



North Decks and Outdoor Living Reveals How Clay Soils Affect Deck Stability

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North Decks and Outdoor Living is drawing attention to how expansive clay soils affect deck supports, following a year of severe moisture swings across the North Carolina Piedmont.

Cabarrus County recorded its third driest year to date in 132 years of record keeping through March 2026, running more than six inches below normal precipitation. Conditions reversed in late July, when the state's wettest rain event in more than a year moved across North Carolina and improved, though did not eliminate, drought classifications. That sequence of prolonged deficit followed by heavy rainfall is the pattern that matters most for structures built on clay.

The North Carolina Geological Survey identifies the Carolina terrane, which encompasses much of the central Piedmont, as one of two regions in the state with the greatest potential for expansive shrink-swell soils. Soil series mapped across these Piedmont uplands carry the characteristic in their official descriptions from the United States Department of Agriculture Natural Resources Conservation Service. The Enon series

is rated high in shrink-swell potential with very high surface runoff and low saturated hydraulic conductivity, while the Mecklenburg series is rated moderate. Both are residuum weathered from mafic crystalline rock and both hold substantial clay content below the surface horizon.

Clay behaves differently from sandier soils as moisture changes. Extended dry weather draws water out and the soil contracts. Returning moisture causes it to swell. Ground with low hydraulic conductivity sheds water at the surface rather than absorbing it evenly, which means moisture content can vary considerably across a single property depending on drainage and grade. Two supports set thirty feet apart can sit in measurably different conditions.

For a deck, that movement acts on footings, post bases, and the connection back to the house. Effects tend to develop gradually rather than appearing at once, and the transition from a dry period into a wet one produces a second phase of movement after the first has already occurred.

"Clay is the reason two identical decks on the same street can perform completely differently," said Tyler North, Owner and Founder of North Decks and Outdoor Living. "What is under the footing matters as much as what is above it, and a year like this one applies pressure in both directions."

Footing depth is the primary defense against seasonal soil movement, and reaching undisturbed load-bearing soil rather than backfill or topsoil is what allows a support to carry weight consistently through changing conditions. Grade and drainage determine how water moves across a property and where it collects, which in turn shapes how much moisture reaches the ground around each support. Sites that slope toward a structure or hold water after rainfall present different conditions from those that shed water away, and those differences persist long after construction is complete.

Property owners assessing an existing structure after these conditions can look for specific indicators. A deck surface that no longer sits level, posts that have shifted or no longer sit plumb, separation or movement where the deck attaches to the house, and stairs that have settled at the bottom landing are all worth attention. Gaps opening in soil around post bases can indicate the ground has drawn back from the support. Doors and gates that once operated smoothly and now bind or catch can also point to movement in the structure they are mounted to.

Not every observation of this kind signals a structural problem. Materials settle, and a deck that has been in place through several seasons will show some evidence of the conditions it has passed through. Movement at the house connection is the exception, and warrants evaluation by someone trained to assess deck structures.

North holds certification from the North American Deck and Railing Association in Deck Evaluation and

Inspection, along with NADRA certification in Decks Done Right. He noted that soil is one of several site conditions bearing on how a structure performs, alongside drainage, grade, and the depth at which footings reach undisturbed load-bearing soil.

Seasonal moisture is also not the only environmental factor acting on outdoor structures in the region. Piedmont summers combine sustained heat with high humidity, and winters bring periodic freeze and thaw cycles that affect both materials and the ground beneath them. Soil movement operates alongside those conditions rather than in isolation, and a structure encounters all of them across a single year.

"Most of what people notice is minor, and some of it is just a deck settling into place," North said. "The value is in knowing which is which instead of waiting to find out."

Conditions that developed over a full year of drought followed by heavy rainfall are unlikely to resolve quickly, and the ground beneath a structure continues responding to moisture long after surface conditions appear normal. Observing how a deck behaves across changing seasons provides a clearer picture of its condition than any single inspection at one moment in time.

North Decks and Outdoor Living is a family owned company serving the greater Charlotte area from Concord. The company designs and builds custom decks, screened and covered porches, patios, arbors and pergolas, and related outdoor living structures, working in wood, composite, and PVC decking. Services include deck installation, repair, maintenance, and replacement.

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North Decks and Outdoor Living

North Decks and Outdoor Living is a family-owned custom deck builder based in Concord, NC, serving homeowners and businesses across Cabarrus County and the greater Charlotte area.

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