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- o Full line of UL and FM Code Approvals
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RCI Upcoming Events

EDUCATIONAL COURSES

- **Basic Roof Consulting Course**
Feb. 16-18, 1996
 - Dallas, TexasFee is \$500 for RCI members; \$550 for nonmembers (two weeks prior to start of course). Add \$50.00 for later registration.
- **Rooftop Quality Observation**
Jan. 26-28, 1996
 - Dallas, TexasFee is \$200 for RCI members; \$250 for nonmembers (two weeks prior to start of course). Add \$50.00 for later registration. (Group rates available; call RCI Headquarters.)
- **Advanced Roof Consulting Course**
Feb. (TBA), 1996
 - Chicago, Ill.
 - Baltimore area (may be moved to Richmond, Virg.)Fee is \$600 for RCI members; \$650 for nonmembers (two weeks prior to start of course). Add \$50.00 for later registration.
- **Courses To Be Determined**
Feb./March 1996
 - Toronto, Ontario

REGISTRATION EXAMINATIONS

- **Registered Roof Observer (RRO) Exam**
Jan. 28, 1996
 - Dallas, Texas
Feb. 10, 1996
 - Orlando, Fla.
Feb. 18, 1996
 - Dallas, TexasThis exam is offered only to those whose RRO applications have been submitted to RCI and approved. Call RCI for fees and requirements.
- **Registered Roof Consultant (RRC) Exam**
Feb. 10, 1996
 - Orlando, Fla.
Feb. (TBA), 1996
 - Chicago, Ill.
 - Baltimore area (may be moved to Richmond, Virg.)This exam is offered only to those whose RRC applications have been submitted to RCI and approved. Call RCI for fees and requirements.

TECHNICAL SEMINARS AND MEETINGS

- *Jan. (TBA), 1996; Region Meeting;* Bloomington, Minn. Call Region Three Director Thomas Hutchinson, AIA, RRC (815) 477-4545.
- *Feb. 8, 1996; Region Meeting;* Philadelphia, Pa. Call Region One Director Joe Heidt, RRC (215) 947-9145.
- *Feb. 9-10, 1996; Region Meeting;* Orlando, Fla. Call Region Two Director Nelson Hall, RRC (704) 282-0826.
- *Feb. 14, 1996; Region Meeting;* Seattle, Wa. Call Region Seven Director William Cypher, RRC (206) 822-8397.
- *Feb. (TBA), 1996; Regions 7 and 8 Meeting;* Vancouver, B.C. Call either William Cypher, RRC (206) 822-8397 or Albert Duwyn, RRC (905) 607-7244.
- *Spring 1996; Region Meeting;* Indianapolis, Ind. Call Region Three Director Thomas Hutchinson, AIA, RRC (815) 477-4545.

ALL PLANNED EVENTS ARE SUBJECT TO CHANGE OR CANCELLATION. Call RCI for current dates, locations and fees. Tel. 1-800-828-1902 or (919) 859-0742. RCI accepts payment in the form of cash, check, Visa or Mastercard.

Other Events

- *Feb. 25-28, 1996; NRCA 109th Annual Convention and Exhibit;* San Diego, Calif. Call (708) 299-9070.

Mark Your Calendar

**RCI 11th
International Convention**
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The Evolution of Seaming Technology for EPDM Roofing Membranes

By Joseph J. Kalwara and Chester T. Chmiel, Ph. D.



Joseph J. Kalwara

Joseph (Joe) J. Kalwara, senior engineer of Firestone Building Products Company's Technical Department, is responsible for overall lab evaluation of adhesive, sealant and tape products. In this capacity, Mr. Kalwara oversees peel and shear adhesion testing, destructive testing, wind uplift analysis, and general performance testing of adhesive related products. He also writes performance specifications and application instructions for Firestone's adhesive, sealant, and tape products. He has been employed by Firestone since May of 1983 and has been in the roofing industry for 15 years. Mr. Kalwara is a member of SPRI and sits on SPRI's adhesives technical subcommittee. He holds a B.S. degree in building construction from Syracuse University.

Chester (Chet) T. Chmiel, Ph. D., is a technical consultant for Firestone Building Products Company and is actively working on adhesive product development and applications. Prior to joining Firestone in 1992, he was instrumental in developing the first solvent-based roofing adhesives for the U.S. Rubber Company (now Uniroyal), where



Chester T. Chmiel

he worked from 1960 to 1989. During his tenure there, Mr. Chmiel headed the Engineered Systems and Adhesives departments and is the co-inventor of butyl-based adhesives used in the roofing industry today. He was also instrumental in the development of seam tapes for the commercial roofing industry. Mr. Chmiel retired in 1989, following which time he served as a consultant for Uniroyal until 1992. He holds both B.S. and M.S. degrees in chemistry from Canisius College, Buffalo, N.Y., a Ph. D. in chemistry from Cornell University, and an M.B.A. from Michigan State University.

EPDm seaming products today are far superior to products that were available in the past. This article discusses the chronological development of the two predominant methods available for the seaming of EPDM rubber roofing today — cured, 100 percent solids seam tapes and solvent-based liquid contact adhesives — to show how improved technology has led to a new generation of products that provide dependable performance. This article also explains why

seam tapes are the product of choice in most EPDM applications.

What Makes a "Good" Seam?

On almost every commercial EPDM roof installed, there is at least one field seam joining adjacent EPDM membrane panels together. In order to recommend a seaming method, it is first very important to understand the many factors that constitute a "good" seam.

A field seam must be capable of a strong initial bond, as it may be exposed to weathering forces immediately upon completion of the seam. A seam must also be strong enough to withstand forces imposed upon it by exposure to high winds and weathering and to maintain its bond throughout the warranty period. Additionally, a good EPDM seam must be capable of withstanding surface temperatures ranging from -30 to in excess of 175 degrees F.

The most critical requirement of a field seam, however, is that it remain watertight. To test water tightness, Factory Mutual (FM) has developed a water leakage test which subjects seams to ponded water continuously for seven days. In this test, a seam section is weathered in an ultraviolet weatherometer (288 hours minimum) and then sealed in place under a cylinder (7.75 inches i.d.). The seam is then subjected to six inches of water for seven days and monitored. Passage of this test is required as part of qualifying a roof system for FM Class I rating.

Evolution of Seaming Alternatives

Thanks to advancements in research and development over the past several years, there are two EPDM seaming methods currently available to field-



(Clockwise starting with the bottom left photo) These four photos show adhesive seams. (1) With a one-part butyl seam adhesive, the seam area is first solvent washed. (2) The adhesive is then applied using a paint brush or roller. (3) The "touch-push" test is used to determine when a seam is ready to be mated. (4) Once the solvents have flashed off (15-45 minutes), the seam is mated and a lap sealant or caulk is applied to the lap edge.

splice EPDM membrane panels: Solvent-based, liquid contact adhesives and preformed, cured seam tapes. Both methods offer secure field seams when installed correctly, and both methods have been on the market for almost a decade with good overall performance histories. However, the performance of these two systems varies widely. Let's take a close look at the evolution of EPDM seaming methods and how the industry arrived at its current product choices.¹⁻²

Two-part Butyl Adhesive with Rubber Tape

In the 1960's, EPDM field seams

were fabricated of two-part butyl adhesives with an uncured rubber tape within the seam. The EPDM surfaces to be spliced together were cleaned thoroughly with a solvent to remove the dusting agent and dirt. After mixing, the two-part adhesive was applied to both splicing surfaces and allowed to dry until it no longer transferred to the finger when touched. A 4-inch wide rubber gum tape with its release paper face up was embedded into the adhesive on the bottom sheet of EPDM. The tape was then rolled with the release paper still in place to ensure good contact. After rolling, the release paper was removed from the gum tape and the top sheet of EPDM was mated to the tape and rolled

again. To finish the seam, a sealant was applied at the lap edge.

This early seaming method provided adequate seam strength, but was very expensive due to the components and installation labor involved. There was a need for a simpler, less labor-intensive system. This search led to the development of a one-part polychloroprene adhesive system.

One-part Polychloroprene Seam Adhesive

In the mid-1970's, a one-part adhesive based on polychloroprene rubber was introduced and greatly simplified EPDM seaming operations. This seam



(Clockwise starting with photo to the left) These four photos show taped seams. (1) EPDM seam tapes simplify the seaming process by combining cleaning and priming into one step. (2) When the primer has had sufficient time to flash off (usually less than 10 minutes as verified by the "touch push" test), the tape is applied and rolled in place with a roller to ensure a tight bond with the EPDM. (3) Once the tape is applied, the seam is closed and the release paper is removed. Blooming of the lap promotes "wet-in" of the tape to the primed membrane. (4) The taped seam is finished by hand using a silicone roller to ensure good contact and mating. Taped seams can be installed twice as fast as liquid adhesive seams and offer twice the strength upon aging.

system required solvent cleaning of the membrane surfaces to be spliced, followed by the application — by brush or roller — of a solvent-based polychloroprene contact adhesive to both splicing surfaces. A brief flash-off period (20-45 minutes) was

allowed for solvents to dissipate from the adhesive. Then, the seam was mated and rolled to ensure continuous contact. The seam was finished with a lap sealant.

In the late 1970's and early 1980's,

research was directed toward improvement of seams made with a one-part polychloroprene adhesive to satisfy industry demand for EPDM roofing systems with stronger seams that were more impervious to moisture.

Primers and Primer Washes with One-part Polychloroprene Seam Adhesive

Research also began in the early 1980's to develop primers and primer washes in combination with one-part polychloroprene adhesives to increase the bond strength of the seam.

Generally, primers are more concentrated solutions of primer washes. Previous seaming methods required washing the EPDM membrane before application of the adhesive using a solvent such as white gas, unleaded gas, or hexane. When a primer is used, it is applied after the solvent cleaner and before the adhesive, adding an extra step. When a primer wash is used, however, it replaces the solvent cleaner because it washes and primes the seam surface.

The roofing industry demanded a one-part seam adhesive that could be installed immediately after solvent washing and that offered sufficient seam strength for all EPDM systems. However, the one-part adhesive system had to show adhesion values similar to those of methods that used primers and polychloroprene adhesives.

One-part Butyl Seam Adhesive

In 1984, a one-part butyl-based seaming adhesive was introduced and is the liquid adhesive system currently in use. With this system, the seam area is solvent washed to prepare the EPDM membrane to receive the butyl adhesive. The seam adhesive is then applied using a paint brush. After the solvents are allowed to flash off, the seam is mated and a lap sealant is applied to finish the seam. When properly installed, this seam offers excellent overall strength and performance for all EPDM systems.

Roof-curing Seam Tapes

Also introduced to the commercial roofing market in the early 1980's were roof curing seam tapes. These tapes were introduced to take advantage of the 100 percent solids tape technology developed for other non-roofing applications. With this sys-

Consistent mass fosters consistent adhesion and waterproofing characteristics.

tem, the EPDM membrane was solvent washed and primed or primer washed prior to the application of the uncured tape. Typically, no lap edge caulking was required.

This system was not offered very long, however, because it relied on heat and time to cure the tape once installed on the roof. Until the tape developed some cure, the system offered low tensile strength and was, therefore, vulnerable to rooftop forces such as wind. Performance problems with roof curing tapes developed before the tapes could properly cure.

Preformed, Cured Seam Tapes

In order to meet industry demand for a better seam tape system, preformed cured tapes were introduced in the mid 80's. Since that time, and particularly within the past five years, advancements in cleaning and priming the membrane surface have further enhanced overall seam tape performance.

Today's seam tapes are cured during the manufacturing process, typically in ovens, prior to installation on the roof. Cured tapes show high tensile strength and, unlike their uncured predecessors, high initial bond strength of the seam.

Current seam tapes are also wider than those first introduced. While applications of 2-1/2 inch wide tapes were commonly used, tape width was increased to three inches in 1993 to enhance performance and accommodate applicator and specifier preference. Seam tapes can be used with ballasted, fully-adhered, or mechanically anchored EPDM systems. Additionally, a 7-inch wide seam tape was introduced in 1994 for use with batten-in-the-seam and reinforced, mechanically attached systems. This

is the widest seam tape available today.

In addition, many accessories incorporating tape are available for EPDM systems, including tape laminated to EPDM cover strips and flashing material for the waterproofing of batten bars and gravel stops. New accessory products are continuously being developed.

Advantages of Seam Tapes

Seam tapes offer significant advantages over liquid splice adhesives. Through factory-controlled manufacturing, seam tapes are preformed to provide consistent thickness within the seam — nominally 35 mils thick — as opposed to liquid adhesives which may show variability in film thickness by virtue of brush application.³ Consistent mass fosters consistent adhesion and waterproofing characteristics.

Seam tapes also offer twice the peel strength of splice adhesives after simulated rooftop aging. To prove the superior strength and quality of seam tapes, a test was conducted in 1993. The test procedure performed was the Rubber Manufacturers Association (RMA) Minimum Peel Strength Requirements test protocol (RP-10).⁴ In this test, seam samples were conditioned at room temperature for seven days. The seams were then subjected to hot-cold cycling (80 degrees C and -18 degrees C, respectively) and water immersion at 80 degrees C. This test, conducted under the supervision of Underwriters Laboratories, Inc., revealed that the tape system increased in strength and was found to be twice as strong as conventional liquid splice adhesives exposed to the same test protocol.

Taped seams can also be installed more than twice as fast as liquid applied seams. This minimizes the opportunity for contamination within the seam, reduces labor costs, and is a benefit during inclement weather. Additionally, with seam tape, there is no down time associated with waiting for the adhesive to dry properly. This

reduces the amount of time it takes to complete an installation.

Volatile organic compound (VOC) emissions are reduced by 66 percent when installing seam tapes. The only VOC emission occurs during the application of the primer wash, since the tapes are 100 percent solids and, therefore, do not contain any VOCs. Liquid adhesives, on the other hand, emit VOCs at every step, including the solvent wash, application of the splice adhesive itself, and application of the lap sealant.

Seam tapes also have proven performance when exposed to weather conditions such as high heat, humidity, and extreme cold. This is a very important advantage given the fact that the surface temperature of black EPDM membranes can range from -30 to in excess of 175 degrees F.

Essentials for Installing Secure Field Seams

Regardless of your seaming preference for seam tapes or liquid adhesives, there are several basic tenets that should be followed. Both methods require that the membrane be thoroughly cleaned or primed, as specified by the manufacturer, prior to installation. All adhesive techniques require that the substrate (in this case, an EPDM membrane) be as clean as possible prior to seam installation.

The only VOC emission occurs during the application of the primer wash, since the tapes are 100 percent solids and, therefore, do not contain any VOCs.

Prior to mating seams together, solvents should be allowed to flash off as much as possible. (Solvent washes flash off very quickly, as do primers and primer washes — usually in less than 10-15 minutes. Splice adhesives take a little longer to flash off — usually 20-45 minutes.) If a seam is mated when there is still solvent present from a primer or splice adhesive, a “fishmouth” or open area in the seam may occur. Fishmouths are readily visible and repairable, but can be avoided by proper monitoring during seam installation.

The “touch-push” test is a good method to gauge when a primer or adhesive is ready to be mated. If touching and pushing on a primer or adhesive reveals any movement within the layer, it is not ready to be mated. After mating, the seam should be rolled with a silicone hand roller to ensure that the adhesive or tape forms a continuous watertight bond with the membrane.

Conclusion

Research, development, and product testing of EPDM seaming products over the past two decades have yielded steady improvements in seam performance. As a result, seam tapes and liquid adhesives on the market today are proven, dependable products. But as more is learned about seam strength, the effects of weathering, application methods, and product formulations, seam tapes are emerging as the best alternative for EPDM seaming due to their higher strength, economical and environmental benefits, and overall proven performance.

Endnotes

1. Chmiel, C., “History of EPDM Splice Adhesives”, presented at the 1986 Midwest Roofing Contractors Association convention.
2. Dupuis, R., “Splice Tape for Use in EPDM Roof Systems”, presented at the 1994 Midwest Roofing Contractors Association convention.
3. Rossiter, W., “Characteristics of Adhesive Bonded EPDM Seams”, *Contractor's Guide*, April/May, 1991.
4. Rubber Manufacturers Association, “Minimum Peel Strength Requirements for Adhesives Used in Black EPDM Sheets”, RP-10, 1989.

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HQ file fact

Region Two can boast the highest number of RCI members: 264. Region One follows a close second with 242 members. RCI's newest Region Eight (Canadian Chapter) currently has 47 members, but is growing fast.

RCI Brings Basic Roof Consulting to Baton Rouge

RCI's Basic Roof Consulting course was presented November 2-4 in Baton Rouge, La. RCI wishes to thank the following RCI members who gave their time and energy to teach this three-day course.

Michael Blanchette, RRC
Amtech Roofing Consultants

Joe Hale, FRCI
HDH Associates

Steven Kern, RRC
Georgia Pacific Corporation

Betty Lee, AIA
Louisiana Facility Planning and Control

RAC

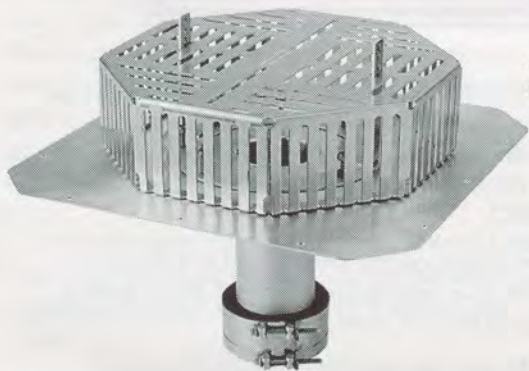
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“As a regional director from 1992 to 1994, I had the opportunity to serve under Richard Horowitz on the Board of Directors for RCI. At the time, I was a newcomer to the board and a little unsure of myself and the uncertainties of the requirements and responsibilities that lay ahead. Richard welcomed me aboard and very much made me feel part of the team. He always acknowledged my presence at meetings, welcomed my input, and took the time to just ‘chat’. I came to know Richard as a very insightful person concerned with establishing a set of standards of which the Institute could be proud. When he was named chairman of the Educational Services Committee, I decided to join the committee and serve under him again.

I learned a couple of weeks ago of Richard’s health problems during a telephone conversation with him regarding the committee. At that time he sounded good and I had wished him a full and speedy recovery. Today I learned of Richard’s death and was very much shocked. I again feel compelled to share my memories of Richard. I will remember him as a patient, understanding, caring, knowledgeable, and unselfish fellow consultant always willing to take on the unwanted task on behalf of RCI for the betterment of the industry which we all serve. My only regrets are that I did not get to know Richard sooner and for a longer period of time. He was a real tribute to our industry. I feel blessed to have known him for the short period of time that I did and to have had the opportunity to serve under him. All my best goes to Richard’s family, friends, and colleagues.”

*Dan Neuhaus, RRC
Past Director, Region Five
Member, Educational Services Committee*



Enjoying the President’s Banquet at the 1987 convention in Orlando, Fla.

“Who of us can forget the turtleneck sweaters, the tweed jackets, the hush puppies, and the turned up smile?”

Who of us can forget the dedication, the hours of tireless work, and still always the gentleman?

No, we’ll never forget — but we all will miss Dick Horowitz. Shalom.

Requiescant in pace.”

*Bob Martin, RRC, FRCI
Fellow, 1993*

“Richard always made me feel like I was an important part of RCI, even when I first became a member. No matter what office he held, no matter how busy his schedule, and no matter if he was late for the next meeting at a convention, he would always take the time to answer any question or give his input. I will truly miss this great man.”

*Michael Blanchette, RRC
Treasurer*



Working as a team player with his colleagues.

On Writing for Interface.

*“It’s your newsletter;
it’s your Institute. RCI is asking you for your support. RCI is you. Don’t let yourselves down.”*

R. Horowitz

"Richard had many gifts; intelligence and wit were not the least of them. He generously shared these gifts with all who knew him. Richard liked to show off. Who wouldn't?"

I remember, while reading Shelby Foote's *History of the Civil War*, remarking to Richard about an incident during an obscure ironclad naval battle on the Mississippi River. He then proceeded to describe, in detail, the battle, the events leading up to the battle, the officers in charge, and what they had for breakfast. Maddening!

Many times, while driving together to a job site, the radio softly playing classical music, he would name the composer, the movement, the conductor, orchestra, and record company label — well in advance of the program commentator.

History. Music. How about wine? Richard could name them all and tell you which years were the best.

I once ran into Richard, long before becoming his partner, at an astronomical seminar. The seminar was being presented at the Planetarium at the Franklin Institute in Philadelphia. I soon learned that Richard was an avid amateur astronomer and was well equipped with the proper optical instruments to pursue this interest.

Richard's knowledge of ships, especially warships, was impressive. This passion manifested itself in the magnificent scale models of ships that he built. These were built from scratch, no kits or pre-made parts; he made each and every piece by hand. Richard was a perfectionist.

He also loved food. I was amazed at his knowledge of restaurants, particularly in an area of Trenton (N.J.), his home town, called Chambersburg, or "The Burg". This unspoiled ethnic neighborhood abounds with the Italian restaurants and Dick knew them all. He could very easily have been a "dining-out" feature writer for any major newspaper.

But all of these, his love of history, books, art, astronomy, music and food, paled in comparison to his dedication and devotion to the Roof Consultants Institute. What can I say about Richard and RCI that most of you don't already know?

Should I mention his rise through the ranks to president; his authorship of the first examination for the achievement of Certified Roof Consultant; the many other contributions he made, including countless articles published in *Interface* written with his own style and wit? I can only say that the people and goals of RCI were as near and dear to Richard as you could possibly imagine. Richard took every opportunity to sing the praises of the organization.

Yes, Richard gave generously of his gifts and talents, especially to RCI. In return, he received many fold that which he gave. This was truly a symbiotic relationship from which we all benefited."

*William A. Edwards, AIA
RCI member and principal,
Horowitz & Edwards*

On RCI's Founders.

"There was so much to do and the grand vagueness of their aspirations appears from the vantage of hindsight to be wistfully admirable and romantic. One wonders just how they managed to get started, but they were practical men and they succeeded because RCI was an idea whose time had come."

R. Horowitz

"In memorial to the passing of an RCI icon, I believe it would be appropriate to pay tribute to the memory of Richard Horowitz by reflecting upon one of the finest, if not greatest, works that he left us.

In 1986, overloaded with responsibilities for two major RCI committees which had been created by president Dick Canon and the board, I began seeking a likely candidate to assume leadership of the RCI Certification Committee. Richard Horowitz emerged as a clear first choice among many who were worthy. I subsequently telephoned him and spoke at length about assuming the chair of this committee. After first expressing reservations about time and the demands imposed by his growing practice, with considerable thought about the commitment which would be involved, Dick accepted. The rest is history. Suffice it to say that Richard Horowitz took a partially fleshed-out concept of what could be, then added his own capabilities and intellect to become architect of the finest and most important accreditation program ever offered to professionals within the roofing industry. I will always be grateful and proud that my original certificate bears his signature.

Thank you, Richard."

*D. Benjamin Hales, CCS, RRC, FRCI
President, 1988-1989
Fellow, 1989*

"I called chairman Richard Horowitz at his home immediately after learning about his surgery. That was on September 22, 1995. Although I had intended to just wish him well, he immediately began discussing his plans of resuming committee work as soon as he felt a bit better. Little did I know that exactly one month later, only his words of encouragement and wisdom would remain with me. Although I had never met Dick, as he wanted to be called, I had talked with him over the phone several times. Everything from his call for volunteers to undertake the major update of the course manuals to his constant encouragement to work hard towards a goal reminded me of all the things it takes to make an organization like RCI successful. His dedication and sense of purpose attracted me towards contribution to RCI.

On September 22, the last time I talked to Dick, he urged me to think hard about the future of the Educational Services Committee and also of the course manuals. He urged me to set up a model within the current framework of RCI to incorporate the practices unique to Canada so that this model could be used by other international members. He asked that I raise the issue of the relevance of the registration exams to Canadian practices and codes. I am saddened that I will not be able to accomplish these tasks under the guiding light that Dick so clearly provided. But my tribute to Dick would be my promise that the work he started will be completed and the things that he mentioned to me just a month before he left us all will be accomplished."

*Hitesh Doshi, PE
Member, Educational Services Committee*

"I first met Dick at the 1988 convention in San Francisco. Fortunately for me, I had the opportunity to get to know him during the many RCI teleconferences and meetings in the following years.

Dick was a great help in my life, as he was in the lives of many others. He would often take the time to pull me aside and give me little tidbits of advice ranging from comments on public speaking to help with what I wanted to accomplish as an officer of RCI.

The programs of RCI will miss his wisdom and leadership. I will miss his friendship."

*Sam Huff, RRC, FRCI
President, 1993-94
Fellow, 1994*



Richard congratulates the first Certified Roof Consultants at the convention in 1988.

"My friend Richard (Dick) Horowitz will be with us forever. His fantastic vocabulary was always a delight to many of us who worked with him. Dick was a world class wordsmith. He added credibility, integrity and professionalism to any task or work he ever undertook for RCI, the fledgling Institute that he loved and nurtured. Providence provides great men for worthwhile work; Dick was such a man. I will miss the man, but I will miss the mind even more."

*Joe Hale, FRCI
President, 1993-94
Fellow, 1992*

On Presenting the First Registration Examination.

"Eight candidates passed that first exam. An officer of NRCA, attending the convention as a speaker and hearing about the exam, asked for permission to see it. After a 20-minute review, he looked up and said, 'Anybody who can pass this exam deserves the title Roof Consultant'."

R. Horowitz

The Man in the Tweed Jacket

"Back in 1986, I attended my first RCI convention. At that time, RCI had a membership of about 60-70 people. The shape of the organization had yet to be formed. Meetings were riotous, ringing with passionate speeches and urgent pleas. During the business meeting that year, a coup d'état was attempted to wrest away part of the leadership. It was at this meeting that I met the man in the tweed jacket. A friendship developed between us. We had certain things in common. Both of us were architects, had begun to specialize in roofing, and were about the same age. We had one additional common interest: a passionate love for opera. We spent one evening during that first convention trying to guess which arias the waiters were singing at an opera theme restaurant we had gone to.

It is strange how a special type of friendship can develop among professional people who see each other only once a year. It was that way with Richard and me. Between 1986 and 1995, with but one exception, we saw each other only at convention time. (I'm sure other RCI members can relate to that situation.)

During each convention, we caught up on all that was going on in each other's lives. A few years ago, he married again and honeymooned in New Orleans. Richard and his new wife called me and we spent an enjoyable evening together. After that short visit, it was evident that he had gotten it right the second time around.

Early on, Richard had the foresight to see that credibility in any certification program for RCI was critical. As chairman of the committee, he was instrumental in putting together those early tests. After taking the test myself, I called for his decapitation in an article in the newsletter. He took it with great, good humor. He knew the importance of a test that represented a real achievement rather than some loosely disguised method of handing out worthless credentials.

Richard, I will certainly miss you, especially around convention time. And wherever you are, let us hope it is cool rather than hot, so that you can continue to wear your tweed jacket."

*Victor Bedikian
Past chairman, Publications Committee*

On Building Envelope Symposium.

"It's been some time now since I've heard RCI described as 'a bunch of ex-shingle salesmen'; my thought now, as it was then, is that it might be surprising for some people to learn what a bunch of ex-shingle salesmen knows."

R. Horowitz



Enjoying a light moment with 1992 outgoing president Don Bush Sr., RRC, FRCI.

"Richard and I met during the first convention in Orlando, Florida. I thought to myself, why is an architect interested in the Roof Consultants Institute? I soon found out that Richard was not only interested in the architectural aspects of structures, but also the roofing and waterproofing of these structures. He understood that one of the most important functions of a building is keeping the occupants and their belongings water free.

At that time, the board was serious about developing the certification program, as it was called then. When asked to participate on a three-man committee with Bob Phillips and Bob Martin to develop questions and start the process of the program, he enthusiastically took on this task and got this program underway in a very short period of time. Richard was a man of his word, had command of the English language, and was a leader.

During the ensuing years, while participating on the board with Richard, we spent a few moments one-on-one. I came away each time with a little more knowledge of some subject — as likely to be about architecture, the history of the Civil War, or the legal aspects of consulting as it was about roofing and waterproofing.

Richard was particularly enthusiastic upon meeting his new family several years ago. He was enthusiastic about the future of his life and that of RCI. One could not help being elevated to a greater level of enthusiasm by just being around him.

I am sure that, wherever he is, those around him are benefiting greatly from his presence, as I have. God bless you, Richard, and your family."

*James E. Magowan, RRC, FRCI
President, 1990-1991
Fellow, 1991*

"After Linda Ronstadt's remarkable metamorphosis from a pop and rock singer to a polished Nelson Riddle style singer, she recorded a moving song called "Goodbye My Friend". When I heard Richard Horowitz had left us, I thought of this song. The words are apropos as a eulogy to our good friend Richard. Listen.

Although we never know where life will take us,
I know it's just a ride on the wheel.
And we never know when death will shake us,
And we wonder how it will feel.
So goodbye my friend.
I know I'll never see you again;
But the time together through all the years,
Will take away these tears.
It's okay now,
Goodbye my friend.

Life's so fragile,
We can't hold on, but we try,
We watch how quickly it disappears,
And we never know why.
But I'm okay now,
Goodbye my friend.
You can go now,
Goodbye my friend.

— By Karla Bonoff - Seagrape Music, BMI; Performed by Linda Ronstadt, from "Cry Like a Rainstorm, Howl Like the Wind"

Contrary to the song, I believe we will see each other again. As a matter of fact, I think Richard saw me the day he was laid to rest. I was on a roof cutting a core, one of those tough, nasty ones that really makes you angry. I was cussing and carrying on when the sun popped out from behind some fluffy clouds; you know, the kind that make you think of heavenly things. I honestly think I heard Richard laughing at me. I wondered then if we will do things after this life parallel to what we do here. If so, I hope Richard gets the coring and I get the sketching or something else.

RCI has lost so few members since its beginning. Those we have lost have been some of our greatest! We have remembered Herb Busching and several others at our conventions during a serious moment. Now, we have lost Richard, another great man.

Most of us remember Richard for the phenomenal job he did of initiating the Certified Roof Consultant exam. Some of us cussed him as we left the test hall in Orlando, but not for something Richard did other than let us know how much we did not know about roofing. Thanks, Richard. (Really.)

Richard was a 'prince of a guy', as they say, and more. He was a professional we could all look to and try to emulate. Thanks, Richard.

Richard brought that and so much more to RCI. I'm sure he also received back from the Institute, but what he did best was to give, give, and give. Thanks, Richard.

As our first registered architect president, Richard brought still more credibility to an organization once murmured to lack credibility. Thanks, Richard.

I'm sure lots of folks have more nice things to say about Richard. I enjoyed our times together. I'll miss his smile, wit, and his wisdom. I'll miss his calming manner and his very presence. Richard was a gentleman and a gentle man. Richard introduced me to a delightful drink many years ago at a meeting in Chicago: a Kir, made with white wine and cream de casis. We didn't have those in Opelika, Alabama, but Richard introduced me to the Kir. Thank you, Richard. I'll never taste another without thinking of you. I'll never attend another convention or see a list of new Registered Roof Consultants without thinking of you. Until we tip another Kir together,

Goodbye my friend,
I'm okay now,
You may go now,
Goodbye OUR dear friend.
P.S. Your turn to do cores."

Dick Canon, PE, RRC, FRCI
President, 1985-87 • Fellow, 1987

"I met Richard in the early 1970's when he attended a BURSI school in Denver. It was immediately obvious that he was a special person, knowledgeable, yet enthusiastic and willing to listen.

Over the next 25 years, our paths occasionally crossed, usually on issues of education and industry improvement. He helped keep RCI and RIEI on parallel paths, as we both sought to share knowledge with our peers. We last corresponded only a few weeks ago, naturally on RCI business. His willingness to reassume chairmanship of RCI's Educational Services Committee only confirms Richard's lifelong commitment to education and his profession.

I and my associates at RIEI will miss him."

*Richard L. "Dick" Fricklas
Technical Director
Roofing Industry Educational Institute (RIEI)
RCI Honorary Member*

On the RRC Title.

"If you apply and qualify for a registration title, you receive a certificate from RCI that designates you as a Registered Roof Consultant. You are also recognized by your peers at the annual awards ceremony held at the convention. You are a little better than the average bear. Your credentials have been verified by RCI, an international trade association. And that is it. Your RRC registration is not a license. You cannot sign and seal drawings with it; it has no standing in law. But roof consultants prize it highly. It is the pinnacle of our profession. And someday, when states get around to licensing roof consultants, who knows?"

R. Horowitz

On Using RCI's Membership Directory.

"You can write or call another member directly. It's O.K. to do this; remember that RCI has no second-class members. However, be respectful and use common sense. Don't take up a lot of another member's time. If you call long distance, don't call collect. Don't ask someone to return a toll call; use your own nickel. Members are encouraged to be helpful and courteous in responding to other members' requests for advice or information. (After all, why did we all join together in the first place?) You can learn a lot from talking to each other and we will be helping RCI do something important for all of us. Use your directory!"

R. Horowitz

"I first met Dick when he joined RCI in 1984, bringing with him a tremendous amount of talent and enthusiasm. Like any true professional, he participated in all aspects of the industry. It was not unusual to run into each other at RIEI seminars and various manufacturer functions as well as at RCI meetings and seminars.

Soon after becoming a member, Dick joined the Professional Liaison Committee which I chaired, but he really made his mark as chairman of the Credentials Committee. I took the first certification exam in 1987 and gained a healthy respect for him. However, it wasn't until Dick became president in 1992 that I got to know him personally — a privilege I will always be thankful for.

Anyone who ever talked to Dick quickly discovered that he was extremely intelligent and well read. There was no subject he didn't know something about. I am proud to have worked with him over the years. Knowing him and working with him has made me a better person."

*Arthur Sark, RRC
President*

"Anyone associated with RCI, or indeed the roofing profession in general, most likely knows about Mr. Horowitz and his contributions to our Institute and the profession of roof consulting. Many of the pieces in this issue extol those contributions better than I ever could. Dick's voice will be missed in our industry. But others can and have stated that loss more clearly than I am able. I feel his loss, as many do, on a personal level. So with apologies, I want to express my personal sense of loss with Dick's passing.

Dick Horowitz hired me into RCI. He was the President of the Institute when I was offered a job with RCI in 1992. It was at the 1992 Convention in Nashville, Tennessee, that I was first introduced to Dick by Joe Hale and I will be forever in Joe's debt for introducing me to as fine a man as Dick Horowitz. I am grateful for the precious few years I was given to know him and I am filled with wonderful memories of our time together.

He was for me that rare combination of friend, teacher, and boss and he served all those roles with a grace and style that was his alone. His strength and sureness of purpose were always tempered with the gentleness of a true gentleman. I learned a great deal simply by watching the way Dick confronted the issues and solved the problems associated with leading the Institute. His ability to craft exactly the right letter saying exactly the right thing was legendary. When any situation arose requiring a tactful yet forceful letter, Dick was always the one assigned the task. I miss the pure and simple pleasure of reading his letters.

Within the whirlwind of activity that comes with managing a growing and dynamic Institute such as RCI, Dick Horowitz was, for me, a calm refuge. I am pleased that I availed myself of every opportunity to seek his company at our many conventions, workshops, and meetings. In Dick I found a friend with wide ranging interests and varied tastes. I fondly remember his love of ice cream and the many times we were able to sneak away from the hustle and bustle of work and indulge ourselves. Our conversations were a constant source of delight. I didn't care if he was talking to me about art history or scale models of naval vessels, I always knew that if I simply listened, I would learn something new. I am pleased that Dick chose to share so many stories with me; I miss his voice.

I could always count on Dick to push me (gently) to improve. It didn't matter if the subject was writing, management skills, or personal growth, Dick always reminded me to try just a little harder. He never let me down when I asked for his help and never failed to show me how to improve my work.

I miss you Dick. I don't suppose that will change. I hope that I won't disappoint you with my efforts. I suppose that I'll have to write the difficult letters without you now; don't laugh too much at my struggles. In case I forgot to say it, thanks for everything you gave me and taught me. God speed, my friend."

John Newark
Executive Manager



Dick received his last award from John Newark at the convention held in Reno.



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JOHN GOLUBIC, JOE DISANTO (SEATED)

MIDWEST



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TOM DALY (SEATED)

MID-ATLANTIC



JOE DISANTO, STEVE WITKOWSKY, HANK BONNEY, STEVE THUMMA
MIKE MERRIGAN (SEATED)

TEXAS



COREY INGRAM, JOE DISANTO, DAVID WEBSTER

SOUTHEAST



JOHN ASHE, JED BREITBART, STEVE TRITES
STEVE BURNS, DAN GENOVESE (SEATED)

WEST



JOE DISANTO, BOB CRELLIN, JED BREITBART
CHARLIE SOFFEL (SEATED)

Off With Richard Horowitz's Head

By Victor Bedikian

The following article brought a smile to Dick's face whenever he spoke of it. For this reason, we have decided to reprint it here. It was originally published in the June 1987 issue of Interface.

Cries of "off with his head" were heard around the Orlando Marriott at high noon on March 23, 1987, as sixty or so irate RCI members milled around the anteroom of meeting room Tangerine B. The head they were crying for belonged to Credentials Committee chairman Richard M. Horowitz, AIA, RCI.

The Roof Consultants Institute had staged its first examination for the certification of roof consultants and the man most responsible for the content of the test was our most notorious Mr. Horowitz. To say that the test was difficult is like saying electrocution is uncomfortable. The first part consisted of 400 multiple choice and true-false questions covering legal and ethical aspects of roof consulting, roofing systems, testing

methodology, specifications, construction and design principles. This part had to be completed in three hours (26 seconds per question). The second part had several practical problems which had to be answered within one hour. For many of the examinees whose last test had taken place some twenty years earlier, it was a trial by fire.

Although most of us who took this exam would like to have Richard boiled in hot coal tar pitch at EVT, we all acknowledge that he achieved credibility for RCI in testing for certification of roof consultants. His was a difficult task and he pulled it off with great verve and nerve. Kudos should also go to Richard Canon for his leadership as president and to the members who submitted the questions and answers that were used.

Richard M. Horowitz Award

Board of Directors Names Interface Award for RCI's Renowned Past President, Fellow, and Exceptional Member.

The award given for the best technical article published last year in *Interface* will be named after the late Richard Horowitz — a fitting tribute to his literary style and breadth of knowledge. Richard had the rare gift of finding the perfect words for any occasion, and he exercised this talent with prolific ease.

Articles published in *Interface* will be judged annually at RCI's convention. Contact Headquarters for more information.

Building Envelope Symposium a Success in California



By Gene Lawrence
Director, Region Six

On Tuesday and Wednesday, September 12 and 13, 1995, RCI sponsored a Building Envelope Symposium in Ontario, California. Coordinators of the event were Susannah Lunenfeld, CDT, and John Pohorsky, RRC. The program was a great success, as evidenced by the turnout of more than 110 architects, engineers, contractors, building managers, and consultants.

Several outstanding speakers presented information on all aspects of the building envelope. We thank the speakers who volunteered their time and effort to share their experience and knowledge with us, and to the RCI members who helped organize and present this event. I also appreciate the help received from Anneliese and Elaine De'Leon at Headquarters.

Watch for other symposia to be presented in future months.

RCI wishes to thank the following speakers for their outstanding presentation at the Building Envelope Symposium.

Lee Anderson
IDC Specialties, Inc.
La Mesa, Calif.

Judy Holleran, RRC, CDT
Systems 7 Plus
La Mirada, Calif.

Louis Bennett
California Association of Window Manufacturers
Santa Ana, Calif.

John Pohorsky, RRC
GAF Materials Corporation
Fontana, Calif.

Dean Colin
Dean Colin Associates
Sierra Madre, Calif.

Walter Pruter
W. F. Pruter Associates
Los Angeles, Calif.

Philip Dregger, PE, RRC
Technical Roof Services
Pleasant Hill, Calif.

Robb G. Smith, RRC, RRO
Advanced Roof Technology, Inc.
Reno, Nevada

Warren French, PE, RRC
French Engineering, Inc.
Houston, Texas

Mark Vanderslice, RRC
Roofing Forensics
Yorba Linda, Calif.

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RCI wishes to acknowledge and thank participants in its executive marketing package. These companies have reaffirmed their commitment to the profession of roof consulting and have made possible the monthly publication of *Interface*.

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* Prepared by Interface staff.

We Get Letters

Dade Accolades

Dear RCI:

I opened the October issue and saw the *Interface* Reader Survey's long list of topics. I thought, there is something for everyone!

"Florida problems and solutions" was one of the suggested topics. I don't have a problem or a solution, but I am having an experience in Florida.

Over the past two years, I have been working with an architect on the design of a large and tall new building in Miami, Florida. Consequently, I have been communicating with the Dade County product control section. I discovered that Dade County is very much aware of RCI and some county people are even aware of me, though I work out of Philadelphia.

What is my experience? Product approval requires input from the manufacturers. Most have submitted good data for approval to meet 1-90 (45 PSF). But, what do you do when your building requires 135 PSF? You look for the manufacturer who is willing to test for those uplift pressures. If the manufacturers follow the program, Dade County is ready and willing to help.

I have worked with many local codes and find the current Dade County code tough but fair. Whether you agree with the code requirements or not, they have established a framework for assessing roofing systems. Codes are not always easy to understand, but the good people at Dade County have taken the time to listen to my frustrations and help me do my work.

A tip of my hat to Dade County and the new code that recognizes the RCI Registered Roof Consultant. And that is my experience!

*John J. Serke, AIA, RRC
JDS Design Associates
Ardmore, Pennsylvania*

Asphalt Slope Guidelines

Dear Editor:

I enjoyed Ken Brzozowski's article (Asphalt vs. Coal Tar) in the October 1995 issue of *Interface*, but one important change has taken place in asphalt specifications that Ken missed.

In the appendix to the specification D-312 for asphalt, the slope guidelines have been changed. They now read:

Type I: inclines up to 2% (1/4 in./ft.)

Type II: inclines from 2% (1/4 in./ft.) to 8% (1 in./ft.)

Type III: inclines from 2% (1/4 in./ft.) to 25% (3 in./ft.)

Type IV: inclines from 2% (1/4 in./ft.) to 50% (6 in./ft.)

The most dramatic change was for Type III asphalt, which is the dominant bitumen in use today. The slope for this bitumen was reduced to 1/4 in./ft. from 1 in./ft. This change more closely follows industry practice, especially since the introduction of glass fiber BUR mats.

Statistics indicate that Type I asphalt is all but dead. This is regrettable, since it truly does have weathering advantages on

flat roofs. A good compromise that RCI members and readers should consider on poorly draining roofs is to require Type I for the flood coat, even if they specify Type III interply to avoid migration through glass BUR mats.

*Dick Fricklas
Technical Director and
Honorary RCI Member
Roofing Industry Educational Institute
Englewood, Colorado*

Editor's note: Following is Ken Brzozowski's response to the previous letter.

"I thank Dick Fricklas for his comments regarding my article in the October 1995 issue of *Interface*.

The slope guidelines I used for asphalt are those which appear in the 1995 *Annual Book of ASTM Standards* (Section 4). Since the new guidelines will not appear until the 1996 edition and are not generally available to the public until then, I chose to use those presently in place. I appreciate Dick giving the readers of *Interface* an opportunity to preview upcoming guidelines, however.

I agree that the use of Type I asphalt is limited, but it is still available and I have had occasion to employ it in certain situations. It is dangerous, however, to expect Type I asphalt to have the same ponding water resistance as coal tar, as the chemical nature of the two products is simply not the same."

RCI invites letters from all readers on subjects related to roofing. Appropriate letters may be published in *Interface*, subject to editorial review.

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Keith Roberts

Short Term Roof Inspections: Guidance Notes for the Adoption of a Safe System of Work

After graduating from the University of Birmingham (England), Keith Roberts worked for Taylor Woodrow Construction on several major construction sites, followed by periods with Allot and Lomax Consulting Engineers and the Science and Engineering Research Council. He is a qualified civil and structural engineer and a director with the independent practice Rollinson Glanville Consultants based near Oxford, England, which specializes in the investigation of building defects and provides professional services to the building envelope industry. He was a speaker at the International Waterproofing Association Congress held in Amsterdam in April of 1995.

On January 16, 1991, a well respected British roofing consultant was killed carrying out a roof inspection. Four weeks later, I was asked to step into his shoes and carry on his work. It was a salutary experience meeting his clients who knew him well and being told how careful and cautious the chap was — and yet he fell to his death.

Roof inspections, by their very nature, usually require access to selected parts of a roof for a relatively short period of time to observe and record its condition. There is a large quantity of written advice dealing with safe methods for roof construction work. However, for short duration non-extensive inspection work, these recommended safety mea-

asures may not all be appropriate.

In the United Kingdom, roof inspection is not 'construction work' within the context of the "Construction (Working Places) Regulations 1966". Therefore, requirements such as the provision of comprehensive roof edge protection do not apply. Other occupational health and safety legislation, particularly relating to fragile roofs, may be applicable but only so far as is "reasonably practicable and safe". Likewise, the U.S.A. has a similar situation in that the revised OSHA "Rules for Protection in Construction" will not apply when employees are doing investigation or assessment of workplace conditions before the actual start of work or after the work has been completed (P.A. Cook, *Interface*, October 1995).

This paper brings together simple inspection rules and good advice under seven discrete headings (stages), each with its own safety checklist.

Stage One: Inquiry

- 1. Is there a need to go onto the roof?**
Could the roof survey be carried out using binoculars and cameras with zoom lenses? This question is especially important if the roof has a steep pitch.
- 2. Establish the type of roof and prepare a first assessment of risk considering the following:**

- a. Roof pitch.
 - b. Weak and fragile materials (asbestos sheet, wood wool slab, roof lights, corroded steel deck, rotted timber boards).
 - c. Edge protection.
 - d. Fire
 - e. Other hazards (gas releases, other works in progress).
- 3. Consider the means of access to the roof.** Access could be via a permanent staircase, a fixed ladder, a temporary ladder secured at the top, a tower scaffold, a mobile platform, or a mechanical hoist.

- 4. Establish whether there is a safety officer for the site.** This is most likely to be the case on larger establishments. Arrange to make contact on arrival at the site, especially when future periodic inspections are also required.
- 5. Never work alone.** Arrange for an escort who could be a member of the client's site staff, a contractor in attendance or another member of the inspection team.

- 6. Contractor to be in attendance.** When opening inspections are required, arrange for suitable tradesmen to be in attendance to remove and later reinstate elements of roofing and cladding in a safe manner with

the correct tools.

- 7. Always take a positive approach. Safety comes first.** Plan ahead and allow for safety provisions within budget proposals.

Stage Two: Arrival on Site

- 1. Allow time for preparing to go up onto the roof.** Do not rush; adopt a methodical, unhurried approach.
- 2. Dress Properly.**
 - a. Footwear should be flexible and have non-slip soles.
 - b. A jacket should be worn over trousers if wet weather is expected.
 - c. Wear a hat for warmth in the winter and to protect from the sun in the summer.
 - d. Avoid loose ties and scarves when working near a mechanical plant.
 - e. A safety helmet is essential on operational construction sites.
- 3. Take the correct equipment, including:**
 - a. A day sack or holdall that can be carried on your back while keeping both hands free.
 - b. A strong nylon rope to lift larger items of equipment.
 - c. A small first aid kit including an antihistamine cream for wasp or bee stings and sun cream.

- 4. Make contact with the permanent site staff and sign in.** Establish whether there are any others working on the roof and whether any special precautions are required. Who will check if you have not signed off at the end of the day?

Larger or more sophisticated occupiers may operate Permit-to-Work systems to regulate high risk activities including roof work. The precautions which you take should be no less than those specified on the permit issued to you.

- 5. Inclement weather.** Be aware of the weather forecast and, where appropriate, rearrange site activities to suit. Consider wind, rain, frost, ice hazards, and extreme heat. Take particu-

lar care in blustery conditions. A gentle breeze at ground level is usually a strong breeze on the roof of a tall building.

- 6. Make yourself comfortable.** There is a good chance that you will be on the roof for three or four hours. Therefore, eat, drink and use the wash room before going up to carry out the inspection. Consider taking a bar of chocolate to boost your energy level on long inspections.

Stage Three: Internal Inspection

- 1. Assess the composition and condition of the roof soffit. Is it safe to walk on?** Look for evidence of severely corroded decking or notable deflections indicating that the structure may be unsound. This inspection must be thorough in order to identify all potentially weak or fragile areas before going on the roof.
- 2. Don't fall.** In the attempt to get closer to the roof soffit, perhaps to inspect an interesting feature, be aware of the height to which you have climbed. Keep your head.
- 3. Do not leave the safe access route.** Stick to the permanent walkways or, alternatively, to the prepared and approved access scaffolding.
- 4. Wear a safety helmet.** This is mandatory on operational construction sites. They must also be worn where there is a risk of falling materials or low-head hazards such as scaffolding.

Stage Four: Going Up

- 1. Check the condition and adequacy of the ladder, platform, or hoist.**
 - a. Is it properly footed?
 - b. Is it at the correct angle?
 - c. Is it restrained at the top?
 - d. Does it project at least 3 feet, 6 inches (1.05 m) above the landing platform?
- 2. Keep to a minimum the number of times you actually go onto the roof.** Climbing up onto the roof and subse-

quently coming down is often the most dangerous part of an inspection. Therefore, it makes sense to reduce the number of times to a minimum by planning ahead.

- 3. Keep both hands free when climbing a ladder.** Use a backpack or satchel to carry survey equipment.
- 4. Use a rope to lift heavy pieces of equipment.**

Stage Five: Moving Around

- 1. Before moving from the access point, identify the major hazards by sight and notify others present.** Major hazards could include the following:
 - a. Fragile areas.
 - b. Edge protection.
 - c. Slippery surfaces.
 - d. Weather conditions.
 - e. Other contractors at work.
- 2. Fragile areas.** Above fragile areas, ensure that suitable protection is in place before you walk on or pass near.
- 3. Follow these general workplace safety rules:**
 - a. Always step forward, never backward.
 - b. Walk — don't run — at a steady pace.
 - c. Keep a minimum of two people on the roof at any one time.
 - d. Keep an eye on your partner and warn him or her of impending danger.
- 4. Edge protection.** In general, stay at least two meters away from an unprotected edge. When there is a need to inspect the roof edge, take off any backpack, approach with caution, crouch down keeping your body weight back from the edge, and move away as soon as possible.
- 5. Opening Up.**
 - a. Before removing any elements of roofing and cladding, ensure that the structure will remain stable

and secure.

b. When opening up a roof construction, be aware that the opening is effectively an unprotected edge with potentially a long fall to the floor below.

6. Louvers. When inspecting the inside of louvers and other mechanical devices, ensure that there is no risk of the unit being accidentally switched on.

7. Take time every 15 minutes to review the major hazards. Have any factors changed in the past 15 minutes and is it safe to continue?

Stage Six: Coming Down

1. Check that there are no loose materials left on the roof. These materials may blow off and strike somebody below.

2. Check that the roof is left in a watertight condition. This will ensure that others will not have to go back onto the roof unnecessarily.

3. Check that there are no other people left on the roof prior to removing temporary ladders or locking access doors.

4. Ensure that all means of access are secure to prevent unauthorized people from going onto the roof.

Stage Seven: Leaving the Site

1. Sign off with the permanent staff on-site and follow Permit-to-Work protocol if a permit was issued to you.

2. Report any dangerous hazards that need urgent attention. Confirm these reports and agreed corrective actions by letter following return to the office.

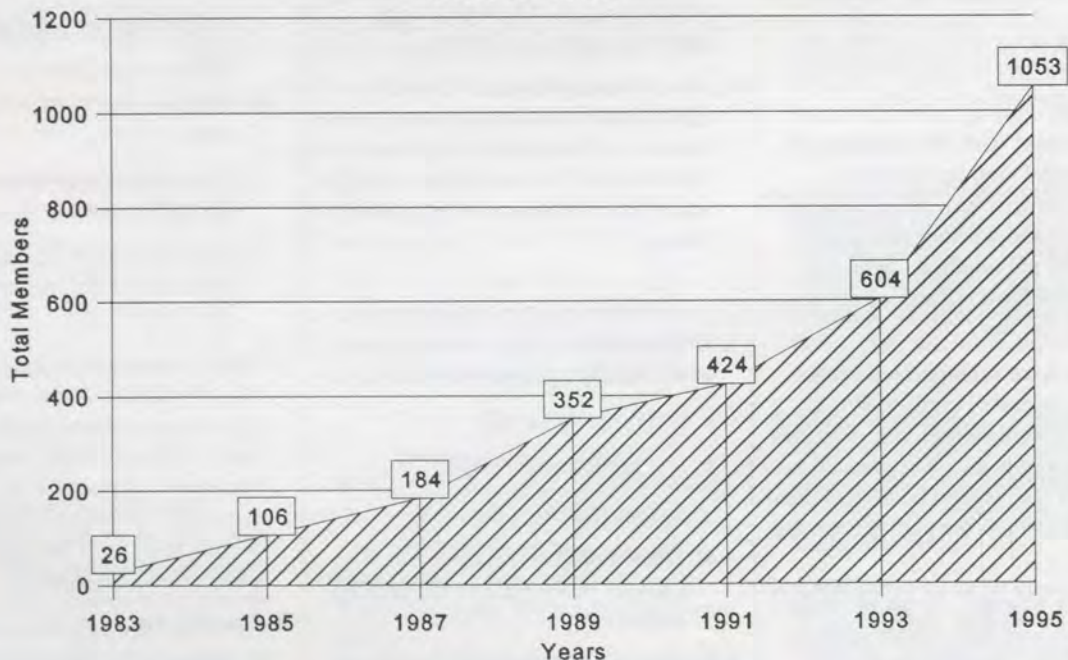
Conclusion

These guidance notes were not written to be prescriptive but rather are intended to promote safety awareness in everyday practice. I am sure that there is more good advice which other experienced roofing consultants may wish to share through the pages of this journal. Alternatively, not all of these rules may be appropriate, considering the wide variety of roof construction traditions and practices in the western world. What is important is that we regularly remind ourselves of the dangers we face while inspecting roofs, which are often in an unknown condition.

By taking a positive approach to the adoption of a safe system of work for short-term roof inspections, we can reduce the number of tragic accidents such as the untimely loss of a fellow roofing professional.

Growth of RCI

1983 to 1995



RCI surpassed the 1,000 member plateau in September of 1995.

Regional Report

Region Three Fall Meeting

October 13, 1995 • Milwaukee, Wisconsin

By Thomas Hutchinson, AIA, RRC



Thomas Hutchinson

Region Three held its fall meeting in conjunction with the Midwest Roofing Contractors Association (MRCA) convention and trade show. This first opportunity to be included as part of the MRCA convention proved to be quite a success, with a number of MRCA contractors and RCI members attending each others' events. Following is a description of RCI's technical presentations.

"Coatings: Selection, Specifications and Application"

Dana Destrow

Senior Technical Sales and Service Advisor
Republic Powdered Metals, Inc.

Dana covered various coatings for metal, built-up roofing, and concrete applications, reviewing binders, pigments, and solvents required. He indicated that often the appropriate

Meetings-at-a-Glance

Jan. (TBA), 1996

Region 3: Bloomington, Minn.

Feb. 8, 1996

Region 1: Philadelphia, Pa.

Feb. 9-10, 1996

Region 2: Orlando, Fla.

Feb. (TBA), 1996

Regions 7 and 8: Vancouver, B.C.

Feb. 14, 1996

Region 7: Seattle, Wash.

Spring 1996

Region 3: Indianapolis, Ind.

Plans subject to change or cancellation.
Watch for regional mailings 3-6 weeks prior to event.

Directors-at-a-Glance

Region 1

Joe Heidt, RRC; (215) 947-9145

Region 2

Nelson Hall, RRC; (704) 282-0826

Region 3

Thomas Hutchinson, AIA, RRC; (815) 477-4545

Region 4

Brian Gardiner, RRC, CCS; (512) 328-8244

Region 5

Nick Lovato; (303) 741-6020

Region 6

Gene Lawrence; (602) 926-2700

Region 7

William Cypher, RRC; (206) 822-8397

Region 8

Albert Duwyn, RRC; (905) 607-7288

surface preparation is the key. Various applications and examples were discussed, along with advantages of different coatings.

“Roof Edge Design Guide for Low-sloped Roofing”

James Miller, President
Metal Era, Inc.

James reviewed the general design principles for roof edge products. A member of the SPRI Edge Detail and RICOWI Steering committees, he gave a history of RICOWI wind research following the occurrences of hurricanes Andrew and Hugo. In association with NRCA's Tom Smith, AIA, RRC, he has written many papers on wind damage to help focus the Roof Edge Detail Committee for SPRI.

James distributed the *Wind Design Guide* and used sample problems to detail ANSI requirements for calculating wind design pressures. Numerous recommendations were given including the use of continuous clips with a 3/4-inch clip engagement and nailed at four inches o.c., no more than 1-1/2 inches above the engagement leg.

“Design and Installation Concerns for Structural Preformed Metal Roof Systems”

Ray Heisey, RRC
Senior Sales Representative
Butler, Roof Systems Division

Ray distributed information and specifications for Galvalume and Standing Seam Roof Systems. He reviewed retrofit projects and their design criteria, including ventilation concerns, code requirements, and specific details such as clip alignment, eave securement, splice joints, and ridges. He emphasized that quality workmanship is paramount for long term service life.

Two project profiles were presented as described below.

Profile One: Frank Moore

Manager of Technical Roof Group
Koppers Industries

Frank profiled the United Air Lines Maintenance Facility in Indianapolis, Indiana, designed by RCI member Luther Mock, RRC, of Martin Riley Mock. Frank reviewed the design concerns and challenges, the requirements and performance during installation, and quality oriented detailing. He provided a hand-out of the project as well as a Kopper's "Roof Maintenance Guide".

Profile Two: Tom Hutchinson, AIA, RRC

Legat Architects, Director

Tom profiled a double-lock standing seam roof system on a concave roof surface at William Rainey Harper College in Palatine, Illinois. He reviewed the process by which Russian-trained sheet metal workers performed hand seaming of a double-locked, 24 gauge terne-coated, stainless steel roofing system on a concave surface. Tom emphasized the craftsmanship required for the work. What was especially interesting was that numerous people within the industry were adamant that this type of installation of standing seam could not be accomplished.

Summary

RCI would like to thank Jack Robinson, RRC, NRCA Deputy Technical Manager, who donated the proceedings from the recent 11th Conference on Roofing Technology. The proceedings were raffled and won by Scott Harms of Langor Roofing in Wisconsin. RCI also thanks Ed Krusec of NRG Barriers, who donated a L.L. Bean \$100 gift certificate. This raffle was won by Bob Humbarger, RRC, of South Bend, Indiana. Thanks also go to John Dashner of A&D Coatings Sales, Inc., in Wheaton, Illinois, for his company's continued support of RCI and its commitment to raising the standard of practice within the roofing industry.

Roof Membrane Warranties: Who Needs Them?

By Robb G. Smith, RRC, RRO



Robb Smith

Robb Smith established his consulting firm, *Advanced Roof Technology*, in 1988, after eight years experience in the roofing industry. His practice serves clients in Arizona, California, and Nevada. Robb joined RCI in 1988 and achieved the status of Registered Roof Consultant in 1991. He is presently the secretary of RCI.

I'm sure that, at one time or another, you've had an owner or client say to you, "I need a 10-year warranty on this new roof." Whatever your response, the statement may have raised some interesting questions. What brought about roof warranties anyway? Why has the warranty become such a key point of owners' reroofing requirements? What do warranties really provide the owner?

Prior to 1975, the roof designer had few decisions in selecting a roof membrane. Those were the good old days when, if the roof slope was less than 3 inches per foot, about the only choice was a built-up roof (BUR). If you were designing a flat roof (less than 1/8 inch per foot), the choice got a little tougher: asphalt or coal tar pitch?

Meanwhile, roofing felt was in the midst of what was to become a significant change from organic and asbestos to fibrous glass. Some brave and forward-thinking specifiers began listening to one or two manufacturers who touted the advantages of fibrous glass

Warranties have become intertwined with the selection of most roof membranes today. But do they really offer protection to the owner?

felt over the old standards asbestos and organic felt. The major felt manufacturers of the time were well known: Johns-Manville, Koppers Industries, Celotex, Certainteed, and Flintkote. Their business was pretty certain, short of typical fluctuations in the economy; buildings would always need a roof, and this handful of companies manufactured virtually all of the roofing materials.

So, what happened in the mid-70's to change all of this? Just a major change in availability of one key component: asphalt. Many of you will remember that, in 1973, the Organization of Petroleum Exporting Countries (OPEC) created an embargo which restricted the availability of crude oil. While the *immediate* effect of the embargo was the short-term doubling of the cost of materials for a commonplace asphalt BUR, the more significant, *long-term* effects were seen in the flood of single-ply and modified bitumen membranes which poured into the U.S. from European manufacturers once the market had opened for them. From that point forward, commercial roofing in the U.S. and around the world would be markedly changed.

Not only did OPEC's embargo affect the price of roofing materials, but it induced a change in building construction practice. Energy efficiency became a key phrase with large property owners and their designers.

Building codes began requiring a more energy-efficient building envelope. This necessitated the development and use of high R-value insulation which often was placed above the roof deck, directly under the roof membrane.

These newer thin, flexible membranes frightened a lot of professionals, both designers and contractors. How could 45 mils provide all the security and protection for 20 years that a four-ply BUR did? This question grew to become a major obstacle for single-ply growth in the 70's.

Their solution: Warranties. Warranties have become intertwined with the selection of most roof membranes today. But do they really offer protection to the owner?

It was single-ply membranes which ushered in a whole new era in the roofing business. You may have heard a line that went something like this: "Mr. Jones, you don't have to worry about *anything*. Our company guarantees that the roof won't leak for ten years." You might recall that Lee Iacocca said something similar in the 1980's when he took over Chrysler Corporation. Remember the 7-year, 70,000 mile warranties? He sold a lot of cars that way.

Because so many roof designers and building owners *still* specify a roof solely by the number of years or length of its warranty, I think it is important to spend at least some time discussing the marketing of warranties. *Webster's Unabridged Dictionary* defines a warranty this way: In law, a guarantee; specifically, a guarantee or an assurance, explicit or implied, of something having to do with a contract, as of sale; especially, the seller's assurance to the purchaser that the goods or property is or shall be as represented. Webster further defines a guarantee as "a pledge or assurance; specifically a pledge that something is as represented and will be replaced if it does not meet specifica-

tions.”

The marketing of warranties usually follows along the lines of this definition. However, real world experience differs from manufacturer to manufacturer and many seeking satisfaction on behalf of a client have met head-on with a wall of frustration.

This is not to say that all roofing manufacturers’ warranties are alike. A few warranties are pretty straightforward and simple, and the manufacturer will in fact remedy the problem. Some manufacturers actually do more than the warranty requires. However, most of the warranties in the industry today are principally designed to protect the manufacturer from loss.

If you or your client insists on a warranty, then I hope you will at least remember this bit of advice: Read and understand and, if necessary, question all the conditions and exclusions contained in the manufacturer’s warranty *before* you accept its materials for your project. If you must require a membrane manufacturer’s warranty in your project, have acceptance of all warranty conditions as part of the criteria before the material will be accepted as equal. This is even more important in the public sector where all similar products seem automatically to be deemed equal. (I won’t get started on the topic of specifying roofing products in the public sector, as that’s an entire article by itself.)

I always advise my clients to obtain legal counsel on all warranty documents. A warranty is first and foremost a legal document, and a lawyer should be the primary person to render an opinion on a legal document. This way, you as the specifier are afforded some protection from being the sole decision maker in accepting the roof system, particularly if the owner is set on a specific warranty term — say 10 years, 15 years, 20 years, or whatever might be dreamt up.

As long as we primary roof speci-

A warranty is first and foremost a legal document, and a lawyer should be the primary person to render an opinion on a legal document.

fiers continue to acknowledge, promote, and require roofing manufacturers’ warranties in our projects, manufacturers will continue to promote them as a key benefit in their sales effort. We may not be able to make warranties go away, but we can encourage the less responsible manufacturers to provide better protection and positive actions when there is a problem.

Know What the Warranty Doesn't Cover

Make it your job to find out the following about any prospective warranty:

1. Is it a “material only” warranty in which installation defects are not covered?
2. Who determines the cause or source of a problem? Many warranties give the manufacturer the exclusive right to determine applicability.
3. Does the warranty include membrane color fading?
4. Does it exclude implied and express warranties established by the Uniform Commercial Code (UCC)?
5. What will the manufacturer do if there is a problem? Many will only repair the leak. What about damaged insulation or decking?
6. Is there any coverage of consequential damages such as damaged inventory or production space?
7. Does the warranty include all the roofing components? Is it a system warranty? Is the system clearly

defined, listing all specific components covered?

8. How long does the owner have in order to notify the manufacturer? Some manufacturers allow only 10 days.
9. What is the maximum wind speed permitted by the warranty? “Gale” force winds are said to start at 32 mph. Is that realistic, or should the number be 72 mph?
10. What are the specific exclusions? Are they reasonable? Here are some typical exclusions:
 - a. Hail.
 - b. Abnormal climatic conditions.
 - c. Damage resulting from ponding or lack of positive drainage.
 - d. Water draining across the roof from another higher roof.
 - e. Alterations to the roof without prior written permission.
 - f. Defects or failure caused by misapplication of materials or by application not in strict accordance with specifications.
 - g. Defects, failure, or improper application of roof insulation or any underlying surface or material.
 - h. Installation of roofing membrane.
 - i. Traffic across the roof.
 - j. Acts of negligence, abuse or misuse. The manufacturer determines this.

As you can see, these exclusions really do stack the cards in favor of the manufacturer. Are warranties really the answer for your clients’ best protection? As roof consultants, one of the most important things we can bring to a client is our knowledge — not just of how to build a watertight roof, but also of the roofing marketplace. In addition to writing a thorough and professional specification, get to know the manufacturers and their products so you can avoid relying on a piece of paper to fix a leak.

Executive Notes



John Newark
Executive Manager

I write this column with a sense of unbridled enthusiasm for the coming year. The momentum established in 1995 continues pushing us ahead. I am pleased to say that the effort of the Institute to promote the use of professional roof consultants is paying dividends for our members. Everyone I speak with is busy and everyday we receive more calls from owners, managers, contractors and insurers inquiring about professional consultants.

I believe that 1996 will be an outstanding year for the Institute and its members. Our efforts to advance the knowledge and awareness of the profession throughout the community of potential clients will continue. Along with that, we are dedicated to continuing our liaisons with the many different groups associated with the roofing industry and broadening the base of knowledge about RCI within these other groups.

Of note on this front, I am pleased to report that I attended the November meeting of the Federal Roofing Committee (FRC) with Joe Hale, FRCI. We updated this group about the many Institute programs and numerous and varied services that professional consul-

tants are able to provide the professional facility manager. We, in turn, were informed about the wide-ranging scope of responsibilities that the members of the FRC are assigned.

Thanks to Mr. Hale's efforts, three items of specific interest to RCI members were accomplished at this meeting:

1. David Bailey of the Civil Engineering Research Laboratory has agreed to present a seminar on the ROOFER software program at the 1996 Convention in Richmond. Among the many topics that Mr. Bailey will cover will be the new Windows version of the program.
2. Andre Desjarlais of Oak Ridge National Laboratory (ORNL) has also agreed to present a seminar at the convention noting his findings on the drying research project at Pembroke, Virginia. This research project is co-sponsored by RCI, SPRI and ORNL.
3. RCI was invited to make a formal presentation to the FRC at its next meeting.

It was truly impressive to see all that this group has managed to accomplish, given the ever present problems associated with dwindling maintenance and program funding. We are excited about this liaison and look forward to our continued involvement with them.

In November, Bill Marcum, RRC, Chris English, AIA, RRC, and Thomas Hutchinson, AIA, RRC, represented RCI at a liaison meeting with Bennett Hutchinson III, Steven Kruger, and John Robinson, RRC, of the NRCA. The six were able to identify a number of areas in which both organizations can work cooperatively. More on the efforts of this liaison will appear later in *Interface*.

All in all, it has been a fine year for the Institute. If 1995 is any indication, 1996 will be busy at Headquarters. By our projections, we will:

1. Add two hundred more members to the membership roster;
2. Host a convention, a dozen or so educational programs, twenty or more regional meetings, — not to mention the Building Envelope conferences, Regulatory Update seminars, and the registration exams;
3. Publish eleven issues of *Interface*;
4. Participate in industry trade shows throughout the U.S. and Canada;
5. Make over 1,800 referrals to professional roof consultants for clients all over the U.S. and Canada;
6. Send 22,000 pieces of mail and over 550 parcels from HQ;
7. Participate in twenty-five or more teleconferences;
8. Make 485,000 photocopies;
9. Send 5,000 faxes;
10. Make 10,400 long distance calls and answer 9,500 inbound calls on the 800 number.

1996 will be a busy and satisfying year if it follows the path of 1995. I invite you to participate in this worthwhile journey. You are the organization; make 1996 the year that you personally join in the activities of the organization and I know that your rewards will be much more than you ever expected!

With all that 1996 may bring to you, I wish for you most of all these three: good health, happiness, and the joy of friendship. Best wishes for a safe and profitable new year.



FROM THE DESK OF ELAINE

Elaine De'Leon • Meeting Planner & Convention Coordinator

Convention '96 Update

Mark Your Calendars

Join us in 1996 for our Eleventh International Convention
April 13-18, 1996 • Richmond, Virginia

Take A Step In The Right Direction . . .



Roof Consultants Institute (RCI) cordially invites you to attend the 11th International Convention & Trade Show, April 13-18, 1996, in Richmond, Virginia. This year, RCI will offer three days of technical sessions, more than 120 vendors in the exhibit hall, a variety of valuable educational programs, and a chance to unite with industry peers to build strong working relationships. The following is a brief overview of convention activities.

Technical Sessions

"Roof Coatings: The Definitive Guide For Consultants"

Designed for roof consultants, architects, specifiers and other roofing professionals, this presentation given by Mr. William A. Kirn, RRC, will educate attendees about roof coatings in a two-module session. The sessions are titled, "The Fundamentals" and "What Every Roof Consultant Needs to Know About Coatings".

"Spray Foam Roofing"

Mr. Thomas Tisthammer will provide information on the history of spray foam roofing including its chemistry, formulation, and application.



"F.M. Overview"

Mr. George A. Smith, PE, of Factory Mutual Research Corporation (FMRC) will provide an overview of FMRC's role in the roofing industry. He will also provide a second, in-depth presentation on FM updates.

"OPM: Other People's Mistakes: Learning from Reported Roof Litigation"

This educational and entertaining session given by Jeffrey L. Knapp, Esq., RRC,

reviews the highlights of fifty years of reported roof-related cases of all sorts, with emphasis on cases involving roof design professionals and issues.

"Fire-Retardant Plywood"

Mr. Scott Hoffman will provide a detailed look at the chemical treatments of fire-retardant plywood.



Old Executive Office Building Project

Roofers, Inc. will share its experience with the recent \$24.5 million roof repair and replacement project they conducted on the Old Executive Office Building, a national landmark in Washington, D.C.

What's New With The ROOFER Program

Mr. Dave Bailey, of CERL, will provide updates on ROOFER software, a cost-effective program for maintaining, repairing and replacing low-slope roofs.

Hurricane Opal Case Study

RCI's WEST (Wind Event Study Team) will provide an overview of its history and goals. Case studies of Hurricane Opal and past research will also be discussed. Valuable information will be provided to attendees and to those interested in becoming a member of this exciting, dynamic team.

Review of Leading Edge Roofing Research

Dr. James McDonald, of Texas Tech University will provide discussion on the leading edge roofing research.

Events to Watch For**120+ Exhibitors**

New products and state-of-the-art technology will be on display as international manufacturers participate in the three-day trade show.

Live Roofing Demonstrations Award CEUs!

Watch artisans demonstrate correct application of slate, copper, clay tile, and wood.

Auxiliary Seminars

Basics of Roofing Course
Factory Mutual Research Corporation Updates

Special RCI Presentations

Presentations of the new *Building Codes and Standards Reference Guide* and the *Manual of Practice*.

RRC and RRO Exams (send in applications now!)

Design Document Competition and Display of Anomalies

Golf Tournament

President's Banquet

Spouse Program

Exciting Optional Tours to Charlottesville, Washington, D.C., and Williamsburg

At RCI's convention, attendees unite with industry peers to build strong working relationships and bring a higher level of professionalism to their services . . . it's a step in the right direction.

Sights of Richmond

(Above) *The J.E.B. Stuart Monument in Richmond.*

(Below) *Virginia state capitol's bell tower.*

**It's Better Than Par!**

Golfers and non-golfers alike are invited to sponsor a golf hole. RCI's Golf Tournament remains a highlight of the convention. What better way to get your company name in print where it will receive a lot of public exposure (and probably a few hits)? Sponsorships are \$150.00 per hole. Participants will receive a flag that will be placed at the hole of your choice. To receive more information, contact William Hale, RRC, at (804) 378-5292.

**Early Bird registrants can save money!
Register by March 11, 1996, and
save \$50 in registration fees.**

RCI 1996 Exhibitors

Look for the following vendors at RCI's upcoming trade show in Richmond, Virginia.

2001 COMPANY	GAF MATERIALS CORP.	PITTSBURGH CORNING CORP.
ACT-MARTCO	GENFLEX ROOFING PRODUCTS	PLASTECO, INC.
ALLIED SIGNAL, INC.	GEORGIA-PACIFIC CORP.	POLYGLASS USA, INC.
AMERICAN BLDGS. RFG/ARCHTL PROD.	GREASE GUARD	PORTABLE PIPE HANGERS, INC.
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AMOCO FOAM PRODUCTS	HDH ASSOCIATES	RAC DRAIN SYSTEMS
ATAS ALUMINUM CORP.	HPG ROOFING SYSTEMS	RAWLPLUG CO.
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BARRETT COMPANY	INSTA-FOAM PRODUCTS	R-MAX, INC.
BITEC, INC.	JIM D. KOONTZ & ASSOC., INC.	ROOFBOND SYSTEMS
BITUFA	JPS ELASTOMERICS, INC.	SARNAFIL
BONDCOTE ROOFING SYSTEMS	KARL H. FRYE, INC. / GERARD	SBC INDUSTRIES
BURKELINE ROOFING SYSTEMS	KARNAK CORPORATION	SCHULLER INTERNATIONAL, INC.
BUTLER ROOFING DIVISION	KEMPER SYSTEMS	SEAMAN CORP.
CARLISLE SYNTEC SYSTEMS	KOPPERS INDUSTRIES, INC.	SEYFORTH ROOFING CO., INC.
CEMFORT	LEAD INDUSTRIES ASSOCIATION	SFS STADLER
CENTER FOR APPLIED ENGINEERING	LUDOWICI ROOF TILE CO.	SHEN VALLEY ROOFING
COMTEN INDUSTRIES	MALARKEY ROOFING	SINGLE SOURCE ROOFING CORP.
CONKLIN CO., INC.	MARATHON ROOFING PRODUCTS	SIPLAST
CONSTRUCTION PUBLICATIONS	METAL-ERA, INC.	SOPREMA ROOFING & WATERPROOFING
CONSTRUCTION FASTENERS, INC.	MM SYSTEMS CORP.	SUBCON PRODUCTS
CONTINENTAL ROOF SYSTEMS	MODERN TRADE COMMUNICATIONS	SUNLIFE SYSTEMS
CONTRACTOR'S GUIDE	MULE-HIDE PRODUCTS CO.	T. CLEAR CORP.
COPPER DEVELOPMENT ASSOCIATION	NATIONAL COATINGS	TAMKO
DAVIS AVIATION INFRARED SERVICES	NEOGARD	THE PATE CO.
DEPT. OF LABOR & INDUSTRY	NEWFOUNDLAND SLATE, INC.	THE CELOTEX CORP.
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ELASTIZELL CORP. OF AMERICA	NORTH AMERICAN ROOFING SYSTEMS	UNISTRUT
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FIRESTONE BUILDING PRODUCTS	PERMA GLASS MESH	WAUSAU TILE, INC.
FRY REGLET CORP.	PIMA	WP HICKMAN CO.

Attendees receive special travel and hotel discounts.

The Race Is On . . .

Documents to be considered for the annual Document Competition must be submitted by March 15, 1996. Documents will be judged and displayed under security in the exhibit hall during trade show hours.

You Are Cordially Invited . . .

RCI invites you to sponsor its 1996 International Convention and Trade Show. We have two sponsorship levels: Sponsor \$500.00 and Supporter \$250.00. Participants will receive a nicely framed certificate that will be displayed in the trade show. They will also be listed in the convention program and in *Interface*.

Contact Elaine De'Leon at 800-828-1902 or (919) 859-0742 for more information about any of the above.

Industry Briefs

RIEI Seminars

The Roofing Industry Educational Institute (RIEI) has posted its schedule of seminars to be held across the nation during 1996. Seminars are planned for Atlanta, Buffalo, Chicago, Cincinnati, Dallas, Indianapolis, Las Vegas, Manassas (Virg.), Nashville, Orlando, Phoenix, Portland, Reno, Rockville (Md.), San Francisco, Santa Monica (Cal.), and Springfield (Virg.). In addition, a large number of seminars will be conducted at RIEI's facility in Englewood, Colo. For cost, course descriptions, and information about certificate programs, call RIEI at (303) 790-7200.

SPRI Appoints New Technical Director

The board of directors of SPRI, sheet membrane and component suppliers to the commercial roofing industry, appointed David L. Roodvoets to the position of technical director. Mr. Roodvoets is currently employed by T. Clear Corporation, where his work involves the development and testing of new products for roofing and wall systems. He has been a member of SPRI since 1982 and has been active in various committees. He was also a member of the board of directors and is a past secretary of the association.

SPRI Wind Design Guide

SPRI has announced the availability of its new *Wind Design Guide for Edge Systems Used with Low Slope Roofing Systems*. The new guide is intended as a reference for those designing, specifying, or installing edge materials for use with low slope roofing systems. Copies of the guide are available from SPRI, 175 Highland Ave., Needham, MA 02194 for \$15.00 each.

NRCA Convention

The National Roofing Contractors Association (NRCA) will host its 109th Annual Convention and Exhibit February 25-28, 1996, in San Diego, Calif. "Today, Tomorrow & Beyond" is the theme for this show which will showcase over 350 exhibitors over a period of four days. The event will also feature 16 educational sessions. To receive a brochure or for more information, call NRCA at (708) 299-9070.

SMACNA Institute Established

The Sheet Metal and Air Conditioning Contractors' National Association

(SMACNA) has promoted the establishment of its Testing and Research Institute, an independent non-profit organization that will oversee the verification of published performance characteristics of sheet metal products. Contact Dennis Bradshaw at (703) 803-2984 for detailed information. In addition, SMACNA recently held its 52nd annual convention and installed new officers for 1995-96.

ASTM News

The American Society for Testing and Materials (ASTM) has relocated to a new headquarters building in Philadelphia. Its new address is 100 Barr Harbor Drive, West Conshohocken, Pa. 19428-2959. Tel. (610) 832-9500, fax (610) 832-9635. The move parallels ASTM's technology updates to better serve members and customers.

Mary McKnight, a research chemist with the National Institute of Standards and Technology (NIST), has been named a 1995 recipient of the ASTM's Award of Merit. The title of Fellow accompanies the award.

ARMA Announcements

The Asphalt Roofing Manufacturers Association (ARMA) has released

the association's latest issues of commercial and residential roofing newsletters. The ARMA *Up on the Roof* newsletters feature timely, pertinent information and feature articles specific to either residential roofing, built-up systems, or modified bitumen roofing systems, as well as updates on ARMA activities and news about the asphalt roofing industry. Contact ARMA for more information, tel. (301) 231-9050.

ARMA has released its 1996 calendar of events, including its spring

committee meetings to be held March 25-28, 1996, in Atlanta, Georgia. For more events and dates, contact Joe Hobson at (301) 230-2501 or Sally Choquette at (410) 546-3338.

PFCD Becomes SPFD

Members of the Society of the Plastics Industry's Polyurethane Foam

Contractor's Division (PFCD) have voted to rename the division the Spray Polyurethane Foam Division (SPFD). The SPFD will continue to represent all phases of the spray-applied foam industry including pour, froth, fill and related applications as well as the contractor, applicator, supplier, manufacturer, distributor, and building professional related to products, equipment, and services. The SPFD can be contacted at (202) 371-5200.

Schuller Will Buy Nord Bitumi

Schuller International has announced an agreement to acquire Nord Bitumi U.S., Inc. The transaction is expected to close in January. This merger will result in the most complete line of commercial and industrial roofing products and systems in the industry.

Interface Will Add an International Column

Beginning with the February issue, *Interface* will feature a column devoted to international roofing. All members and non-members outside the U.S. are encouraged to submit technical papers and articles. *Interface* will also consider certain reprints from other publications and proceedings and welcomes all suggestions. Please contact Lyle Hogan at (910) 768-7185 or call RCI Headquarters and ask for Jeanette.

Why Join RCI?

RCI is more than just another industry association. It is a fellowship of professionals who learn from each other and who share a common goal of sustaining the highest standards. Following are some of the benefits of membership.

- Member referrals.
- International membership directory published annually.
- Annual convention and trade show.
- Education and training courses and publications.
- Information library and database of reference material.
- World-recognized registration titles.
- Regional seminars and meetings.
- *Interface* journal of technical papers and industry practices.
- Standards of ethical practice.
- Networking and a supportive fellowship.
- Increased involvement and visibility within the industry.

Career Opportunities: Consulting Services

StructureTec, specialists in weatherproofing structures, is seeking professionals in the fields of project management, technical support, and marketing. Applicants should have experience in roofing and weatherproofing, restoration and remediation of building structures.

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Questions? Suggestions? Problems?

Contact RCI's Staff at Headquarters. They work for you.

Call 1-800-828-1902 or (919) 859-0742 with your questions or comments and RCI's staff will do its best to provide quick, efficient action.

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International Directory

Natalie Moore

Registration (RRC/RRO) Programs
Membership Services

Jeanette Bottitta

Interface/Publications
Instructional Materials and Texts

Anneliese De'Leon

Receptionist
Office Administration
Membership Services

Call 800-828-1902 to obtain information about advertising in *Interface*.

Interface Editorial Guidelines

General Guidelines

Interface is a monthly journal which features technical articles on a wide variety of roofing-related topics. All articles submitted are subject to a peer review process. This process gives an author several advantages and provides an initial reader reaction. Rebuttals desired by the author can then be integrated into the text prior to actual publication. *Interface* seeks technically meritorious articles rather than those which would serve commercial interests.

- Submissions should be typed, double-spaced, and one-sided.
- There are no length restrictions; however, typical articles range between 500 and 2,000 words.
- Photos should be black and white glossy prints, clearly labeled. Color photos or slides will be accepted. Photos will be returned upon request.
- Illustrations should be camera-ready or print quality originals.
- Peer-reviewed manuscripts may be submitted on computer diskette using IBM compatible MS-DOS format usable or convertible by Word Perfect 6.0.
- Footnote references serve to enhance a manuscript's professionalism and credibility. Footnotes should follow accepted documentation practice.
- The published article will include a byline, a short biographical sketch, and the author's photo if one is available.

Additional Categories

All of the following are subject to editorial review for length, style and content.

- Project descriptions for unique or challenging roofing projects will be considered for publication.
- Articles on topics such as finance, legal issues, environmental concerns, and business management are routinely published.
- *Interface* carries a "Contractor's Column" which features timely and relevant topics from the contractor's point of view.
- Press releases about events, services, and products are published as space allows in an "Industry News" column.
- *Interface* welcomes letters to the editor about any issue of concern to the Institute or the roofing industry. Letters must be signed and include a return address and telephone number.
- *Interface* is always looking for quality front cover photos and illustrations. All submissions will be considered and, depending on space, a brief description of the photo will be published inside the magazine.
- Additional feature columns may be developed based on readers' interests and needs. *Interface* welcomes all ideas and suggestions.

Interface is written by, for, and about those interested in roofing technology. *Interface* eagerly seeks innovative ideas, topics for articles, and suggestions for improvement. The cutoff date for text (peer-reviewed and otherwise) is approximately eight weeks prior to the month of issue. Send your inquiries, ideas, suggestions and manuscripts to RCI, attn: Editor, 7424 Chapel Hill Road, Raleigh, NC 27607 • Tel 800-828-1902 • 919-859-0742 • Fax 919-859-1328

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We believe no other roofing manufacturer offers you Firestone's commitment to quality. We invest heavily in research and development to produce the finest, high performance roofing products and systems that make your job easier. Every Firestone system provides a durable solution to your design and installation challenges. Our technical expertise is second to none. Whether it's UL, FM or another model building code approval that you require, Firestone has a system that's got you covered.



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It's knowing the products we make are worthy of the name Firestone. And we stand behind our materials with a warranty—that's single-source responsibility from the deck up. More than just words, it's a commitment we couldn't deliver on if we didn't believe in our roofing systems. Combine this with knowledgeable and responsive sales and service and quality installers and you'll discover why Firestone is the only company for all your roofing needs.

Total systems. Total dedication. Total service. Not just words. Proof of why Nobody Covers You Better. Phone Firestone for more information on any of our products or systems.

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Newton's Laws of Physics and The Roof That Fixes Itself

In 1868, a man named Michael Ehert, Jr. received a U.S. patent for a revolutionary built-up roofing system using coal tar. The roof could have continuous exposure to water without damage. And if someone punctured it, the roof would find the spot and seal itself. It still works that way in every climate, making it the best roofing system made in the last 135 years. Coal tar pitch molecules are very stable and highly resistant to aging, chemical attack and moisture. It's the only roofing system with these properties. It's the premier product for dead level and low slope roofing.

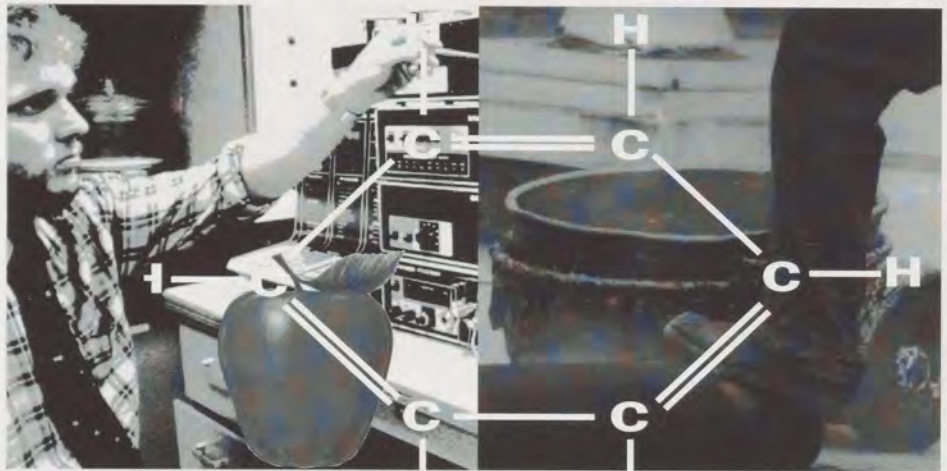
Coal tar roofing isn't glamorous. It's a black gooey substance that's installed in layers on a roof — four plies of felt and five coatings of coal tar on average. One application lasts for 20, 30, 40 years or longer. This means your roof can be under water for months from downpours or melting snow and the coal tar — unlike other roofing materials — won't be affected. Since most dead level or low slope roofs are prone to ponding water, coal tar will protect the value of your property like no other roofing system.

The Roof That Fixes Itself

Coal tar is a Newtonian liquid, even in a solid state it moves. That's why you only use it on low slope or dead level roofs. At about 70°F it will begin to flow, looking for any fracture in the waterproof seal. Thus, if a workman were to puncture the roof, coal tar will find the void and fill it, resealing the roof. This is an example of its self-healing property. It's a feature that ensures the long-term success of coal tar roofing systems.

Coal Tar Is Where You Are

Coal tar is plentiful and is used in a wide variety of applications. Besides roofing, it is used in aerospace, the production of aluminum, and wood preservatives. Coal tar roofs have been installed in all parts of the country. You'll find them on huge installations like the Toyota Plant in Georgetown, KY, covering almost 3 million square feet of roof and on small but important buildings like the Frank Lloyd Wright Corbin Education Center at Wichita State University. There's also a coal tar roof on the Environmental Protection Commission's building in Tampa, FL.



Coal Tar Roofs Are Not Expensive

While every building owner or architect is conscious of first costs, that's not the end of the calculation with roofing systems. Coal tar, unlike most other roofing systems, allows you to build a roof with little or no slope because standing water won't bother it. So the initial cost of a coal tar roof is often less expensive than other systems. When you analyze the life cycle cost of a coal tar roof — which generally lasts twice as long as other systems — the savings are even greater.

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Richard M. Horowitz 1930 - 1995



RCI Members Reflect on Their Friend and Colleague • Page 14

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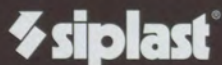
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RCI In This Issue
Interface

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 them about roofing-related topics, establish a common ground for discussion, promote Institute programs, and branch out toward ever 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.

Disclaimer: The articles contained in this publication have been prepared for and 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 this information in light of the unique circumstances of any particular situation and must determine independently the applicability of this information thereto.

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President's Message

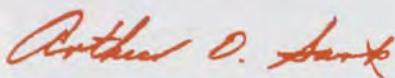
RCI reached another milestone when its total membership ticked upward past 1,000 last autumn. As I write this message, we have 1,052 members. Unfortunately, good and bad news often come in pairs. As most of you know by now, RCI has experienced a tremendous loss in the passing of Richard Horowitz.



Dick will be remembered as someone whose vision, energy, and enthusiasm greatly advanced the goals of the Institute. He was instrumental in the development of RCI's education and certification programs, both mammoth undertakings. The certification exam, in particular, impacted the entire field of roofing. It set a high standard for roof consultants at a time when standards were dearly needed. The exam provided a way to establish credentials and sent a message throughout the industry that consultants were serious about their profession. In the process, Dick gained new respect among his colleagues. The sheer size of the task alone would easily have dissuaded someone else. More than anything, though, he is revered for giving his fellow consultants a real challenge — one that would endure the test of time.

When looking over RCI archival material in recent days, it has become clear to me that Dick Horowitz can never be replaced. His ideas and hard work are clearly woven into the fabric of the Institute. But we can find comfort in the fact that the goals he labored to accomplish are realized every time an RCI member passes a registration exam or learns something new at an educational seminar. Dick's dream for the future of RCI is now a reality and he will be a permanent part of that reality.

Speaking for myself, the Board of Directors, and the Institute, our deepest thoughts and prayers go to Dick's family. We will all miss his leadership, endless drive, and most of all, his friendship.



Arthur Sark, RRC
President

Advertisements in *Interface* are available on a first-come, first-served basis. Call RCI headquarters at 800-828-1902 or 919-859-0742 for additional information.

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