

Bevilacqua Deck Builders Explains Freeze-Thaw Effects on Decking

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Bevilacqua Deck Builders has released guidance on how repeated freezing and thawing affects decking and framing materials, ahead of a winter that federal forecasters expect to be shaped by an unusual climate pattern. In its August outlook update, the National Oceanic and Atmospheric Administration reported that a very strong El Niño is expected to persist through the fall, with the agency's Climate Prediction Center placing the likelihood of continuation into the December through February period at 96 percent.

The guidance addresses how outdoor structures respond to conditions that arrive every year in New England but vary in intensity. Freezing and thawing acts on a deck through water. Moisture held in or beneath a material expands as it freezes and contracts as it thaws, and the repetition of that cycle over a season transfers mechanical stress into the material. A single cold night does little. A season of alternating cold and thaw does considerably more.

Wood is affected most directly. The USDA Forest Service Forest Products Laboratory documents in its Wood Handbook how lumber exchanges moisture with the surrounding air and changes dimension as it does. Water held within the grain expands on freezing, and the resulting stress separates fibers and opens fine cracks that admit more water on the following cycle. Density and species influence how quickly this progresses, though installation and maintenance affect the outcome as much as material choice does.

Composite and polyvinyl chloride decking respond differently. Composite combines wood fiber and plastic, while PVC contains no wood at all, and neither absorbs water the way lumber does. Both still change dimension with temperature, which is why manufacturers publish installation gapping requirements specific to cold-climate conditions. ASTM D7032 establishes the standard specification these products are evaluated against, and independent evaluation reports for individual products are available through ICC-ES.

"Every material moves. The question is what makes it move and how much," said Anthony Bevilacqua, owner

of Bevilacqua Deck Builders. "Wood responds to moisture in the air. Composite and PVC respond mostly to temperature. A deck that was gapped correctly for one of those will not behave the same way if it was built like the other."

Below the surface, the concern shifts from the boards to the ground. Frost penetrates to a depth that varies by location and by winter, and footings that do not reach below it can move as the soil around them freezes and expands. That movement carries the frame with it, and it does not always reverse when the ground thaws. Because frost depth requirements are set locally rather than regionally, the applicable figure comes from the municipal building department with jurisdiction over the property.

Framing material also affects long-term performance. Bevilacqua Deck Builders builds decks framed in steel, aluminum, pressure-treated lumber, and composite. Metal framing does not absorb moisture, which removes the internal expansion mechanism entirely, while pressure-treated lumber remains a widely used option when specified and installed for the exposure it will face. Fastener selection matters alongside the framing itself, since hardware exposed to repeated wetting and freezing must be rated for that environment.

The distinction becomes relevant on older structures, where the surface and the frame can be in different conditions. Boards that show cracking and a frame that has shifted are separate problems with separate solutions, and the second is not visible from above. Bevilacqua Deck Builders assesses framing, ledger connections, and footings before recommending surface work, on the basis that a frame in sound condition can often carry replacement boards and railings while one that is not requires reinforcement or rebuilding. That sequence applies whether the eventual work involves board replacement, railing and stair repairs, post stabilization, or a full rebuild. More information about the company's approach is available at bevilacquadecking.com.

Founded in 2017 and based in Massachusetts, Bevilacqua Deck Builders designs and builds residential and commercial decks, porches, and outdoor living spaces in wood, composite, and PVC. Owner Anthony Bevilacqua brings more than fifteen years of construction experience across paving, home building, and renovation to the company's deck and outdoor living work.

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