

INFRARED INSPECTION OF BUILDING ENVELOPES & ROOFS

1. Basic Infrared Theory

- Heat transfer
- Electromagnetic spectrum
- Emittance, reflectance, and transmittance
- Atmospheric transmission
- IR wavebands and lens materials

2. Infrared Equipment

- Selection criteria
- Range and level settings
- Equipment set-up & operation
- Image recording
- Equipment care & maintenance
- Self-directed learning activities for hands-on use

3. Building / Roof Moisture & Pest Inspections

- Theory and component construction
- Insulation & material moisture characteristics
- Inspection techniques
 - interior
 - exterior
- Weather variables and models
- Required site conditions
 - creating sufficient delta-T
- Pre-inspection procedures
- Thermal signatures of latent moisture
- Thermal signatures of pest damage
- Mold detection
- Inspection, data recording, marking and mapping
- Destructive and non-destructive moisture verification
- Standards for inspection
 - end user and thermographer responsibilities
 - safety practices
 - data gathering and report preparation

4. Energy Loss Inspections

- Theory and component construction
- Insulation & material characteristics
- Inspection techniques
 - interior
 - exterior
- Weather variables and models
- Required site conditions
 - creating sufficient delta-T
- Pre-inspection procedures
- Inspection and data recording
- Verification of data
- Conduction losses by insufficient, missing, damaged or improperly-installed insulation:
 - weather variables and influences
 - thermal signatures
- Convection losses by uncontrolled air movement
 - natural and forced convection
 - thermal signatures
 - pressurization/depressurization techniques
- Standards for inspection
 - end user and thermographer responsibilities
 - safety practices
 - data gathering and report preparation

5. Implementing an IR Predictive Maintenance Program

- 9 steps to setting up a program
- Integrating with other predictive technologies
- Cross-verifying with other predictive technologies
- Why programs fail, how they succeed