

# GEOTECHNICAL ENGINEERING

A MESSAGE TO

# ARCHITECTS

AND

# CIVIL ENGINEERS

FROM

# ASFE

THE GEOPROFESSIONAL BUSINESS ASSOCIATION

Because professional liability claims quickly expand to involve many project participants, all benefit by cooperating to help minimize risk exposures. No group of design professionals has been more successful in reducing risk exposures than geotechnical engineers. In 1970, so many were being faced with meritless claims that professional liability insurance was unavailable. By 1980, ASFE-member geotechnical engineering firms reportedly had achieved the best "claims against" record of all design professionals. Despite that accomplishment, subsurface problems still are among the most prevalent on any construction project. This makes the prime consultant's approach to geotechnical engineering particularly important. It can mean the difference between a project that runs smoothly despite unanticipated conditions, or one that is fraught with delays, rework, overruns, claims, and disputes.

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Experience shows that the owner receives a better service, and the entire design team's risk exposure is reduced, when consulting geotechnical engineers:

- are selected based upon their technical, professional, and administrative competence, as well as their experience with area geology and similar types of construction,
- serve as full members of the design team,
- participate meaningfully in developing the scope of geotechnical services,
- communicate directly with the design professionals, who will implement geotechnical recommendations,
- review plans and specifications that reflect their findings, and
- observe construction activities for compliance with plans, specifications, and recommendations, and to provide prompt reaction to any unanticipated conditions that may be discovered.

Although several competent geotechnical engineering firms typically are available to an architect or civil engineer, the experience, skills, and technical resources of these firms never are identical. Given the opportunity, each would suggest a different scope of service for any given project. In all cases, however, the best scope of service is the one developed with the full participation of the geotechnical engineer, other appropriate design team members, and the

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owner. This technique, mutual or bilateral development, permits project principals to familiarize themselves with one another's goals, objectives, and concerns. It also permits the geotechnical engineer to explain the alternatives available and the risks and costs associated with each. The communication associated with mutual scope development is fundamental to reduced design team liability exposure. Because the geotechnical scope of service comprises design of the subsurface exploration program, geotechnical engineers' services actually begin during the procurement process. That's when geotechnical consultants apply their expertise to identify what they believe is required to satisfy the needs of other design professionals and the owner, given the site, type of construction, and other pertinent factors involved. The effectiveness of geotechnical engineers' recommendations is directly dependent

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on the nature and extent of the services they perform. Of all project participants, geotechnical engineers are in the best position to indicate what those services should consist of based on their own unique experience and skills. Because each member of the design team should be sensitive to the needs and preferences of others, Geotechnical consultants should be questioned about their scope of service recommendations. What is to be gained by performing

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both A and B? What risks are incurred by doing one but not the other? What are the alternatives? What is gained? What is lost? Such questions are not posed to challenge a geotechnical engineer's judgment. Rather, they are asked to create the understanding a client needs to make effective decisions and to create the bond of trust that traditionally is the hallmark of any client-professional relationship. For purposes of time or economy, architects and civil engineers will sometimes establish a fixed, usually limited geotechnical scope of service, and invite several firms to submit fee quotations. *The architects and engineers who develop these unilateral scopes may be forced to accept responsibility-and liability-for their adequacy.* The risks involved can be significant, because architects and civil

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engineers do not possess as much geotechnical expertise as competent geotechnical engineers. As a result, the geotechnical scopes created by architects and civil engineers are far more susceptible to errors or omissions, thus creating unnecessary and wholly avoidable professional liability exposures for themselves and other members of the design team. Is this risk commensurate with the hoped-for gain? Not often, because gain seldom is achieved. Geotechnical engineers that participate in unilateral-scope procurement often recommend conservative design alternatives as a defensive measure. Accordingly, the lower fees that sometimes stem from relying on unilateral geotechnical scopes of service can all too often lead to far higher costs for site preparation and foundation construction. In addition, restricted or otherwise inadequate geotechnical scopes of services create a far greater

potential for costly delays, rework, overruns, claims, and disputes. To help ensure even further reduction of risk exposure, as well as enhanced cost-effectiveness, ASFE recommends that geotechnical scopes of service include two services in addition to subsurface exploration and development of foundation design recommendations.

These two services are:

- geotechnical review of other design professionals' plans relative to their interpretation of geotechnical findings and recommendations, and
- full-time field observation of site preparation activities to help ensure contractors' adherence to recommendations, plans, and specifications, to determine if genuine unanticipated conditions arise, and- if they do-to permit prompt corrective action and thus prevent minor problems from growing to major proportions.

No matter how comprehensive the geotechnical scope of service, risks will still remain; risks that affect more than just the geotechnical engineer alone. However, when the design team functions well; when communication, coordination, and cooperation are effective, the chance of these risks materializing is greatly reduced, and the severity of those that do materialize will usually be limited.

For more information about steps you can take to enhance the quality of your practice and thus reduce your exposure to professional liability claims and losses, speak with a member of ASFE or request a directory of publications and loss prevention aids from:

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