

BUILDING ENERGY/HEAT LOSS INFRARED INSPECTION REPORT

for

The Any Company Inc.
123 Any Drive
Chicago, IL

January 1, 2012

Job Number: 1234E-09

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Certification of inspection authenticity and completeness, signed by certified thermographer.

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I - INTRODUCTION

Infrared Inspections, Inc., was contracted by The Any Company Inc. to perform an infrared building energy loss inspection of all contracted exterior elevations and selective interior wall surfaces at 123 Any Drive, Chicago, IL . This inspection was performed on January 01, 2012.

The purpose of this report is to present the results of that thermal inspection, especially for any potential problems indicated by the presence of thermal differences.

The infrared device used to perform the inspection is a sophisticated electronic camera that “sees” the heat/cold emitted from your building exterior and interior wall surfaces. The pictures produced by this camera are called thermograms, and they are essentially multi-colored or black/white “temperature maps” of your building envelope.

The infrared thermographer who performed your inspection used this special camera to look for potential problem areas in your building. These areas could cause energy loss, water infiltration and premature deterioration. With our advance warning, you can proactively correct these areas before they become very costly problems.

The results of the inspection are presented in Sections III and IV of this report. Section III explains the procedures used in the performance of the building energy loss inspection. Section IV contains thermographic photo documentation and commentary for selected areas of the building.

This inspection and report has been performed and prepared under the direction of an Infrared Inspections thermographer who is certified by the Infrasppection Institute. This report fully meets the Infrasppection Institute’s “Guidelines for Infrared Inspection of a Buildings Envelope”.

Infrared Inspections, Inc. is an independent thermal imaging inspection firm. We provide unbiased inspection services and analysis which can help make your buildings envelope more energy efficient and prevent costly premature deterioration.

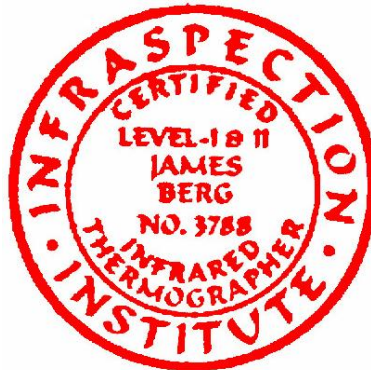
II – CERTIFICATION

I hereby warrant that the inspection, which is the subject of this report, was conducted personally by me or by a thoroughly qualified assistant under my direction. I further warrant that this report has been prepared under my personal guidance and has been found by me to be totally accurate and complete to the best of my ability as a certified thermographer.



Certified Thermographer, Level I and II
Infraspection Institute Certificate No.

3788



III - INFRARED EVALUATION PROCEDURE

All components of a building emit infrared radiation, heat or cold that is not visible to the naked eye. The Inframetrics ThermalCam infrared scanner, which was used, for this inspection senses this infrared radiation and electronically displays a visual image of the thermal patterns.

Infrared Inspections, Inc. thermographer can determine from this image those components having surface thermal differences, which represent conductive or connective heat loss/gain.

Typically, four different types of thermal patterns are identified with the infrared scanner. First a fully insulated and properly sealed wall will appear thermally uniform in color or black & white from the outside of the building. This is due to the absence of heat loss from the heated interior.

Second, a partially insulated or uninsulated wall will have partial or whole cavities where the surface temperature is colder, if the inspection was performed from the interior and warmer if inspected from the outside. The thermal differences between insulated areas and uninsulated voids is sharp and consistent.

A fully insulated wall with retained moisture exhibits the third type of pattern sometimes found during an infrared heat loss evaluation. The moisture within the wall components can usually be traced to severe condensation problems or flashing/seal problems in the roof, window, or door areas. The thermal pattern will show streaks of surface temperature variations where saturated/damaged insulation has lost its thermal resistance.

Finally, air infiltration and exfiltration cause a fourth type of thermal pattern normally found. Normally, such currents will produce an infrared image which exhibits wisps or "fingers" of darker, colder thermal patterns if air infiltration is occurring into the building and brighter, warmer thermal patterns if air exfiltration is occurring out of the building. These thermal patterns are caused by cold air infiltration if the building is operating under a negative pressure and warm air exfiltration if under positive pressure.

Before a building envelope is considered generally ready for an infrared inspection, the following criteria must be satisfied.

- 1. BUILDING ENVELOPE COMPLETE** - All components of the building envelope (components which separate the conditioned space from the unconditioned space) must be in place. This includes doors, windows, and roof components. Insulation should be completed, including all glazing and caulking.
- 2. HVAC SYSTEM FUNCTIONAL** - The heating, ventilation and air conditioning and all associated ductwork should be complete and operational, to create a normal operating positive pressure within the building.
- 3. ADEQUATE CONDUCTIVE HEAT LOSS** - The differential between the inside and outside surface temperatures of the building should be a minimum of 18 degrees F. (10 degrees C.) for at least three hours prior to the inspection. Whenever possible, the inspection should be conducted when there is little or no solar loading on the building envelope. However, some buildings can be inspected utilizing solar load as the source of temperature differential.
- 4. INTERIOR FINISH** - In an existing building, the building envelope must be dealt with as a single unit, regardless of the envelope makeup. Therefore, the thermal conductance of the envelope will include all components of the building envelope as it currently exists. Detailed investigation at this point, when compared to "as build" drawings, can assist the thermographer in identifying thermal anomalies and their probable causes.

When a building envelope inspection is being performed for the purpose of identifying the locations of envelope leakage, the use of pressurization of the structure can greatly enhance the thermal visualization of convective leakage.

IV - THERMOGRAPHIC DOCUMENTATION & ANALYSIS



← 01 = Approximate photo location and viewing angle.

INFRARED INSPECTIONS INC.

JOB DATA

Scan Date: 01/01/12 Job No: 1234E-12-01 Client: The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 01 view is of the penthouse west elevation, looking east.
Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 01 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s). (see bottom thermal photo) Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.01

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by missing/poorly fitted insulation, caulking deficiencies and/or construction design.

Investigation of this area is recommended to determine if corrective action is warranted.

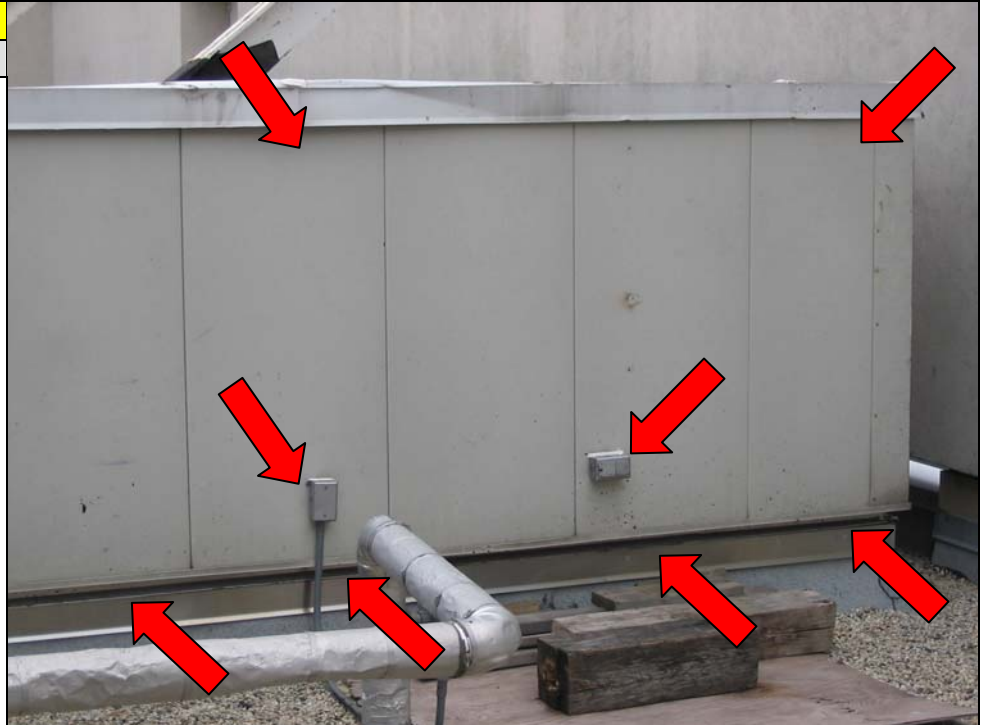


IMAGE No.01

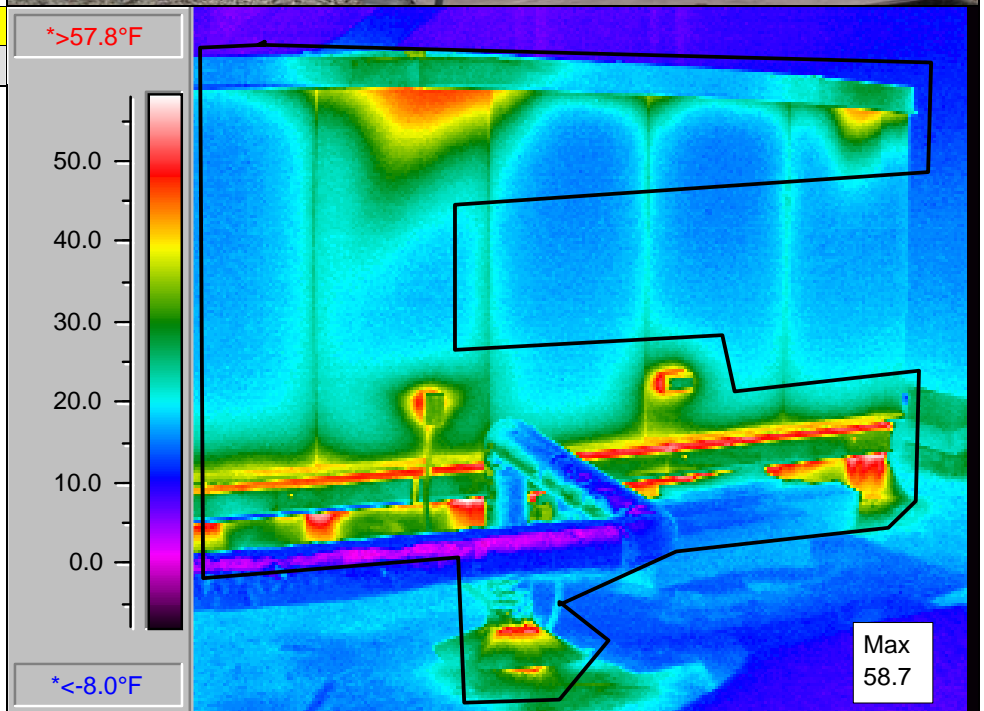
Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.



INFRARED INSPECTIONS INC.

JOB DATA

Scan Date:01/01/12 Job No: 1234E-12-02 Client:The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 2 view is of the penthouse north elevation roof edge, looking west.
Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 2 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s).(see bottom thermal photo)
Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.02

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by missing/poorly fitted insulation, caulking deficiencies and/or construction design.

Investigation of this area is recommended to determine if corrective action is warranted.

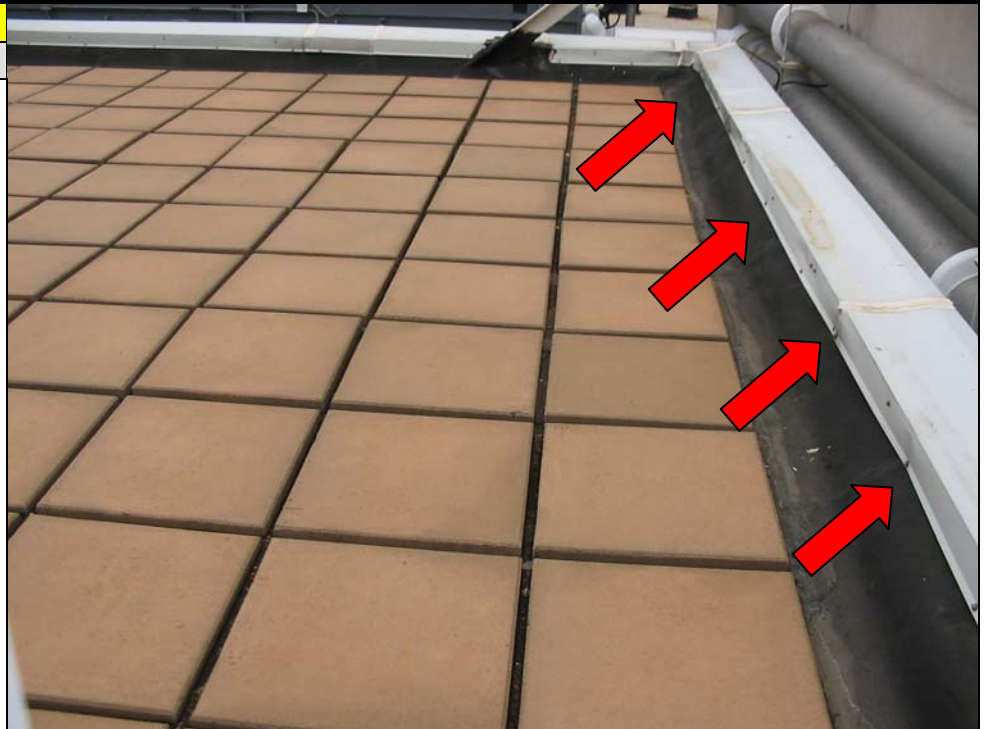


IMAGE No.02

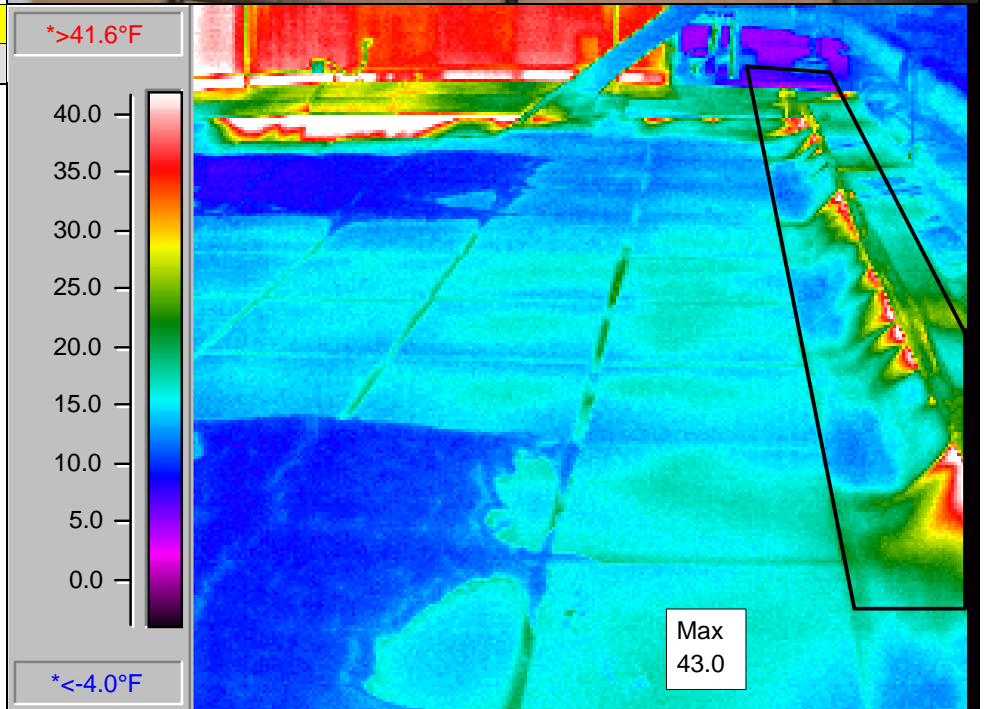
Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.



INFRARED INSPECTIONS INC.

JOB DATA

Scan Date: 01/01/12 Job No: 1234E-12-03 Client: The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 03 view is of the penthouse west elevation roof edge, looking south.
Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 03 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s). (see bottom thermal photo)
Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.03

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by missing/poorly fitted insulation, caulking deficiencies and/or construction design.

Investigation of this area is recommended to determine if corrective action is warranted.

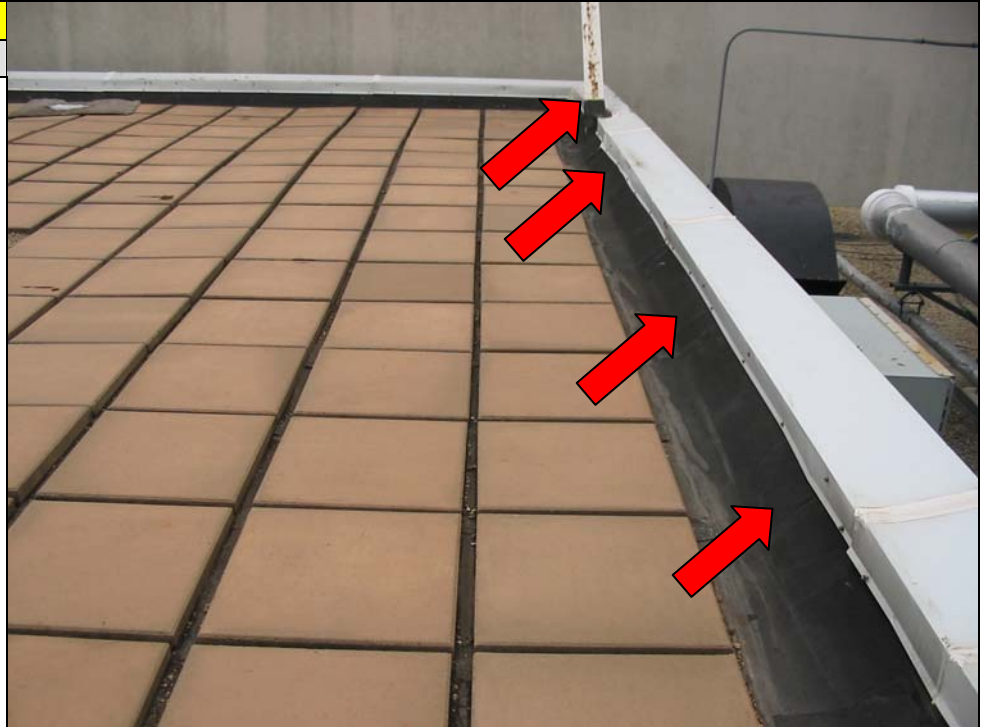


IMAGE No.03

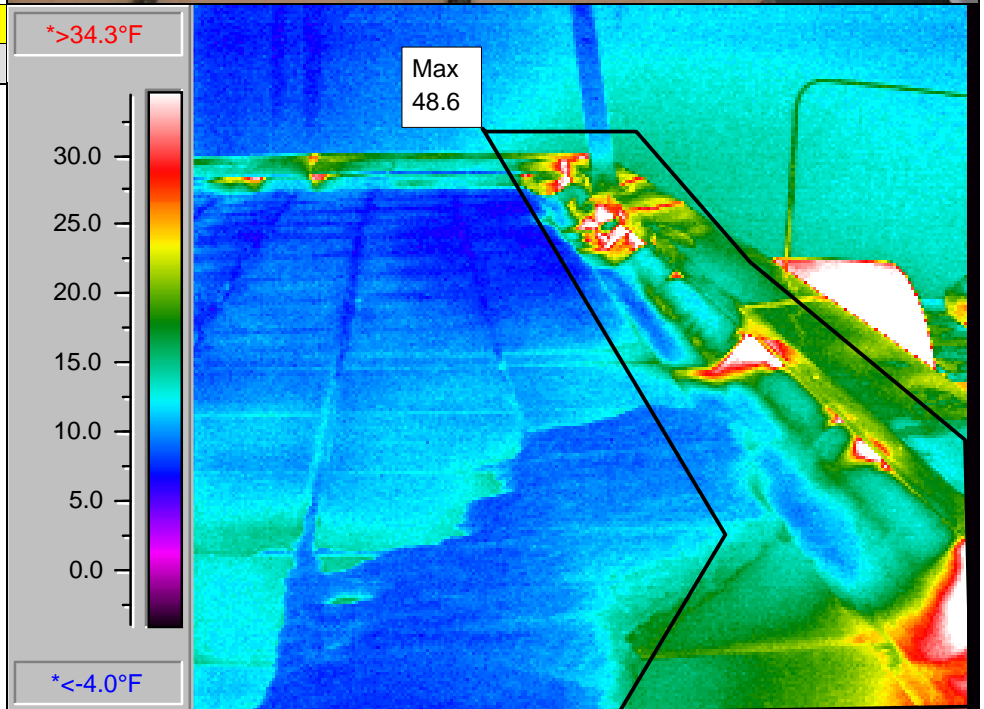
Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.



INFRARED INSPECTIONS INC.

JOB DATA

Scan Date:01/01/12 Job No: 1234E-12-04 Client:The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 04 view is of the penthouse south elevation roof edge, looking east.
Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 04 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s).(see bottom thermal photo)
Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.04

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by missing/poorly fitted insulation, caulking deficiencies and/or construction design.

Investigation of this area is recommended to determine if corrective action is warranted.



IMAGE No.04

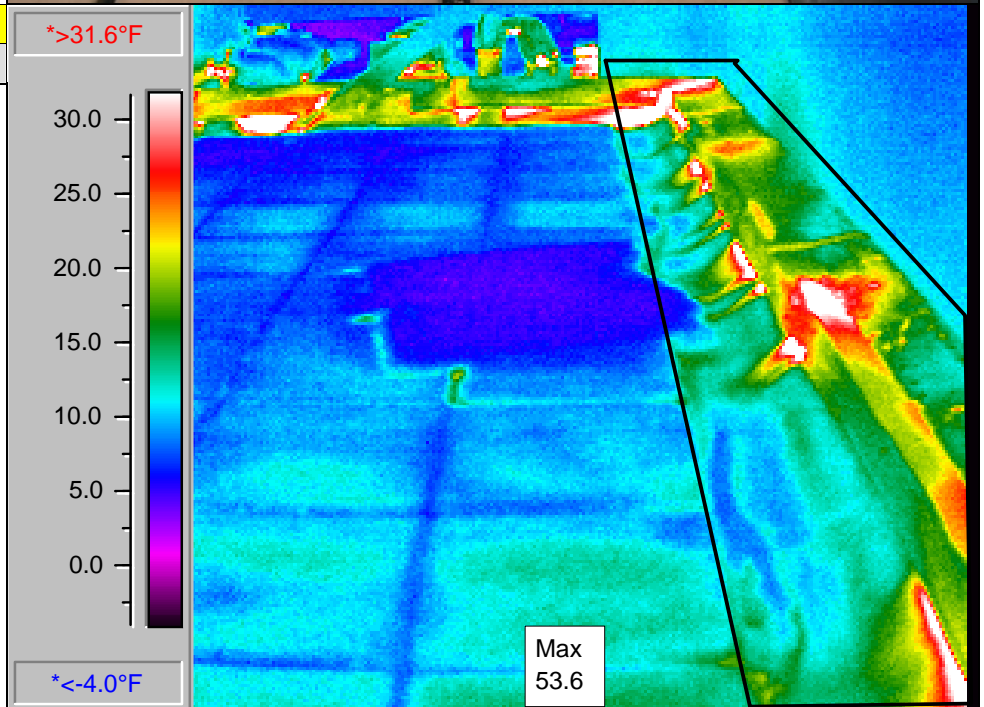
Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.



INFRARED INSPECTIONS INC.

JOB DATA

Scan Date:01/01/12 Job No: 1234E-12-05 Client:The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 05 view is of the penthouse east elevation roof edge, looking north.
Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 05 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s).(see bottom thermal photo)
Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.05

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by missing/poorly fitted insulation, caulking deficiencies and/or construction design.

Investigation of this area is recommended to determine if corrective action is warranted.

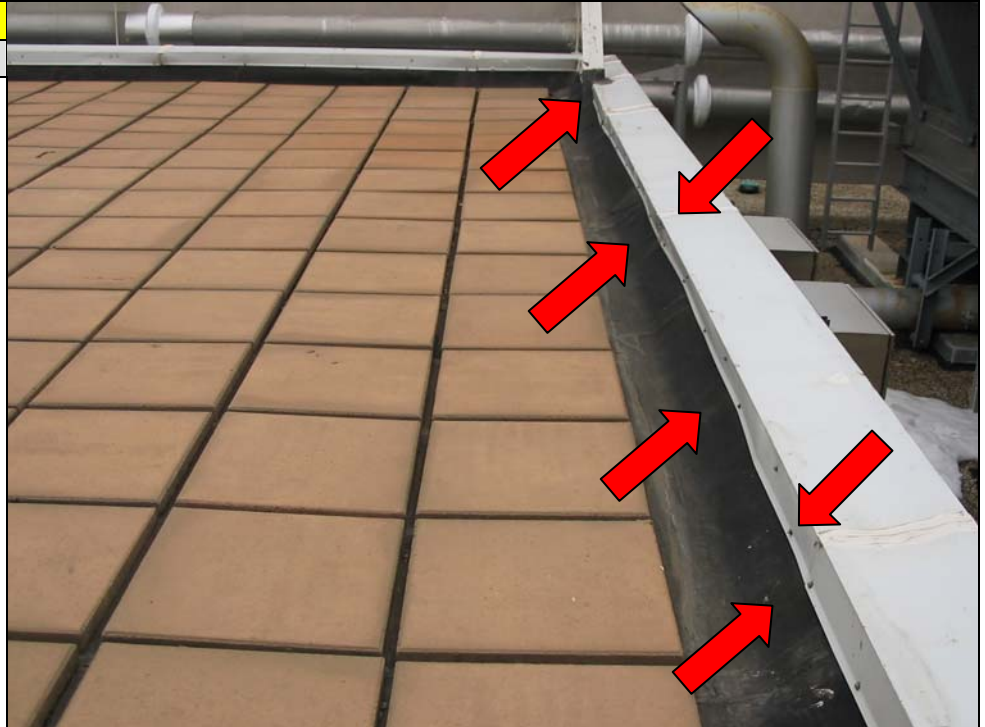


IMAGE No.05

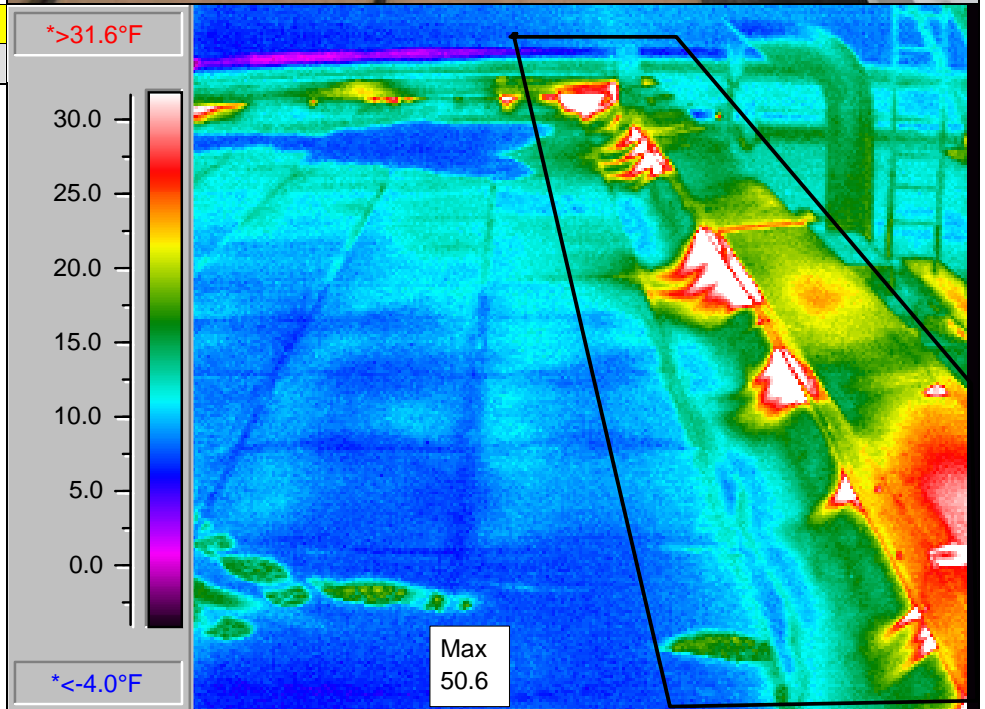
Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.



INFRARED INSPECTIONS INC.

JOB DATA

Scan Date:01/01/12 Job No: 1234E-12-06 Client:The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 06 view is of the south elevation, west side of building
Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 06 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s).(see bottom thermal photo)
Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.06

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by missing/poorly fitted insulation, caulking deficiencies and/or construction design.

Investigation of this area is recommended to determine if corrective action is warranted.

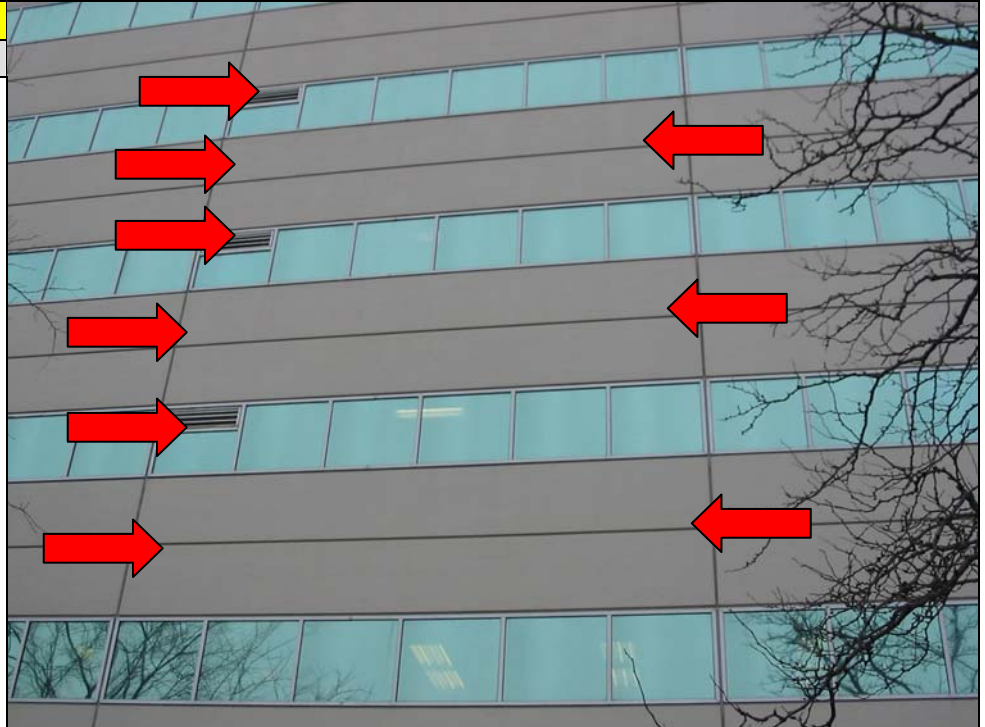


IMAGE No.06

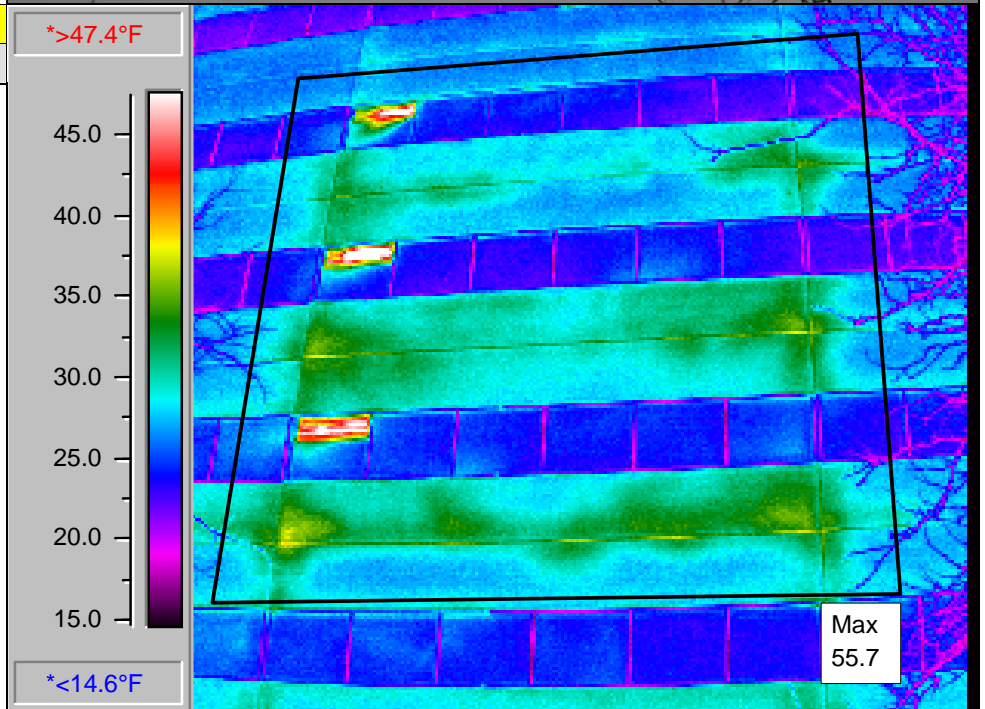
Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.



INFRARED INSPECTIONS INC.

JOB DATA

Scan Date:01/01/12 Job No: 1234E-12-07 Client:The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 07 view is of the north elevation, west side of building.
Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 07 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s).(see bottom thermal photo)
Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.07

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by missing/poorly fitted insulation, caulking deficiencies and/or construction design.

Investigation of this area is recommended to determine if corrective action is warranted.

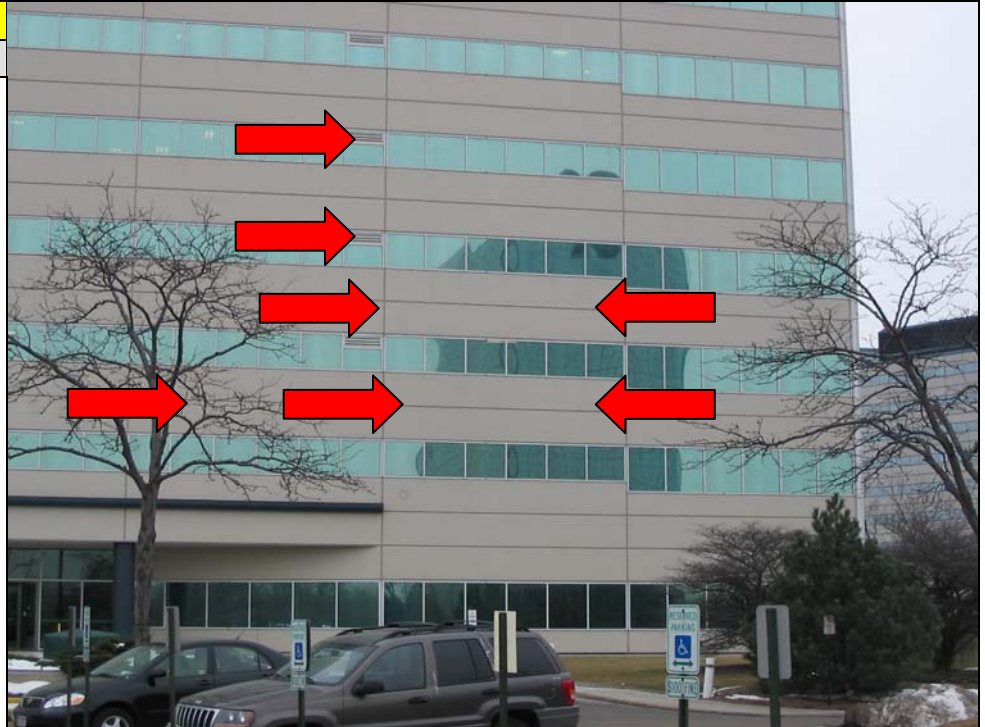


IMAGE No.07

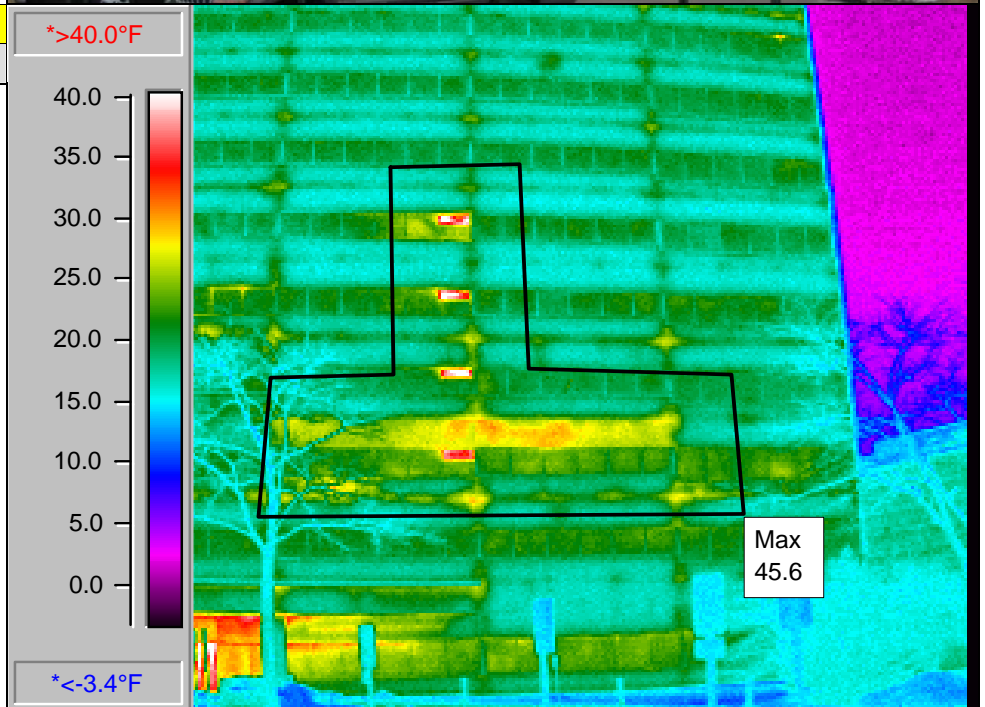
Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.



INFRARED INSPECTIONS INC.

JOB DATA

Scan Date: 01/01/12 Job No: 1234E-12-08 Client: The Any Company Inc.

BUILDING ENERGY DATA

Location: Image No. 08 view is of the north elevation, entryway & canopy.
 Note: Refer to satellite image for approximate photo location and viewing angle.

Description: Image No. 08 documents the location (see red arrows in top photo) of surface thermal differences for selective building surface area(s). (see bottom thermal photo) Investigation of this area is recommended to determine cause of thermal differences

IMAGE No.08

Information:

Visual corresponding photograph (at right) is of below color infrared thermal image.

Red arrow(s) identify location of the outlined area (in lower photo) documenting surface temperature differences and/or measurements with in thermal image.

Thermal differences may be caused by normal building HVAC operation, diffusion of heat on window surfaces and/or discharge air through vents.

Investigation of this area is recommended to determine if any corrective action is warranted.

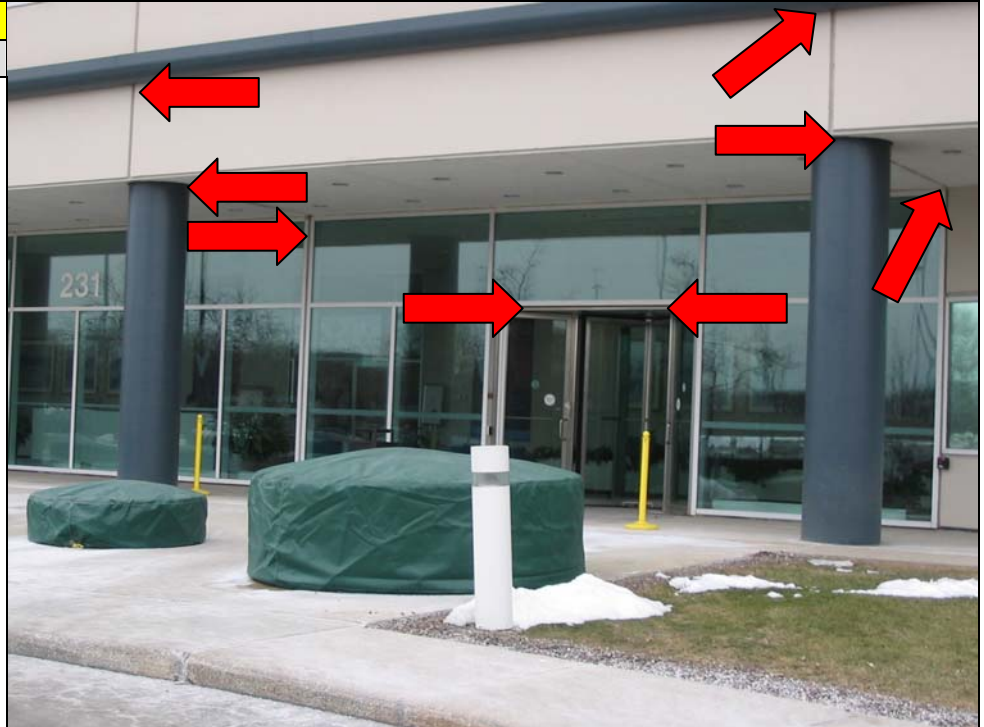


IMAGE No.08

Information:

Nighttime infrared thermal color photograph (at right) documents surface thermal differences.

Brighter/lighter colors are warmer surface temperatures and darker colors are colder temperatures.

Spot/area surface temperature measurements are documented on thermal image (at right) and their location(s) are identified on above visual photograph.

Note: Refer to vertical color temperature bar, at left side of thermal image, for surface temperature measurements.

