Guest Column

dedicated to the dissemination of information from other organizations

The Proper Role of the Geotechnical Engineer

By Victor R. Donald, P.E.

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As a practicing geotechnical engineer for over 30 years, I would like to thank Mr. Gerd Hartung, P.E., S.E. and Mr. Richard Anderson, P.E. for their insightful article entitled *The RFP for the Geotechnical Report* as presented in the March 2013 issue of STRUCTURE magazine. Their specific and relevant advice regarding how to procure the services of geotechnical engineers is beneficial to us all.

The structural engineering community is well-known as a strong advocate for the selection of geotechnical services based upon quality and understanding of the project and project area, and that article is another example of their commitment to the use of geotechnical engineers as significant contributors to the overall success of every project. Structural and geotechnical engineers must forge a team to create a successful design, as the article states.

When I encounter a prospective client who considers geotechnical engineers to be a "testing laboratory" and chooses to hire based on the lowest price instead of selecting a capable and knowledgeable professional, I respond with a three-word declaration: "You deserve better." It is a simple, yet significant statement.

The fees of the geotechnical consultant are usually less than a fraction of one percent of the construction costs, yet their test results and opinions have an impact on the project budget that is orders of magnitude greater. Going with the cheapest provider for this critical investigation and design work ultimately places undue burden on the structural engineer to interpret the geotechnical data, select design parameters, consider site preparation and foundation options, etc.

Along those lines, the structural engineer should not dictate the scope of the field and laboratory segments of the geotechnical engineer's work, or exclude the geotechnical engineer from the process of foundation system selection. Our profession has grown immensely in the development of technologically enhanced ways to conduct a site characterization program using geophysical and/or in-situ test methods, typically complementing the traditional soil boring as a means of understanding the subsurface conditions. Geotechnical engineers also develop, understand and promote innovations in ground improvement, intermediate foundations and advancements in deep foundations to save owners millions of dollars.

Today's technology makes active collaboration with the geotechnical engineer simple, which minimizes the potential for miscommunication that can result from a single point of delivery report and overly conservative designs. There are two types of foundation failures. The first is obvious – structures move, slopes fail, walls tilt, floors distort, walls crack, etc. This failure type gets significant attention. The second could be more prevalent, but it goes completely undetected. It is the foundation that costs at least twice and perhaps up to ten times more than necessary, all because the design team lacked the active participation of an innovative and capable geotechnical engineer knowledgeable of recent advancements in the profession.

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The design-build (D-B) environment is a good example of geotechnical engineers providing valuable participation on the design team. D-B projects include the geotechnical engineer in the design process in order to render a proposal for the project that offers the best value. In my experience, D-B projects allow for vigorous and highly collaborative interaction of all disciplines, with the winning proposal often resulting in an innovative solution. If the need for active participation by the geotechnical engineer is that obvious in D-B projects where best overall value wins, why do geotechnical engineers struggle to participate as design professionals in the traditional design-bid-build environment?

As the referenced article implies, the structural engineer has a unique appreciation of the benefit that a capable geotechnical engineer brings to the design team. My request to the structural engineering community is to "help us help you." By continuing to convey this message to your clients, you can assist us in becoming more influential in the design process and eliminating the burden of insufficient geotechnical engineering that must be borne by someone – usually the structural engineer.▪