Houses That Work Water Management

This half-day workshop will help builders and designers apply building science to address the highest risk element of new home construction – water management – keeping buildings dry.

The session will review the basic physics of air, heat and moisture flow covered in the Houses That Work workshop and then will outline important, cost-effective strategies that will protect builders and their homeowners from water intrusion and material damage. A thorough discussion of topics such as site drainage, house designs that help manage water, proper flashing details, rain screen principles, controlling ground water intrusion and managing interior moisture will be covered. This presentation will allow participants to discuss their experiences with a variety of water management materials and strategies that are appropriate to the climate zone they work in. Information learned at the session will help participants design and build long lasting, healthy, sustainable buildings.

Who Should Attend

The workshop is targeted to at least the following groups:

- New home builders and remodelers and their site supervision staff
- Designers and architects
- Estimators and contract managers of builders
- Building supply and manufacturers' representatives who promote building materials
- Trade contractors such as framers, siding installers, stucco installers, brick layers and window installers
- Housing program officials who promote energy efficiency or green building
- Building Officials, Energy Raters, home inspectors and LEED professionals

Relevance to Attendees

- Relate the basics of air, heat and moisture flow to proper water management in high performance homes.
- Learn the four transfer mechanisms of moisture movement in buildings and how to control them.
- Identify the essential material properties for weather barriers, air barriers and vapor retarders and how they can be integrated into the building envelope
- Identify cost-effective design and material installation strategies to avoid water intrusion.
- Learn important techniques for building a variety of foundation types that control the flow of water into buildings.
- Identify techniques and methods for cost-effective management of interior moisture in energy efficient buildings.

Note:

The workshop will in all cases be adapted to the climate zone and building practices of the local area where it is being presented to ensure it is relevant to participants.

Agenda

Session Segment	Activity Plan	Timing
Introduction to EEBA and its Sponsors • What EEBA does • Relevance of the Houses that Work Program • EEBA publications and education • The EEBA Conference • Introduction of speaker and sponsors	Facilitator has sponsors and participants introduce themselves and asks participants what prompted their interest in today's session.	15 minutes
Importance of Water Management This segment will demonstrate that water intrusion continues to be the single most important aspect of building durability and sustainability. For example, water problems account for 80% of all construction litigation. 1. The changes in the way we build and use houses that increases water management risks • More complicated designs, restricted lot sizes, different building materials, higher expectations of homebuyers 2. Code requirements with respect to water management • Comparing code requirements for water management with requirements for structural or energy performance. • How local climate parameters should affect designs with respect to water management	Small Group Exercise: Participants work together to list industry changes that impact performance. Question & Answer: Participants are asked about local climate and code conditions that impact the way they build.	30 minutes
Building Science Principles as it Relates to Water Management In this segment participants learn how the many complex changes noted above can be addressed with a thorough understanding of basic building science physics of moisture, air and heat flow. This segment will outline moisture flow mechanisms in residential construction and how they relate to overall building performance. 1. Four moisture flow mechanisms and three forms of moisture • Bulk water, capillary flow, moisture flows with air flow and vapor diffusion	Short Lecture: Facilitator outlines fundamentals of building science Question & Answer: Participants are shown pictures of building defects / failures and are asked to identify the types of moisture flow that are involved.	30 minutes

• Solid, liquid and vapor flow with water in liquid form being the most important 2. Building Science Fundamentals • How moisture flow relates to air and heat flow to determine overall building performance		
Applying Moisture Flow Science to the Building Design In this segment participants will be given the overview of applying the science of moisture flow to site and house design 1. Ensuring proper drainage • Site drainage issues and design parameters • Draining the house envelope • Draining components and assemblies • Draining foundations	Short Lecture: Facilitator outlines fundamentals of water management details.	15 minutes
Water Management Strategies for Specific Building Elements In this segment participants will be given information on water management details for each major house element. The advantages and disadvantages of different materials and methods of water management will be discussed 1. Roof water management • Alternative finishing materials • Flashings • Proper sized gutters and downspouts • Design elements that assist in water management 2. Water management of walls • Drainage planes and rain screens • Roof to wall intersections • Drainage for different exterior finishes – brick, stucco, siding • Detailing penetrations 3. Water management of windows – the largest, most difficult wall penetrations • Sill protection • Interfacing with drainage planes • Alternative methods and materials 4. Foundation Water management alternatives for: • Full Height Basements • Crawl Spaces • Slabs	Question & Answer: Participants are shown pictures of bad building details and are asked to identify defects / inadequacies / problems with respect to types of moisture flow. Participants are shown good details and asked for their feedback on any experience they have had with the techniques and materials shown.	60 minutes
Managing Interior Moisture	Question & Answer:	35 minutes

This segment provides participants with important information about managing interior moisture related to new construction moisture and occupant activities 1. Understanding the sources of interior moisture and how to create comfortable environments that ensure good indoor air quality • Defining relative humidity and the proper levels inside of homes in different seasons • The basics of avoiding mold by managing surface moisture levels • Keeping surfaces warm and dry and getting them dry when they do get wet 2. Techniques for managing interior moisture levels • The role of ventilation • The role of air conditioning and dehumidification • Materials and methods that resist moisture damage • Education of homebuyers as to their role in managing interior moisture	Participants are asked about experience with indoor moisture issues. Small Group Exercise: Participants list strategies and the potential barriers to implementation of moisture management.	
Summary and End of Workshop	Final Review Question and Answer: Participants are asked three review questions about the fundamentals of moisture flow. Participants are asked: - Two things they are already doing to improve water management - Two things they need to improve.	10 minutes
End of Workshop		

Training Time and CEUs/Professional Development Credits
3.5 Hours of Educational and Training Time

This Seminar qualifies for CEUs/Professional Development Credits from the following accreditation organizations:

Pricing

The hosting fee for this seminar is $6500

The registration fee for this seminar is $65 (online registration) or $70 (on-site registratin)*

* The registration fee includes lunch when two half-day sessions are combined for a full day.

Reading Material and Online Resources

The reading material for the course consists of documents, publications and online resources relating to each educational and training seminar. You are welcome to order, view or print the resources if you choose. You can find them by following the links below to the EEBA, Department of Energy and EPA/IAQ websites.

Link / Purchase / Download
Climate Specific Builders Guides
Builder's Guide to Cold Climates
Builder's Guide to Hot-Dry / Mixed-Dry Climates
Builder's Guide to Hot-Humid Climates
Builder's Guide to Mixed-Humid Climates
Online bookstore with EEBA Publications, issue-specific guides, software and tools
Software Resources
Building Better Homes DVD
Online Resources
National Residential Efficiency Measures Database
DOE Building Technologies Program
Building Energy Optimization Software
EEBA National Education Partner Resources & Information