrecorded

Approximately 35,000 Contractors
Revenue Split = 73% Reroof / 27% New Roofs
No single contractor with more than a 1% market share

Lots Of "pent-up" Demand
(Deferred Maintenance Backlog)

North American & Overseas Markets Open To Development

DRIVING INTERNAL GROWTH

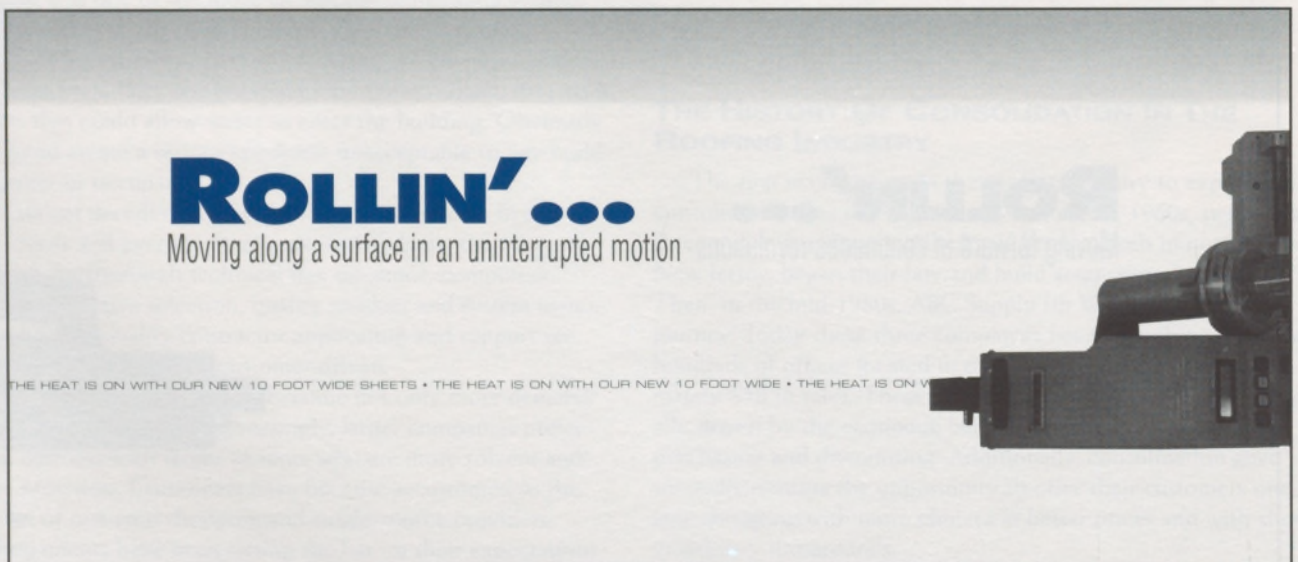
Following is a list of the major synergies and strategic initiatives that should drive internal growth of the new consolidated company:

- Economies of scale
- Best practices
- National accounts
- Standardized training
- Employee motivation through incentives
- Coordinated marketing and advertising
- Enabling company entrepreneurs to focus on what they do best, freed of many of the undesirable daily administrative tasks

REQUIRED PROFESSIONAL MANAGEMENT

Following is a profile of the core competencies and proven experience that should be a part of the professional management team of any consolidation:

- Ability to close acquisitions
- Ability to identify and evaluate future target acquisitions
- Ability to effectively integrate acquired companies
- Ability to cut costs while maintaining customer service, quality and value
- Ability to create standardized best practices
- Ability to create a national brand
- Ability to redefine sales and marketing concepts
- Ability to train middle managers (field and office)
- National experience and exposure



WHY THE NEED FOR CHANGE?

This is by no means an exhaustive list of justifications for a roofing contracting consolidation. However, based upon my almost 25 years of national exposure and experience, and much time spent listening to clients, these are some of the most common responses given to me by both the building owner customers and the contractors.

Building Owners:

- Building owners and managers want a better alternative for their roofing contracting needs
- Erratic contractor performance
- Inconsistent pricing and value
- Poor responsiveness
- Desire for single point of contact
- Desire for regional or national coverage capabilities

Roofing Contractors:

- Feel like they are being squeezed by owners to do more for less
- Feel like they are being squeezed by manufacturers to pay more for less

POSSIBLE CHANGES IN THE MARKET FROM CONSOLIDATION

There is no way to know for sure how the roofing industry will be impacted by the contractor consolidations currently underway. However, if they are successful, there could be many new concepts introduced into the market. For purposes of stimulating thought and discussion, here are some possibilities for consideration.

- Movement toward the offering of design/build services, impacting the traditional way that architects, engineers, and roof consultants currently interface with owners as a third party
- Introduction of more substantial proactive roof maintenance programs
- Introduction of more comprehensive roof management programs
- Offering of longer-term financing of roofing (and reroof-

ing) purchases

- Offering of self insurance
- Development of extensive in-house training programs
- Development of better bidding programs and processes
- Development of better job costing programs and processes
- Development of better safety training and monitoring programs
- Implementation of state-of-the-art technology into the field processes, including mechanization of labor-intensive operations
- Implementing better logistics practices
- Closer partnering and alliances with manufacturers
- Closer partnering and alliances with customers
- System, product, and equipment R&D
- Branding, Internet marketing, and E-commerce

SUMMARY

In an effort to bring this topic full circle, we will go back to the original focus of the who, what, where, how, and why issues surrounding the current consolidations taking place in the roofing industry.

WHO? All roofing contractors are potential candidates for eventual inclusion in one of the consolidation companies. However, due to the need to cost-effectively form a critical mass, the criteria for inclusion in the initial founding groups are somewhat selective and limiting. As a result, the initial founding contractor companies will typically be the larger companies in the industry (averaging \$10M in annual revenues) and more profitable, averaging 8 to 10% earnings before interest, tax, depreciation, and amortization (EBITDA).

WHAT? A roofing contractor consolidation company will be structured as "big business." The initial founding companies will typically come together in a reorganization and will all end up as equity owners of the new corporation. The consolidated company will have an executive management team and a board of directors. They will provide "audited" financial statements for their internal and external investors and stockholders. They will



SW Sure-Weld

ROLLIN'!

WE'RE ROLLIN' ON THE HEAT WITH OUR NEW, WIDER SURE-WELD TPO SHEETS...
UP TO 10 FEET WIDE

THE HEAT IS ON WITH OUR NEW 10 FOOT WIDE SHEETS • THE HEAT IS ON WITH OUR NEW 10 FOOT WIDE • THE

YOUR SINGLE-PLY SOLUTION™
800-4-SYNTEC
www.carlisle-syntec.com

CARLISLE
Carlisle SynTec Incorporated

be poised for the possibility of going public when the environment and timing are best.

WHERE? The initial founding contractor companies will typically be located in first-tier cities, strategically dispersed throughout all regions of the country. There are two distinct groups of firms that will make up these initial partner firms:

- **Sellers**—These are the current contractor-owners who wish to sell and possibly retire or slow down significantly in their daily involvement in the business, and
- **Builders**—These are the contractor-owners who still want to work hard and build something bigger and better than what they can possibly do on their own. They are typically in their mid 40s to mid 50s in age and have a strong passion to continue to invest in their businesses.

HOW? These consolidations are being organized and funded with both contractor equity and outside investor equity. Since the collapse of the "poof" company, or IPO "roll-up" option, all of these consolidations have been forced to look to the private rather than public sector for their capital. There are significant costs associated with putting one of these companies together (organizational costs range from \$1M to \$4M), and there are some risks that it may not get done.

WHY? There are two basic answers to this question. The majority of these consolidations are done as a financial play for the promoters and investors. However, one of these current consolidations is taking a platform focused on the perspective of improving service to customers, enhancing the work environment for employees, while offering the contractor-owners a win-win investment scenario.

ABOUT THE AUTHOR

Robert W. Lyons, FRCI, is a co-founder and the first two-term president of RCI. In 1986, Bob was awarded the first Fellow of RCI award. He has 24 years experience in the roofing industry. Bob has been a faculty member of RIEI for over 15 years and is an author and lecturer on many contemporary roofing topics.



Robert W. Lyons, FRCI

Change for change's sake is rarely good; however, change is inevitable and can be positive!

It is inevitable that several contractor consolidations will enter the marketplace going into the next millennium. We can only hope that these companies take the higher road of quality, value, and customer service that our clients will be demanding. Additionally, there will be opportunity for these larger contracting firms to position themselves to deal with the manufacturers on a more equal footing, "big business to big business." There is the possibility that these truly national contracting firms will be better able to service both the consultants and the nationally distributed clients they need to serve. For the sake of the roofing laborer, we also hope that they will provide a challenging, dignified, safe, and properly-compensated work environment for themselves and future generations in which to be proud to work.

As Will Rogers once said, "Even if you're on the right track, you'll get run over if you just sit there." In the final analysis, consolidation could benefit everyone.

Editor's Note: This paper is extracted from the Proceedings of the 14th International Convention & Trade Show of the Roof Consultants Institute in Charlotte, NC March 12-16, 1999.

Accept no substitutes . . .



Zero Penetrations

. . . only the original

Portable Pipe Hanger Systems

Pipe Support Systems • Duct Support Systems
Equipment Support Systems
Walkway Systems

- Continuous transition
- Increased load distribution
- Integrate gas lines, etc
- Accessories available
- Easy installation
- Height adjustable
- On-site technical support



PORTABLE PIPE HANGERS, INC.

Call 1.800.797.6585

website @ www.portablepipehangers.com

5534 HARVEY WILSON DRIVE

HOUSTON, TEXAS 77020

If you're looking for a single source of single-ply roofing, you've made the right play.



I's only 18 points in "Scrabble®" but GenFlex is the only game in town when you need a supplier with a complete line of single-ply roofing systems and the tech support you need to take advantage of their properties. Whether you're thinking of EPDM, PVC or TPO, GenFlex has it all. Just spell out your needs and concerns and GenFlex will provide the answers you need whether you're looking for economy or reduced life-cycle cost or you're faced with difficult construction challenges or environmental factors.

With almost two decades in the single-ply roofing business, GenFlex has the experience to solve any kind of roofing or re-roofing problem. In fact, chances are that we've already figured it out because we've probably seen it before somewhere across the country. Come to GenFlex for PVC, EPDM or TPO and we'll help you sort through all the possibilities on the board. Call 800-443-4272.

GenFlex
Roofing Systems

GENCORP

1722 Indian Wood Circle

Maumee, Ohio 43537

<http://www.genflex.com>

Scrabble® is a registered trademark of Milton Bradley Company, a subsidiary of Hasbro, Inc.

RCI Holds Largest

Never before have so many come together to participate in a dialogue on roof consulting. Over 700 individuals from 40 U.S. states, two Canadian provinces, the District of Columbia, and Puerto Rico traveled to Charlotte, NC, where RCI was launched 15 years ago. They came to take RRC and RRO tests; to listen to educational programs on roofing technology and the business of roofing; to network on the golf course, in the lobby and on the trap shooting range; to participate in committee work and association policy establishment; to elect officers and to reward volunteers for past work; to examine the latest in roofing materials in the trade show. In essence, they came to have fun and to advance their careers.

There were two keynote speakers: NRCA Executive Vice President Bill Good and baseball legend Gaylord Perry. There was a surprise appearance by bagpiper/member Darryl Rodgers, who led the assemblage to the outstanding trade show. Another interesting and informative Mock Trial was held. The roof consultant "went free" because, as the jury announced, "he was lucky to be practicing in North Carolina," where contributory negligence on the part

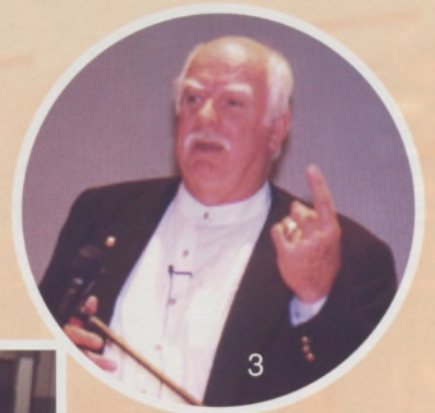


Clockwise starting at left:
1) There was plenty of time to learn about new products from vendors in the Trade Show.
2) Comedian Jerry Farber entertained at the President's Banquet. 3) The Hilton Charlotte & Towers Hotel was the site of many events. 4) Member Darryl Rodgers plays the bagpipes to lead attendees to the trade show opening. Behind him, Executive Director Fran Acquaviva is introducing Darryl as Gaylord Perry (adjusting hat) and Nelson Hall look on.

Convention Ever

of the plaintiff negates a finding against the defendant. There were sessions galore on subjects ranging from "Performance Attributes of Type III Coal Tar Bitumen" and "Using the New ANSI Roof Edge Standard" to "Personalities in the Workplace" and "Consolidation in the Roofing Industry." Artisan demonstrations on wood shakes, slate, EPDM roofing, and copper. A jam-packed President's Reception and Dinner that featured awards for, as the comedian joked, "97% of the people in the room." Some folks played golf; some went fishing (no one caught more than a cold); some shot sporting clays, while others sweated in the air-conditioned rooms of the Hilton over RRC and RRO exams. Many took side tours to Charlotte landmarks or indulged in shopping forays. And on the last day of the convention, the new Executive Committee of the Board of Directors, led by President James P. Sheahan, took over following the election of new Treasurer Nelson Hall.

—Kris Ammerman



Clockwise, starting directly above: 1) Secretary Al Duwyn, left, and Immediate Past President Mike Blanchette, right, react to an airplane analogy offered by new President J. P. Sheahan, sporting Irish suspenders. 2) Some 328 individuals manned booths on the Exhibit floor. 3) Baseball Hall of Famer Gaylord Perry makes a point. 4) Mike Blanchette, left, and Bill Cypher, right, were named as Fellows of the Institute. 5) Nelson Hall, left, playing the part of the defendant roof consultant, is cross-examined by the plaintiff's attorney, played by Steve Badger, during the Mock Trial presentation.



PRESIDENT'S BANQUET

Outgoing President Mike Blanchette was given several gifts, including a book, carrying case, Tiffany pen, cedar matches and a Cuban cigar (the Board hadn't gotten the message that Mike had quit smoking).



Two-hundred attended the President's Reception and Banquet.



Lyle Hogan was given the President's Award by President Mike Blanchette as the editor of *Interface* and for his chairmanship of the *Interface* Editorial Board.



Kami Farahmandpour was recognized as an Outstanding Volunteer for his "superb efforts in coordinating the successful 1998 Building Envelope Symposium program, and his leadership of the symposium in Chicago."



Ed Betker received a Certificate of Appreciation for his "consistently willing service to the Institute in a variety of important endeavors."

BY KRIS AMMERMAN

Over 200 attended the President's Reception and Banquet Monday evening, March 15, in Charlotte. Once again, RCI's favorite emcee, Dick Canon, took the floor. Following a surf 'n turf repast, Dick gave a presentation reviewing RCI's history.

The first meeting of RCI—then called the National Association of Roofing Consultants & Surveyors (NARCS)—met Oct. 27, 1981 in Charlotte. Charter membership was \$300 for three years. A \$15,000-\$20,000 budget was established. At the final organization meeting in Charlotte on Jan. 27, 1983, there were 11 pledged attendees. Bob Lyons was elected president; Dick Canon, first vice president; Ray Godschalx, second vice president; Bob Phillips, secretary/treasurer, and Bill Correll, executive director. Offices were set up in Raleigh because that's where both Phillips and Correll lived. There were 25 members that first year. RCI received its charter on May 23, 1983.

RCI held its first conference Feb. 16-17, 1984 in Atlanta in conjunction with the NRCAs convention. But RCI's first "national convention" was held April 15-18, 1986 in Dallas with 126 attendees and almost 50 exhibitors, the year Ben Hales was president.

This year, Dick Canon noted, we had over 800 attendees with 108 trade show booths (309 exhibitors), and can boast a membership of 1,216.

Recognized for their years of service to the Institute were Bob Lyons, for his "vision and determination" in organizing RCI; Bill Correll, for his countless unpaid hours of dedication as the organization's first executive director; the late Dr. Herbert Busching for his guidance; Ben Hales for daring to convene in Dallas; and Bob Phillips for his devotion and selfless contributions. (Later, Mike Blanchette noted that Dick, the Institute's second president and a charter member, had left himself out.)



Socializing at the banquet were, left to right: Richard Rinks, Shirley Rinks, and Don Cochran.

AWARDS

Named Fellows of the Institute by the Board of Fellows were outgoing president Mike Blanchette and first vice president Bill Cypher.

Lyle Hogan, FRCI, was given the President's Award for his "countless hours and exceptional insight as the editor of *Interface*, and for his chairmanship of the *Interface* Editorial Board."

Outstanding Volunteer awards were granted to:

- Pat Downey, for his "energy, commitment and long hours dedicated to the restructuring of RCI governance as the chair of RCI's Bylaws Committee."
- Kami Farahmandpour, for his "superb efforts in coordinating the successful 1998 Building Envelope Symposium program and his leadership of the symposium in Chicago."
- Chris Clarke for "his efforts in coordinating the successful Building Envelope Symposium in Houston and his work in coordinating the joint Region 4/RICOWI meeting in Houston."

Certificates of Appreciation were given to:

- Jim Magowan, for his "effort in coordinating the successful Oakland Building Envelope Symposium."
- Dennis McNeil, for his "exceptional service as a model region director."
- Jeff Scott, for his "commitment to the Institute and his valuable service as an exhibitor representative on the 1999 Convention Committee."
- Ed Betker, for his "consistently willing service to the Institute in a variety of important endeavors."

Recognized were individuals leaving the Board of Directors:

- Mike Blanchette
- Dennis McNeil
- Nick Lovato

Jeff Scott was awarded a Certificate of Appreciation for his "commitment to the Institute and his valuable service as an exhibitor representative on the 1999 Convention Committee."



Dennis McNeil was awarded a Certificate of Appreciation for his "exceptional service as a model region director."



RCI staff members were recognized at the banquet. Seated, left to right: Bill Myers and Fran Acquaviva. Standing, left to right: Micki Kamiszik, Margaret Huels, Kris Ammerman, and Ann Coughlin. (Back at Headquarters were Margie Phillips and Sharon Dupre).



Comedian Jerry Farber kept the assemblage in stitches.

The Horowitz Award was granted to Gerald Teitsma, RRC, for his contribution to *Interface* Journal in 1998. In his absence, the award was accepted by Ted Michelsen of RIEI. (Look for an article in an upcoming issue of *Interface*.)

Winners of the Document Competition were recognized (see page 15).

Staff members were also introduced and recognized for their work:

- Francis Acquaviva, executive director.
- Kris Ammerman, publications manager.
- Ann Coughlin, meetings and education manager.
- Sharon Dupre, executive assistant and receptionist (absent).

- Margaret Huels, assistant.
- Micki Kamszik, registration and membership manager.
- Bill Myers, marketing manager.
- Margie Phillips, finance coordinator (absent).

Following the awards, comedian Jerry Farber kept the hall in stitches, using props and the names of prominent attendees, such as Joe Hale, Al Duwyn, Mike Blanchette, J. P. Sheahan, and Fran Acquaviva in his routine.

At the conclusion of the evening, Jim Sheahan made a toast to outgoing president Mike Blanchette, who received several gifts from the Board. "May the roof of your house never fall in and may those beneath it never fall out," he proclaimed.

NEW REGISTERED ROOF CONSULTANTS AND REGISTERED ROOF OBSERVERS



New RRCs are seated above, left to right: Brian Ullery and Christopher Payne. Standing, left to right: John D. Shepherd and Ron Haynes.

NEW RRCs

Dennis Keith Davis
Ron Haynes
Christopher Payne
John D. Shepherd
Brian Ullery



New RROs are, seated, left to right: John A. Pitre, Jud P. Jansen, David Pierce. Standing, same order: Robert J. Elsdon, Larry Olson, Michael Thompson, John W. Wells, and William E. Clayton.

NEW RROs

Brandon L. Bullock
William E. Clayton
John E. Crowley
Edmond Daigneault
Eric Downey
Robert L. Dye
William J. Elliott
Robert J. Elsdon
Matthew P. Gateman

James Haltiwanger
Jeffrey A. Harrison
Dave R. Hornsey
Jud P. Jansen
James R. Kiernan
Steven H. Kinel
Richard Markel
Larry Olson
Jeffrey J. Opel
Robert B. Parden
Giuseppe Parente

Michael Paschal
Donald L. Pate
Henry Pearson
Gregory A. Phillips
David Pierce
John A. Pitre
Jerry L. Reeves
Joseph Rives
David M. Sanford
Richard Schuettner
Dustin J. Somers

Tom Stanley
Jim J. Stithem
Michael Thompson
Robert D. Tuff
Don M. Utsunomiya
James W. Watson
John W. Wells
Johnny L. Williams
Dennis M. Wilson
Jason Wysong

DOCUMENT COMPETITION WINNERS

A committee of five dedicated, knowledgeable judges spent several hours studying the almost 30 documents entered in this year's Document Competition. Awards in the tight field were granted as follows:



Patrick Downey, Merik Inc., was the First Place winner in the Roof Report contest of the Document Competition. (Pat also received an Outstanding Volunteer Award for his "energy, commitment and long hours dedicated to the restructuring of RCI governance as the chair of RCI's Bylaws Committee.")

Large Roofing Project

1st—Bill Conley, Conley Design Group, Inc.
2nd—Ron E. Haynes P.E., Austin-Dillon-Cook
Honorable Mention—Michael S. Cornett, PE, RRC, HDH Assoc.

Small Roofing Project

1st—Forrest Whitescarver, Conley Design Group, Inc.
2nd—Joe Hale, FRCI, HDH Associates

Roof Report

1st—Patrick L. Downey, Merik, Inc.
2nd—Robert J. Boessen Sr., RRC, Roof Consulting Tech., Inc.
2nd—Gary I. Mitchell, Service Master Energy Management
Honorable Mention—Allen Nicholson, RRC, Holmes & Narver, Inc.
Honorable Mention—Ken Paar, Conley Design Group, Inc.

Nelson Hall Elected Treasurer

Nelson Hall was elected national Treasurer of RCI at the organization's annual meeting in Charlotte, NC March 16.

W. Nelson Hall has been involved in the roofing industry since college. After studying engineering at N. C. State, he joined Lan-Way Contractors in Raleigh as a supervisor and estimator in 1972. In 1977, Nelson joined the Garland Company of Cleveland, OH, where he served as area representative responsible for sales, preparation of roof specifications, and project management.

In 1980, Hall joined Burlington Industries in Greensboro, NC, where he did project management of roof projects and held seminars for plant and division personnel for approximately 150 Burlington facilities, as well as analyzing existing roof conditions.

By 1983, he had joined CRS Inc. in Monroe, NC, where he became a senior consultant preparing bid docu-

ments and general project management. He also conducted nondestructive surveys, served as an expert witness for roof-related litigation, and did analysis of existing and proposed roof assemblies. Hall also managed the nationwide inspection staff.

In 1989, Hall established his own firm, Nelson Hall & Associates, Inc., in Monroe. His firm provides all types of roof consulting services on a nationwide basis.

In 1992, Hall became a Registered Roof Consultant, and in 1994, was elected to the board of directors of Region II, where he sits on the Professional Liaison and Product Performance Committee. Hall is a past member of the American Society for Testing and Materials (ASTM), where he was active on the D-08 Committee on Roofing, Waterproofing, and Bituminous Materials.

In his private life, Nelson spends time with his five-year-old daughter,



ten-year-old son (whose Little League team he coaches), and wife of 19 years, Liz, who manages a local credit union. He enjoys hunting and fishing and recently organized RCI's first fishing tournament at the Charlotte convention.

Bill Good, NRCA

REPORTED BY SCOTT M. HINESLEY



On Sunday, March 14, William A. Good, National Roofing Contractors Association (NRCA) Executive Vice-President, presented the "state of the industry address" to the attendees of the RCI Convention. Bill attended the convention with Steve Kruger, current President of NRCA.

Good outlined several potential problems that may arise in the roofing community in the near future and the steps NRCA is taking to confront these issues.

The roofing industry has been in a period of sustained growth for the past several years. The outlook for 1999, although not anticipated to be as strong as in 1998, is expected to maintain this trend. The future health of the economy will quite possibly have the strongest effect on the roofing market; however, NRCA can not affect this. There are several areas where NRCA can have some influence. They are:

Workforce. The average age of a construction worker in the United States is in the mid 40s. The roofing profession has not been able to attract young workers out of high school or military service due to a perceived tarnished image of roofers. (According to a poll referenced by Good, this profession was recently ranked as 248th out of 250 preferred professions). Polls conducted by NRCA show the largest contributing factor to the lack of

workers is a lack of training. With this in mind, NRCA has begun development of a series of training "modules" dedicated to providing potential roofers with formal training prior to "hands on" field experience. To that end, they have set up a complete training program in McAllen, Texas. NRCA plans to maintain a national directory of individuals who have completed the training programs.

Government regulation. According to Good, a new wave of government regulations relating to asphalt fumes, fall protection, and safety are to be implemented in the near future. Although many of these regulations are necessary, Good urged all individuals who may be impacted (including architects, engineers, contractors, etc.) to provide input to the regulatory agency requesting the fair and even execution of any new regulations.

Demand for quality. Insurance agencies (such as Factory Mutual) are increasingly demanding a higher standard of quality in order to reduce the number of loss claims. Additionally, building owners and managers are demanding the same level of quality in an effort to alleviate unnecessary repair costs and maintain tenant satisfaction. Good stated that increased communication efforts between all parties involved with the roofing project will most often lead to a higher-quality finished product.

In closing, Good urged all members of RCI and NRCA to act as a team to help control the forces which work to shape the future of the roofing industry.

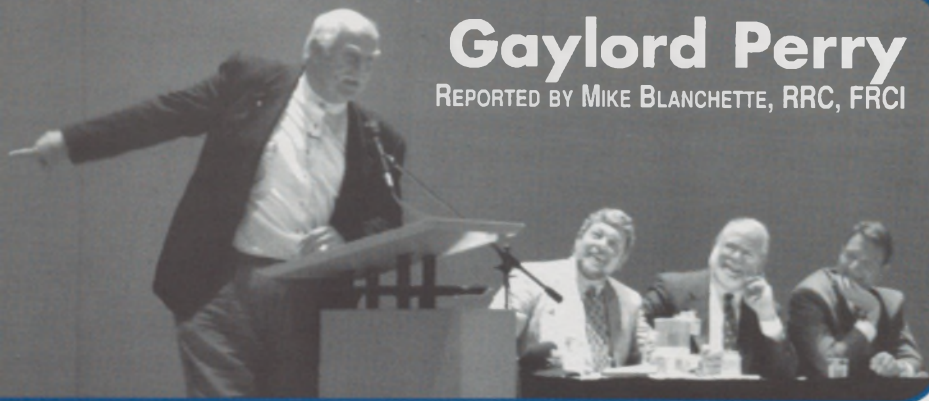
When he got into the heart of his speech, every ear in the house was well tuned in. Stories of teammate pranks, team dependency on one another, foreign objects "placed" on baseballs prior to sending them at a batter, and more, kept us entertained.

Mr. Perry took questions from the audience at the conclusion of his talk, adding to an entertaining afternoon. We got an insight into what it's like to face a lineup like the Big Red Machine (Cincinnati Reds), carrying over remembrances of opposing player "situations" from one season to the next, and going from a huge team like the Giants all the way "down" to Cleveland.

When asked about other big names and favorites in the game, Perry praised many individuals and made a lot of us think back to a great time in the history of baseball. Thank you, Gaylord, for a very enjoyable convention opening.

Gaylord Perry

REPORTED BY MIKE BLANCHETTE, RRC, FRCI



Just prior to opening the Trade Show exhibits, RCI's attendees were treated to more than 40 minutes of entertaining baseball inside information from one of the greats: Gaylord Perry. Mr. Perry pitched a no-hitter back in the days of other huge names from the past, such as Willie Mays and George Brett, to name a few. Just on personality and entertainment value, I would have voted him into the Hall of Fame, but he made it on his pitching ability and he's extremely proud of it.

I was fortunate enough to sit in with Mr. Perry before his speech. As they say, the hits just kept on coming. He kept us entertained even before getting up on stage.

Gaylord Perry describes an encounter with Billy Martin as (left to right) Nelson Hall, Fran Acquariva, and Mike Blanchette, look on.

TECHNOLOGY IN ROOF CONSULTING

BY IAN LURIE, MODERATOR

With the incredible array of technological gadgets and issues we now face, the single most daunting technological task of any roof consultant is to pick and choose carefully. Digital cameras or scanners? Web sites or CD-ROMs? Which software and hardware? Should I hire a Y2K consultant or take my chances? Should I take my office "paperless"?

After discussing this broad array of topics, the round table members settled on a few key points:

- The technologies having the most impact in the profession right now are digital cameras and the Internet.
- In the next six months, look to palmtop computers and Y2K to become more prominent as small, powerful, hand-held computers become less expensive and more powerful, and January 1 quickly approaches...



STATE REGULATORY ISSUES

WARREN FRENCH,
MODERATOR

The group discussed the feeling that the "time is right" to push for legal recognition of RRCs and RROs by state groups, in the face of increasing recognition elsewhere by insurers and public sector facility managers. It was noted that the NCEE is implementing a model law to allow states to incorporate more reciprocity between states' engineers. This might be an opportunity for

RCI to have RRCs recognized under an existing governing board, a separate, distinctive "RRC" board, or by using RCI as the registration "clearing house."

Participants recognized the limitations of gaining legislative recognition due to our tiny constituency (not many votes), but it was suggested that a possible avenue to influence use of roof consultants in architecture work might be insurance firms.

The AIA has also published articles urging architects to obtain roof consulting assistance. We need to realize, however, that recognition within the industry does not reflect legal recognition by the states.



GOALS OF RCI

BY J.P. SHEAHAN, MODERATOR

The roundtable on RCI Goals was attended by 14 members consisting of a mix of professional and industry members and a few contractors. Several concepts were developed. The first related to a practical suggestion:

- Incorporate a loop to allow users to comment on the article they have called up on Mercury to correct any

errors noted.

Two goals were directed to "image building":

- Reach out to students (particularly in community colleges), to have them help in projects like building the platforms for the artisan demonstrations, etc.
- Get involved in community projects like Habitat For Humanity. Work with groups trying to help in useful humanitarian causes where building projects are needed.

Three ideas related to growth opportunities:

- Include training and presentations on residential roofing.
- Expand roofing to include plaza deck construction, green roofs, and below-grade waterproofing.
- The most enticing idea was to include the entire building envelope in the association. This would include insulation and waterproofing assemblies as well as glazing and curtain wall systems.

CONSULTANT LIABILITY & INSURANCE ISSUES

COLIN MURPHY, MODERATOR

Participants in this roundtable discussed the interrelationship between insurance and manufacturers' warranties. At the conclusion, they determined they knew less than they did when they started.

It was mentioned that defense costs on errors and omissions cases average \$200,000 to \$250,000 per claim. Owners are looking for contractors and consultants who are properly insured. More liability claims occur over contract administration than the documents themselves.

Consultants concurred that there is not enough time to know all we need to know about insurance, and that expert advice is important.



ETHICS

By ROBERT F. MARTIN,
MODERATOR

A dozen individuals took part in this roundtable discussion. A synopsis of their questions and the group's discussion shows the wide scope of this issue.

- What is the complaint process for unethical behavior, and how is the complaint filed?
- What is the process of complaint resolution?
- What is the difference between RCI membership and those with RRCs and RROs?
- How do ethics and bylaws affect an RRC?
- Can you be both a roof consultant and a contractor?
- Under the current code of ethics, are professional and industry members held to different levels of ethical behavior?
- All members should be treated the same in taking the RRC and RRO tests. The organization needs to have a process in place to deal with misuse of the title. Discussion was held regarding voting rights of non-professional members.
 - The use of a disclosure statement was discussed in regard to dealing with clients.

The one thing the group agreed on was that no one seems to agree in the area of ethics. This laid the groundwork for the fact that these issues need to be continuously revisited and explored.



MARKETING FOR ROOF CONSULTANTS

By BOB LYONS, FRCI, MODERATOR

Marketing is everything a company does to position itself favorably to make sales. It has to do with image, goodwill, promotion of products and services, detailing of experience and qualifications, etc.

General marketing examples:

- Advertising
- Direct mail campaigns
- Websites
- Trade shows
- Association memberships
- Guest speaking
- Article publications
- Civic, church, & professional society memberships
- Political campaign support and PAC contributions to friendly candidates

Collateral material examples:

- Business cards
- Statements of qualification
- Videos, slide shows, Powerpoint presentations
- Informational newsletter
- Company literature
- Project profiles

Client/Prospect Databases:

- Manufacturers' directories
- Book of lists
- Association membership directories
- Sales contact databases (e.g., ACT, Goldmine, etc.)

General information to consider:

- Mass mailings generally get only a 1-3% return rate.
- If you are going to do any media advertising, be sure to study your best clients' demographics and plan to commit at least a 12-month ad campaign.
- Whatever you invest in marketing purposes, be sure that the products you choose are a good reflection of your company's image and purpose.
- Convey the benefits of your client using your services—not just what you do, but rather why it needs to be done.
- Pick one (or a few) marketing campaigns or techniques, rather than over-extending and not doing justice to any of them.

Recommendations of the group to RCI:

RCI should produce a video (or CD) that explains the needs and benefits of having professional roof consultants assist clients with their roofing needs. This could be combined with a small trifold brochure that summarizes this video theme and tells the story effectively as only a non-proprietary professional association can do. Proposed title: "The Benefits a Professional Roof Consultant Can Bring to Your Next Roofing Project!"





STATE CHAPTER ORGANIZATION

BY NELSON HALL, RRC, MODERATOR

The discussion began with Pat Downey explaining how the chapter model charters were developed and how these were pretty much a "fill-in-the-blanks" for any group wishing to form a state chapter. The discussion then moved to chapter financing and whether the chapters should or should not have fees over and above the membership fees charged by the Institute. We also discussed appropriate ways to solicit donations from manufactures for the chapter activities. It was noted by John Hickman that these types of organizations will be the breeding ground for future leaders of the Institute and we pretty much agreed that the chapter process will substantially increase the membership of RCI. One of the leading member benefits from the formation of chapters will be that members can travel short distances to attend RCI educational training sessions. This will provide the members with easy access to CEUs required to maintain RRO and RRC status.

COLLECTING OUTSTANDING INVOICES

MODERATED BY RICHARD CANON, RRC, FRCI

This very informative lunch roundtable was led by Dick Canon. There was an interesting and humorous discussion of billing and collection problems of roof consultants. Some the topics discussed were methods of aging past due accounts, billing late charges or late fees, contract provisions for collecting, contract terminology, terms, invoice timing, use of monthly statements, identifying slow pay clients, billing and accounting software. Approximately seven consultants participated in the discussion, providing a variety of opinions, ideas, and experiences. All came away with some new ideas for improving collections.

—Gene Lawrence, RRC



RESEARCH TOPICS FOR RCI

BY MODERATOR ANDRÉ DESJARLAIS

The roundtable to discuss roofing research attracted nine RCI members and guests. Each of the guests was invited to supply up to two research subjects that he or she felt would be of greatest assistance to RCI members.

These subjects were tabulated and a total of fifteen subjects were identified. Proponents of each subject were given time to advocate their topics.

Each attendee was given five votes and a balloting process was undertaken to shorten the listing. From the original list of fifteen, eight topics were identified. The voting process was repeated and the four top research ideas were identified. These are (not in any specific order):

1. Identifying key material and roof system properties that can be used to define roof system durability;
2. Wind uplift data on real buildings;
3. Reroofing guidelines; and
4. Information to increase the reuse and recycling of roofing system components.





EDUCATION COMMITTEE

Pictured, left to right: Sy Elakman, Joe Hale (chairman), Tim Barrett, Kami Farahmandpour, Hitesh Doshi, Chip Ward, Ann Coughlin, and Ted Sheridan. Absent from the photo: Chris Campbell and Jeff Scott.

The Education Committee held two meetings at the Charlotte convention—Saturday, March 13 and Sunday, March 14.

Topics discussed:

- Proposal to be presented at the upcoming Board meeting for additional funding for new education projects by RCI.
- Updated *Fundamentals of Roofing* and *Advanced Roof Consulting* textbooks. Joe Hale presented copies of the instructors' manuals for both courses. Hitesh Doshi demonstrated the use of scanned slides to accompany the textbooks. Committee members turned in their completed assigned chapters that included forms and graphics.
- All of the slides that will accompany the textbooks will be distributed among committee members for review.
- The possibility of new continuing education courses was discussed.



RRC Ad Hoc REGISTRATION COMMITTEE

Pictured, left to right: Micki Kamszik, Registration Manager; Ron Haynes, and committee member Mark DeOgburn. Present at the meeting but absent from the photo: committee members Warren French, Chairman Richard Rinks, Don Bush, Curt Liscum, Paul Ridley and Jim Magowan (non-member).

The RCI Ad Hoc Registration Committee met March 15 at the convention. The Board of Directors approved several recommendations by the committee (see "Registration" in the Board Action report).

Assignments for the Manual of Practice were made for the following domains: Roof condition surveys (includes legal witness), Warren French; construction documents, Richard Rinks; roof moisture surveys, Mark DeOgburn; design reviews, Don Bush; research related to roofing, Walt Rossiter; lab testing, Jim Koontz and Vicki Crenshaw; professional association participation, Micki Kamszik; assessment of code

compliance, Paul Ridley; quality assurance observations, Curt Liscum. All information on the above is to be sent to Micki Kamszik by April 30 for dissemination to all members.

An intermediary step between the RRO and the RRC—tentatively labeled "Registered Roof Technician," was discussed.

All applications will remain valid for a two-year period. After that, candidates must submit new applications.

—Micki Kamszik

ETHICS COMMITTEE

Jim Magowan, Petter Nottleson and Bob Martin were present at a meeting of the Ethics Committee March 12 in conjunction with the Charlotte convention. The committee's approach is as follows:

Ethics starts at the top.

The Board has directed that the Ethics Committee redefine for the '90s what professional members, industry members, and affiliate members are.

Discussion along these lines has included:

- Should these designations be put on the back of membership cards?
- What form of punishment should a violation of ethics take? (Loss of membership? Loss of RRC/RRO? Notice in *Interface* of action taken?)
- How should ethical issues be filed? Should they go to the Ethics Committee for review and action or no action? Are they then sent on to a review board and decided by a simple majority before the Board of Fellows with punishment directed by the Board?

Education

Education is one area in which RCI can help its

members stay out of trouble. Going back to the old point system for RRC test taking was discussed. A review of all documents and submittals by potential RRC candidates by a special arm of the Ethics Committee might be warranted.

The goal of the Ethics Committee is to resolve these issues within the next seven months and have them ready for review, voting, and implementation at the next convention. There is no doubt that RCI does not legislate morality. Each member has to do that.

Everyone must understand, also, that ethical issues are not new. They were discussed and resolved 13 and 14 years ago when RCI was established, and now are being revisited due to changes in the industry. A session on ethical "what ifs" and guidelines should be held at each convention. It was also agreed by all that the membership needs to be made aware of RCI's concern for their needs. If a member has an issue or concern, he or she should feel free to bring the problem forward. Hopefully, over the next year, this goal will be realized.

—Robert F. Martin, Chairman

CONVENTION COMMITTEE

Present at the celebratory finale to the '99 convention were, left to right: Meeting Coordinator Ann Coughlin, Marketing Coordinator Bill Myers, Jan Sheahan, 2000 Convention Committee Chair Warren French, 1999 Convention Committee Chair Bill Cypher, Past President Robb Smith, President J. P. Sheahan, and Secretary Albert Duwyn.



The final meeting of the Charlotte Convention—the Reno 2000 Convention Committee Meeting—was held late Tuesday afternoon, March 16, in Charlotte. The committee is made up of the following members: Warren French (Chair), Albert Duwyn, Robb Smith, Mike DeFrancesco, Sheila Cockrell (Siplast), Laurie Ybarra (GL Meetings), and RCI staff members Bill Myers and Ann Coughlin.

A wrap-up of the Charlotte convention was made by Bill Cypher and Jim Sheahan. A time for future meetings was established: the second Tuesday of each month at 7:30 PM (EST).

The theme of the next convention, to be held

March 24-28, 2000 in Reno, Nevada, has been established as "On the Frontier of a New Millennium."

Discussed were:

- Keynote speaker possibilities
- Ideas for recreational events
- Exhibitor Priority Points System
- New member welcome event
- Speaker presentations
- Time line
- Increased sponsorships

Members toasted to a successful '99 convention, and a more successful convention in 2000.

—Ann Coughlin

RRO EXAM COMMITTEE

Eleven of RCI's finest sat for the RRO exam the morning of March 12 in Charlotte. The exam consists of six individual tests, all requiring a 70% or better to pass. During the morning session, exams were given covering General Knowledge, Built-Up and Modified Bitumen Roofing, and Asphalt Shingles. The afternoon session covered Single-ply, Wood, and Spray Applied Polyurethane Foam (SPF) roofing. This was the inaugural use of the revised exams that use all multiple choice questions with an answer sheet. This procedure was so successful that all the exams were graded in time to announce the new RROs at the President's Banquet on Monday evening.

It was a "slim but powerful" meeting of the RRO Exam Development Sub-Committee on Saturday,



Micki Kamszik and Curtis Liscum (chairman) meet on RRO Exam issues.

March 13. The committee discussed the inaugural use of the revised exams, answer sheets, and grading process. Discussions were also held concerning three new exams under development. Those include: metal, slate, and tile roofing. As always, the committee is looking for exam questions with references. Membership is requested to forward questions to Micki Kamszik at RCI or Curt Liscum.

—Curt Liscum, Chairman

BUILDING CODES & STANDARDS

The members of the Building Codes and Standards Committee met Saturday during RCI's 14th Annual Convention and Exhibition in Charlotte, NC.

The Codes Committee members and officers are:

- Dean Larsen Jr., Roof Systems Eng./Chair (Region 6)
- Patty Wood-Shields, Wood-Shields Roof Consultants/Secretary (Region 2)
- Hitesh Doshi, Ryerson Polytechnic Univ. (Region 8)
- John Gerber, Roof Management Technologies, Inc. (Region 1)
- Gene Lawrence, Lawrence Roof Consultants, Inc. (Region 6)
- Paul Lundquist, Environmental Roofing Systems, Inc. (Region 4)
- Luther Mock, Martin Riley Mock Architects/Consultants (Region 3)
- Darrell Smith, Van Winkle-Jacob Engineering, Inc. (Region 3).

The committee re-defined its objectives to include:

- Participation in the code development process.
- Participation in the standards development process.
- Informing members about current codes and standards.
- Updating members on anticipated changes in codes and standards.
- Development of "How-to Guides."

In order to meet the objectives, the committee will

be sending out a survey to RCI members. Input will be requested on the types of code and jurisdictional issues that the members would like to see addressed. Members will also be asked to provide the names of the codes and standards organizations of which they are members.

The committee is developing a microsite that will be linked to RCI's web site. The site will serve as a link for a codes discussion forum where members can post questions relevant to building codes and standards, retrieve information on joining specific committees of codes and standards organizations, and obtain results of code hearings and other valuable information. Once approval is received from Headquarters, the committee will proceed.

Paul Lundquist, Environmental Roofing Systems, Inc. (ERSI) has been an active member of this committee since 1993. ERSI has generously donated \$1,000 to underwrite the cost of the committee's web page and other related projects. Mr. Lundquist will be profiled in an upcoming edition of *Interface*.

The committee is planning to run at least four articles this coming year in *Interface* relating to standards and testing.

Code Update

The 1999 International Code Council's (ICC) code development hearings were held in Costa Mesa, CA on March 15-26. The three major code organizations (BOCA, ICBO, SBCCI) participated in the joint hearings to take action on the code change submittals to the final draft of the International Building Code

BUILDING CODES & STANDARDS (CONTINUED)

(IBC), the International Fire Code (IFC) and the International Residential Code (IRC). Final action on the changes will take place at the ICC's joint Annual Conference to be held September 11-16 in St. Louis, MO. Monographs listing all of the code changes are automatically mailed to eligible members of the model code groups. Copies can be purchased by contacting

Becky Cook, SBCCI (205) 591-1853 ext. 250.

Please feel free to contact Committee Chair, Dean Larsen (559-226-3670), Secretary, Patty Wood Shields (770-914-7235), or the RCI committee member in your region, if you need any assistance.

—Patty Wood-Shields, Secretary

PUBLICATIONS COMMITTEE

The Publications Committee held its first face-to-face meeting in conjunction with RCI's annual convention. The committee mandate was briefly reviewed, and no significant changes were suggested.

As requested by members of the RCI Executive Committee, the Publications Committee has begun to expand and assimilate RCI's *Glossary of Terms*. Merging RCI's glossary with glossaries of other industry organizations, such as NRCA, ASTM, etc., was also discussed. As a further resource to RCI members, the publications of other industry organizations, such as SPRI, PIMA, NRCA, ARMA, etc., could be outlined on a "master publication list" on roofing issues. The potential for the development of this list is under review.

All RCI members are encouraged to contact any member of the Publications Committee with questions or suggestions regarding future publications RCI may choose to offer. It is the committee's intention to

set aside sufficient time at the beginning of each meeting to allow RCI and other industry members an opportunity to make recommendations regarding information offered or to be otherwise made available by the Institute.

Committee members are:

- Chairman Ed Betker, RRC, Inspec, Inc.; phone: 612-546-3434; fax: 612-546-8669.
- Robert Kuhn, Kuhn Consulting Inc.; phone: 281-955-2447; fax: 281-955-2447.
- Vickie Crenshaw, Jim Koontz & Associates Inc.; phone: 505-392-7676; fax: 505-392-7602.
- Helene Hardy-Pierce, Tamko Roofing Products Inc.; phone: 417-624-6644; fax: 417-624-8935.
- Tom Hutchinson, RRC, Legat Architects; phone: 312-258-9595; fax: 312-258-1555.
- Kris Ammerman, staff liaison, Headquarters.

—Ed Betker, Chairman

INTERFACE REVIEW BOARD

Several long-standing and a couple of new members of the Peer Review Group of *Interface Journal* met in Charlotte to discuss the state of the journal. Senior Editor Lyle Hogan expressed concern over the fact that there is no back-up plan should he or Executive Editor Kris Ammerman be unavailable or indisposed for one or more issues. With the addition of *RCI* items, there are now two sets of editing and production schedules per month involving many hours of work and interaction between headquarters and Lyle.

Other members agreed to be available to proof issues should the need arise. Present were Hogan, Ammerman, Bill Rubel, Gary Cattel, Ed Betker, and Donald Kilpatrick.

—Kris Ammerman, Executive Editor



The Interface Board met twice: once at the pool table to be "snookered" by Logan. Left to right: Gary Cattel, Bill Rubel, Lyle Hogan, Kris Ammerman.



Nominations committee members, from left: Dave Siple, Francis A. Acquaviva, Chairman Sam Huff, Joe Heidt, Ed Betker.

NOMINATIONS COMMITTEE

The committee discussed holding future national elections by direct mail ballot. With that in mind, the following schedule was set:

Nominations deadline	June 30
Candidate selection deadline	Sept. 1
Biographies due	Nov. 1
Ballots mailed	First week in January
Ballots due back	Second week in February
Tabulated by outside firm by	March 1

In other business, the committee discussed establishment of criteria for position statements and planned to work on a leadership development program for the Institute.

Members oversaw the election at the annual meeting on Tuesday.

—Sam Huff, Chairman

RRC EXAMINATION DEVELOPMENT

The RRC designation continues to be the most recognized and respected credential in the roofing industry. It identifies professionals that have demonstrated and achieved, through education, experience, and examination, an unsurpassed level of knowledge and understanding of a very complex roofing profession. An equal credential does not exist in our industry.

The RRC Exam Development Committee proctored the examination for 19 enthusiastic examinees on March 12 in Charlotte. Part I of the examination started at 8:30 a.m. and Part II ended at 6 p.m. The committee not only proctored the exam, but, through a marathon grading process, examinations were graded

and cross-checked prior to the official opening of the convention.

A number of one-on-one meetings between committee members took place during the convention to update the status of current work tasks and to make plans for future progress meetings.

The RRC Exam Development Committee is in need of new members from Regions I, IV, VII, and VIII. Four vacant positions exist. If you are an RRC and have a desire to join a busy committee that always has important work to do, please call Don Bush Sr. at 815-385-0041 or e-mail dbushsr@moistcontech.com.

—Don Bush Sr., Chairman



JOHN HICKMAN

USING THE NEW ANSI ROOF EDGE STANDARD

PRESENTED BY JOHN HICKMAN

REVIEWED BY THOMAS SMITH, RRC, AIA

John B. Hickman, Chairman and CEO of the W. P. Hickman Co., is chairman of SPRI's Edge Detail Subcommittee. He spearheaded development of both the new ANSI standard and SPRI's Wind Design Guide for Edge Systems Used with Low Slope Roofing Systems (1994), which was the forerunner to the new ANSI standard. Titled ANSI/SPRI ES-1-98, Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems, the standard was approved in November 1998 and became available in February.

During the presentation, Hickman illustrated the critical role that edge systems (i.e., edge flashings

and copings) play in wind performance, and he discussed development of the standard. He pointed out that edge system performance is important throughout the country. Although wind damage is commonly associated with hurricanes, edge systems are vulnerable to thunderstorm and other straight-line wind events if they are not carefully designed and installed. Design examples were presented to illustrate the relatively simple calculation procedure in the standard that is used to determine design loads on edge systems. He also discussed edge flashing test methods which are included in the standard.

SPRI graciously included a copy of the new ANSI standard in the *Proceedings* which was given to convention attendees. The standard can also be purchased from SPRI by calling 781-444-0242. The author encourages designers to become familiar with the standard and take it into consideration when designing edge flashings and copings.

POST-INSTALLATION FIELD EVALUATION OF A PRESSURE-EQUALIZED, SINGLE-PLY ROOFING SYSTEM TO DETERMINE DRYING EFFECTS ON MOIST CEMENTITIOUS ROOF DECKS

PRESENTED BY WARREN R. FRENCH, PE, RRC, CCS

REVIEWED BY MICHAEL BLANCHETTE, RRC, FRCI



WARREN R. FRENCH, RRC

What do you do with a high rise building in downtown Houston that has wet insulation and wet lightweight concrete? To further complicate the problem, the owner/tenant does not want major disruption, and removal of the lightweight concrete from 40+ stories would increase costs beyond budget limitations. Warren French provided a project profile of a job his firm undertook in 1997 which attendees found both enlightening and informative.

Thanks to a reference from fellow RCI member Rick Cook, Warren's firm was asked to undertake evaluation and re-roofing design of a major oil company's building in Houston. Warren's staff performed a nuclear non destructive survey of the existing conditions of the lightweight insulating concrete before re-roof in 1997. He followed up with a second nuclear survey in 1998 to see if drying had taken place. The existing built-up roof and wet insulation were removed and a pressure-equalized, single-ply roof system was installed during the re-roofing operations as

per specifications provided by French Engineering.

Conditions to overcome were disruption to building occupants, high wind loads, and the weather in Houston, Texas. Houston has an average rainfall of 47" per year which does not allow for protracted periods of having a roof "open" during removal and replacement.

The results to date find that the roof has not completely dried, but the areas of high moisture content (34% - 43%) have decreased while other areas have increased in moisture content slightly. In this writer's opinion, the moisture is evenly disbursing throughout the lightweight concrete and success is in the wings. The lightweight concrete was saved, the pressure-equalized single ply roof system is performing very well, and the client was not seriously disrupted during the re-roofing operations. I would ask that Warren periodically update us.

PERFORMANCE ATTRIBUTES OF TYPE III COAL TAR BITUMENS

PRESENTED BY JIM D. KOONTZ, P.E.

REVIEWED BY MICHAEL BLANCHETTE, RRC, FRCI

Jim Koontz's talks are always well attended at RCI functions, whether he is speaking on hail testing, lab analysis, or, in this case, coal tar products. This program was no exception, and all attendees were given a very honest and unbiased presentation on the attributes of a sometimes controversial roofing material.

After a brief introduction on the history of coal tar, Jim explained the research which went into making the less fuming product we now refer to as coal tar bitumen. For many years we have been told not to mix coal tar and asphalt, yet we have to do so at base flashings, envelopes, etc. The manufacturers took a base coal tar pitch and added various hydrocarbon-based products to try to keep the good waterproofing properties of coal tar but and still lessen the complaints received on physical irritation and potential health concerns during

application. The resulting coal tar bitumen came into use in the mid 1970s.

Jim also talked about the use of coal tar products with fiberglass felts and the problems that developed in the industry: i.e., point loading, slope limitations, etc. Jim finished up his presentation by analyzing the weight loss, pinholing, and increased softening point attributes that are sometimes found when using Type III Coal Tar Bitumen. Mr. Koontz concluded his presentation by advising building owners that have this product in place to monitor these roofs for premature flood coat and inter-ply hardening.



JIM D. KOONTZ, P.E.



KEITH FLOHR, LEFT, AND PHIL DAWSON

The presentation started with a news videotape with newscasters explaining the asbestos hazards associated with this fire and the roofing project. As it turns out, the asbestos that was on the roof had already been removed properly before the time of the fire. This is another example of how news reporters sometimes make news rather than report the facts. The fire apparently started around a temporary installation of

FIRE DOWN BELOW

PRESENTED BY PHIL DAWSON AND KEITH FLOHR

REVIEWED BY W. NELSON HALL, RRC

roof membrane around a roof drain and spread from there. The contractor was unable to have an inside fire watch for security reasons and the rooftop fire watch, which in effect lasted approximately an hour and a half, did not detect the fire. The testing units used to check the area around the drain did not reveal that the fire had started.

Tests performed by Phil Dawson and Keith Flohr show why the testing equipment was unable to detect the fire. The point of the presentation is that rooftop testing with heat detectors will never be a substitute for a monitor inside the building to assure that no fires are started when using a torch to install a modified bituminous roof system.

ASBESTOS AND ROOF CONSULTING

PRESENTED BY CHUCK MARVIN & JEFF DELLINGER

REVIEWED BY DON KILPATRICK

"Asbestos and Roof Consulting: Watching Your Step," was co-presented by Chuck Marvin, RRC, and Jeff Dellinger, an asbestos consultant with the State of North Carolina.

As roofing consultants, we are charged with representing our clients' best interests. Chuck Marvin's portion of the presentation focused on asbestos-containing roof materials (ACRM) that, by virtue of our roles as consultants, have the potential to be our responsibility. Marvin stressed that it is our responsibility to take the



JEFF DELLINGER

owners and their hazardous waste down the high road. The most practical approach to this most strongly regulated element of our charge is 1) an appropriate sampling protocol performed by a certified asbestos building inspector, 2) subsequent testing by an accredited lab, and 3) knowledge of local, state, and federal regulations as they relate to worker protection, certification, removal, transport, and disposal.

Jeff Dellinger spoke about regulatory compliance and complacency issues. Know your limits. Roofing consultants have been cited if they offer specific direc-

ASBESTOS AND ROOF CONSULTING (CONTINUED)



CHUCK MARVIN

tion for removal of ACRM without the benefit of an accredited management planner. Dellinger revealed the most common violations occur with wrong assumption of qualification to perform a task. The laws governing asbestos, though they may vary from one state to another, are out there and enforced. He stressed a prudent roofing consultant should make no assumption related to his/her activities in this arena. An awareness of regulatory compliance on all levels is a key element for the mutual protection of the client, the consultant, and the general public.

COLD-APPLIED BITUMINOUS ROOFING

PRESENTED BY TERRY O'CONNOR & JEFF SCOTT

REVIEWED BY KAMRAN FARAHMANDPOUR

This topic was presented by Terry O'Connor, Product Manager, Asphalt Roofing Systems of Firestone Building Products Company. Jeff Scott, also of Firestone, assisted in the preparation of the presentation. More than 75 attended the session.

Mr. O'Connor presented a well-organized overview of cold-applied bituminous roofing, including a review of materials and application methods. The following is a brief summary:

In general, cold-applied modified bituminous materials offer several advantages over the conventional hot-applied systems. Cold-applied systems can be cost effective, reduce the contractor's liability exposure related to safety and fire, reduce fumes, reduce potential for dependency on labor variability, and can offer an alternative for projects with limited site access.

Cold-applied bituminous roofing systems can be divided into two categories: cold-applied built-up roof (BUR) membranes and cold-applied modified bitumen systems. Components of a BUR system include the bitumen (typically a cut-back for cold applications) and reinforcement sheets. The modified systems include a similar bitumen and modified bitumen rolls. In a BUR system, the cold-applied bitumen serves as the waterproofing membrane between the reinforcing sheets, while in a modified bitumen system, it serves as the adhesive between the rolls.

Typically, the asphalt for cold-applied systems is more viscous for a modified system. The majority of available cold-applied bitumens are VOC-compliant.

The application methods for cold-applied bituminous systems include manual and mechanical application. When utilizing a manual method, the adhesive or interply bitumen is spread using a notched flexible squeegee. In the mechanical method, the adhesive or interply bitumen is applied using spray equipment. Use of the mechanical application method can greatly increase production rates and make a project more cost competitive. In a modified bitumen system, the seams can be sealed with the interply adhesive or by welding the two rolls together. Applicability of each seaming method will depend on the manufacturer.

Based on the examples of typical unit costs provided by the presenter, cold-applied bituminous systems can be cost-competitive with conventional hot-applied systems.

When specifying a cold-applied bituminous system, it is important to specify compatible components that are designed to function as a system. Most cold-applied system manufacturers offer a complete system with all the components having gone through testing as part of the system. Various ASTM standards for modified bituminous sheet materials (D-5147, D-6162, D-6163, and D-6164) also apply to cold-applied systems. However, no ASTM standards

currently exist for cold-applied adhesives used in such systems. Most proprietary systems available on the market meet UL Class A fire rating and FM 1-90 uplift requirements.

When installing a cold-applied bituminous roofing systems, temperature limitation of the materials should be carefully considered. Also, traffic on newly-installed membranes should be avoided until the membrane has fully cured.

In general, the presentation was highly educa-

tional and useful. O'Connor incorporated brief video segments showing various steps involved in manual application of a cold-applied modified bitumen roofing system. He also presented animated slides showing the sequence of roll application for the "conventional staggered roll" and "roll block" approaches for installation of modified bitumen roofing systems.



STEVEN MURRAY, P. ENG.

SOLVING ROOF LEAKS WITH FANS

PRESENTED BY STEVEN MURRAY, P. ENG.

REVIEWED BY ARTHUR "CHIP" WARD

As a prelude to the case study, Steven Murray discussed the factors that affect building performance: climate zones, rainfall zones, moisture transport (vapor diffusion and air leakage), economics (changing design and construction), and architecture (building envelope systems). Each factor was discussed in detail in relation to how it affects the building's performance.

The case study involved a hockey facility consisting of four NHL-size ice pads, dressing rooms, a pro shop, restaurant, bar, and amenities. The basic design was developed by the owners and has been copied in approximately 20 locations across Canada. The structure contains a pre-engineered, steel, rigid frame system with pre-painted, corrugated, steel cladding on both the walls and roof. On both the walls and the ceiling, an interior finish material (polyethylene fabric) both supports and conceals the fiberglass batt thermal insulation. The fabric serves four functions: interior finish, insulation support, vapor barrier, and air barrier. From the beginning, operation staff noticed an accumulation of water in the ceiling assembly and water leakage into the rink spaces. Attempts to stop the moisture accumulation and leakage by the owner, builder, and designer had proven unsuccessful.

As part of the investigation process, the building envelope, existing roof construction, symptoms, and attempted solutions were analyzed. It was determined that the vapor barrier is in the wrong position in the envelope for the majority of the year and, therefore, becomes an unintended condensation plane.

The possible solutions to this problem require one of two things: 1) raise the temperature of the existing vapor barrier to above the dewpoint of the exterior area, or 2) prevent the moist exterior air from reaching the existing vapor barrier. Option 1 can be accomplished by adding additional insulation to the

cold side of the vapor barrier. Option 2 can be accomplished by: a) installing a vapor barrier on the warm

side of the insulation; or b) creating a large enough positive pressure within the rink spaces that a constant exfiltration leakage will occur through the ceiling, preventing exterior humid air from entering the ceiling cavity.

Of the possible solutions listed above, the pressurization approach (2b) appeared to have the most potential, because it required no modification to the ceiling structure and could be accomplished at a lesser cost. Alternative means of creating a positive pressure across the plane of the ceiling assembly were examined. The most cost effective, at 5 to 10% of the next-lowest cost option, was installing five fans per rink with variable speed motors and associated controls to provide a small, balanced air flow. This solution was also less disruptive to normal facility operation than the more conventional repair options.

There were several issues outlined in the factors affecting building performance that contributed to the arena problems. First, there is the usage change from seasonal to year-round, secondly, the "cookie cutter" design developed by the owner was not well suited to the location where it was constructed, thirdly, the ceiling fabric was poorly suited for this application; and finally, poor maintenance of the air-handling units prevented the HVAC system from functioning correctly.

Mr. Murray further discussed how the information obtained from this case study could be applied to other common buildings, such as air-conditioned high rise buildings, historic masonry buildings, freezer structures, and swimming pool facilities.



DAVID ORBACH

CONTRACT ESSENTIALS FOR THE CONSULTING BUSINESS

PRESENTED BY DAVID ORBACH

REVIEWED BY DENNIS McNEIL, RRC, CCS, RRO

Construction attorney (and RCI member) David Orbach returned to an RCI convention once again to expand upon his

previous theme of "Weasel Wording" as protective contract language to shield the consultant from catastrophic damage. This time, David reviewed and discussed specific contract provisions which can limit the consultant's exposure, and the psychology which the consultant can implement to ensure that his contract—not the client's—is the document which is signed.

Orbach provided handout materials for a mythical consultant, "U Leak, We Seek, Inc.," which included standard form language beneficial to the interests of the consultant. These sample forms were used to focus upon specific areas of interest. Several recurrent themes which David suggests that consultants utilize in their contract format and negotiations include:

- Try to use your own "Standard Form Contract" as

a first attempt in establishing the contract, rather than the client's contract form or purchase order.

- Add protective language on the reverse side of your invoice, so that if the client balks at signing your "Standard Form Contract" or won't sign any sort of contract, then the protective language and stipulations may provide the protection which you need but couldn't state otherwise.
- Provide for adequate compensation if the scope of your work changes or your activities and services are being directed by others (e.g. by a mediator).
- Retainer fees are useful to establish the client's commitment to the project and to weed-out "flakes."
- Termination language should include verbiage concerning release of your liability.
- Financial exposure should be stated under the terms of the warranty section.
- Indemnity provisions should protect against latent conditions and third-party claims.

THE YEAR 2000 COMPUTER PROBLEM: PERILS AND OPPORTUNITIES

PRESENTED BY C. MATT SWAFFORD

REVIEWED BY BARRY G. O'BRIEN

Matt Swafford presented a clear and concise viewpoint that could be found somewhere in between opinions on Y2K problems. Such opinions have ranged from "it's poppycock" to "prepare for an economic and social meltdown." As he stated, "It certainly won't be Armageddon, but it is of concern as there will be significant failures in some businesses."

The highlights of the presentation were:

- A summary of exactly what the year 2000 computer problem is.
- What the real world effects of the situation are.
- What is being done about the problem.
- What businesses should do.
- How the problem can be transformed into an opportunity.

Computer systems in the early 1960s had nowhere near the memory capacity they do today. As a result, programmers were required to save storage space by using two digits for the year (i.e., "99" instead of

"1999"). With the century field "19" held constant, many programs will read 01/01/00 as January 1, 1900. Resulting scenarios could have wide-ranging and unpredictable implications.

Most recent reports indicate that large corporations are better prepared for potential glitches, while governments—particularly state and local jurisdictions—are less advanced in their efforts. Attendees at this seminar came away realizing that the Y2K problem should not be taken lightly and that with the necessary planning, risk can be significantly reduced. Furthermore, it was indicated that whether you are a large or small business, "an aggressive, proactive response to the Year 2000 computer problem presents an opportunity to gain a competitive advantage."



C. MATT SWAFFORD

HOW TO SET UP A PROJECT FOR SUCCESS

PRESENTED BY LEE HINES
REVIEWED BY PETE NOTTLESON



LEE HINES

Lee Hines, Corporate Accounts Manager for D.C. Taylor Company, made a presentation entitled "How to Set Up a Project For Success." The focus of the presentation was steps that can be taken prior to the start of roofing work to ensure a safe and successful project for all involved parties. One area of discussion was clearly defined staging areas. Items to be considered when planning a staging area include kettle/tanker and dumpster locations, clear identification of the staging area during the bid process, access, facility disruption, and safety.

Safety plays a large role on all roofing projects and Mr. Hines' presentation gave numerous examples of hazardous conditions. The discussion covered topics such as flammable material storage, fire extinguisher placement, fall arrest/prevention requirements, tear-off chute safety, and ladder safety. He also suggested that a building owner's insurance company could be requested to conduct a safety audit of the project prior to the start of the actual roofing work. A hand-

out prepared by Stanford University entitled "The Owner's Influence on Contractor Safety Programs" was included in the packet. The handout listed 15 items that owners do that have an influence on project safety.

The pre-construction meeting is one of the most important parts of successful project planning. Topics to be discussed at a pre-construction meeting were reviewed in this part of the presentation. All parties involved must understand their roles and responsibilities as well as the roles and responsibilities of others. A "Responsibility Chart" example was distributed in the packet and discussed. Leak and emergency procedures should be reviewed and understood at the pre-construction meeting. Accurate minutes of the meeting should be distributed to all parties in attendance. Several examples of meeting minute styles were provided.

DIGITAL IMAGING FOR TODAY'S BUSINESS

PRESENTED BY MICHAEL DOANE
REVIEWED BY AL MACCAGLI, RRC

Michael Doane explained the basics of digital photography and how it could best be used by roof consultants. Now that digital photography is available at a much more affordable cost than in the past (under \$1000), it is becoming a viable alternative to traditional film photography in some applications.

The Good News: Digital pictures can be downloaded to a computer immediately with no time or cost involved for developing. As many as 100 images can be stored on reusable storage "cards." They can be used in computer presentations, web pages, or sent in e-mail easily and quickly.

The Bad News: The image quality for a printed photograph isn't as good as film photography at the consumer level. Mr. Doane used "Moore's Law of Technology" (that every 18 months current technology will roughly double in speed) to reassure us that digital photography will eventually resolve its shortcomings.

This presentation was right on track for me. At my company, we use a standard film camera for everything that the client will need to see, but we use a digital camera and save the cost and time of developing hundreds of photographs for our own use.

CONSOLIDATIONS IN THE ROOFING INDUSTRY

PRESENTED BY ROBERT LYONS, FRCI REVIEWED BY WILLIAM RUBEL, RRC

According to Bob Lyons, one of the legends of RCI lore, the roofing industry is 50 years behind the times with respect to the way the industry is organized. To set the record straight, Bob wanted to describe the who, what, where, how, and why of the current move to aggregation.

At present, there are two roofing contractors who have "rolled up" with several more waiting in the wings. "What" happens is that a group of premier companies find financing to source the initial configuration. There is a core of growth-oriented management from the "founding companies." The

founders own a majority of the company but ultimately may sell stock in an initial public offering (IPO).

The "Where" is usually a group of major metropolitan areas capable of supporting the founder-type companies and their design for further consolidation through acquisition. "Why" it happens is a natural progression, especially in an information technology society. It provides succession plans for small businesses, liquidity for the owners, an opportunity to be part of something bigger and better, and freedom for the contractor owner to focus on doing what he or she does best.

"How" it occurs is usually through a third party consolidator who is able to research and select the participants. The reward for the consolidator is usually the difference between the company's value when it is worth five times earnings

as a private company compared to as much or more than 15 times earnings as a public or more widely-held concern.

The drivers of the consolidation process are the roofing consumers who want one-stop shopping with better service, quality, and peace of mind. Customers also want more consistent pricing, both seasonally and geographically, with service providers who have regional and national coverage capabilities.

Mr. Lyons' prediction is that we will see a competitive shakeout in the not-too-distant future with a 25% or greater reduction in the number of top 100 companies.

(See the complete presentation by Bob Lyons in this issue of Interface.)



ROBERT LYONS, FRCI



IAN LURIE

INTERNET TECHNOLOGIES FOR PROJECT MANAGEMENT

PRESENTED BY IAN LURIE REVIEWED BY AL MACCAGLI, RRC

This presentation provided a creative use of the Internet that could not have been imagined a few years ago: How to move project documents securely, quickly and efficiently. Mr. Lurie pointed out the three areas in construction management in which computers have the advantage over paper:

- Record keeping—Computer files are easier to manage, file, and retrieve.
- Distance—Sending documents across great distances via carrier takes time and can become costly.
- Access—When documents are sent, how do you know the receiving party will be there to accept them?

Lurie explained how these problems can be addressed by using the Internet. He demonstrated an example of how a web site can be set up with bid docu-

ments for a project. The involved parties are given the site address and a password for secured access. The 10 to 20 people who would have received a three-inch thick binder can now download the same information quickly, from anywhere in the world, 24 hours a day. Answers to frequently asked questions, addenda, and changes can be added to the website easily. This reduces the work and costs involved in making copies, sending bid packages, and answering the same questions for the spec writer.

This same method can be used for daily reports between the field observer and the consultant and similar "paper intensive" applications. The Proceedings from the convention (available for purchase for \$20 by calling Headquarters at 1-919-859-0742) contain much more detailed information on this presentation. It was an interesting insight into the way most of us will probably be doing business.

MOCK TRIAL: ROOF LITIGATION

PRESENTED BY WARREN FRENCH,
PAUL RIDLEY, JIM KOONTZ,
NELSON HALL, STEVE BADGER,
& KEN HONEYCUTT
REVIEWED BY ZEN SZEWCZYK



The jury discusses a point during deliberations as Warren French, Mock Trial coordinator, provides direction.



Jim Koontz, left, playing plaintiff's expert "John Johnson," is cross-examined by Atty. Paul Ridley, Defense Attorney.



Judge Ken Honeycutt of Charlotte gave of his time and expertise to participate.



Participants learned about legal pitfalls in roof contracting while being amused by the trial characters' testimony.

Participation at this year's Mock Trial Roof Litigation was great! There wasn't a seat left in the room. Kudos to the participants for the way they portrayed their characters and provided us with a realistic look at the procedural methods of a court of law.

Congratulations to Warren French, who introduced the scenario and his colleagues for their efforts to provide such a realistic, situational, trial scenario. The well thought out preparation and documentation provided by all the participants was admirably noted by all in attendance. We will not soon forget the all-too-real portrayals given by both the plaintiff's "expert witness" John Johnson (portrayed by Jim A. Koontz of J. D. Koontz &

Associates); and the defense's expert witness, Mac "Big Mac" MacDonald, roofing consultant, whose educational background includes an associate degree in marketing from the Huntsville Learning Facility (played by Nelson Hall of Nelson Hall & Associates Inc.).

We wish to extend special gratitude to the legal expertise that the three attorneys graciously provided—Steven Badger, Esq., of Zelle & Larson, Dallas, Texas (plaintiff's attorney); Paul Ridley, Esq., Wolin, Ridley, & Miller, Dallas, Texas (defense attorney); and Judge Ken Honeycutt, Esq., Charlotte, NC (the judge). The twelve jurors, taken from attendees at the convention, should also be congratulated for their participation and thoughtful verdict.

ETHICAL & CONTRACTUAL ISSUES: DOING THE RIGHT THING

PRESENTED BY EDWARD BETKER,
RRC; AND MICHAEL TAYLOR, ESQ
REVIEWED BY JOSEPH R. HEIDT, RRC

Edward Betker, RRC, and Michael Taylor, Esq., dealt with a dispute based upon the varied interpretations of responsibility for facility maintenance stated in a lease agreement signed approximately 25 years ago. As with most disputes, there are technical as well as legal issues to be considered. Mr. Betker discussed the technical issues, and Mr. Taylor

provided a legal perspective. The presentation explored roof replacement as a component of facility maintenance versus the "ordinary wear excepted" provision contained in the lease. It was emphasized that each component of the structure requires individual evaluation. It was concluded that the responsibility of the parties cannot always be determined

based upon the language contained in the lease document.

Audience participation brought out many contributing factors which would have bearing on the dispute. Opinion varied widely regarding which party to the agreement was responsible for the roof replacement.

Most disputes are the result of a break down in communications. It was concluded that with better communications, a compromise could have been reached. It was not necessary for either side to be "stuck" with a judicial verdict as well as the cost of litigation.

PERSONALITIES IN THE WORKPLACE

PRESENTED BY C. ALLAN KIDD, RRC, EIT

REVIEWED BY BLAKE JOPLIN, EIT

A lesson on personality traits is not exactly the type of technical session one might expect to see at a national RCI convention. Although no revolutionary roofing techniques were discussed, the subject of this session has the potential to revolutionize relationships in business. Allan Kidd and his wife, Charlene, have had much success in using these techniques to aid them with marriage counseling they perform for their church.

Allan, director of Region II, asked for the opportunity to present this session because of the impact it can have on people's lives and their business. Kidd discussed how primary personality traits can be defined by asking ourselves whether we are outgoing or reserved and whether we are task-oriented or people-oriented. By doing this, everyone can be placed in one of the following categories:

Type D—outgoing, task-oriented

Type I—outgoing, people-oriented

Type S—reserved, people-oriented

Type C—reserved, task-oriented

For each of these categories, Allan presented a long list of strengths and weaknesses for the various personality traits. Once an employer has the ability to identify people's strengths and weaknesses, he can build his company with people who will complement each other's personalities, therefore creating a more productive and comfortable working environment.



C. ALLAN KIDD, RRC

EPDM SEAMS

PRESENTED BY JOE HALE, FRCI, & WALT ROSSITER JR.

REVIEWED BY MASON MONTGOMERY, RRO

Joe Hale, FRCI, owner of HDH Associates, and Walt Rossiter Jr., research chemist with the Building and Fire Research Laboratory of the National Institute of Standards and Technology, presented findings from a three-year program focused on evaluating the performance of seam tape.

Their presentation started by discussing the positive value of industry and government benefitting from conducting joint venture product research. The National Institute of Standards and Technology (NIST) is a laboratory funded by the U. S. Department of Commerce. The laboratory performs research that is of great value to the consumer, industry, and general public.

Various factions of the roofing industry have questioned the performance and popularity of tape systems for EPDM membranes.

All tape seams used for this research were tested under laboratory conditions. These results were compared to previous peel test values and parameters developed by NIST.

Overall findings presented indicate that tape seams give the project a manufactured product that could be applied with better consistency. Additionally, the test modules indicated the strength of EPDM tape seams were adequate and acceptable.



ANDRÉ DESJARLAIS

PEMBROKE DRYING RATE PROJECT

PRESENTED BY ANDRÉ DESJARLAIS

REVIEWED BY MICHAEL S. CORNETT, PE, RRC

RCI continues its collaboration with Oak Ridge National Laboratory (ORNL) and the Sheet Membrane & Component Suppliers to the Commercial Roofing Industry (SPRI) on the subject of roof drying. André O. Desjarlais of ORNL gave an excellent update on an on-going research project (co-sponsored by RCI) concerning full-scale drying of a moisture-laden roof system. The project began in April of 1995 on the approximately 4,000 sq.ft. Pembroke Municipal Building in Pembroke, Virginia. It consists of four different roof recover combinations (each approximately 1,000 sq.ft.) utilizing variations of extruded polystyrene insulation thickness and thermoplastic single-ply membrane color (i.e., black membrane & 1/2" XEPS, black membrane & 3" XEPS, white membrane & 1/2" XEPS, and white membrane & 3" XEPS). The existing 27-year-old moisture-laden roof system is a four-ply organic felt asphalt built-up roof over 1.5" wood fiberboard over 1.5" metal roof deck.

Some results of the Pembroke Drying Rate Project, to date, are as follows:

- Roof does not leak (previously leaked badly).
- Fastener corrosion is an issue. Fasteners installed in

- very wet areas may have reduced pull-out strength.
- Dried (previously wet) wood fiberboard has compressive strengths of 50% or less of the original compressive strengths.
- The thermal value and resistance to water ingress for the extruded polystyrene insulation (both the 2" and 3") are essentially unchanged.
- The reflectivity of the black membrane is essentially unchanged; however, the reflectivity of the white membrane has decreased.
- Roof is drying. The final results for the Pembroke Drying Rate Project will be performed during the spring/summer of 2000.

A second drying rate research project (similar to the Pembroke Drying Rate Project), began in June 1998 at the New Bethel Fellowship Church in Rossville, Illinois. After three months, the roof for the Rossville Drying Rate Project dried approximately 9%. Additional results will be obtained for this drying rate project in June 1999.

ORNL and RCI are currently looking for an appropriate site (preferably a roof with foam insulation and in a northern location) on which to conduct a third drying rate project.

SIGDERS

PRESENTED BY BAS BASKARAN, P.E.

REVIEWED BY MICHAEL S. CORNETT, PE, RRC

Dr. A. "Bas" Baskaran, P.E. of the National Research Council of Canada (NRCC) gave a very interesting report on an ongoing NRCC Research Program (co-sponsored by RCI) concerning dynamic wind loading evaluations of single-ply membrane roof systems. Since typical North American single-ply membrane roof test procedures for certifications are limited to static wind loading conditions (FM-4470), the National Research Council of Canada has started a consortium project. It is entitled "Special Interest Group for Dynamic Evaluation of Roofing Systems (SIGDERS)" and is meant to evaluate the performance of single-ply membrane roof systems subjected to dynamic wind loading conditions.

An interesting finding from Phases I & II of the study is that for mechanically-attached thermoplastic (PVC, TPO), thermoset (EPDM), and modified bitumen single-ply roofing systems, the most common static wind loading failure mode was due to fastener pull-out from the deck. However, under dynamic wind loading conditions, membrane tearing at the fastener was the most common failure mode. Also, the wind uplift and membrane deflection failure modes for dynamic loading occurred at 30-50% less loading than when under static wind loading conditions.



BAS BASKARAN



DAVID L. ROODVOETS

RICOWI

PRESENTED BY DAVID L. ROODVOETS, CHAIRMAN,
& PHIL DREGGER, RRC

REPORTED BY DAVID L. ROODVOETS, CHAIRMAN

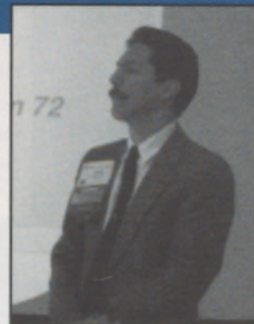
RICOWI is now the Roofing Industry Committee on Weather Issues Inc. This change to the bylaws and name of the organization (formerly "...on Wind Issues...") was approved at the March 12 meeting in conjunction with the convening of the RCI Convention in Charlotte. This change will expand the scope of the organization to address more issues facing the roofing industry. The members of RICOWI are the sponsor associations, which cover almost every aspect of roofing. Attendees are those who deal with the technical issues of the association. This group felt that there were other important weather issues and that it would be helpful if they could be discussed under one organization. This led to the proposal to change the name and bylaws. A committee has been appointed to determine what future programs or actions should be generated from this broadened scope.

RCI membership was also brought up-to-date on the status of the Wind Investigation Program (WIP). The

Cooperative Research and Development Agreement with Oak Ridge has been extended until the fall of 2000. Most of the teams trained in 1996 are still in place and ready to go this year if a major hurricane makes landfall in the continental U.S. There were 14 new trainees added in 1998 to fill slots left by those who are no longer available and to add a metal roof team. RCI members were asked to inform WIP about the extent of damage from any storms that make landfall in their areas.

Members were informed of an upcoming joint RCI/RICOWI seminar Oct. 22 at Underwriters Laboratory in Northbrook, IL. This will be held in conjunction with the Region III meeting of RCI. Planned topics are wind design and a tour of UL's wind test facilities.

Officers are: David Roodvoets, chairman; Bas Baskaran, Vice-chairman; Andre Desjarlais, treasurer; Joe Wilson, secretary; Patty Wood-Shields, executive director.



**PHIL DREGGER,
RRC, FRCI**

COOL ROOF INVESTIGATIONS

PRESENTED BY

ED BETKER, RONALD ABREMSKI, & ANDRÉ DESJARLAIS

REVIEWED BY AL MACCAGLI, RRC

The purpose of this research project is to see if the color of roofing can make a difference in energy usage. The concept of heat island effect was explained as concentrated areas of higher temperatures affecting communities, thereby increasing air conditioning usage. Air conditioning was used because it is a comparatively inefficient use of energy. Atlanta was used as an example to show how, as the heat dispersion of a community changes, so does the energy usage.

The presenters explained how reflective roofs are poor radiators and reflect heat back into the community. They also discussed how agriculture and discoloring



ED BETKER, RRC



RONALD ABREMSKI

can affect the performance of the color of "white" roofs.

Ongoing research in this field is currently underway by a group of organizations, including manufacturers, RCI, and various government and academic entities. The product of this research is the Energy Star Roof Products Program—rating of systems and products which will result in better energy usage.



COLIN MURPHY, RRC

ROOFTOP SAMPLING

PRESENTED BY COLIN MURPHY, RRC,
AND JOE HALE, FRCI

REVIEWED BY GRAYDON HEXHAM



JOE HALE, FRCI

This half-day course was presented by Colin Murphy and Joe Hale. The presenters offered their advice, based on their many years experience, to a full meeting room of attendees. Colin started the morning by explaining that it is not enough to merely go to a roof and start testing. One must objectively think about the roof. You must be prepared, bring sufficient equipment, and ensure that the roofer has enough of the right materials to complete the required number of tests. Examine the roof visually. Determine what you need to test for, where you need to test, and why and how many tests are required. Make sure that you fully understand the test methodology. Have prepared a "Chain of Custody"—a document to create a paper trail which provides evidence of who handled the samples. Colin also advised that it is wise to have a duplicate sample retained by your company or the lab

in case further testing is required. Inform the lab that you are sending samples and tell them which tests you want them to perform.

Some tests will destroy the samples. The importance of a pre-written protocol was driven home by Joe Hale. You must assume that your actions and inactions will be challenged in a court of law. You must have a set of procedures written out and on file before you visit the roof. Joe reinforced that even a bad, poorly-written protocol is better than none at all.

The protocol for the testing must also include what you are not going to do and why. The presenters were extremely knowledgeable about their subjects and presented their fact-filled course in a style that was easy to listen to and entertaining. I would highly recommend this course to all.

FACTORY MUTUAL RESEARCH CORPORATION REPORT

PRESENTED BY PHILLIP J. SMITH, PE

REVIEWED BY JOHN WILLERS, RRC, FRCI, PE

Phil Smith addressed five topics: (1) Introduction to Factory Mutual, (2) Overview and changes, (3) use of the new Approval Guide on CD, (4) a new Approval Standard 4490 for roofing applicators, and (5) application of EPS directly to metal deck.

Introduction

Factory Mutual consists of FMRC (Factory Mutual Research Corporation), FMEA (Factory Mutual Engineering Association), FMEC (Factory Mutual Engineering Corporation) and FMI (Factory Mutual International). These organizations are owned and operated by Allendale Insurance Co., Arkwright Insurance Co., and Protection Insurance Co., which are in the process of merging.

Overview and Changes

Smith indicated that the Approval Guide gives requirements. The Data Sheets provide recommendations. However, for FM-insured buildings, FM requires that their recommendations be followed. Phil noted that identical systems may not be approved on adjacent buildings due to the internal use and risk. For example, a warehouse may have a lesser risk than a computer chip manufacturing facility. He also indi-

cated that there are internal Data Sheets (pink sheets) that address some proprietary systems. These are not available outside of FM; however, designers can submit designs based on a proprietary system and FM will review these and provide comments.

Regarding wind uplift resistance, Phil noted that FM utilizes a "fastest mile" approach, whereas ASCE utilizes a "peak gust" approach. He explained that the same wind could be 85 MPH based on the fastest mile and this same wind could be 105 MPH based on the peak gust. These velocity values are then used in the formula $p=0.00256V^2$. Therefore, it is important to determine what should be used as the basis for the design. For example, some local building codes may require a greater "p" than FM due to the design procedure stipulated in the local code.

A new set of Data Sheets will be available in 1999. These are 1-28 (wind & decks), 1-29 (above deck components), 1-31 (metal roofs) and 1-28/29R (reference material). Some of the changes in these documents include providing tables for uplift pressures in 15 psf increments, eliminating zones, prescribing perimeter fastening options, requiring that mechanically-attached single ply systems be installed with the rows of fasteners oriented perpendicular to

the flutes in the deck, limiting insulation board size to a maximum of 4' X 4' for all adhered systems, and specifying requirements for enhanced securement of the deck to the structure at building corners.

Use of the CD

An Approval Guide is now available in CD format. It will be published annually and updated three times each year. The updated material appears in red print. There is no "line out" for deletions. Data Sheets are not yet available in CD format.

The introductory material must be read for one to effectively use the CD. Also, it would be helpful to print pages 3-235, 3-236 and 3-237 as these pages contain all of the footnotes. Having these printed will eliminate having to move to these pages each time one needs to look up a footnote.

Approval Standard 4490

This standard is for approval of roofing applicators and should be available in January 2000. This is FM's first attempt to deal with people. Phil indicated that 60% to 80% of FM's losses are a result of "people

problems." The standard will address training, education, application skills, and record keeping. FM is also considering developing similar standards for roof monitors and designers.

EPS Applied Directly to Metal Deck

PIMA sponsored the testing (FM 4880) of three different constructions. The three tests were on roof systems where extruded polystyrene was installed directly over metal roof deck, extruded polystyrene was installed directly over a gypsum board which was placed directly over metal deck, and where polyisocyanurate was installed directly over metal roof deck.

Based on the results of this internal fire test, FM will neither approve nor accept roof systems where polystyrene insulation is applied directly to the roof deck.

FM-approved polyisocyanurate insulation applied directly to metal deck is approved and accepted by FM. The test results of this roof assembly were comparable to the assembly where extruded polystyrene insulation was placed over gypsum board which was placed directly over the metal deck.

PHOTOGRAPHIC DOCUMENTATION & PRESENTATION

PRESENTED BY RICHARD CANON AND JOHN SHEPHERD
REVIEWED BY DONALD E. BUSH JR., RRC

As the saying goes, "Almost anyone can take a picture. All one needs is a camera and a roll of film." A simple click of the shutter and the photographed subject is recorded permanently on film. Often, the end results are far from pleasing.

Why? Most amateur photographers—a classification most of us in the roofing industry fall under—never stop to visualize the image we want to photograph before clicking the shutter.

The secret of professional-quality photos lies in the fundamentals: exposure, angle of view, shutter speed, aperture, depth of field, lens perspective, film, film speeds, and lighting.

In addition to these fundamentals, all professional photographers should ask themselves

the following questions before creating a picture:

- 1) What is the theme or message of the photograph?
- 2) What is the main subject of the photograph?
- 3) What to take?

The RCI photo session introduced various ways in which to create photographic documentation of your roofing and waterproofing-related projects. It was divided into three basic segments: traditional photography, digital photography, and videography.

The presenters, Richard P. Canon, RRC, PE, and John D. Shepherd, RRC, both possess great insight and were very articulate in their presentation. For those of us with blinders on that do not have a panoramic view of the whole picture, this seminar offered a variety of options for consideration.



**JOHN D. SHEPHERD,
RRC**



RICHARD P. CANON, RRC

RCI items will return in June.



The new board of directors: Seated, left to right: Francis A. Acquaviva, Executive Director; Richard Wagner, RRC, CCS, Region I Director; Warren R. French, PE, RRC, CCS, Second Vice President; Colin Murphy, RRC, Region VII Director; C. Allan Kidd, RRC, EIT, Region II Director; James Magowan, RRC, FRCI, Region VI Director. Standing, same order: James P. Sheahan, RRC, President; Robb Smith, RRC, FRCI, Past President ('97-'98); Albert Duwyn, RRC, Secretary; Luther C. Mock, RRC, Region III Director; W. Nelson Hall, RRC, Treasurer; Arthur O. Sark, RRC, FRCI, Past President ('97-'98); Mike Blanchette, RRC, RRO, FRCI Past President ('98-'99); William Cypher, RRC, FRCI, First Vice President.

The board met three times during the convention: March 11, 12, and March 16.

The following actions were taken:

INDUSTRY LIAISONS

- A proposal for RCI to accept members of the IRWC as a group was discussed. Several details still need to be worked out with respect to credential designations and administrative issues.
- Ken Wolford of SPRI (Sheet Membrane & Component Suppliers to the Commercial Roofing Industry) gave a presentation to the board on the organization's objectives and activities. Jim Sheahan, RCI's liaison to SPRI, was to speak at SPRI's April 13 meeting.
- Ted Michelsen of RIEI spoke to the board and urged that RCI and RIEI work together on educational opportunities. He requested a donation of \$1 per member to RIEI, which was approved with the stipulation

that RIEI promote RCI-Mercury. RCI and RIEI may work together to develop education courses to be used toward accreditation of contractors through Factory Mutual. A subcommittee of Jim Sheahan, Albert Duwyn, Robb Smith, and Colin Murphy was appointed to explore promotion of educational opportunities between the two organizations.

FINANCES

- A full audit of 1998-'99 finances will be made. The 1997-'98 formal review of association finances identified a \$90,000 surplus.

REGIONS

- Dennis McNeil and Nick Lovato, who have completed their terms as directors, were thanked for their contributions. Luther Mock and David Davis were welcomed.

- Rick Wagner of Region I and Allan Kidd of Region II were asked to extend their terms an additional year in order to facilitate the rotation process of directors.
- Colin Murphy suggested that Region Directors adopt a project to be completed within their term. For his project, Colin volunteered to work with the Education Committee on the development of a new course aimed at contractors.

PUBLICATIONS

- Following recommendation by the Publications Committee, the addition of *Legal Aspects of Consulting* to RCI's publication list was approved. The Committee is now working on the *Glossary of Terms*. They have also taken on responsibility for the Horowitz Award.
- Fran Aquaviva has been invited to sit on the editorial board of *School Planning and Management*.

REGISTRATION

- Mailing of new identification cards is underway.
- Dr. Steven Heavner of Columbia Assessment Systems reviewed the steps necessary for an examination to receive NCCA (National Commission on Certifying Agencies) approval.
- The RRC examination will be offered only twice annually in the future.
- Part II of the RRC exam will be changed to an objective format, which will facilitate automatic scoring and shorten the time necessary to get results to candidates.
- A recommendation that the RRC exam be put into a computerized databank system was held for further discussion.

MEMBERSHIP

- The first draft of the membership survey set to go out in April was reviewed. It will be distributed, collected, and compiled by an outside firm.

INSURANCE

- RCI has negotiated with MIMS International, an association insurance broker, for a liability insurance program to be available for members.

EDUCATION

- RCI has entered into a one-year contract with Humber College, Toronto, Canada, which will enable the college to offer RCI's Fundamentals and Advanced Roof Consulting courses, as well as the Rooftop Quality Assurance program. Results of this arrangement will be presented to the board in March 2000.

- The Education Committee is finalizing the revision of two existing roof consulting textbooks. The instructor syllabus has been completed.
- The Education Committee is reviewing programs acceptable for RCI CEUs. Converting from CEUs to PDHs (Professional Development Hours) was discussed.
- The *Contractors Guide* publication will be used by the Education Committee to develop a new education program. Colin Murphy, author, estimated that it would cost \$3,000 to \$4,000 to redevelop and redesign the publication for this purpose.

MARKETING

- Marketing Manager Bill Myers is working on new brochures for membership, education, and registration. He has also completed a new brochure to attract Facility Manager members.

RCI-ONLINE.ORG

- The RCI web site is currently being upgraded.

RCI MERCURY

- A report received from Ian Lurie, webmaster of the Mercury site, was discussed. There was an upswing of use in February. Status, control, promotion, and interim planning were discussed by the board. The board allocated \$5,000 for its promotion.
- Joe Hale, Colin Murphy, Robb Smith, Allan Kidd, and Jim Sheahan were appointed as the new Mercury committee.

MEETINGS

- The midyear workshop of the Board will be held in Vancouver, BC October 1-3.
- The Reno convention is set for March 24-29, 2000.

ETHICS

- Bob Martin, Ethics Committee chairman, spoke on the distinction between industry and professional members and related ethical issues. The committee has recommended that the membership application include a warrant from the applicant that he will adhere to RCI's Code of Ethics. The application should clearly identify the criteria are for different member categories.

COMMITTEES

- The slate of Convention Committee members offered by Warren French, chairman, was accepted: Al Duwyn, Mike DeFrancesco, Sheila Cockrell, Robb Smith, Warren French.

**MIKE BLANCHETTE
ANSWERS A
QUESTION.**



**JIM SHEAHAN
REVEALS HIS
ST. PATRICK'S DAY
SUSPENDERS.**



**VOTERS PREPARE TO
ELECT A NEW BOARD
FOR RCI.**



**MIKE DEFRADESCO,
RRC**

W. Nelson Hall, RRC, was elected Treasurer of RCI at the organization's Annual Meeting March 16 in Charlotte. Hall won in a two-way race against Tom Hutchinson. Taking the controls from outgoing president Mike Blanchette was Jim P. Sheahan, RRC.

After taking the podium, Jim removed his suit jacket to reveal green, shamrock-studded suspenders in honor of St. Patrick's Day (actually eve). Through analogies on flying, the pilot expounded on his philosophy of organizational success. If the engine fails in a one-engine plane, he noted, your troubles are over. If one engine fails in a two-engine plane, it will lead you to the scene of the accident. An association must operate with all engines engaged.

Jim spoke on teamwork and the necessity of viable, working committees to keep the organization on top of issues.

Advancing to new national offices with no nominations in opposition were: William Cypher, First Vice President; Warren P. French, RRC, PE, Second Vice President; Abert Duwyn, Secretary.

Executive Director Fran Acquaviva explained the logistics of convention location selection and noted that GL Meetings has been charged with making a concerted effort to locate the 2001 convention in the Northeast. He also explained the upcoming member survey and urged members to cooperate in order to provide information RCI can use to serve and market its members.



BOB MARTIN, RRC

Several members were recognized and spoke from the floor. Bob Martin noted he would support reinstatement of voting privileges for all RRC members and asked that an ad hoc committee be appointed to review that. Currently only professional and professional affiliate members and RRCs who were grandfathered in before the rule change was made are eligible to vote. He also suggested an ad hoc committee review the Mercury program with an eye to improvement.

Mike DeFrancesco, noting the importance of education, urged the Board to "raise my dues to whatever is necessary to pump money into education."

Josh Hubbard asked about the proposed meshing of IRWC (Institute of Roofing and Waterproofing Consultants) with RCI. Mike Blanchette responded that IRWC has a problem with RCI's member designations. According to the IRWC, Blanchette noted, "We need something that lets a client know their industry standing up-front." Joining the two groups would give RCI "more horsepower and foundation money for research and education." Talks are continuing.

Ed Betker commended "those who supported the trade show" for the excellent participation.

Joe Hale asked for a showing of hands to indicate region attendance. The following overall membership by region was noted: 1, 250; 2, 267; 3, 189; 4, 136; 5, 35; 6, 170; 7, 36; 8, 133. Total: 1216.

Sam Huff, chairman of the Nominating Committee, noted the committee is composed of members from each region. Nominations are currently being solicited for national officers for 2000.

Pat Downey, chairman of the Bylaws Committee, explained the work the group has done on a policy guide and committee mandates.

Education Committee Chair Joe Hale complimented the "amazing vision" within the committee. They are working to bring the class curriculums up to date. Format revision has been completed by Ryerson University. The committee is currently working on updating the Rooftop Quality Observation manual with new modules from the industry. "We endeavor to provide meaningful educational experience for our members and the industry at large," Joe stated.

Bob Martin, chair of the Ethics Committee, noted that the group will be working over the next seven months on updating ethics rules.



COPPER ROOFING

PRESENTED BY BILL LANEY

REVIEWED BY MASON MONTGOMERY, RRO

It is said that knowledge comes from experience, and that is exactly

what this presentation displayed. Bill Laney, president of Murr & Laney Roofing and Sheet Metal of Charlotte, NC, demonstrated and discussed various installation techniques associated with copper roofing.

This professional demonstration covered actual details for the following roof areas:

- Underlying substrates.
- Underlayment felts and fastening patterns.

Recommended uses of ice and water shield underlayments.

- Step flashings.
- Eave details.
- Ridge details.
- Drainage crickets.
- Panel width and length.
- Standing seams.
- Valleys and gutters.
- Penetrations.
- Fastener and clip selection.

Mr. Laney's knowledge of copper roofing and his presentation technique to a standing-room-only crowd exemplify the quality the artisan demonstrations display.

Special thanks to Nelson Hall & Associates for preparing the base models for the artisan displays.



WOOD SHAKE ROOFING

PRESENTED BY MARTIN L. OBANDO
REVIEWED BY DOUGLAS PLOTKE

Marty Obando, director of application specifications for the Cedar Shake and Shingle Bureau, started with an overview of proper installation techniques covering nailing patterns, valley details, coursing, skylight or chimney flashing, and hip and ridge details. He discussed the difference between wood shakes and wood shingles and reviewed the extensive work performed by the Cedar Shake and Shingle Bureau and the labeling provided by the bureau.

A design and application manual for new roof construction was handed out to some of the attendees, but significantly more people attended than had been anticipated. Those who didn't get a brochure should contact the bureau at 604-462-8961, or fax: 604-462-9386, or online at www.Cedarbureau.org.

Marty then demonstrated shingle installation at valleys. His 40 years of experience were readily apparent to all who watched him work at the demo and in the video he showed.

In discussing elements to look for when inspecting cedar shingle installation, he noted that improper nailing will cause cupping when fasteners are installed too close to the center of the shingle, and curl

ing when nailed too high. Interior inspection can also be helpful to verify nailing pattern. In open deck jobs, you can identify low felt when tops of shakes are visible above felt, which is a common cause of rot felting.

Allowing shingles to breathe has a significant impact on life expectancy. Another trick for inspecting low felt is by checking between shakes for visible felt. Felting was further discussed for roofs with pitch below 4" on 12" to extend underlayment from 18" to 36".

Obando demonstrated an inspection technique to determine the wear of shingles by scraping the surface with a quarter to determine thickness of shingles to estimate remaining service life.

Repair techniques for spot replacement were demonstrated along with a discussion on use of high pressure spray application. Obando cautioned against using high pressure washing as it will accelerate the weathering process and can greatly reduce life expectancy.

Marty closed by stressing the extensive work being performed by the Cedar Shake and Shingle Bureau, which can be a useful resource for any wood roofing project.

SLATE ROOFING

PRESENTED BY BRIAN STEARNS
REVIEWED BY DENNIS McNEIL, RRC, CCS, RRO

Slate expert and co-author of *The Slate Book*, Brian Stearns returned for his fifth RCI Convention slate mock-up demonstration. This year's event was sponsored by Nelson Hall & Associates. Brian began his session by demonstrating how individual slates are hand-split. He began with a 50 pound block, which is initially cut in half, then each successive piece is similarly split until the desired minimum thickness is obtained—typically one-quarter inch for "Standard Thickness."

Brian spoke of how a typical slate roof is installed and included discussion of deck types, underlayments, sheet metal flashings, and various accessory items. As his talk progressed, Brian referred to areas of the mock-up dealing with starter courses, valleys, hips, ridges, and dormers. He also addressed weather conditions, such as the heavy snow and ice build-up

which occurs in mountainous regions.

The second phase of the presentation dealt with field troubleshooting for new slate construction. Brian stressed the necessity for a "cant" beneath the drip edge along the eave, maintaining at least a three-inch headlap (or four inches if the slope is less than 4 in 12), spacing slate side joints at least three inches from those of upper and lower courses, and watching the flashing details.

For localized repair of damaged or missing slates, Brian suggested using stainless steel slate hooks rather than copper which tend to be too soft and may not penetrate old, hardened deck boards. Bib flashings can be either stainless steel or copper and should be at least three inches wide.

Brian concluded his session with a fourth segment dealing with



the decision point of whether to repair or re-roof. Brian notes that usually slate will outlive the metal flashings, so if the flashings begin to leak, then it is prudent to replace all the flashings. However, if more than 25 percent of the slate needs to be removed in order to replace the metal flashings, then it is more economical to re-roof. In most cases, only about 60 percent of existing slate can be salvaged for re-use.



KEVIN STONE

EPDM ROOFING

PRESENTED BY KEVIN STONE
REVIEWED BY WILLIAM RUBEL, RRC

Kevin Stone, the manager of technical services for Firestone's North Central Region, provided some insights into field inspection of EPDM roofing.

Through the use of a mock-up previously put together at the convention center, Kevin reviewed key issues from the perspective of one major manufacturer. At the top of the list were the importance of cleaning prior to seaming and the use of the appropriate cleaning tool. Kevin then went over the most common deficiencies in seams that inspectors look for, including the appropriate exposure of splice tape. He also described the repair of wrinkles and how to handle a "one on two" T joint and a "two on one" T joint.

There was lively discussion on perimeter flashings, corner flashings, and curb flashing details, as well as views on how to improve the ergonomics of the seaming process. The session concluded with tips and tricks of the trade to patch over old membrane, not the least of which was to use a commercial floor scrubbing machine to rout out the dirt where a lot of reseaming was required.

*The owner
insisted on the durability
of EPDM.*

*The architect
argued for
heat welded seams.*

*The contractor
pointed them toward
Stevens TPO.*

A Stevens EP TPO Roofing System gives you all the weatherability of an EPDM roof without its weak-kneed seams. And its got the superior seam strength of PVC, but without any plasticizers. Which means there's nothing that can migrate, leaving the membrane brittle and weak. So if you want the best of both worlds, head in the direction of a Stevens EP TPO Roofing System. To learn more call toll-free 1-877-TPO-ROOF or visit our website at: www.stevensroofing.com.



SPORTING CLAY TOURNAMENT

BY LYLE HOGAN, FRCI



Captions: Jeff Scott bears down on clay in flight.

Included in Friday's recreational activities was a sporting clay tournament. Established sharpshooters and would-be gunners converged on Shooter's in Turnersburg, N.C. This activity is addictive and represents some serious fun for the dollar spent.



Left, one of ten stations in this year's event at Shooter's in Turnersburg, N.C. Above, onlookers watch as Tom Hutchinson pulls another one out of the sky.

ing almost everything in the sky.

It has been said that clay shooting is a reaction sport. Accordingly, Karen Weitzel squeezed off the best single shot of the day. She vaporized a clay target which was no more than 11 feet out of the gate. The trapper and onlookers marveled at her reaction time.

High score of the day went to Wayne Klatz of Pro Logis Trust. Firestone's Jeff Scott, the reigning hot shot from last July's event at the same lodge (see October 1998 *Interface*), came in second. Jeff is in a league of his own with a cool, relaxed style. We are glad he's on our side.



Approximately 15 participants worked through 10 stations of sporting clays. Most improved of the day was Tom Hutchinson. Later afternoon brought some practice drills at the skeet stations. By this time, Hutch was smok-

GOLF TOURNAMENT

BY C. ALLAN KIDD, RRC, EIT

Arnold Palmer designed it, but it took RCI to break it in. On Friday, March 12, 76 rowdy members of RCI invaded Birkdale Golf Club in Huntersville, North Carolina for a spirited game of Captain's Choice golf. Nineteen teams hacked up the course, woods, and neighboring backyards. Fortunately, no one was shot by an angry homeowner. The weather turned out to be the best of the convention with temperatures reaching near 60.

Although this sounds good, it did bring one problem—many of the Canadians decided to show off their white legs with short pants. This was a major distraction and was rumored to have cost one team a two-stroke

penalty. Our gracious host at Birkdale, Jim Carlson, the Outings Director, indicated that the lake level had risen approximately two inches due to the volume of golf balls hit into the water. We are not sure who hit the most in there, but it is rumored to have been Joe Fitzpatrick's team.

All kidding aside, this tremendously fun event could not have happened without the generosity of our sponsors, who include:

- | | |
|----------------------------|----------------------|
| Georgia Pacific | Soprema |
| Amtech Roofing Consultants | Sarnafil |
| ES Fasteners | Fibertite |
| SFS Fasteners | Francis A. Acquaviva |
| Olympic Fasteners | |

We truly appreciate their valued sponsorship and look forward to their continued support in the years to come. Special thanks to Bob Yoder of Soprema and Charlene Kidd, my lovely wife, who helped organize and staff the event. We would also like to thank the fine folks at Birkdale Golf Club for a wonderful day and their professionalism throughout the event.

Each individual team member was either given strokes or had strokes taken away based on their average score or handicap. This modified Wilkinson handicapping system allowed us to put participants together in any arrangement. The handicapping worked well. We had four teams that finished at a net of 54 (18 under par). We had to then go to a card playoff to determine the winning team.

Unfortunately for those of us from south of the border, several Canadians were on the winning team; and, yes, we did hear about it the rest of the weekend. Members of the winning team are Kathy Uglow, Frank Francella, Mike Cameron and Zen Szewczyk. We encouraged Zen to seek out Vanna White and buy a vowel with his winnings. There were numerous other contests and winners which, if all listed, would take up the rest of this issue; however, I would like to single out Mary Beth Duwyn for her closest to the pin shot on No. 2 and Mark (the dog) Allaire for his booming drive. We also recognized the last place team. Those team members are now on a witness protection program and have asked that their names be withheld.

BASS FISHING TOURNAMENT

BY W. NELSON HALL, RRC

On Friday, March 12, the first RCI Fishing Tournament was held. Members from all over the country got together to enjoy a beautiful day on Lake Wateree. Apparently the fish were sunbathing as well, because no one got a bite. The largest fish was caught by Karim Allana with a dip net out of the bait tank. Accordingly, he was awarded the trophy for the largest fish caught. The event was sponsored by Carlisle Syntec Inc.

—Nelson Hall



Karim Allana, left, shows off his fish trophy, presented by tournament organizer Nelson Hall, right.



Lake Wateree



Fishermen show off their bait fish catch.

SHOPPING TOUR

Participants in the "Shop 'til You Drop" tour prepare to depart via bus from the Hilton to check out Charlotte's bargains.



**ONE TIME IN ALVIN, TEXAS,
IT RAINED 43 INCHES IN A SINGLE DAY.**

“So?”

With exceptional waterproofing and strength properties, Firestone Asphalt Roofing Systems are made to withstand some of the nastiest storms that Mother Nature can dish out. Advanced asphalt and polymer chemistry make Firestone roofing systems resistant to tears, punctures, and weathering. Choose an APP or SBS Modified Bitumen multi-ply system for reliable performance year after year. So even if bad weather lasts a long time, at least your roof will, too. Find out more about Firestone Asphalt Roofing—and the complete Firestone line—by calling 1-800-428-4442.

Firestone
ROOFING SYSTEMS

NOBODY COVERS YOU BETTER™

www.firestonebpco.com



TRADE SHOW



Bagpiper Darryl Rodgers, above, leads attendees to the Trade Show floor.

Attendees swarm the trade show floor, top right. Attendees, below right, enjoy hors d'oeuvres.

Pictured, left to right are Don Bush, Jr., Julieann Bush, Jim Magowan, and Bill Cypher.



Platinum Sponsors



SIPLAST

SIPLAST SPONSORED THE CONTINENTAL BREAKFAST PROVIDED DURING THE TRADE SHOW.



GEORGIA-PACIFIC GYPSUM

GEORGIA-PACIFIC GYPSUM CORPORATION WAS THE LARGEST SPONSOR OF THE GOLF TOURNAMENT.

Gold Sponsors



TAMKO ROOFING PRODUCTS

TAMKO SPONSORED BASEBALL GREAT GAYLORD PERRY'S KEYNOTE ADDRESS AND A PORTION OF THE PRESIDENT'S BANQUET.

FIRESTONE BUILDING PRODUCTS

FIRESTONE BUILDING PRODUCTS SPONSORED THE TRADE SHOW OPENING.



Silver Sponsors

AMTECH ROOFING CONSULTANTS

MIKE BLANCHETTE, AMTECH ROOFING CONSULTANTS, LEFT, PRESENTS RICHARD RINKS, RIGHT, WITH A DOOR PRIZE SPONSORED BY MIKE'S COMPANY. AMTECH ALSO SPONSORED THE GOLF TOURNAMENT.



CARLISLE SYNTEC INC.

CARLISLE SYNTEC INC. SPONSORED THE FISHING TOURNAMENT ON FRIDAY.

D. C. TAYLOR

D. C. TAYLOR, CONTRACTORS AND SERVICE PROVIDERS, SPONSORED THE PRESIDENT'S BANQUET ON MONDAY EVENING.

Bronze Sponsors



- SOPREMA —
- TRADE SHOW GRAND OPENING AND GOLF
- JOHNS MANVILLE —
- PRESIDENT'S RECEPTION
- ES PRODUCTS —
- GOLF
- NELSON HALL & ASSOCIATES, INC. —
- ARTISAN DEMO
- BARRETT ROOFS —
- DOOR PRIZE
- SFS STADLER —
- GOLF
- OLYMPIC FASTENERS GROUP —
- GOLF

Additional Sponsors

- OWENS CORNING TRUMBULL —
- POLYCOAT —
- DOOR PRIZES
- SARNAFIL —
- FIBERTITE (SEAMAN CORP.) —
- FRANCIS A. ACQUAVIVA —
- GOLF





DENS-DECK®

IS THE BEST

UTILITY BOARD

IN THE ROOFING INDUSTRY.

PERIOD.

The superior properties of Dens-Deck make it the best utility roof board in the industry. Fire resistance, moisture resistance, strength, dimensional stability, adhesive qualities--Dens-Deck is unmatched when **EXCELLENT FIT WITH ANY SYSTEM** comparing those properties to lesser alternatives. BUR, Single-Ply, Modified Bitumen, Metal, PUR, whatever system you use, Dens-Deck has the versatility and durability that is desired in a quality roof

"Dens-Deck is the most significant new product to enter the commercial roofing market in many years."

*- T.W. Freeman,
Roofing Consultant*

system. Dens-Deck features glass mats, front and back, and a patented treated core which provides the high compressive and flexural strength to withstand roof traffic during construction. The water resistant **SUPERIOR STRENGTH AND DURABILITY** treated core protects against the effects of moisture. With 0 flamespread and 0 smoke development, Dens-Deck is the ideal fire barrier. Dens-Deck is tops. No ifs. No ands. No buts.


See us in the Sweets Group Directory. For literature call **1-800-BUILD G-P (284-5347)**. For technical information, call **1-800-225-6119**. Visit our website: **www.gp.com/gypsum**

DENS-DECK is a registered trademark of Georgia-Pacific Corporation. ©1998 Georgia-Pacific Corporation. All rights reserved.

G-P Gypsum Corporation



Don't Ask for Headaches. Ask for Dens-Deck Roof Board.



You are a snowflake.

Gracefully floating through a silent winter's sky.

You dream of a place in the mountains where
you'll dive into a clear-flowing stream and melt your way
into a frosty bottle of cold-filtered lager.

You'll hang out in the best bars.
Be in TV commercials with famous athletes.

But then, all at once, your bubble bursts.
Seems you're headed right for a Siplast roof.

It's enough to make you get on the wagon.

The elements have a mind of their own. Siplast roofing is designed to outsmart them. Form a partnership with Siplast, and you get the knowledge and experience of the company that pioneered the SBS process over 30 years ago. And considering what you're up against, you'll need all the help you can get. 1.800.922.8800.

NOTHING STANDS UP TO THE ELEMENTS LIKE A SIPLAST SBS ROOF™

 **siplast**

WIND BECOMES WEATHER AT RICOWI MEETING

HAIL INCLUDED SINCE MEETING IN CONJUNCTION WITH RCI

BY PHILIP D. DREGGER, PE, RRC, FRCI

Meeting in Charlotte, North Carolina as part of the RCI Convention, The Roofing Industry Committee on Wind Issues (RICOWI) voted to amend its bylaws to become the Roofing Industry Committee on Weather Issues, Inc. (RICOWI).

Rick Olson, NTRMA, Chair of the Strategic Planning Committee, explained that the original "wind" focus was born out of concerns about roof covering performance after a series of storms. Since then, RICOWI has successfully brought together academic, insurance, and industry groups to discuss and cooperate on wind-related research. Over the last several years, concerns have also arisen about the effects of hail, energy efficiency, and durability on the performance of roof coverings.

Mr. Olson cited several reasons why it would be a natural extension for RICOWI to include "weather related" topics:

- Industry, code, and insurance group representatives already participate in RICOWI and would form a ready nucleus for the broadened scope of interest.
- Currently there are no other organizations that have directly attempted to provide a singular forum for these topics.
- With an increased demand from code officials to address the topic of hail impact and resistance, a forum such as RICOWI could provide positive feedback on possible alternatives available.
- This change would broaden the basis of involvement and thereby increase the feasibility of participation by academic groups, testing facilities, and research groups that have an interest in these topics.

RESEARCH AND TESTING UPDATES

Some interesting comments made during the various member reports, technical presentations, and subsequent meeting discussions follow. (Note: The accuracy of the following statements was not confirmed and is offered for the reader's consideration only.)

Ken Rhodes, UL: The speed of the wind stream directly over an asphalt shingle can be 3 times greater than the approach wind speed. Since asphalt shingles are air permeable, wind uplift pressures are readily transferred down through the shingles to act on



Members of RICOWI hold a meeting in conjunction with the RCI Convention in Charlotte.

the roof deck. Uplift forces associated specifically with "flow separation" of the wind stream act directly on the shingle tabs. These uplift forces will generally represent about a "2- to 3-fold reduction from those estimated using ASCE 7-95 procedures."

Marty Obando, Cedar Shake and Shingle Bureau: Heavy (3/4" thick) Certi-Label cedar shakes have passed the UL2218 Class 4 hail test and now qualify for property insurance "roof covering credits" offered by some insurance companies. The credit system introduced by the Texas Department of Insurance is expected to reduce losses from hailstorms.

Tom Smith, T. L. Smith Consulting Inc.: ASCE 7-98 is in the last round of balloting and should be available in the summer of 1999. Revisions from the 7-95 version are likely to include: clarification that the use of exposure B is acceptable for components and claddings of most buildings less than 60 feet tall; reduction of coefficients for internal pressure; simplified topography effects; and inclusion of a new table for rapid determination of loads on components and claddings of low-rise buildings. Smith also mentioned that two reports from the Federal Emergency Management Agency (FEMA), mobilized to investigate building damages from Hurricane Georges, were now available at the FEMA web site (www.fema.gov).

Bonnie Manley, Institute for Business and Home Safety: Informational pamphlets are available by calling IBHS (617-292-2003). They include "Performance of Metal Buildings in High Winds" and, later this year, "A Homeowner's Guide to Roofing and Hail."

Dan Best, SPFD: Submitted a letter indicating that the Society of Plastics Industry is currently seeking Factory Mutual

Wind Becomes Weather (Continued from page 53)

approvals for spray foam roofing systems applied directly to steel decks. The Del Webb School of Construction, AZ State University, has completed a new hail study for spray foam roofs.

Tom Kelly, 2001 Company: Using a slow rise polyurethane foam material to seal over fasteners and laps of steel decks resulted in sustaining wind uplift pressures in excess of 200 psf in tests at FM and UL.

Tom Hall, Factory Mutual Engineering: When damage was experienced by various roof systems, it appeared to be related to omission of FM-recommended "enhancements" for perimeter securement, air filtration at perimeter features (e.g., gutters), and internal pressurization through large, wall-mounted vent openings.

Joint RCI/RICOWI Seminar

In January 1999, RCI and RICOWI teamed up to put on a wind seminar in Houston, Texas. RICOWI representatives presented wind design and research-related topics and RCI representatives presented project-oriented topics. Based on the favorable feedback received, a similar joint educational effort is planned for this fall in the Chicago area, including a tour of the Underwriters Laboratory's (UL) facilities in Northbrook, IL.

Join RICOWI

Individuals interested in becoming Affiliate members of RICOWI and attending RICOWI meetings are asked to contact RICOWI Executive Director, Patricia A. Wood-Shields for additional information by phone at 770-914-7235, by fax at 770-915-7102, or e-mail: pawroof1@aol.com.

—Philip D. Dregger, PE, RRC

ROOF COATINGS MANUFACTURERS ASSOCIATION (RCMA) THE RESOURCE CENTER FOR ROOF COATINGS EDUCATION AND TRAINING 1999 COLD-APPLIED COATING TRAINING COURSES

JULY 26-27, 1999 – ORLANDO FLORIDA • DECEMBER 2-3, 1999 – DENVER COLORADO

For additional information, contact: Roof Coatings Manufacturers Association
Suite 404 CenterPark, 4041 Powder Mill Road, Calverton, MD 20705-3106 USA
Telephone (301) 348-2002 Fax: (301) 348-2020 Website: www.roofcoatings.org

The Roof Coatings Manufacturers Association (RCMA) is the North American trade association representing the manufacturers of cold-applied roof coatings and cements, as well as the suppliers of products, services, and equipment to the industry.



Meet The Complaint Manager

Our design is simple, easy to use, and it works. Everything is attached to the kettle . . . no extra trailers to haul to the job site where space is often a premium, and extra parts are difficult to keep up with.

Perhaps the greatest benefit to the Reeves afterburner is that you can spend your time working on the job rather than dealing with angry people who distract you with their complaints about the odors created by hot roofing materials.

Reeves Roofing Equipment Company, Inc.
P.O. Box 720 • 12042 Leslie Rd. Helotes, TX 78023
(210) 695-3567 • FAX (210) 695-3554
Toll Free (800) 383-3063

Avoiding Algae Growth on a Roof

If you've seen black streaks on roofs in your area, chances are those buildings are vulnerable to attack by a primitive but stealthy plant that can ruin a home's appearance. The tiny culprit is algae. Although there is no cure for algae, it can be controlled, saving the cost of repeated rooftop cleanings and reshingling.

What attracts algae and why does it attack shingles?

The black streaking is caused by a specific variety of algae called *Gloeocapsa* that produces its own energy source and feeds on the filler calcium carbonate found in asphalt shingles. When algae infests a roof and grows unchecked, it produces a dark pigment to protect itself from ultraviolet rays, giving the roof a dirty, streaked-looking appearance. Tiny but tough, algae is resistant to removal. Once it spreads across a roof, it can then become airborne and be carried from rooftop to rooftop throughout an entire neighborhood. All roof types, including tile, wood shakes, concrete, clay, and asphalt are susceptible.

Appearance isn't the only problem. An algae-free roof can

reduce the temperature in a home's attic by 15 to 20 degrees, while the black stains caused by algae absorb heat from the sun. This results in premature shingle deterioration and increased energy costs to cool a home. Often, the only permanent solution to contain the growth is to reshingle the entire roof.

Solution: Copper Prevents Algae Growth

Once algae develop, there's no permanent cure. Short-term, homeowners can keep their rooftops attractive by cleaning the shingles. But that is only a short-term solution. To prevent the onset of algae, some shingle manufacturers recommend "algae-resistant shingles" that use the natural ability of copper to inhibit algae growth. Copper granules, coated with ceramic colors, are mixed in with the overall blend of granules and applied to the shingles in the manufacturing process.

Learn more about algae-resistant shingles by contacting a shingle manufacturer.

—Provided by Globe Building Materials

RoofManager

Roof Asset Management Program



Finally, a roof database developed by Registered Roof Consultants, Owners, Contractors and certified software developers. Call for your demo copy or visit our web site at www.prophead.com/RoofManager.htm.

CTL Engineering, Inc. 704-553-8285

roofingexpo.com

www.roofingexpo.com

P.O. Box 6863 Kingwood, TX 77325

PH: (281) 361-ROOF FAX: (281) 359-8811

"The roofing industry's most comprehensive roofing information destination WebSite"

EXPOSURE, EXPOSURE, EXPOSURE!

Call us to learn about the opportunities for listing & advertising.

- ◆ Roofing Consultants
- ◆ Roofing Manufacturers
- ◆ Roofing Contractors
- ◆ Trade Associations
- ◆ Industry Consultants
- ◆ Roofing Distributors
- ◆ Training Programs
- ◆ Classified Advertising

Get published in Interface!

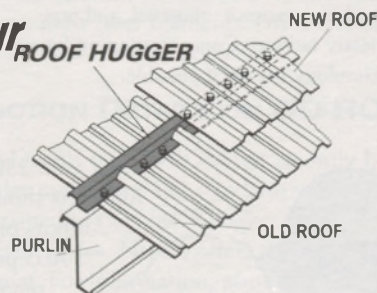
Get your name in print. Publish with us! For writer's guidelines and deadlines, phone Executive Editor Kris Ammerman, 919-859-0742.

Upcoming theme issues:

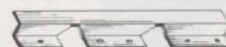
- | | |
|----------|---------------------------------------|
| August | Hoisting & Ridding, Tools & Equipment |
| October | Wet-applied Roof Decks |
| November | Testing/Analysis |
| January | Steep Roofing |

Try Re-roofing with Our Nesting Sub Purlins...

Roof Hugger Sub-Purlins Make Metal Re-roofing EASY!
Pre-punched holes for FAST Erection.
Galvanized 18, 16 and 14 gauge.
Fits over and into existing profile ribs.



-ROOF HUGGER™



1-800-771-1711

Call, write or FAX (813-855-5304) for more information
120 East State Street, #104,
Oldsmar, FL 34677

CALL FOR PAPERS

RCI's 15th INTERNATIONAL CONFERENCE AND TRADE SHOW

RENO, NEVADA

MARCH 24-28, 2000

ON THE FRONTIER OF A NEW MILLENNIUM

RCI attempts to provide conference attendees with stimulating and useful educational experiences and the latest in technological advances. We invite you to contribute to that experience by submitting a paper for presentation in these areas: Research, Professional Issues, or Business.

If you are interested in presenting a paper detailing your original

research or innovative technology, an exploration of professional concepts or issues, or an instructive session covering the business aspects of roof consulting, please follow the directions outlined below.

If your abstract is chosen, you will be asked to write a complete paper for presentation at the conference and subsequent publication.

You will receive continuing education units, recognition in *Interface*, and international acknowledgement of your knowledge and expertise.



SUGGESTED TOPICS:

RESEARCH:

- ▼ MATERIALS RESEARCH
- ▼ PROCEDURES RESEARCH
- ▼ TECHNIQUES RESEARCH

Information supported by data collected and analyzed in a rigorous, impartial, and non-proprietary fashion. Concentration on futuristic technology trends, if possible.

PROFESSIONAL:

- ▼ TECHNIQUES AND PROCESSES
- ▼ ISSUES OF IMPORTANCE TO PROFESSIONALS

Issues and project implementation concepts of value to the industry.

BUSINESS:

- ▼ CONTRACTUAL ISSUES
- ▼ HUMAN RESOURCES
- ▼ ECONOMIC ISSUES
- ▼ COMPUTER SYSTEMS AND USE

Information of use to roof consultants in the course of their business (particularly new technology).

SUBMIT ABSTRACTS BY MAY 15, 1999

Submit your 250 word abstract by May 15, 1999. Include your name, address, and phone number. Abstracts should discuss the objective of the work presented, the methods employed, and conclusions. Authors of accepted papers will be notified by July 1, 1999 for completion by Oct. 1, 1999.

Accepted papers will be published in conference proceedings. Presenters are encouraged, but not required, to do final presenta-

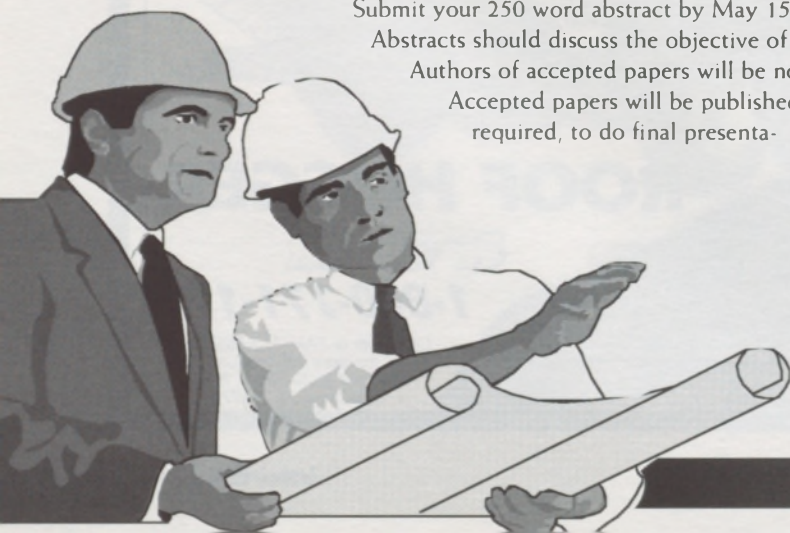
**PUT YOUR SKILLS, KNOWLEDGE AND TALENTS TO WORK
FOR YOUR PROFESSION AND PROMOTE YOURSELF!
SUBMIT AN ABSTRACT NOW!**

For more information, contact

**Warren French, PE, RRC, CCS,
at 281-440-8284.**

Mail abstracts to:

**Publications Department, RCI
7424 Chapel Hill Road, Raleigh, NC 27607
or fax to 919-859-1328.**



PEOPLE

VAN-PELT AWARDED RCMA HONOR

Former RCMA President James Van Pelt Jr., President, Grundy Industries, Inc., Joliet, IL, was named as the recipient of the Roof Coatings Manufacturers Association's Martin A. Davis Industry Leadership Award.

IRWC ELECTS NEW OFFICERS

The Institute of Roofing and Waterproofing Consultants elected new officers at its annual meeting in Phoenix in February. They were: president, Matthew Hitlin; vice president, Robert Alford; treasurer, George Criel; directors, Edward Arnold and Sandra Gray; continuing directors: Richard Cook, Dick Unrue, and Ray Wetherholt.

NRCA ELECTS JAMES McADAM PRESIDENT

James McAdam, president of F. J. Dahill Co. Inc., New Haven, CT, was elected 1999-2000 president of the National Roofing Contractors Association during its convention in Phoenix. Other officers are: John F. Miller, sr. vice president; David Bruce Fryer, Don McCrory, Don Springer, vice presidents.

ISANTA ELECTS NEW OFFICERS

The International Staple, Nail, and Tool Association's (ISANTA) members elected Thomas M. Green, vice president of Senco Products Inc., Cincinnati, OH, as chairman of its board of directors. Craig A. Hindman was elected vice chairman.

TERRY DEENY NEW PRESIDENT OF AGC

Terry Deeny, CEO of Deeny Construction Co., based in Seattle, WA, has been elected the 1999-2000 president of The Associated General Contractors (AGC) of America. Also elected were Ralph W. Johnson as senior vice president; Robert J. Desjardins as vice president; and Robert P. Elsperman as treasurer.

PROGRAMS

COPPER SEMINARS OFFERED

Revere Copper Products Inc. is offering a series of comprehensive seminars focusing on the advantages of designing, specifying, and building with copper. They are offered as a courtesy to architects, contractors, and others in the industry. AIA members will receive CES units. For scheduling information, phone 800-448-1776, ext. 2474.

MRCA FOUNDATION SCHOLARSHIPS

The Midwest Roofing Contractors Association is currently taking applications for its annual scholarship award to students interested in pursuing a career in the construction industry. Applications may be obtained by calling 800-497-6722. Deadline for submittal is June 1, 1999.

PROMOTIONS

MONTELL LAUNCHES WEB SITE

Montell, one of the major suppliers of thermoplastic polyolefins (TPOs) to the roofing industry, has launched a new roofing web site describing its advantages. It was developed in cooperation with leading producers of TPO single-ply roofing membranes. Check www.montell.com/roofing.

DOW LAUNCHES STYROFOAM® WEB SITE

The Dow Chemical Co. announces a new web site for its Styrofoam® brand insulation. The new site, located at www.styrofoam.com, provides architects, specifiers, and contractors with product and application information on the full line of Styrofoam brand insulation products.

PRODUCTS

NEW SBS MEMBRANES INTRODUCED BY FIRESTONE

Firestone Building Products has introduced a new glass- and polyester-reinforced fabric SBS Cap Sheet. The new reinforcement consists of a 190 or 250 g/m², non-woven polyester mat embedded with continuous glass fiber filaments. For information, check out their web site at www.firestonebpc.com.

NRCA CONSTRUCTION DETAILS ON CD-ROM

NRCA Construction Details on CD-ROM has recently been released. The CD provides more than 350 standardized roofing construction details contained in the *NRCA Roofing and Waterproofing Manual—Fourth Edition*. NRCA offers the details in a CAD-manipulatable format. For information, phone 800-323-9545 or 847-299-9070.

FIRESTONE ADDS ULTRAPLY® TPO

Firestone Building Products recently expanded its commercial roofing product line by adding UltraPly® TPO, a "high-quality, white thermoplastic polyolefin membrane." The new material is available in 45- or 60-mil thicknesses and 39-, 78-, and 120-inch widths. For information, check out Firestone's website, www.firestonebpc.com.

Classified Ads

**FOR CLASSIFIED
ADVERTISING RATES,
PHONE
MARKETING
COORDINATOR
WILLIAM MYERS,
1-800-828-1902.**

ROOF CONSULTANT WANTED—Allana-Lippert, Inc., Northern California's leading architectural-engineering firm, specializing in building envelope technology, is seeking an experienced individual. Person must be technically knowledgeable in roofing and waterproofing systems with the commercial, multi-family residential, or industrial sectors. Architectural license, professional engineering license, Registered Roof Consultant or Registered Roof Observer is a plus. Excellent pay and benefit package, commensurate with experience. Please fax resume to: (650) 354-8828.

**TOP GUN
ROOF LINKS**
www.topgunroof.com

"The Best of The Best"

LAMINATED GYPSUM DECK REROOF
PANELS ELIMINATE GYPSUM POURS,
MESH AND FORMBOARD
SAVE MORE THAN \$10/SF
TECTUM RE-ROOF PANELS ALSO AVAILABLE
DATA SHEET AND PRICE LIST AVAILABLE FROM:
DECKS, INC., P.O. BOX 278, WOODSTOCK, IL, 60098
PH: 815-337-2030 FAX: 815-337-2031;
<http://www.roofdecks.com>

Industry News (continued)

PERMUTATIONS

AT&E ADOPTS NEW NAME

Atlanta Testing & Engineering (AT&E) has adopted a new name for the company: QORE, Inc. (pronounced "kore." Both AT&E and its subsidiary, Ground Engineering, will be combined under the new name. The companies have a 30-year history of providing scientific and engineering services for clients in the property management, building, and development industries. QORE has more than 480 employees in 24 offices throughout the Southeast.

CTL GOES INTERNATIONAL

CTL Engineering has opened an office in Bangalore, India, with other offices planned for France and Malaysia. These offices will be working with merchants involved in global trade and interested in providing product testing on import/export merchandise.

A D V E R T I S E R I N D E X

ADVERTISER	PHONE NUMBER	PAGE
AlliedSignal	(800) 221-6490	Inside Back Cover
Asphalt Roofing Manufacturers Association	(301) 348-2002	3
Carlisle SynTec Incorporated	(800) 4-SYNTEC, Ext. 7148	5, 6, and 7
CTL Engineering Inc.	(704) 553-8285	55
Firestone Building Products	(800) 428-4442	47
GenFlex	(800) 443-4272	9
Georgia Pacific	(800) 284-5347	51
Infrared Inspections	(800) 543-2279	60
Jim D. Koontz & Assoc.	(800) 645-7663	3
Momentum Technologies	(800) 720-0261	3
Portable Pipe Hanger Systems	(800) 797-6585	8
Reeves Roofing Equipment Co.	(800) 383-3063	54
Roof Coating Manufacturers Association	(301) 348-2002	54
Roof Hugger	(800) 771-1711	55
RoofingExpo.com	(281) 361-6863	55
Sarnafil	(781) 828-5400	Inside Front Cover
Siplast	(800) 922-8800	52
Stevens Roofing Systems	(877) TPO-ROOF	44
Topcoat	(800) 323-0009, Ext. 528	Outside Back Cover



Anchor your Advertising Presence

in front of one of the Construction Industry's most powerful groups...



**Roof
Consultants
Institute**

Advertise In:

Space Reservation Deadline:
May 14, 1999

Copy Deadline: May 25, 1999

1999-2000 International Directory of Roofing Professionals

- A desktop membership directory of the industry's largest and most powerful roof consulting association
- 2,000 copies will be distributed to RCI members, facility managers, government agencies, insurance companies, etc.
- Widely distributed at roofing education programs, and at major industry trade shows & conventions throughout North America.

To Reserve Ad Space contact William Myers, RCI Marketing Director at 800-828-1902

**On average, RCI's membership specifies over
\$4.0 billion in roofing materials per year**

Industry/RCI Calendar

MAY 1999

- 2 RRC Exam
 - Oakland, CA
- 6-9 AIA National Convention and Expo
 - Dallas, TX
 - Info: 202-626-7395
- 12-15 Dach + Wand '99
 - German Central Assoc. Roofing Contractors
 - Stuttgart, Germany
 - Info: 847-299-9070, ext. 231
- 13 Region IV Meeting
 - Houston, TX
- 14-15 Rooftop Quality Assurance Course
 - Las Vegas, NV
- 15 RRO Exam
 - Las Vegas, NV
- 24-27 Build USA
 - Los Angeles, CA
 - Info: 508-790-4751

JUNE 1999

- 13-14 Nat. Assoc. of State Facility Administrators*
 - Jackson Hole, WY
- 14-16 WSRCA Convention & Trade Show
 - Las Vegas
 - Info: 650-548-0112
- 20-22 Assoc. of Physical Plant Administrators*

- Cincinnati, OH
- 24-27 CSI Annual Convention
 - Los Angeles
 - Info: 703-684-0300

JULY 1999

- 16 Region II Meeting
 - Raleigh, NC
- 28 RRC/RRO Exams
 - Toronto, ON
- 28-31 Florida Roofing, Sheet Metal & AC Contr. Assoc.
 - Orlando, FL
 - Info: 407-671-3772
- * RCI will exhibit

Infrared Inspections, Inc.

*Infrared Roof Moisture Surveys
Using the Latest infrared - ThermoCAM™*

*Nationwide, short notice service at a competitive price.
Thermograms, photos & roof plan showing wet areas.*

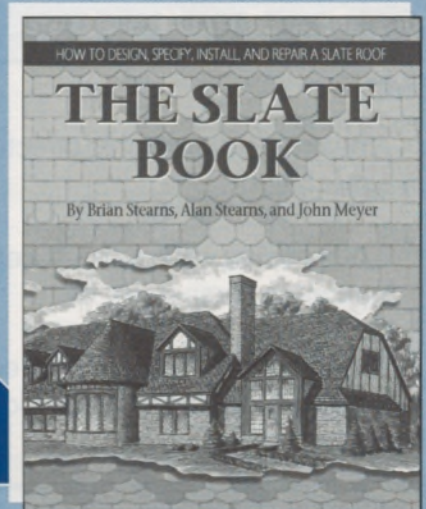
Infrared Inspections, Inc.

1-800-543-2279

Since 1984

THE SLATE BOOK

Get your Copy
Today!



- 205 detailed pages
- 175 figures, photos, charts & graphs
- Explanations for every facet of planning, installing, and maintaining a slate roof!

Destined to become
the Industry Standard

To order call: 800-828-1902

Unlike other widely specified roofing systems, Millennium resists many destructive chemicals —like water.

When it comes to the durability of roofing materials, chemistry is everything.

Exposure to sunlight breaks down the chain-like molecules of asphalt and EPDM roofing to create dangling bonds, which make them chemically reactive.

The free radicals combine with dissolved oxygen atoms in rainwater to form soluble organic compounds that gradually wash away.

Cracks, cavities and fissure form. The destructive process accelerates.

Millennium is different.

Its unique ring-like molecular structure features chemical bonds 50 percent stronger than those found in asphalt and rubber-based roofing.

They don't break down under exposure to sunlight. Millennium doesn't oxidize.

It doesn't react with oils, fats, or any of the various chemicals that attack other roofing materials —much less, water.



Specify. Millennium®



**Fax to learn how to
spec a longer lasting roof
(800) 255-1464**

Contact our experts for technical assistance or customer service.
(800) 221-6490
www.alliedroof.com

AlliedSignal Inc
Commercial Roofing Systems
2000 Regency Parkway, Suite 255
Cary, NC 27511-8507

Please print your name _____

Company _____

Street address _____

City _____ State _____ Zip _____

Phone () _____ Fax () _____





CHOOSE TOPCOAT® FOR YOUR METAL ROOF.
End of leak. End of story.

TOPCOAT, THE ORIGINAL METAL ROOF RETROFIT SYSTEM has been putting an end to roof problems for over 15 years. It's a twelve-step spray applied system that cures in the sun's UV rays to form a seamless, flexible synthetic rubber membrane. It's impervious to water and performs as well in the Caribbean as it does in Alaska.

CHOOSE THE RIGHT SOLUTION INSTEAD OF ANOTHER PROBLEM. TOPCOAT is the original. Often copied. Never equaled. Find out why companies like Alcoa, Anheuser-Bush and Vanity Fair selected the pioneer in metal roof retrofit systems.

For a **FREE** roof evaluation or more information,
call (800) 323-0009



PO BOX 231 • 24 Industrial Rd
Walpole, MA 02081-1305
TOPCOAT, Inc. is a subsidiary of
GAF Materials Corporation
© TOPCOAT, Inc. 1999