

Thermography Surveys

Introduction

“Moisture Damage Contributes to 90% of All Building and Building Material Failures” (ASHRAE)

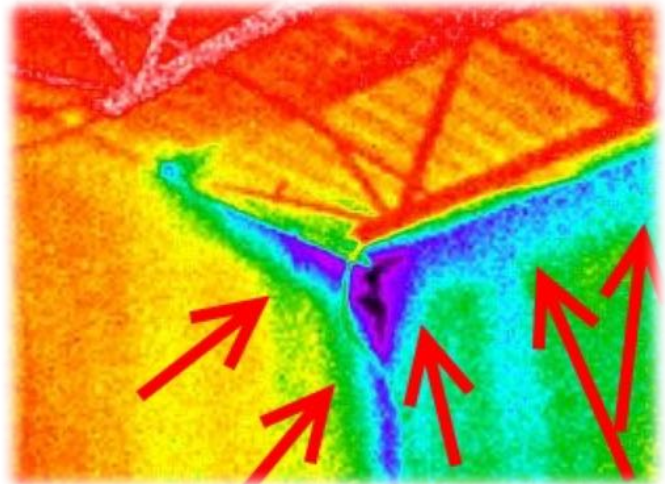
“Moisture Leading Cause of Building Problems Costing More Than \$9 Billion Annually in U.S.” (ASTM)

“Moisture Will Replace Asbestos as the Most Frequently Mentioned Topic in Building Litigation”
(C. Gaal, NJ Investigation Commission Counsel)

Moisture, in all its physical forms, is commonly regarded as the single greatest threat to durability and long-term performance of the building stock. Excessive exposure to moisture is not only a common cause of significant damage to many types of building components and materials, it also can lead to unhealthy indoor living environments.

Some of the more serious effects resulting from *moisture problems in buildings* include:

- Decay of wood and corrosion of metals
- Infestation by termites, carpenter ants and other insects
- Negative impacts on indoor air quality (IAQ)
- The growth of mold, mildew, bacteria, and other biological contaminants
- Reduced strength in building materials
- Expansion/contraction damage to materials
- Reduced thermal resistance of wet insulation
- Premature failures of paints and coatings
- Damage to building contents
- Negative effects on building aesthetics



Thermography

Thermal Imaging is an extremely cost effective technique for evaluating the integrity of a wide range of roof systems, wall systems, and curtain wall systems.

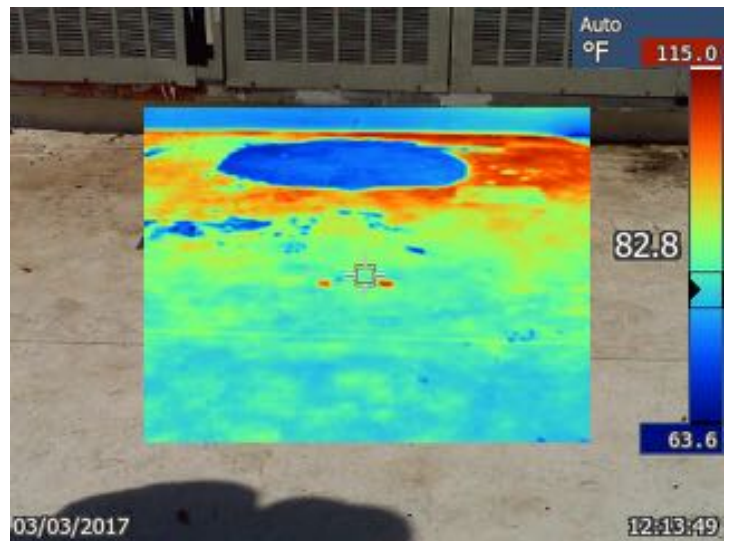
Surface damage to the outer membrane of roofs will cause water to be absorbed into sub-surface insulation layers and can result in major structural damage or, at the very least, deterioration to any structure near the leak location. A **Thermal Imaging** survey will quickly locate any area where moisture is retained or trapped. Knowing the exact location of the trapped moisture will allow for an accurate decision to be made regarding the remedial repairs necessary for the building envelope.

FACT - Moisture in a Building Envelope is the leading cause of indoor air quality problems including:

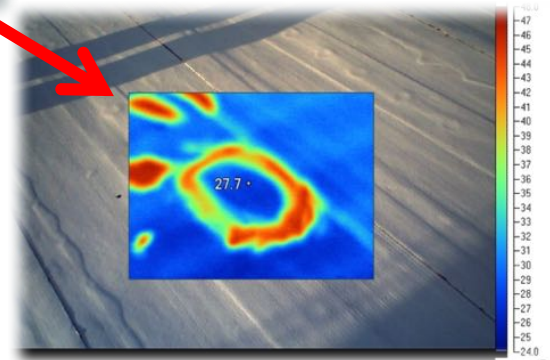
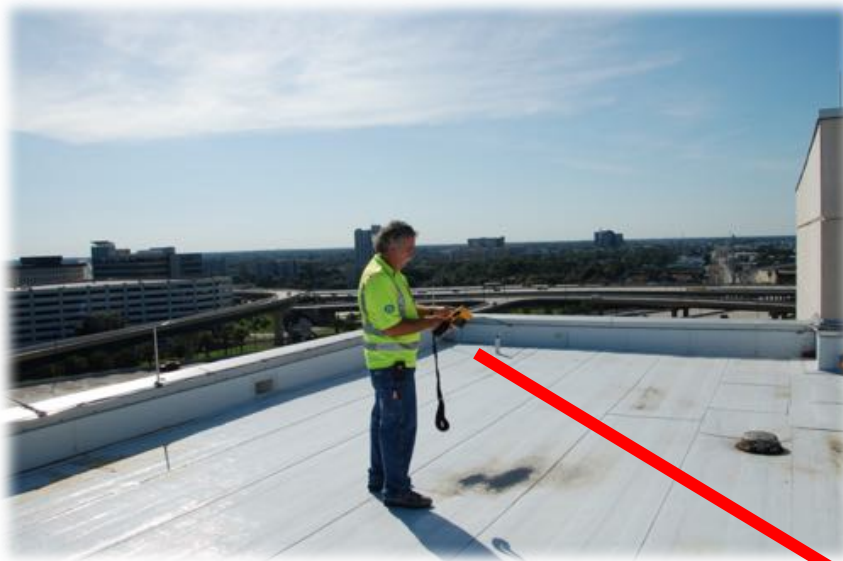
- ✓ Sick Building Syndrome or (BRI) Building Related Illnesses
- ✓ Negatively effects the Indoor Air Quality (IAQ)
- ✓ Mold & Biological (microbes) contamination

Top 10 Reasons Roofs Fail

1. Lack of routine maintenance
2. Poor choice of roofing system
3. Poor quality control during application or repair
4. Improper finishing of surface materials
5. Use of incompatible materials
6. Damage by subcontractors
7. Severe weather damage
8. Manufacturing defects/Poor quality materials
9. Fire
10. Vandalism



Pinpointing these areas with an infrared camera will save on un-necessary repairs to other parts of the roof and will also help extend the life cycle of the roof...



A **Thermal Imaging** Survey should be carried out:

- ✓ When leaks are detected within the roofing system
- ✓ Prior to acceptance of a new roof system
- ✓ Before any existing warranties expire
- ✓ Before acquiring a new building
- ✓ Before roofing over an existing roof
- ✓ For planned maintenance purposes
- ✓ When a pre-purchase construction report is needed

Per **ASTM Standards for Thermographic Inspections of Building Envelopes;**

- **ASTM Standard C1060-11a, Building Envelopes**
- **ASTM Standard C1153-10, Roofing Systems**

Don't get soaked, or mold is a four-letter word

Design flaws, entrained moisture in roofs and walls and water leaks cause billions of dollars' worth of damage to buildings every year. In very hot and very cold climates, poorly installed insulation and vapor barriers can lead to condensation problems and the degradation of the building itself. This can cause rot, mold and mildew and all of these problems lead to the building being devalued. In warm climates, as more "fresh" moist outside air is mechanically introduced into buildings in an attempt to make the building healthier, condensation and its side effects—mold and mildew, become a real threat to the building owner and manager. Mold is a microscopic fungus known to destroy building materials and cause health problems for many individuals. Occupants are asking for more "healthy" buildings in which to work and live. Now, infrared thermography cannot be used to detect mold itself, because mold does not exhibit an exothermic reaction strong enough to be seen by an infrared camera walking around a building. But building infrared thermographers can help find moisture and without moisture, mold growth is limited.

Thermography Surveys according to the following "standards of practice";

- [ASTM C1153-10: Standard Practice for Location of Wet Insulation in Roofing Systems Using Infrared Imaging.](#)
- [ASTM C1060-11a: Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings.](#)
- [ASTM D7053-07: Standard Guide for Determining and Evaluating Causes of Water Leakage of Low-Sloped Roofs](#)
- [Infraspection Institute: Standard for Infrared Inspection of Building Envelopes-2016](#)

Note: as per "standards of best practice" the thermography survey requirements;

- ✓ An hour after sun-up or/and hour after sundown.
- ✓ With no measurable precipitation 24hrs prior the survey.
- ✓ With no wind speed above 25mph.
- ✓ Safe access to roofs.
- ✓ Access to interior of building if required.



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