

TIPS FOR BUILDING A HEALTHY, ENERGY-EFFICIENT HOME

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Building a new home is a big, complex project. The tips that follow (see reverse) highlight the most critical construction tasks that MUST be followed to ensure you get a home that is both healthy for you and your family to live in, as well as energy- efficient. Many of these recommendations can only be done at the point of new construction or are significantly less expensive to do up front rather than after the home is finished. The added cost of many provisions will save the homeowner in the long run—in reduced energy consumption, reduced maintenance cost, and increased health and productivity.

Goals For Your New Home

- Moisture Managed (liquid water and moisture/vapor management)
- Pollutant and Pest-Free
- Ventilated with Balanced Mechanical Ventilation
- Comfortable
- Energy-Efficient

New Home Construction Resources

TRAININGS: Maine Indoor Air Quality Council's Residential Construction Trainings and Ventilation Design & Installation Trainings



BOOKS: "Builder's Guide to Cold Climates"
– by Joseph Lstiburek



ASTM E1465 Radon Standard for New Construction (mandatory in Maine)



FREE PUBLICATION:
For New Construction: U.S. EPA's Indoor Air Plus Program



Tip! The Council recommends you review the recommendations on the next page with your contractor prior to starting construction, and insist that these practices be followed.



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TIP #1: Site Work - Drainage, drainage, drainage The building & site must provide effective drainage measures to control both surface water and sub-grade water to prevent it from entering the building. If the site is difficult to drain, don't build a basement.

TIP #2: Install Radon Preventive Features - Radon is a colorless, odorless gas that comes up through the ground and gets trapped in buildings. Radon is the #1 cause of lung cancer in nonsmokers. 1/3 of Maine homes (1/2 in Cumberland County) will have a radon problem. Installing radon preventive features at the point of new construction is not only cheaper, it is more likely to be effective without the need for an electric fan.

TIP #3: Waterproof Foundation Walls - Waterproofing, not dampproofing, bridges the cracks that will form in your concrete foundation.

TIP #4: Insulate the ENTIRE Foundation - A "koozie" for your basement. Insulate under the slab AND all the way up all foundation walls. Best done at the point of new construction outside the foundation walls but can be done from the inside later.

TIP #5: Install a Moisture Barrier Under the Slab - This can be part of your radon preventive features.

TIP #6: Install a Sill Seal - Create a thermal and moisture barrier between the concrete foundation and the structure of the home.

TIP #7: Cellar Windows Are for Light, Not Ventilation - Ventilating the basement in the summer in Maine leads to condensation issues – don't do it.

TIP #8: Dehumidify - Even well-built, properly drained, and fully insulated foundations may have moisture problems in Maine during the summer months. Be prepared to dehumidify your basement with a good quality, dehumidifier rated for basement spaces.

TIP #9: Protect Your Building Materials from the Weather - Send back or throw out any moldy materials.

TIP #10: Avoid Traditional Single-Stud Walls with Fiberglass Insulation - This style of framing allows thermal bypass through the wood studs. Newer, better options are available.

TIP #11: Caulk, caulk, caulk - Account for high grade caulking in the budget (a case or more to do it right). Air sealing should be part of your housing budget, not an incidental. Sealing all cracks is critical for both indoor air quality and energy efficiency.

TIP #12: Plan for Ductwork BEFORE You Start Framing - Think Ahead! Leave space to keep the ductwork inside the heated envelope, not in attic space.

TIP #13: Pay Careful Attention to the Make-Up of the "Sandwich" of Your Walls & Roof - This is extremely important. The sandwich should keep liquid water and water vapor out, but also provide it with a pathway to get out if (when) it finds its way in. This can be very technical and complicated and is a bigger topic than can be adequately addressed in this tip sheet. Resources and trainings are available.

TIP #14: Avoid Plumbing in Exterior Walls - Not Even Sewer Drainage. Condensation issues & frozen pipes are expensive to repair after the fact.

TIP #15: Flashing, Flashing, Flashing - Spend whatever is necessary to properly flash all windows, doors, eaves, valleys, decks, chimneys, plumbing stacks, exterior lights, and other penetrations or areas that alter the natural drainage plane.

TIP #16: Rain Screen/Drainage Plane - An air gap behind the cladding is an excellent idea. Cladding is for looks, not moisture management. A good storm will bypass the clapboards/ siding no matter what it's made of. Give the water a way to get out.

TIP #17: Manage Insulation Cost: Doubling Your R-Value Will Not Halve Your Operational Costs - It is more important for the insulation to be continuous (no gaps or holes) than for it to be thick.

TIP #18: Install Fully Ducted, Balanced Ventilation - Your new home will have people in it, and people need ventilation. Fully ducted, balanced systems deliver fresh air to all areas of your home, exhaust pollutants from all areas of the home, and are more energy-efficient than passive ventilation or exhaust-only ventilation. Your goal: Build Tight, Ventilate Right!

TIP #19: Use Sealed Combustion Heating Appliances or Consider Heat Pump and/or Solar Strategies - Heat pump technology has come a long way, and works consistently down to -25°F

TIP #20: Finishing Smartly - Use low VOC paint. Solid wood details are preferred over products with lots of glues. Allow new materials to off-gas prior to occupancy. Don't install carpet in any area likely to get wet. Place foundation plantings at least 24" from the home, and away from any exterior vents. Keep earth sloping away from the home, and no closer than 8" from any wood surface.



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