GEOPROFESSIONAL BUSINESS ASSOCIATION

Thank you for attending!

The attached Geoprofessional Business Association (GBA) *Case History Number 108* is being provided as a gift from GBA to registrants of the 2021 Geo-Omaha. This case history supplements the presentation at the conference titled “Lessons Learned from Litigation Caused by Expansive Clays”. This document is copyrighted by GBA and is normally available *only* to GBA member firms.

All registrants of the 2021 conference are free to use this document for their own educational purposes. GBA has 107 other similar case histories providing lessons learned and guidance on a variety of topics of interest to consulting engineers, environmental professionals, construction engineers, and materials testing firms.

Also, the first few pages of a GBA publication titled *Can’t You Come Up with a Cheaper Alternative?* are attached. This document is referenced in the “Lessons Learned” presentation. The full document is available for free to GBA member firms.

GBA is the preferred source of business-educational resources, specifically risk management and business performance optimization, for geoprofessional firms. For more information about GBA and membership, please, visit www.geoprofessional.org .


GEOPROFESSIONAL BUSINESS ASSOCIATION

CASE HISTORY

The Client
A constructor-in-charge (formerly, “general contractor”

The Project
A new hospital

Assignment of the GBA-Member Firm
Sample and test a bagged, non-shrink expansive grout.

Background

The new hospital building was the key element of a high-profile, $800-million* project. Comprising nearly three-quarters of a million square feet, it would be a seven-story, structural-steel building with a partial basement, supported by drilled piers. Other building components included steel columns, metal decks, and concrete floor slabs. Importantly, the constructor-in-charge faced significant penalties if it failed to complete its work by the targeted date.

The column-base-plate grout was a non-shrink, bagged product to be mixed on site and placed beneath base plates ranging from 12 to 16 inches square on the lowest level of the structure. Project specifications called for the grout to achieve a minimum compressive strength of 8,000 psi at 28 days, the same as the product manufacturer’s advertised-strength claim. Specifications did not require grout testing. However, earlier in the project, in a request for information (RFI), the constructor-in-charge recommended the product and that it be

The constructor-in-charge retained the GBA-Member Firm to perform the testing

tested. After the RFI was approved, the constructor-in-charge retained the GBA-Member Firm to perform the testing, following the manufacturer’s testing recommenda-

the grout used for 85 of cubes achieved th Concerned about the the project manager

Only one set of cu specified strength.

sampling/testing proc he learned that the with ASTM C1107 and recommendations, be

- instead of using mat plastic molds whose uneven cube surfac cross-sectional test caused uneven load
- the plastic molds we clude a cover plate ably resulting in a lo less dense than the

The Member Firm’s pe with the Member Fir neering, who contacte technical personnel. T firm’s faulty sampling a reduced the cubes’ me

Had field repre the grout sample ing probably wou that compressive exceeded specifica

also noted that the pr

GEOPROFESSIONAL BUSINESS ASSOCIATION

CASE HISTORY NUMBER 108

PROJECT MANAGEMENT

The Client
A national chain of senior-living facilities

The Project
A five-story senior-living facility to be constructed on an undeveloped lot

Assignment of the GBA-Member Firm
Perform a geotechnical-engineering study and provide construction-materials engineering and testing (CoMET) services during construction.

Background

The client – a national chain of senior-living facilities – contacted the GBA Member Firm about a new facility it planned to build: A five-story wood-framed structure with an underground parking garage. The Member Firm assigned the commission to a project manager who prepared an agreement-formatted proposal to perform a geotechnical-engineering study and construction-phase construction-materials engineering and testing (CoMET) services, including earthwork observation and testing, foundation-construction observation, and concrete sampling and testing, most of which was considered

The client accepted the proposal as submitted, including its $50,000-or-fee-whichever-is-higher limitation-of-liability provision.

code-required special inspections. The client's vice president for construction accepted the proposal as submitted, including its $50,000-or-fee-whichever-is-higher limitation-of-liability provision.

Late in the design process, the vice president of construction decided to reduce costs by eliminating the underground parking garage and relying, instead, on a structurally suspended slab with a crawl space beneath it. The owner and architect-led design team decided against a slab-on-grade design because the Member Firm's study revealed that the site was underlain by expansive-clay soils. To protect the structurally suspended slab from underlying clay that could swell, the structural engineer specified use of void forms; cardboard forms that would support the slab during placement and then collapse once exposed to subgrade moisture. Based on a recommendation in the Member Firm's geotechnical-engineering report, the structural engineer called for a minimum void space of 12 inches.

Soon after he became aware of the client's decision to eliminate the parking garage, the Member Firm's project manager issued

The project manager issued a report addendum recommending that a particular type of form not be used.

a report addendum that he focused solely on void-form selection, recommending that a particular type of form *not* be used because of his concerns about its long-term performance. The project manager had to assume the structural engineer adopted his guidance because the architect failed to heed the explicit recommendation – included in the geotechnical-engineering

The architect failed to heed the explicit recommendation that the Member Firm review construction plans and specifications before construction began.

report – that the Member Firm review construction plans and specifications before construction began, especially because of the risks posed by expansive clays.

During construction, the mechanical constructor e-mailed a request for information (RFI) to all design-team members, including the GBA-Member Firm, stating that the sanitary-sewer-pipe design had to be revised because it failed to incorporate local practices for protecting buried pipes from damage caused by swelling clays.

The mechanical-engineering firm that designed the sewer lines was located in another state and was unfamiliar with local practices. Be that as it may, a month

The mechanical-engineering firm failed to respond to the RFI.

passed and the firm failed to respond to the RFI, causing the mechanical constructor – joined by the constructor-in-charge – to

issue a second e-mail to all design-team members, this time threatening to stop construction unless the sanitary-sewer design was revised. To keep the project moving, the Member Firm's project manager suggested some design changes that he sent via e-mail to the mechanical constructor and the constructor-in-charge. The mechanical constructor's superintendent assumed that the e-mail was a response to its RFI and moved forward, ultimately ignoring the project manager's suggestions

The mechanical constructor's superintendent assumed that the e-mail was a response to its RFI and moved forward.

and constructing the sewer lines his own way. The Member Firm's scope of service did not include observation of sewer construction, but it did include observation of concrete placement, during which some of the void forms collapsed as floor-slab concrete was being placed. On two occasions, the Member Firm's field representative – on site to observe concrete placement and test fresh concrete – included comments about the collapsed void forms in her daily field report (DFR), in one case noting that the constructor's superintendent told her that he would demolish and reconstruct areas where the void forms had caved in. She did not follow up, because observation of void-form placement and performance was the structural engineer's responsibility, not the Member Firm's. The Member Firm's project manager, who reviewed the field representative's DFRs, did nothing about the report, assuming that the structural engineer had things under control.

Problems and Outcomes

About four years after construction was completed and the senior-living facility was occupied, sanitary-sewer lines began backing up: A powerful sewage stench permeated the building; walls and the lower-level floor slab began to show heaving-related distress. The client had to move residents out of the building and into suitable temporary housing. Its next step was to retain a geotechnical engineer to conduct a forensic study.

In his report, the forensic consultant opined that the building's problems were caused by sewer-line breakage that allowed water into the subgrade, causing swelling. The breakage occurred, he said, because of poorly designed sanitary-sewer piping, inadequate inspection of the void forms during construction (they had collapsed in many areas filling the void space with concrete), and insufficient void space under the lower-level floor. Compounding those problems, the broken sewer lines could not be easily reached because the building had no basement. Worse: Void forms still were present in the space beneath the slab, blocking observation of the sewer-line damage and obstructing efforts to move through the crawl space. On the advice of the forensic consultant, the client chose to excavate a deep crawl space under the building floor – essentially a basement – so workers could access the sewer lines and repair them. This labor-intensive effort cost about $8.3 million*.

Not surprisingly, the client filed construction-defect claims against all the design firms involved, the constructor-in-charge, and the mechanical constructor. The client was

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seeking $25 million to pay for sewer-line repairs, floor-slab repairs, interior repairs, lost revenue from residents, resident-relocation

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costs, attorney's and expert's fees, and court costs. Five minutes after receiving the client's petition and pleadings, the Member

Firm's branch manager was speaking with the firm's chief operating officer (COO) at the firm's headquarters office. Moments later, the COO was on the phone with a representative of the firm's professional-liability (PL) insurer, and five minutes after that he was forwarding a copy of the claim to one of the insurer's claim managers.

The client alleged that the Member Firm was a principally responsible for the problems that arose.

In its pleadings, the client alleged that the Member Firm was a principally responsible for the problems that arose because:

1. This was "a soils problem" and the Member Firm was the geotechnical engineer.

2. The Member Firm's project manager had issued the e-mail in which he had suggested changes to the sewer-line design. Therefore, the client alleged, the firm had taken full engineering responsibility for sewer-line design and performance.

3. The Member Firm's geotechnical-engineering study failed to meet the standard of care, because the firm recommended at least a 12-inch void space when it should have recommended at least 24 inches, and because it failed to specify a certain "essential" test to evaluate the clay's swell potential.

4. The Member Firm's report addendum in which the project manager discussed void-form materials comprised a tacit approval of the change from a parking garage to a crawl space without informing the client and other members of the design team of the associated risks. The 8-foot-tall parking garage with sewer lines suspended from the first-floor slab would have eliminated the risk of swelling clays damaging the sewer lines. The addendum was also faulty in that the project manager failed to warn that it would be impossible to repair damaged sewer lines within a 12-inch crawl space filled with void forms.

5. The Member Firm's field representative failed to observe every area where the void forms had collapsed when the floor slab concrete was placed, causing some areas to have no void under the floor and leading to floor and wall damage when the underlying clay swelled.

6. The Member Firm's paperwork was incomplete because its representatives failed to provide adequate documentation of the engineering decisions made.

The Member Firm's COO and its PL insurer's claim manager agreed on the insurer's recommendations for local defense counsel and the COO's recommendations for an expert; a nationally known geotechnical engineer who was a good friend and GBA colleague of the COO. Two days later, the Member Firm's new defense counsel met with the branch manager to discuss the case, advise him of the need to preserve all documents relating to the claim, and begin organizing files for review by the geotechnical expert recommended by the COO. Later that same day, the branch manager began the arduous task of collecting all the documentation, organizing it, and delivering it to the attorney and the expert.

The Member Firm's attorney decided to approach the lawsuit on two tracks: first, file a motion for partial summary judgment, seeking solely to validate the enforceability of the firm's limitation-of-liability provision; and, second, to initiate discovery on the claims.

At a hearing on the Member Firm's motion for partial summary judgment, the client's attorney argued that state law prohibited enforceability of construction professionals' limitation-of-liability provisions when the

projects involved were "residential." The trial court rejected the client's argument and the client appealed. Ultimately, the client's attorney argued the appeal before the

The client's attorney argued that state law prohibited enforceability of construction professionals' limitation-of-liability provisions when the projects involved were "residential."

state's supreme court. There, the justices reversed the lower courts' rulings and held that, in fact, the senior living facility was a "residential project," thereby exposing the Member Firm to the full amount of the claim.

At the same time that the limitation-of-liability appeals were moving forward, the Member Firm's expert reviewed the documents assembled under the branch manager's guidance and visited the site. In his expert report, the Member Firm's expert opined:

1. The Member Firm was the project's geotechnical engineer of record, not the mechanical engineer of record. This was a sewer-line-design problem, not a soils problem.

2. The architect, structural engineer, mechanical engineer, and constructors did not appreciate the Member Firm's warning about local soil conditions that the project manager had included in the geotechnical-engineering report.

A 12-inch void space was commonly used in the project area and was "fully consistent" with the local standard of care.

3. A 12-inch void space was commonly used in the project area and was "fully consistent" with the local standard of care.

4. The Member Firm's laboratory-testing specifications were consistent with common local practice and were also consistent with the standard of care. The additional laboratory test suggested by the client's expert was rarely used. Only one local firm was known to perform it and reasons for doing so were unclear. Geotechnical engineers whom the expert spoke with about the test said it provided no additional value when evaluating mitigation of expansive soils.

5. Even though the Member Firm's project manager went outside his area of expertise and outside the firm's scope of service when he responded to the mechanical constructor's threat to stop construction, it didn't matter: The mechanical constructor ignored the project manager's suggestions and followed its superintendent's guidance instead.

6. The mechanical constructor's superintendent had no reason to assume that the project manager's sewer-line-design suggestions were responsive to the RFI. The constructors and client

The mechanical constructor's superintendent had no reason to assume that the project manager's sewer-line-design suggestions were responsive to the RFI.

should have insisted that the response to the RFI come from the mechanical engineer of record.

7. No one had cause to infer that the Member Firm's field representative was responsible for observing all void

The field representative commented about two instances of form collapse solely because she happened to be in a position to do so.

forms' placement and performance and reporting on all of the failures. The field representative commented

about two instances of form collapse solely because she happened to be in a position to do so during concrete placement. Observing placement and performance of the void forms was part of the structural engineer's scope of service, not the Member Firm's.

8. Construction-phase e-mail correspondence between client representatives and the Member Firm's project manager showed that client representatives clearly understood the risks posed by the site's expansive clay soils.

Although the Member Firm believed it had little liability, it still faced a massive claim… and faced it alone: All others named in the lawsuit settled with the client. Following intense negotiations and two failed mediations, the Member Firm and its PLI carrier agreed to a settlement two weeks before the trial; seven years after the client initiated the claim; and eleven years after the Member Firm initiated the project. Although the settlement amount was substantial, it was significantly less than what the client sought; the client understood the weaknesses of its position.

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Lessons Learned

This case history teaches eight important lessons:

No Good Deed Goes Unpunished: The truth of this dictum is debatable, but only because of its absolute wording: "*No* good deed…." Not many would debate "Few good deeds go unpunished," a truism because so many good deeds require the "Samaratins" involved to do something they shouldn't do or to not do something they should do. By suggesting changes to the sewer-pipe design in order to keep construction moving forward – the good deed – the Member Firm's project manager created unnecessary risk for the Member Firm and himself personally. First, responding to the RFI was the responsibility of the mechanical engineer of record and it was the responsibility of the architect to manage the disposition of the RFIs. The geotechnical engineer had far more to lose than he had to gain by inserting himself in the sewer-pipe issue. At the very least, he should have clarified in writing that he was not responding to the RFI, but merely passing along some suggestions that the mechanical engineer might want to consider in order to keep the project moving.

By suggesting changes to the sewer-pipe design the project manager created unnecessary risk for the Member Firm and himself.

He should have clarified in writing that he was not responding to the RFI.

Second, the project manager could have exposed himself to a licensure-board complaint. Most engineering-licensure boards require engineers to practice only in their areas of competence; that is, an engineer must not perform or offer to perform any engineering assignment for which the engineer is not qualified by education or experience to perform adequately and competently. One can

Engineering-licensure boards require engineers to practice only in their areas of competence.

only speculate how the licensure board might have responded had the client filed a complaint.

Prevent Recommendations from Becoming Requirements: *The ASTM Form and Style Manual* explains that the verb "shall" indicates that a provision (of a standard) is mandatory while the verb "should" indicates that a standard's provision is recommended, but not mandatory. Although geoprofessionals may understand this distinction, constructors' personnel may not: They operate in a world of requirements stipulated by codes and specifications. As such, many constructors (and their attorneys) regard a geoprofessional recommendation (a "should") as a requirement (a "shall"). Giving the mechanical constructor's superintendent the benefit of the doubt, one could say that he looked at the project manager's recommendations (the suggestions for sewer-line redesign) and saw requirements. Plain wording, such as the following sample, can help prevent this occurrence: "***Note:*** These recommendations are just that; recommendations, ***not requirement***s. They are based on various geotechnical-engineering assumptions. Do not implement them without first discussing them with the geotechnical engineer of record."

Many constructors regard a geoprofessional recommendation (a "should") as a requirement (a "shall").

Do Not Unilaterally Deviate from the Scope of Service: Problems can occur when a geoprofessional firm fails to do what it has agreed to do or does something it has not agreed to do. Doing something it has not agreed to do it can open the proverbial "can of worms." The problems created can be as mild as being unable to bill for the additional – unauthorized – services involved, to becoming responsible for those services and the consequences of another party not following through as it should. Worse: A client might argue that the additional services comprised a separate commission authorized by an oral understanding, not the contract the client and consultant signed, and therefore not subject to the signed agreement's terms and conditions. Field representatives need to know that the project manager or the project manager's designee must approve *any* scope modification.

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It Pays to Be Your Brother's Keeper: Every party engaged for a construction project should want the project to run "as smooth as silk," because every party should realize that a problem seemingly affecting one party only can quickly spread to engulf all. For that reason, each party should want to help others do what they're supposed to do, because – when they do – problems are far less likely to occur. In this case, the Member Firm's field representative documented the collapse of void forms on two occasions. Where were the structural engineer's field representatives given the structural engineer's CoMET responsibilities? At the very least, the Member Firm's project manager should have called the structural engineer's project manager to ensure that he was fulfilling his employer's scope of service, after which he should have documented the call via e-mail.

Where were the structural engineer's field representatives given the structural engineer's CoMET responsibilities?

Documentation Can Be Your Best Defense: It is axiomatic in the legal profession that "the best evidence is what's in writing." For that reason, and as many GBA case histories

"The best evidence is what's in writing."

illustrate, maintaining accurate, complete, and unambiguous documentation can help prevent problems and disputes and, when a dispute is unavoidable, such documentation can be a geoprofessional's best defense. By the same token, inaccurate, incomplete, or ambiguous documentation – or no documentation at all – can cast a shadow over the quality of a firm's professional services and expose the firm to liability for which it has no real responsibility. For many firms, a report or a letter can be considered complete only when it answers the questions Who? What? When? Where? Why? and, if appropriate, How?

A report or a letter can be considered complete only when it answers the questions Who? What? When? Where? Why? and, if appropriate, How?

E-mail Is an Inappropriate Means of Communicating Professional Judgment: The project manager sent his sewer-redesign suggestions by e-mail. Too often e-mail is regarded as an acceptable expedient; a somewhat-informal means of communication people can use when they're in a hurry, especially so because it's so easy to copy five or six people on each e-mail sent. But e-mail communication is not informal. In fact, it is just as formal as the most formal communication you can imagine, especially when it is used as evidence in litigation. It is also indestructible, especially after it has been passed through two or three servers. Treat e-mail with respect. Have at least one "e-mail buddy" who can review your proposed e-mails relative to their content and composition, and for whom you will return the favor. If the project manager could have had his branch manager review the e-mail before he sent it, chances are it never would have been sent.

Treat e-mail with respect.

Hired Guns Seldom Establish the Standard of Care as They Should: *Recommended Practices for Design Professionals Engaged as Experts in the Resolution of Construction Industry Disputes* has been endorsed by more than 40 national (principally), international, and regional organizations that represent literally millions of design professionals. The document (available from GBA) sets forth 13 "shoulds" that all these organizations agree on. A key element of the document is found in its seventh recommendation, which holds that experts involved in dispute resolution (mostly by means of litigation) should base their testimony about the standard of care on research into what the standard of care actually was at the time when and the place where the alleged breach of the standard occurred; i.e., what was the degree of skill and oversight ordinarily exercised by design professionals in the same profession as the allegedly negligent professional, for similar types of projects? The document specifically states that what the expert witness would have done, or what a publication of one kind or another says should have been done, is not at all the standard of care. Still, many experts and the attorneys who hire them just don't "get it" and, as a result, the testimony of the "hired guns" who don't get it can often be impeached. They tend to see their role as that of an advocate for the side that has engaged them to serve. In truth, however, experts are supposed to serve the court by explaining complex technical issues in terms that are somewhat easy for a judge or jury to understand. Those who fail to serve as they should do a disservice to their professions. (Realize that professionals are negligent when they fail to meet the standard of care and, as a re-

What the expert witness would have done, or what a publication says should have been done, is not at all the standard of care.

Experts are supposed to serve the court.

sult, some other party – i.e., the plaintiff – was damaged or injured. The standard of care in effect at the time is determined by the trier of fact; a judge or jury.)

Consider Limitation of Liability during Your Go/No-Go Analysis: Some projects – especially residential projects – pose more risk than others. Having the client agree to a limitation-of-liability provision is one way of limiting some of that risk, and thus it becomes an issue to discuss during the go/no-go analysis and later, during contract formation. Will the client accept a limitation of liability? Experience with the client may allow you to answer the question on the spot. But if you haven't worked with the client before, and don't know, you may make acceptance of the project contingent on the client's willingness to accept a limitation of liability. If the state where your contract will be enforced does not permit use of limitation of liability in certain circumstances, or perhaps even all circumstances, there may be nothing you can do about the situation. However, if there are or could be questions about applicability – as was the case here – you may wish to discuss the matter with your attorney. Could you have the contract interpreted in accordance with the laws, regulations, and precedents of a state where limitation of liability is accepted?

Could you have the contract interpreted in accordance with the laws, regulations, and precedents of a state where limitation of liability is accepted?

Could you use a contract provision so explicit about client acceptance of the limitation that it would be enforceable "statutes, regulations, and precedents notwithstanding"?

Comments of the GBA-Member Firm's Representative

As a result of this experience, we make a greater effort to ensure our field personnel understand the scope of our services for each project; our field personnel review the proposal with the project manager before the start of work. Unfortunately, good project-records-retention practice continues to be a challenge for us. We are also much more careful in our pursuit of quasi-residential projects such as college dorms, nursing homes, and hospice facilities that may fall under the laws that protect "residential" structures. In terms of the litigation itself, as other parties settled, the pressure on us grew. This seven-year litigation on this claim has pushed us toward more aggressively settling claims soon after they arise.

Keywords

- active soils
- agreement-formatted proposal
- assisted-care facility
- CoMET
- construction-claims attorney
- construction-materials engineering and testing
- contract formation
- daily field report
- DFR
- documentation
- e-mail
- e-mail buddy
- engineering licensure board
- expansive clay
- geotechnical engineering
- limitation of liability
- PLI
- professional-liability insurance
- *Recommended Practices for Design Professionals Engaged as Experts in the Resolution of Construction Industry Disputes*
- Request for information
- RFI
- sanitary-sewer-line design
- scope of service
- senior-living facility
- should vs. must
- void forms

*All financial factors are reported in 2020 dollars.

The first few pages of a GBA publication titled *Can't You Come Up with a Cheaper Alternative?* are attached here. The full document is available to GBA member firms.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

CAN'T YOU COME UP WITH A CHEAPER ALTERNATIVE?

BY JOHN PHILIP BACHNER

$175

CONTENTS

CAN'T YOU COME UP WITH A CHEAPER ALTERNATIVE?

BY JOHN PHILIP BACHNER

INTRODUCTION

When GBA's Geotechnical Business Council (GBC) initiated this publication, its goal was to address the claims and losses stemming from poorly conceived value-engineering projects, especially those conducted by the same firm whose deliverables were at issue. As work progressed, however, the GBC realized that many of the problems stemmed not from value engineering *per se*, but from well-intentioned, but misguided efforts to achieve an acceptable outcome for less money. In other words, the real "culprit" was not the question "Can't you come up with a cheaper alternative?" but rather geotechnical engineers' response to it.

As it so happens, geotechnical engineers are more likely to hear "Can't you come up with a cheaper alternative?" than other members of a project's design team, for three principal reasons. First, owners commonly retain geotechnical engineers of record (GERs) at the very beginning of a project. At that point, a GER lacks the project information needed to formulate a cost-effective geotechnical design and, of course, a corresponding budget for implementing that design. Under those circumstances, the best a GER usually can do is offer a carefully caveated estimate based on rules of thumb.

The second reason stems from the significant differences between geotechnical engineering and other engineering disciplines. While structural, mechanical, and electrical engineers must follow specific code requirements, geotechnical-engineering code requirements are far less specific and, in some cases, almost nonexistent, as is the case with horizontal construction. On the one hand, it makes accurate cost estimates far more difficult to develop early in a project. On the other hand, it gives geotechnical engineers much more latitude when it comes to the approaches they develop to achieve their clients' objectives, including cost savings.

The third reason stems from the unique nature of geotechnical engineering. Unlike other project professionals, geotechnical engineers apply the "observational method," a two-step process developed by von Terzaghi and Peck, the "parents" of modern geotechnical engineering. During step one of the observational method, GERs develop educated inferences about a site's subsurface composition based on strategically limited sampling and testing, their own knowledge of local geological conditions, and their informed professional judgment. Those inferences become the basis for the "confirmation-dependent" recommendations that GERs convey via their geotechnical-engineering reports.

Confirmation-dependent recommendations are so named because they should *not be implemented* until GERs complete step two of the observational method, by being on-site during earthwork and foundation construction to confirm that the subsurface conditions they observe match those they inferred to exist during step one. When observed conditions differ from inferred conditions, as they often do, GERs make the necessary adjustments to convert confirmation-dependent recommendations to final recommendations. And there's the rub: When the project

budget includes the cost to implement the confirmation-dependent recommendations – or just a rule-of-thumb "guesstimate" prepared before step one, often by someone other than the GER – the owner may have to increase the budget to accommodate the higher cost of the final geotechnical recommendations. And that's when the GER is likely to hear, "Can't you come up with a cheaper alternative?"

Make no mistake: Having to revise a design or increase a budget because of unanticipated subsurface conditions is not the only situation that launches the question. "Can't you come up with a cheaper alternative?" is often heard whenever a major project is involved and, in the case of some clients, whenever *any* project is involved, because their *modus operandi* is doing things as cheaply as possible and then distancing themselves from the project as quickly and as far as they can.

"Can't you come up with a cheaper alternative?" is not an unreasonable question. To the contrary: It's a question that geotechnical engineers can – and should – anticipate, and so be ready to answer in a prudent, practiced, professional manner. Nonetheless, in an effort to accommodate client representatives' preferences, GERs will all too often acquiesce to changes (often suggested by other project participants) that create new and sometimes-severe risks. Later, after those risks materialize into full-fledged problems, GERs get blamed and ultimately have to deal with professional-negligence, breach-of-contract, and similar claims, commonly because they failed to issue a written warning about the new risks pursuing the alternative would entail.

What follows are descriptions of some common "Can't you come up with a cheaper alternative?" scenarios accompanied by suggestions for steps you can take to prepare for them. The first step is educating the "right people" about the right ways and wrong ways to seek economies.

RICHARD D. HECKEL, P.E., D. GE
CHAIR, GEOTECHNICAL BUSINESS COUNCIL
MAY 2015

1. USING A GROUP-BY-GROUP APPROACH, EDUCATE CLIENT REPRESENTATIVES, PROSPECTIVE-CLIENT REPRESENTATIVES, AND THOSE WHO INFLUENCE THEM

You and other members of your firm should make a concerted effort to educate owner's representatives and those who influence them (e.g., civil engineers, architects, structural engineers, constructor's and construction-manager's representatives, public officials, insurance brokers and agents, and lenders) through presentations at local-association meetings as well as presentations in clients' or your own offices. Much of the information contained in this publication would likely be suitable for discussion, and much of it may be useful for some audience members to apply in their own practices.

Much of the information contained in this publication would likely be suitable for discussion, and much of it may be useful for some audience members to apply in their own practices.

To begin, the people you address need to know that geotechnical engineers generally can select from an array of acceptable options to achieve almost any desired result. However, none of those options is immune to risk, because construction activities like excavation, grading, and foundation installation cannot expose all subsurface conditions. For that reason, on any given project, GERs may have to deal with unanticipated conditions hidden by earth, rock, water, and time. The ultimate "trick" is to identify the one, two, or more options that comply with the standard of care and incorporate acceptable risk/reward balance, where the reasonable risk posed by a given option is justified by the cost-effectiveness applying the option should engender.

Audience members also need to know about – and appreciate – the observational method; GBA has developed several "message flyers" to help geotechnical engineers and other geoprofessionals, both as backgrounders for your own staff and as handouts to audience members. As appropriate, explain that von Terzaghi and Peck developed the observational method as a technique for addressing owners' desire to keep the cost of a geotechnical-engineering study relatively low, without compromising quality. In all cases, however, owners and those who influence them need to realize that achieving quality and economy depends upon prudent consideration of risk. For that reason, GERs *must* be on site during those construction activities that allow them to see actual subsurface conditions as they are exposed. The unavoidable presence of risk also makes it essential for owners to include a contingency allowance to accommodate any modified recommendations that will cost more to implement than their confirmation-dependent predecessors, or – for that matter – in the event of *any* unanticipated expense.

While having a contingency can soften the blow of unanticipated expenses, it hardly precludes a client from asking, "Can't you come up with a cheaper alternative?" You can anticipate that situation in your educational efforts by reminding those in the audience that, with few exceptions, GERs have already considered the "cheaper alternatives," and have rejected them, because the risk they entail makes it extremely difficult to achieve risk/reward balance.

6. BE PREPARED

No matter what circumstances cause a client to ask, "Can't You Come up with a Cheaper Alternative?" *everyone* in your firm who may be required to provide an answer should be prepared to do so, following a firm-approved protocol. That protocol should incorporate the philosophy that the best outcome is not achieved by focusing on gaining or keeping a client; rather, it's achieved by providing the same high-quality, professional recommendations you'd hope to receive were you the client, whether or not the client appreciates that fact. Remember the need to balance risk with reward and keep the client informed. Doing that puts you on the high road, the fastest route to professional success.

GEOTECHNICAL BUSINESS COUNCIL
of the Geoprofessional Business Association

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Interested in joining GBA?

We have one membership category and seven associate-membership categories. **Membership** is available to firms that provide geotechnical, geologic, environmental, construction materials engineering and testing, and related geoprofessional services, including civil and some structural. In all cases, Member Firms' geoprofessional services must be directed by an individual who is required by law or enforced code of ethics to preserve and protect public health, safety, and welfare.

ASSOCIATE MEMBERS **get involved only by annual invitation; we seldom turn down a request for an invitation! Except for Collaborative Members, associate members receive all the benefits Member Firms receive. The seven associate-member categories are:**

Professional Colleagues: Professional Colleague Membership is available to firms that provide design/build and/or design/remediate services, but whose staff-provided design or consulting services are not severable from their construction or remediation services.

Collaborative Members: Geoconstructors with or without in-house design or consulting staff are eligible to participate as Collaborative Members.

Practitioner Members: Practitioner Membership is offered to geoprofessionals who work for entities that are not eligible for GBA-Member Firm status; e.g., professional societies and client companies.

Government Members: Government Membership is offered to geoprofessionals who work for federal, state, or local governments.

Faculty Members: Faculty Membership is offered to individuals who are full-time geoprofessional professors, associate professors, and assistant professors.

Student Members: GBA invites qualified students to participate as Student Members on an annual basis. GBA provides Student Membership without charge to those individuals whom a Faculty Member lists. Others must pay $25 per year.

Consultant Members: Consultant Membership is offered to attorneys, financial advisors, and others who serve as consultants to GBA-Member Firms.

Please contact us if you are interested in receiving an invitation to join or if you want more information:
Joel Carson, Executive Director, jcarson@geoprofessional.org or 301-565-2733.

We look forward to welcoming you to GBA!