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## **Building renovation and rehabilitation projects start with infrared thermography testing**

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Considering a renovation or rehab project? If you listen to the experts, you'll soon hear that there are three things you should address carefully before diving in: planning, planning, and planning. Buildings are not birthday presents - when you open them up, surprises are usually unpleasant and expensive. That's why it's best to have all the major issues on the table at the outset. While it can take more time and money upfront to carefully plan your project, experts agree that it's the best way to ensure a cost-effective project that avoids the unexpected pitfalls that can drain your budget before completion.

With today's escalating energy costs and pressing concerns about environmental impacts, improving the building's energy performance is an important objective for any renovation or rehab project. Good pre-project planning is especially critical in this area. You could simply add low-emissivity windows and a few of the latest "green" gadgets to your shopping list. Yet without an understanding of the actual energy performance of the existing building, there's a good chance that an "add-on" approach will not produce the energy savings you expect -- and may even make things worse.

Fortunately, it is now possible to document a building's energy performance in "real time" using infrared thermography. Using this cutting-edge technology, an experienced Certified Thermographer can pinpoint all the significant sources of heat loss in the building envelope. This testing, called Infrared Building Envelope Analysis, provides a virtual road map for planning and integrating the most appropriate and cost-effective energy saving measures in your renovation or rehab project.

Where is warm air escaping from the building? Where is cold air coming in? Is the insulation in that wall functioning well? Or has it settled, or suffered water damage, or...is it even there? Are there conditions that could encourage mold growth? Which windows are failing? What are the most cost-effective steps to improve the building's energy performance? What needs attention? What already works well?

The importance of answering that last question was illustrated recently when we conducted a thermographic evaluation of a large performing arts center in New York City. The original 100-year old masonry portions of the building were performing surprisingly well, but when we inspected newer sections of the building we found serious problems. In many areas, the newer walls performed so poorly that the windows were actually transferring less heat than substantial portions of the fully insulated wall systems. Armed with our test results and analysis, the building owners had a much better understanding of the steps required to cost-effectively improve their facility's energy performance.

Too often we are asked to troubleshoot building envelope issues only after a renovation project is completed, when - too late - it becomes clear that the building's thermal performance was not

understood when the renovation plans were being drawn up. In one such case, we were asked to perform emergency thermographic testing of an old university building that had been recently renovated. Once construction was complete and the occupants moved in, they found their offices were uncomfortably cold as soon as temperatures started dropping in the fall. By mid-winter, the sprinkler pipes started bursting, causing water damage to three floors of the building. Our infrared scanning revealed that there had been a substantial misunderstanding of the initial condition of the building envelope. Significant insulation voids had resulted in cold penetration of the walls and attic, causing the freeze ups. When you make infrared testing the first step in developing a renovation or rehab plan, you can avoid these types of disasters.

Would you like your renovation project to be officially recognized for its energy saving performance? Many building owners are now incorporating infrared inspections in their plans to seek LEED Certification for their existing buildings. To cite one example, the CB Richard Ellis team recently received a LEED innovation credit for our testing of a 37-story 1.1 million s/f office building at One Beacon St. in Boston.

Whatever your renovation or rehab plans, getting an accurate picture of the building's thermal performance beforehand is critical to avoiding expensive surprises and disappointing results. Infrared building envelope analysis provides this information so you can develop plans based on actual conditions, rather than assumptions. For any project, large or small, that's a big step toward realizing substantial ongoing energy savings and achieving a trouble-free, cost-effective outcome. Peter Brooks is president of Infra-red Analyzers, Inc., Williston, VT.

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