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## **Relying on a geotechnical consultant can be an effective way to manage underground risks**

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Typically, below ground design and construction aspects of a project are among the most risk prone. This is due to the inherent variability in subsurface conditions and the fact that these conditions are never fully known until construction is underway or in some cases, after construction is complete.

Relying on your geotechnical consultant from pre-design through construction can be an effective way for owners and developers to effectively manage underground risks helping them avoid costly delays and disputes during construction and facility performance and maintenance issues after construction.

In the early stages of a project, meeting with your geotechnical consultant along with the other project disciplines and mutually developing a scope of geotechnical services based on the type of project and the anticipated subsurface conditions can be very beneficial. Different methods for exploring and testing the subsurface conditions at the site along with the appropriate number of explorations and tests to be performed can be discussed in terms of risk versus reward and expected outcomes with input from all of the project team members.

Also, individual tenants may have generic geotechnical requirements that many times are not applicable to a given site. Your geotechnical consultant can advise you on these requirements and assist you with negotiating alternatives with the tenants that may be better suited to a particular site and the anticipated subsurface conditions. This advice can often result in cost savings for the owner and developer.

Once a scope of services is established and agreed upon, the geotechnical consultant will then generally proceed with exploring and testing the subsurface site conditions, analyzing and evaluating the results and developing design and construction recommendations for the soils related aspects of the project (foundations, slabs, pavements, excavations, slopes, groundwater control, seismic design, stormwater and wastewater infiltration, fill and backfill materials and compaction requirements, etc.). The recommendations are typically presented in report format and on all too many projects, this is where the geotechnical consultant's services end.

But relying on your geotechnical consultant during design and construction can be crucial to a project's success. Your geotechnical consultant can be effective in working with the other design team members such as the civil and structural engineers assisting them in proper interpretation and implementation of the geotechnical recommendations into the working plans and specifications. This assistance can help avoid costly confusion, disputes and delays during construction.

Involving your geotechnical consultant during the bidding and pre-construction phases of the project can also be very beneficial. During this time, the anticipated subsurface conditions and geotechnical requirements can be discussed with the contractors before shovel meets soil.

And then perhaps the greatest benefit of all can be realized during construction. Because, even

though your geotechnical consultant has explored the subsurface conditions prior to construction, these explorations are typically widely spaced and only cover a small fraction of most sites because of the practical limitations with current exploratory techniques. Variations in conditions between exploration locations are part of the inherent risk with below ground construction and unanticipated or changed conditions can result, even when a site has been adequately explored prior to construction.

Your geotechnical consultant is uniquely qualified to perform construction observation and testing services. Service objectives include: assessing contractor compliance with the geotechnical recommendations that the very same consultant has developed; assessing when significant variations or changes in conditions are encountered; and quickly addressing these conditions during construction again to avoid costly delays and disputes or future performance and maintenance issues.

The principals and field staff at Northeast Geotechnical have been helping owners and developers throughout the northeast manage the inherent risks with below ground design and construction by providing full service geotechnical engineering consulting from pre-design through construction for over 25 years. One of our particular areas of expertise is the economical reuse of on-site materials during construction. On many sites, we have saved owners and developers significant resources by working with the site contractors during construction managing the reuse of on-site materials thereby avoiding costly material disposal and import costs.

So as you consider developing new sites or redeveloping existing ones, consider your geotechnical consultant as an effective risk management partner and increase the chances of success on your next project.

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