



# Thermal Scanning Services: Aerial IR Building Envelope Audits

# Agenda

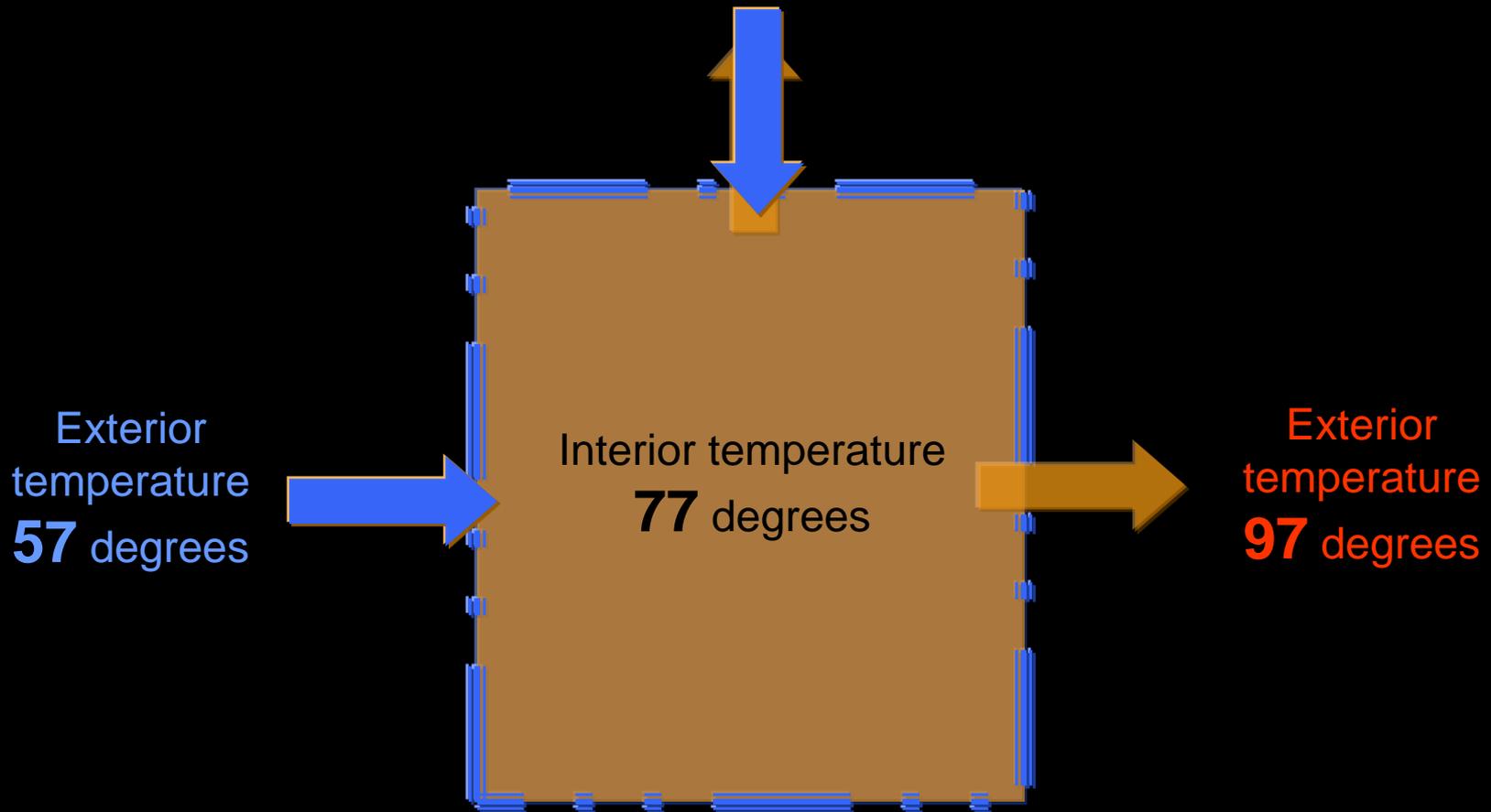
1. What is the problem and why is it important?
2. How does an infrared (thermal) scan of a building work?
3. What is its cost and value?

# Problem

41% of a buildings yearly maintenance cost goes to energy\*.



# Thermography is based On Temperature DIFFERENCES

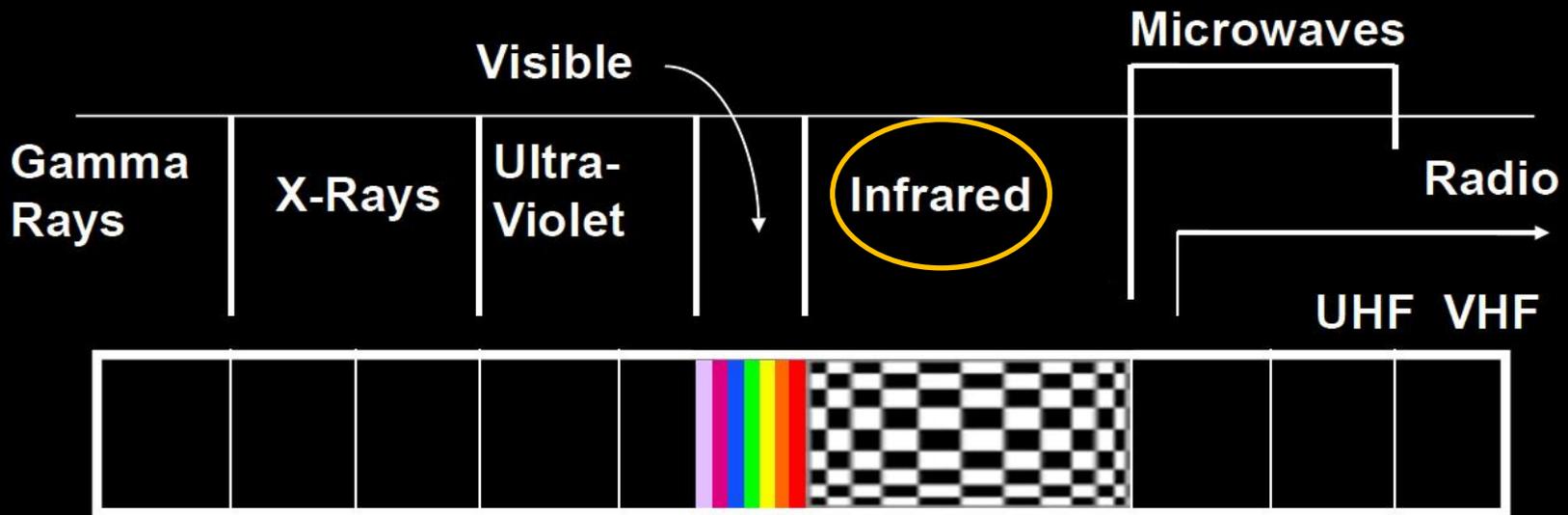


Need at least a 20 degree differential

# Exterior Thermography Can:

- Visualize external flow of **heated** air
- Identify potential **moisture** intrusions (roof leaks)
- Locate *ineffective* insulation and seals
- Identify faulty construction or materials

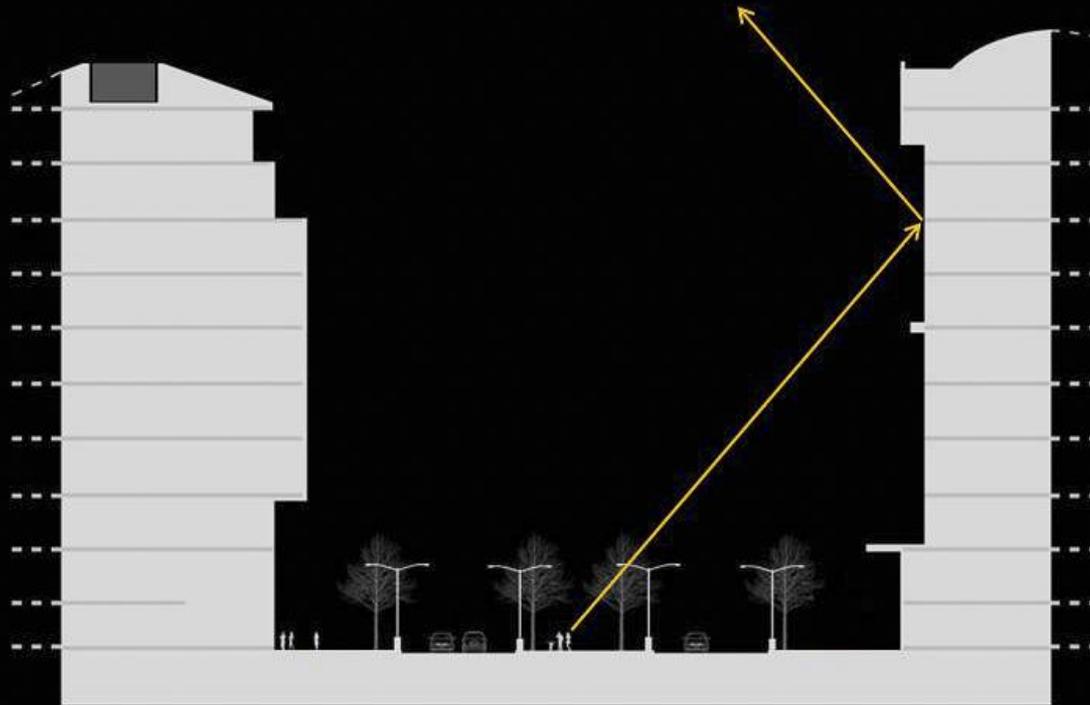
# What is HD Infrared ?



High Definition Infrared Radiation  
(640x480)



# Thermal Imaging Services:



# Thermal Imaging Services:



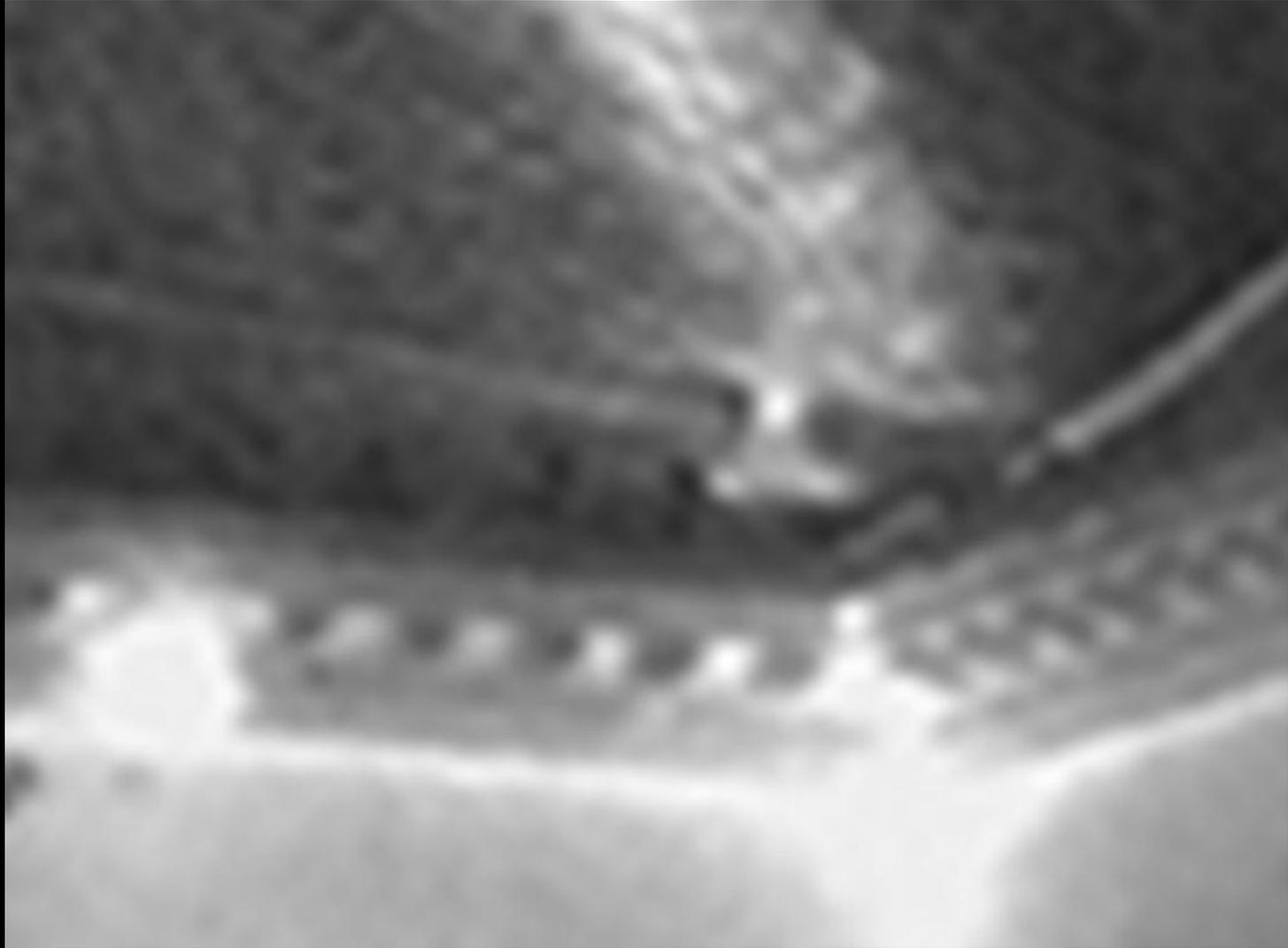
The IR camera hoisted from the balloon can see hidden areas.

# Thermal Imaging Services:



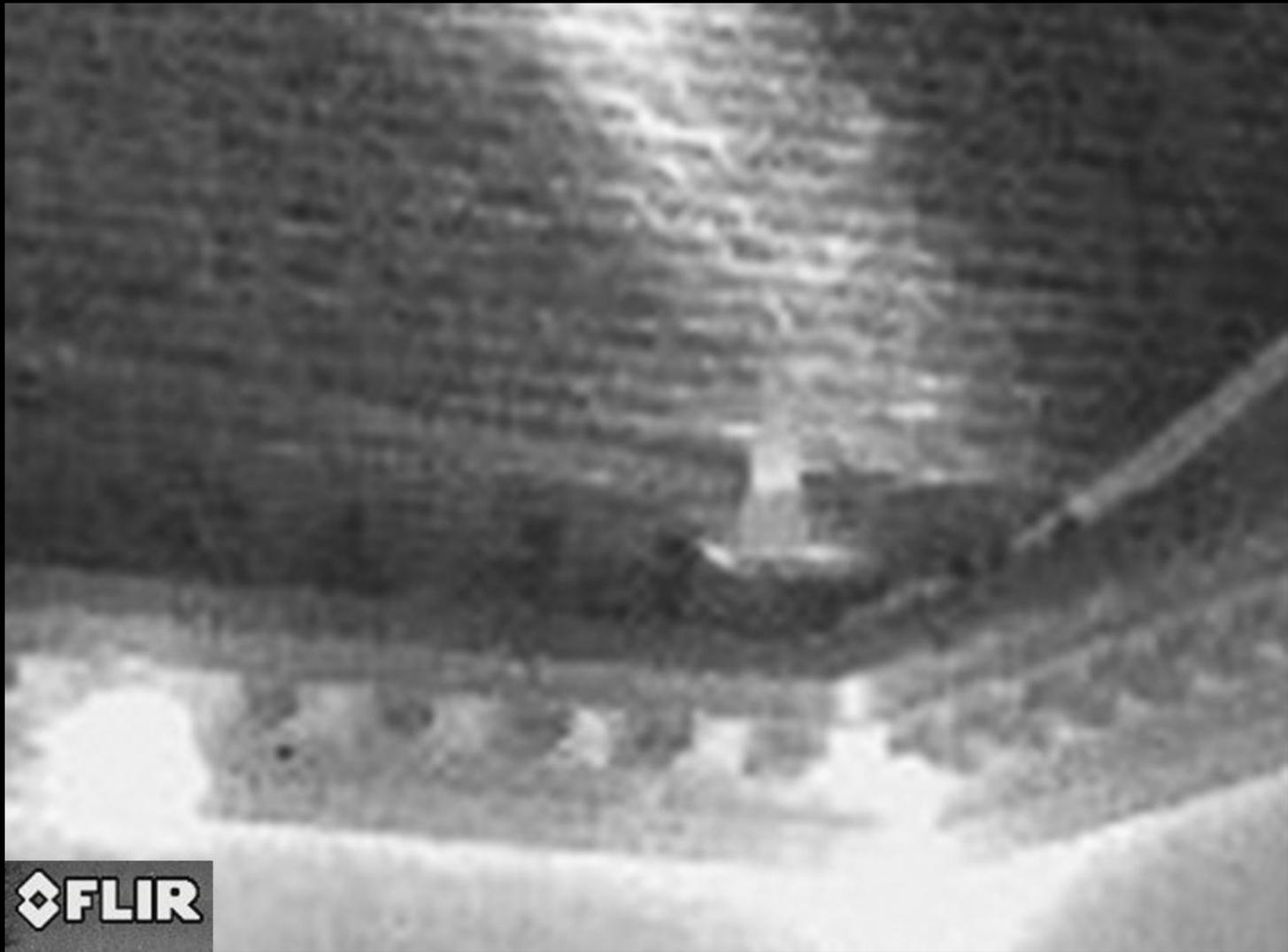
The dark (warm) spots show poor wall design and missing insulation at this judiciary building.

# Thermal Imaging Services:



Detail: 320x240 Resolution (simulated)

# Thermal Imaging Services:



Detail: 640x480 Resolution

# Thermal Imaging Services:



Detail: 1024x768 Resolution

# Case Study:

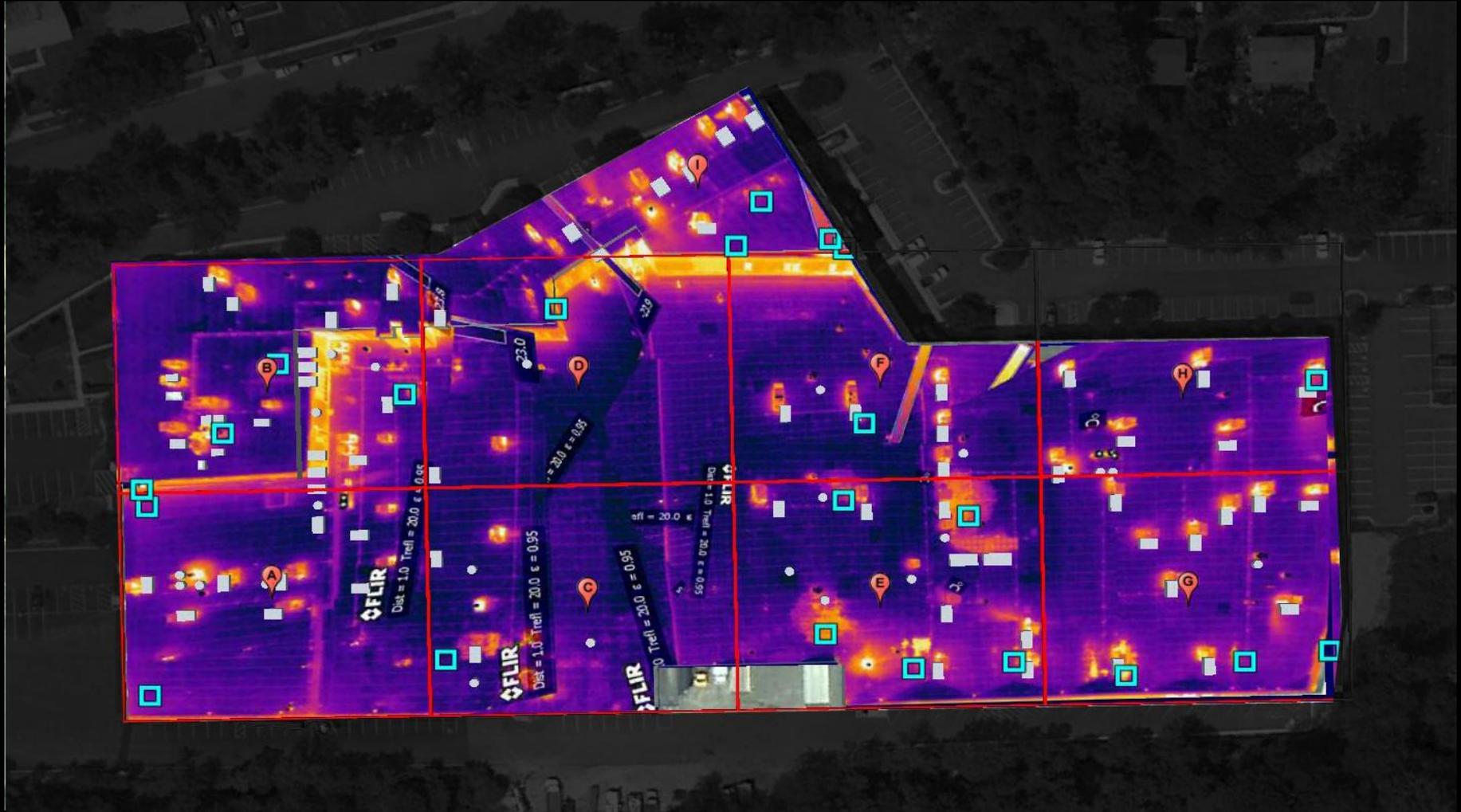


# Case Study:



For easier analysis, the building has been divided into a simple grid formation. Grid Sections are used to locate IR photos on the rooftop and along the façade.

# Case Study



The light blue boxes indicate the major thermal insulation issues.



Overall view of Section C. Major problems have been marked by indicator boxes.



Just South of center of West-facing facade. Heat loss indicated by boxes.

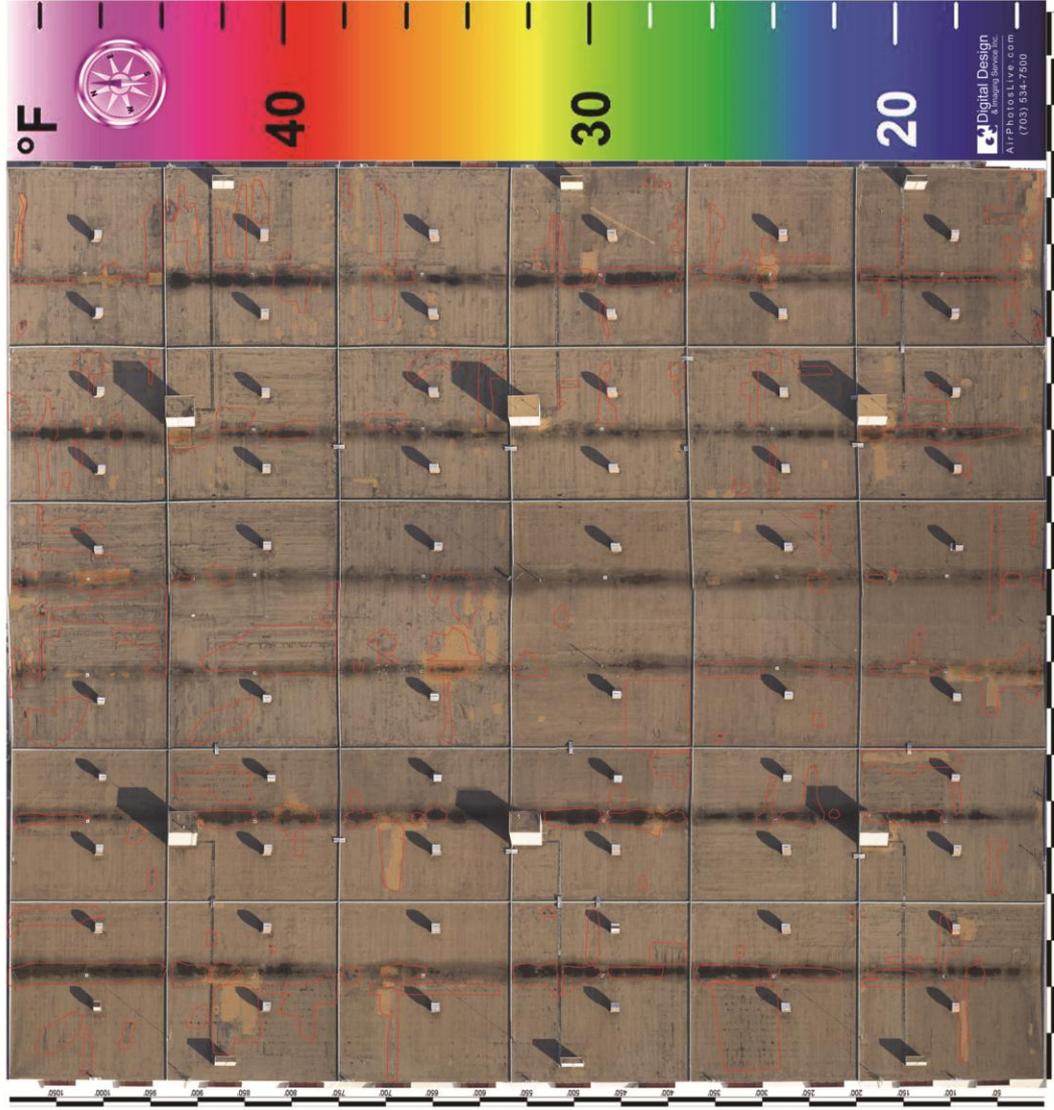


There is a significant problem with heat wicking out of the Rooftop through the thousands of long roofing nails. The above photo shows a 1/8" thick film of ice over parts of the roof. Each nail has melted completely through the ice forming a small crater.

# Contents & Deliverables

1. An illustrated report that orients, locates and prioritizes potential problem areas that need detailed interior inspection.
2. A complete set of FLIR radiometric images that allows the client/building engineer to analyze specific temperature differences. These images have been prioritized with the most important problem areas listed first.
3. IR Analysis software tools that allows the Client and Engineers to look closely at each image to further analyze it.

# Sample Deliverables CAD:



**BUILDING  
VISIBLE  
ROOF SURVEY**

**A.03**

**CAPTURE DATE**  
2016.02.01  
**DRAWN BY**  
RS

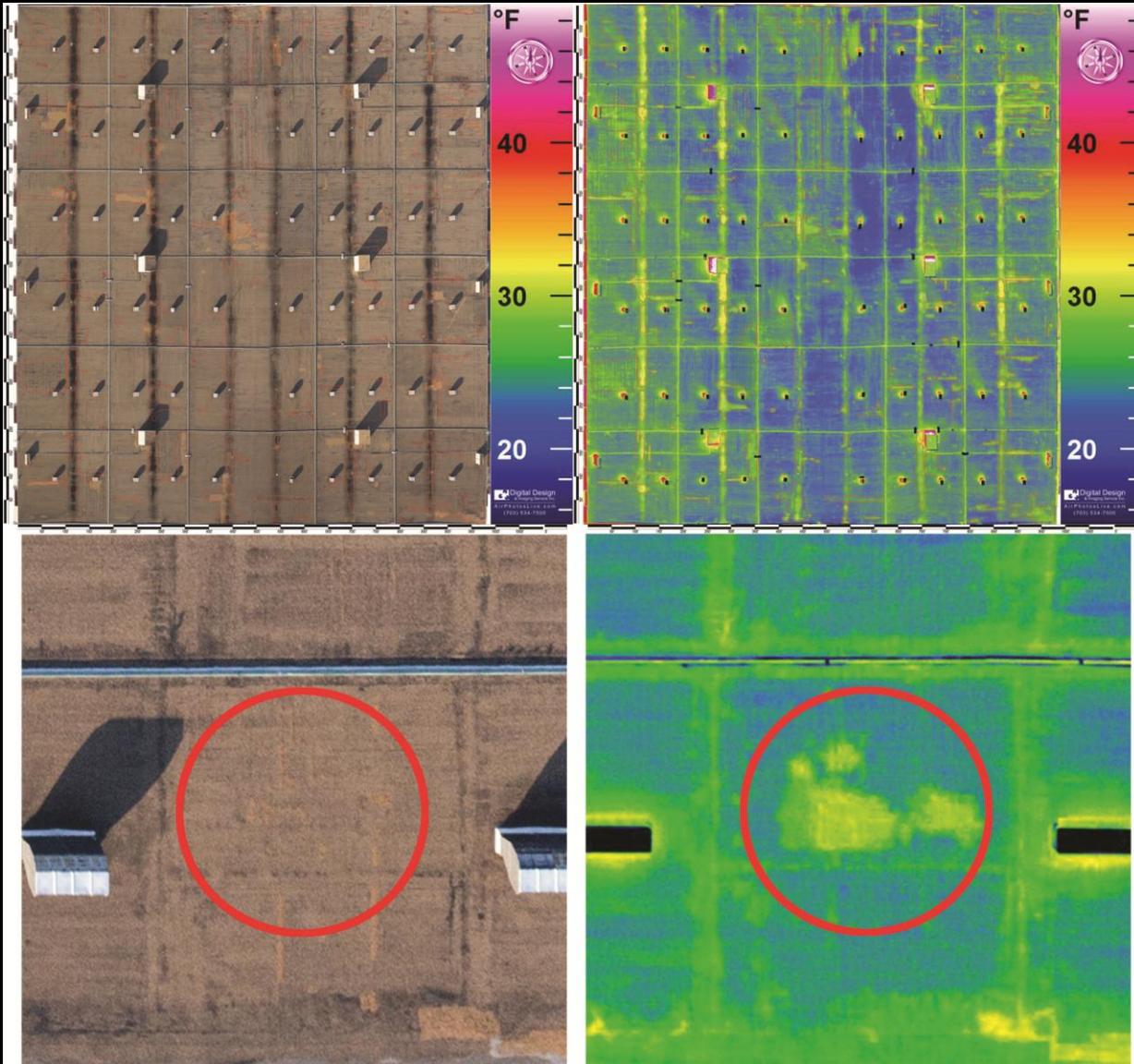
**PROJECT**  
PROJECT NO.

**CLIENT**

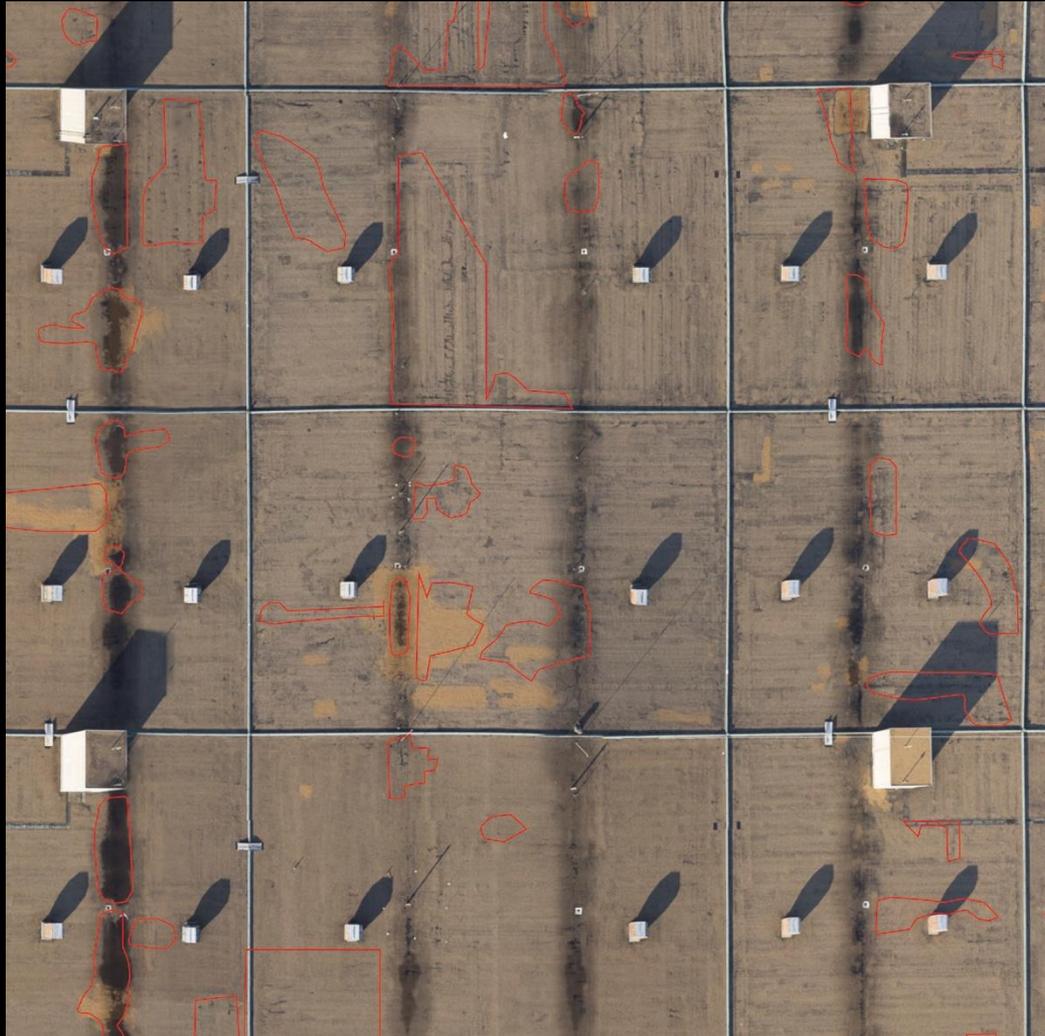
**COMPANY NAME**  
AirPhotosLive Service, Inc.  
100 West Jefferson St, Suite 200  
Falls Church, VA 22046

 Digital Design  
& Imaging Service Inc.  
AirPhotosLive.com

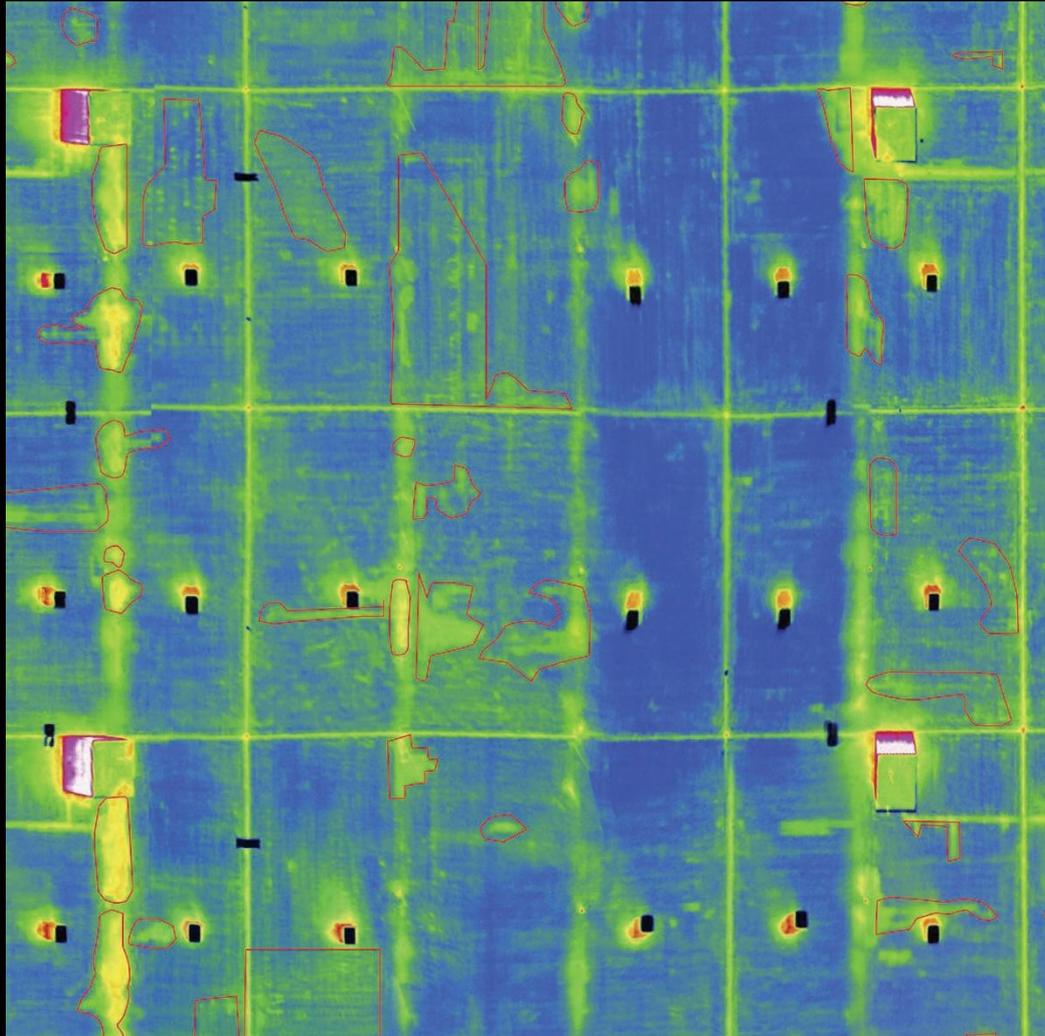
# Sample Deliverables CAD:



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# Summary:

## External Scan:

- Used for quick, accurate scanning of a building's envelope
- Exposes overview of most major heat and water leaks
- Reveals exterior leaks through the roofs, facades

## Internal Inspections:

- Involves room by room interior inspections during blower test.
- Harder to locate thermal bridges
- Useful to pinpoint problems between internal walls

# Standard Pricing :

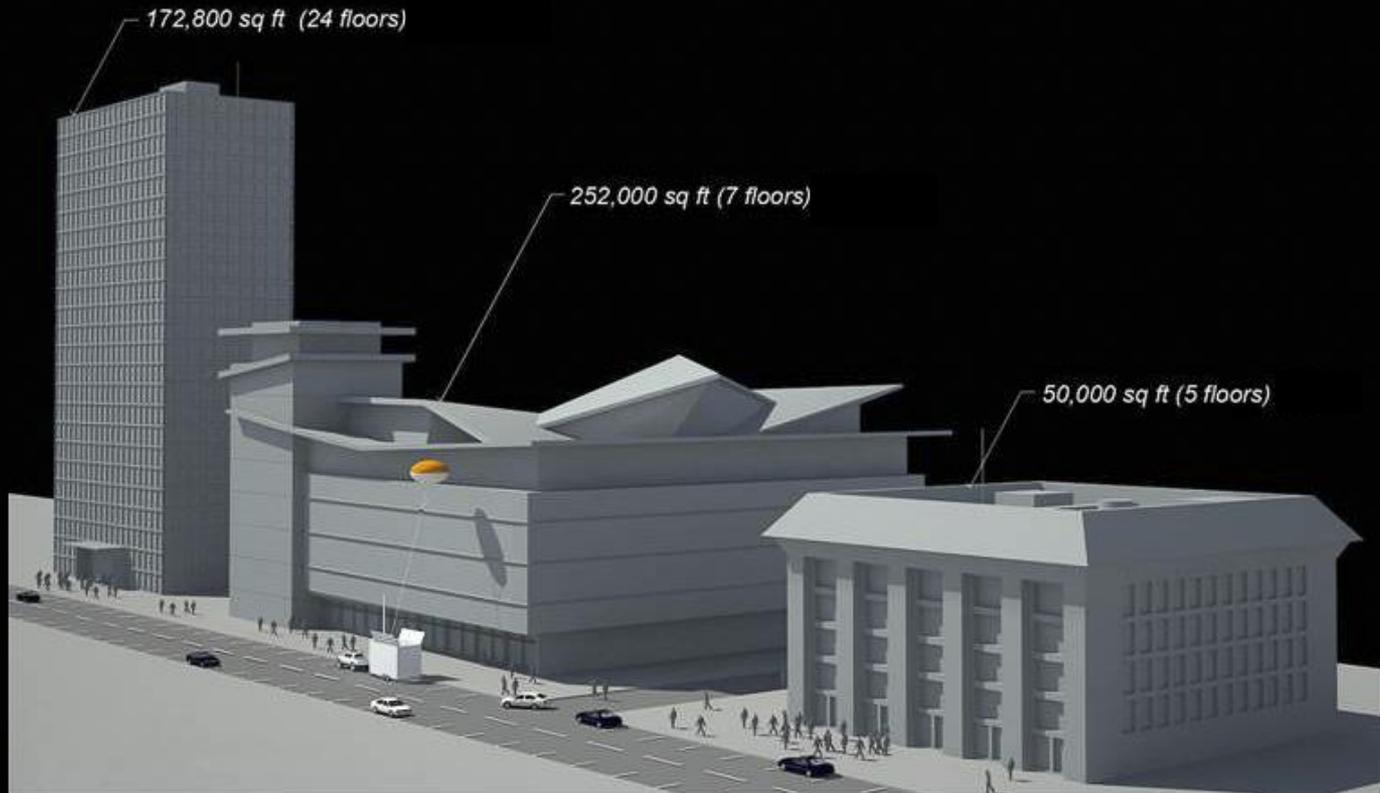


Illustration showing infrared scanning process using specialized mast and/or aerostat balloon.

# Methodology:



The DDIS platforms is the ultimate in Green technology: Helium does the lifting, manpower reels it in.

# Additional Applications:



[Please Click Here to View A High-Altitude 360° Viewshed](#)

# Additional Applications:



Monitoring Building's Security Against Drones