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Master Class

Legal Aspects of Geotechnical Engineering Practice
Experience, Thoughts, Concepts and ideas
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Stapledon in a review of ten contractual disputes where he provided advice or acted as an Expert Witness identified the following key issues:

- “In every case the Contractor's claims were related to some alleged adverse geological condition or conditions at the site.”
- “The Contractors alleged further that the said geological conditions could not have been predicted by a competent tenderer, from the information made available during the pre-tender stage.”
A review of 41 legal cases related to geotechnical problems in Canada covering, building, residential, highway, railway, earthwork, tunnel, piles, and pipelines in 2010 found seven different causes for geotechnical claims (order of decreasing frequency):

- "Different soil conditions and recommendations than expected from the geotechnical report." - **23 cases or 56% of total**.
- "Inaccuracies in the design plans and specifications," – **6 cases or 15%**.
- "Owner's failure to disclose important information." – **5 cases or 12%**.
- "Calculation error in the tender documents of the quantities of material to be excavated." – **3 cases or 7%**.
- "Discrepancies in pile design or required length longer than recommended in the geotechnical report." – **2 cases or 5%**.
- "Contractor did not adhere to specifications outlined in the agreement". – **1 case or 2.5%**.
- "Different type of rock was used by contractor than rock named in the contract." – **1 case or 2.5%**.
The success rate of these claims (grouped into significant and insignificant numbers):

- "Owner's failure to disclose important information." – 5 out of 5 or 100%.
- "Inaccuracies in the design plans and specifications," – 5 out of 6 or 80%.
- "Different soil conditions and recommendations than expected from the geotechnical report." - 8 out of 23 or 40%.
- "Different type of rock was used by contractor than rock named in the contract." – 1 out of 1 or 100%.
- "Discrepancies in pile design or required length longer than recommended in the geotechnical report." - 1 out of 2 or 50%.
- "Calculation error in the tender documents of the quantities of material to be excavated." – 1 out of 3 or 30%.
- "Contractor did not adhere to specifications outlined in the agreement". – 0 out of 1 or 0%.
In summary the main points arising from this overseas review are:

1. 71% of the claims arise from two areas, inaccuracies in the design plans and specifications and different soil conditions.

2. Almost 60% of all claims arose from the province with the most complex geological conditions. This situation led to a review by Association of Professional Engineers and Geoscientists of British Columbia who concluded:

   “The conclusions of the aforementioned committee were that many geotechnical engineers are unaware of their own limitations in geo-understanding and therefore get themselves into trouble.”

3. Preliminary indications of possible success rates are given by the success rates in the different areas summarised above.

4. These success rates should be carefully considered when deciding on settlement or litigation strategies.

5. Poorly written interpretive geotechnical reports and inconsistencies between the interpretive report and the contract documents are a major source of problems.
Many owners and consultants attempt to avoid liability by adding clauses to their contracts or reports. The aim is to try and shift any risk to the contractor and or the client respectively. These "disclaimer" clauses are generally carefully examined by the court before being deemed enforceable. A number of cases have held that the disclaimer clause does not relieve the owner or consultant from differing site conditions and delays or other conditions for which the owner is contractually responsible. Courts may also not enforce a disclaimer if it is deemed to be inequitable. The use of disclaimer clauses in geotechnical reports, promoted in part by insurance companies, has probably lulled the geotechnical profession into a false sense of security, leading to reduced standards of Quality Control and Assurance (QAQC).
Subsurface conditions are always variable to a lesser or greater extent and are not readily able to be exactly defined.

Most construction contracts include information about the subsurface conditions.

However when the subsurface conditions differ from those represented in the contract then litigation may result.

Differences arise from many different sources including problems with the investigation, interpretation or site characterization.

Alternatively it can be an actual surprise not a problem with the documents, but some unusual condition beyond what can be reasonably expected.

However liability may arise from many different factors and variability in subsurface conditions is only one of them.

Thus when someone acts upon geotechnical information that is factually incorrect, even though it has not been dishonestly or negligently prepared, and damage results from those actions;

Then who should bear the loss?
All projects carry some risk. If varying subsurface conditions occur the owner tends to blame the engineer. However the owner has some control over his risk because he can assign or transfer risk as part of the contract. Many owners recognize the benefits of accepting some of the risk because this may help them achieve a better overall result, for example minimum cost. The contracting parties may agree who should bear the risk of loss. However when the contract terms are not negotiable, ambiguous, or contradictory clauses exist, then litigation frequently occurs. All experienced geotechnical engineers understand that the level of risk varies inversely with the extent of the investigations. Site investigations are often performed under time and cost pressures. However geotechnical knowledge follows the law of diminishing returns and at some stage in the investigation process judgment indicates a stopping point.

Here-in lays the nub of one of the major risk issues.
The prevailing view of the courts is that engineers are not guarantors of satisfactory results arising from the use of their information or designs. Engineers are selling expertise not insurance and clients should be aware they are purchasing service not insurance.

The courts have found that those who sell their services for the guidance of others are not liable in the absence of negligence or intentional misconduct.

However they are expected to exercise reasonable care and competence. Hence in offering their services they are in effect guaranteeing they are:

- Competent to perform the engineering services in question,
- Will exercise reasonable care, and
- In keeping with the standards of the profession.

Most legal complaints against engineers or geologists usually allege negligence rather than strict liability.
All engineers and geologists make representations; including capability statements, proposals, brochures, web sites and social media sites; as to their experience, expertise and or abilities.

Fundamentally it is obviously important to ensure these are correct. However hyperbole is to be avoided.

Anyone utilising the individual or the company on the basis of their stated experience or expertise may then be entitled to rely on that.

Hence particular care is required in proposals, which may embellish or overstate expertise, and hence may set up a higher standard of performance than the law would otherwise impose:

"Where a person holds himself out as specifically qualified to perform work of a particular character, there is an implied warranty that the work which he undertakes shall be of proper workmanship and reasonable fitness for the intended use."
Contracts, Subsurface Variations and Liability
Subsurface conditions in contracts

Generally the courts recognise that if the wording in the contract, documents and specifications are such that the contractor was justified in relying on them, then the contractor may claim a warranty if the conditions encountered are significantly different from those represented such as to require extra work or expense.

However if the conditions were adequately covered in the contract, then just because the contractor encountered difficulties and expense beyond his stated price, does not mean he is entitled to claim compensation.

Some contracts include definitive statements and information about the site conditions. Others only suggest the general conditions and leave all investigations and estimates to the contractor.

Although the law is not clear on this distinction, however if it was made very clear to the contractor that any variations were his responsibility then compensation has generally been difficult to obtain.

However if the contract documents are not very clear courts have generally found for the contractor.
However where definitive statements are not made, but rather only indicative statements are made about the subsurface conditions, then the courts have found that the contractor is not entitled to compensation provided the contract includes the following:

- A clear strong statement that all figures are estimates or approximations,
- Full disclosure of all information known about the site,
- The contractor is required to make his own independent investigations;
- The contractor has to state he has satisfied himself about the construction conditions; and
- In the preparation of his bid the contractor has only relied on his own facts and figures.
Contracts, Subsurface Variations and Liability

Latent conditions clauses

Many contracts now contain a latent condition clause. This clause has resulted from the realisation that the owners risks can most economically be satisfied by accepting responsibility for pre-bid investigation data and assuming the risk of differing or unknown conditions discovered during performance.

There are two types of latent conditions:
- Misrepresented conditions and
- Unusual or unknown conditions.

Like all legal cases the definition of unknown is its’ strictly literal meaning; If a “reasonable investigation” would have disclosed an unusual condition, then a failure to examine a site could result in a latent condition claim failing.
A latent condition is not a miscalculation or error on the part of a contractor. Many contracts require the contractor to make a site inspection prior to bidding. These clauses are primarily to protect the owners against a contractor's miscalculation and claims of unknown conditions.

Court decisions around site inspections are generally governed by two fundamental propositions:

Firstly, the contractor cannot benefit from his own negligence, and
Secondly, exculpatory provisions in contracts (like the requirement to visit the site) will not shift liability if conditions are misrepresented.

Although the purpose and intent of latent conditions clauses are clear, contracts often include general disclaimers of liability. These clauses attempt to restrict or nullify the latent condition. However, the courts generally disregard disclaimer clauses.
Contracts, Subsurface Variations and Liability

Capturing Uncertainty in Specifications of Subsurface Conditions – the final word.

The focus should not be on limiting liability, but rather accurately capturing degrees of uncertainty and knowledge.
Avoiding Litigation
Successful Strategies

In geotechnical practice there is a need for strategies that can assist with thwarting spurious claims, but also that will aid in a successful defence.

A defence based on disclaimer clauses is at best very weak.

A sound geotechnical practice is based on policies that promote excellence in:

• Practices,
• Documentation,
• Communications,
• Openness, and
• Full disclosure.

Hence the requirements for sound QAQC policies to ensure that errors and omissions are minimized and thus help successfully defend against claims.
The final word on contracts.

In regards to contracts and the universally scorned term “fine print” there is an overall truism:

“You read the fine print before the event for information and afterwards for education.”