Building Envelope

Technology Symposium

Design & Repair Solutions

An RCI, Inc. Educational Presentation

October 17-18, 2016
Houston, Texas

RCI, Inc. • 1500 Sunday Drive, Suite 204 • Raleigh, NC 27607

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Valuable Insights for Building Envelope Professionals

Real-World Examples | Specific Case Histories

RCI's knowledgeable instructors offer more than just technical data. Presenters offer relevant solutions referencing examples from applications in the field. The event's open, inclusive environment encourages attendees to ask questions and stimulates dialogue — so can you get the answers you need.

High Level of Participant Satisfaction

98% of attendees polled described RCI educational events as worthwhile and said they would attend future programs.

2 Days, 12 Insightful Design/Repair Presentations

RCI is an international association of building envelope consultants. Members specialize in design, investigation, repair, and management of roofing, exterior wall, and waterproofing systems.

The Symposium on Building Envelope Technology offers peer-reviewed, application-based technical information for design professionals, architects, engineers, and facility managers.

Register Today @ rci-online.org

All attendees earn up to 12 Continuing Educational Hours from RCI.

AIA members earn up to 12 Learning Units. Programs qualify for HSW Credit.

Building Envelope Design and Repair | Roofing | Waterproofing | Exterior Walls

The Performance of Weather-Resistant Barriers in Stucco Assemblies

This presentation will focus on the performance of traditional three-coat cement plaster with two layers of Grade D 60-minute paper. The speaker will discuss observations of moisture movement through the plaster, building paper, and plywood/OSB sheathing into the interior. Plaster performance was judged through nail pull-out strength testing (ASTM D1037). The results were mapped to determine the level of damage and loss of structural strength. RILEM tube tests were conducted to determine the porosity, moisture absorption, humidity levels, and interior and exterior temperatures. The presenter will demonstrate how to better design plaster mix and use drain mats and rainscreens to prevent wood rot and damage.

Karim P. Allana, RRC, RWC, PE | Allana Buick & Bers, Inc., Palo Alto, CA Karim Allana is the CEO and principal of an A/E firm specializing in the building envelope and sustainable construction. Allana earned a B.S. in civil engineering from Santa Clara University and is a licensed professional engineer. He has been in the A/E and construction fields for 30+ years, specializing in forensic analysis of roofing, waterproofing, and the building envelope. Allana has acted as an expert witness in 250+ construction defect projects and is a frequent speaker and presenter at professional forums.

Aluminum Window Sill Anchors and Supplemental Waterproof Flashing Design Practices

Sill flashings are often the most challenging aspect of aluminum window system design and installation – for both new installations and replacement projects. While aluminum window systems and their performance are often well detailed by manufacturers, providing a waterproof transition from the window sill to the concrete or metal substrate can be challenging. When designing window sill flashing systems, supplemental waterproof systems (in addition to the manufacturer's standard or high-performance sill design) should be considered for longer-term waterproof performance. The best approach involves utilizing anchorage systems that do not penetrate the horizontal portion of the manufacturer's sill, with a flexible waterproof system as the secondary flashing system.

Rocco C. Romero, AIA | Wiss, Janney, Elstner Assoc. Inc., Seattle, WA Rocco Romero is a registered architect and principal with his firm. He has over 25 years of experience and has investigated hundreds of building envelope and façade systems. Romero specializes in water leakage investigation, assessment, diagnostic testing, and repair design of claddings, curtainwalls, windows, roofing, and waterproofing systems in contemporary and vintage buildings and structures. He provides professional consulting services to owners, architects, and general contractors related to the design, performance, and constructability of new and retrofit building envelope systems. Romero provides litigation and expert witness support services for existing buildings.

The Ideal Third-Party Warranty: A Risk-Managed Approach

The design and construction of buildings is a process laden with potential risk of failure, whether as a result of poor design, material failure, or construction defects. In recognition of these risks, many manufacturers provide warranties, while third-party warranty programs provide the opportunity for owners and builders to further indemnify themselves against failures. The speaker will compare the effectiveness, advantages, and disadvantages of several warranty programs that use different risk management strategies to prevent roof claims.

Lorne Ricketts, PEng | RDH Building Science, Inc., Vancouver, BC Lorne Ricketts is a building science engineer specializing in new construction, investigation, and research work. Typical projects for Ricketts include building enclosure system design, hygrothermal and thermal analysis, and performance testing and monitoring. A combination of practical and theoretical expertise provides him with a unique perspective on building enclosure considerations, which helps Ricketts to deliver innovative yet practical solutions to complex problems.

Nonpresenting coauthors: Bryan Hubbs, PEng, Graham Finch, PEng

Playing Against a Stacked Deck: Restoration of a Stone Fin Façade

A popular architectural style in the late 20th century embraced alternating vertical "fins" of stacked stone cladding and strips of glazing. One of the best examples of this aesthetic is the National Geographic Society Building in Washington, DC. Due to the load-bearing panel configuration, conventional practice would have required destruction of several undamaged stone panels to access one needed repair. A pre-tensioned cabling system used to temporarily support the intact panels enabled targeted removal of only the damaged portions of the panels. This innovative method offered a time- and cost-effective repair strategy using only suspended scaffolding.

Matthew C. Farmer, PE | Wiss, Janney, Elstner Associates, Inc., Fairfax, VA Matthew Farmer has served as principal investigator on numerous evaluations of buildings and monuments. He has concentrated his practice in the areas of masonry building enclosure systems engineering, design, investigation, analysis, and repair. Farmer's projects have included institutional, commercial, and historic landmarks. He is a registered professional engineer in Washington, DC, Maryland, and Virginia. Farmer holds a bachelor of science degree in architectural engineering and a bachelor of environmental design degree from the University of Colorado, as well as a master of civil engineering degree from Cornell University.

Nonpresenting coauthor: Frederick Peters

Evening Social Reception | October 17

After the close of the symposium's first day of presentations, join fellow attendees for an informal social gathering.

Everyone Loves a Pool, But What's Lurking Beneath the Surface?

Rooftop swimming pools and similar elevated water structures—be they residential or commercial—present a unique set of considerations that need to be thoroughly compensated for during design and construction. Referencing several case studies, the presenters will discuss the aspects of a properly designed waterproofing system on the interior of the concrete vault, the importance of properly sized pool vaults, the structural loads exerted, and how designers can best utilize aquatic and waterproofing design professionals as members of their team to provide a pool system that won't result in costly leaks.

Rob Holmer, PE, GE | Terracon Consulting Engineers, Sacramento, CA Rob Holmer has served as the engineer of record for over 30,000 swimming pool projects. Rob specializes in large residential and commercial facilities, competition pools, public and private recreation facilities, and water parks. His engineering consultation services include structural, geotechnical, mechanical, hydraulic, water treatment, materials engineering, risk management, code compliance, and expert witness litigation consulting. Holmer holds bachelor's and master's degrees in civil engineering. He is licensed to practice in ten states and has presented at over a dozen technical conferences in the past ten years.

Michael Phifer, RRO | Terracon Consulting Engineers, Charlotte, NC Michael Phifer is a graduate of the University of North Carolina, Charlotte, with a bachelor's degree in civil and environmental engineering. Since 2013, he has served as a staff engineer in the Facilities Engineering Division of Terracon Consultants, Inc. He has extensive experience in horizontal and vertical waterproofing systems, fenestration, and roofing. Phifer has performed assessments and investigations for building enclosure systems and pools for new and existing construction.

Design Principles for Tower and Steeple Restoration

The contemporary tectonics of analyzing and designing the restoration or construction of architectural towers and steeples can both inspire and confound contemporary design professionals. The effective design of steeples, bell towers, spires, and clock towers requires a multidisciplinary synthesis of technical, aesthetic, and engineering requirements that are unique to tower architecture. In this presentation, the speaker will discuss construction considerations and design problems inherent to tower projects by reviewing recent restoration case histories. The information shared will help designers to produce effective and thorough design processes for architectural tower and steeple projects.

Robert L. Fulmer | Fulmer Associates, LLC, North Conway, NH Robert Fulmer specializes in the analysis and diagnosis of building envelope issues for both historical and contemporary structures. Fulmer is a published author and has lectured on historical preservation and contemporary building envelope topics. He is past president of the New England Chapter of RCI, Inc. and currently serves on the board of directors of the National Slate Association where he is chair of its Education Committee.

When the Numbers Don't Work: Engineering Judgment for Historical Buildings

Do the structural provisions in modern building codes dictate methods of evaluation that are inappropriate for historical structures? Many components and systems in older buildings do not meet current structural code requirements, and yet the vast majority have been in service for decades in the United States and centuries throughout the rest of the world. Does the lack of meeting each new set of standards automatically designate a building as unsafe? And more importantly, what does it mean if a building is "not up to code?" The presenters will provide an overview of some common components and systems in historical buildings that do not comply with current code requirements. Representative examples will be cited, ranging from smaller detailing elements and wall systems to entire structural systems. The case studies are intended to illustrate that *engineering judgment* plays an important role in redeveloping historical buildings.

Rachel L. Will, PE | Wiss, Janney, Elstner Associates, Inc., Chicago, IL Rachel Will is a senior associate at her firm and has experience with investigation and repair of existing buildings. She has performed evaluations of historical masonry façades and overseen preparation of documents for the repair of numerous terra cotta-clad buildings. Will's master's thesis focused on the integration of structural codes and rehabilitation of historical buildings.

Edward A. Gerns, RA, LEED AP | Wiss, Janney, Elstner Associates, Inc., Chicago, IL Edward Gerns is a principal with his firm. He has extensive experience with investigation and repair of existing buildings. He has performed evaluations of historical masonry façades and overseen preparation of documents for the repair of numerous terra cotta-clad buildings.

Air Barrier Integration: Don't Entangle Yourself With These Common Pitfalls

In many respects, the air barrier industry is still in its infancy, and there is a vital need for education of design professionals, contractors, installers, and building owners. Of particular concern is integration of air barrier systems into the building envelope in a way that windows, doors, curtain walls, and other openings and penetrations are constructed to be airtight and/or weathertight. The speaker will review many of the common methods for proper detailing and installation of building envelope components. Emphasis will be placed on the Air Barrier Association of America's (ABAA's) programs to facilitate developing, designing, and constructing better buildings. Attendees will participate in a review of conventional, unique, and new detailing and installation methods that are both successful and practical, as well examples of details and methods that don't work.

Timothy A. Mills, PE, LEED AP, CIT | TAM Consultants, Inc., Williamsburg, VA Timothy Mills has over 30 years of experience as an engineer, building envelope specialist, and roofing systems consultant. He is also a licensed field auditor, instructor, and speaker for the ABAA. Mills' scope of projects has included commercial, federal, municipal, educational, institutional, single- and multifamily residential, historical, industrial, laboratory, manufacturing, and retirement facilities, as well as green buildings.

Upgrading the Performance of Heritage Windows to Suit Modern Design Conditions

Heritage buildings provide historical, cultural, and social cornerstones. To continue these important functions, heritage buildings are often repurposed and modified to suit modern needs and requirements. As building science practitioners, we are called upon to assist the design team in "making the envelope work" without compromising the building's heritage-defining characteristics. This presenter will discuss strategies and concepts for heritage window upgrades in cold-weather climates, and demonstrate how hygrothermal field monitoring can be used to validate the design concept. Specific case studies will be referenced.

Scott Tomlinson, PEng | Morrison Hershfield, Ottawa, ON Scott Tomlinson is a specialist for rehabilitation and heritage projects. He is an experienced senior project manager with expertise on a wide variety of structural and building science projects, including building rehabilitations, condition assessment, forensic investigation, and building assemblies performance testing. Tomlinson was a primary author and instructor for Parks Canada's "Window Conservation for Historic Places," a two-day training workshop which has been delivered across Canada.

Nonpresenting coauthor: David Kayll, PEng, FMA

Design Considerations for Renewing Podium Waterproofing

Landscaping systems over suspended podium slabs are becoming more common as housing density intensifies and communities endeavor to increase their green spaces. These landscaped podiums often feature difficult-to-access spaces covered with heavy and complex landscaping elements. During this presentation, the speakers will discuss design decisions for landscaped and waterproofing assemblies installed over main building structures and the cost and complexities of future waterproofing renewal. The authors will use specific examples to clearly illustrate the need to coordinate efforts between different disciplines to best meet municipality development requirements.

Bereket A. Alazar, RRO, LEED AP, BD&C | Morrison Hershfield, Edmonton, AB Bereket Alazar is a building envelope consultant with his firm. He has performed design, contract administration, and field reviews of building envelope systems, including several types of roofing and podium waterproofing installations. Alazar's experience with podium waterproofing system design and installation review includes projects at the Olympic Village in Vancouver and a Brewery District project in New Westminster, BC. Alazar holds a bachelor of science degree from University of British Columbia and a diploma in architectural and building engineering technology (building science option) from British Columbia Institute of Technology.

Stéphane P. Hoffman, PE | Morrison Hershfield, Seattle, WA Stéphane Hoffman is a senior building science specialist and vice president of his firm's façade engineering team. He specializes in building envelope system water penetration, air leakage, vapor diffusion, and thermal efficiency issues. Hoffman's work experience ranges from low-rise wood-frame residential construction to high-rise commercial developments; new construction to rehabilitation and historical restoration projects. He holds a master's of engineering degree from McGill University and a master of architecture credential from the University of Montreal.

Fully Soldered Metal Roofing: More Complicated Than You Think

Copper roofing has been used for centuries, particularly on ornate institutional or historical buildings where access and roof maintenance are impractical. When fully soldered, copper roofing can provide a watertight, durable roof with a decades-long service life; however, these roofs are highly dependent on proper design and careful craftsmanship during installation. The presenters will discuss common issues with fully soldered metal roofing, including improper accommodation for thermal expansion, improper rivet or joint detailing, and drain details for contemporary copper roofs that incorporate membrane underlayment.

Nicholas T. Floyd, PE | Simpson Gumpertz & Heger, Inc., Houston, TX Nick Floyd is a senior project manager who specializes in the investigation and remediation design of building enclosures. His past and current copper roofing design and investigation projects include historical and large public structures, including the New York, Massachusetts, Kansas, and Iowa State Capitol buildings. Floyd also has experience designing and investigating various membrane roofing systems, slate roofing, masonry, plaza and below-grade waterproofing, fenestration systems, and architectural terra cotta.

Nonpresenting Coauthor: Amrish K. Patel, PE, LEED GA

A Case History Review of ETFE on Today's Projects

The fluorocarbon-based polymer ethylene tetrafluoroethylene (ETFE) is quickly gaining popularity in North America and is being used on some of the continent's most prominent projects. Through a review of multiple case studies of ETFE installations, the speakers will review important lessons learned and discuss the limitations and benefits of this material.

Lee Durston | Morrison Hershfield, St. Paul, MN Lee Durston is a senior building science consultant with over 16 years of experience with a variety of project types, including sporting venues, high-rise, military/government, higher education, data centers, hospitality, and natatoriums. His current work includes many prominent ETFE installations, including the largest installation of ETFE in North America.

Shawn Robinson | Morrison Hershfield, Atlanta, GA Shawn Robinson is a senior building science consultant with over ten years' experience with a variety of project types, including sporting venues, high-rise, military/government, higher education, data centers, hospitality, and medical facilities. Robinson's experience includes project management, building envelope design, field review assignments, and condition assessments. His current work includes ETFE installations on prominent projects.

Discover the Newest Building Envelope Products

Representatives from leading product manufacturers will be available to discuss the latest trends in product technologies.

Current exhibitors include:

- Air Barrier Association of America, Inc.
- FiberTite Roofing Systems by Seaman Corp.
- Georgia Pacific Gypsum, LLC
- International Leak Detection
- J.R. Jones Roofing
- Owens Corning
- Polyguard Products, Inc.
- SFS intec, Inc.
- Sto Corp.
- STS Coatings
- Wasco Products, Inc.

For more information and an up-to-date list of exhibiting companies, visit tinyurl.com/rci-bes-exhibitors.

Catered Meals | Evening Reception

Breakfast, lunch, and breaks will be catered. Monday evening, join fellow attendees for an informal social gathering with light hors d'oeuvres.

Online Access To Technical Papers

Access over 1,200 design-related technical papers in the RCI Technical Articles Library at: rci-online.org/publications/tech-library.

Documents include past Building Envelope Symposia presentations, RCI International Convention educational sessions, and articles from *RCI Interface,* the Association's technical journal.

Premier Provider of Building Envelope Design Education

RCI offers over 30 educational programs each year for roofing, waterproofing, and exterior wall technology professionals. Classroom-based and e-learning programs cover diverse design-related topics for building envelope construction and repair.

For a full educational program catalog, visit rci-online.org/building-envelope-edu.

Professional Association for Building Envelope Consultants and Design Specialists

RCI, Inc. is an international association of building envelope consultants whose members specialize in design, investigation, repair, and management of roofing, exterior wall, and waterproofing systems.

Objective viewpoints, sharing of information, and practical-minded sustainable design principles are primary values of RCI members. Affiliation with RCI offers opportunities for networking, professional enrichment, and industry involvement.

Registration Form

(One form per attendee.)

Name:	
Company Name:	
Address:	
City/State/Zip:	
Phone:	
E-mail:	
RCI Member #	Required to receive member discount.

Payment:	❑ Check	❑ Discover	❑ Visa	❑ Am. Ex.	❑ MC
Name on Card:					
Card Number:				Exp. Date:	
Signature:				CVV:	

Amount payable to RCI.
U.S. funds.

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Discount Registration

on or before September 23 , 2016

- ❑ $580 - RCI Members
- ❑ $625 - Nonmembers

Standard Registration

after September 23, 2016

- ❑ $630 - RCI Members
- ❑ $675 - Nonmembers

❑ $100 - Student Rate | To be eligible, you must be a full-time student of an engineering, architectural, or construction management or similar discipline. You must provide a copy of a valid student ID or other proof of full-time status.

Hotel and travel arrangements are the responsibility of the registrant.

Mail or Fax Registration to:

RCI, Inc.
1500 Sunday Drive, Suite 204 | Raleigh, NC 27607
Fax: 919-859-1328 Phone: 800-828-1902

Register Online @ rci-online.org

Learn Design Innovations from These Leading Field-Experienced Experts

Meeting Location and Accommodations

The Westin Galleria Houston
5060 W. Alabama St., Houston, TX 77056

The AAA Four-Diamond Westin Galleria Houston is located in Houston's Uptown Galleria area and is connected to the Galleria Shopping Center, which offers a variety of shopping, dining, and entertainment options just steps from your room.

Hotel Reservations
800-937-8461 | 713-960-8100 | tinyurl.com/rci-bes-hotel

Room Rates
$179.00 standard room, single/double occupancy.*

To receive the special room rate, contact the hotel by September 23, 2016 and refer to: *RCI Building Envelope Symposium.*

This special room rate will be honored by the hotel for nightly stay three days before and three days after the symposium event dates (based on availability).

Complimentary Internet access is available in all guest rooms.

**Plus 17% tax. Beyond double occupancy, $20 per additional person per night. All hotel and travel arrangements are the responsibility of the registrant.*

Each registrant will receive a comprehensive, full-color proceedings book and CD detailing each presentation.

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