

Expert advice for remodeling: inside and out

An expert remodeling project should include evaluating, and if needed, correcting the causes of poor energy efficiency.

There are many things to consider when remodeling a home, especially if the goal is to improve the building's energy efficiency, including, but not limited to, ventilation, indoor air quality, combustion safety and how moisture is affecting the building assembly.

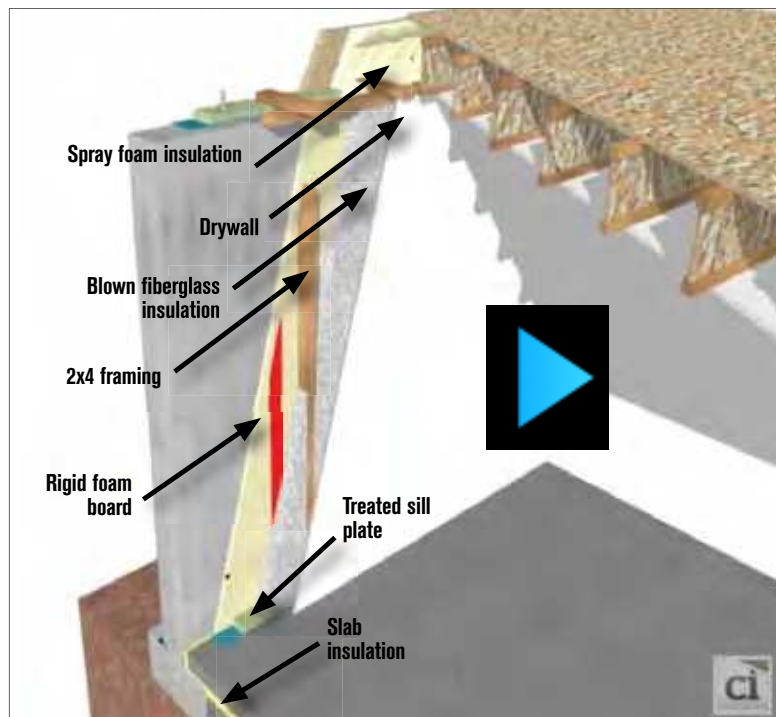
Ventilation and indoor air quality

Indoor air quality is important to all occupants. Common indoor pollutant sources are pets, furniture and household chemicals. Removing these, when possible, called "source control," can have an immediate impact on indoor air quality.

Depending on the type of furnace filter that's currently being used, upgrading to a higher performing media filter is a good starting point. Look for filters with a MERV rating of more than 10, which can reduce small airborne particulates that can trigger an allergic response.

Most existing homes do not have a comprehensive ventilation system. Construction Instruction strongly recommends installing a ventilation system that provides low-level, constant ventilation. One simple and cost-effective strategy can be a very quiet bathroom fan installed to operate continuously.

A fireplace that lacks a sealed enclosure or airtight doors can cause back drafting when negative indoor pressures exist. If this type of fire-



Keep basements comfortable with rigid insulation and additional interior insulated framing. Control moisture with a vapor barrier below the slab and proper drainage.

place is in the home, replace the firebox with a closed combustion unit or, at the very least, install airtight doors.

Other open combustion systems, such as older vented water heaters and furnaces, can also allow back drafting, if a tighter enclosure meets an exhausting appliance. Replacement with power vented or closed combustion equipment is recommended, which can also reduce wasted energy.

If condensation on windows occurs, ventilation can help manage the indoor moisture levels. The

expensive option is replacing windows with a high-performance product, Low-E glass with a warm edge spacer.

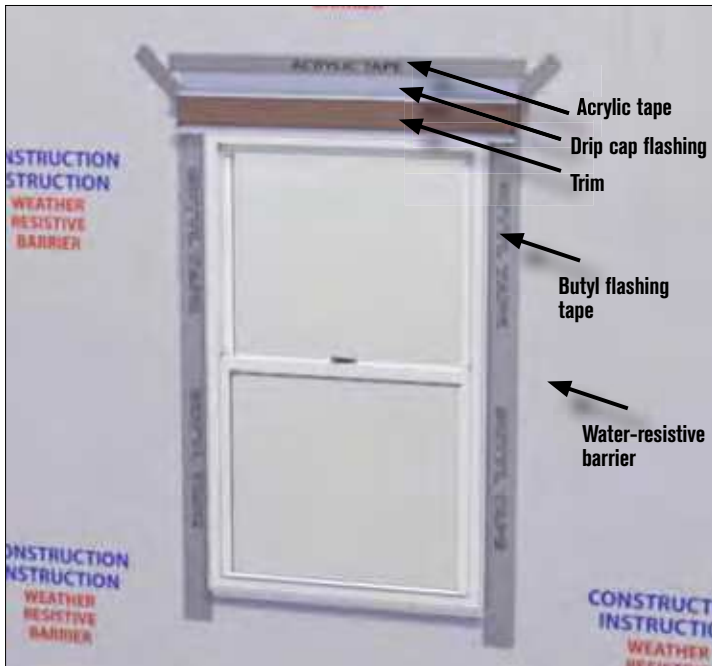
If windows do not close properly, repair them, replace gaskets or adjust the rough opening and replace the windows. Always install new windows with sill pan flashing, interior back dams and proper exterior flashing.

Wall systems, roofing and cladding

Water leakage can cause a significant number of problems. The roof is the first line of defense against rain and snow, so always check the condition of the shingles, roof boots and gutters, if any. If there are no gutters, install them. If there is attic ventilation, inspect for ridge and soffit vents that are installed to code and be sure the vents are clean and clear.

Like roofing, cladding protects the structure from rain and snow. If the cladding is deteriorating, that's a likely sign that more extensive problems exist within the wall system and further investigation is recommended. Pay particular attention to areas around windows and doors, the most common entry point for water.

Another significant point of water intrusion is cracks in stucco, brick and mortar. These cladding systems should be installed over a continuous drainage plane. If no drainage plane exists, the best time to add one is when you replace the cladding.



To help establish a weather-resistant barrier in a window install use proper flashing techniques, which includes not taping the bottom of the window to allow any moisture to escape.

IF THE GRADE AROUND THE HOME ISN'T DIRECTING WATER AWAY FROM THE FOUNDATION ADEQUATELY, IMPROVE THE GRADE. THE SLOPE AWAY FROM THE HOUSE SHOULD BE AT LEAST 6 PERCENT OR ¼ INCH PER FOOT.

Foundations

All concrete and block foundations have minor cracks. If the cracks show signs of water leakage, waterproofing or replacement may be necessary depending on the severity of the problem.

Pooled exterior water is a primary cause of a wet foundation basement or crawlspace. If the grade around the home and the area around downspouts aren't directing water away from the foundation adequately, improve the grade and extend or redirect the downspouts. The slope away from the house should be at least 6 percent or ¼ inch per foot.

Too often, homeowners place trees and shrubs or irrigations systems close to the house. This prevents the foundation and lower sections of siding from drying out adequately; additional-

ly roots from plants and trees can damage the foundation. Because all plantings need to be watered, trees, shrubs, flowerbeds and lawns should be as far from the foundation as possible.

In addition, crawlspaces should be treated like full basements. Unconditioned crawlspaces vented to the exterior of the building, are not generally recommended. Instead, cover the soil with a high-quality poly vapor retarder, insulating the foundation, conditioning the area, and ventilating the crawlspace with conditioned house air.

Remember, whatever gets into the crawlspace, gets into the house...soil gas, moisture, rodents, and even the insecticide from local exterminators. For this reason, all ductwork in crawlspaces should be sealed with mastic.



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