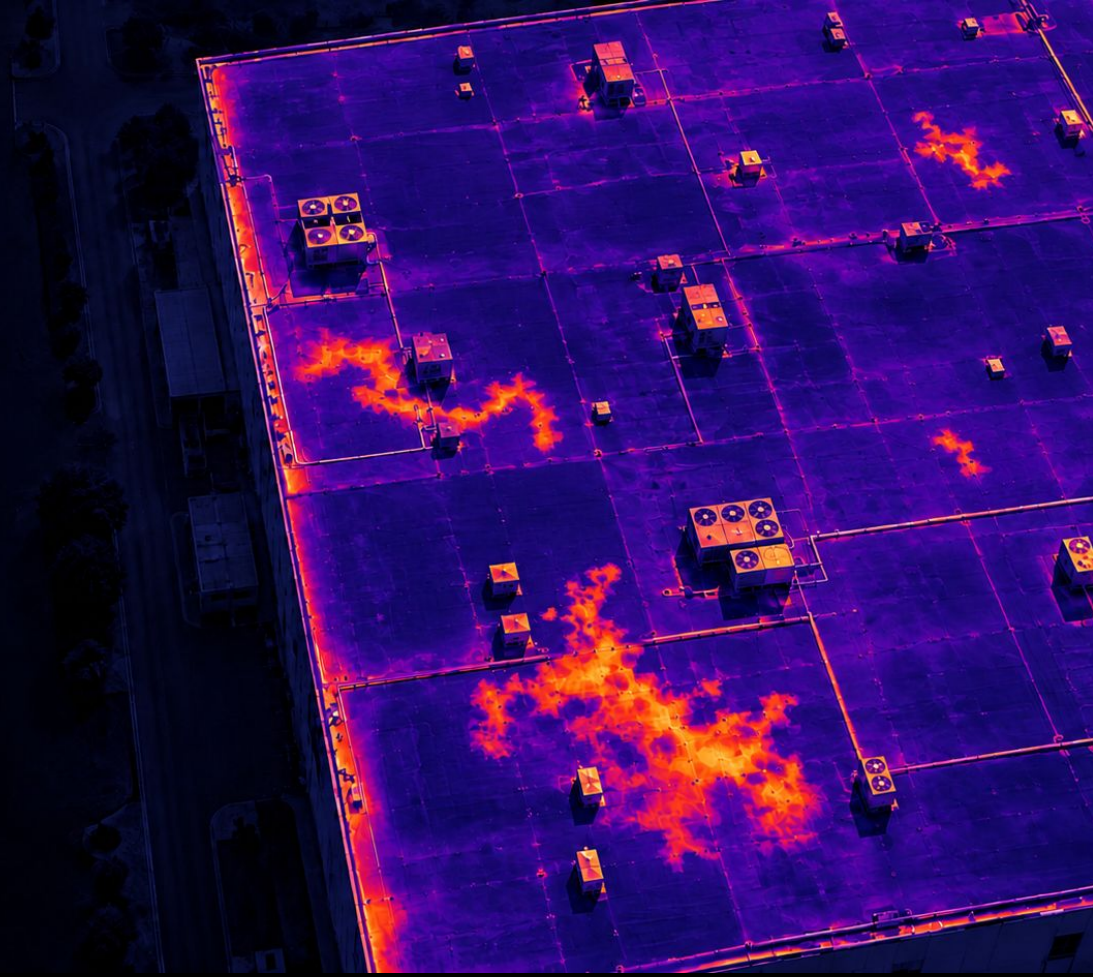
DRONE INSTITUTE

INSTITUTE · INDUSTRY · INNOVATION

Beyond the Heat Map

A disciplined approach to thermal drone roof assessments



George Femmer / Drone Institute

FAST Academy / Nov. 2026

The moisture investigation toolbox

Visual inspection

Core cuts

Electrical impedance

Nuclear testing

Handheld infrared

Manned aircraft

Thermal drones

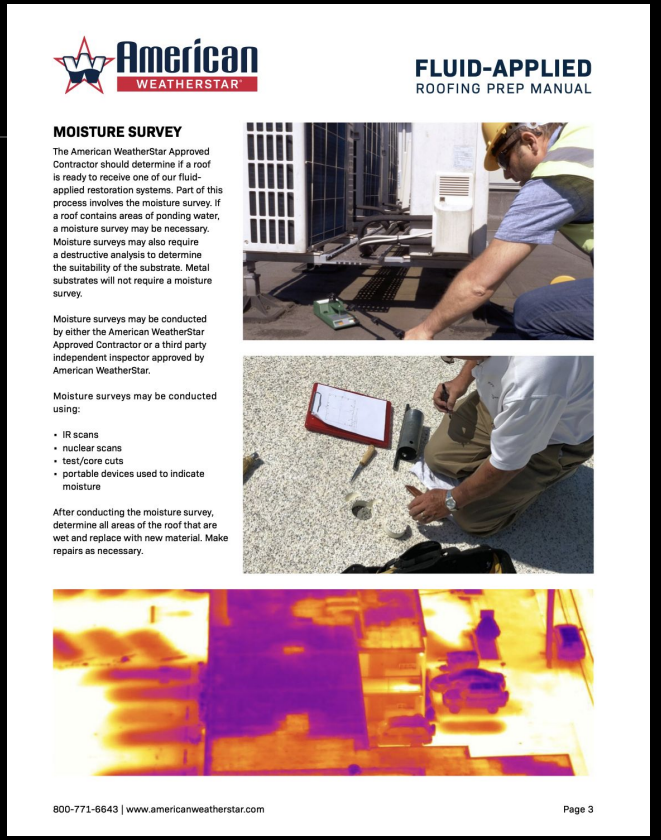


Every tool has its place.

Why Do We Assess Moisture?

The best brands in the industry push for moisture scans for a reason!

- Standardized findings
- Establish scope properly
- Provide accurate bids
- And more…



American WEATHERSTAR®

FLUID-APPLIED
ROOFING PREP MANUAL

MOISTURE SURVEY

The American WeatherStar Approved Contractor should determine if a roof is ready to receive one of our fluid-applied restoration systems. Part of this process involves the moisture survey. If a roof contains areas of ponding water, a moisture survey may be necessary. Moisture surveys may also require a destructive analysis to determine the suitability of the substrate. Metal substrates will not require a moisture survey.

Moisture surveys may be conducted by either the American WeatherStar Approved Contractor or a third party independent inspector approved by American WeatherStar.

Moisture surveys may be conducted using:

- IR scans
- nuclear scans
- test/core cuts
- portable devices used to indicate moisture

After conducting the moisture survey, determine all areas of the roof that are wet and replace with new material. Make repairs as necessary.

800-771-6643 | www.americanweatherstar.com

Page 3

The consistency problem

The Same Tech Can Provide Different Opinions

01

Collection

Different conditions

02

Processing

Different methods

03

Interpretation

Different experience

04

Field decision

Different tools

One weak link breaks the chain.

How and Why Drone IR Works

Solar Load Heats Materials Unevenly

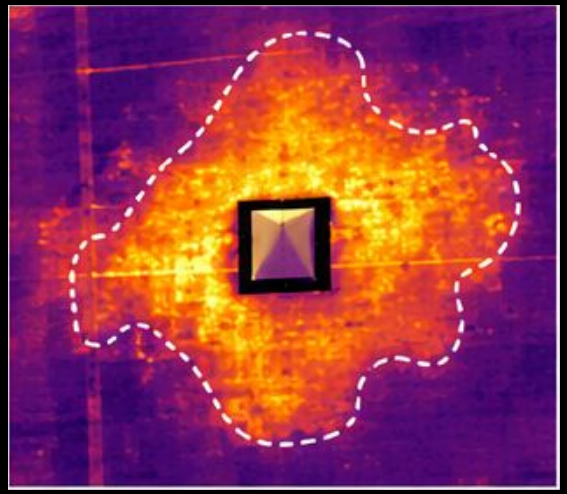
- Water vs. Dry Insulation
- What happens at night
- Avoid thermal crossover



Solar loading Heat storage Surface radiation

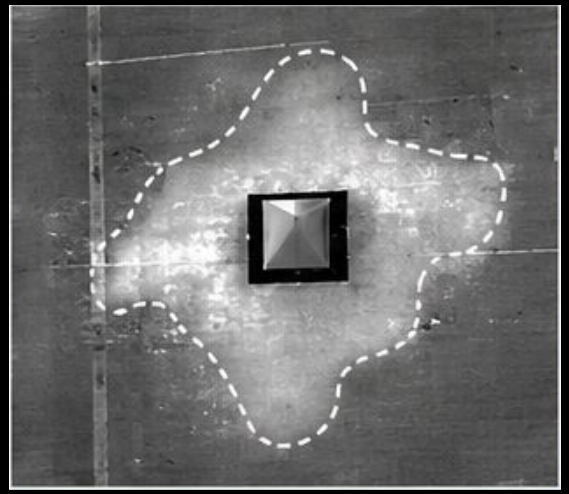
Palettes Matter.

Ironbow



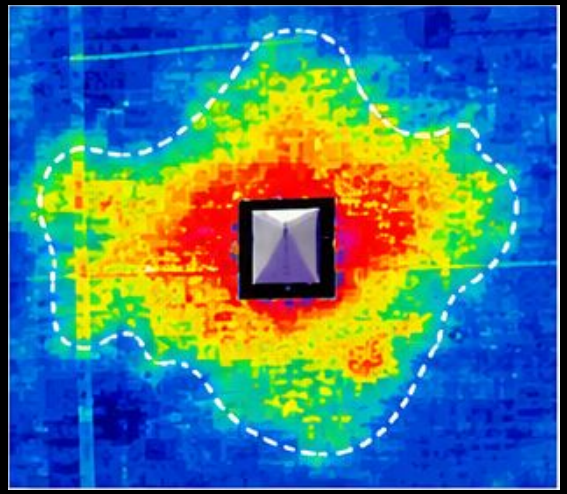
487 sq ft

White Hot



352 sq ft

Rainbow

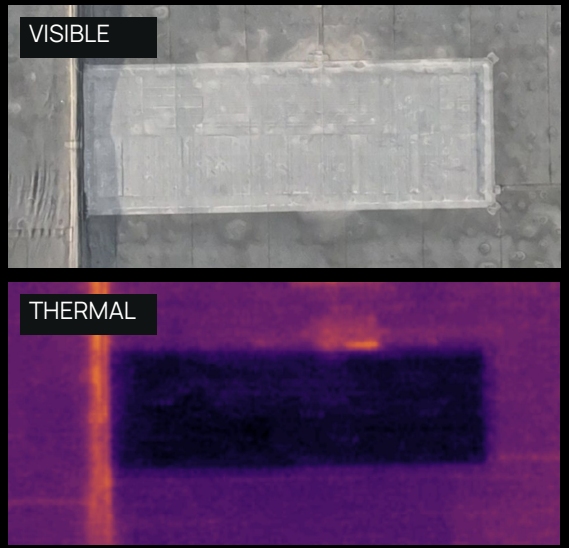


621 sq ft

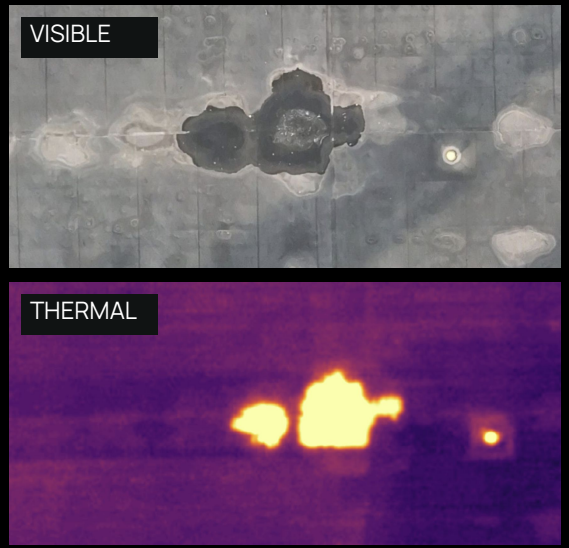
Different boundaries create different scopes which create different bids.

Not every hot area is wet

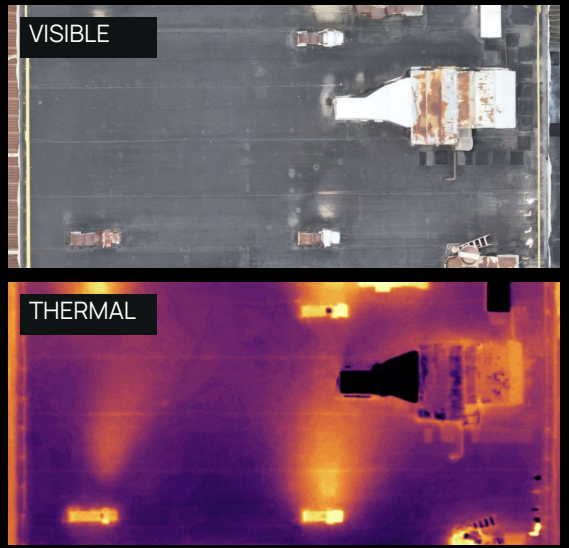
Repairs / materials



Ponding / contamination



HVAC / heat transfer



Conclusions come from clues.

Standardization starts before takeoff

01 Qualify the roof (by material)

02 Review recent weather

03 Confirm solar loading (contrast)



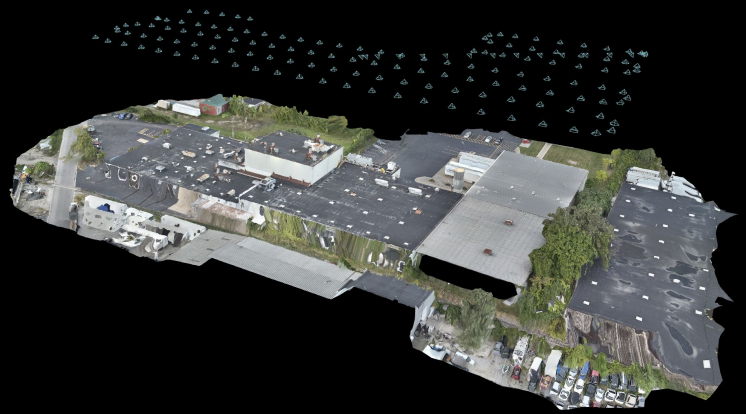
Know when not to fly.

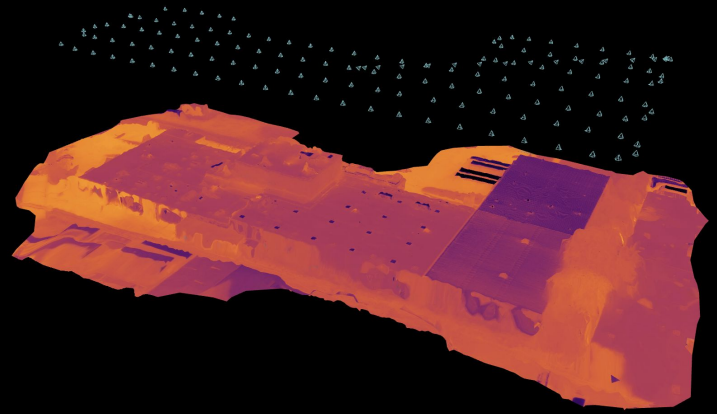
A repeatable collection protocol

Visible imagery

Thermal imagery

Image capture positions





Altitude · Overlap · Resolution · Speed · Camera angle

A defensible report





01 Capture record

Collection conditions
Equipment and flight information

02 Mapped evidence

Visible and thermal overviews
Numbered locations and boundaries
Measured anomaly area

03 Analyst accountability

Qualified analysts used
Know the limitations

We identify where. You determine why.

DRONE INSTITUTE

01 Aerial evidence

CONTRACTOR EXPERTISE

02 Targeted verification

03 Diagnosis and extent

04 **Roofing decision**



Better evidence leads to better decisions.

CONTRACTORS

Scope with confidence

Better-defined work.
Fewer surprises.

MANUFACTURERS

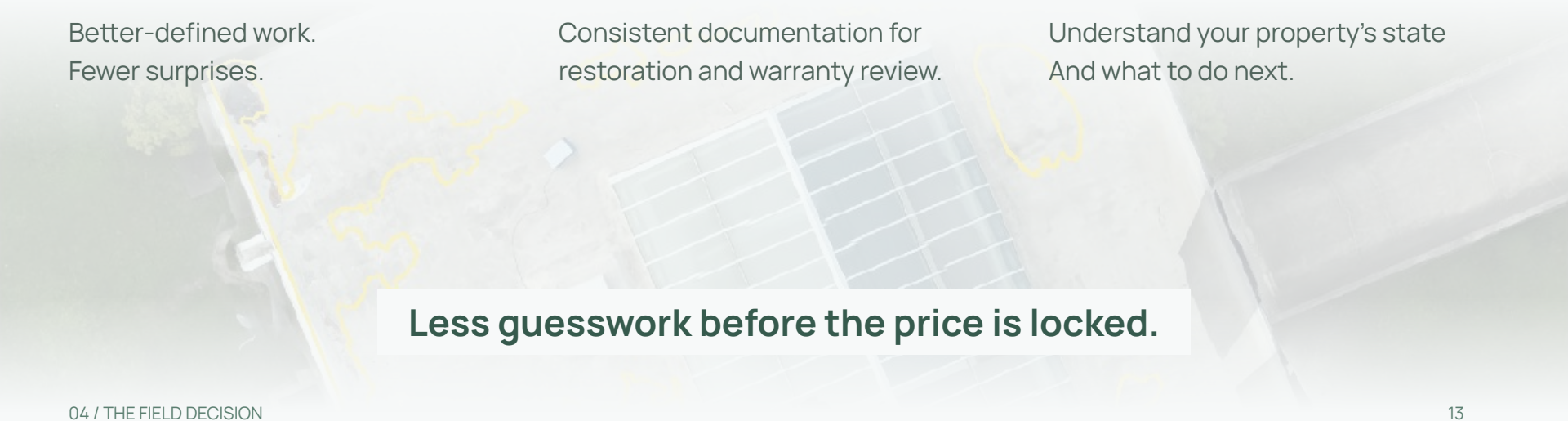
Evaluate with evidence

Consistent documentation for restoration and warranty review.

OWNERS

Plan with certainty

Understand your property's state
And what to do next.



Less guesswork before the price is locked.

Five questions to ask your provider

01 What **conditions** determine the day and time of flight?

02 Do you use radiometric imagery?

03 Who analyzed the data, and **what qualifies them**?

04 Does your report include imagery captured the day of the thermal?

05 Are you identifying **suspect anomalies**—or claiming moisture is confirmed?


DRONE INSTITUTE
INSTITUTE · INDUSTRY · INNOVATION
The standard is the process
Qualify · Capture · Preserve · Analyze · Verify
The right evidence for the right roofing decision.