MID ATLANTIC INFRARED SERVICES, INC.
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Aerial Steam System Report

CLIENT: LARGE UNIVERSITY

ADDRESS: 100 Main Street
Yourtown, MD 10000

DATE: November 28, 2011

SUBJECT: Aerial Infrared Steam System Survey

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Mid Atlantic Infrared Services has been conducting steam survey services since 1982. We have surveyed thousands of miles of underground steam, high temperature hot water and condensate lines.

Our unmatched experience, state-of-the-art instrumentation and clearly written, easily used report result in an effective tool for minimizing steam system operating costs.

Our aerial infrared steam survey report consists of several sections.

Section 1 provides a discussion of the survey methodology and techniques for interpreting the thermal image.

Section 2 provides a prioritization of problems based on temperature rise and problem length.

Section 3 presents specific discussions of each suspected problem area. Sample problem discussions are presented below.

Remember- your steam distribution system is just one component of your steam system energy planning. We provide complete steam trap testing services using ultrasonic and temperature testing techniques. A single trap, blowing year round, can easily waste $10,000 worth of steam. We would be happy to discuss how our steam trap testing services can help maximize the efficiency of your steam system.

Regards,

Stephen Seeber
President

MID ATLANTIC INFRARED SERVICES, INC.

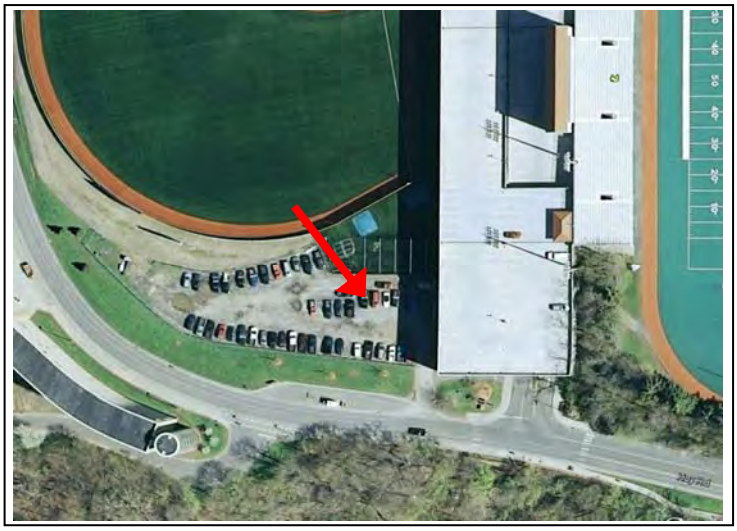
Aerial Steam Survey

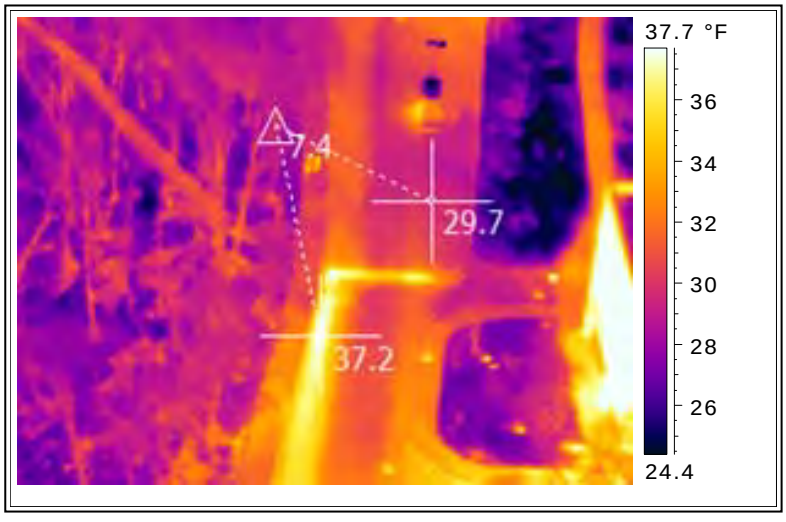
Problem # 1

Location:
Parking Garage, west of manhole 27-1

Analysis:
The 90° bend that is clearly seen here was not visible in prior surveys. Insulation may be damaged here and a leak may be present. The temperature rise is relatively low. This could be a condensate leak.

The comparative image on the following page is from the 2005 survey. The steam lines are not seen in this image.





Comparative 2005 Image-Steam Lines are not visible.

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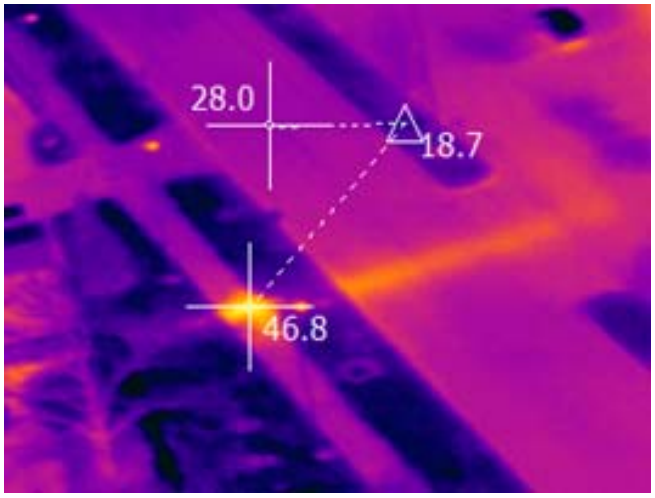
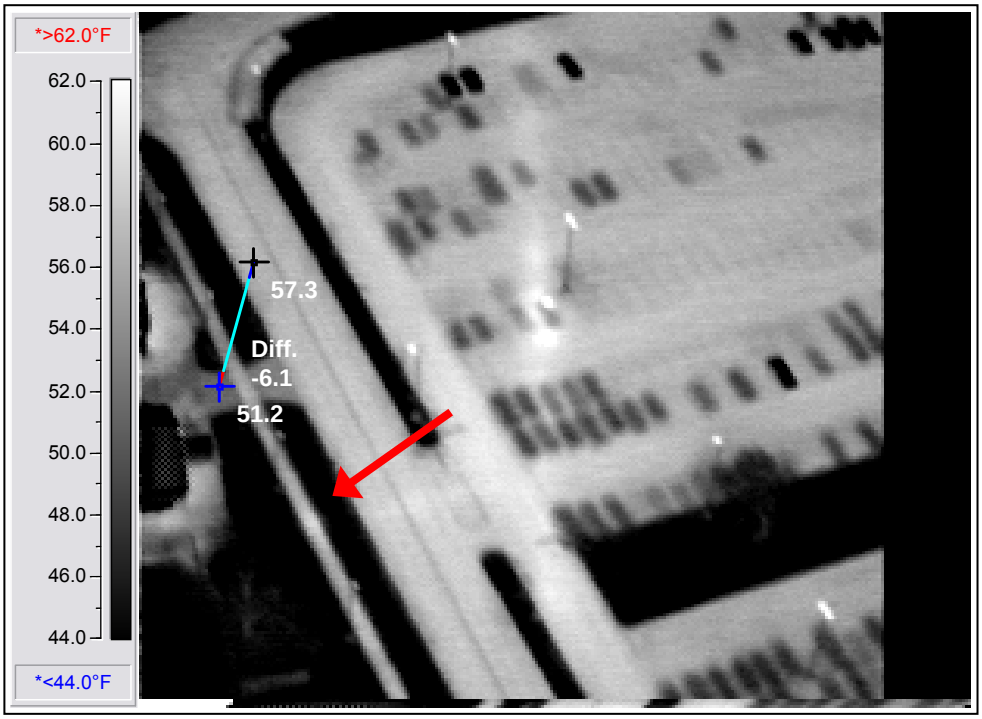
Problem # 2

Location:
Isolation Building, at sidewalk crossing

Analysis:
A well defined hot spot is present in the sidewalk. No heating was present here in prior surveys.

The comparative image on the following page is from the 2005 survey. The steam line is not visible.





Comparative 2005 Image. The steam line to the Large Animal Isolation building is not visible.

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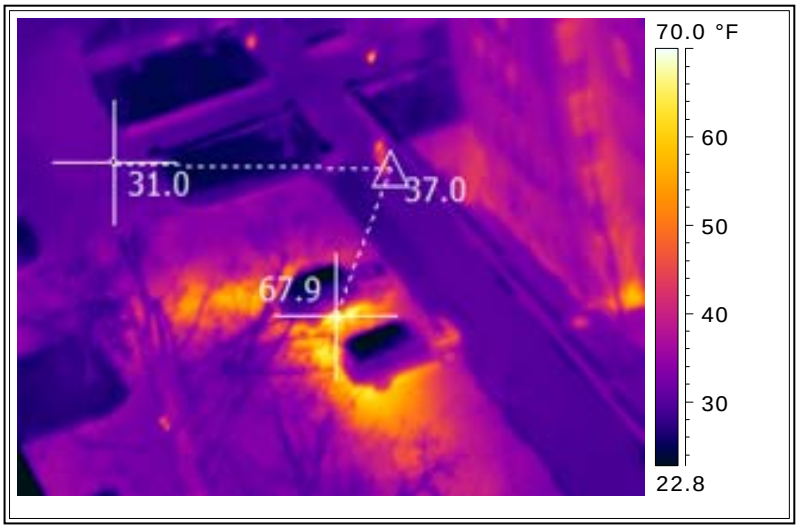
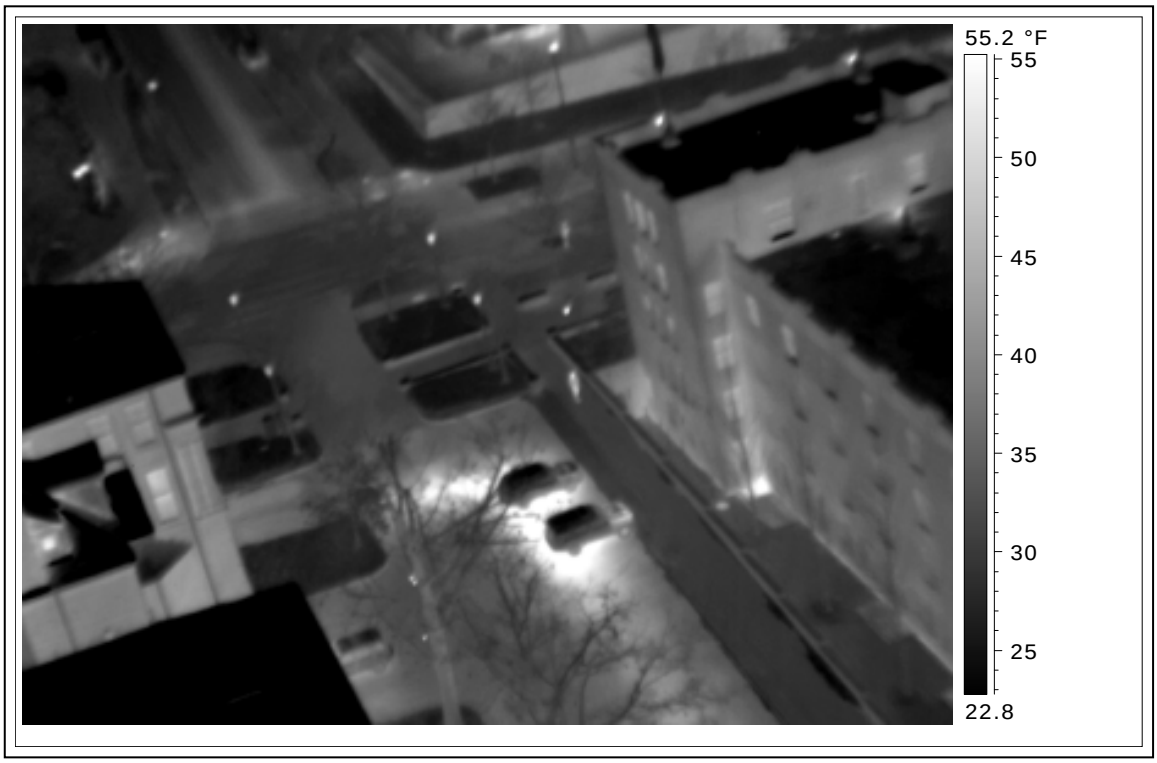
Problem # 3

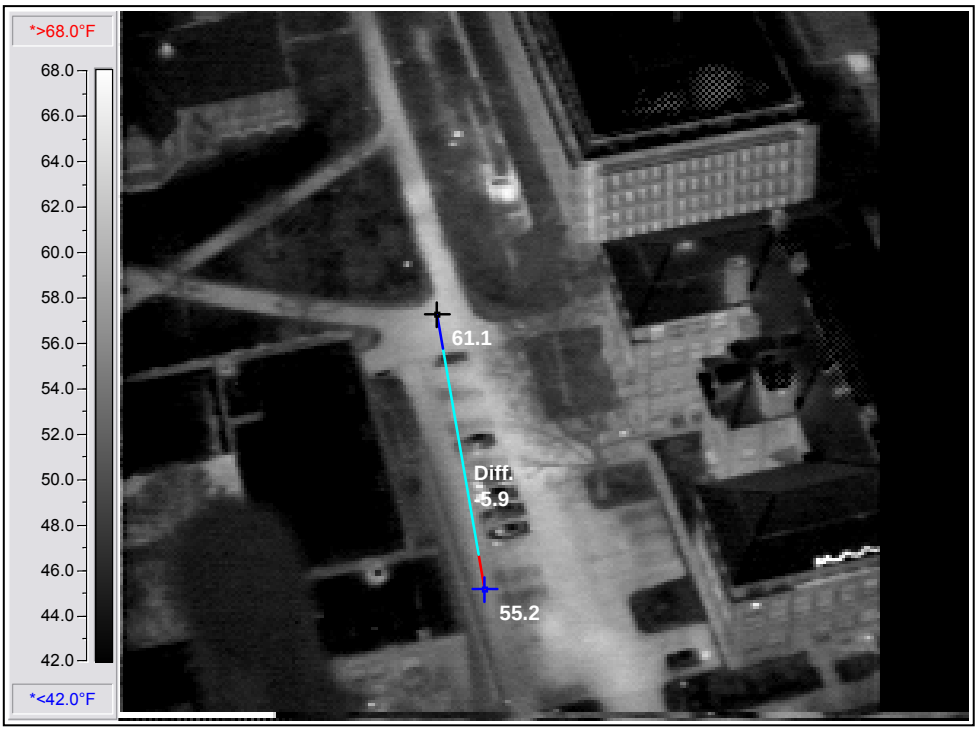
Location:
Friend Hall at Lower Road

Analysis:
A large area with substantial heating is present here. This is a likely steam leak.

No heating occurred in the prior survey, as seen in the comparative image on the following page.







Comparative 2005 image. No heating is seen at the location of the current suspected leak. Note: Image angle is reversed 180° from present image.

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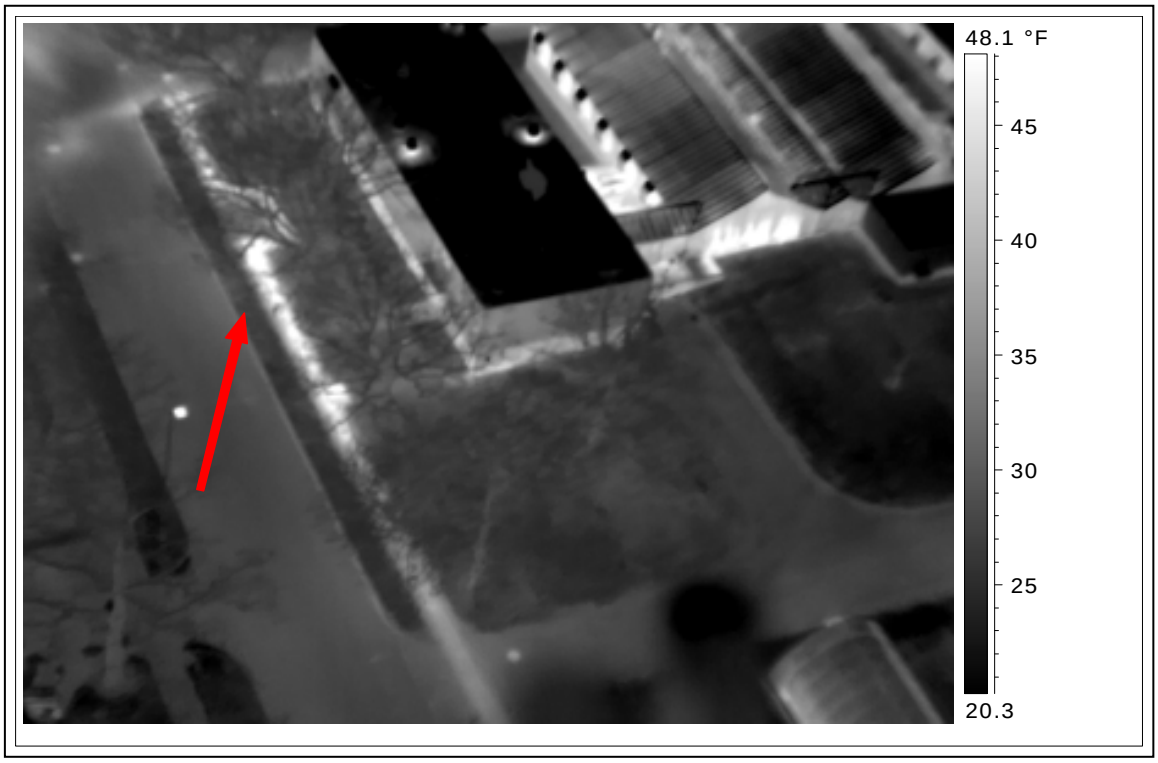
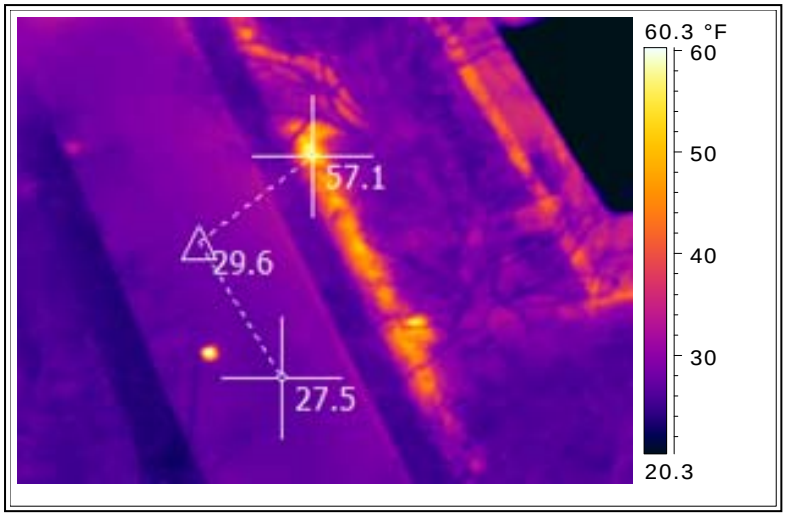
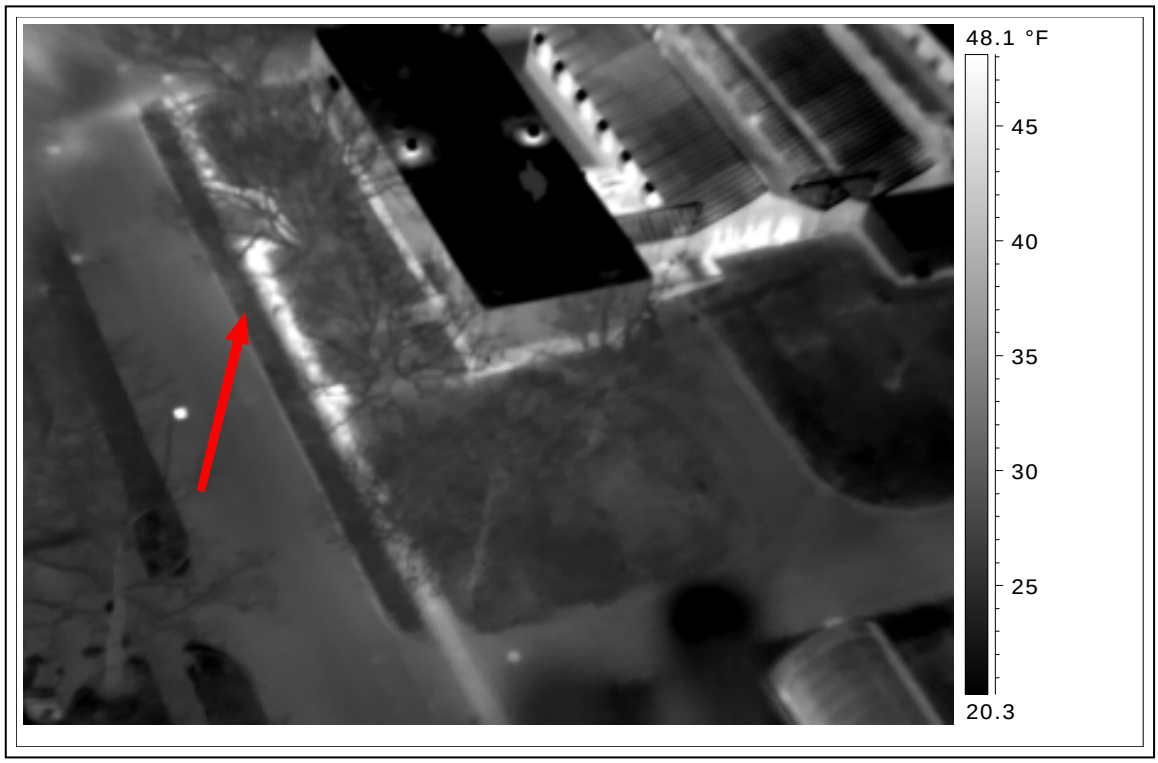
Problem # 5

Location:
Lab, at expansion loop

Analysis:
Significant heating occurs on the east side of the loop and extends past the end of east end of the building. The image is obscured by adjacent trees. The line at the street is substantially cooler than the loop. The comparative picture on the next page shows the 2005 image. It is partially blocked by the helicopter skid, but shows little heating. A leak is likely here.







Comparative 2005 image shows minimal heating at the east side of the expansion loop.

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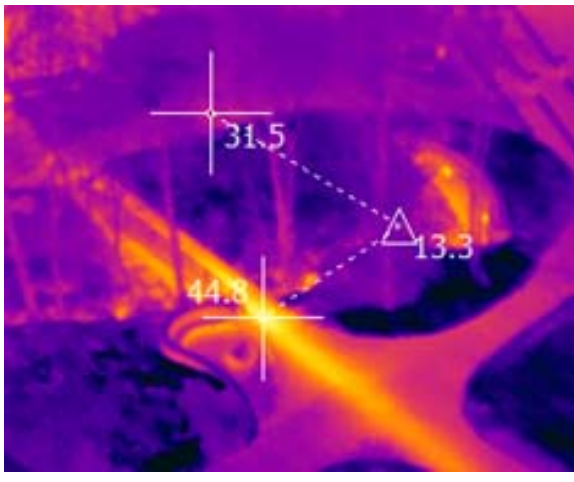
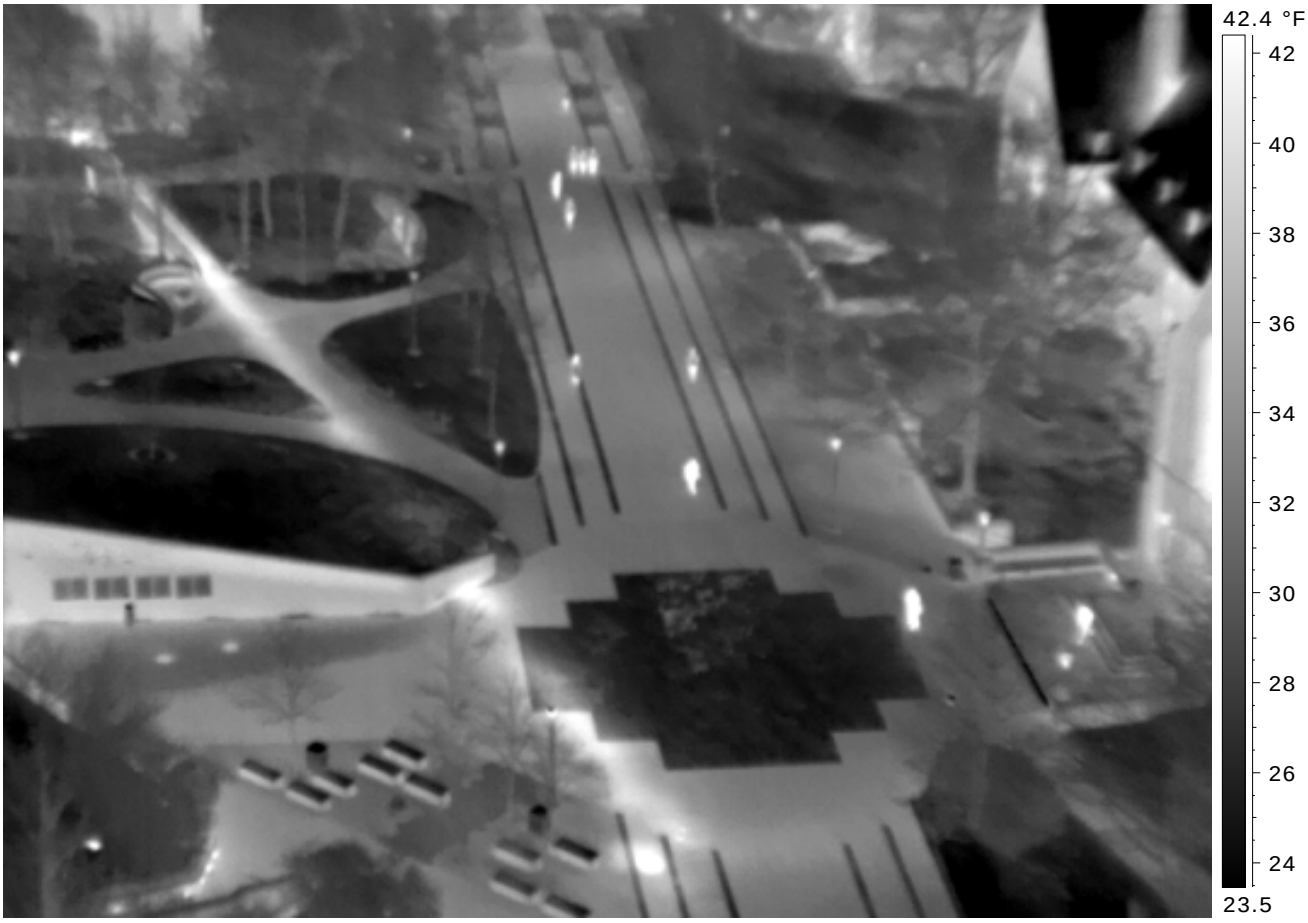
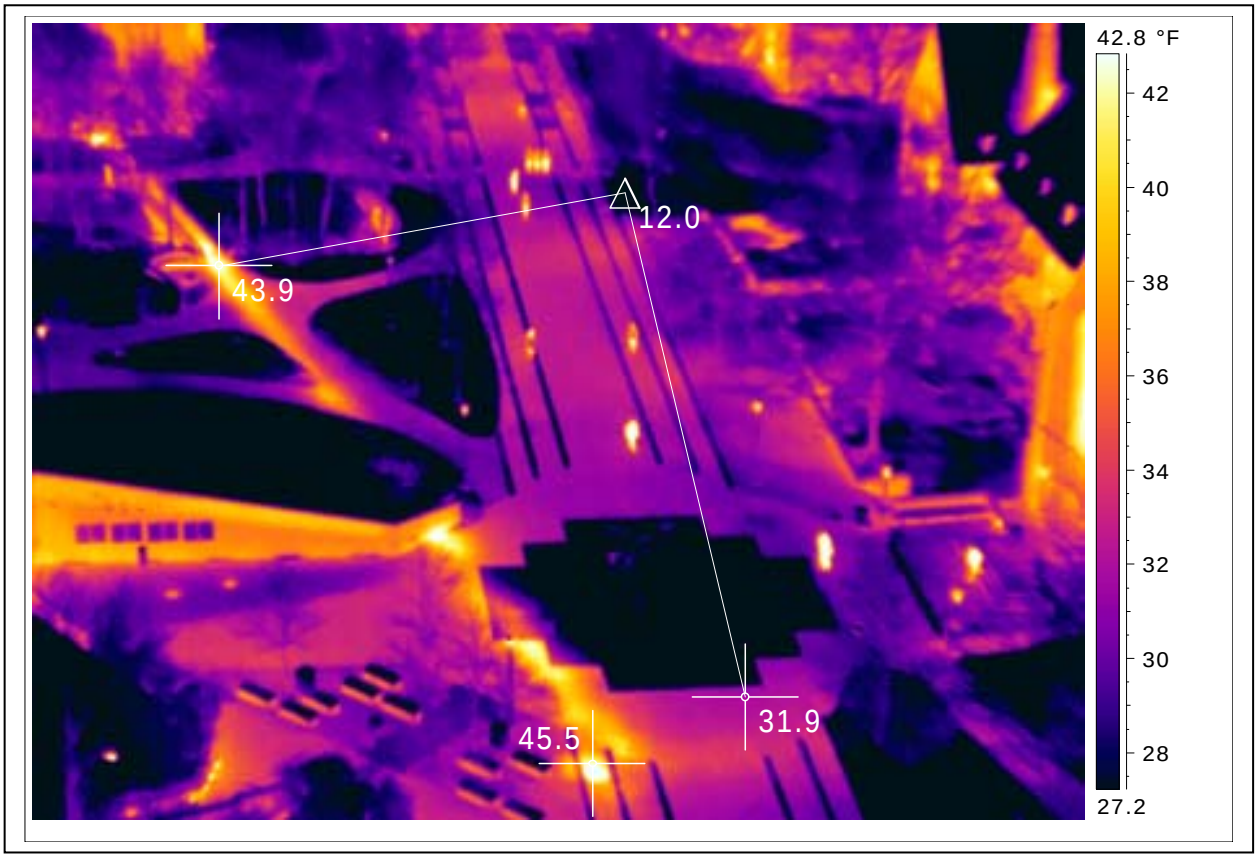
Problem # 6

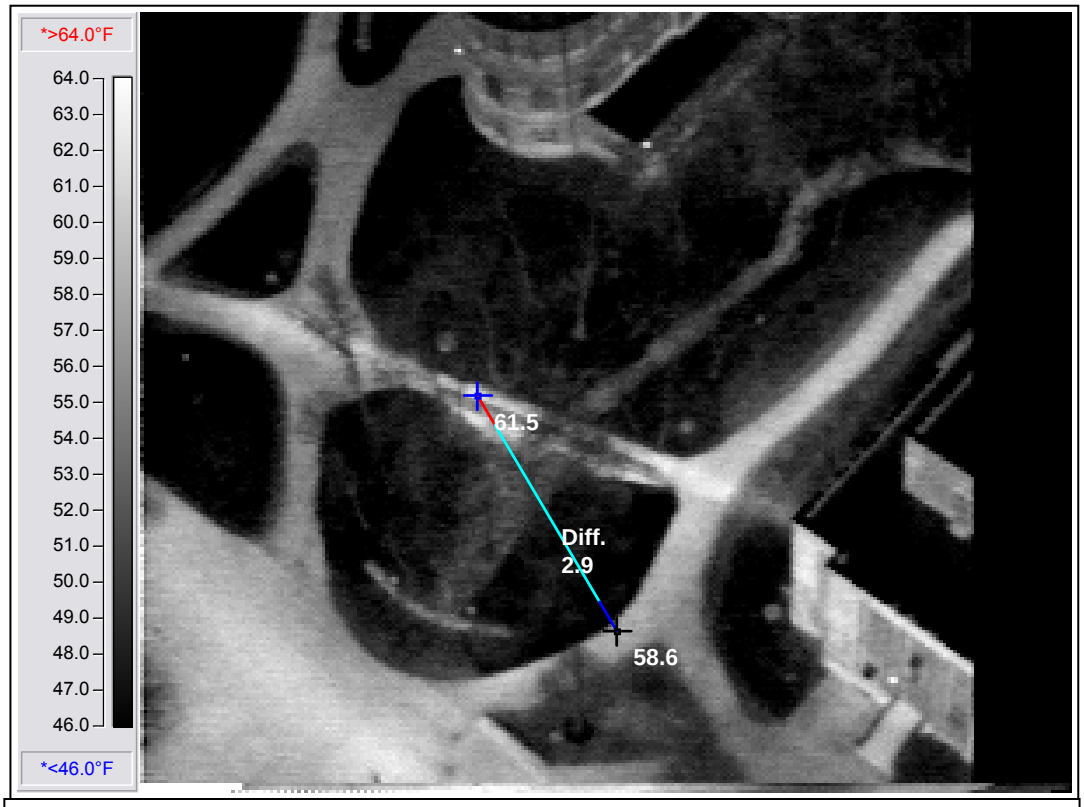
Location:
Entire line segment from Fred Hall to manhole WS

Analysis:
In 2006, heating was noted at the courtyard between Will Hall and Page. The heating now extends up the line toward Olin hall, with the greatest heating adjacent to Barnes. The images on the following page show the entire length. This is followed by prior images of the line adjacent to Barnes.

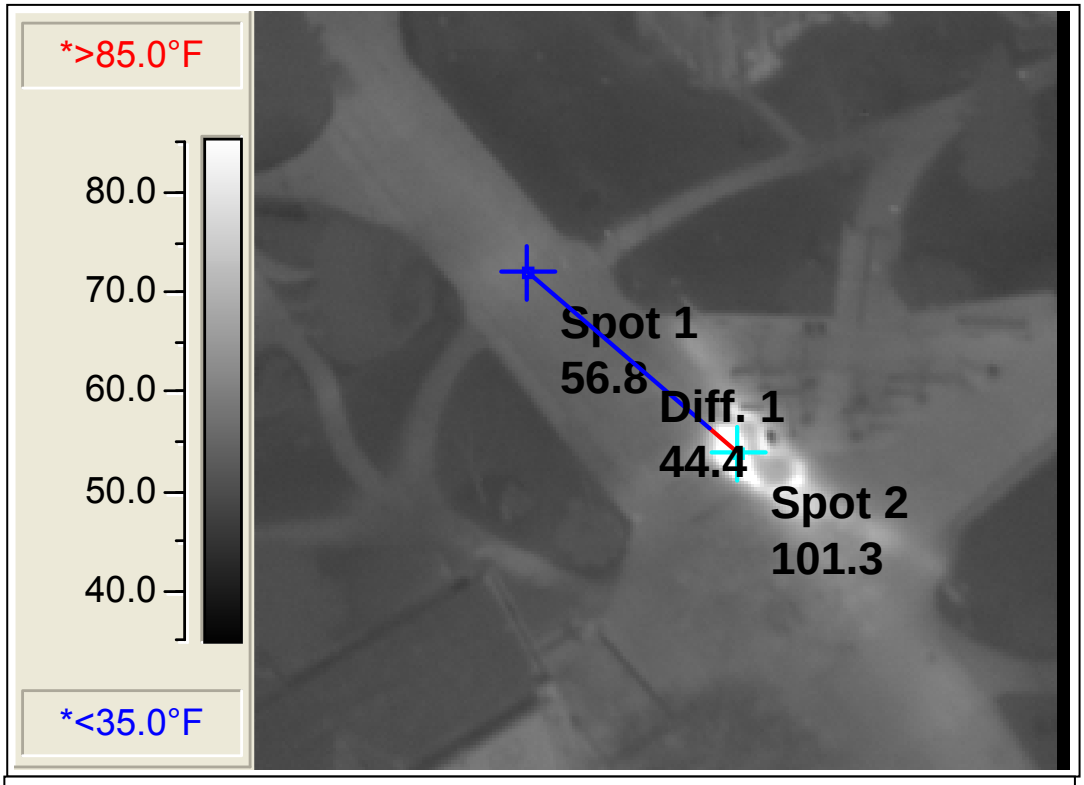



42.4 °F
42
40
38
36
34
32
30
28
26
24
23.5


42.8 °F
42
40
38
36
34
32
30
28
27.2
12.0
43.9
31.9
45.5



Comparative2005 image shows minor heating at the location of the present hot spot.



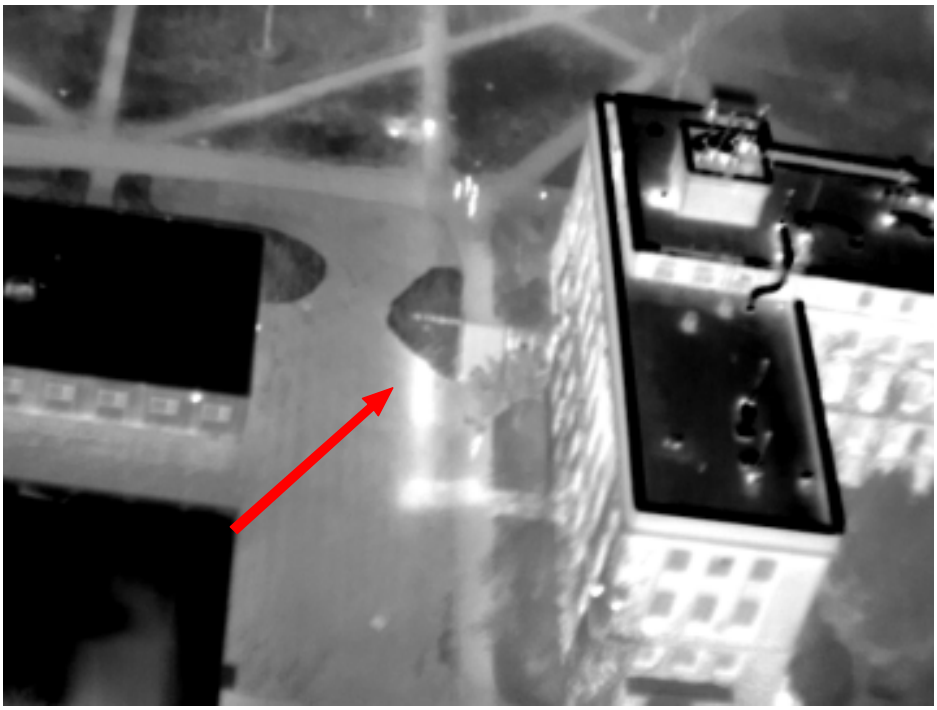
2006 image from Will Hall/ Page showing hot spot that was not present in 2005. Orientation of this image is reversed from the current problem views.

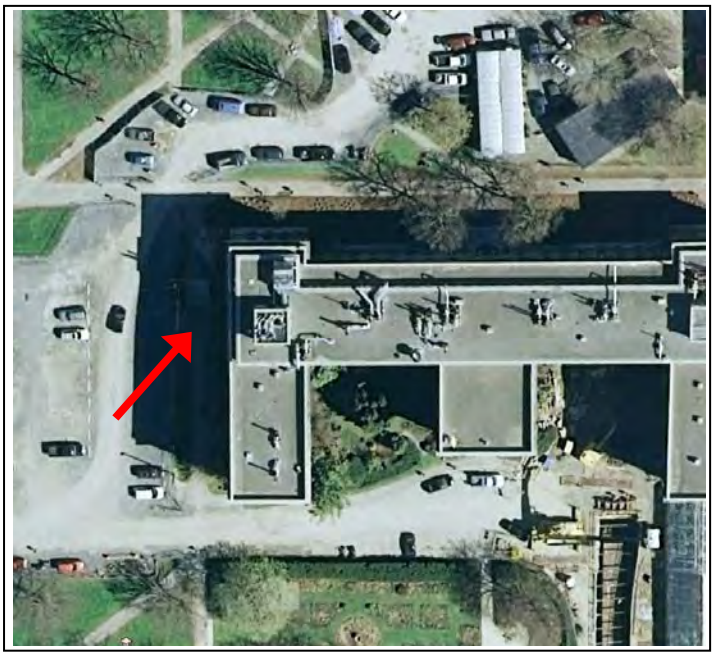
Problem #8

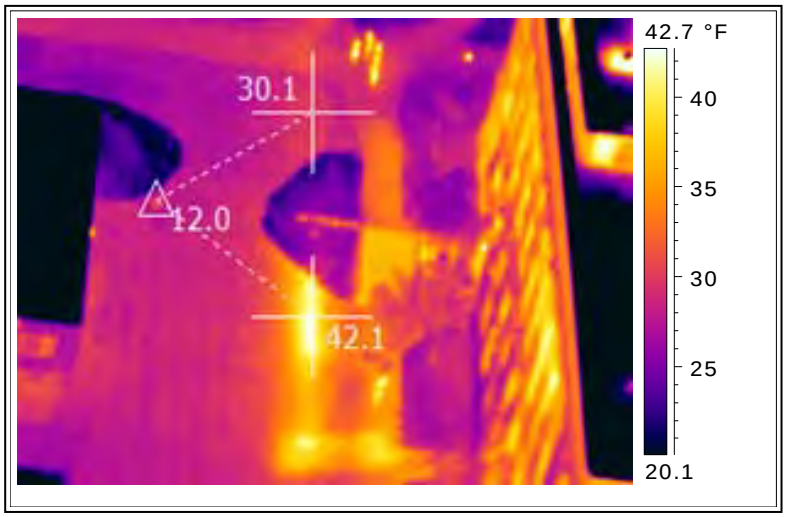
Location:
Science, West end

Analysis:
Prior to the line entrance into the building, a line segment is sharply warmer than the segment just to the north. A minor steam leak or a condensate leak may be present here.

No prior comparative image is available.







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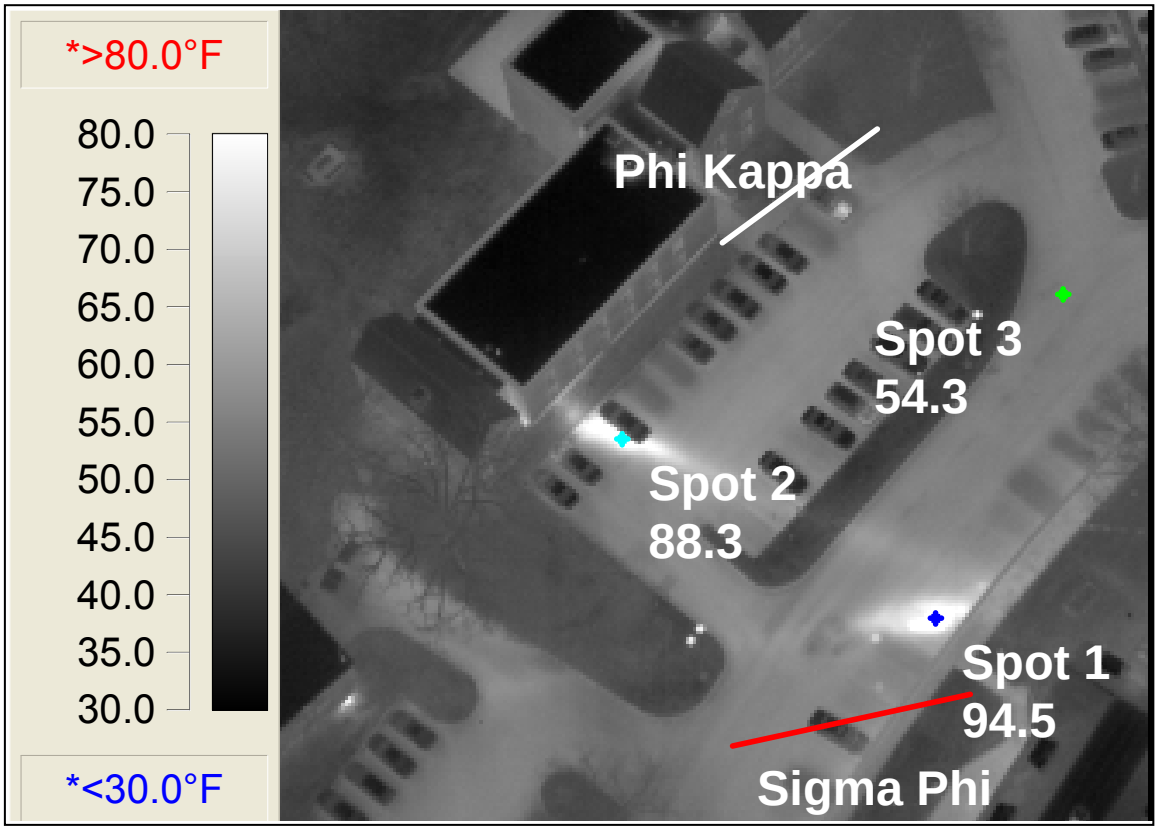
Problem #9

Location:
Kappa Kappa and Sigma Tau

Analysis:
Two leaks were found here in the 2005 survey. The image from that survey is shown in the lower image. The upper image shows the results of repairs.



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Problem #10

Location:
Line to Nelson

Analysis:
The condensate leak formerly noted in the line to Nelson is now repaired. The line of elevated heating beneath the parked cars is an expansion loop.