

Dr.Decks Outlines How Public Soil Survey Data Guides Deck Framing Choices

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Dr.Decks, a custom deck builder founded in 1991, has outlined how publicly available soil survey data can inform footing and framing decisions for residential decks across the Puget Sound lowland, where glacial deposits vary sharply between neighboring properties.

The glacial history of western Washington left a layered patchwork of material beneath the region. Pierce County Public Works documents that Vashon still predominates in the level to hilly topography of Fircrest, University Place, Steilacoom and the northern portions of the City of Tacoma, while Vashon outwash occurs across the remaining, more rolling areas of the basin. The same documentation notes that glacial deposits in the area extend to considerable depth, with the thickness of the upper layer ranging widely from one location to the next.

Guidance published by Washington State University Extension describes the structure of a typical till profile in more detail. The upper portion is relatively permeable and has drained freely since the glaciers retreated. The lower portion is a very dense and nearly impermeable basal till, often called hardpan, which usually appears 20 to 40 inches below the surface. Water moves readily through the upper horizon and then meets a layer it cannot pass through.

Those conditions carry practical consequences for any structure anchored to the ground. Engineering literature on glacial till in the Puget Lowland describes the material as a very dense, silty, gravelly sand with scattered cobbles and boulders, generally difficult to excavate and frequently requiring ripping. The same research notes that because of its load-deformation characteristics, it can provide excellent support for structures, while also observing that it can be satisfactorily compacted only during dry weather, a characteristic that restricts its usability across the region.

"The ground changes from one street to the next here, and sometimes within a single lot," said Jason

Russell, owner of Dr.Decks. "Two footings ten feet apart can sit in completely different material. That is something to establish during design rather than discover during construction."

Homeowners can review the soil classifications mapped for their own parcel through the Web Soil Survey maintained by the USDA Natural Resources Conservation Service, which publishes drainage class, depth to any restrictive layer, and related properties by location. The same underlying data is used by engineers, planners and public agencies across Pierce County. The Washington Geological Survey publishes surficial geology mapping for the region that covers the distribution of till, outwash and non-glacial deposits in greater detail.

The variation is not limited to glacial material. Pierce County documentation identifies non-glacial strata in the area that include floodplain sediments along with mineral and organic deposits associated with former lakes and bogs. Those fine-grained layers tend to be more uniform than glacial outwash but carry lower permeability, which affects how water behaves beneath a structure built above them. Properties near the region's many creeks, lakes and low-lying basins may sit on materially different ground than a property a short distance uphill.

Seasonal timing compounds the effect. The South Puget Sound receives sustained rainfall across the autumn and winter months, followed by a comparatively dry summer. Soil that holds moisture through the wet season and then dries out has a measurable influence on the environment immediately beneath a deck, where airflow is often restricted and evaporation is slower than in open ground.

Ground conditions also influence material selection above the framing. Where soil retains moisture through the long wet season, the structure sits above a persistent source of humidity for months at a time. Dr.Decks specifies composite and PVC decking alongside wood, matching the surface material to the elevation, airflow and moisture exposure of each site rather than applying a single standard to every project. Elevation above grade, the degree of shading, proximity to standing water and the amount of air circulation beneath the frame all factor into that assessment.

"A deck is a structure before it is a surface," Russell said. "The decisions that determine how it holds up over twenty years are mostly made before anyone opens a box of boards."

The company incorporates 3D design modeling into its planning process, allowing property owners to see how a proposed structure sits on the site and how framing and material choices work together against the conditions their particular lot presents. Layout, elevation changes and the relationship between the structure and the surrounding grade are reviewed at that stage, when adjustments remain straightforward. Permits for deck construction in the area are obtained through Pierce County or the City of Tacoma depending on the property.

Dr.Decks is a family-owned deck and outdoor living contractor founded in 1991 by Jason Russell, serving Tacoma and the surrounding South Puget Sound region. The company designs and builds custom decks, porches, pergolas and outdoor living structures, and is known for shaping composite and PVC boards into curves through a process called deck board bending.

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