

Bigfoot Homes

BIGFOOT HOMES • OWNER'S GUIDE

The Ground Under Your Home

Soils, geotechnical reports, and how they decide the foundation under a factory-built home in California.

WHO THIS IS FOR

Anyone putting a manufactured home, CrossMod or ADU on their own lot in California, and anyone deciding whether to buy that lot.

THE ONE THING TO REMEMBER

The home is engineered once at the factory. The foundation is engineered for your dirt. A soils report is how the engineer learns what your dirt is.

A factory-built home arrives finished, inspected and stamped. The one part of the project built on site, to fit your ground, is the foundation. Its design starts with a question the county will ask before it issues a permit: what is the soil under this home, and what does it do when it gets wet, dries out, or shakes?

What a geotechnical report is

A geotechnical report (also called a soils report) is written by a licensed geotechnical engineer or engineering geologist after they have looked at your ground in person. They dig test pits or drill borings where the home will sit, log what they find, send samples to a lab, and write recommendations the foundation engineer and the county rely on.

What the field work measures

- Soil type by layer, and how deep to competent material or bedrock
- How much the soil swells and shrinks with moisture (the Expansion Index)
- How much weight it can carry (allowable bearing pressure)
- Groundwater, if any, and how close to the surface
- Fill, debris, or old foundations that must come out
- Slope stability where the lot is not flat

What the report tells the engineer

- Which foundation systems are acceptable for this soil
- How deep footings must be embedded
- Whether the top soil must be dug out and replaced with compacted fill, and how deep
- The seismic Site Class used in the structural design
- Drainage and grading requirements around the home
- Inspections and compaction tests the engineer wants during construction

When a report is required

California's building code lets the building official require a geotechnical investigation whenever the site conditions call for one, and most counties apply that to any new dwelling on a permanent foundation. Expect to need a report when any of these are true:

- The lot slopes, or the home sits near the top or bottom of a slope
- The parcel is in a state-mapped seismic hazard zone for liquefaction or landslide, or in an Alquist-Priolo earthquake fault zone, where a fault study may be required as well
- The soil is known or suspected to be expansive (common in clay-rich valley and foothill ground)
- The site has fill, a previous structure, or a fire rebuild with debris removal
- The home will sit on an engineered foundation rather than the manufacturer's standard installation

- Your lender requires it. FHA-insured loans on manufactured homes require a permanent foundation certified by a licensed engineer or architect to HUD's Permanent Foundations Guide, and that certification leans on soils data

Flat lot, good soil, no hazard zones? Some jurisdictions will accept a manufactured home on the manufacturer's standard pier-and-pad installation without a full investigation. Whether yours does is one of the questions a site feasibility study answers before you spend money on engineering.

How the numbers turn into a foundation

Three findings do most of the deciding.

FINDING	WHAT IT MEANS	WHAT IT CHANGES
Expansion Index	How much the soil swells wet and shrinks dry. 0 to 20 is very low; 21 to 50 low; 51 to 90 medium; 91 to 130 high; above 130 very high.	Medium and above usually means over-excavating the top foot or two, replacing it with compacted fill, deeper footings, and careful drainage so the ground under the home stays at a steady moisture.
Allowable bearing pressure	How much load a square foot of soil can carry safely, in pounds per square foot. Around 1,500 to 2,500 psf is common for residential lots.	Sets the size of pads and footings. Low bearing means bigger or deeper footings, or a different system.
Seismic Site Class	A letter from A (hard rock) to F (special study) describing how the ground amplifies shaking. Site Class D, stiff soil, is typical.	Feeds the structural design of the foundation and the tie-downs that hold the home to it.

The foundation options for a factory-built home

SYSTEM	HOW IT WORKS	WHERE IT FITS
Pier and pad set	The manufacturer's installation manual: concrete or ABS pads on prepared grade, steel or block piers, ground anchors and straps. Installed by a licensed C-47 installer.	Flat, competent soil where the jurisdiction and lender accept it. Fastest and least expensive.
Engineered above-ground pier set	Masonry piers on engineered footings with a certified steel tie-down system, often after the top layer of soil is over-excavated and recompactd. Engineered to the soils report and stamped.	Lots where the soil needs some correction but a full perimeter wall is not required. Often \$10,000 to \$18,000 less than a stem wall.
Stem wall (perimeter footing)	A continuous concrete footing and short wall around the perimeter, home set into the wall and bolted down. Crawl space below.	Expansive or weak soils, slopes, sites where the report calls for conventional footings, and buyers who want a site-built appearance and appraisal.
Slab or basement	A monolithic slab, or a full-height basement where grade allows it.	Special cases. A basement needs the grade to work with it and its own engineering.

A REAL EXAMPLE, SANTA CRUZ MOUNTAINS

A lot in Bonny Doon had bedrock close to the surface, an Expansion Index of 55 (medium) and Site Class D. As first written, the geotechnical report called for a conventional shallow foundation: spread footings embedded 18 inches on the exterior and 12 inches inside, with the ground over-excavated and recompactd to about two and a half feet below grade. That is a stem-wall job.

After a conversation between our foundation engineer and the geotechnical engineer, the report was amended to allow an engineered above-ground pier set instead: over-excavate 12 to 18 inches, replace with compacted fill, pass a compaction test, then set the home. Same safety, same stamp, and a foundation that costs meaningfully less. The lesson is that the report is a starting point for a conversation between engineers, not a verdict, and the time to have that conversation is before the permit goes in.

What it costs and how long it takes

Budget a few thousand dollars for a residential geotechnical investigation and report, and plan on several weeks from the engineer's site visit to the stamped report, because lab work and writing take time. The foundation engineering that follows is a separate line item. Both are small next to the foundation itself, and both are cheap next to a foundation that has to be redone.

Two habits save the most money:

- **Order the soils report before you order the home.** The report can change the foundation type, the site prep, and sometimes the placement on the lot. Knowing that before the factory builds means one order, not two.
- **Choose a geotechnical engineer who understands factory-built homes.** Some engineers default to a site-built foundation because that is what they see most. An engineer who knows engineered pier systems can often approve one where the soil allows, and will put that approval in writing so the county sees it in the permit package.

How Bigfoot handles it

1 Site feasibility study first.

A member of our team walks the lot, pulls the hazard maps and the county's rules, and tells you whether a soils report will be required and what kind of foundation to expect.

2 We order the right investigation.

We work with geotechnical engineers in each county we serve, brief them on the home and the installation system, and ask the pier-set question up front.

3 The report goes to our foundation engineer.

The foundation and tie-down design is drawn to the report's recommendations and stamped. Any pier-set approval is confirmed in writing before the permit is submitted.

4 It all lands in the permit package.

Soils report, foundation plan, and the manufacturer's installation manual go in together, so the county reviews one consistent set.

5 Inspections and compaction tests happen on schedule.

Our licensed C-47 installer builds the foundation to the plan, the engineer's field tests are booked when the report asks for them, and you follow each step in your Lodge portal.

Glossary

Geotechnical engineer

A licensed civil engineer, often with a further Geotechnical Engineer license, who investigates soil and rock and writes foundation recommendations.

Bearing pressure

The load a soil can safely carry per square foot, used to size footings and pads.

Over-excavation and recompaction

Digging out the top layer of poor soil and replacing it in compacted layers of engineered fill, tested to a required density.

Pier and pad set

The manufacturer's standard installation of a HUD-code home: pads, piers, anchors and straps, installed per the home's installation manual.

Stem wall

A continuous perimeter footing and short concrete or block wall the home is set on and bolted to.

Expansion Index

A lab measurement of how much a soil swells when it takes on water. The higher the number, the more the ground moves between wet and dry seasons.

Site Class

A seismic classification of the ground, from A (hard rock) to F, that sets how much earthquake shaking the design must resist.

Compaction test

A field test, usually by the geotechnical engineer, confirming the fill was compacted to the density the report requires.

Engineered tie-down system

A certified steel bracket-and-anchor system that connects the home's frame to the foundation and is accepted as part of a permanent foundation.

Liquefaction zone

A state-mapped area where loose, saturated soil can lose strength in an earthquake. Triggers a geotechnical investigation.

START WITH THE GROUND

\$500 site feasibility study

A member of our team visits your property and you get a written report: zoning and setbacks, hazards, water and septic, access, the permit path, a cost picture and the next steps, including whether you will need a soils report. If you go forward with Bigfoot, the \$500 is credited toward your home.

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