

***A comprehensive three-day workshop
applying to roofs in all United States climates***

Low Slope Roofing Systems Membrane, Metal, Sprayed Foam, plus Latest Roofing Technologies

- Design**
- Construction**
- Repair and maintenance**
- Standards and codes**
- Roof asset management**
- Actual roofing construction demonstration**

For owners' representatives, designers, and specifiers, consultants, contractors, and manufacturers

**December 13–15, 2011
Madison, Wisconsin**



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Department of Engineering Professional Development
432 North Lake Street Madison, Wisconsin 53706

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Low Slope Roofing Systems

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December 13–15, 2011 in Madison, Wisconsin

You Will Learn

If you design, install, maintain or repair low slope roofing systems or provide consulting services, this workshop will show you techniques for ensuring trouble-free roofs.

During three, fast-paced days you will:

- Receive information and training essential to the understanding of roofing problems and their solutions, whether for new construction, preventive maintenance, repairs, or re-roofing
- Focus on practical topics ranging from roofing fundamentals to some of the newest and most advanced concepts in roofing design and construction
- Have an opportunity to participate in class exercises and an actual roofing construction demonstration
- Be able to discuss with instructors and other participants your specific roofing concerns

Who Will Benefit

Workshop topics are based on our instructors' many years of experience and on comments from the attendees of our previous workshops. Anyone involved in roofing design, construction, and maintenance or repair will benefit by attending this workshop. This includes owners' representatives, consultants, designers and specifiers, contractors, and manufacturers. (See instructors' bios at the end of the outline.)

Workshop Outline

Tuesday, December 13

7:45 Registration

The Pyle Center
702 Langdon Street
Madison, WI

8:15 Principles of Low Slope Roofing—Materials, Design, Installation, and Maintenance

- Roof decks
 - steel decks—types and construction
 - wood decks
 - poured-in-place concrete decks
 - precast concrete decks
- Roof insulation
 - wood fiberboard
 - fiberglass board
 - polystyrene
 - polyisocyanurate
- Roofing membranes
 - built-up membrane
 - modified bitumen
 - single-ply membranes
 - metal
- Surfacing
- Coatings
 - selecting appropriate coating for the project
 - application recommendations

11:30 Lunch at The Pyle Center

12:30 Understanding and Responding to the Impact of Water Entry and Moisture in Low Slope Roofs

- Sources of moisture
- Key design considerations
 - slope to drain
 - flashings and penetrations
 - vapor retarders and air barrier systems
 - venting
 - compact vs. framed roofing systems
- Construction and workmanship issues
- Occupancy issues (inspection and maintenance)
- Finding wet insulation and leaks
- How wet is wet?
- What to do with wet materials?
- Condensation of indoor moisture
 - psychrometrics and stack effect
 - diffusion vs. air leakage
 - vapor traps and smart vapor retarders
 - self-drying roofs
- Design guidelines for control of condensation

3:00 Latest Roofing Technologies

- Emerging technology systems defined
- Solar reflectance
- Thermal emittance
- Reflective, photovoltaic, and vegetative systems
- Design and construction issues
- Basic configurations
 - modular systems
 - built-in-place systems
- Trade conflict issues
- Expected maintenance and repair requirements
- Incentive programs—government rebates, tax incentives, local, and other incentives
- Initial and life cycle costs
- Anticipated market demands—what the future holds

4:30 Let's Talk Roofing Codes—What They Are and Their Impact On Owners, Designers, and Contractors

- Understanding standards and codes
- New developments—"Green" roofing code
- Expected future developments

6:00 Adjournment

Wednesday, December 14

8:00 Metal Roofing Systems with an Emphasis on Structural Metal Roofs

- Drainage concepts
 - hydrokinetic (water shedding/architectural)
 - hydrostatic (water resisting/structural)
- Materials: aluminum, steel, and metal shingles
- Principles of thermal cycling
- Coatings
- Flashings, sealing joint, and seam technologies
- Panel anchorage
- Selection and integration of underlayment
- Systems selection criteria
- Maintenance and repair of metal roofing systems
 - identifying potential failure areas
 - guidelines for effective metal roof maintenance/repair procedures
- Design and application precautions
- Re-roofing with metal
- Application of photovoltaic panels

12:30 Lunch at The Pyle Center

Outline continues...

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1:30 Report on Single Ply Roofing Performance and Latest Developments

- Understanding materials and their properties
- Product update
- Self-adhered single ply roofing system
- TPO systems—what can be expected
- Why single ply roofs fail
- Ensuring high level performance
- Guidelines for performing single ply roofing maintenance and repair

4:00 Polymer-modified Bitumen Systems—Design and Installation Guidelines

- The impact of modified bitumen roofing systems on the roofing industry
- Cold applied vs. torched systems
- APP systems vs. SBS systems
 - materials: membranes, attachment, flashings, and surfacings
 - installation techniques
- Benefits of modified bitumen systems
- Key limitations of using modified bitumen systems
- Maintenance issues

5:30 Adjournment

Thursday, December 15

8:00 Sprayed Polyurethane Foam Roofing—A System Gaining Momentum

- Material properties
- Where to use polyurethane and where not to
- Coatings for polyurethane roofs
- Application techniques—a critical factor
- Failures to expect and how to avoid them
- “Greening” applications

9:00 Guarding Against Causes of Roofing Failures—A Contractor’s Perspective

- Improper design resulting in inadequate drainage and wind and fire damage or loss
- Non-performing materials
- Poor workmanship
- How to do it right

10:30 Roof Asset Management (RAM)

- What is Roof Asset Management
- Components and goals
- Life cycle analysis
- Information management

12:30 Lunch at The Pyle Center



A workshop highly rated by past participants

1:30 Actual Roofing Construction Demonstration and Discussion

You will visit Tilsen Roofing Company, Inc. to observe the actual construction demonstration of a number of roofing systems. See firsthand how roofing components should be installed to ensure their maximum, trouble-free performance. This session will demonstrate:

- Construction of thermoset and thermoplastic systems including installation of EPDM and PVC membranes
- Construction of modified bitumen systems including installation of cold process and self-adhering systems
- Integration of different roofing components including flashings, insulation, insulation attachment, membrane securement, expansion joints, and lap joint construction

During the demonstration period you will have an opportunity to actively participate by making comments, asking questions, and obtaining advice on your specific concerns.

Note: We will provide round-trip transportation, as needed, between Tilsen Roofing Company, located 10 minutes away, and our conference center.

3:30 Final Adjournment

Please Note: Your instructors want to ensure that they cover topics vital to the success of your projects. Please contact program director Raymond Matulionis (matulionis@engr.wisc.edu; 608-263-3372) if you would like to suggest a roofing topic not shown in the outline.

Daily schedules will include lunches and midmorning and midafternoon refreshment breaks.

Continuing Education Credit

University of Wisconsin:

1.8 Continuing Education Units (CEU)

American Institute of Architects (AIA):

18 Learning Units (LU); qualifies for Health, Safety, Welfare (HSW) and Sustainable Design credit

Engineering Professionals:

18 Professional Development Hours (PDH)

Expert Instructors

Richard P. Baxter, President, CRS, Inc., Monroe, North Carolina

Richard Baxter is an experienced and progressive roofing contractor who formerly served with Owens Corning where he was responsible for product and specification development, manufacturing coordination, development of technical manuals, and training of in-house personnel. He currently serves as president for CRS, which provides roofing contracting and consultation. He has contributed to numerous publications, including the second and third editions of the *NRCA Energy Manual*. He is a past director of the National Roofing Contractors Association (NRCA).

Rene M. Dupuis, PhD, PE, CSI, President, Structural Research, Inc., Middleton, Wisconsin
Rene Dupuis is a leading international authority on roofing systems. Since 1974, he has been involved in materials research, with an emphasis on roofing systems. A frequent speaker at seminars and conferences, he has written extensively on roofing technology, conducted numerous investigations for building owners and architects, and consulted on many major projects. His memberships include ASTM and the ASTM Committee on Roofing and Waterproofing, the Construction Specifications Institute, the Single Ply Roofing Institute, the International Committee on Single Layer Roofing, and ASCE.

Richard L. Fricklas, Roofing Consultant, Englewood, Colorado

Richard Fricklas is former director of the Roofing Industry Educational Institute, honorary member of the Roofing Consultant Institute (RCI). He also is a member of the Institute of Roofing and Waterproofing Consultants (IRWC), the ASTM Roofing Materials and Systems Committee, RILEM-CIB Committee on Single Layer Roofing, American Chemical Society, and National Paint and Coatings Society. He is the co-author of a textbook, *The Manual of Low Slope Roof Systems*. His awards include ASTM's Walter C. Voss Award, MRCAs James Q. McCawley Award, and IRWC's Outstanding Achievement Award.

Mark S. Graham, Associate Executive Director of Technical Services, NRCA, Rosemont, Illinois

Mark Graham is an experienced project engineer with expertise in the investigation, design, and repair of roof and waterproofing systems. With NRCA, he is responsible for developing and maintaining his association's technical documents including the *NRCA Roofing and Waterproofing Manual*. He is also a contributing editor to *Professional Roofing Magazine*. Mark is an active member of ASTM's Roofing and Waterproofing, Thermal Insulation, Fire Standards, and Performance of Buildings Committees. Other memberships include ASHRAE, International Code Council and NFPA.

Four Easy Ways to Enroll

**Internet:**

<http://epd.engr.wisc.edu/webM908>

**Phone:**

800-462-0876 or
608-262-1299 (TDD 265-2370)

**Mail to:**

Engineering Registration
The Pyle Center, Dept. 106
702 Langdon Street
Madison, Wisconsin 53706

**Fax:**

800-442-4214 or
608-265-3448

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Course Information

- Please enroll me in **Low Slope Roofing Systems Membrane, Metal, Sprayed Foam, plus Latest Roofing Technologies Course #M908** December 13–15, 2011 in Madison, WI Fee: \$1195
Team Discount: \$1095 each when two or more enroll from the same organization
- I cannot attend at this time. Please send me brochures on future courses.

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Rob Haddock, Director, Metal Roof Advisory Group, Ltd., Colorado Springs, Colorado

Rob Haddock has a background in the “nuts and bolts” of contracting, having operated for 15 years one of the nation’s largest metal roofing companies. He has authored a number of training and educational curricula for various trade groups. A prolific technical author, he served as a faculty member of the Roofing Industry Educational Institute. He holds several US and foreign patents. Rob is a member of NRCA and ASTM, as well as a lifetime honorary member of the Systems Builders Association and the Metal Construction Association.

David J. Tilsen, President, Tilsen Roofing Company, Inc., Madison, Wisconsin

David Tilsen heads one of the most progressive Midwest roofing contracting firms. Providing contracting services on commercial and industrial low-slope and residential steep slope roofs, the firm specializes in built-up, single ply, modified bitumen, and metal roofing and offers roof maintenance and roof management programs. David has served as director of the NRCA and as president of Wisconsin Roofing Contractors Association. He is a past member of the Midwest Roofing Contractors Association (MRCA) Technical and Research Committee and past president of MRCA.

Wayne Tobiasson, PE, Civil Engineer/Moisture Consultant, Etna, New Hampshire
Wayne Tobiasson formerly served as a senior research civil engineer for the Cold Regions Research and Engineering Laboratory (CRREL), US Corps of Engineers. His expertise focuses on building technology with emphasis on controlling moisture in roofing systems. His work has taken him to Alaska, Canada, Greenland, Scandinavia, Siberia, and Antarctica. He was the Corps’ Engineer of the Year in 1992, and in 1998 he received a National Roofing Foundation fellowship to further his studies of roof ventilation. He is a member of ASCE and an honorary member of the RCI.

Need to Know More?

Call toll free **800-462-0876** and ask for

Program Director: Raymond C. Matulionis, PhD, AIA
matulionis@engr.wisc.edu
608-263-3372

Program Associate: Rose Richgels

Or e-mail custserv@epd.engr.wisc.edu

General Information

Fee Covers Notebook, workshop materials, break refreshments, lunches, and certificate.

Cancellation If you cannot attend, please notify us by December 7, and we will refund your fee. Cancellations received after that date and no-shows are subject to a \$150 administrative fee. You may enroll a substitute at any time before the workshop starts.

Location The Pyle Center, 702 Langdon Street, Madison, WI. Phone messages: 608-262-1122.

Accommodations We have reserved a block of sleeping rooms (rates starting at \$115, including parking and Madison Taxi’s silver cab from the airport) for course participants at the Campus Inn, 601 Langdon Street, Madison, WI. Reserve a room online at epd.engr.wisc.edu/lodgingM908, or call 800-589-6285 or 608-257-4391 and indicate that you will be attending this course. **Room requests made later than November 21 will be subject to availability.**

We have reserved a second block of sleeping rooms (rates starting at \$89, including parking and continental breakfast) for course participants at the Lowell Center, 610 Langdon Street, Madison, WI. Reserve a room on-line at epd.engr.wisc.edu/lodgingBM908, or call 866-301-1753 or 608-256-2621 and indicate that you will be attending this course. **Room requests made later than November 12 will be subject to availability.**

Note: If you have any difficulty locating accommodations, or if you have any other questions, please call program director Raymond Matulionis, 608-263-3372, or e-mail matulionis@engr.wisc.edu.

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