Case Study: Understanding Materials to Ensure Seamless Roofing Integrity

(1.0 hour, 1.0-AIA-HSW)

A roofing system is a highly engineered assembly of interdependent materials designed to form a continuous, watertight envelope that protects the building from environmental exposure. Its complexity lies not only in the diversity of materials—such as membranes, insulation, vapor retarders, adhesives, fasteners, and flashing systems—but also in the critical compatibility between these components. Chemical interactions, thermal expansion coefficients, and adhesion properties must be carefully evaluated to prevent degradation, delamination, or moisture intrusion.

Installation sequencing is equally vital. Each layer must be applied in a precise order to ensure proper bonding, drainage, and integration with penetrations and transitions. For example, installing insulation before verifying vapor barrier integrity or applying membrane without proper substrate preparation can compromise the entire system.

The substrate itself—whether concrete, metal deck, wood, or lightweight insulating concrete—must be assessed for moisture content, surface condition, structural integrity, and thermal movement. Substrate irregularities can lead to membrane bridging, ponding, or fastener misalignment, all of which affect long-term performance.

Ultimately, successful roofing system performance depends on a holistic understanding of material science, environmental conditions, and construction sequencing, supported by rigorous QA/QC protocols throughout design and installation.

HSW – Examine a complex construction of installing roofing on concrete and other materials and what examine what the concerns are and how to prevent roofing failures.

Learning Objectives:

1. Exploring best practices and methods for attaching roofs to different substrates to comply with specifications and warranty requirements
2. Address the importance of substrate properties and testing protocols to provide accurate information to make the best decision for the roofing system
3. *Review roofing detailing to confirm proper air barrier, vapor barrier, and water barrier management.*
4. *Promote specification, designer, and contractor collaboration for efficient overall design and construction.*

Interactive discussion with leading thought-provoking questions to engage the audience and bring them into the presentation.