The Journal of the Roof Consultants Institute

interface

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THE JOURNAL OF THE ROOF CONSULTANTS INSTITUTE

OCTOBER 2005 • VOL. XXIII, NO. 10

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THE ROOF CONSULTANTS INSTITUTE was chartered, in part, to bridge the gap between the seemingly disparate elements of the roofing profession. The goal of *Interface* is to connect these elements, educate and inform about roofing-related topics, establish a common ground for discussion, promote Institute programs, and reach out to the industry at large. The articles contained in this publication are intended to provide information that may be useful to readers of *Interface*. RCI does not necessarily endorse this information. The reader must evaluate the information in light of the unique circumstances of any particular situation and independently determine its applicability. Entire contents, © RCI.



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About This Issue: This issue is devoted to those who need the services of a roof consultant. The articles herein will inform readers why they should avail themselves of RCI members' skills and services.



Thomas W. Hutchinson, AIA, RRC,
President

Change, Challenges, AND Opportunities

It appears that nothing is more constant or assured than change. We all experience many changes throughout our personal and professional lives. How we view these changes often affects the long-term outcome. Sometimes change is initiated by us and sometimes we are caught by surprise. Looking for the good in change is something I've always tried to do. But being aware of opportunities that may arise out of change is vital.

As you know, a new governance structure was approved by your board of directors (see August RCItems for an explanatory article) with transition to commence in 2006. This change will better serve the membership by making the RCI board more efficient. Recent events, however, have accelerated this transition.

On August 10, 2005, Region VII Director Josh Mullen and his wife Erica became the proud parents of Connor James Mullen (7 lbs., 15 oz., 20.5" long). Additionally, Josh challenged his professional career by taking a new position that moved him across the country to Florida. These changes resulted in Josh's resignation as director of Region VII.

At the same time, numerous hailstorms across the Colorado plains resulted in a tremendous work load for John Gimple, director of Region V. And Carl Brown, Director of Region VI, also has experienced a heavy work load. Both have found it difficult to carry on the duties of directorship and consequently have requested a release from their positions.

The board and I wish Josh, John, and Carl all the best and give them our sincere appreciation and thanks for their dedication as region directors.

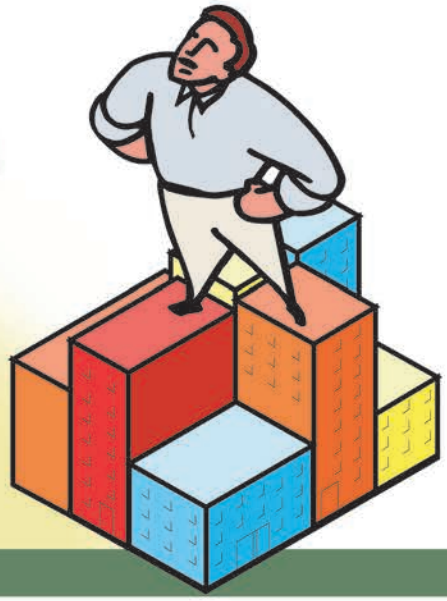
Positive changes for some of our directors have resulted in positive challenges and opportunities for RCI: The acceleration of the new governance structure. I have asked Bill Cypher, RRC, FRCI, and past president, to assume the role of interim region director of the newly-created region encompassing the western United States. Bill, as a past region director, board member, and president, is the perfect fit to move this new initiative forward. I am thankful for his help. Region IV Director Todd Spore and Region III Director Curt Liscum are working to bring their regions together with a joint meeting in late fall in Texas. I appreciate these leaders rising to the opportunity.

In the past few months, I have reached out to the AIA, NRCA, WSRCA, and SPRI to foster mutual understanding, to work together for the benefit of the industry, and to expand the sphere of RCI member influence. Additionally, I've called many of you and attended region meetings across the country in an effort to better understand your concerns, needs, and desire for the Institute. I appreciate those of you who have offered thoughts, concerns, and support.

As I compose this message, the full effects of Hurricane Katrina are unknown. It is clear, however, that it is truly a modern-day catastrophe. Headquarters and I have been trying to determine how RCI and its members can be of help. A great deal of study has been undertaken to understand how roofs fail during hurricanes. A clear opportunity exists for RCI to change the roofing industry's mindset concerning roof preparedness regarding windstorms from post-operative investigation to pre-emptive design enhancements. Perhaps this type of change will provide some individuals with a measure of safety and security in times of need. This could lead to exciting possibilities and opportunities. To all of our members affected by this storm, our thoughts and prayers are with you and your families.

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ROOF CONSULTANTS BRIDGE THE GAP



By Dick Fricklas

Back in the 1960s, the remarkable growth of the roof consulting profession was triggered by the failures of some poorly thought-out roofing specifications (and the ensuing litigation). Today, there are many reasons to have roof consultants as part of one's team.

First, the world is a far more complex place. Possession of an architectural or engineering degree does not mean that the degree holder has adequate knowledge or experience in roofing design. Many design professionals have found that joining the Roof Consultant's Institute (RCI) is the only way to become (or remain) proficient in issues of roofing and waterproofing.

Secondly, building owners and managers are finding that managing roofs efficiently is very difficult. Products come and go, warranties get issued but not enforced, and budgets often do not provide adequate surveillance or plan appropriately for repairs or replacement.

Building owners with multiple properties often engage outside consultants on a corporate level to give an overall picture of their properties, to plan capital expenditures, and to help prioritize maintenance and replacement projects. RCI offers educational programs that not only update building professionals, but train new staff as well. While outsourcing has become a bad word in the current economic climate, many designers and property managers have found that roof consultants have the talent and time to manage the roofing design and follow it throughout the construction phase.

Energy demands and soaring petroleum costs have changed insulation's role from just being a membrane's substrate to the key conservation component of low-slope roofing. Today's roofing professionals must keep up with the ever-changing requirements of California's Title 24, ASHRAE 90.1, ASCE-7, national and local building codes, and new terms such as "LEED," "albedo," and "urban heat island." In addition, the complex insurance requirements of Factory Mutual Global and Underwriters Laboratories must be met. With the push for sustainability and reflectance, what constitutes appropriate maintenance? Is power-washing a roof cost effective? Does it damage the roof? When should an owner initiate action?

Roof consultants offer moisture survey services based upon infrared, nuclear, or capacitance devices, as well as visual sur-

Dick Fricklas



Dick Fricklas is an author, journalist, and educator. He retired from the Roofing Industry Educational Institute in 1996, but continues to lecture and publish frequently. Along with co-author Bill Griffin, Fricklas recently completed the manuscript for the fourth edition of *The Manual of Low Slope Roof Systems* to be published by McGraw-Hill. Its expected release is December 2005. Dick is a contributing editor for *RSI* magazine and web columnist for *Buildings.com/newsletters/roofing*. He holds a bachelor's degree from Hofstra University and a master's degree in physical chemistry from Rutgers University. Dick is currently assisting Jerry Teitsma with curricula development for RCI's educational programs. Fricklas's awards include the J.A. Piper award from the NRCA, the James Q. McCawley award from the Midwest Roofing Contractors Association, the Walter C. Voss Award from ASTM, and Lifetime Achievement Awards from both the Educational Foundation of the Institute of Roofing and Waterproofing Consultants and from the Colorado Roofing Contractors Association. Dick is an honorary member of RCI. He lives in Centennial, Colorado, with his wife of 47 years, Anita. They have three children and seven grandchildren.

veys. Their comprehensive reports identify areas of wet insulation, determine how wet they are, and whether the roof can be repaired, dried out, or partially replaced. This can be part of an overall roof asset management program, set up by a competent roof consultant and tailored to the client's needs.

Building codes have been revised to require "positive drainage" rather than the previous minimum of 1/4" per foot. Tapered insulation systems can provide the necessary drainage, but only if well understood and designed properly.

Safety and health are issues of which every contractor and building owner must be conscious. While torched-on modified bitumens are excellent roofing systems, there is concern for possible fires. Roof observers must verify that the torch applicators have current certification. Owners or their representatives must establish fire watches and make certain that propane bottles and torches are not a tempting attraction for nuisance or vandalism. This should be part of an observer's daily report.

Then there are urgent construction matters, such as the current worldwide shortage of isocyanate (precursor of isoboards) and the sudden discontinuance of an established product such as Fiberglas™ rigid insulation board. These may force a specifier to make a substitution on an emergency basis, without adequate time to properly research the consequence of the substitution. For example, changing from isocyanurate foam boards to polystyrene foam may force the designer to change attachment methods, add underlayment boards, or even switch to a more compatible roof membrane system.

On the maintenance side, while bituminous membranes can be repaired with mundane asphalt mastics or hot bitumen, single-ply repairs are generally membrane-specific. Roof consultants can identify what is on the roof and where to find appropriate materials and tools. If an owner does not have a current roofing file, an experienced consultant can make one. This file will tell what was specified, what was actually installed, and whether there are applicable warranties or guarantees. Observer reports and correspondence with the material manufacturer, general contractor, and others will be added during the construction phase. If or when repairs are made, the documentation of such repairs is also added to the file, as are copies of visual or moisture surveys.

Consultants are specially trained to deal with quality assurance issues. They will conduct a pre-roofing conference to review roof plans and specifications and to observe the actual application of the roofing or waterproofing process. They will verify that materials are properly protected during shipment and field storage, and that labels are correct and in accordance with specifications. This quality assurance phase is so important that RCI has added an educational and registration program for roof observers (RRO). Observers are trained to monitor the construction process, documenting through photography and written word the conditions of the substrate, weather, flashing details, and contractor workmanship. While at first glance this might seem like a confrontation waiting to happen, contractors have found this documentation can verify that they did comply with specifications and can aid in their defense should problems arise.

We hope this special publication will kindle your interest in professional roof consulting and enable you to use professional roof consultants to your best advantage.

...building owners and managers are finding that managing roofs efficiently is very difficult. Products come and go, warranties get issued but not enforced, and budgets often do not provide adequate surveillance or plan appropriately for repairs or replacement.



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Credentials

By Albert Duwyn, RRC, FRCI

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krə'den CH əl

a letter and/or certificate given to a person to demonstrate that he or she has achieved and maintained established levels of education, training, and/or experience

What do Robert Smith, MD, Bob Smith, PhD, Robbie Smith, P. Eng., Robyn Smith, RNA, and Robb Smith, RRC, all have in common? Besides the obvious, they all have "credentials" and although each has credentials that are different in nature, they all give notice that the individual is held to a higher standard.

Credentials are letters, certificates, or both, given to a person to demonstrate that he or she has achieved and maintained established levels of education, training, and/or experience. They imply professionalism, integrity, and credibility, and are usually granted upon strict adherence to a code of ethics. In certain cases, the credentials allow the person to practice within his or her profession and this licensure is granted by a credentialing committee that also has the authority to deny the privilege to practice.

Without credentials it would be extremely difficult to distinguish between fact and fiction. It is comforting to know that the credentials behind a doctor's name attest to the fact that he or she has met all the requirements of the American Medical Association or another country's equivalent to practice medicine. Knowing that one's lawyer has a grasp on law can help one in court – or better still – help one to avoid court.

The architect and engineer hired to design a building can protect its owner from potential disaster. Many states, provinces, counties, cities, and towns require that design of new building and component replacements such as roofing and the exterior envelope be performed by a licensed architect or engineer. Some jurisdictions include Registered Roof Consultants (RRCs) in this requirement. By enforcing this requirement, it is believed that the potential for failure or disaster is greatly reduced if not eliminated. It also increases the likelihood that the design will be in accordance with all code and jurisdictional authority requirements. If an individual does not possess the credentials, they cannot provide the service.

The Roof Consultants Institute grants credentials to three groups of people. The RRC (Registered Roof Consultant) is granted to those individuals who possess established requirements in education, training, and experience and are successful in achieving an established score on an eight-hour examination. The RRO (Registered Roof Observer) requires similar attributes to the RRC and is focused on quality observations and evaluations of roofing and installation. The RWC (Registered Waterproofing Consultant) focuses on waterproofing throughout the entire building envelope. All of these exams were or are in the process of being developed under the direction of a psychometrician in compliance with standards published by the National Commission for Certifying Agencies (NOCA).

RCI provides educational programs, study guides, reference materials, and direction to publications that help candidates prepare for testing. Examinations are administered several times a year throughout the United States and Canada. In order to maintain their credentials, individuals are required to earn a set amount of CEHs (Continuing Educational Hours) relevant to their discipline on an annual basis. This ensures that they are not only qualified, but also keeping abreast of their trade. The credentials behind the successful candidates' names are a testament to their ability to provide the highest level of service in the profession and are the only recognized credentials in the roofing and waterproofing industry.

Whether one is maintaining his or her health, finances, or assets, it is imperative that the advice received comes from qualified, knowledgeable, professional, ethical persons who say what they do and do what they say and most importantly, have the credentials to back it up.

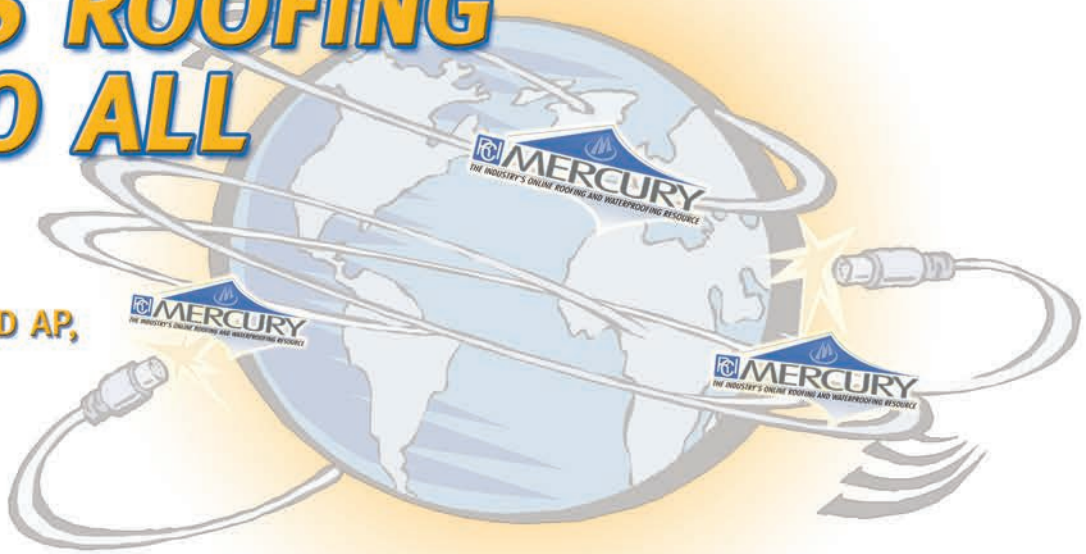
Albert Duwyn, RRC, FRCI

Albert Duwyn, RRC, FRCI, is the president and owner of IRC Building Sciences Group Inc. with offices across Canada and in the Caribbean. A past president of the Roof Consultants Institute, Mr. Duwyn is the chairman of the RCI Jury of Fellows and the RCI Marketing Committee and is a director of the RCI Foundation.



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RCI-MERCURY BRINGS ROOFING INFO TO ALL



By Kent P. James, LEED AP, and Richard R. Rast

Introduction

RCI-Mercury is a dynamic, comprehensive, searchable online library that includes technical, historical, and innovative roofing and waterproofing information. RCI-Mercury is a free information service provided by the Roof Consultants Institute (RCI) as a means to promote professionalism, education, and research throughout the roofing industry.

An Expanding Resource

The RCI-Mercury content database spans decades and covers a myriad of topics. The majority of articles on this website have been submitted by generous industry publications and numerous roofing professionals. In a conscious effort to preserve the rich history of the roofing industry, these individuals and organizations have offered their personal libraries for inclusion in RCI-Mercury. Anyone who has archival information that would interest the roofing and waterproofing community, in either digital or hard copy form, is asked to consider adding it to RCI-Mercury.

"The constant addition of new information to RCI-Mercury helps to expand the knowledge base of the entire industry," notes William Cypher, RRC, FRCI, chairman of the RCI-Mercury Committee.



The new RCI-Mercury website (**www.rci-mercury.com**) is dynamic and easy to use.

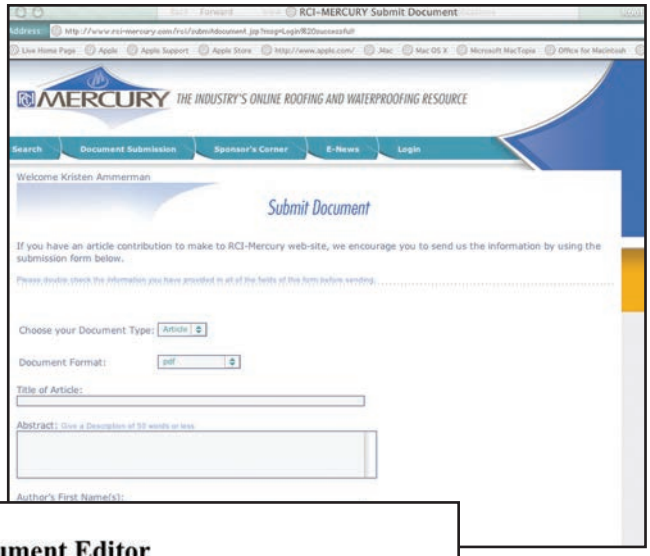


History of the RCI-Mercury Site

RCI-Mercury evolved from a hard copy collection of information maintained at RCI headquarters called "Information Central." The intent was to maintain a reliable resource of historical and current information related to roofing and waterproofing. The original development of the RCI-Mercury database began in the mid-1990s as a way to make this information more accessible to RCI's members and others in the roofing community.

As the RCI-Mercury database grew and Internet technology evolved, it became apparent that the older technol-

RCI-Mercury users can now easily submit documents to continuously grow the online library of technical, historical, and innovative roofing and waterproofing information.



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2005-07-13	Approved Derbigum Contractor Program	Article	submitdoc_147.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Approved Derbigum Contractor Program Guaranty Guidelines	Article	submitdoc_145.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Built-up Roofing Products Reference and Application Guide	Article	submitdoc_143.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Commercial Roofing Guide.	Article	submitdoc_170.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Commercial Roofing Guide.	Article	submitdoc_171.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Commercial Roofing Guide.	Article	submitdoc_172.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Commercial Roofing Guide.	Article	submitdoc_173.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Commercial Roofing Guide.	Article	submitdoc_174.pdf	Richard Rast	SUBMITTED	Details
2005-07-13	Commerical Roofing Guide	Article	submitdoc_169.pdf	Richard Rast	SUBMITTED	Details

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Step 2 – Once an article has been submitted, it is placed in a "queue" for review and upload by a designated RCI representative. This "queue" is accessed via the RCI administrative functionality developed for this site. The submitter is notified via e-mail that RCI has received a document for review.

ogy could no longer support the growing needs of the program. Discussions and agreements for building a new platform for RCI-Mercury with dynamic search capabilities and state-of-the-art administrative functions were finalized in 2004 with RCI's industry partner, now Roof Express, LLC, in Denver. This marked the beginning of a collaboration between the two entities. The new RCI-Mercury Web site beta format was launched at the annual RCI convention in Miami Beach, Florida, in April 2005. Testing and administrative functional development was completed in May 2005 and the final version of the new site was launched July 1, 2005.

The New RCI-Mercury Site

The new RCI-Mercury site has been developed with the future in mind and includes the capability to continually grow in response to the needs of RCI and the industry in general. The site is "dynamic" and generated via a database that allows RCI to continually update and modify site content as needed. RCI-Mercury encourages users to submit comments so the site can continue to grow in response to the communities' needs. An easy-to-use "Submit Comments" section has been added to facilitate input.

Users can now easily submit new documents, thus ensuring that the library continually grows as documents become available. The time requirements associated with review and cataloging have been split between the authors and RCI. This allows RCI to have more time to upload documents and less time cataloging.

The process is simple and intuitive:

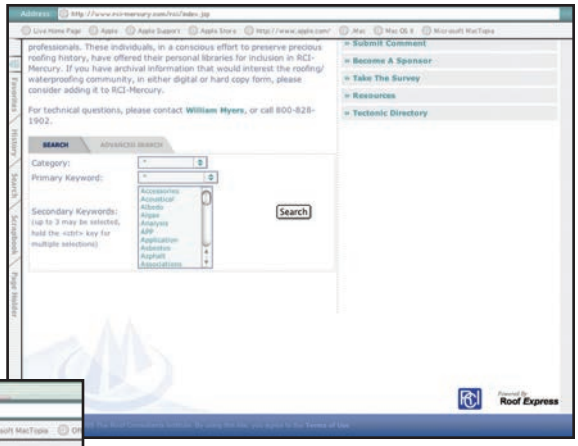
Step 1 – An electronic document is submitted via the website by filling out the document submission form. (Note that submitters are required to be logged into the system.) During this step, the submitter is asked to fill out several items (author, title, description, etc.), as well as select the categories and keywords associated with that document.

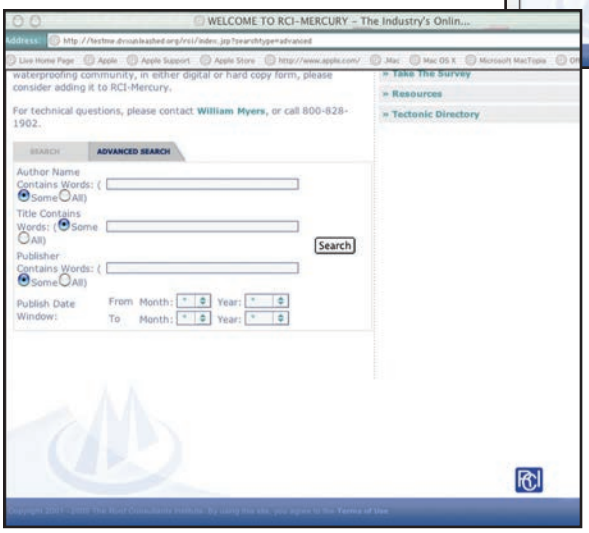
Step 3 – After RCI has reviewed the article to ensure it is appropriate for the site (i.e., not overly advertorial and is related to roofing or waterproofing, etc.) and that associated data is complete (author, description, etc.), and has verified the appropriateness of category and keyword classifications, the document is uploaded to the site with a click of the button. Once this step has been completed, the submitter is notified that the document has been accepted and added to the library. It is then available for immediate access by the user community. If the article is rejected, the user is notified as to the reason.

In an attempt to meet the needs of all users, developers have included six separate ways for a user to find documents within the library by searching on:

- Category
- Keyword

Advanced search capabilities allow all RCI-Mercury users to find roofing and/or waterproofing information quickly.





- Author
- Title
- Publication
- Date (we bet this is the only place on the Web to find the 1907 *Tin Roofers Handbook*!)

The RCI-Mercury Community

RCI-Mercury is available to anybody looking for roofing and/or waterproofing information. It does not require registration for access to information. Registration is required to submit articles or comments and is encouraged. This site was made possible through collaboration between RCI and Roof Express, LLC. A special thanks goes to industry sponsors who can be viewed in the rotating banners and sponsors' corner section of the site. For information about becoming a sponsor, click the "Become a Sponsor" link and learn about this exciting program that allows for high visibility in the roofing community.

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"The new RCI-Mercury," according to RCI President Tom Hutchinson, RRC, AIA, is a "vibrant, ever-evolving and expanding tool and resource for disseminating information about roofing. It reflects the goals and purpose of RCI stated in our mission." They are:

- To represent the interests and values of the roof consulting profession;
- To provide for the professional development of our members;
- To convey the consultant's perspective to the roofing industry and the public; and
- To support professionalism, ethical behavior, education, and research in the roofing industry.

Kent P. James, LEED AP



Kent James is the product manager for the Roof Express software suite. Kent has also acted as the project manager for the development and deployment of the new RCI-Mercury website over the past year. As a cost engineer, Kent has spent the last ten years defining the logic and engineering algorithms for technology models focused on the building profession. In addition to developing cost estimating software, Kent has spent considerable time collecting field data via GPS, linking to an integrated database, and using the data to produce maps, reports, and cost estimates.

Richard R. Rast



Richard Rast is the president of Roof Express, LLC. Over the past 25 years, Richard has focused on the development of cost estimating, condition assessment, and asset management software tools for building construction and building asset management for private and public sector clients. He has also prepared cost estimates and project development documents for over $2 billion in construction value since 1980. He holds two patents for innovative approaches to cost estimating and project management, has taught cost estimating and project management at Georgia Tech and the University of Colorado, and has authored several books on related topics.



RCI-Mercury is a dynamic, comprehensive, searchable online library of historical and innovative roofing and waterproofing information.

Share information with the roofing community

Do you have current or historical roofing or waterproofing documents of value to the roofing community that should be safely preserved? If so, RCI-Mercury wants to hear from you.

Uploading articles to RCI-Mercury is easy. Just visit: www.RCI-Mercury.com and select the "document submission" tab. If you are already an RCI-Mercury subscriber, you'll be asked to log into your account. If you are a new subscriber, you'll be asked to create an RCI-Mercury account. It's simple — just enter your contact information and select a password.

Once you've entered your account information, you'll be given access to the RCI-Mercury document submission interface. The submittal/uploading process is easy. Simply select from a series of pull-down menus and type some basic information into six specific text fields.

www.rci-mercury.com

A Strategic Alliance

Until now, no organization has existed to provide a consensus for the building envelope industry. The building envelope industry is comprised of a diverse group of manufacturers, contractors, consultants, and design professionals. Coordination between these parties and various building envelope components is the key to maintaining a total building envelope that protects the facility from moisture intrusion.

The Building Envelope Institute (BEI), through its Strategic Alliance with the Roof Consultants Institute (RCI), will provide the vehicle for this consensus.

Consider the following:

1. Moisture intrusion remains one of the most significant and costly problems with new and existing facilities. The cost for repairs and consequential damages is a multi-billon-dollar industry. Coordination between these parties and various building envelope components is the key to a building envelope that protects the facility from moisture intrusion.
2. The building envelope industry is not as clearly defined as the roofing industry, and is mostly represented by organizations that are contractor- and/or manufacturer-driven (BIA, SWRI, EDI, AAMA, ICRI, PCI, etc.) and many of these organizations do not interact.
3. A recent RCI survey indicated that approximately three-fourths of its membership deal with elements of the building envelope beyond the roof. RCI's Registered Roof Consultant (RRC) program and its introduction of the Registered Waterproofing Consultant (RWC) designation this year cover two of the three elements of the building envelope. The benefits provided by RCI are desperately needed in the building envelope industry as well.

While some of RCI's members focus on just the roofing system, others routinely deal with other elements of the building envelope or must coordinate with those elements. For this reason, a strategic alliance has been initiated between RCI and BEI to jointly support this effort. RCI continues to expand its programs, technical articles, and symposia for those who wish to expand their knowledge base. The Strategic Alliance will include a joint effort on producing the Symposia on Building Envelope Technology and a focused effort at the annual convention for sessions and auxiliary seminars to include building envelope issues. *Interface* continues to provide quality technical articles addressing all elements of the building envelope and how the various systems interact. A consensus in the Strategic Alliance is the need for the interaction and coordination of the building envelope as it relates to the roofing and waterproofing systems, and the building envelope industry as a whole.

Until now, no organization has tried to provide a consensus to building envelope industry professionals. The best model that exists for this endeavor is the Roof Consultants Institute's model. The BEI's primary focus is from a technical perspective, providing its members with publications, presentations, articles, journals, and symposia from recognized leaders in the industry. Its secondary focus is working with other related organizations with common interests and pursuing liaisons and alliances to provide avenues for coordination with the building envelope industry.

The opportunity to make a difference starts with becoming a member of BEI, an organization committed to its mission statement, "serving the common interests of individuals involved in the performance of the building envelope."

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RCI, Advancing the Quality of Roof Consulting Services

The Roof Consultants Institute (RCI) is an international association of roof consultants (e.g., architects, engineers, and former contractors) who specialize in the specification and design of commercial roofing. From sprayed polyurethane foam to cedar shakes, RCI has an expert for most every type of roof system used in the world today.

Since its formation in 1983, RCI's members have offered unbiased design, repair planning, quality observance, legal testimony, and general roof management services. RCI roof consultants adhere to a strict ethics code and offer unprejudiced professional service unaffiliated with product or manufacturer. The Institute's current membership numbers more than 2,000, including professional, industry, and facility manager members. Headquartered in Raleigh, NC, RCI boasts an international constituency residing in all 50 U.S. states, Canada, Mexico, South America, Europe, Australia, the Middle East, and Indonesia.

Applicants must pass a rigorous examination process that covers subjects such as legal and ethical concerns, roofing systems, specifications, testing, construction procedures, and design principles.

Registration Programs

RCI maintains a highly selective registration program designed to distinguish roofing professionals with the highest proven standards of education, experience, and ethics. To qualify for the titles Registered Roof Consultant (RRC), Registered Waterproofing Consultant (RWC), or Registered Roof Observer (RRO), one must submit educational credentials, evidence of significant relevant experience, and proof of good character.

Applicants must pass a rigorous examination process that covers subjects including legal and ethical concerns, roofing systems, specifications, testing, construction procedures, and design principles. RRCs, RWCs, and RROs must offer yearly proof of continuing education to qualify for renewal of their title.

The grandest of RCI's educational programs is the annual International Convention and Trade Show.

Continuing Education

Each year, RCI offers over 30 educational events. Designed to provide individuals of differing backgrounds with relevant information about roofing technology and design, the programs vary in scope, from basic roofing concepts to advanced specific application principles. Program titles include: Advanced Thermal and Moisture Theory, Professional Roof Consulting, Construction Specifications and the Project Manual, Roof Asset Management, Roof Technology and Science I, Roof Technology and Science II, Rooftop Safety for Consultants and Building Owners, Rooftop Quality Assurance, the Symposium on Building Envelope Technology, Waterproofing Theory, Wind and Drainage Theory, plus numerous chapter and regional events.

International Convention

The grandest of RCI's educational programs is the annual International Convention and Trade Show. The event features five days of technical seminars, demonstrations, and networking opportunities. It also includes an extensive trade show, roundtable discussions, RCI governance meetings, and recreational activities.

Of attendees polled, 99% describe RCI's educational programs as very "worthwhile" and say they intend to participate in future RCI educational events.

A connection with the Roof Consultants Institute can help owners and facility managers to choose appropriate new roof systems or remedy existing roofing deficiencies. A visit to the RCI website, www.rci-online.org, offers users a searchable member database of RCI members and detailed information regarding RCI programs and events. To receive personal assistance, call 800-828-1902.

FACILITY MANAGER MEMBERSHIP

An RCI Facility Manager membership is $97 and includes a monthly subscription to RCI's esteemed technical journal, *Interface*. For more information about the Roof Consultants Institute, call 800-828-1902 and mention this article. You'll receive a copy of RCI's *International Directory of Roofing Professionals*, a handy guide to over 2,000 qualified roof system experts, for just $10 shipping and handling. You can also visit RCI online at **www.rci-online.org.**

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VIEWPOINT OWNER

The Owner's Perspective on the Role of Roof Consultants

By Joe Saldarelli, P. Eng.

"It is important to recognize that the owner is the roof consultant's client and with specifications and contract documents prepared by the consultant on behalf of the owner, the owner is determining the 'rules of the game.'"

Roofs represent a critical building component for building owners. A leaking roof can inconvenience, interrupt, or even shut down the core business taking place within the building and can result in collateral damage to interior finishes, equipment, and products, as well as create a host of health and safety concerns including mold growth in walls and ceilings that may not be readily evident. The services of a roof consultant can be very beneficial to a building owner, especially those who have numerous buildings.

For owners to effectively manage their buildings or any component of their buildings, they first have to know how much roof area they have, what it consists of, and its condition. A roof consultant can inventory and develop a numbering identification system for all of the owners' roof sections, keeping in mind that the roofs on many buildings will be made up of various subroof areas or sections. From there, the roof consultant will determine the square footage and construction of the roof sections and evaluate their condition. If a particular section has problems, the roof consultant will recommend a repair or reroofing and estimate budget cost. This information is essential in developing a long-term roof replacement and maintenance plan



Chicken nuggets or gold nuggets? The former will feel like the latter if a preventable leak damages stock and building components to the tune of expensive repairs and damages. A roof consultant before the fact might have saved this building owner an arm and a leg (if not a breast and a thigh). (Photo courtesy of Fincastle Engineering.)

Joe Saldarelli, P. Eng.



Joe Saldarelli is the manager of facility services for the Grand Erie District School Board of Ontario. He has been occupied for 23 years in the field of facility management and also has experience in both engineering consulting and construction management as a contractor.

that will yield the most benefit from the financial resources the owner has available and will also help the owner better understand the consequences of different funding levels.

With this information, the roof consultant can assist the owner in developing a long-term roof replacement and maintenance plan and review and update the plan annually or as required. Many consultants own or have the rights to roof management software that can be made available to the owner so that critical roofing data, complete with photographs, can be quickly accessed and reviewed to support better decision making and to ensure roof warranty obligations of contractors and manufacturers.

The services of a roof consultant are especially beneficial to the owner in the implementation of roof replacement and maintenance projects. The quality of a roof replacement or major maintenance project is dependent on the appropriateness of the remediation and quality of the specification, the products used, the workmanship and quality control of the roofing contractor, and site inspection by the consultant to ensure the end product meets the specification.



Starting with the information collected in the condition investigations and reports, the roof consultant can recommend appropriate repair or replacement, as well as the life cycle/cost benefit of different decisions. When the owner, with help from the roof consultant, decides on the treatment to be used, the consultant will develop the specifications and drawings and prepare documents required to tender the work to qualified roofing contractors. The competitive tendering process based on clear specifications and drawings is an extremely important step in the owner getting a high quality roof from the dollars expended. The roof consultant will recommend a list of qualified contractors to bid a project and oversee the tendering process to ensure a fair process for the contractors and owner. It is important to recognize that the owner is the roof consultant's client and with specifications and contract documents prepared by the consultant on behalf of the owner, the owner is determining the "rules of the game." This is not the case with contractor- or manufacturer-prepared specifications. When the contractor commences work on a project, the roof consultant will inspect the work as it is being completed to ensure that the installation satisfies the specifications and to deal with any unforeseen issues that may arise through the course of the project.



A consultant checks a wind uplift chamber on a roof to determine the system's uplift resistance. (Photo courtesy of Roof Engineering Inc.)

While owners will readily understand the value of the above-named services, they may be worried that these services will place an additional burden on their limited budgets. The competitive tendering process overseen by a qualified roof consultant can yield competitive benefits that can more than pay the fees charged to the owner by the consultant. Besides the obvious competition created at the contractors' level, a good tendering process will create fair competition at the product manufacturer's level.

Roof consultants are knowledgeable on a wide variety of roof treatments and products and are not limited to the products of one manufacturer. Access to the full range of roofing manufacturers and their products means owners are not limited to the options available in getting the roofing solution that best meets their needs.

With the roof consultant preparing specifications, tendering, and inspecting a roofing project, it is unlikely that the owner will face roof performance problems with the new roof; but if any problems arise, the consultant is well positioned to protect the owner's interests in getting the problem corrected. The roof consultant will make the owner aware of the warranty advantages and disadvantages of various products and the specifications and contract documents will be very clear on the warranty obliga-

"The competitive tendering process overseen by a qualified roof consultant can yield competitive benefits that can more than pay the fees charged to the owner by the consultant."

tions of both the contractor and product manufacturer as well as the owner's obligations relative to the warranty.

The benefits a roof consultant can deliver to an owner are not limited to existing buildings and their roofs. Some of the problems owners face in maintaining roofs are inherent in the original roof design. One of the most proactive things an owner can do with respect to managing his or her roofing portfolio is to make sure that any new buildings have properly designed and constructed roofs. Owners readily recognize that their architect needs the services of structural, electrical, and mechanical engineers in designing and constructing a new building. The roof is as critical to a building's performance as the aforementioned components and a wise owner will insist the architect uses the services of a RRC in the design and construction of the new building's roof. This decision will yield great benefits in ensuring a better performing building for the owner's core business and in reduced maintenance costs.

Preventive maintenance (PM) is another area where the roof consultant can deliver value to an owner. Owners can easily recognize how mechanical components require PM service to ensure that the components do not fail ahead of their potential life cycle. Roofs also require PM service in order to maximize their life. A RRC can assist the owner in developing and delivering a roof PM program that targets certain roofs at critical times and can also ensure that the PM program takes into consideration long-term warranty periods.



A roof consultant may take samples to determine that specified materials are being installed in compliance with the project specifications. You will know you are getting what you bargained and paid for. (Photo courtesy of INSPEC.)

Registered Roof Consultants (RRCs) are certified as possessing expertise in their field by the Roof Consultants Institute. Owners are wise to set the RRC designation and RCI membership as a prerequisite in selecting a consultant to help manage their roofing portfolios.





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VIEWPOINT MANUFACTURER

Consultants Add Value for Manufacturers

By Helene Hardy Pierce, FRCI

"The roof consultant adds value for the manufacturer when a specification allows for fair competition between manufacturers."

To summarize the role roof consultants play in the roofing equation is simple – they add value. And whenever value is added, simple economics tells us that the dependence of property owners and others on the services provided by roof consultants will continue to increase. These are bold statements from a manufacturer's perspective, so let's explore why and where a roofing materials manufacturer would claim that consultants "add value."

Consider the Venues

Roof consultants participate in a number of different processes that involve a building's roofing system. *Table 1* provides one way of considering these different venues where value may be added.

Certainly there are other ways to delineate the services that a roof consultant can provide and where each spends his or her individual efforts varies. For the purposes of this discussion, however, let's look at each of the areas of service provided as defined in *Table 1*.

Roofing Projects

In a pure sense, "Roofing Projects" is the area where most consider the majority of work performed by a roof consultant is found – from the initial evaluation to the preparation of construction documents to bidding the project and then ensuring that the project is completed to provide a watertight roofing system for the building owner. Seems simple, right? Not exactly, and it is here that "value added" has many different facets.

As a manufacturer, the evaluation of the project and subsequent specification preparation are very important. It's not a "one roof fits all" roofing world anymore, and the professional roof consultant is well armed to take into account all of the different needs of the building and its occupants when determining the best roofing choice to be made for a specific project. Unlike other design professionals, roof consultants know roofing and are in a unique position of being advocates for the best design given all of the particulars, such as geographic location, code requirements, occupancy requirements, building limitations (such as height and access), maintenance needs, unusual uses of the roof surface, local contracting expertise, etc. In addition to these concerns, they are also knowledgeable about manufacturers' system requirements that must be met in order for warranty issuance.

From a specification preparation aspect, the roof consultant adds value for the manufacturer when a specification allows for fair competition between manufacturers. Most on the material supply side compete every day, offering quality products at competitive prices. Well-written, fair construction documents allow for comparison between like products that sometimes is missing when project documents are written by individuals with less knowledge of either the products or the systems.

Just because a system is "warrantable" for a specific time doesn't mean it's the equal of another roofing system. A specification written by a roof consultant typically is a more specific document and the accompanying construction details often offer a

Helene Hardy Pierce, FRCI



Helene Hardy Pierce is director of contractor services at GAF Materials Corporation. Hardy Pierce was named a Fellow of RCI in 2005 and is on the board of the Roof Consultants Institute Foundation.

TABLE I

SERVICE PROVIDED	DESCRIPTION	DEFINITIVE ASPECTS (MAY INCLUDE)
Roofing Projects	Participation in the process for new construction or re-roofing projects.	• Evaluation • Design • Document preparation • Project management • Quality observation
Roof System Evaluations	Evaluation, for a property owner, of the roofing system on an existing facility, what may be needed to maintain the system, what the life expectancy is of the existing roofing system, etc. Often a precursor to a full "roofing project." May be for one or multiple locations.	• Non-destructive testing • Destructive testing • Roof plans • Basis for a historical record • Some reporting mechanism
Forensic Evaluations	Similar to Roof System Evaluations, except in this case, the roofing system(s) did not perform as anticipated and this evaluation is to determine the cause(s) of failure.	• Non-destructive testing • Destructive testing • Roof plans • Reporting mechanism • Roof consultant's opinion of cause(s)
Roof Asset Management	While a Roof System Evaluation may be considered a one-time event, Roof Asset Management provides for the long-term care of the roofing system. At its best, it helps property owners realize the best performance they can get for their dollars invested in the roofing system.	• Annual or routine maintenance and repair schedules, checklists, and plans • Roof plans • Photo documentation of inventory • Financial planning model for future expenditures • Source of historical data for each roofing system in the owner's possession, system specifications, repair history, warranty specifics, etc.
Expert or Legal Testimony	Often the end product of a Forensic Evaluation, Expert or Legal Testimony by a roof consultant may include depositions, testimony at trial, or simply providing an unbiased third-party opinion on a roofing matter.	• Unbiased, independent opinion based on: – experience, – education, – data, – and practical knowledge.

high level of design detail that has been tailored to the project requirements. Construction details that incorporate the knowledge and technical experience of the roof consultant are often better than the "generic" details of a manufacturer.

Given a good evaluation and well-written construction documents, the next step is project management, including the bidding of the project. At this point, the expertise of the consultant in defining the bidding requirements for contractors who wish to participate in the bidding process can assist the property owner in obtaining a well-installed roofing system. For the manufacturer, the roof consultant with stringent bidding requirements provides an avenue for competent contractors to be the qualified invited bidders. Again, value is found in a level and competitive playing field.

After a successful bid award, the actual roof installation proceeds. At this stage in the project, roof consultants provide much value to the manufacturer as another set of independent "eyes" on the installation. This is not to question the intent of the contractor and it should be understood that the roofing contracting community is filled with professionals who take pride in their workmanship and approach projects with the goal of providing a well-installed roofing system that will perform for its expected life. However, involvement of a knowledgeable consultant whose only purpose is to be an advocate for the project while providing quality assurance, results most often in a system with much less chance for an installation oversight. Additionally, for the roofing contractor, a roof consultant can often be a fair spokesperson for the installation when unforeseen conditions arise. As for the manufacturer, knowing that full-time or even part-time quality assurance was conducted on a project may provide confidence that its exposure for warranted projects has been reduced.

Roof System Evaluations

Property owners often do not understand or know what comprises their roofing investment. It is not uncommon for owners and managers to want and need a roofing professional to survey their facilities and help them understand 1) what they have, 2)



what may be required to protect their investment, and 3) why they need to invest in maintenance for their roof system(s).

These services, provided by either roof consultants or professional roofing contractors, are often about educating the property owner. Once educated, owners can make better decisions regarding roofing needs. For the manufacturer, educated owners who understand these three key issues (what's there, what's needed, and why) are much better equipped to avoid problems and premature failures of their roofing system(s) and understand the importance of their proper care and maintenance.

Often included in roof evaluations are recommendations to maintain the existing roof. Knowing what needs to be done and how to proceed is often critical in avoiding inadvertent warranty problems up to and including cancellation. Unfortunately, property owners and maintenance personnel can and do cause harm to roofs by taking the wrong steps when a roofing problem arises, such as using incompatible materials to make a repair. Instructed by a roof consultant, these missteps can be avoided. Likewise, the consultant, as an independent party, can be key to addressing other areas of water intrusion that are not roof-related, saving the manufacturer and the roofing contractor from seemingly self-serving claims of "it's not the roof."

Forensic Evaluations

When a roofing system fails prematurely, the determination of cause can be a critical component in making the right decisions to avoid the same fate for the replacement roof. Sometimes the cause of a premature failure is straightforward and self-evident. In these cases, as with the water intrusion statement above, the roof consultant as an independent third party can provide an opinion that is unbiased and much less likely to be self-serving than if coming from the designer of record, the general contractor, the material supplier, the roofing contractor, or any other party with a vested interest.

In cases where the cause of failure is more complex or comprised of a variety of factors, the roof consultant brings knowledge and expertise to the determination of cause, and the value to the manufacturer is a greater chance of a fair assessment of why the roof failed. Almost no one, and certainly not material manufacturers, has any desire to be involved in premature roof failures and their investigation. Yet an investigation conducted by an independent professional who truly wants to understand the "why" is much preferable to any part of the "blame game" that can develop when no party wants to take responsibility for a roof failure.

Roof Asset Management

This is an area of expertise that is continuously developing to provide property owners with a service that has not been formalized in the roofing industry. There are varying levels of service offered, but at a minimum, asset management should include roof evaluations and a disciplined approach to managing the roofing system over its expected life, up to and including scheduled replacement. For the property owner, benefits include fewer hassles, greatly reduced expenditures for unplanned repair and replacement, more controlled and typically lower operating costs, detailed specifics on roofing assets, etc.

Manufacturers, whether of widgets or roofing materials, understand the principles of preventative maintenance and asset management for their facilities, and the benefits of applying these types of proactive programs to the roofing system can be easily appreciated.

For the materials manufacturer, the value of proactive management of the roof is found in preventing unintentional neglect and providing for routine inspection and maintenance by qualified personnel, both of which contribute to the system realizing its intended service life. In addition, long-term care of the roof can be very helpful in identifying potential problems before they become large issues. It is much preferable to be made aware when there "might" be a cause for concern than to find out about a problem after a large area of the system has been affected.

Asset management also provides a degree of realistic expectations for the property owner. Many owners intellectually understand that preventative maintenance is cost effective, but in practice, live from one roof leak to another. Roof asset management can be used to break this cycle and educate owners on how to take a measured approach to protecting their property and meeting their roofing needs. For the manufacturer, again, value is found in dealing with educated property owners who hold realistic expectations about their roof(s).

Expert and Legal Testimony

In any dispute, there are at least two sides – each with differing opinions about the basis of the dispute. Manufacturers routinely utilize consultants to be an independent, unbiased voice where there is a difference in opinion about a roofing matter. The value here is self-evident; the roof consultant opines based on what the science and data tells him or her and not for other, vested reasons.

The limitations of expert and legal testimony offered by roof consultants are found in the experience and practical knowledge of individuals and their ability to educate. If "testimony" is the first-hand authentication

"For the manufacturer, educated owners who understand these three key issues (what's there, what's needed, and why) are much better equipped to avoid problems and premature failures of their roofing system(s) and understand the importance of their proper care and maintenance."

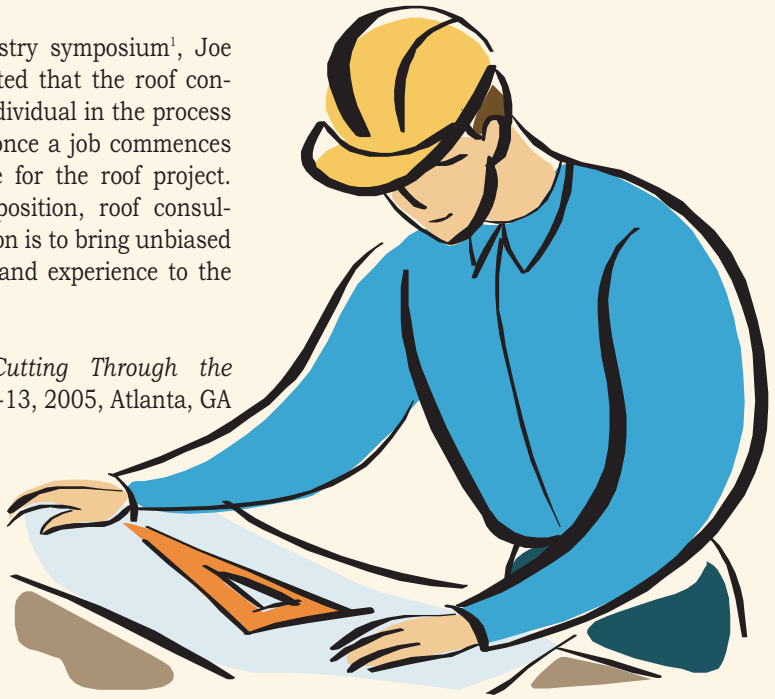
of a fact, then the experience of the individual giving testimony can greatly influence his or her understanding of the facts. Likewise, the ability to communicate not only "what" was seen or happened but "why" it occurred in a clear and concise manner is key to educating the parties involved in a dispute. Often, roof consultants can accomplish this education because they are operating from a different position than others who may have vested interests in a particular outcome.

What Can You Conclude?

First, make no conclusions without a clear understanding that roof consultants and the services that they provide, as detailed within this article, describe those individuals who conduct themselves in a competent and professional manner and who uphold the ethical standards set for their profession. If this is a given, then it's easy to understand that roof consultants do add value to the roofing equation and perform a variety of services for which they are either specifically qualified to perform or are best situated within the framework of the process to perform.

At a recent industry symposium[1], Joe Hale, FRCI, commented that the roof consultant is the only individual in the process whose sole purpose once a job commences is to be an advocate for the roof project. From their unique position, roof consultants' value proposition is to bring unbiased technical knowledge and experience to the roofing industry.

[1] *Cool Roofing...Cutting Through the Glare,* May 12-13, 2005, Atlanta, GA





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VIEWPOINT



The Added Value of Using a Roof Consultant, from a Roofing Contractor's Perspective

By Kevin Kennedy

"Without a professional designer you may have a 15-year roof warranty, but it may not meet local building codes, the insurance carrier's requirements, or have the required FM or UL rating."

The Evans Companies have been working with roofing consultants for our mutual customers since the early 1980s. The consultant's role on the team has added value to roofing projects by providing an independent professional responsible for proper design, bidding documents, code compliance, contractor pre-qualification, safety, coordination, inspection, and an overall quality roofing experience for the owner.

We respect the professional relationship our company has enjoyed with roof consultants. Their knowledge and experience adds an additional perspective to the roofing team that helps eliminate problems and results in a better project. Roofing contractors must work in concert with the consultant to understand the requirements of the specifications and design to collectively provide the owner with a quality roofing experience.

The roof may provide owners with a warranty, but there is no guarantee the roof will meet code or be a quality application. Simply put, every roofing project requires proper design, the right materials, and a quality application. There is no substitute for these three elements. Roofing contractors are applicators, not licensed professionals responsible for structural integrity and roof design.

Having well-designed bidding documents and a pre-bid meeting is the first step in ensuring a successful project. It is beyond bidding apples-to-apples and leveling the contractor playing field. Without a professional designer, the owner may have a 15-year roof warranty, but it may not meet local building codes, the insurance carrier's requirements, or have the required FM or UL rating. This happens frequently and can be eliminated by having a design professional on the front end, creating accurate bidding documents with specifications that will meet all requirements.

On many industrial buildings, roofs are platforms for mechanical equipment. Consultants are aware of this and use functional designs that allow roofers to properly flash, and later, maintain the roof system by complying with recommended clearance endorsed by the NRCA (National Roofing Contractors Association). Otherwise, the customer may get a roof that is impractical and expensive to maintain.

Drainage is a critical roofing design element. Drains, gutters, scuppers, and roof slope must be properly designed to provide adequate drainage, minimize ponding water, meet code, and comply with the selected roofing material manufacturer's warranty.

Code compliance is also beyond a roofing contractor's expertise. An independent professional source should be responsible for meeting state and local codes, which may include requirements for:

- Wind uplift.
- Thermal insulation.
- Energy Star® and reflectivity.

Kevin Kennedy



Kevin Kennedy is the executive vice president of the Evans Service Company, the holding company for the Charles F. Evans Company, Inc. and its four CFE, Inc. roofing operations. Mr. Kennedy has authored three *Interface* articles and was a presenter at the 1999 North American Conference on Roofing Technology and the 2000 RCI 15th International Convention.



Apparent ceiling leak. (Photo courtesy Fincastle Engineering.)

- Fire resistance.
- Dead and live loads.
- Slope.
- Overflow scuppers/drains.
- Screens for rooftop equipment.

Choosing the roofing contractor is an owner's third major decision after choosing the material and design. The owner should take responsibility for pre-qualifying bidders and making a selection in concert with the consultant's suggestion. Owners should consider the following:

- Financial strength of the contractor, which can be independently verified with bonds and financial statements.
- Three-year safety performance, OSHA 300 log and documented EMR (Experience Modification Rate) submitted on the insurance carrier's letterhead.
- Contractor experience with the selected manufacturer's system or specialty project experience (i.e., deck replacement, asbestos, etc.)
- Level of management, support, and service.
- Opinion of the roofing consultant.

Consultants can play a vital role in the overall safety of the project and the finished roofing system. Consultants can help the owner pre-qualify contractors so that only safety-conscious contractors are allowed to bid on the owner's work. Consultants also ensure that the new roofing system complies with requirements of the relevant fire code to ensure the safety of building occupants after construction. Further, consultants will often specify minimum safety practices to be followed by the contractor during construction, based on the consultant's knowledge of the building occupants and examination of the site.

Coordination is critical on complicated re-roofing projects, especially over occupied buildings. There are continuous decisions that must be made regarding insidious conditions in the reroofing process. For example, deteriorated decking is sometimes discovered when the existing roof is removed. Should the deck be repaired, overlaid, or replaced? What is the effect on the building occupants? Having a consultant direct, document, communicate, and coordinate daily activities with the owner is critical to the construction schedule and process.

A full-time inspector can be the difference between an average, good, or great project. His or her role often goes beyond making sure the design and specification requirements are met. Inspectors will often act as the owner's representative and address the everyday issues that occur on difficult projects such as communicating daily roofing activity with the building occupants and addressing needed design changes.

Getting roof consultants involved early in the process of a reroofing project can save a lot of time, money, and heartburn. A professional roof consultant will add value to the entire project by doing things correctly the first time and leveling the field with professional bidding documents. Their third-party responsibility creates credibility and provides the owner with a quality roofing experience. As contractors, we endorse roof consultants' involvement and have witnessed their benefit to the owner and the level of quality added to the roofing project.



A full-time roof inspector (or RRO) can be the difference between an average, good, or great project.

"A full-time inspector can be the difference between an average, good, or great project."

VIEWPOINT



The Professional Roof Consultant: An Architect's Perspective

By Franklin B. Swanson, AIA

"The technical (as well as practical) knowledge that the roof consultant provides can prevent critical mistakes from occurring early in the design process by others who may not fully understand a material or system."

Franklin B. Swanson, AIA



Franklin B. Swanson, AIA, is an associate principal for the architectural firm of LS3P/Boney in Raleigh, North Carolina. He has been a member of the firm for 15 years. Prior to that, Swanson worked in Charlottesville, Virginia. He earned his master's degree in architecture from Virginia Tech and his bachelor's in design from the University of Florida. Swanson has been involved in the practice of architecture for 20 years.

Architects, contrary to popular belief (especially among other architects), do not have all the answers. Case in point: in 1934, Mr. Herbert Johnson, then CEO of the S.C. Johnson Wax Company, was entertaining friends and associates in his newly completed residence designed by none other than Frank Lloyd Wright. During the dinner, a thunderstorm erupted and water soon appeared over the dinner table in the form of roof leaks. Granted, the roof forms were dynamic and the details complex, but there it was...water on the dining room table. Embarrassed and enraged, the irate Mr. Johnson immediately called on his architect complaining that the leaking roof was ruining his dinner party and that water was dripping on his head.



The fact of the matter is that there are very few things that are more basic or essential to the human condition than the necessity for shelter. An important component of that need is protection from the elements. When architects design new buildings, we are required to provide structures that are safe and that shelter their inhabitants from the extremes of the outside environment. A building that does not do this because the roof does not perform is a building that has failed.

Why then, since this aspect of any design is so critical, do we still encounter roof deficiencies and how, as architects, can we deliver a more reliable overall roof assembly to our clients? I believe that one solution is for architects to be more proactive and insistent with their clients in requiring the inclusion of roof consultants on the design team. This may not be essen-

tial for all projects, but for those that may have complex or large-scale roof systems, the benefits can more than pay for the cost of an additional consultant. This is especially true in the current climate of construction where schedules seem to be more and more compressed and skilled labor harder to find.

I think there are four major areas of consideration that any project architect should review in order to decide whether or not it is beneficial to include a professional roof consultant on his design team. They are:

1. Specialization,
2. Appropriateness,
3. Detailing, and
4. Follow-though.

Depending on the type of project in question, these issues may play an important role in determining the necessity for having a roof consultant on the design team.

Specialization

Over the past 20 or 30 years, the roofing industry has seen an explosion in the development and production of new materials and assemblies. It used to be that the average architectural practice had a developed set of roof details that were "tried and true" and that could be put to good use on a majority of the projects that the architects were typically accustomed to designing. This still holds true for many firms, but with the emergence of new roofing materials and systems, what used to be the "standard" is becoming more and more unclear.

Innovative roofing materials for specialized building applications are making it increasingly difficult for the design professional to make intelligent and informed decisions about materials and assemblies. Indeed, this is just the sort of case where architects, who know a little about a lot, need to know more. A professional roof consultant can provide that information and help sift through the scores of specialized roof types while assisting the architect in understanding the physical characteristics and attributes of different systems. Whether the need is for a roof that performs best in a certain application or one that responds to a level of environmental sustainability, knowing the physical limitations and attributes of which a certain material or assembly is capable is an invaluable resource that the roof consultant can provide.

Appropriateness

This leads directly into the next area of consideration that the architect should evaluate, which is the issue of appropriateness. Selecting the most suitable roofing system for any project is critical. In order to be able to do this, the designer must have an extensive knowledge of how certain materials perform under prescribed conditions and circumstances. Any roofing manufacturer will tell you that his or her systems work great, but objectivity is something that is hard to come by from someone trying to sell a product. Unless the architect is up to date on roofing issues and performance statistics, it really isn't a well-informed basis on which to make critical judgments. The roof consultant can provide this objectivity in order to fully understand and evaluate systems that work best in the type of application appropriate to the project.

A careful evaluation of appropriate roofing materials and systems can yield information that benefits not only the design, but can also help the owner in other ways. Life-cycle cost analysis of roof options can provide data that will help reduce costs in the long-term which, depending on the type of client in question, may affect decisions on other projects.

As an example, the public school district for the county where I work has adopted a roof design assembly as a "standard" in low-slope applications for new school designs. This decision was based on a roof analysis and design that we performed with the assistance of a local roof consultant for a new high school prototype project. Indeed, this very same school system now requires that all its architects include a roof consultant on the design team throughout the design process for any school project.

Detailing

From my perspective as an architect, one of the most beneficial aspects of having a roof consultant on my team is the fact that I know the details they are generating, as well as the relevant specification sections they provide, are getting the individualized attention that today's construction documents require. The technical (as well as practical) knowledge that the roof consultant provides can prevent critical mistakes from occurring early in the design process by others who may not fully understand a material or system. Typically, we (that is, architects) rely on shop drawings or other information provided by the manufacturer for assistance in making sure a design works or to verify that what we designed is correct. But the day-to-day experience that a specialized consultant can provide with correctly designed details most certainly pays in the long run.

"Innovative roofing materials for specialized building applications are making it increasingly difficult for the design professional to make intelligent and informed decisions about materials and assemblies. Indeed, this is just the sort of case where architects, who know a little about a lot, need to know more."

Follow-through

And finally, the last item for architects to consider when deciding if a roof consultant is appropriate for the design team is that of follow-through. Whether the details are drawn in-house or are provided by a consultant, any design is meaningless if not installed correctly. Possibly the most important aspect of a roof consultant's services are those of construction administration. Architects vary on the levels of construction administration they provide, and indeed, it may be unnecessary in many cases, depending on the circumstances. However, in most cases, the design architect may visit a jobsite once a week and even then, is being pulled in a hundred different directions, looking at anything from rebar placement to door hardware installation problems.

A roof consultant who is on-site to inspect and review a roof-related construc-

tion activity is focused solely on that activity. An experienced consultant can anticipate problems, detect incorrect installations, and prevent construction delays by ensuring that it is done right the first time. The documentation that is provided concerning the roofing installations can also be extremely helpful if, for any reason, problems arise in the future. In fact, the role that roof consultants play during construction has become so important to many owners that several public school systems throughout North Carolina now require the presence of a roof consultant on-site during construction and installation of the roof.

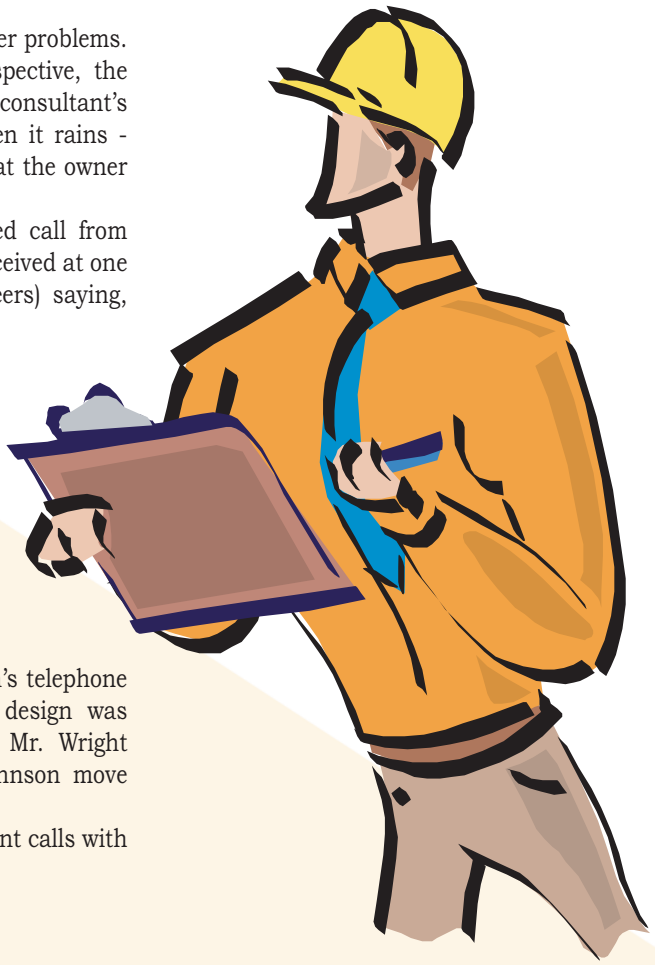
I am a firm believer that roof consultants are an important and vital component of any successful design project. My experiences with projects that involved these consultants is that design decisions were more informed and relevant, the bid process was smoother and generated fewer questions (as well as fewer addenda to the construction documents), construction was better coordinated, requiring fewer RFIs or subsequent bulletin drawings, change orders were kept to a minimum for roof-related items, and that at the end of the day, the final product was a better built roof with fewer problems.

The result? From my perspective, the result of designing with a roof consultant's input is that I rest easier when it rains - which, I hope, is something that the owner experiences as well.

Architects hate the dreaded call from an owner (which many have received at one point or another in their careers) saying, "My roof is leaking." I can't guarantee that having a roof consultant on board as part of the design team will eliminate those calls; however, I am certain that those calls will be fewer and if a leak does occur, easier to rectify.

Which begs the question, how did Frank Lloyd Wright respond to Mr. Johnson's telephone call when informed that his design was leaking on his client's head? Mr. Wright simply suggested that Mr. Johnson move his chair.

Try that the next time a client calls with a roof leak.





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VIEWPOINT



The Benefits of Roof Consulting Services in Architectural and Engineering Design

By Thomas M. Gernetzke, RRC, CDT

"The single most important roof consultant characteristic is his or her unique perspective in the complex building life cycle."

Thomas M. Gernetzke, RRC, CDT



Thomas M. Gernetzke, RRC, CDT, is a project manager for Facility Engineering, Inc. (FEI), located in Madison, Wisconsin. FEI provides professional building envelope services, including the analysis and design of waterproofing, roofing, and masonry/cladding systems. Mr. Gernetzke specializes in roofing and waterproofing assessment, analysis, design, and construction administration.

Introduction

Since the 1970s energy crisis, the demand for energy efficiency has created a Pandora's box of cause and effect relationships between increasingly complex building systems. As high performance insulation, HVAC, fenestration, and other systems have been introduced, energy saving requirements have further collided with modern economics where "faster, better, cheaper" is the unassailable business culture mantra. As building technologies continue to evolve under these intense pressures, design teams are called upon to merge profitability with multifaceted building necessities in tidy, "green-washed" construction packages.

Modern building technologies impact all phases of construction. Now more than ever, the designer must be technically correct in predicting the interaction of building system components during pre-design and design phases. Architects and engineers must also understand the technical requirements, product end use, limitations, and the detail required for the specified systems in order to convey the correct intent to the construction team. Finally, construction techniques and methods must be understood and specified in order to achieve desired outcomes during construction administration and post-construction phases.

The rapidly proliferating complexity of buildings often necessitates the expansion of design teams. For example, medium to large construction projects may involve multiple architectural firms, structural engineers, special process or application consultants, HVAC engineers, electrical and plumbing consultants, cost consultants, landscape architects, LEED® consultants, and others. Roof consultants, however, are not commonly involved. While many design teams have realized the usefulness of roof consultants on green roofing, waterproofing, or other specialized applications, roof consultants can provide valuable assistance on *every* project.

Roof consultants can assist architects and engineers by limiting liability, maintaining profitability, reducing team workload, providing specialized design and problem-solving capabilities, and increasing diversification of project types.

Roof Consultants Limit Liability

In today's litigious atmosphere, design liability is not requisite to being sued and the limitation of liability is an absolutely critical consideration. A roof consultant can be a key asset to architects and engineers in this important task through his or her knowledge of building life cycles, specification development, contractor selection, and quality control.

The single most important roof consultant characteristic is his or her unique perspective in the complex building life cycle. On a daily basis, roof consultants are involved with every facet of the building life cycle, from commissioning and pre-design





Photos 1 and 2. Remedial through-wall masonry flashing repairs are often expensive and disruptive to an owner's operations. Roof consultants routinely investigate and specify transitions between systems, such as roofing and masonry.

services, to design-development, to post construction, to demolition. By necessity, architects and engineers are often forced to concentrate primarily on the first of these life-cycle phases. But roof consultants analyze the effectiveness and performance of roofing systems across all life-cycle phases. Daily experience in maintaining, repairing, and replacing the spectrum of roofing systems available enables a roof consultant to provide unbiased recommendations regarding system performance and return on investment information. Perhaps more importantly, the roofing consultant's training and experience can serve to provide quality control during roofing design and construction phases to help protect the client and limit architect/engineer (A/E) liability.

In limiting liability, building code implications must also be considered. According to Richard Canon, PE, FRCI, RRC, building codes clearly delineate roofing systems as cladding.[1] Cladding is a structural component of the building system and therefore must be designed by a licensed structural engineer or registered architect. It can be argued that this delineation of roofing responsibility to the engineer (or architect) creates more long-term liability for the design professional. If the engineer specifies a roofing system with a specified warranty period, any deficiency or problem during that period could be construed as a design deficiency. By ensuring that the system will actually perform, a roof consultant can provide a measure of protection and confidence to the architect and engineer.

For common reference, the International Building Code (IBC) is used as a basis. IBC refers to ASCE-7 which defines roofing as an "engineered component relative to: gravity loads, fire, drainage, energy, and wind uplift resistance."

While many engineers can calculate and design the requirements necessary to satisfy code, knowledge of code requirements may not be sufficient to avoid selection of components that lack compatibility or desired performance. A roof consultant has the unique experience and training required to determine systems and components that are both compatible and capable of delivering performance consistent with and appropriate for existing (or future) conditions, ease of maintenance, life expectancy, and qualification for warranty.

A roof that meets code will not necessarily perform. IBC references many separate entities that control or provide direction in separate areas of concern, such as plumbing code for drainage, UL and FM Global for fire resistance, ASCE-7 and FM Global for wind uplift, ASCE-7 for gravity loads, and ASHRAE for energy requirements. As long as a system, or the components of a system, meet the requirements of these individual entities (FM Global, UL, etc.) and satisfy their concerns, the system earns their approval. However, while the IBC list of entities appears comprehensive, each has a narrow area of emphasis. A single controlling entity concerned with high performance, long-term, sustainable roofing has yet to be developed. Roofing consultants are uniquely qualified, by nature of their experience and training, to understand these complex system relationships. While not qualified to perform the structural analysis required for a roofing system, a roof consultant is qualified, from a comprehensive viewpoint, to predict roofing



Photo 3. Roof consultants are extensively involved during the pre-design and design phases of a project. Here, an owner's representative is inspecting existing flashing details with a roof consultant.

"Roof consultants can assist architects and engineers by limiting liability, maintaining profitability, reducing team workload, providing specialized design and problem-solving capabilities, and increasing diversification of project types."

system performance.

Finally, in limiting exposure to liability, the role of roofing system manufacturers must be carefully considered. The position of the manufacturer is quite clear – the system manufacturer is not and will not act as a design professional. In addition, membrane warranties are frequently issued in conjunction with non-warranted conditions and materials, such as tie-ins, standing water conditions, and most edge metals. Vapor retarders, insulations, and other roofing components may not be covered. If you have not read a manufacturer's specification or system warranty, do so. All specification and warranty documents limit the liability of the manufacturer, not the design professional. The expertise of a roof consultant can help correlate roofing system products with desired outcome, assisting architects and engineers by having a thorough knowledge of critical protection components.

Maintain Profitability and Reduce Workload

Most architects and engineers lack passion in designing roofing systems, especially low-slope systems that often serve no aesthetic purpose. Add a measure of complexity to a non-aesthetic system, and profitability, focus, and accuracy can become difficult to achieve. Outsourcing this aspect of the process to a roofing consultant can help to avoid unanticipated costs.

Delegating roofing design and related efforts to a roof consultant has other benefits as well. A roof consultant can take on many aspects of roofing-related design, thus reducing internal workload. If roofing-specific requirements have not been considered, a roof consultant will ask the right questions and provide appropriate recommendation. A roof consultant can also provide specifications and details developed through consistent, monitored use.

Additionally, a roof consultant can be valuable during bidding and construction phases. Roof consultants can make bid recommendations and help select qualified contractors. Delegating approval of tedious roofing-related submittals during construction can further reduce A/E workload.

Provide Specialized Design and Problem-solving Capabilities

Air barriers, green roofing, and Energy Star® systems are relatively new to the industry. Their specification and use often require specialized design and can also introduce new problems, interactions, and consequences to building systems. The addition of a roof consultant to a design team can help to avoid such problems via pre-construction assessments and evaluations, peer review, construction observations, and post-construction problem solving. Discussion of the roof consultant's specialized knowledge and problem-solving capabilities follows.

The number of buildings with improper air barriers indicates a lack of understanding of air barrier code. Perhaps more misunderstood are requirements to bridge all envelope systems for a complete air barrier system. Air barrier systems must be compatible and maintainable over the life expectancy of a building. Consider the following common detail: can an EPDM membrane be taped to a polyethylene air barrier? Absolutely. Will the adhesion between air barrier and EPDM last for the life expectancy of the building? Not likely. While wall systems are not as simple as a "roof turned vertical," roof consultants are routinely involved in building envelope systems, particularly the interaction between roofing and wall systems.

The United States Green Building Council's (USGBC's) LEED® construction program offers many new opportunities and imposes many new requirements for projects seeking LEED® certification. It is often assumed that a green roof or Energy Star®-rated roofing system is required on a project. However, if a lower certification level is desired, this may not be the case. A roof consultant can provide information to the LEED® professional to properly assess whether or not these systems are required to achieve certification. In addition to this assessment, the roof consultant can include cost-benefit, return on investment, or similar economic analyses for the project.

Green roofing systems require unique design considerations. Component proliferation is overwhelming. To many, a green roofing system is visualized as the finished appearance of an inviting garden or useable interactive pedestrian environment. To a roof consultant, a green roofing system is visualized as the membrane system performing for the long-term as the key characteristic with something aesthetically pleasing on top. Contrary to commonly held beliefs and some manufacturer literature, green roofs are not standard roofing systems buried under something supporting plant growth. Green roofing systems designed in this manner are doomed to premature failure. Membranes, drainage mats,



Photo 4. The roofing on this contemporary home has four different roof structures, each with different roofing and cladding systems. A roof consultant's involvement may have increased efficiency for the design team during design and construction administration phases.



Photo 5. The ratchet straps on the barrel ends holding down the roofing are not clearly visible. Although an extreme case, the materials that are visible are FM- and UL-approved. Specification of approved materials is not necessarily a good assurance of performance.

insulations, overburdens, plant media, etc., all need to be carefully considered. All components must be compatible for the duration of the expected lifespan. Replacement considerations must also be carefully weighed. Replacement of green roofing systems (or overburden covered waterproofing systems) often exceeds $40 per square foot.

Energy Star®-rated roofing is less complicated. However, questions do remain. Is the proposed system sustainable? Will it maintain the required performance levels over the lifespan of the system? Will the system need to be cleaned and maintained regularly? Most importantly (and unfortunately often overlooked), will it meet the owner's performance and lifespan requirements?

Diversify Project Types

Architects and engineers often find and are trapped by a niche building type. As with any endeavor, stepping out of a comfortable paradigm is difficult at best and damaging at worst. While the basic tenets of building design remain the same, the complexity and differences of a new building type often spell disaster in the details. If the challenge of a different building type is accepted, selection of design team members is critical. Additionally, unique construction types require unique roofing systems. Adding a roof consultant to the team can help diversify projects without having to invest in the specialized training of internal assets.

Exploring and researching any new building system is tedious and overwhelming. Inquiries are made to trusted vendors, contractors, and sales representatives. At times, Sweets® catalogs or other trade reference information is used, or the Internet is employed. While these sources can provide valuable information, they present varying degrees of bias. A roof consultant can provide unbiased recommendations regarding roofing system types and manufacturers. Additionally, a roofing consultant can provide valuable recommendations to integrate unfamiliar systems with other components.

Educating the owner can also be a difficult task for an architect or engineer. With a roof consultant on the design team, an architect can more confidently pursue intelligent, alternative roofing systems with an owner. A roof consultant can provide system performance, lifecycle cost analysis, and warranty information for the architect to present to the owner to facilitate the decision-making process.

Conclusion

Complex building relationships need not lead to the proverbial Pandora's box. These interactions, especially when related to the building envelope, are critical to building performance. Roof consultants utilize a unique perspective of the building lifecycle to provide assistance on every phase of a project, from pre-design to construction administration. While the design professional is best suited to determine who participates on the design team, a roofing consultant can prove to be a worthwhile investment. Call a roof consultant to find out how he or she can help with a specific project.

Footnote

[1] Canon, Richard P., FRCI, RRC, PE, "Delineation of Roof Design Services," *Proceedings of the 20th International Convention of the Roof Consultants Institute,* March 31 – April 5, 2005, pp. 3–20.

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Designerless Roofs — Who Has Liability for Faulty Design?

By Paul E. Ridley

Introduction

It is a fact of life that the commercial roofing industry is in a constant state of change. Building owners' expectations for the performance of roof systems continue to increase over time. Manufacturers frequently introduce new products or change their existing products in an effort to meet the evolving demands of the marketplace. The adoption of new building code provisions and other legislation has imposed new energy efficiency and "green roof" requirements on the industry. These and other developments have increased the importance of roof design specialists who keep current on the constant changes in roofing technology, building codes, and performance requirements and limitations and who can provide building owners with informed, objective advice, free from conflicts of interest. A factor that further enhances the roof design professional's value to building owners is the code of ethics to which they are bound, either through professional state licensure or membership in RCI.

Notwithstanding the substantial value that independent roof design professionals can add to projects, many owners do not retain such specialists to design their roofs. This may be due to a lack of knowledge of the availability or value of an independent roof designer, or a conscious decision based on a short-term perspective that the cost exceeds the benefits.



A roof consultant views an interesting protection arrangement in this leaking building. (Photo courtesy Fincastle Engineering.)

Building owners may be persuaded by a contractor or manufacturer that an independent designer is unnecessary because the contractor or manufacturer is capable of providing "turnkey" design-build or design-procure services at no (apparent) additional cost to the owner. It is thus likely for the foreseeable future that some commercial roofs will be constructed without the benefit of independent professional design.

It would overstate the case to say that every roof installed without the benefit of independent professional design is doomed to premature failure, or that every roof designed by an independent roof design professional is guaranteed to perform within or exceed expectations. However, it has been demonstrated that utilizing a qualified independent roof design professional greatly increases the likelihood that the roof will meet the owner's immediate and future needs related to leak-free occupancy, minimized maintenance costs, and long-term service. When a building owner forgoes use of an independent design professional, he increases the risk that the roof will not meet his requirements concerning performance, cost, appearance, or longevity. This is because critical choices of materials and design of details will be made by someone whose principal role or financial interest is selling materials or installing a roof, not the provision of design services.

These observations about the importance of independent professionals in roof design set the stage for the principal issue addressed in this article: When no roof design professional is involved with a roof that fails prematurely, who has liability for any design defects that cause or contribute to the failure? The answer, as with so many issues in life, is "it depends." The answer will be affected principally by the roles of the different parties involved with the roof and the scope of their agreements. In examining this issue, the author will separately discuss the legal issues relating to each of the principal parties involved in the typical roofing project.

The Owner

The owner's decision not to use a design professional can have at least two consequences. First, the owner loses a strong advocate for his interests, thereby increasing the chance that his expectations for the roof will not be met as discussed above. The second consequence is that allocation of legal liability and recovery of damages for design errors become more complicated and less certain. This is because there may be no single party who has clearly assumed responsibility for the roof design.

With or without a professional designer of record, the owner will bear the first-line

liability to third parties who are injured or damaged as a result of faulty roof design. For example, if roof leaks or complete failure of a roof due to a design defect lead to water damage to contents, structural collapse, or injury to occupants or bystanders, the owner (simply by virtue of owning the building), will be legally liable to those third parties.

The owner or his insurer can and frequently will seek indemnification for such claims from the parties who were responsible for committing the design errors. If an independent roof design professional was involved, the liability for any design errors will clearly rest with him. In that event, the owner will have recourse against the designer for damages the owner must pay to third parties, as well as his own damages. A designer will frequently have errors and omissions (E&O) insurance coverage to pay such claims.

However, where no independent design professional was involved, the owner will first have to determine who is responsible for the faulty design, and then seek recourse against him or her. Moreover, if an independent design professional was not involved, E&O coverage will likely not be available as a source of recovery for the owner.

The Contractor

In the absence of a designer of record, design responsibility may be unclear. It may rest with the contractor, manufacturer, or both. If a contractor is hired to install or replace a roof with no clear designation of design responsibility, the contractor nonetheless will likely be deemed to have assumed responsibility for the suitability of the materials installed and the design of the roof details. Because in law, liability follows responsibility, the contractor will have liability if the roofing materials selected are unsuitable for the application or if roof details are substandard, in addition to the contractor's customary liability for installation flaws.

The Manufacturer

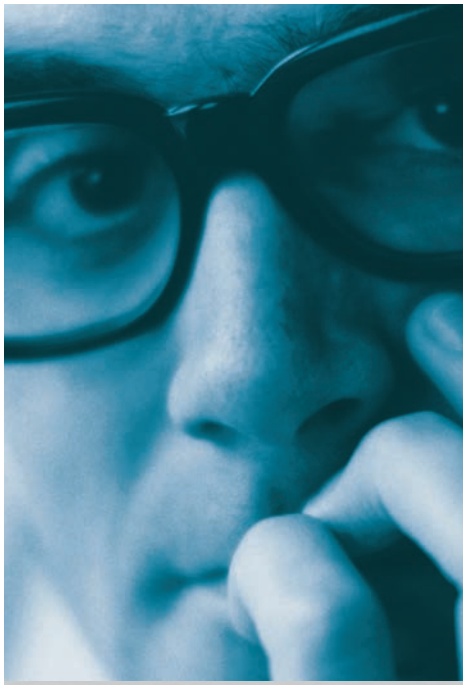
The liability equation becomes more complicated, however, when the role of the roofing manufacturer is considered. If a manufacturer issues a traditional "material-only" roofing warranty, the contractor will likely continue to have liability for design errors with one possible exception. The

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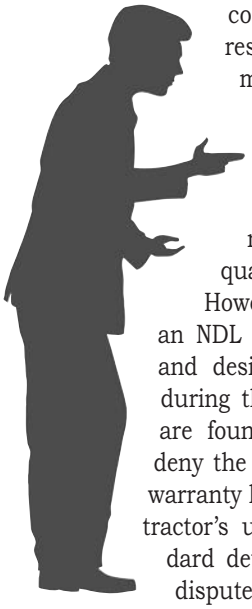
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Dimensionally unstable foamed plastic insulation resulted in a failure investigation at this plant in Michigan. (Photo courtesy of Roof Engineering Inc.)

manufacturer may have liability for suitability of the product if it recommended a particular product with knowledge of the intended application.

If a manufacturer issues a no-dollar-limit ("NDL") warranty covering installation and roofing materials, design liability may shift entirely to the manufacturer. Acceptance by the manufacturer, particularly after inspecting the completed roof, can constitute acceptance of responsibility and thus ultimate legal liability for the quality of the installation, suitability of the product for the particular application, performance of the roofing materials, and adequacy of the design.



However, when a roof covered by an NDL warranty prematurely fails and design defects not discovered during the pre-warranty inspection are found, the manufacturer may deny the claim on the basis that its warranty has been voided by the contractor's use of improper, non-standard details. To avoid this sort of dispute, the wise contractor should obtain the manufacturer's advance approval of any non-standard details. Absent such a step, a legally murky situation may result in which liability is hotly contested between the contractor and manufacturer. The dispute can become even more factually complex if it is unclear whether the roof failure resulted from substandard installation, material failure, or design flaws.

Once the manufacturer inspects and accepts the roof by issuing an NDL warranty, it will have a heavy burden to establish that it did not, by virtue of issuing its warranty, accept all design aspects of the roof. Even if the manufacturer contends it could not have discovered the particular design flaw by inspecting the finished roof, unless it convinces the trier of fact that the design flaw was fraudulently concealed, it runs a high risk of being determined to have assumed the risk of even hidden design flaws and thus found liable to the owner.

Even if a manufacturer is successful in contending that the contractor is liable for design defects, it will still have a second hurdle to surmount. That is the burden to prove the extent and materiality of such design defects. This requirement is illustrated by an Oregon case, *Amfac Foods, Inc. v. Fred A. Snyder Roofing and Sheet Metal Corp.*[1] In *Amfac*, when the roof leaked, the roofing subcontractor defended a claim for breach of warranty by contending that the owner had voided the warranty coverage by installing rooftop equipment without prior notice to the subcontractor as required by the warranty. The court ruled that the roof subcontractor was required to prove the occurrence and extent of such modifications to the roof and that the installation of such equipment was a material cause of the leaks. A court will likely hold a manufacturer to the same burden to prove the extent and materiality of the design defects as the cause of roof failure (as distinguished from substandard installation or material failure).

Conclusions

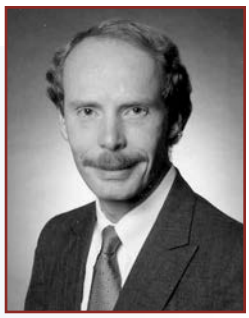
Involvement in a legal battle over ultimate liability for roof design is usually not in the owner's best interests. The typical owner is better served by a roof that performs to expectations rather than becoming enmeshed in expensive litigation with multiple finger-pointing parties. Reliance solely upon even the best NDL warranty can thus be short-sighted.

A much better method of reducing the risk of poor performance is to prevent roof failure in the first place through proper design and material specification. For if roof leaks result from use of unsuitable materials or substandard details, the owner is likely to incur costs that no roof manufacturer's warranty will cover, such as damage to other building components (including insulation, roof deck, and ceilings), damage to contents, and interruption of operations. Such risks will not be covered even by NDL warranties because they typically exclude consequential damage to other building components or contents. Also, should the roof fail prematurely, the owner bears the risk that the installer or material manufacturer is no longer in business or cannot be identified as a result of loss of records.

Before deciding to forego the services of an independent roof design professional, the building owner should carefully weigh the benefits of such services against the increased risk of premature roof failure and potentially complicated issues of legal liability for design flaws in the absence of a designer of record.

[1]43 OR. App. 107, 602 P.2d 321 (1979).

Paul E. Ridley

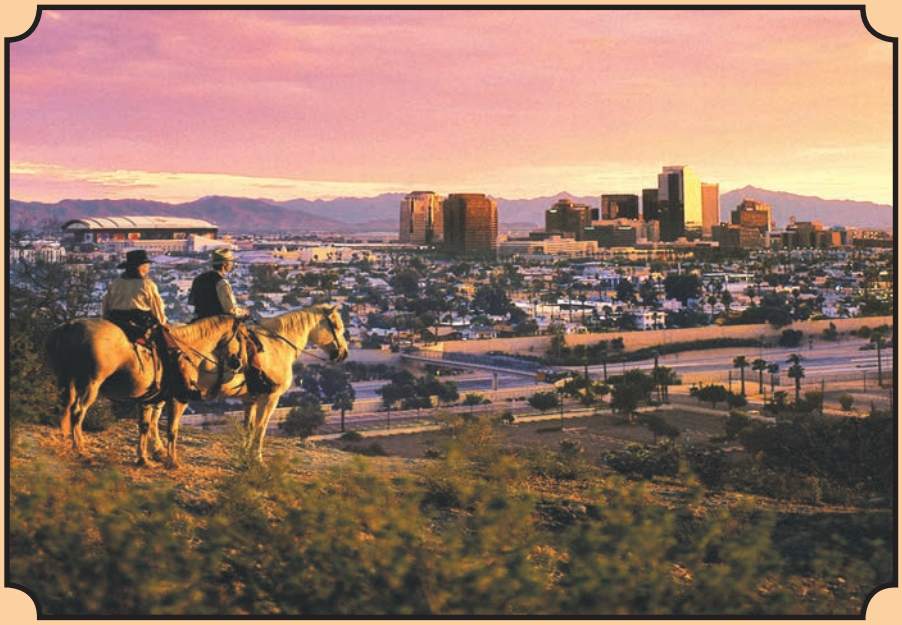


Paul E. Ridley is a partner of Kirkpatrick & Lockhart Nicholson Graham LLP, a law firm with offices in 12 cities in the U.S. and U.K. Mr. Ridley is resident in the Dallas office. He has practiced law for 21 years and focuses his practice on resolving construction disputes. Prior to becoming a lawyer, Ridley practiced architecture and is a registered architect. Ridley is a former member of RCI's Board of Directors as Region IV director, former chairman of the Nominating Committee, and has participated in mock trial presentations at several national conventions. Mr. Ridley has also taught RCI seminars on various law-related issues.

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Roofing/Waterproofing Details and the Architect's Standard of Care

By Colin Murphy, RRC, FRCI, and Lonnie Haughton

Across the nation, most states or jurisdictions have adopted the new International Building Code and/or International Residential Code (the 'I-Codes') to replace the three older building codes (ICBO Uniform Building Code, BOCA National Building Code and SBCCI Standard Building Code) that had divided the country into distinct areas of model building code influence.

During the lengthy processes that led to the melding of these three "model" codes into the unified I-Codes, the negotiators added new language that helps clarify an issue that has been argued for decades in various forums for building defects mediation and litigation: The project designer's standard of care for ensuring that the contractor has all details and guidance required for weatherproof construction of the exterior walls and roof covering.

In the past, it was not uncommon for a project architect or specifier to pass a major portion of the design responsibility over to the building contractor by simply calling out "flashing" on a typical wall section or roof plan within the project documents. We have seen construction drawings in which the designer's entire guidance for proper flashing and weatherproofing of the exterior wall and roof covering systems consisted solely of the brief specification, "Comply with applicable code requirements" inserted into the General Notes. In these cases, the project's design professional quite simply is stating that while it is his/her general "design intent" that the building envelope shall not leak, it is up to the contractor to figure out how to carry out this broad mandate.

> "NO LONGER SHOULD IT BE ARGUED THAT THESE CRITICAL TASKS CAN SIMPLY BE PASSED ON TO THE CONTRACTOR AND HIS/HER SUBCONTRACTORS."

Note that while the Request for Information (RFI) and submittal processes, where applicable, can induce further clarification as to the design, the architect may not be contractually bound to respond once the construction drawing phase is complete. Further, after the project has been bid and the work has commenced, there are generally time and/or cost constraints that significantly limit the potential processes of design clarification when all the contractor has been provided is the "intent."

If, at a later period, these building walls or roof do experience leakage or mold proliferation due to waterproofing or flashing defects, it has been our experience that this "design intent" defense by the project architect can be successful in the litigation process. The builder's continuation of the construction, even when the design guidance has been minimal, can be considered to represent an acceptance of the additional design responsibility and a commitment by the builder to carry out the work in conformance with the controlling building code.

- "The contractor is charged with knowing, understanding, and complying with code provisions and is liable when there is a violation."[1]

However, the referenced new I-Codes[2] now make it completely clear that the final responsibility for a detailed and effective design for the building envelope remains with the project's designated design professional and/or the qualified roofing and waterproofing design professionals assisting the project. Prior to issuance of the building permit, the construction documents must include comprehensive waterproofing details:

- "... including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves, or parapets, means of drainage, water-resistive membrane, and details around openings."[3]

Further:

- "The exterior wall envelope shall **be designed** [bold emphasis added] and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior veneer..."[4]
- "Roof coverings shall **be designed** [bold emphasis added], installed, and maintained in accordance with this code and the approved manufacturer's instructions such that the roof covering shall serve to protect the building or structure."[5]

Note in the code language quoted above the addition (new to the I-Codes) of the short phrase "be designed," which advises the project's design professional that his/her standard of care typically will include project-specific detailing (typically during the pre-construction process) of the wall and roof covering systems and their associated flashings. No longer should it be argued that these critical tasks can simply be passed on to the contractor and his/her subcontractors.

"Be designed" is an example of a "performance" requirement within the I-Codes; the project architect is being advised that his/her envelope design must be well-detailed and well-specified and must provide long-term weatherproof performance. If the design fails to perform properly, the

responsibility for this failure rests primarily with the project's design professional, while it is the contractor and subcontractors who remain responsible for proper installation of the well-conceived waterproofing design in accordance with industry standards.

Like the older model building codes, the Chapters and Sections of the I-Codes are written in a combination of "prescriptive" and "performance" language. It is interesting to note that a comparison of the flashing requirements of Chapter 14 (Exterior Walls) and Chapter 15 (Roof Assemblies and Rooftop Structures) of the International Building Code reveals a higher proportion of general performance language in Chapter 14 while Chapter 15 presents a greater degree of prescriptive instructions about proper flashing materials, dimensions, and securement. These differences can be attributed to the decades of service by past and present roofing manufacturers, industry organizations, and associated roofing professionals dedicated to identifying the minimum requirements for assured long-term, weather-resistive performance of the various roof covering systems. In comparison, the overall body of knowledge for proper exterior wall cladding and below-grade waterproofing is less developed, less validated, and more inconsistent and scattered. To address this lack, the authors of Chapter 14 have fallen back on broad performance language:

- "Flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior."[6]

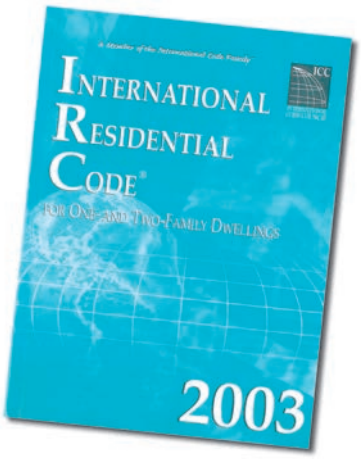
A good example of the difference between "performance" and "prescriptive" language in the I-Codes is a brief comparison of how the International Building Code (IBC) and International Residential Code (IRC) address joint overlaps of loose-laid sheet goods (e.g., asphalt-saturated building paper or polyolefin housewraps) used as the weather resistive barrier at exterior walls. The IRC (Section R703.2) simply prescribes minimum 6" vertical overlaps and minimum 2" horizontal overlaps. The IBC (Section 1404.2) requires the overlaps to be appropriately configured to provide "continuous water-resistive" performance. In other words, the IBC expects the project designer (or its qualified representatives) to evaluate local climate conditions, the building's exposure, and the expected weather-resistive performance of the cladding and flashing designs in order to determine appropriate overlap dimensions of the loose-laid sheet weather-resistive barrier installed at the exterior walls.

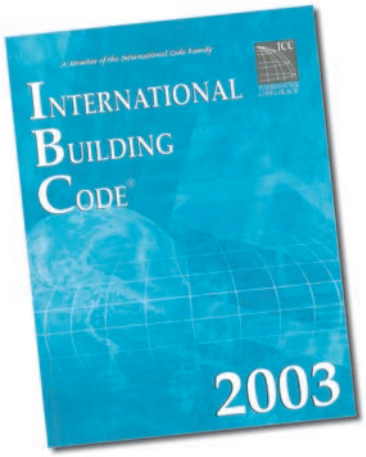
Similar design responsibilities are associated with the roof covering system:

- "The designer will typically include in his or her roof specification compatibility of materials, deck type, weather conditions, roof slope, structural loads, roof drainage, roof penetrations, energy, and future reroofing."[7]

It is important to recognize that in most cases, the design responsibility mandated by the I-Codes cannot be fulfilled simply by providing to the contractor a manufacturer's packet of generic details and guide specifications. The I-Codes task the design professional with project-specific design responsibilities that are greater in scope than the downloadable product information promoted by sales representatives across the nation. Unless these sales and technical

"Asphalt-saturated felt free from holes and breaks...shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches..." — 2003 IRC





"A minimum of one layer of No. 15 asphalt felt...shall be attached to the sheathing, with flashing...in such a manner as to provide a continuous water-resistive barrier behind the exterior wall envelope." — 2003 IBC

The *International Residential Code* provides prescriptive instructions for proper installation of the weather-resistive barrier, while the *International Building Code* simply specifies an installation that provides proper weather-resistive performance.

personnel and their employers formally accept project-specific responsibility for the successful long-term performance of the roofing, cladding, or waterproofing design that they are marketing, then this burden continues to rest with the project's design professional.

Similarly, while the generic MasterSpec and MasterFormat guide specifications published respectively by the American Institute of Architects (AIA) and the Construction Specifications Institute (CSI) are important resources for the design professional, neither of these tools can provide the code-required design review necessary to ensure weather-resistive performance of the building envelope. Even the comprehensive standards and details published by the nation's most respected industry organizations (e.g., the National Roofing Contractors Association and the Asphalt Roofing Manufacturers Association) cannot be blindly substituted for the project-specific design review prescribed by the I-Codes.

In all of these cases, the referenced standards, details, and guide specifications can be invaluable components of the project-specific design review, but the I-Codes make it clear that ultimately someone must assume responsibility for design performance. For large projects in most jurisdictions, this person likely will be the "registered design professional in responsible charge."

- "The registered design professional in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building." [8]

For some small projects, depending on the requirements of the local jurisdictions, the responsible design professional may not even be a "registered" professional (i.e., a licensed architect or engineer), but this lack of formal credentials does not absolve him or her from code-prescribed responsibility for a successful envelope design.

While there are many architects who are well qualified to fully evaluate, detail, and specify even the most complex flashing, cladding, and roof covering systems, for most designers and specifiers these critical tasks are best carried out by qualified roofing and waterproofing specialists whose professional services for each project will include acceptance of the mantle of design liability imposed by the I-Codes. Without doubt, the nation's most qualified and knowledgeable body of roofing and waterproofing experts are the registered roof consultants (RRCs) who comprise the foundation of the Roof Consultants Institute.

"THE I-CODES TASK THE DESIGN PROFESSIONAL WITH PROJECT-SPECIFIC DESIGN RESPONSIBILITIES THAT ARE GREATER IN SCOPE THAN THE DOWNLOADABLE PRODUCT INFORMATION PROMOTED BY SALES REPRESENTATIVES ACROSS THE NATION."

[1] *Legal Aspects of Code Administration*, International Code Council, Falls Church, VA, 2002.

[2] In addition to the 2003 International Building Code and 2003 International Residential Code, the I-Code series includes the 2003 International Fire Code, 2003 International Plumbing Code, 2003 International Mechanical Code, 2003 International Fuel Gas Code, 2003 International Energy Conservation Code, 2003 International Private Sewage Code, 2003 ICC Performance Code for Buildings and Facilities, 2003 International Property Maintenance Code, 2003 International Zoning Code, 2003 International Existing Building Code, and the 2003 International Urban-Wildland Code. Most jurisdictions, however, have adopted only some (or just one) of these many model codes.

[3] 2003 IBC, Section 106.1.3.

[4] 2003 IBC, Section 1403.2 and 2003 IRC, Section R703.1.

[5] 2003 IBC, Section 1503.1 and 2003 IRC, Section R903.1.

[6] 2003 IBC, Section 1405.3.

[7] IBC Commentary, Vol. I, Section 1503.1.

[8] 2003 IBC, Section 106.3.4.1.

Colin Murphy



Colin Murphy founded Exterior Research & Design, LLC (originally Trinity Engineering, Inc.) in Seattle, WA, in 1986 and has since expanded the firm to include offices in Waterbury, CT, and Portland, OR. Colin is a Registered Roof Consultant and has been elected to the RCI Jury of Fellows. He also is a LEED® Accredited Professional, a certified EIFS Third Party Inspector, and an ICC-certified Building Inspector. Colin is the principal author of *The Roof Construction Guide for General Contractors,* published in 1998 by RCI.

Lonnie Haughton



Lonnie Haughton serves as a construction consultant for Richard Avelar & Associates in Oakland, CA, and is one of fewer than 400 individuals nationwide who has been certified by the International Code Council as a Master Code Professional. Lonnie is a LEED® Accredited Professional, a certified EIFS Third Party Inspector, and an accredited instructor for the InstallationMasters window/door installation training and certification program developed by AAMA.

The Wind Investigator:

How to Approximate Wind Velocities at Roof Level

By Phil Dregger, PE, RRC, FRCI

In the wake of major hurricanes such as Katrina that recently devastated much of the Gulf Coast area near New Orleans, roofing professionals are often asked to investigate the cause of roof wind damages. A key to many damage investigations is approximating the maximum gust wind velocity experienced at roof level. Although wind velocity data are usually available from the National Weather Service (NWS), the National Oceanic and Atmospheric Administration (NOAA), and other sources, the data are usually for terrain exposures, heights above ground, and averaging times different than what is needed. This article discusses how to adjust wind velocity data for site-specific terrain exposures, heights, and averaging times.

Wind Warranty Claim

To illustrate how these adjustments work, we will use the following hypothetical example scenario:

> On August 29, 2005, a 2-year-old, built-up roof covering on a 45-foot tall building in a mostly suburban and wooded area southeast of New Orleans, Louisiana, lifted near one corner and peeled back (see *Figure 1*). The building owner submitted a warranty claim, but it was denied because, according to the manufacturer, wind gusts in the greater New Orleans area exceeded those covered by the warranty. The warranty excludes coverage for damages experienced by "wind gusts greater than 100 mph at the roof." The building owner hires you to provide an approximation of the maximum wind gust velocity experienced at roof level on his building. No nearby wind velocity data are available, but the site is within the geographic region covered by "wind swath" data published by NOAA shortly after Hurricane Katrina made landfall.



Figure 1: A built-up roof covering lifted and peeled back near one corner.

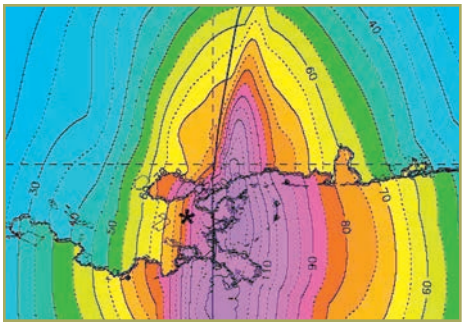


Figure 2: Excerpt from Hurricane Katrina wind swath data published by NOAA.

NOAA H*Wind

Figure 2 shows an excerpt from wind swath data published by NOAA shortly after Hurricane Katrina made landfall on August 29, 2005. The graph shows the estimated maximum sustained winds in miles per hour along the hurricane path at a height of 33' (10 meters) in open terrain (exposure C). Sustained winds are defined as the maximum velocity averaged over a 1-minute interval. See the NOAA Hurricane Research Division, Surface Wind Analysis website (**www.aoml.noaa.gov/hrd/data_sub/wind.html**) for information about how the data were gathered and reduced to graphical form.

Because many roofs are not positioned at a height of 33' in open terrain, and because current wind design guides (and many wind warranties) are based on three-second gusts, not one-minute winds, the NOAA wind swath data often need to be adjusted for height, exposure, and/or averaging time before they can be used.

Approximate Sustained Winds

Approximating the maximum sustained winds experienced at a building site is simply a matter of interpolation between the wind isotach lines on the NOAA H*Wind map. Assuming the example building site is located at the asterisks on *Figure 2* yields a maximum sustained wind velocity of 85 mph.

Adjust For Averaging Time

The H*Wind data are wind velocities averaged over one minute. Wind velocities referred to in most building codes and most roof manufacturers' warranties are wind gusts. Wind gusts are typically wind velocity data averaged over three seconds. The "Durst Curve" (Durst 1960 and ASCE 7-02) can be used to adjust one-minute wind velocities to equivalent wind gust velocities.

The Durst Curve (*Figure 3*) shows how wind velocities averaged over "t" seconds compare to wind velocities from the same windstorm averaged over one hour (3600 seconds). The ratio is 1.0 for an averaging time of one hour and something higher for shorter averaging times.

For our example, the Durst Curve indicates a 103 mph 3-second gust wind velocity is considered equivalent to an 85 mph 1-minute wind velocity. The math for this is found in *Formula 1*.

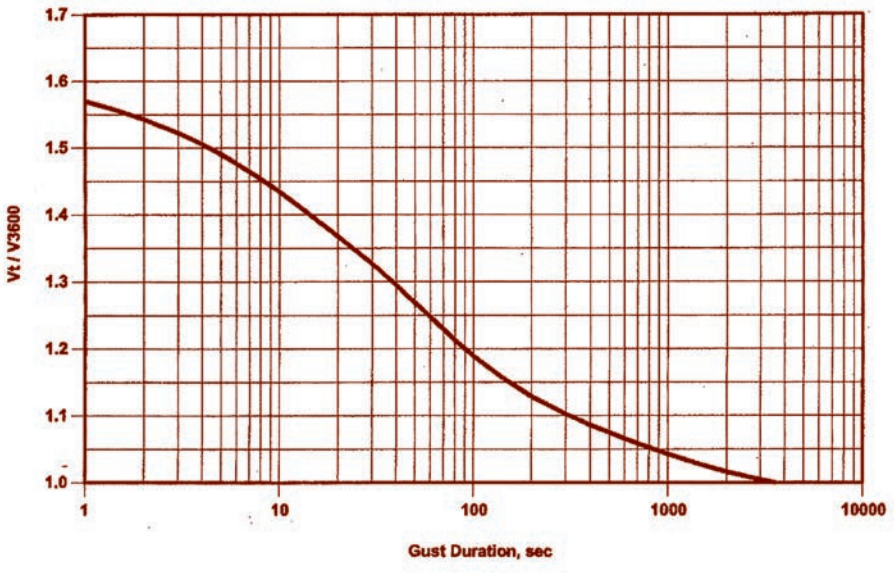


Figure 3: The Durst Curve [Durst 1960 and ASCE 7-02] shows how wind velocities averaged over "t" seconds compare to wind velocities from the same wind storm averaged over 1-hour (3600 seconds).

$$\frac{V_{60}}{V_{3600}} = 1.25; \quad \frac{V_3}{V_{3600}} = 1.52;$$

$$V_3 = 85 \text{ mph} \left(\frac{1.52}{1.25}\right) = 103.4 \text{ mph}$$

Formula 1

Adjust for Height

Winds in a wind stream are assumed to be moving at a constant velocity above a certain height (i.e., the gradient height, Zg). Winds in this same wind stream but below the gradient height are moving at a slower velocity. They are slowed by friction between the wind stream and the ground. *Figure 4* illustrates how the rate of wind stream slowing increases as the terrain gets "rougher" [source: Texas Tech University].

The wind velocities discussed in our example so far are applicable to a roof height of 33' (10 meters). However, while the wind is blowing at 103 mph at a height of 33', it is blowing faster at greater heights.

The Power Law can be used to adjust wind velocity data from one height to another. The Power Law equation shows the relationship between the wind velocity at a given height (Vz) and the gradient velocity (Vg). (See *Formula 2*.)

$$V_z = V_g \left[\frac{Z}{Z_g}\right]^{1/\alpha} \qquad 0 \le z \le z_g$$

Formula 2

Figure 5 provides numeric values for gradient heights (Zg) and the alpha exponents for different terrain exposure categories [Davenport, 1960].

For our example, the Power Law is used in a two-step manner to indicate that a 107-mph gust measured at a height of 45' is considered equivalent to a 103-mph gust measured at a height of 33'. The math for this is found in *Formula 3*.

Adjust for Terrain

The wind velocities discussed so far are applicable to open terrain (Exposure C), a terrain similar to that surrounding most airports. Since the rate at which a wind stream is slowed by "friction" depends on

$$V_g = \frac{103.4}{\left[\frac{33}{900}\right]^{.1052}} = 146.4 \text{ mph}; \quad V_{45} = 146.4\left[\frac{45}{900}\right]^{.1052} = 106.8 \text{ mph}$$

Formula 3

ground roughness, wind velocities need to be adjusted if the building is in a terrain exposure other than C. See the commentary of ASCE 7, "Minimum Design Loads for Buildings and Other Structures" for descriptions and photo examples of different terrain exposures.

The gradient velocity of a given wind stream is the same no matter what the terrain exposure is. The Power Law can be used to adjust wind velocities from one exposure condition to another. Referring again to *Figure 4*, one could say terrain-adjusted wind velocities are approximated by "sliding up" to the gradient velocity along one terrain curve and "sliding down" another.

The "suburban and wooded" terrain surrounding our example building is classified as terrain Exposure B. Using the previous approximation that the wind stream at this site has a gradient wind velocity of 146 mph, the Power Law (with exposure B values), indicates the wind gust velocity at 45' in Exposure B would be 92 mph, which is less than the 107 mph approximated for Exposure C. The math for this final step is shown below in *Formula 4*.

$$V_{45} = 146.4\left[\frac{45}{1200}\right]^{.1052} = 91.6 \text{ mph}$$

Formula 4

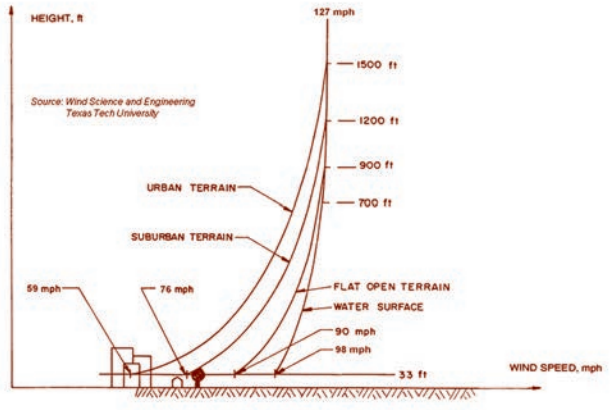


Figure 4: Illustration of how the rate of wind stream slowing increases as the terrain gets "rougher" [source: Texas Tech University].

Terrain	Exposure	Z_g	α
Water	D	700 ft	11.5
Open	C	900 ft	9.5
Suburban	B	1200 ft	7.0
Urban	A	1500 ft	5.0

Figure 5: Numeric values for gradient heights (Zg) and the alpha exponents for different terrain exposure categories [Davenport, 1960].

Since the final approximated wind gust velocity of 92 mph at roof level in our example is less than 100 mph, the building owner thanks you and submits your information, along with his warranty claim for reconsideration.

Be Careful

Warranties are legal documents and require legal assistance to interpret. Roofing professionals are encouraged to limit the information they offer as part of warranty claims to technical considerations.

The procedures discussed provide approximations of site-specific wind velocities based on generalized wind field type data. Wind velocities at specific sites can vary significantly from these types of generalized data. Investigators are encouraged to supplement and to corroborate NWS and NOAA data with wind velocity data obtained from other sources. More sophisticated analytical procedures, including wind tunnel modeling and/or site instrumentation, are recommended when data beyond approximations are desired.

This article focuses on the velocity of the wind stream as it approaches a building. It does not address how wind velocities are affected as the wind stream is diverted up, over, and around a building and it does not address how wind streams are affected by upstream terrain features such as escarpments and valleys. Readers are directed to ASCE 7 for more information.

This article also does not address how roof wind damages can start and progress, yet these considerations are important in terms of what may or may not be covered by roof warranties.

Summary

A key to many wind damage investigations is approximating the maximum gust wind velocity at roof level. Wind velocity data available to investigators, however, are often for heights, terrain exposures, or averaging times different than what is needed. For example, the NOAA H*Wind data represents one-minute sustained wind velocities at a height of 33' in open terrain (Exposure C). The Durst Curve and the Power Law can be used to adjust NOAA data, as well as data from other sources, for desired averaging times, roof heights, and terrain exposures.

Acknowledgments

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References

Davenport, A.G., "A Rationale for the Determination of Design Wind Velocities," *Proceedings ASCE Structural Division*, 86: 39-66, 1960.

Durst, C. S., "Wind Speed Over Short Periods of Time," *Meteorological Magazine*, 89, 181-187, 1960.

SEI/ASCE 7-02, "Minimum Design Loads For Buildings and Other Structures," ASCE/SEI, 298, 2003.

Philip Dregger, PE, RRC, FRCI



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If your home or business was affected by Hurricane Katrina and you would like to share your experiences with members in *RCItems*, please e-mail Kristen Ammerman (kammerman@rci-online.org) or Catherine Moon (cmoon@rci-online.org), or call 1-800-828-1902

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Visit the Virtual Trade Show at www.rci-online.org/prog-vts.htm

Hail Report To Be Released



RICOWI's Hail Investigation Report of the April 21, 2004 Oklahoma City hailstorm is scheduled for release at the Roofing Industry Committee on Weather Issues' roofing seminar on October 12, 2005 in Norman, OK.

RICOWI's Chairman, Joe Wilson, stated that "the Hail Investigation Program was the first industry-wide research program ever conducted to assess field damage from a major hailstorm in the United States." The storm selected was based on the criteria of having been declared an insurance catastrophe by Property Claim Service (an insurance services company) and having hailstones larger than 1.5 inches in diameter in a region of five square miles or greater.

RICOWI sent trained and balanced teams into the field to inspect hail damage. Teams were comprised of engineers, roofing material specialists, structural engineers, and roofing consultants who had completed RICOWI's hail investigation training workshop. Four teams examined over 100 roofing systems during a four-day period to evaluate the effects of a significant hailstorm. The purpose of the project was to document the effects of hail impact on a variety of roofing products, and to describe roof assembly performance and modes of damage for substantiated hailstone sizes. Data collected from the investigations will provide unbiased detailed information on the hail resistance of low-slope and steep-slope roofing systems from credible investigative teams. The project was funded mainly by RICOWI's sponsor members. Additional funding came from the affiliate members and a supplementary research grant provided by the Roof Consultants Institute Foundation.

The October 12 seminar will focus on the results of the investigation and attendees will receive a copy of the final report. Members from the teams will provide images and discuss the results of their investigations. The seminar will also include presentations on how hailstorms develop, meteorological tools used in hail identification technology, and tours of the National Storm Prediction Center and National Weather Forecast Office.

For further information, contact RICOWI's Executive Director, Patty Wood-Shields: Phone 770-914-7235; E-mail paws01@charter.net or log on to RICOWI's website: **www.ricowi.com.**

RCI Foundation Gives $20,000 to Aid Victims of Hurricane Katrina

By William Myers

ROOF CONSULTANTS INSTITUTE FOUNDATION

The Roof Consultants Institute (RCI) Foundation, moved by the devastation wrought by Hurricane Katrina, has donated $20,000 to the American Red Cross. The Red Cross, through its Hurricane Katrina Relief Operation, will use the financial gift to help provide shelter, food, counseling, and other assistance to those in need.

"It's gratifying to participate in an organization that recognizes when it must go beyond the stated mission of its purpose," said Patrick D. McGrady an RCI Foundation Board member. "There are times when people and organizations need to step up and help their fellow man, and this is one of those times." Chairman Joe Hale, FRCI, furthered, "Thanks to the generosity of our supporters, the Foundation is in a position to help."

The Roof Consultants Institute Foundation is a tax-exempt 501(c)(3) organization committed to education and research. Its mission is to "to support research, education, and the dissemination of information for issues important to the industry."

For more information about the RCI Foundation, visit: **www.rcifoundation.org.**

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CONSTRUCTION AND THE ECONOMY

KATRINA ALTERS CONSTRUCTION INPUTS

AIA FIRMS REPORT STRONG GAINS

By Ken Simonson

Hurricane Katrina has radically changed the outlook for construction demand and construction inputs throughout the country for an indefinite period. Katrina may significantly disrupt supplies of construction inputs, including diesel fuel, other petroleum and natural-gas products, cement (9% of cement imports in 2004 came through New Orleans and downstream ports), and tires for heavy equipment. (New Orleans is an entry point for imported rubber.)

Whether recovery from Katrina adds to demand for construction materials depends on the types and speed of rebuilding in damaged areas or incremental construction activity in areas where displaced people and businesses relocate. So far, the storm has pulled work crews in to plug breached levees and canals and begin restoring power, communication, water, sanitation, and transportation infrastructure. But many of these workers were pulled off other jobs rather than being new hires.

Kermit Baker, chief economist for the American Institute of Architects (AIA), wrote that, "firms reported strong gains nationally [in July] as the nonresidential construction expansion continued to pick up steam. There are no signs of a slowdown on the horizon. New project inquiries also increased... All told, it is shaping up to be a strong fall for design firms...in all regions..." (**www.aia.org/aiarchitect**).

McGraw-Hill Construction reported, "For the first seven months of 2005, total construction [contract values were] 6% above the corresponding period of 2004," with residential building up 10%, nonbuilding up 7%, and nonresidential building down 5%.

The number of mass layoff events (those involving 50 or more workers from a single establishment) in July dropped 8% from July 2004 and involved 6% fewer workers, the Bureau of Labor Statistics (BLS) reported. Mass layoff events in construction fell 33%, from 119 in July 2004 to 80 in July 2005, and involved 28% fewer workers.

The consumer price index (CPI) for all urban consumers rose 0.5% in July, seasonally adjusted, and 3.2% over the past 12 months, the Bureau of Labor Statistics (BLS) reported recently. The core CPI inched up 0.1% in July and 2.1% for the 12-month span. The CPI for urban wage earners and clerical workers (CPI-W), which is used to adjust many labor contracts in construction and other industries, rose 0.6% in July and 3.3% over the previous 12 months.

Real average weekly earnings, the product of average hourly wages and average weekly hours deflated by the CPI-W, fell 0.5% over the past 12 months, as hourly earnings rose 2.7%, seasonally adjusted, and hours did not change. Average hourly earnings in construction rose just 1.6%, to $19.54 (not seasonally adjusted), 22% above the average for all private nonsupervisory or production workers.



Ken Simonson

This series on the economy and its impact on the construction industry is published monthly in Interface. *This month's column was prepared by Kenneth D. Simonson, Chief Economist for the Associated General Contractors of America (AGC). Before joining AGC, Simonson spent three years as senior economic advisor in the Office of Advocacy of the U.S. Small Business Administration and 13 years as vice president and chief economist of the American Trucking Association. Simonson may be reached at simonsonk@agc.org.*

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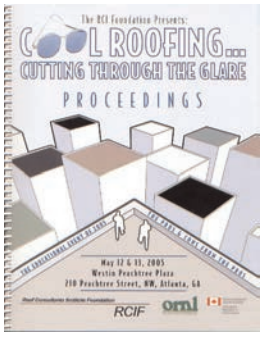
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INDUSTRY NEWS

To submit an industry news item to *Interface* *(Note: News must fit journal requirements in order to be published.)*:
E-MAIL IT TO: **kammerman@rci-online.org** OR MAIL TO: **RCI, *Interface* Journal, 1500 Sunday Drive, Suite 204, Raleigh, NC 27607**

HOUCK PASSES AWAY

Gary L. Houck Jr., director of operations for Houck Services Inc., Harrisburg, PA, recently died at the age of 29. He had previously worked for Beldon Roofing Co., San Antonio, and Hamlin Roofing Co., Raleigh, NC. He was a former member of RCI.

CEMENT SHORTAGES

Shortages or tight supplies of cement in 30 states have led to calls to suspend the 15-year-old anti-dumping duty on imports from Mexico. The AGC is urging the Commerce Department to speed efforts to get more cement into the U.S.

HEATBLOCK-75

Heatblock-75, part of the STS Coatings Inc.'s line, is available for use as a radiant barrier designed to be sprayed on the underside of the roof deck and any gable ends of a home. It is said to stop 75% of potential radiant heat transfer to an attic.

SMACNA ELECTS OFFICERS

The Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) recently elected officers: Keith E. Wilson, president; Richard J. Cramer Sr., president-elect; John Ilten, vice president; Ronald J. Palmerick, secretary/treasurer; and Kevin A. Harpring, immediate past president.

SME DESIGNS GREEN ROOF

The City of Battle Creek, MI, has awarded a contract for a green roof system designed by Soil and Materials Engineers Inc. (SME) with materials provided by Xero Flor America. The vegetated roof will replace an existing 18,000-square-foot roof on the city's Public Safety Building.

STS COATINGS WALL ASSEMBLY IS EFFICIENT

STS Coatings Inc. announces its steel wall assembly for masonry or stucco veneers featuring Wall Guardian® FW-100 qualifies for the maximum tax credit under the recently-signed Energy Tax Policy Act of 2005. For information, visit **www.wallguardian.com**.

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GALE ASSOCIATES, INC. — Engineering opportunities in Massachusetts and Florida

WEYMOUTH, MA: Established engineers with 8-12 years' experience in building envelope systems (roofs, walls, windows) and a solid résumé in the design and construction of new and historic exterior building envelope renovations. Project types include industrial, commercial, and institutional. Expertise in relevant software programs and project management skills are essential. A professional registration is desirable.

ORLANDO, FL: Graduate engineer or architect with 1 to 3 years' experience in construction documents and field observation. Technical knowledge of construction is essential. Candidate will work under senior staff and interface with clients on building envelope investigations and studies, remedial repair, roof replacement designs, and construction monitoring. Must have excellent writing skills and expertise in AutoCADD (v. 2005) and Microsoft Office software.

Gale is a well-respected, national consulting firm with offices nationwide. We specialize in the repair, rehabilitation, and adaptive reuse of new and existing buildings, sites, and infrastructures. We seek talented individuals who are dedicated to their clients, leaders, peers, and the community. We provide excellent salaries and a full array of employee benefits to include Blue Cross/Blue Shield, Delta Dental, Life and Disability Insurance, a 401(k) Plan, Flex Benefits package, vacation and sick time, several annual paid holidays and liberal tuition reimbursement. If you have the requisite skills, please mail, fax or e-mail your résumé and salary requirements to: Gale Associates, Inc., 163 Libbey Parkway, Weymouth, MA; Attn: H.R. Dept. (P) 781/335-6465; (F) 781/335-6467; E-mail: kaf@gainc.com. Learn more about us at www.galeassociates.com. Gale is an Equal Opportunity Employer.

HELP WANTED - ARCON ASSOCIATES, INC. is a 27-year architectural and envelope consulting firm located in Chicago. We are in need of consultants specifically experienced in each of membrane, metal, and shingle roof systems. Professional oral and written communication skills required. Send résumé and letter to: Steve Mulvihill at srmulvihill@arconassoc.com.

GEORGE BUTLER ASSOCIATES, INC. ("GBA"), a multi-disciplined consulting engineering firm, has several career opportunities available in our Lisle/Naperville, Illinois office. GBA is seeking highly motivated professionals to join our outstanding team.

ROOF CONSULTANT/PROJECT MANAGER — As a national Roof Consulting Firm, we are searching for additional Consultants to complement our Professional Team. Potential candidates should have experience in roofing and waterproofing. Good written and verbal communication skills are essential. Candidates should have Project Management experience and be able to prepare roofing plans, specifications, cost estimates, and interpret detailed CADD drawings. Primary responsibilities will be to expand our roof consulting business and supplement our services. Some travel is required. Registered Roof Consultant (RRC) and/or Registered Roof Observer (RRO) classification would be a plus.

QUALITY ASSURANCE REPRESENTATIVE — The selected individual(s) will perform various types of roof inspections as needed to support our Roof Consulting business. The QA Representative will be expected to travel and perform roof inspections throughout the United States. The ideal candidate will have a minimum of 5 years roofing experience, knowledge of roof applications, and basic computer skills. Candidates must possess strong organizational skills and have good written/verbal communication skills. A Registered Roof Observer (RRO) classification would be a plus.

All positions offer a great opportunity for a team player to grow with a well-established company. All responses kept confidential. GBA offers an excellent benefit package, competitive salaries and the opportunity for growth based on performance. Visit our web site at www.gbutler.com. For immediate consideration, send résumé and salary history to: George Butler Associates, Inc., 2300 Cabot Drive, Suite 150, Lisle, IL 60532-3639, Attention: Human Resources. Or fax to 630-955-9080. – No phone calls please. EOE/M/F/D/V



Calendar of Events

Black print: INDUSTRY EVENTS **Blue print: RCI EVENTS**

Calendar subject to change without prior notice. Visit **www.rci-online.org** for schedule updates. *A completed application must be received by Headquarters 90 days prior to sitting for an exam.

OCTOBER 2005

4-5 Wind & Drainage
San Diego, CA

5-7 Midwest Roofing Contractors Association
Grapevine, TX
Info: www.mrca.org

6 Region IV Meeting
Grapevine, TX

6-7 Professional Roof Consulting
San Diego, CA

16-20 SMACNA Convention
Palm Desert, CA
Info: www.smacna.org

25-26 Advanced Waterproofing
Alexandria, VA

27 Advanced Thermal & Moisture
Alexandria, VA

28 Roof Asset Management
Alexandria, VA

NOVEMBER 2005

3-5 Roofing Issues: Decks to Dockets
Los Cabos, Mexico
Info: NRLRC; 847-299-9070

8-9 Roof Technology & Science I
Chicago, IL

10 Mid Atlantic Chapter Meeting
Maryland

10-11 Roof Technology & Science II
Chicago, IL

10-11 Symposium on Building Envelope Technology
Chicago, IL

11 Train the Trainer
Chicago, IL

12 RWC Exam
Chicago, IL

14 SoCal Chapter Meeting
Los Angeles, CA

17 Chicago Chapter Meeting

18 Region III / Ohio Valley Chapter Meeting
Indianapolis, IN

DECEMBER 2005

1-2 Rooftop Quality Assurance
Orlando, FL

2 Region I Meeting
Harrisburg, PA

3 RRO Exam
Orlando, FL

3-4 Exec. Committee Winter Meeting
TBD

4-7 ASTM Committee D-08 on Roofing and Waterproofing
Dallas, TX
Info: 610-832-9740

6-7 Wind & Drainage
Atlantic City, NJ

8-9 Professional Roof Consulting
Atlantic City, NJ

10 RRC Exam
Atlantic City, NJ

JANUARY 2006

15-18 RCMA Annual Convention
Ft. Meyers, FL
Info: www.roofcoatings.org

19-20 Chicago Roofing Contractors Conference
Info: www.crca.org

23-24 Hawaii Winter Workshop
Honolulu, HI

FEBRUARY 2006

13-16 NRCA Convention
Las Vegas, NV
Info: www.nrca.net

MARCH 2006

23-28 RCI International Convention & Trade Show
Phoenix, AZ

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Chemlink	(800) 826-1681	www.chemlink.com	33
Firestone Building Products	(800) 428-4442	www.firestonebpco.com	13
GAF Materials Corporation	(800) 555-1852	www.gaf.com	Cover 4
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George Butler Associates, Inc.		www.gbutler.com	50
Infrared Inspections Inc.	(800) 543-2279	www.infraredinspections.com	46
Kemper Systems	(800) 541-5455	www.kempersystem.net	44
Liquid Plastics Inc.	(860) 613-2688	www.liquidplasticsinc.com	28
Polyglass USA, Inc.	(800) 222-9782	www.polyglass.com	15
Portable Pipe Hangers	(800) 797-6585	www.portablepipehangers.com	49
Roof Hugger	(800) 771-1711	www.roofhugger.com	18
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Seaman Corp.	(800) 927-8578	www.seamancorp.com	5, 35
Siplast	(800) 922-8800	www.siplast.com	7
Situra	(888) 474-8872	www.situra.com	Cover 2
Stevens Roofing	(877) TPO-ROOF	www.stevensroofing.com	49
TuffWrap Installations Inc.	(800) 995-4556	www.tuffwrap.net	49



If It Were Your Roof...

By Brian Gardiner, RRC, CCS





Above: Alignment error: Certain roof problems are "highlighted in black."

Above: Modified bitumen roof failure. Sometimes you just know it's time to reroof!

How many times have you heard: "What would you do if it were your roof?" Well it's not. How do we know what the owner's pain threshold is? Can they afford to have periodic leaks and maintain their roof to eke out its maximum life? How much does a roof leak actually cost them? What are the ancillary costs of water entering the building? What is the value of their inventory? How much does down time cost?

One diagnostic tool we unfortunately do not have is a meter that measures a client's perceptions and underlying motives. The best we can do is draw upon our experience to interview our client, access roof conditions with the tools we have, and render an opinion. Hopefully, we can also provide options that the owner can use for long-term and short-term scenarios. Sometimes I am sure the owner will pick a certain option, and when they do not, I discover there was something of which I was unaware that had the greatest influence on their ultimate decision. This is all the more reason to allow for options that can be supported, while still allowing the client flexibility to choose what fits them best.

How does one respond when asked, "How does this roof rate compared with the others you have seen?" We pause, thinking back, trying to categorize the roof we are standing on at the moment. Do we express the roof rating on a scale of 1 to 10? Do we start on a perfect score of 100, and then deduct points for observed deficiencies? Or is it a spur-of-the-moment, subjective answer, because after all, this is the roof we are standing on now? How much does our frame of mind at the time matter? If, before stepping on this roof, we had had the pleasure of working with an excellent roofing contractor who produced a quality product, does that influence our answer? Or was the last roof a disaster, making this one score higher by comparison? How many times have we been tempted to blurt out, "This is the worst roof I've seen!"

But who cares what the rating is if it has obviously failed and exceeded the owner's pain threshold for persistent leakage? The owner has just unloaded a horror story of previous roof problems, along with futile attempts to remedy. After viewing the symptoms of chronic leakage inside the building, a climb to the roof reveals a membrane that is failing. As Nick Nolte's character Detective Cates tells the bad guy in the movie *48 Hours*: "You're done. End of story." Why waste time and money rating the roof? Now is the time to spend the owner's money on designing and actually replacing the roof. Existing roof problems must be evaluated, but from the standpoint of how they will affect the new roof's specification.

The opposite scenario arises when an owner calls because he thinks he has a problem. It goes like this: The owner states, "The buyer's appraiser said our roof has some problems and wants to deduct for it." The appraiser's report only has one roof-related statement that reads, "Roof Repairs: $50,000." Attempts to find out what this means receive no return phone call from the appraiser. You visit the roof, find no reported leaks, a roof membrane that looks intact, and good flashing workmanship. Finally, it's discovered that the $50,000 was an amount to cover the buyer from possible future problems for which the appraiser has no justification. Should you recommend expensive diagnostic procedures to prove the roof is in good condition, or report to the owner that the appraiser is merely speculating? The burden of proof may fall more on the buyer to qualify and quantify roof problems.

It is those roofs that fall into the middle that make a consultant scratch his head the most. Proposing roof evaluation options is in order with roofs that fall in the middle (those that may have had a few leaks and are reaching an age when problems begin to accelerate). Explain to the client that initial diagnostic procedures may uncover a problem that justifies more expense to better quantify. If it is prudent to mount an intense evaluation from the start, then by all means propose it. Spending extra time when determining what and how to propose a roof evaluation can reap future benefits, including preservation of a good relationship with the client.

Brian Gardiner, RRC, CCS, has owned and operated Austech Roof Consultants, Inc. in Austin, Texas, for over 20 years. He has served RCI as a Region IV director (1995-98), chaired the Standards and Practices Committee, and presented several RCI classes. Currently he serves as chair for the Documents Competition Committee.

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- Rehabilitating Plaza Deck Waterproofing Systems
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- Glass/Metal Curtainwalls: Practical Solutions to Common and Not-So-Common Problems
- EIFS: Practical Solutions For Addressing Damage
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