



Building Envelope Maintenance

An Organized Approach

[by Jack Carr, P.E., RS, LEED-AP]

If your condo complex has a building(s) over 25 years old, you are facing some serious maintenance or capital improvement issues in your near future. For most condominiums, these issues are associated with the building envelope. Since the building envelope is probably one of the most important, if not the most costly common condominium asset, it bears careful monitoring. Therefore, it is important to understand what the building envelope is and how to approach its maintenance in an organized fashion.

ROOF AGE AND REPAIRS

Starting from the top, most condos use asphalt shingles for sloped roofs and EPDM membranes for flat roofs. Both last a long time with asphalt shingles having expected useful lives of 25 to 30 years while EPDM membranes start to fail after 20 to 25 years. Most roofs start to show their age with leaks of

which the great majority are concentrated in areas where dissimilar material or horizontal and vertical surfaces meet. Defective or poorly installed flashing is usually the culprit.

Caulking or roof repair mastic is often used for repairs but these tend to be only temporary fixes. Watch for curling or lifting shingles as these are good signs of an aging roof. Roofs can also fail prematurely from overheated and poorly vented attics. And speaking of attics, the irony is that ice dam leaks are caused by heat rather than ice. Ice dams are formed at the edges of roofs due to heat escaping into the attic from poorly sealed exterior walls or inadequate insulation, resulting in the melting roof snow setting up a freeze/thaw cycle that eventually works under the shingles. Those issues should be addressed first before bothering with external electrical heating wires or similar measures.

SIDING VS. BUILDING WRAP

Many New England condominiums are sided with wood, vinyl, or cement composite clapboard siding. For the most part these materials do their job to keep most of the moisture out of the building but they are not the only barrier. In fact, one of the most important components of exterior walls is the building wrap beneath the siding. This material's purpose, going by such names as Tyvek or Typar, is often misunderstood, even by contractors.

When it was first introduced, it was called a vapor barrier and is still thought of as such by many. In fact, building wrap should be renamed and called building flashing as that is its true purpose. Water will infiltrate most siding whether it is clapboards, brick, or stucco. The trick in good building envelope design is to ensure this water infiltration is stopped by a drainage plane, which, for most residential structures, is building wrap.

This is why most exterior wall leaks can be traced back to missing or poorly installed building wrap.

If building wrap were only used for a vapor barrier function, then not taping the seams of the wrap would not be a big deal. But as a building flashing, it is critical that seams (particularly vertical ones) are taped, holes are patched, and the wrap is properly integrated with the flashings around doors and windows. When a unit owner reports a water infiltration problem through the walls, it is a good idea to focus on problems with the wrap rather than the siding. To make matters worse, if the wrap is failing, it is very possible water damage may also be occurring to the sheathing and insulation behind the wrap.

WINDOW LEAK RESPONSIBILITY

This brings us to windows. The problem with windows is they often belong to the unit owner and are not a common element under most condominium rules. However, the building committee is not off the hook with window leaks as these same condo rules that assign the windows to the unit owners also assign the window frames to the association's responsibility. In most cases, it is not the window that is leaking but the frame's flashing (or lack of flashing) causing the problem.

Poorly installed windows probably did not follow the manufacture's installation instructions, as these instructions are rarely read on the job site. Often the only solution is to remove the siding around the window, inspect the flashing, and re-flash. Many such problems can be minimized by preventive inspections using either visual methods or instruments such as moisture meters or infrared scanners to focus on the specific moisture path to diagnose the issue.

Building envelope water infiltration problems are like odd noises in your car - they do not go away they only get worse.



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