Geo-Strata
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Geo-Education

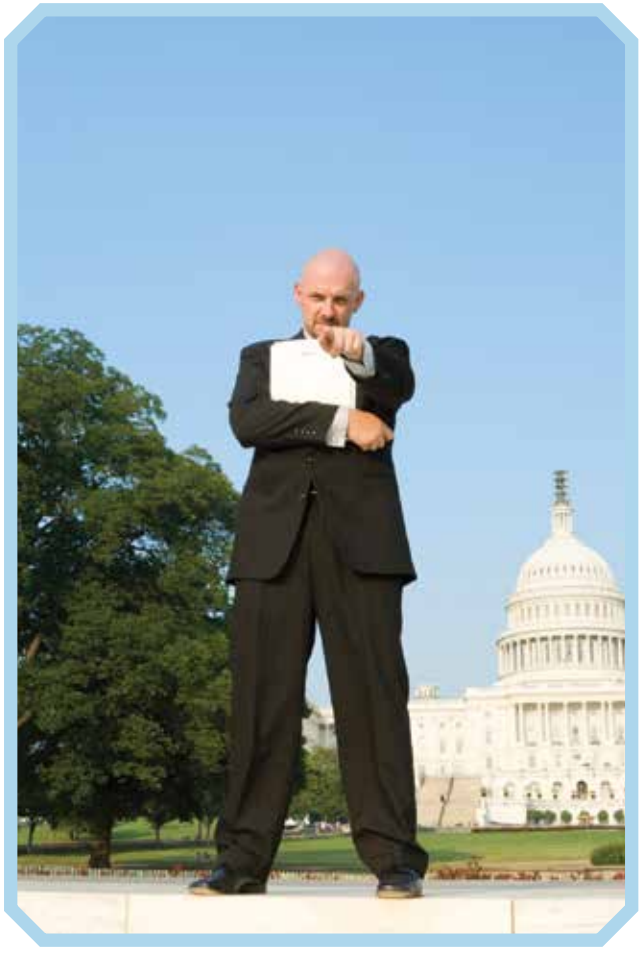
ALSO

Lessons Learned from Geo-Legends: James E. Monsees

A Complete Geoprofessional Service

An individual who prefers to remain anonymous has sent you this photocopy of an article that appeared in the May/June 2013 issue of Geo-Strata *magazine.*

You are a government official who believes geotechnical engineers of record should not be permitted to observe excavation on the sites of projects for which they have been engaged. You maintain this belief because you fear that these geoprofessionals will fraudulently alter their instruments of professional service to hide their negligent performance.



You need to learn something about geotechnical engineering, because – if you don't – you could seriously damage those you serve.

The site-specific nature of geotechnical engineering is just one of the discipline's aspects that make it unique. Other forms of engineering tend to be location-independent; i.e., given the same subsurface conditions and building-code requirements, the civil, structural, mechanical, electrical, and plumbing design of almost any project would be the same no matter its location. By contrast, geotechnical engineering deals with site-specific, natural conditions that can differ significantly from conditions typical of the area's geology. This potential seemingly would necessitate extensive subsurface exploration before initiating foundation design. It doesn't.

Because extensive subsurface exploration is expensive, proper geotechnical-engineering practice has *always* incorporated "the observational method," another unique aspect of the discipline that skilled practitioners apply to optimize cost-effectiveness. It's implemented by sampling and testing just a tiny portion of a site's subsurface, then applying local experience and seasoned judgment to formulate the *provisional* foundation-design recommendations included in a geotechnical engineer of record's final report. The recommendations are provisional because, given the limited sampling involved, they can be responsibly finalized *only in the field*, during excavation, when actual subsurface conditions are exposed, permitting geotechnical engineers of record to evaluate and adjust their recommendations if and as necessary.

Please get it! Geotechnical engineers cannot use on-site geotechnical observation to fraudulently modify their final recommendations because they don't take their final recommendations into the field. They take the provisional recommendations that they rightfully assume will need some post-excavation fine-tuning, because no one can see what's hidden by earth, rock, and time. In other words, your policy prevents a problem that doesn't exist, while creating a problem that's all too real, because it prevents geotechnical engineers from completing their service and shifts reliance to replacement firms whose unfamiliarity with key issues could compromise the success of the entire project.

And it gets even worse, because – despite their serious information deficits – replacement firms seldom ask questions of the one person who knows more about the project's geotechnical issues than anyone else – the original firm's project manager – because the replacement firm's personnel regard the project manager as a competitor; i.e., the enemy. By contrast, when the original firm is retained to complete its service, the project manager briefs field representatives before they depart for a project site, so they know what to look for. And while on site, the field representatives stay in close contact with the project manager, using smartphones to communicate by voice, e-mail, texts, photos, and videos.

The communications breakdown that occurs when a replacement firm is retained to perform field services increases the risk of unanticipated conditions, delays, extras, claims, and disputes. It also increases the risk of far more serious problems, such as those investigated by the Subcommittee on Investigations and Oversight of the House Committee on Sci-

ence and Technology in 1983, following a series of alarming construction failures that included the Kansas City Hyatt failure that killed 114. The Subcommittee's conclusion? *The engineer of record needs to be engaged during the construction phase to help ensure specifications are being met.*

The problems become still worse because of liability issues.

Geotechnical engineers obviously cannot be held liable for site problems they ordinarily would have prevented had you not prevented them from performing a complete geotechnical-engineering service. Supplanting firms cannot be held liable for preventing those problems either, because their job is to evaluate what they find, not second-guess the engineer of record. In other words, you and your employer may be held solely responsible for all the problems, because you're the ones who created them! That can be a particularly onerous burden when it comes to geotechnical engineering, because subsurface issues comprise the number-one source of construction-industry claims and disputes.

And, finally, this point: Those who believe the geotechnical engineer of record should be prevented from performing geotechnical field services *cannot cite even one instance where the problem they are trying to prevent has* ***ever*** *occurred*. By contrast, just a 60-second Internet search will identify dozens of instances where the problems you would create have resulted in hundreds of deaths.

The position you advocate is dangerous and, if you choose to maintain it, you are, too.

AUTHOR

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