



# Geotechnical Investigation: Deal or Dud?

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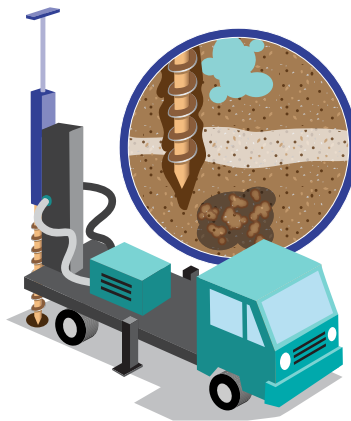
As a home builder, have you ever wondered if a geotechnical investigation is needed, or if the benefits support the cost? A geotechnical investigation (a.k.a. soil report) analyzes and characterizes surface and subsurface conditions. It identifies geologic hazards and provides site development and foundation recommendations. Building homes without a geotechnical investigation is a bit like being blindfolded and swinging at a piñata. You can't see what you're doing and hope for the best.

Think about it, without a geotechnical investigation, how can a home builder know:

- **If there are geologic hazards like expansive soils, uncompacted existing fill, buried debris, collapsible soils, soft or organic soils, hard rock, sinkholes or unstable slopes?**
- **If there is shallow groundwater to seep into excavations, crawl spaces and basements?**
- **If the onsite soils can be reused to balance cut and fill, and how to properly compact fill?**
- **If the most appropriate and cost-effective foundation will be used?**

What are the risks of building without a geotechnical investigation? 2-10 Home

Buyers Warranty has been investigating claims for over 38 years and has found that 80% of all structural claims are due to the impact of soils on the foundation. Builders that use geotechnical investigations are up to 50% less likely to experience structural claims. The cost of the investigation may be offset by using the lowest cost foundation for site-specific conditions, balancing cut



and fill to avoid importing fill and avoiding construction delays due to subsurface surprises. A geotechnical investigation can aid a home builder's defense in the event of arbitration or litigation of a structural defect claim.

Instead of using geotechnical investigations, some home builders rely on prior excavation experience in the general area, soil maps or surface-soil grab sample analysis. These methods may work in some low-risk undisturbed areas, but the odds of satisfactory results are

unfavorable in the long run. Subsurface conditions can vary greatly over short lateral distances, such as from lot to lot within the same subdivision. The rule of thumb amongst geotechnical engineers regarding the consistency of subsurface conditions, is that there is no rule of thumb. The only way to really know what lurks below the surface is to explore by drilling or digging.

Home builders often ask, when is a geotechnical report required? In general, home builders should use geotechnical investigations if geologic hazards are likely, if there are past foundation failures in the area or if it is the local standard practice or code requirement. Most industry groups recommend geotechnical investigations, and structural engineers can be found liable for designing foundations without one. A growing number of building departments require them, especially in elevated-risk areas. The International Building Code, Section 1802, specifies that a geotechnical investigation is needed for questionable soils, expansive soils, shallow groundwater table, pile and pier foundations, variable rock strata and for footings on fill material more than 12 inches in depth.

Geotechnical investigation...deal or dud? It appears to be a resounding deal, based on the experience of America's oldest and largest new home structural warranty company.



Mr. Keaveny is the Risk Manager and Principal Engineer for the leading new home warranty company, 2-10 Home Buyers Warranty. He earned a Bachelor's degree in Geological Engineering and a Masters in Geotechnical Engineering. He is licensed as both a Professional Engineer and a Professional Geoscientist, and has over 30 years of diverse engineering experience. He serves on the Construction Performance Standards Committee for the Texas Association of Builders, and is an invited speaker and author. Mr. Keaveny's work on the subject of structural claims has been published in major newspapers and has drawn international interest.



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