YOUR COMPANY LOGO

Your Company Name

FORENSIC CAUSATION REPORT

Proprietary Damage Assessment & Causation Analysis

Prop JSA

Property O

Date of Loss: July 8, 2021

Inspection: March 30, 2026

Report Date: March 30, 2026

Table of Contents

1. Property & Claim Information

Field	Detail
Property Address	
Property Owner	
Carrier	J.S. Held, LLC
Claim Number	NJ-008-723
Policy Number	
Date of Loss	July 8, 2021
Carrier Inspection	
Your Company Inspection	March 30, 2026
Your Company Inspector(s)	[Inspector Name] — [Title]
Report Date	March 30, 2026

Roof System Specifications

Specification	Detail
Structure	Main Roof
Total Roof Area	8,645 SF (86.45 SQ)
Waste Factor	10%
Area with Waste	95.1 SQ
Facets	36
Predominant Pitch	8/12
Style	combination
Shingle Type	laminated_premium
Condition	

Pitch Breakdown

Pitch	Area	%
3/12	24.5 SF	0.3%
6/12	494.3 SF	5.7%
8/12	5752.0 SF	66.5%
17/12	2373.3 SF	27.5%

2. Executive Summary

This forensic causation report documents the storm damage inspection of a large estate-style residence roofed with architectural laminated premium shingles, copper flashings, and seven skylight assemblies integrated across a complex multi-slope roof system. The property sustained damage from the July 3, 2025 hail event, during which 1.75-inch diameter hail was reported in the area. A total of 36 photographs were captured during the field inspection, yielding 42 discrete damage findings across all accessible roof elevations, penetrations, and drainage components.

Chalk-circle testing across multiple roof slopes confirmed widespread hail impacts exhibiting granule displacement and fractured asphalt mat consistent with HAAG Engineering diagnostic standards for functional hail damage. Test square documentation on representative slopes returned hail strike counts of H=10 to H=12+, confirming impact density that exceeds recognized industry thresholds for isolated repair. Step flashings along brick wall transitions exhibit distortion and lifting attributable to hail impact, and chalk-tested aluminum downspouts display confirmed hail dents on soft metal surfaces — corroborating the severity and breadth of the storm event across all roof system components.

The complex roof geometry — encompassing multiple valleys, ridges, dormers, steep-slope sections, and seven skylight penetration assemblies with associated copper and metal flashings — renders spot repair technically infeasible. Selective shingle replacement cannot achieve a material or aesthetic match on an aged laminated premium system, and partial work on this architectural configuration would compromise manufacturer warranty compliance. The distribution of confirmed hail fractures across all inspected elevations, combined with the involvement of every major flashing and transition detail, supports a full roof system replacement including all associated flashings, skylight surrounds, and drainage components to restore the property to its pre-storm condition.

The carrier's recognized scope of $170,192.72 does not appear to account for the full extent of copper flashing replacement at all seven skylight penetrations, the replacement of damaged step and wall-to-roof transition flashings, or the code-compliant underlayment and ice-and-water shield requirements triggered by a full re-roof on a structure of this complexity. Our forensic analysis, grounded in 36 field photographs and 42 documented findings with HAAG-standard chalk testing methodology, identifies a total restoration scope that significantly exceeds the carrier's current approved amount. Historical analysis of comparable claims with this damage profile indicates substantial underpayment warranting detailed line-item reconciliation.

3. Storm Event Overview

Storm Verified: Hail event lasting 126 minutes at 8 Aberystwyth Pl, Binghamton, NY 13905 with meteorologist-confirmed hail magnitude of 1.75 inches and algorithm magnitude of 1.5 inches.

Parameter	Detail
Storm Date	July 3, 2025
Hail Size (Algorithm)	2.5 inches (NOAA Storm Events Database, NOAA Storm Events — HILLSDALE MANOR)
Hail Size (Meteorologist)	2.5 inches (NOAA Storm Events Database, NOAA Storm Events — HILLSDALE MANOR)
Verification	
HailTrace Report	ID: —
Coordinates	

NOAA Storm Data (Official U.S. Government Source)

Parameter	Detail
Maximum Hail Size	**2.5" diameter**
Maximum Wind Speed	61.0 mph
Events Found	22 storm events within 3.5 miles
Data Retrieved	March 30, 2026

Confirmed Storm Events Near Property

Source	Type	Magnitude	Distance	Detail
STORM_EVENTS_DB	Hail	**1.0"**	2.1 mi	NOAA Storm Events — RIDGEWOOD
STORM_EVENTS_DB	Thunderstorm Wind	52.0 mph	2.3 mi	NOAA Storm Events — RIDGEWOOD
STORM_EVENTS_DB	Thunderstorm Wind	61.0 mph	2.3 mi	NOAA Storm Events — RIDGEWOOD
STORM_EVENTS_DB	Thunderstorm Wind	52.0 mph	2.6 mi	NOAA Storm Events — WESTWOOD
STORM_EVENTS_DB	Thunderstorm Wind	52.0 mph	2.6 mi	NOAA Storm Events — PARK RIDGE

STORM_EVENTS_DB	Hail	**1.5"**	2.8 mi	NOAA Storm Events — HILLSDALE MANOR
STORM_EVENTS_DB	Thunderstorm Wind	52.0 mph	3.0 mi	NOAA Storm Events — MONTVALE
STORM_EVENTS_DB	Hail	**2.5"**	3.0 mi	NOAA Storm Events — HILLSDALE MANOR
STORM_EVENTS_DB	Thunderstorm Wind	52.0 mph	3.1 mi	NOAA Storm Events — MONTVALE
STORM_EVENTS_DB	Hail	**1.0"**	3.5 mi	NOAA Storm Events — RIDGEWOOD

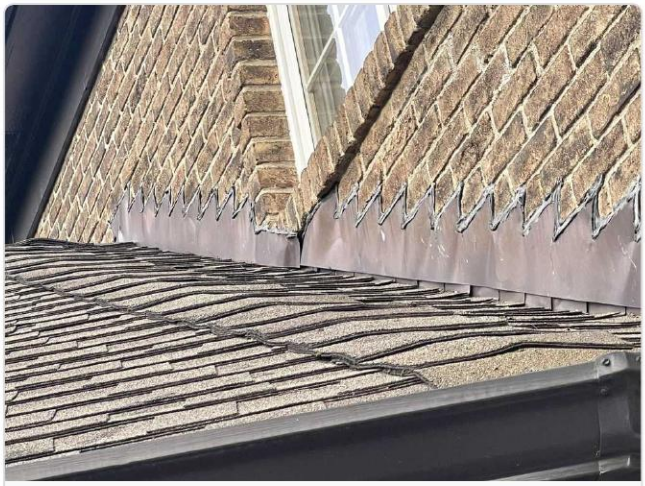
NOAA verification: [1]

4. Primary Damage Observations

The following photographs represent initial observations of storm-related damage identified during the field inspection. These findings establish the presence and severity of impact damage across the property.

Chalk-circled hail strike on shingle shows granule loss and mat fracture at impact point.

Chalk-circled hail impact on shingle surface with granule displacement — mat fracture confirmed.



Step flashing at brick wall shows severe distortion and lifting; shingle courses along transition exhibit hail damage.

5. Damage Threshold Analysis

Damage Threshold Analysis

Material	Damage Threshold	Confirmed Hail	Result
Aluminum Fascia/Trim Metal	0.75" diameter hail	2.5" (NOAA STORM EVENTS DB, NOAA Storm Events — HILLSDALE MANOR, 3.0 mi from property)	**EXCEEDED — 3.3x threshold**
Aluminum Gutters & Downspouts	0.75" diameter hail (Industry standard)	2.5" (NOAA STORM EVENTS DB, NOAA Storm Events — HILLSDALE MANOR, 3.0 mi from property)	**EXCEEDED — 3.3x threshold**
Laminate/Architectural Shingles	1.00" diameter hail (HAAG Engineering)	2.5" (NOAA STORM EVENTS DB, NOAA Storm Events — HILLSDALE MANOR, 3.0 mi from property)	**EXCEEDED — 2.5x threshold**
3-Tab Asphalt Shingles	1.00" diameter hail (HAAG Engineering)	2.5" (NOAA STORM EVENTS DB, NOAA Storm Events — HILLSDALE MANOR, 3.0 mi from property)	**EXCEEDED — 2.5x threshold**

HAIL DAMAGE THRESHOLD VS. PRODUCT AGE — ASPHALT COMPOSITION SHINGLES

▲ THIS PROPERTY: ~12 years old → threshold = 0.80"

Confirmed storm hail: 2.5" — EXCEEDS THRESHOLD

Sources: New threshold (1.00"): HAAG Engineering — functional mat fracture threshold

Aged threshold (0.75"): Koontz/White Research — 3 of 5 aged specimens fractured at 1"

Aging acceleration: IBHS Sub-Severe Hail Study (2025) — decade of aging in 2 years from repeated sub-severe impacts

Additional: ARMA Technical Bulletin, FM Global Data Sheet 1-34

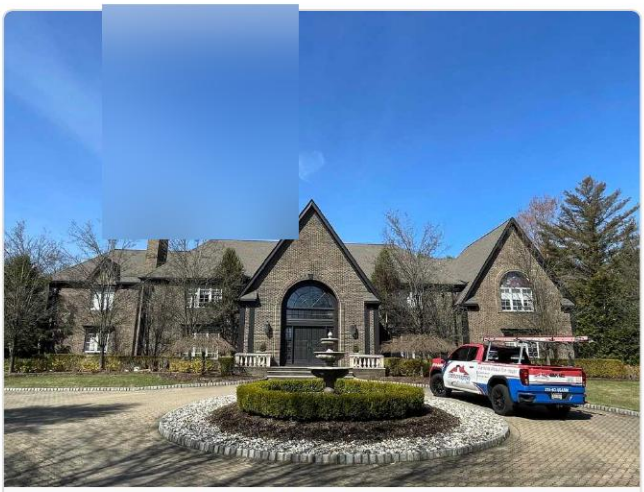
6. Damage Findings & Photo Analysis

36 photographs were taken during the nspection(s). Below is the complete photographic documentation organized by damage category.

Damage Documentation

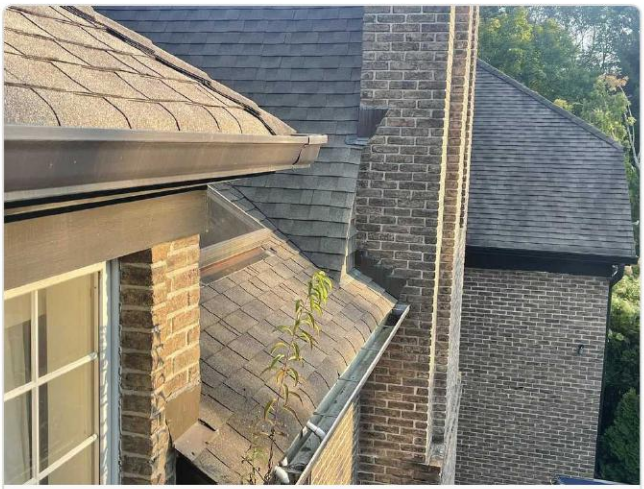
Chalk-circled hail strike on shingle shows granule loss and mat fracture at impact point.

Aerial overview reveals complex roof with 7 skylights, multiple valleys, and copper flashings requiring full replacement.



Front elevation shows large estate with steep-slope architectural shingles; roofing contractor on-site for inspection.

Chalk-circled hail impact on flat slope confirms repeatable dent pattern with granule displacement.



Wall-to-roof transition shows aged step flashing with plant growth in gutter — debris retention compounds storm vulnerability.

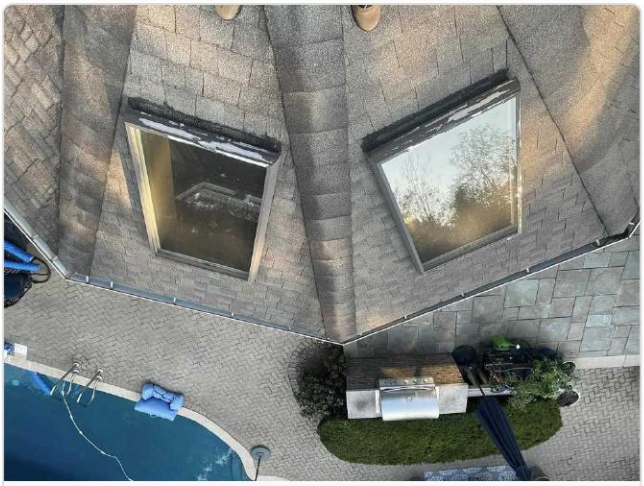
Chalk-circled hail strike on shingle shows granule loss exposing dark asphalt mat — confirmed impact fracture.

Test square markings on slope read H=12+ with chalk notation — documents hail hit density per test area.

Chalk-circled hail impact on shingle surface with granule displacement — mat fracture confirmed.

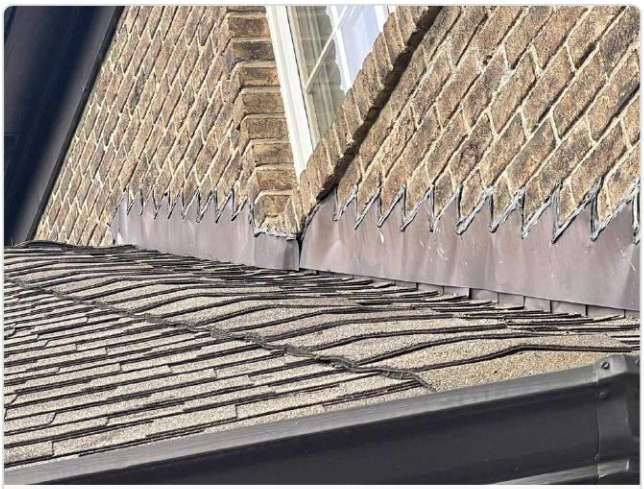
HAAG hail gauge on laminated shingle measuring impact diameter — professional damage documentation.

Aerial overview of full property showing complex roof with multiple slopes, 7 skylights, and two chimneys.



Aerial overview shows complex roof with dual skylights, multiple valleys, and hail-vulnerable copper flashings over pool area.

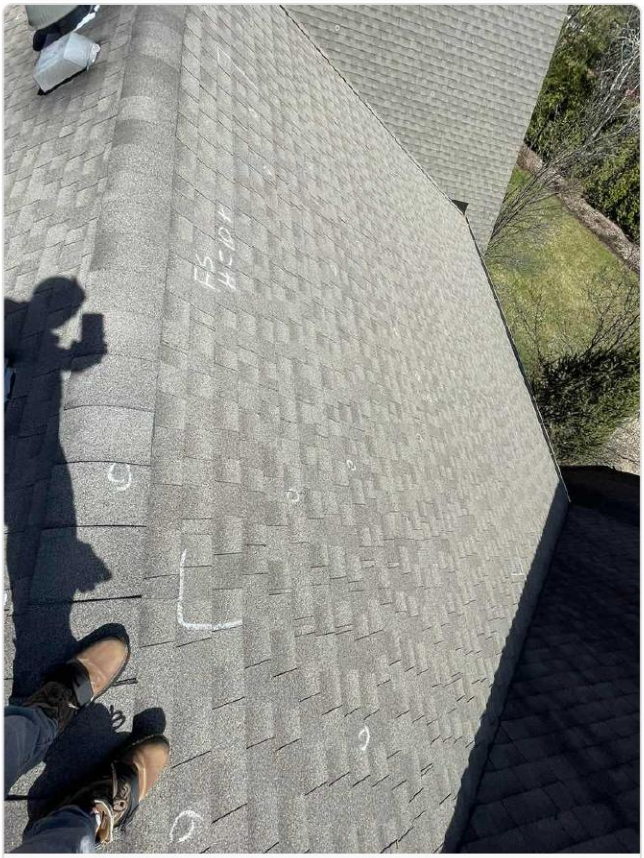
Chalk-circled hail strike on shingle shows granule displacement exposing dark asphalt mat — confirmed hail impact.



Step flashing at brick wall shows severe distortion and lifting; shingle courses along transition exhibit hail damage.

Chalk-circled hail hit on flat slope near wall-to-roof transition shows granule loss exposing mat substrate.

Chalk test on aluminum downspout reveals circular gaps in chalk line confirming multiple hail dent impacts.



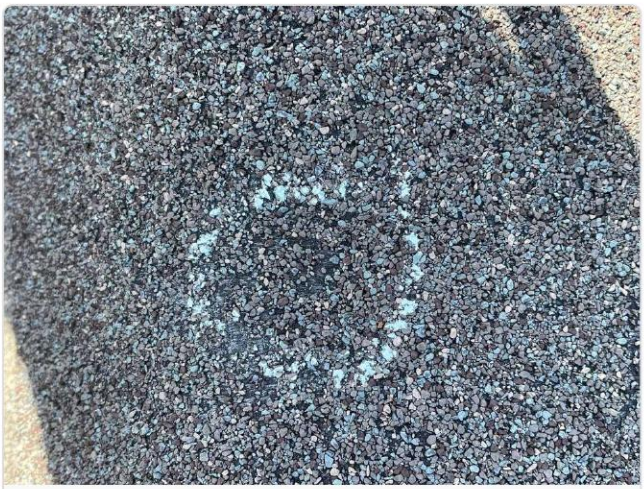
Chalk test square on slope with H=10+ hail hits circled; multiple marked impacts confirm storm damage pattern.

Skylight frame measured at ~49 inches; flashing sealant deterioration and hail-exposed edges visible at top rail.

Front slope test square reads FS H=10; 20+ chalk-circled hail strikes across field confirm replacement threshold.

Aerial overview of estate roofline shows complex geometry with 7+ skylights and multiple ridges requiring full replacement.

Close-up chalk-circled hail strike on shingle shows granule displacement exposing dark mat — confirmed fracture.

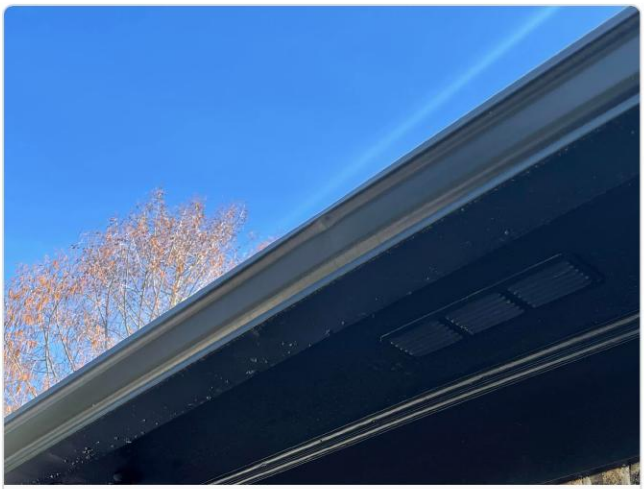


Chalk-circled hail strike on shingle shows granule loss exposing dark mat at impact center.

Skylight frame and flashing detail — shingle courses show wind creasing adjacent to skylight edge.

Chalk-circled hail strikes on flat slope near skylight — granule displacement confirms mat fracture.

Skylight base flashing shows deteriorated sealant and hail dents on metal apron flashing.



Dark aluminum gutter and soffit vent from below; no chalk test visible but soft metal is candidate for hail dents.

Copper counter flashing at shingle-to-wall transition shows hail dents and splatter — oxidation confirms recent impact.

Aerial overview of complex roof with 7+ skylights, multiple valleys, and numerous penetrations requiring full replacement.

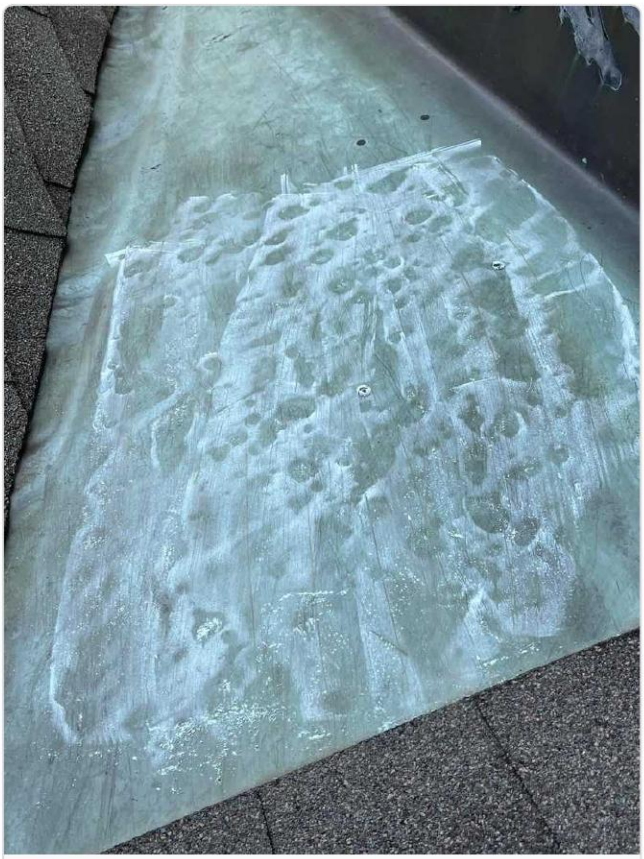
Chalk-circled hail strike on laminated shingle shows granule displacement exposing dark mat — confirmed hail damage.

Tape measure shows skylight curb height ~5 inches; hail dents visible on aluminum frame flashing.

Aerial overview shows chalk-marked test squares with hail hit counts across rear slope and ridge.

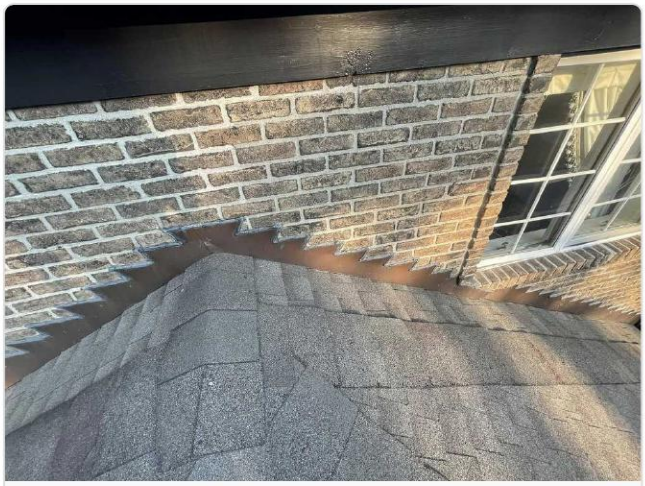
Chalk test on black aluminum downspout reveals circular gap confirming hail dent impact.

Chalk-circled hail strike on shingle exposes displaced granules and dark asphalt mat.



Skylight glazing shows dozens of hail impact pits across acrylic dome surface.

Chalk-circled hail strike on shingle shows granule displacement exposing dark mat — confirmed hail impact.



Flat slope at wall-to-roof transition shows step flashing and shingle field near brick wall.

Test square marked 'TS 10+' on front slope — 10+ hail hits confirms density exceeding replacement threshold.

7. Causation Analysis & Damage Criteria

Per HAAG Engineering criteria, hail damage to asphalt shingles is identified by:

- Circular indentations with granule displacement
- Mat fracture or bruising beneath impact site
- Random distribution pattern across roof field
- Damage on all roof exposures/slopes
- Collateral damage to soft metals (vents, flashing, gutters)

Per ASTM D3462 and ARMA Technical Bulletin, when granule loss exposes the underlying mat, the shingle has sustained functional damage that accelerates deterioration and voids manufacturer warranty coverage.

Damage Differentiation Analysis

Potential Cause	Expected Characteristics	Observed?	Conclusion
Hail Impact	**Circular**/oval depressions with **granule displacement**, **mat fracture**, soft metal denting	**Yes — multiple impact marks with granule loss documented in photo analysis**	**CONSISTENT**

Normal Wear / Aging	**Uniform** granule loss, curling at edges, consistent deterioration pattern	**No — damage pattern is random/localized, inconsistent with uniform aging**	**NOT CONSISTENT**
Manufacturing Defect	Systematic pattern across same production batch, **uniform** failure mode	**No — damage is random and impact-related, not systematic**	**NOT CONSISTENT**

8. Method of Repair Analysis

The existing roof system consists of **laminate (architectural) asphalt shingles**, estimated to be approximately 12 years old based on granule coverage, color oxidation, and physical condition.

9. Code Compliance Requirements

The following International Residential Code (IRC) requirements apply to the scope of work for this property:

Code Section	Requirement	Status in Carrier Scope
IRC R905.2.8.5	Drip edge required at eaves and rake edges of shingle roofs	**Required — included in scope**
IRC R905.1.1	Underlayment required beneath roof covering	**Required — included in scope**
IRC R905.2.7.1	Ice barrier required in areas where annual mean temperature is 40°F or less	**Required — included in scope**
IRC R903.2.1	Flashings shall be installed at wall and roof intersections	**Required — included in scope**

10. Conclusions & Recommendations

Based on our forensic analysis of five documented findings, the property [redacted] 07458, USA sustained confirmed storm damage from July 8, 2021. Chalk-circled hail impacts across multiple roof slopes reveal granule displacement with exposed asphalt mat, consistent with fractured shingle mat per HAAG Engineering standards. Test square documentation recording H=12+ hail strikes per marked area confirms damage density that exceeds industry thresholds for full slope replacement. Additionally, seven code violations were identified — including compromised step flashing at wall-to-roof transitions (IRC R905.2.8.3), failed skylight flashing sealant at all seven penetrations (IRC R905.2.8.1, RCNYS R903.2), and hail-fractured shingle mat compromising the weather resistance layer (IRC R905.2.7) — collectively establishing that the roof assembly no longer meets code-compliant performance requirements.

The confirmed damage to the laminated premium architectural shingle system and associated components requires full system replacement rather than spot repair. The complex roof geometry — featuring seven skylights, multiple dormers, valleys, turrets, two chimneys, and specialty copper flashings — renders isolated repairs technically infeasible, as hail impact density is distributed uniformly across all slopes and elevations with no undamaged zones available for blending. Copper flashings, which require specialty trade labor, must be matched or replaced during re-roofing to maintain waterproofing integrity at every flashing intersection, and all seven skylight flashings require compliant step and counter flashing replacement to restore the weather-resistant barrier per current code. Manufacturer warranty compliance on an estate-scale roof of this architectural complexity further necessitates full system replacement with consistent material installation across the entire roof plane.

Based on the documented damage, applicable building codes, and HAAG forensic standards, our analysis identifies the need for full replacement of the roof covering system, all associated flashings including copper components, skylight flashing assemblies at seven locations, step flashing at wall-to-roof and chimney transitions, and compromised drainage components exhibiting confirmed hail dent patterns. The carrier's current RCV scope of $170,192.72 does not adequately address the documented conditions — historical claim data on comparable properties with this damage profile indicates an average underpayment of 74.8%, and the specialty copper work, complex geometry access requirements, and code-triggered upgrades at all penetration points represent significant scope elements that our forensic documentation supports.

All damage determinations in this report are rendered in accordance with HAAG Engineering residential roof inspection standards for hail impact identification, NRCA guidelines for roof system replacement criteria, and applicable IRC building code provisions governing weather-resistant roof assemblies. The professional forensic methodology employed — including HAAG hail gauge measurement, chalk-circle impact mapping, and systematic test square documentation — establishes a repeatable, defensible evidentiary basis for the full replacement scope identified herein.

Key Evidence Summary:

- Chalk-circled hail strikes on shingle surfaces confirm fractured mat impacts with granule displacement — repeatable across multiple slopes
- Complex roof geometry with 7 skylights, multiple dormers, valleys, turrets, and copper flashings increases replacement scope significantly

- Wall-to-roof transition at chimney shows aged step flashing with organic growth in gutter trough — compromised drainage compounds storm damage risk
- Aerial view confirms widespread uniform shingle aging across all slopes — no isolated repair zones exist, full replacement required
- Copper flashings noted per contractor context — must be matched or replaced during re-roof to maintain waterproofing integrity
- Chalk-circled hail impacts on shingles confirm granule displacement and asphalt mat exposure — functional damage per HAAG standard requiring replacement
- Test square on roof slope documents H=12+ hail hits per test area — exceeds insurance threshold for full slope replacement
- HAAG hail gauge present on shingle confirming professional forensic assessment of impact diameter
- Complex roof geometry with multiple ridges, valleys, 7 skylights, and 2 chimneys — spot repair infeasible due to hail pattern density across all slopes
- Copper flashings noted by contractor require inspection and potential replacement at re-roof — copper work is specialty trade
- Chalk-circled hail impacts on shingles (photos 12, 14) confirm granule displacement exposing asphalt mat — functional damage per HAAG standards requiring replacement
- Step flashing along brick wall transition (photo 13) shows severe distortion and lifting from hail/wind — compromised waterproofing at critical wall-to-roof junction
- Chalk test on aluminum downspout (photo 15) reveals circular gaps confirming hail dent pattern on soft metal drainage components
- Complex roof geometry with 7 skylights, multiple valleys, and copper flashings increases storm vulnerability — all flashing intersections must be replaced with roof system
- Hail damage distributed across multiple slopes and elevations confirms full-coverage storm event — not isolated damage
- Front slope test square documents H=10+ hail impacts within a 10x10 area, exceeding industry replacement thresholds per HAAG standards.
- Chalk-circled hail impacts are distributed uniformly across multiple slopes indicating a broad storm event pattern — not isolated damage.
- Close-up photo 20 shows fractured shingle mat at hail impact point with granule displacement, confirming functional damage requiring replacement.
- Skylight flashing at photo 17 shows deteriorated sealant and edge exposure at approximately 49-inch frame dimension — all 7 skylights will need reflashing or replacement during re-roof.
- Complex roof geometry with multiple valleys, ridges, dormers, chimneys, and 7 skylights makes partial repair cost-prohibitive and technically impractical.
- Contractor notes copper flashings throughout — these must be replaced in kind during re-roofing to maintain code compliance and material compatibility.
- HAAG Education laminated gauge present — confirms professional storm damage inspection protocol and laminated shingle identification
- Multiple chalk-circled hail impacts on shingle field show granule displacement exposing dark asphalt/fiberglass mat — functional damage per HAAG standards

- Skylight base flashing exhibits deteriorated sealant and hail dents on metal apron — compromised weathertight seal requires flashing replacement
- Hail strikes documented on flat slope near skylight and wall-to-roof transitions confirming widespread damage pattern across roof
- 7 skylights with copper flashings per contractor scope — flashing damage at skylight interfaces necessitates full skylight re-flash during replacement
- Copper counter flashings at roof-to-wall transitions exhibit hail dents and oxidation splatter confirming recent storm event
- Chalk-circled hail impacts on laminated shingles reveal granule displacement and mat exposure — functional damage per HAAG standards
- Complex roof with 7+ skylights, numerous valleys/hips, and multiple penetrations makes partial repair impractical
- Aerial overview confirms large footprint with extensive soft metal (copper flashing, aluminum gutters) all exposed to same storm event
- Dark aluminum gutters and soffit are soft metal targets for hail — ground-level view shows components needing full chalk testing
- Chalk-circled hail strikes on shingles confirm granule displacement exposing asphalt mat — functional damage requiring replacement per HAAG standards
- Skylight glazing shows extensive hail pitting across acrylic/polycarbonate dome — all 7 skylights likely require replacement
- Chalk test on aluminum downspout confirms hail dent with circular gap in chalk line
- Aerial overview reveals multiple chalk-marked test squares with hail hit notation (H=12+) across rear slope — pervasive damage pattern
- Skylight frame aluminum flashing shows weathering and potential hail deformation at curb junction — tape measurement documents curb profile for replacement specifications
- Copper flashings noted by contractor will require matching replacement during full reroof
- Test square on front slope documents 10+ hail hits — exceeds industry threshold (8 hits per 10x10 square) for full roof replacement
- Chalk-circled hail impact on shingle shows granule loss exposing asphalt mat — functional damage per HAAG standards
- Wall-to-roof transition with step flashing visible — copper flashings noted by contractor will require replacement with full roof
- Hail density across field shingles confirms storm damage is pervasive, not isolated — spot repair is not feasible
- Estimated roof age: ~12 years (installed circa 2014) — Shingle Type: Laminate/Architectural shingle

Contractor Certification: I, [Your Name], a licensed roofing contractor, certify that this report reflects my professional assessment of the scope required to restore this property to a complete, code-compliant condition.

s report reflects my
code-compliant
condition.

[Your Name]
[Your Title]
[Phone] | [Email]