Cold Air in Boston: A High-Rise Wants It Out and a Grocery Chain Wants It Kept In

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ABSTRACT

A contrast in cold air appreciation, in where a 55 story high-rise in Boston with cold air infiltration is making the top floor restaurant uncomfortable for upscale dining customers and increasing the client's heating costs in the process. Thermal issues were discovered and we'll show you their importance relative to the buildings functionality and how infrared gave the client the necessary knowledge to have the matter properly corrected.

And, in the suburbs a large grocery store chain has concerns for the seventeen freezers that operate inside the store may be losing precious cold air. We take a look at the freezer room's exterior shells and find some interesting issues from scanning with infrared that we would not have found using other inspection methods.

Two different client problems with a common similarity and Infrared was the proper application to show where the cold air issues were located and where corrections could be made to meet the client's needs in both situations.

INTRODUCTION

We'll see in the high-rise situation where neglect and missed air sealing techniques cause a real customer comfort and owner heating cost nightmare. They want the cold air kept *'out'*.

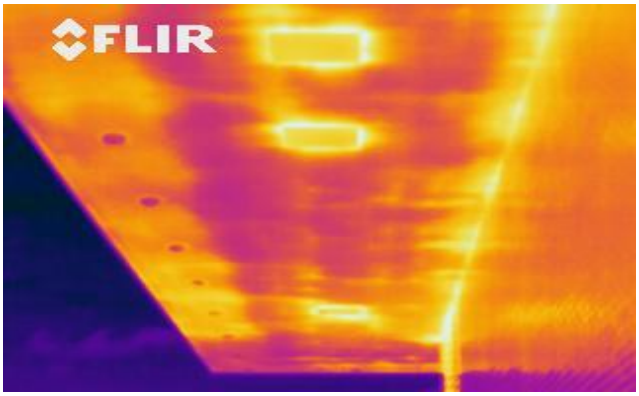
In a large supermarket they are running seventeen freezers in varying states of cold temperature's depending upon product and room use. Efficiency and keeping the individual room's temperatures as constant as possible is what's needed here by keeping the cold air *'in'*.

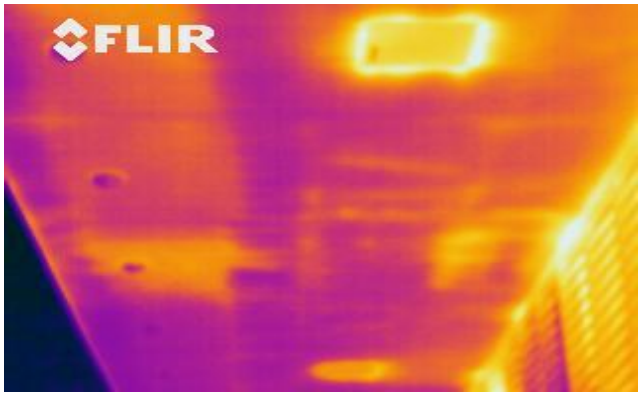
THE HIGH-RISE

At the 52 story level of this building is a roof level that encircles the main electrical and mechanical floor of this particular building. The window washing machinery of this structure takes up most of this roof level's floor surface. Above this roof level is an overhang extending out to the edge of the building. There are three floors above this overhang section. And, depending upon which side of the four sides of the building that you're standing on it's the windy side that's the scariest to be on. Trust me. It looks something like this.

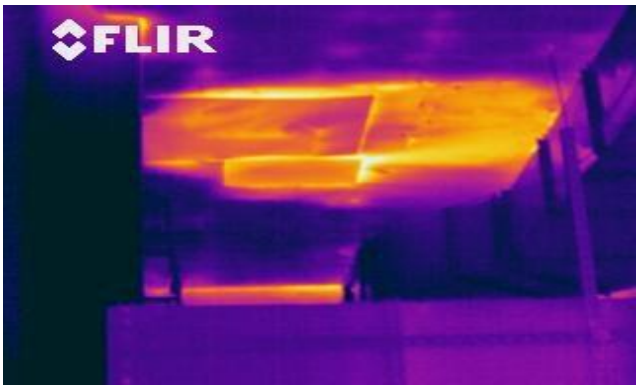
All four sides of the overhang were shot with the IR as was the interior ceiling of the electrical and mechanical floor. Some sections of this floor were open on the side for ventilation. The restaurant sits on top of this overhang and the mechanical floor. There are great views of the city all around the building from the restaurant floor but a cold air problem had invaded this floor level causing the comfort and cost issues. Two main issues were discovered utilizing the infrared survey.

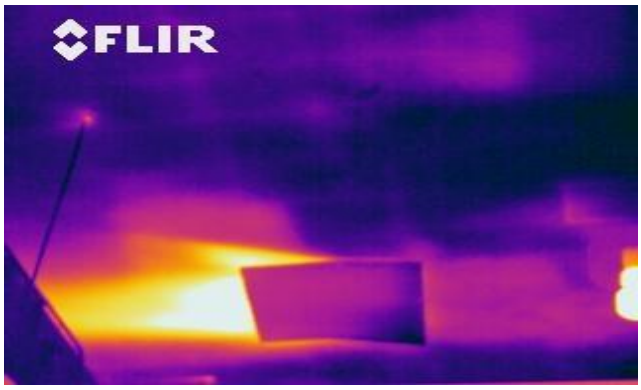
The overhang had thermal deficiencies, brighter areas indicate heat loss.





As did the electrical and mechanical room ceiling, lighter areas indicate heat loss..



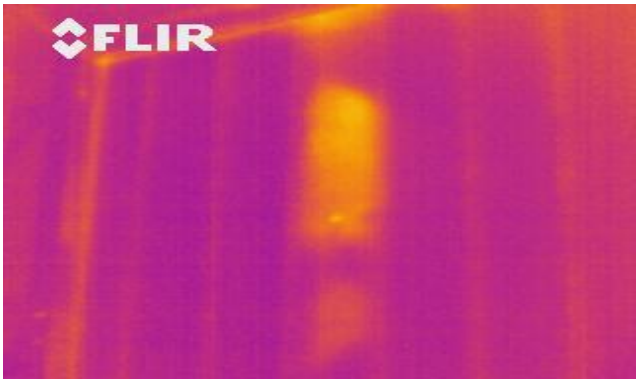


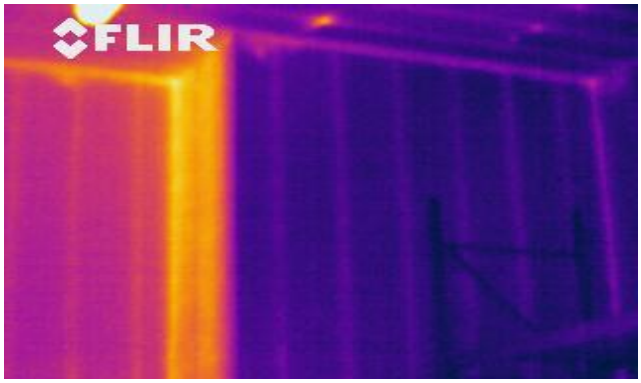
As you can see, and many of you know, that with older buildings the insulation and air sealing materials deteriorate over time. Repairs that have been neglected to be fixed are often the source behind problem issues. Infrared allowed the client to see their problem. It also helped them to realize the situation's significance and get the issue corrected.

SEVENTEEN FREEZERS

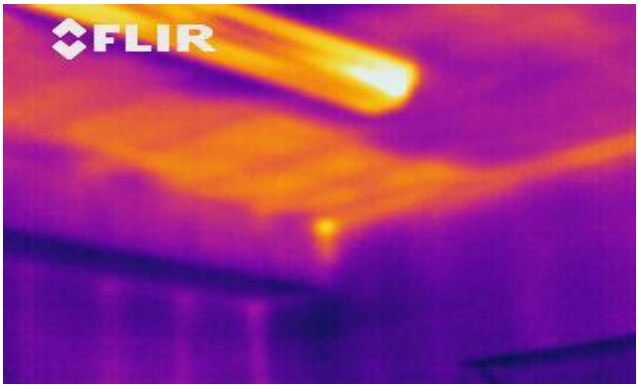
In the suburbs outside of Boston a supermarket had a similar problem but it involved keeping the cold air in. With seventeen freezers they all had different functions, and temperature ranges. There were average sized rooms to large rooms to enormous rooms, though most were average to large sized. The problems found here were the missed wall bays of insulation and more problematic was the common pattern of missed spayed in closed foam insulation all occurring in the center of most of the freezer ceilings, a materials application blunder. It would not have been picked up unless an IR scan had been performed, or the ceilings were taken down, whichever occurred first!

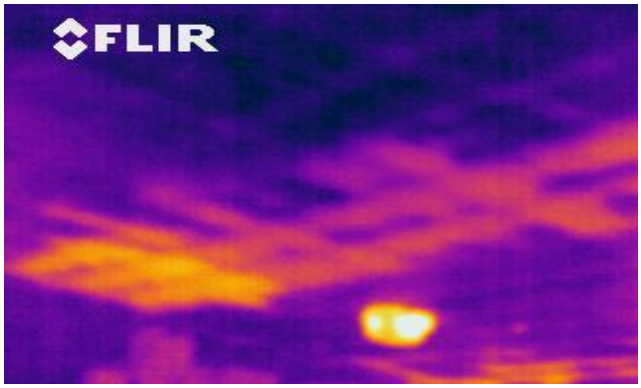
The missing wall bays of insulation. Yellow areas are voids.



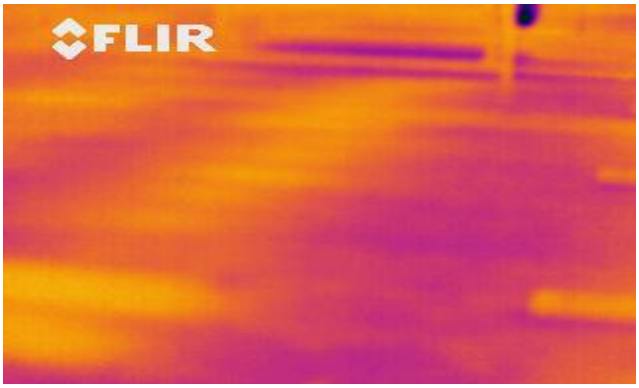


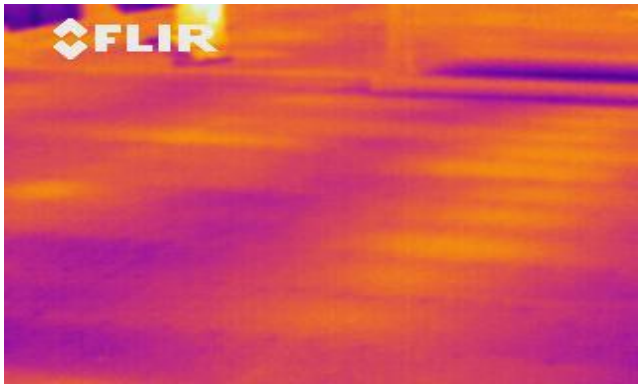
The missing freezer ceiling sections of insulation, from inside the freezers. Yellow areas are voids.





The missing freezer ceiling sections of insulation, from outside of the freezers. Blue areas are voids.





This is also typical of what occurs in the world of new construction. Things get missed. Infrared lets you know what got missed and where those locations are. The interior freezer walls were not made of stainless steel panels causing no IR image problems due to high emissivity issues. This made scanning the freezers an easier project than anticipated.

SUMMARY

A contrast of cold, between where is the cold air getting in and where is it getting out? The high-rise people know they are having a cold air problem, they can feel it. Infrared located the areas that needed attention, the under insulated overhang area and the patched ceiling areas in the partially open air mechanical room. The identified issues were documented in a professional report and give a contractor a ready-made road map of what needs correction.

The freezer people want their cold air and before they move product in to the store they want to make sure the freezer rooms are tip-top. Again, Infrared is the perfect inspection method for determining temperature differences. From the inside of the freezers we can see a heat signature when there is a problem because the freezer rooms are at operating temperature. Conversely, scanning the exterior of the freezer ceilings we see cold areas indicating insulation voids.

So, are you looking to keep the cold air in or out? And, did you satisfactorily meet your objectives to do just that? Infrared helped these client's determine their particular objectives.

REFERENCES

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ABOUT THE AUTHOR

Dave is a Level III thermographer and owner of SAWYER INFRARED, a Boston based Infrared Inspection Company. They have been doing infrared consulting professionally since 2003. To find out more about his company's services visit their website at ***sawyerinfrared.com***.

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