

Energy Conservation Projects

Citizen's Building

The 15,325 sqft Citizen's Building was originally built in 1978, and then renovated in 2013 for the new data center and IT offices. Based on the age and type of construction for the building with a return-air plenum system, it was an ideal candidate for blower door testing to determine the building's air tightness and leakage at the roof/parapet wall juncture.

in the fall of 2013, CPCC retained HICAPS, Inc. from Greensboro to do the testing. Their blower door test and thermal imaging found air leakage pathways through gaps in the building envelope, having an equivalent leakage area of between 864in² and 1480in² or a single hole 25" x 35" to 30" x 50" in size.

In March of 2014, HICAPS, Inc. sealed significant gaps around the perimeter of the building where the roof and exterior wall meet using a fire-rated two-component foam. This effort was undertaken to reduce air infiltration and energy use in the building.

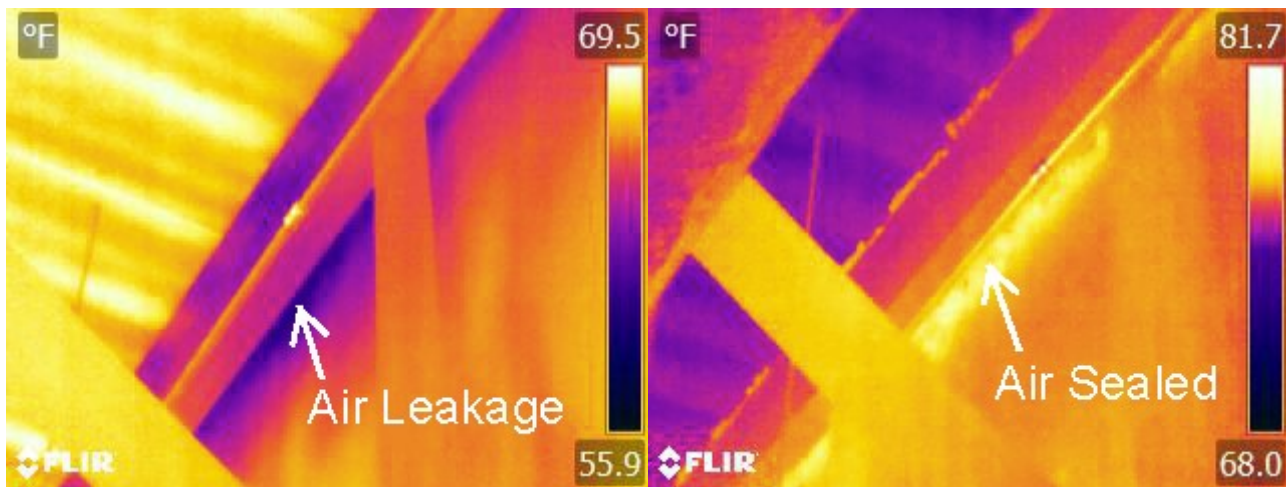


Figure 1: 2nd floor mechanical room before and after sealing - air leak is at bottom of beam along the wall.

In the thermal imaging photo on the left, the arrow points to a blue-colored area below a beam, which indicated that everything above the second floor suspended ceiling was being convectively cooled by outside winter air entering through penetrations in the building's envelope while the building was negatively pressurized.

In the thermal image on the right, the missing blue-colored area verifies the effectiveness of the work. Blower door pressure testing was again performed so the baseline and post-air sealing leakage rates could be compared and energy use reduction could be modeled.