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Time: 11:15 AM to 12:15 PM

Title: Advanced Understanding of Hail Damage to Asphalt-Composition Shingles

Abstract: Hail damage in the United States exceeds $2 billion annually. The most common type of roofing for residences is asphalt-composition shingles. At times, the causes or extent of hail damage to asphalt-composition shingles are disputed between property owners and insurance carriers — these disputes commonly involve forensic engineers. Disputes commonly relate to threshold sizing (the perceived size of hail necessary to cause damage to the roof assembly), the extent of damage due to a hailstone impact, and what caused a specific point of interest on a roof assembly. This paper focuses on further assessment of laboratory-simulated hail impacts of standardized sizes (¾-inch, 1-inch) to laminate-style asphalt-composition shingles of various ages and conditions from across the United States, a discussion of further assessment methodologies, including the use of light blocks to assess cracking to shingles, CT imagery, laboratory simulation of hail impacts under laboratory conditions, and the counter-current solvent extraction method (desaturation) of shingles to expose the internal fiberglass mat and conditions resulting from hail impacts. The intent of this research and these protocols is to further understanding of the conditions from more common, smaller hail impacts, and documentation methods for verifying damage to existing asphalt-composition shingles.



Chad Williams is a licensed Professional Engineer and a board-certified Diplomate in Forensic Engineering with more than 22 years of engineering experience, including more than 17 years of forensic engineering and maintenance/operations engineering. Primary practice areas include evaluating residential, commercial, industrial, and institutional facilities to determine the causes and extent of damage related to improper design, construction defects, and damage due to weather events and other causes. In addition, Williams has experience in facilities and asset management through maintenance and operations engineering. He is also involved in technical research, tool and process development, and providing training in forensic engineering and roofing. Williams has served as executive leadership of professional engineering firms and not-for-profit engineering service organizations.