

{ Flagstaff Green Builder }

Performance Testing: A Must in Modern Construction

By David Carpenter

If you hire a contractor to build an energy efficient building, or retrofit an existing building, how do you know if they are doing everything they claim to be doing?

Using third party inspectors is very common in the building industry. The most common and widely recognized inspector on a building project is usually the municipality's building inspector. They ensure that a new building conforms to building and fire codes. Other inspectors for a project might include specialty inspections for structural elements, or the soil conditions on a project site. Banks and owners also hire inspectors. They want to confirm that new construction projects are tracking on budget and on schedule before releasing funds. Most mandatory inspections in construction have to do with safety. We hardly ever see required inspections for quality and performance, but we should.

As a building owner, you can validate that a building performs the way a builder promises by hiring a third party energy auditing company. That way, you can be sure that you are getting what you pay for. Most energy audits

can be broken up into two categories: new building and retrofits.

In new building construction, owners would hire an energy auditing/rating company at the same time they bring on their design team. The rater will work with the architect and design team as the design evolves, sharing valu-

// Some companies are so busy touting their products or services as the greatest ever developed that they ignore prospects' problems.

able knowledge about where the building is vulnerable to failure, and help to avoid common mistakes that can end up as bad design. Once a design is selected, the building's characteristics are entered into a computer program. The

program will build a model that will forecast the energy performance of the completed building. This template will act as a road map to ensure that the building is built to the standards specified in the design. The auditor will make jobsite visits during construction and document the job progress, and ensure that building assemblies are built properly. Upon completion of the building, the energy rating team will depressurize the building using a device called a blower door to get a set of values they can check against the original model. The results of the test will confirm or deny that the building is performing to the standard.

In a retrofit situation, the auditing team does not have the benefit of a computer model. Therefore, a benchmark is needed to track the changes that will be made to the building. The team will perform the blower door test first, to establish the failure points in the building. By depressurizing the building and deploying smoke devices, the team can ascertain where there are leaks in the thermal envelope and make recommendations for repair. The team might also use infrared cameras to determine if the building is missing insulation or has insu-

lation improperly installed. Once the initial test is done, a report is written that will become the road map for the repairs. The contractor should follow the road map and make all necessary repairs. Once this is done, the testing company will perform the blower door test again to determine the level of success. This method is referred to as the test-in / test-out method and can generate a report that might be helpful when applying for federal and state tax credits.

Not only is it now possible to ensure that a building is safe for use, but also that it performs like it is designed. Only through performance testing can you ensure the results are quantifiable and measurable. **FBN**



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