

Project: Medical Facility - Midwest U.S. Confidential Client



CHALLENGE:

A Midwestern medical facility was experiencing condensation as well as moisture/ice damage due to excess humidification combined with building pressurization and air leakiness. The solution had to be non-disruptive, as the facility was fully functioning.

SOLUTION:

Liberty provided building forensics and diagnostics services to show how properly operating the facility's humidifiers could solve the frost/ice problem.

RESULTS:

Correcting the facility's humidification problem solved the problem without having to address a poor air barrier design and pressurization issues. This was done without disrupting facility operations or sacrificing occupant comfort.

CASE EXPERTS:

J. David Odom – Principal Investigator
Richard Scott, AIA - Forensic Architect
Norman L. Nelson, PE – Senior Forensic Engineer

SERVICES PROVIDED:

Liberty Building Forensics Group (Liberty) provided building forensics and diagnostics services, including the use of internet-connected wireless data loggers to test and analyze humidification.

CASE SUMMARY:

The medical facility was experiencing buildup of frost and ice in above-ceiling spaces and in clerestories during winter months two years after construction. The frost/ice eventually melted, causing damage and leaking into occupied rooms below. Liberty discovered the causes to be an improperly designed air barrier system, improperly operating humidifiers set so high as to cause excess humidity, and exfiltration of humid interior air through HVAC-induced building pressurization. Our data-loggers showed how properly operating the humidifiers without sacrificing occupant comfort solved the frost/ice problem without having to disrupt facility operations by replacing the air barrier or changing pressurization. The wireless, internet-accessible data loggers were left in place to allow the owner to continue to monitor the building operation.