



THERMAL DRONE ROOF REPORT

Hochunk Nation - Hochunk Cinema

LIDAR Drone Services

Capture Date: 02/19/24
Created Date: 02/23/24

Drone Operator: Robert Hart
Thermographer: Robert Hart

LIDAR Drone Services Commercial Roof Report

Overview

L.I.D.A.R. Drone Services conducted a complete thermal drone roof inspection above the Hochunk Nation's Hochunk Cinema. The client expressed concern that there may be moisture intrusion after a recent roof installation and requested an overall thermal drone scan of the roof to locate any current moisture issues.

A heat anomaly found during a thermal drone scan indicates possible issues such as moisture infiltration, heat loss, insulation problems, or electrical malfunctions. It serves as a warning sign for prompting further investigation or maintenance to prevent problems and ensure proper functionality.

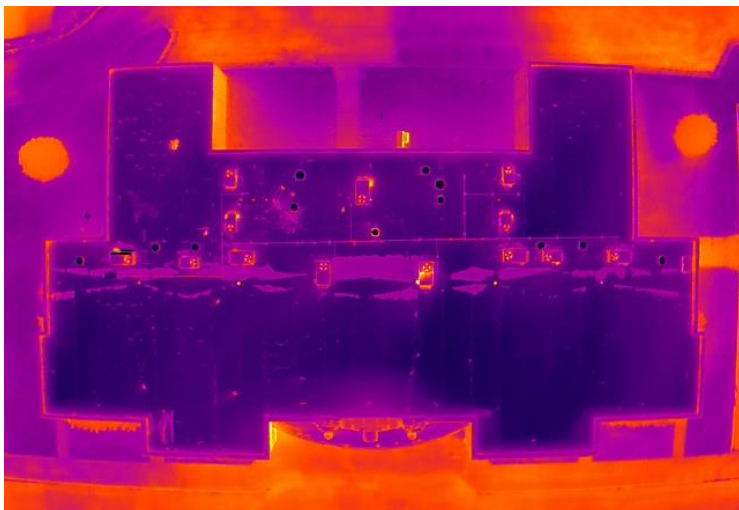
During the day, solar radiation heats both the roof and moisture. Moisture retains heat better, appearing warmer than the dry roof material during a thermal drone scan. This temperature difference becomes more evident after a day of sunshine, accentuating the warmth of the moisture on the thermal image.

The area of roof scanned is broken down into numbered sections. All images are labeled. Please take note of sections 2, 4, 7, and 8.

*Note: This inspection did not require any temperature readings. The camera settings were left at the factory values for RAT, humidity, and emissivity. Any temperature readings are apparent temperatures.

EQUIPMENT

DJI Mavic 3 Enterprise Thermal Drone
DJI Mavic 3 Enterprise Drone



Roof Overview

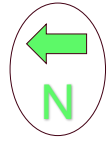
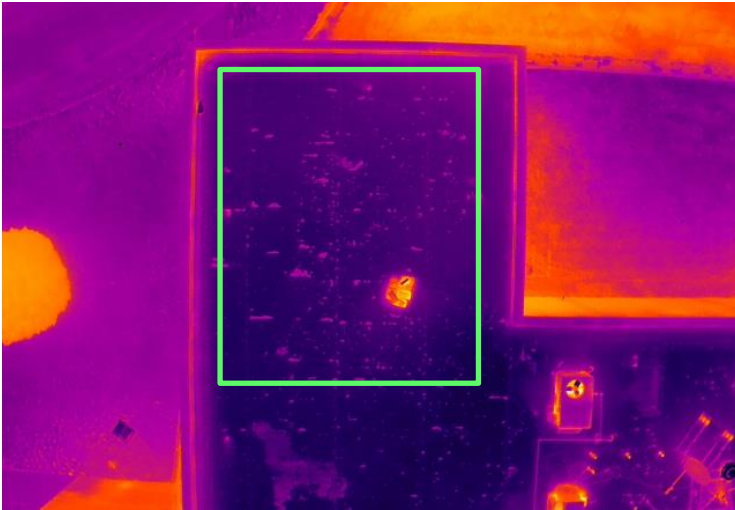


Roof Overview-Sections

Text Annotations:

All pictures are labeled to corresponding sections.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	350'
Wind Speed	7mph



Anomaly - Section 1



Text Annotations:

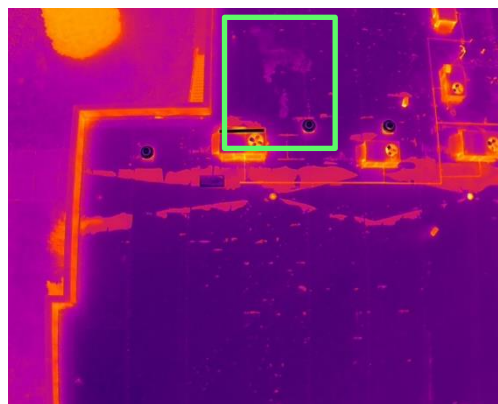
An anomaly was detected indicating possible moisture intrusion. Further investigation is recommended.

NOTE: The “bubbles” could be things such as air, vapor, condensation, glue, moisture, or the roof needing thermal cycling due to it being new and will stretch out over time.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



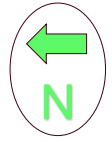
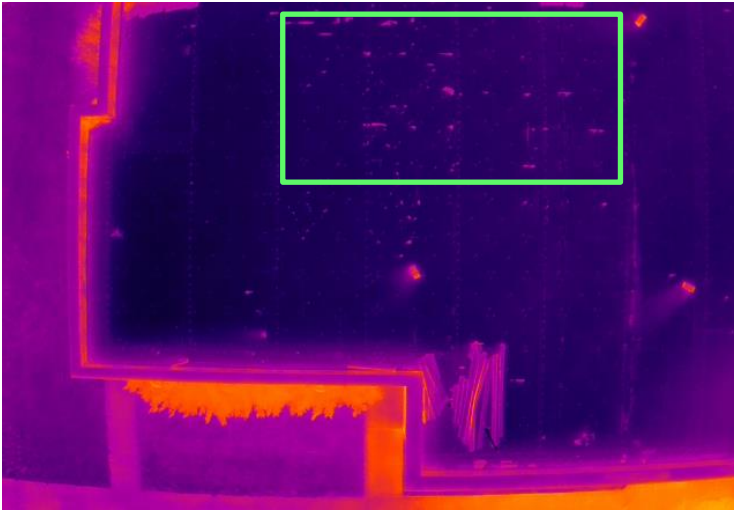
Anomaly - Section 2

**Text Annotations:**

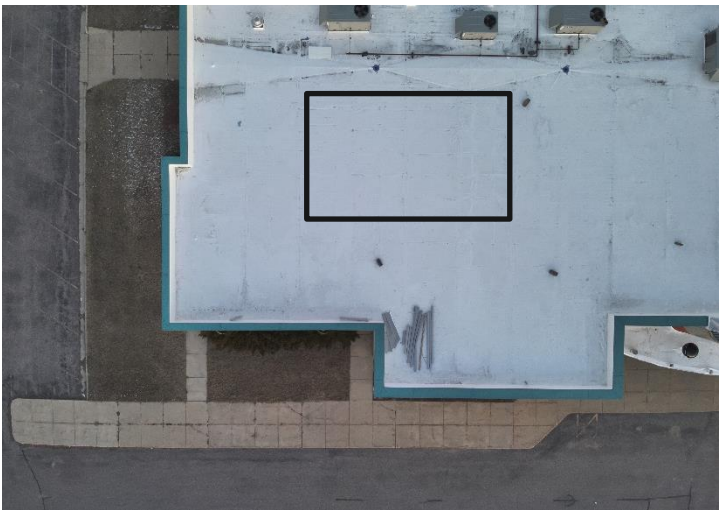
An anomaly was detected indicating possible moisture intrusion. Further investigation is recommended.

NOTE: This is one area of greater concern. Check all flashings and penetrations in that immediate vicinity.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



Anomaly - Section 3

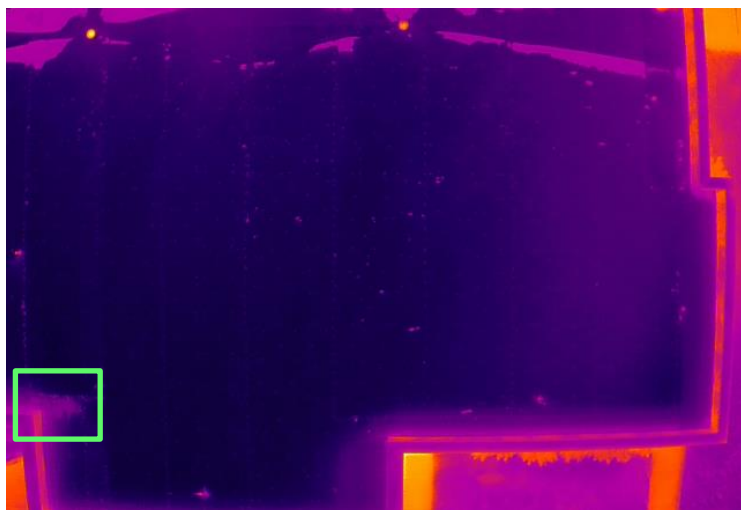


Text Annotations:

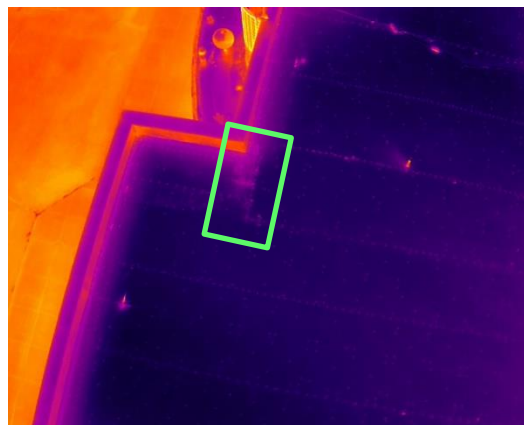
An anomaly was detected indicating possible moisture intrusion. Further investigation is recommended.

NOTE: The “bubbles” could be things such as air, vapor, condensation, glue, moisture, or the roof needing thermal cycling due to it being new and will stretch out over time.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



Anomaly - Section 4

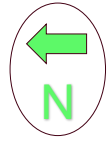
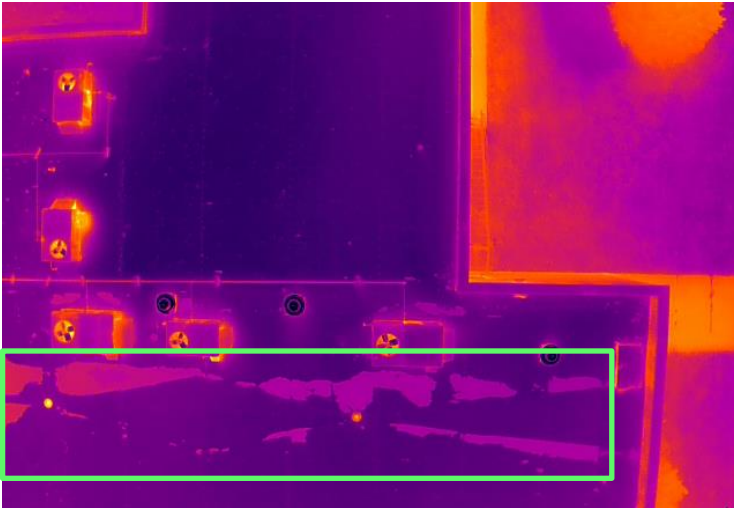


Text Annotations:

An anomaly was detected indicating possible moisture intrusion. Further investigation is recommended.

NOTE: Another area of concern that may be moisture intrusion.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



Anomaly - Section 5

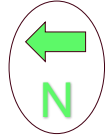
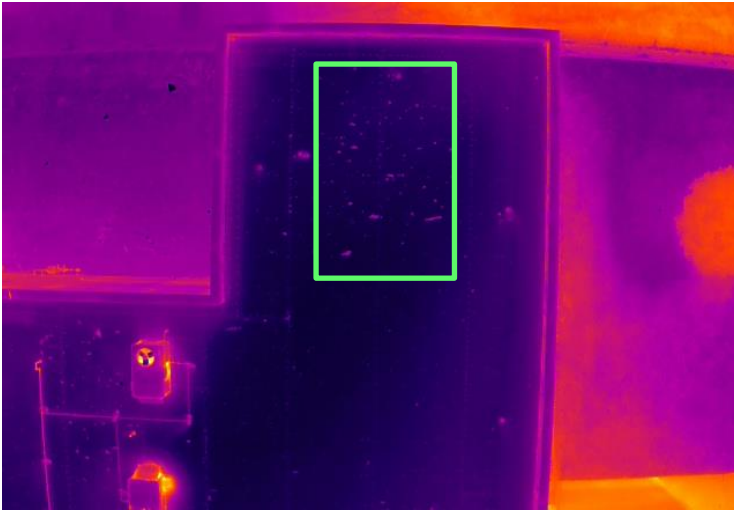


Text Annotations:

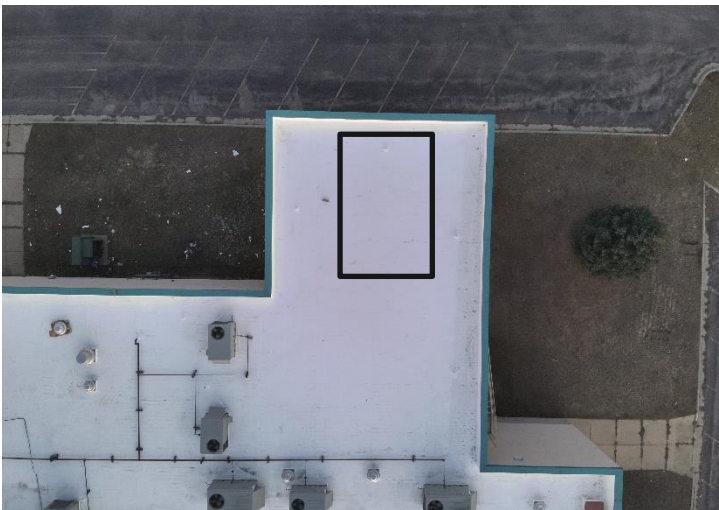
Ice and surface water build up next to drainage pathway crickets.

NOTE: Severe ice and water build up next to roofing crickets. Unable to detect any readings below surface ice and water.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



Anomaly - Section 6

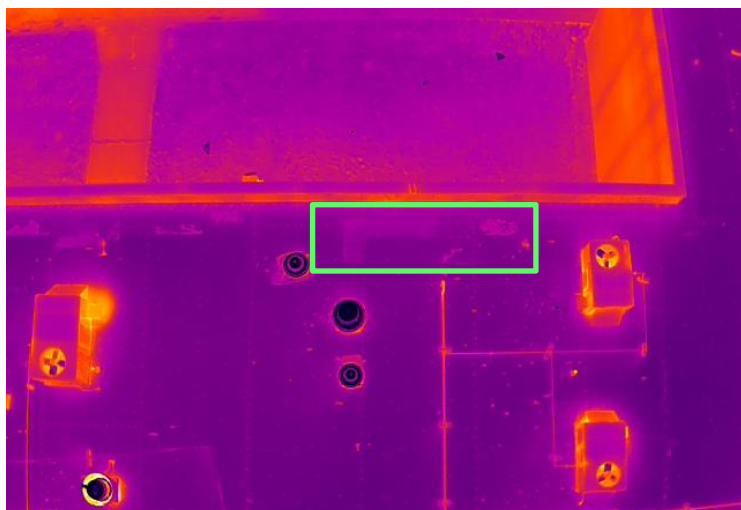


Text Annotations:

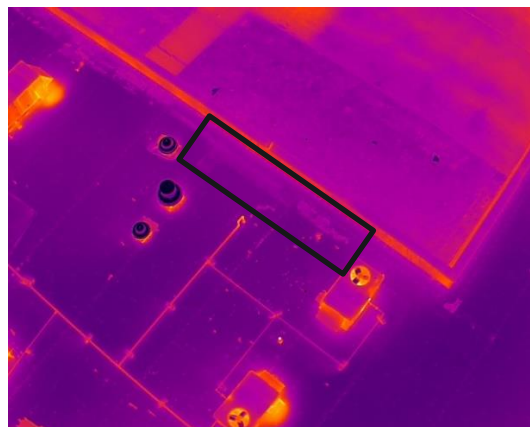
An anomaly was detected indicating possible moisture intrusion. Further investigation is recommended.

NOTE: The “bubbles” could be things such as air, vapor, condensation, glue, moisture, or the roof needing thermal cycling due to it being new and will stretch out over time.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



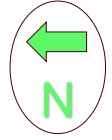
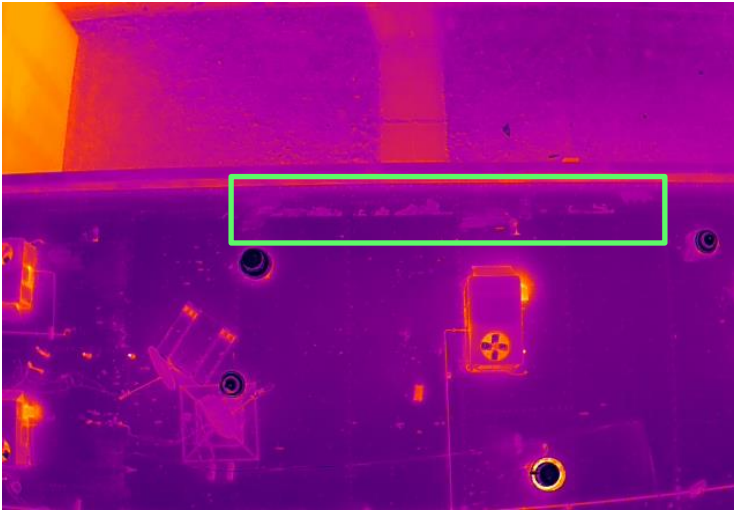
Anomaly - Section 7

**Text Annotations:**

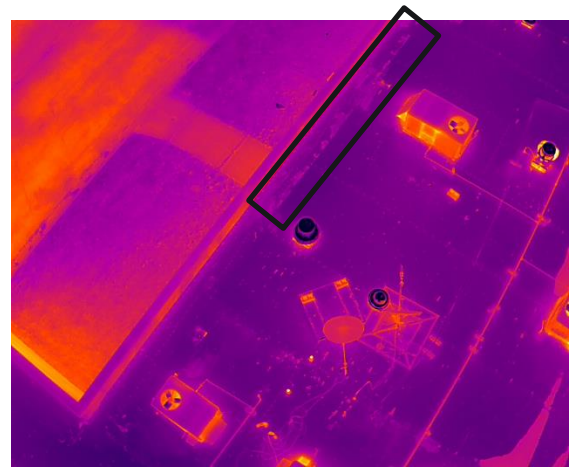
An anomaly was detected indicating possible moisture intrusion. Further investigation is recommended.

NOTE: Area of concern that may be moisture intrusion.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



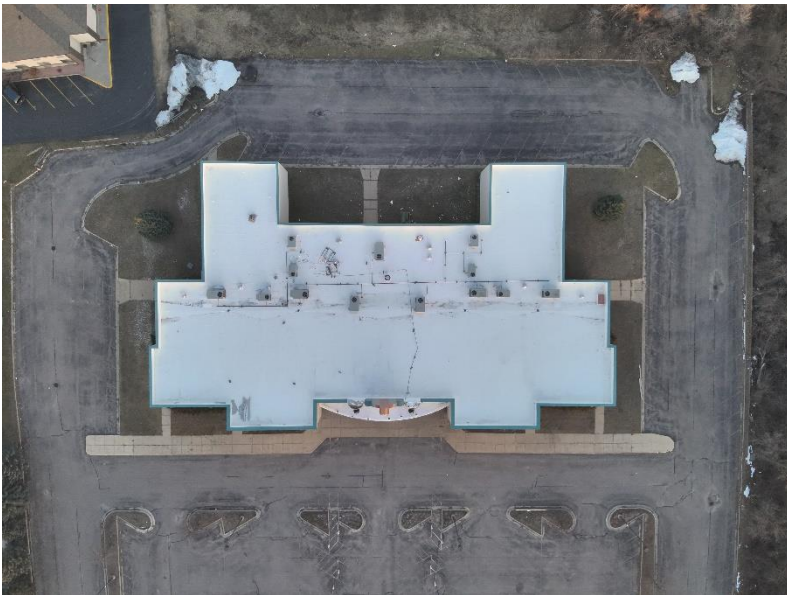
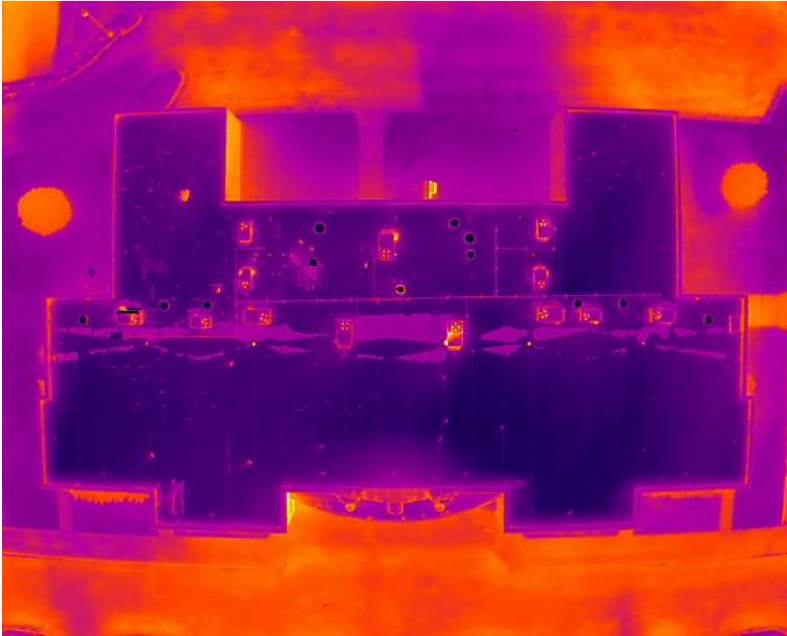
Anomaly - Section 8

**Text Annotations:**

An anomaly was detected indicating possible moisture intrusion. Further investigation is recommended.

NOTE: Another area of concern that may be moisture intrusion.

Camera Info	
Camera Model	M3T
Lens	9.1mm
Width	640
Height	512
Flight Altitude	75'
Wind Speed	7mph



Conclusion:

In conclusion, the thermal drone roof scan has successfully identified several anomalies that may indicate potential moisture intrusion issues. These findings underscore the importance of further investigation and action to ensure the integrity and longevity of the roof structure. Please note, there was ice and standing water present during the scan.

As a thermography expert, I recommend that our client engage the services of a qualified commercial roofer to implement necessary repairs. I would also recommend reviewing your warranty, as these issues may be covered. A follow up scan is recommended once the ice and surface moisture has evaporated. It would also be good to see if thermal cycling helps works out the “bubbling”.

Thermography Certifications:

