

## **Case Study: Corrective Measures Extend Roof Life for Large Commercial Building**

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Consider the scenario. The owner of a large commercial building in Northeast Ohio is facing a number of obstacles at his facility. The roof leaks, the gas and electric bill are through the roof, the furnace/AC runs constantly, some rooms are cold while others are hot, and there is a constant sewer gas smell in certain parts of the building. To top it off, there is condensation buildup on the upper mezzanine and the exterior doors are hard to open. Besides the cost, the most annoying thing is that there is a never-ending battle to keep the HVAC units running.

Over a period of six months, belts, circuit boards and two fan motors are replaced – and the entrepreneurial owner is ready to throw in the towel. However, after four different contractors have tried unsuccessfully to correct some of the issues, the owner finds a contractor who examines the entire building system as a whole and discovers that one of the previous “roofers” has covered a vent fan, plugged a drain, created a ponding water on the roof and closed off the ridge vents.

To make matters worse, an “HVAC technician” had decided to close the fresh air intake because the furnace wasn’t heating the building properly, and has disconnected the ventilation fan to help heat the cold rooms. Now this system is like a terminally ill patient.

### **What went wrong?**

The new contractor’s investigation uncovers the causes of the challenging conditions. It is revealed that the building previously served as a warehouse and didn’t need as much insulation. The undersized roof HVAC unit has been overworked because of the difference in prior usage as well. The condensation is from lack of insulation and lack of ventilation, and the unbalanced HVAC unit has been overheating some rooms and not heating others.

The sewer smell and door problem is caused by negative pressure from makeup air vents being closed. The kitchen exhaust hood is pulling so much air out of the building that the doors re hard to open and sewer gases are being pulled up from the floor drain in an unused mop sink in the closet.

### **How did this happen?**

Who is to blame for these problems? The roofer? The HVAC tech? Or was it the owner’s fault for buying a building bigger than he could afford on the cheap that had a bad roof, and then trying to have it patched until the business could afford a better roof?

Whoever is “at fault,” there were three lessons to be learned. First, don’t assume anything. Second, always get three estimates from three different sources. Thirdly, compare theories, ask many questions, research answers and don’t assume that because a professional says it, it is true.

### **Identifying a solution**

As a corrective measure, a new system was selected for the large commercial building: sprayed-in-place, high density polyurethane foam on top of the existing roof, and a reflective Conklin roofing system to cover the foam.

The foam saved the owner money on gas bills, the reflective coating on top helped offset the need for the AC unit to be running 92% of the time and the unit lasted another 10 years (trouble free). In fact, the energy savings alone paid for the cost of the roof in 7.3 years. And because the roof system was renewable with an 18-year non-prorated warranty, it was cleaned and another top coat was applied 18 years later, and the warranty was extended.

As a bonus, the roof will never have to be torn off and dumped into a landfill, as it can be renewed over and over, meeting the true definition of green roofing.

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**SIDEBAR:****Benefits of Sprayed-in-Place Foam/Coatings & Spraybots**

Statistics show that sprayed-in-place foam and coatings are on the rise, second only after single-ply systems. One major reason is because 85% of commercial roofing companies report an increase in employee costs – and liquid applied systems do not require the intensive labor and disruptive practices common to other roofing systems (no need for roof tear-off, dumpsters, etc.)

With the use of Spraybots (robotic machines used to apply foam), labor costs have decreased even further. The machines need a highly skilled operator, however Spraybots don't get tired. Operators can trade off in operation and projects can theoretically take place 24 hours a day if needed. Plus, the machines can apply 15,000 square feet of foam in one eight-hour shift in a much more consistent pattern and accuracy than their human counterparts.