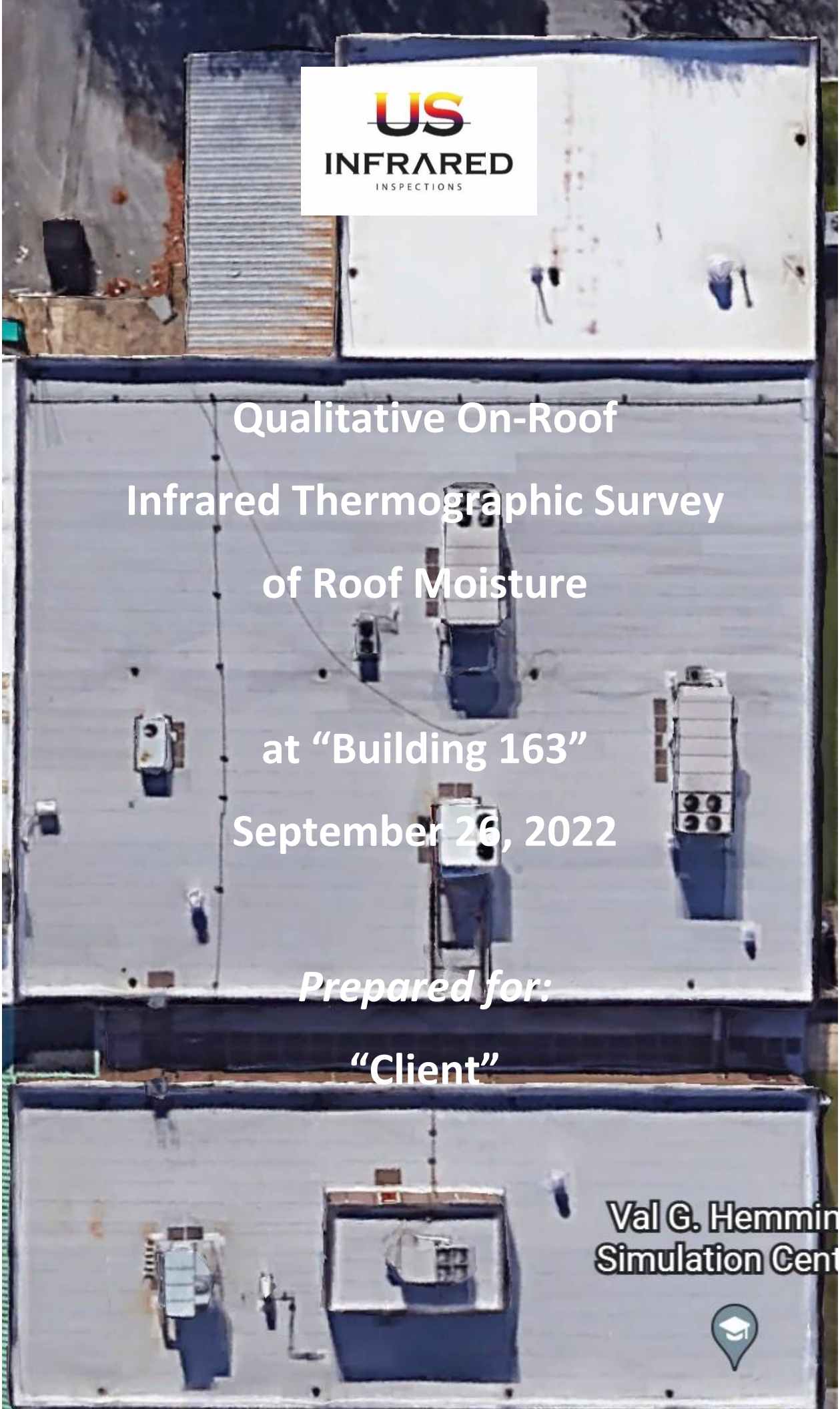

US
INFRARED
INSPECTIONS
Qualitative On-Roof
Infrared Thermographic Survey
of Roof Moisture
at “Building 163”
September 26, 2022
*Prepared for:*
“Client”
Val G. Hemmin
Simulation Cent

October 5, 2022

Mr./Mrs. “Client”
“Company”
“Company Address”

Dear Mr./Mrs. “Client”:

The building roofs of the "Building Name" building at “Building Address” were the subjects of an infrared (IR) survey on the night of September 26, 2022. The weather was Clear and approximately 67 Degrees, providing good infrared imaging conditions.

**This report includes:**

- USIIScanIR™ digital report printed in high resolution with explanations of the method,
- Conditions at the time of the survey,
- A map marked with the finding locations,
- Individual report pages of all suspect wet areas.
- Digital image file delivery.

**SoCal Infrared**, an Authorized USIIScanIR™ Contractor, was retained for an infrared survey of the roof in an effort to identify areas of suspect moisture and to mark the areas for further review. This report is based on information obtained at the site at the given date and time. We marked an outline of identified areas of moisture with marking paint directly on the roof and documented our findings with a thermograph and photograph of the area. The purpose of any infrared thermography service is not to locate or identify leak sources. Our inspection is designed to comply with ASTM Standard C1153 -"Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging" with the exception of core sampling.

This report is for the exclusive use of our Client and is not intended for any other purpose. The report is based on the information available to us at this time as described in the report. Should additional information become available at a later date, we reserve the right to determine the impact, if any, the new information may have on our discovery and recommendations and to revise our opinions and conclusions if necessary and warranted. Some anomalies were verified by using a moisture meter to check the moisture content. There may be specific areas and items that were inaccessible during our survey. We can make no representations regarding conditions that may be present but were concealed or inaccessible during the survey. With access and an opportunity for inspection, additional reportable conditions may be discovered. Inspection of the inaccessible areas will be performed at an additional cost after access is provided.

**Analysis and Recommendations**

We recommend that your roof maintenance team carefully review this report. Then, regarding the images contained herein and the marked areas on the roof, these areas should be physically located and given a thorough visual examination. When warranted, these areas should be subjected to a destructive test (core sample) to confirm the analysis. We recommend a roofing professional conduct core samples on the roof(s) as needed. Destructive probes and roof cores

will be taken and repaired by others and are not in this scope of our work. Services such as interpretation of thermal patterns documented in this report and any remedial and replacement recommendations should be performed by a knowledgeable roofing consultant or comparable roofing expert.

Our reports are designed to be clear, concise and useful. Please review it carefully. If there is anything you would like us to explain, or if there is other information you would like, please feel free to call us as we would be happy to answer any questions.

Sincerely,

Michael Wiggs
US Infrared Inspections Thermal Imaging Services
Certified Thermographer, CIT #13770
Authorized USIIScanIR™ Contractor

## Roof Moisture Survey Info

**Client:** Mr./Mrs. "Client"
**Building Name:** "Building Name"
**Client representative present at inspection: "On Site Rep"**
**Building Location:** "Building Address"
**Certified CIT#: 13770 Infrared Thermographer**
**Survey Date:** September 26, 2022
**Survey Start Time:** 9:30 pm
**High ambient temperature of the day:** 78 Degrees
**Daytime weather conditions:** Partly Cloudy
**Last recordable rainfall:** 9/11/2022
**Weather conditions at survey start time:** Clear
**Wind speed/direction at survey start time:** 0 Mph
**Ambient temperature at survey start:** 67 Degrees
**Imager used:** Flir E96
**Roof deck:** Concrete
**Insulation:** EPS Board
**Membrane:** TPO ,Bitumen
**Membrane attachment:** Mechanically Attached and fully adhered
**Notes:** One area with ponding water is located on TPO roof section. The probability of membrane compromise is not evident based on the previous inspection on Sept 26, 2022. Resolve ponding water issues immediately. Imamate premature roof decay will continue due to water creating a UV magnification effect.

# Understanding Building Roof Infrared Imagery

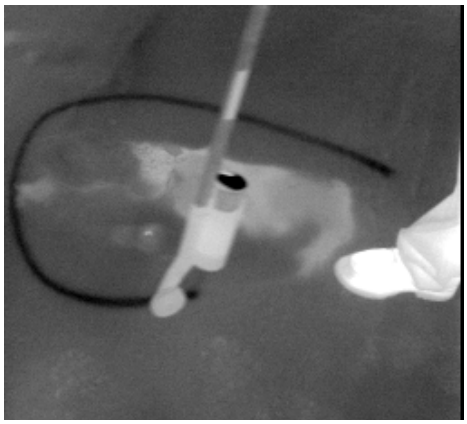
Infrared imagery is often a grayscale picture whose scales (or shades of gray) represent the differences in temperature and emissivity (opposite of reflectivity) of objects in the image. As a general rule, objects in the image that are lighter in color are warmer, and darker objects are cooler. No object in the images is detected via visible light wavelengths (400-700 nanometers) rather, only from infrared wavelengths in the 3000-5000 nanometers or 8000-14000 nanometers range. Lights and other relatively hot objects are very evident, but as a result of their heat…not light emissions.

When an image is taken with an infrared camera, it is often recorded onto videotape and/or digitally saved to an on-board storage device. The image may be then modified in a number of ways to enhance its value to the end user. Imager files are digitized, saved and converted to jpeg images, then adjusted for color, contrast and brightness before being scaled and placed into a report file. Report files are then printed in high quality and saved to a CD-ROM.

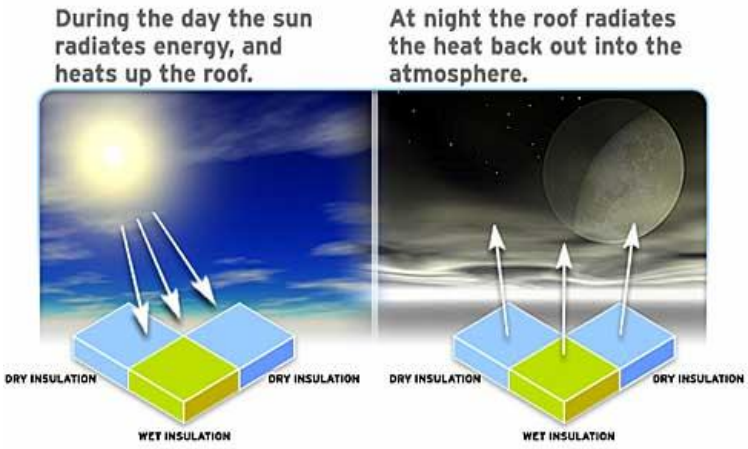
During the day, the sun radiates energy onto the roof surface and into the roof substrate, and then at night, the roof radiates this heat back into outer space. This is called radiational cooling. Areas of the roof that are of a higher mass (wet) retain this heat longer than that of the lower mass (dry) areas. Infrared imagers can detect this heat and "see" the warmer, higher mass areas during the "window" of uneven heat dissipation.

We scan the roof with sensitive infrared cameras to detect the sources of heat and record them for later analysis. Since we can “see” all areas of a different mass immediately, we can then mark the roof and/or save infrared images for report use.

*For more information, please visit us at...[www.usinfraredinspections.com.](http://www.usinfraredinspections.com)*



**Suspect wet areas marked directly on the roof with marking paint.**

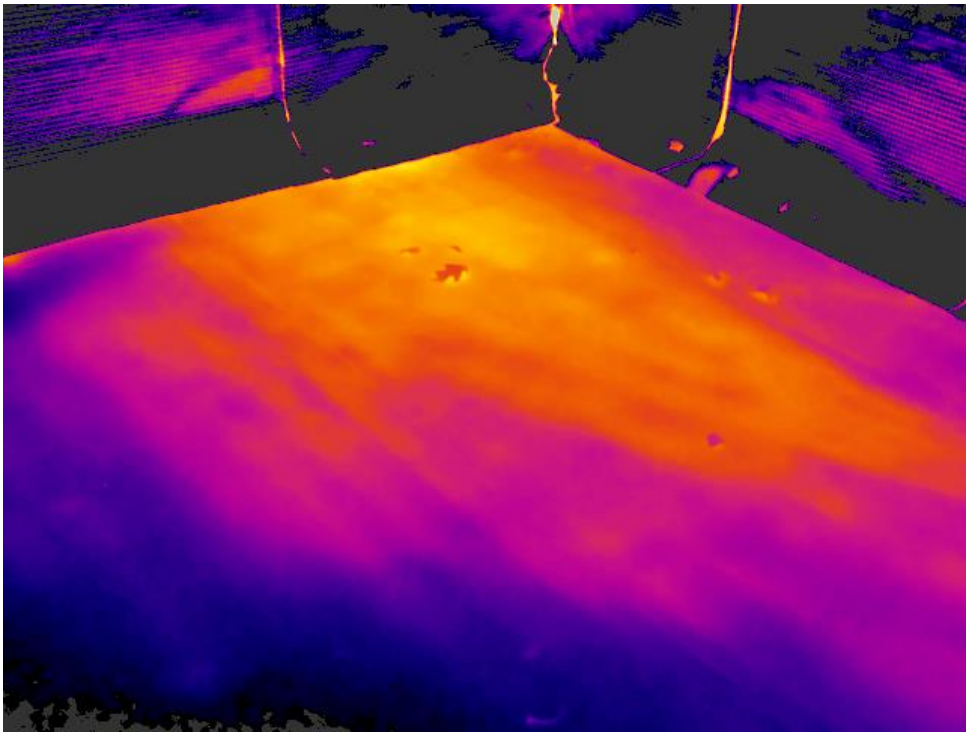


# Google Earth Map of the Sample Project Roof

## Roof Moisture Infrared Survey of "Building Name" on September 26, 2022

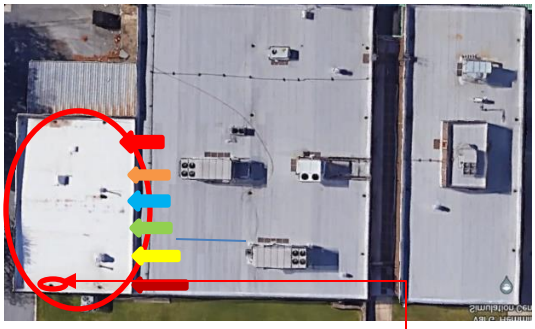
## Report #: 1

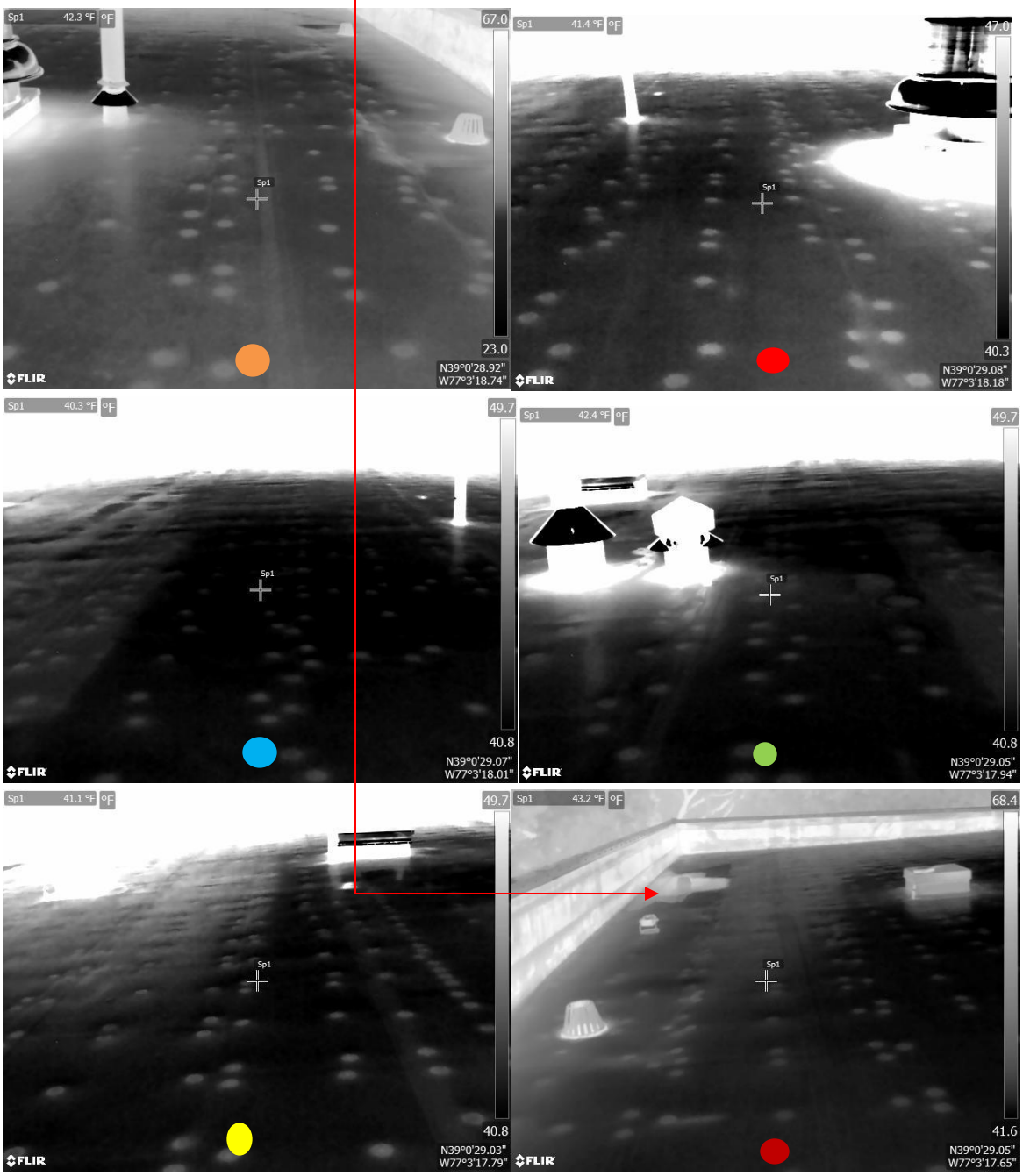
**Notes:** **Roof core sample recommended here to confirm current moisture**

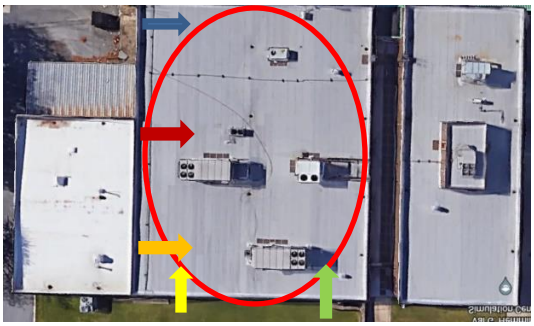


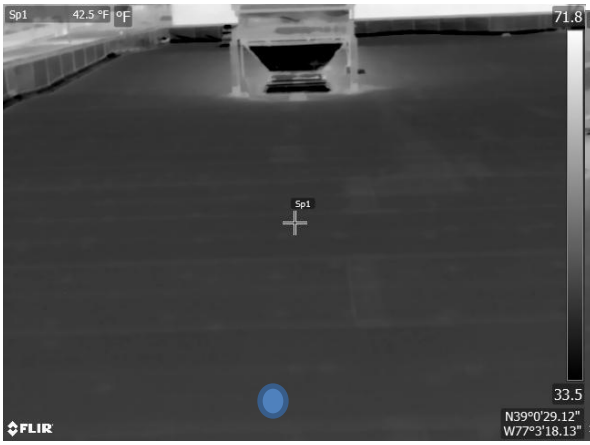
## IR By Roof Section (no anomaly)

**Match arrow color with aspect and direction of IR to see aspect of picture. Red arrow indicates location of ponding water**

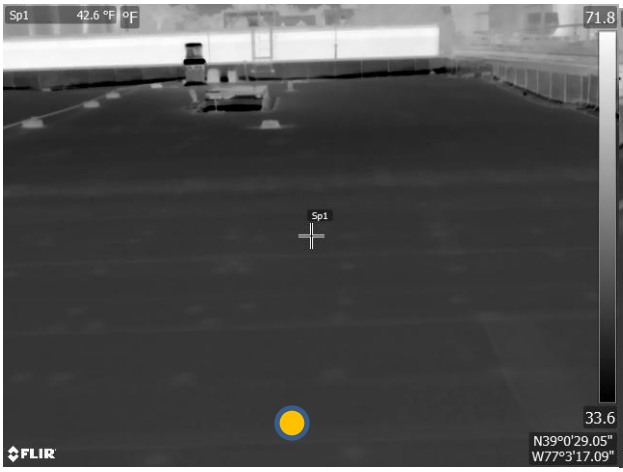


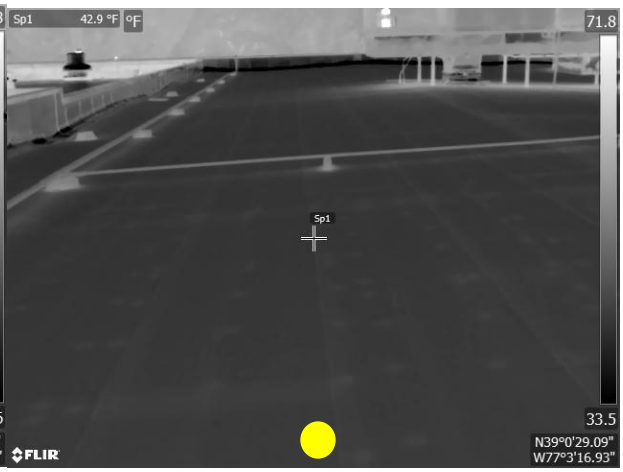




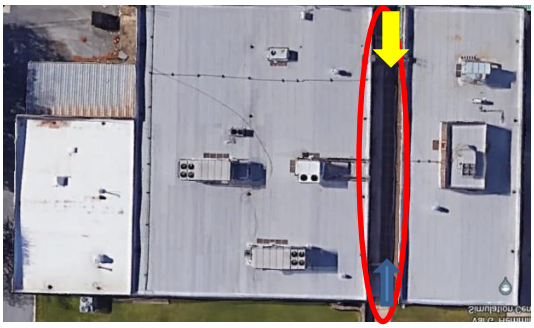

Sp1
42.5 °F
°F
71.8
33.5
N39°0'29.12"
W77°3'18.13"
FLIR

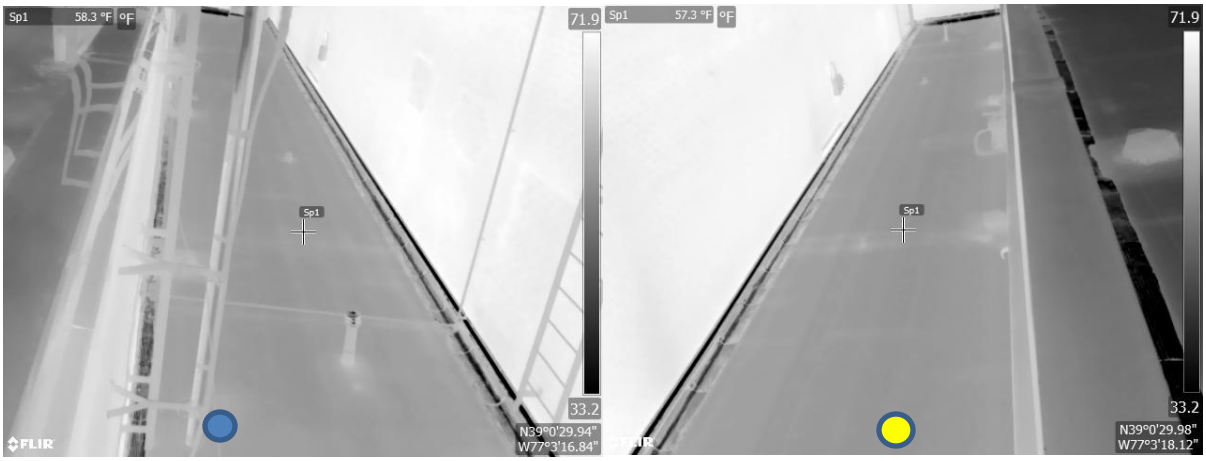

Sp1
43.9 °F
°F
71.8
33.5
N39°0'29.04"
W77°3'17.51"
FLIR

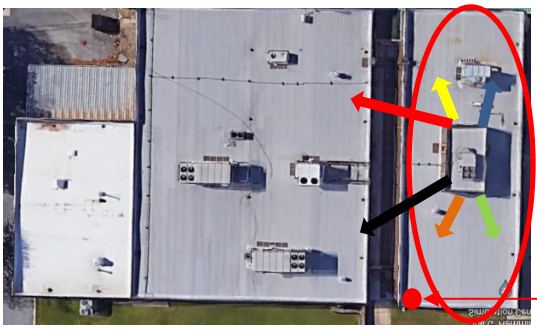

Sp1
42.6 °F
°F
71.8
33.6
N39°0'29.05"
W77°3'17.09"
FLIR


Sp1
42.9 °F
°F
71.8
33.5
N39°0'29.09"
W77°3'16.93"
FLIR

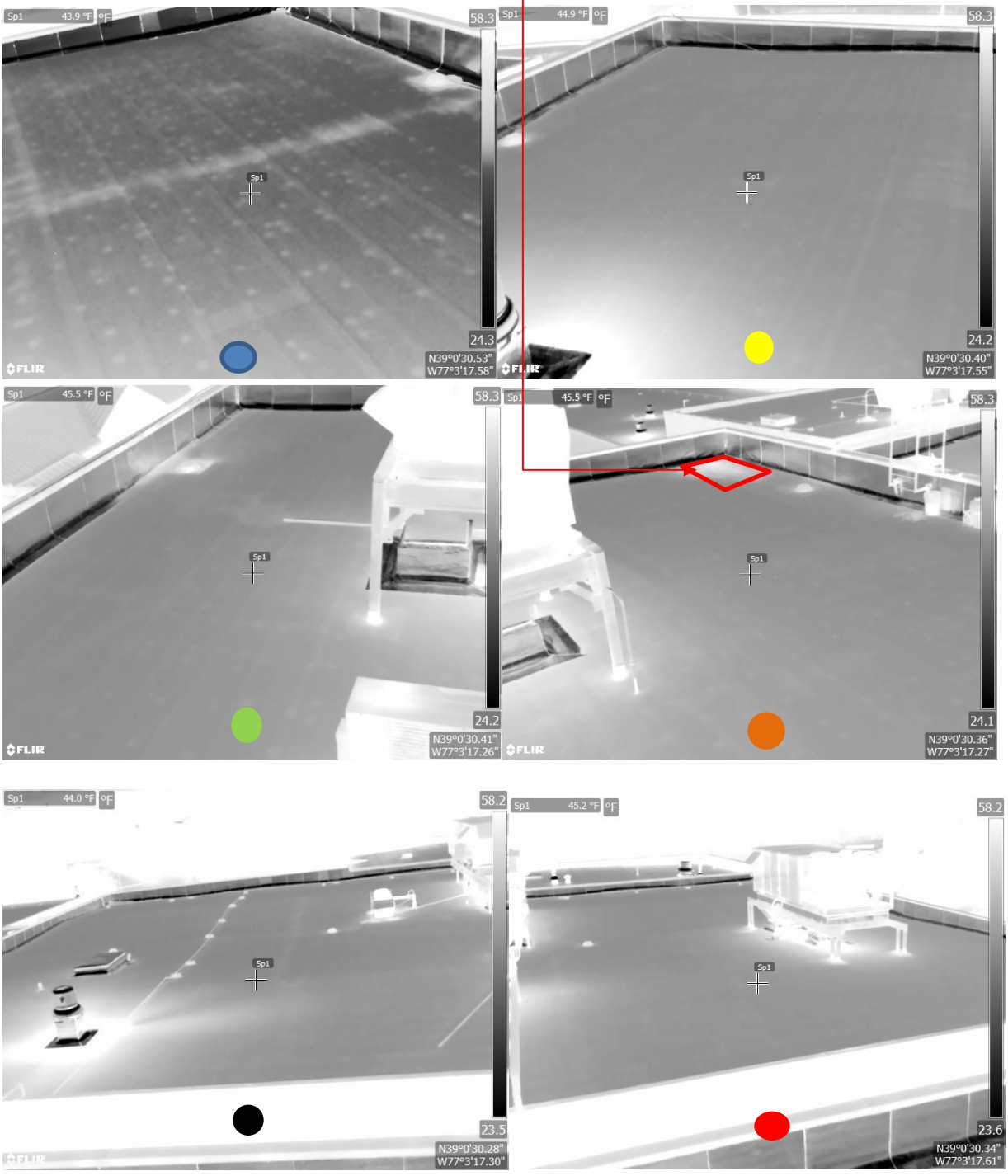

Sp1
43.2 °F
°F
71.8
33.6
N39°0'29.45"
W77°3'18.26"
FLIR




Sp1
58.3 °F
°F
71.9
33.2
N39°0'29.94"
W77°3'16.84"
FLIR
Sp1
57.3 °F
°F
71.9
33.2
N39°0'29.98"
W77°3'18.12"



**Arrow to roof anomaly**



**Estimated area to repair and possible leak penetration.**

## Replacement roof area - @ 26sqft

**Suspect entry repair location – parapet wall and cap**

## Electronic Verification of water

## Ponding Water on TPO roof

## Evidence of Core Sample Repair


## End of report