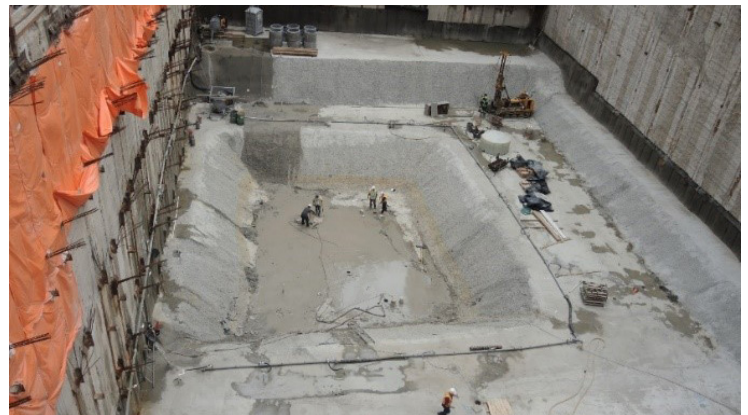


Geotechnical Engineering & Mining Practice Statement of Qualification



Forensic Engineering



This **Statement of Qualification** (SOQ) Document outlines **30 Forensic Engineering's** consulting services related to forensic engineering in the geotechnical and mining disciplines.

30 Forensic Engineering is one of Canada's largest and most respected multi-disciplinary forensic firms. Our core team of 70 Professional Investigators, Engineering Technicians and support staff is enhanced through relationships with some of the top scientists, standard-makers and specialized consultants in North America serving a wide variety of industries including: Insurance, Mining, Manufacturing, Legal, Construction, Health Care, Commercial and Residential Property, Financial, Government, Hospitality, Renewable Energy and Transportation.

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Meet Our Team



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The Real Goal

Ultimately, our clients are looking for a resolution. And while we will always provide a clear, unbiased account of the facts, we also keep in mind the business aspects of an investigation, by providing:

- Budget estimates to investigation costs
- Cost analyses to identify the most economical action among repair, replace, or reinvent
- Advice to our clients on whether a full written reports is worth or a verbal opinion suffices
- Advice to our clients when technical details suggest that a case is or isn't worth fighting

We've built our success on long-term relationships with our clients, and always seek to serve their best interests – without compromising the presentation of the facts.

Local Presence and Experience

30 Forensic Engineering was founded in Toronto in 2002. Since then, we've evolved into one of the leading forensic engineering firms in Canada.

We have recently opened our second office in Ottawa to expand our presence in Ontario; however, our experience goes well beyond our province with projects completed in most Canadian provinces as well as internationally.

Our Difference

We are forensic engineering specialists – that is, we pair science and engineering knowledge with our expert professional judgement to find the root causes of failures and provide a clear and unbiased account of the facts.

However, we extend our services to providing integrated services of Prevention, Investigation, Remediation and Risk Management. We develop thorough risk framework to evaluate stability and serviceability of structures, construction and post-construction monitoring plans, conceptual design of remedial measures for foundations, shoring systems, slopes, among other things.

Mission

We are problem solvers. Together, our passionate and diverse professionals are relentless in their pursuit of the truth. We bring clarity to complex scientific problems to help our clients make decisions with confidence.

Our corporate philosophy is based on providing an unparalleled combination of technical excellence, powerful reporting and professional service. That, combined with our commitment to ethical practice, has quickly established us as the preeminent forensic firm in Canada servicing the legal and insurance industries. The firm is progressive in its management practices and is committed to implement systems and protocols that will support ongoing growth.

Forensics First

Too often, forensics happen too late – often leading to more time, effort, and higher expenses. But when forensics are brought in early, crucial evidence can be found that will help everyone involved come to a much faster resolution, with a clearer negotiation position, more subrogation opportunities, and more efficient case handling.

Geotechnical and Mining Qualifications

The **Geotechnical and Mining Group** investigates residential, commercial, industrial, heavy civil infrastructure, mining, and natural resource losses on the basis of sound application of science, soil and rock mechanics and, most importantly, our expert engineering knowledge and judgment.

Beyond natural forces, the damage that occurs can be the result of inadequate investigation prior to design, limitations in the design approach, construction, or contract issues, and even human factors and error during the construction process.

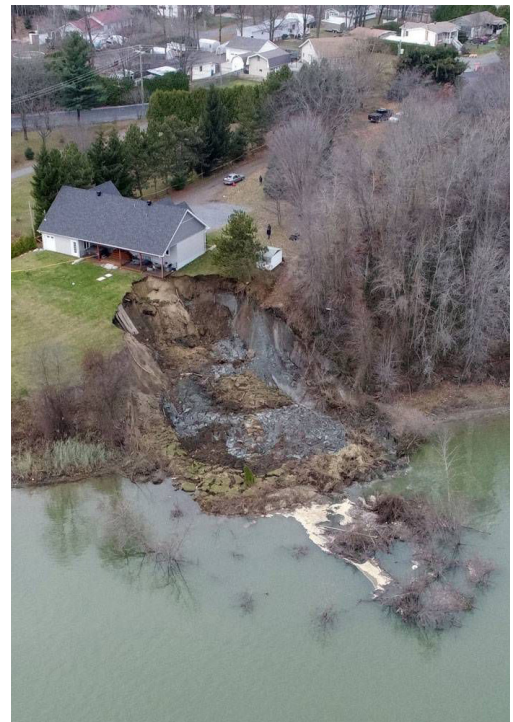
Our investigations involve shallow or deep excavations, retaining walls, dams, natural or man-made slopes, or underground structures such as transportation tunnels, infrastructure, and mining tunnels. We look at damage to structures caused by settlement, heaving, vibration, or other foundation-related instabilities.

In the more complex cases, we work in multidisciplinary teams with our in-house specialists in buildings, structures, environment, and materials to provide an unbiased, technical, and factual analysis of the incident, with a goal of helping our clients make educated decisions to achieve a timely resolution.

Over the years, our team has been retained to investigate some of the largest and most complicated assignments in Canada and internationally. Our diligent, thoughtful, and well-communicated reporting continues to strengthen our reputation. As a result, we continue to be retained for increasingly larger and more complex projects worldwide.

Our Geotechnical and Mining Team has been involved in over **300 cases** related to the following areas:

- Natural and man-made slope
- Reinforced slopes (soil nail walls, mechanically stabilized earth walls, etc.)
- Cuts and excavations
- Shoring and retaining walls
- Dams and embankments
- Tailings dams
- Residual soils
- Shallow and deep foundations
- Machine foundations
- Solar farms foundations
- Foundations construction
- Bottom heave failures of deep excavations
- Swelling soils
- Vibration damage to foundations and buildings
- Flooding and drainage damage
- Tunnel damage, grouting losses, settlement, collapse, flooding, and reconstruction
- Sinkholes
- Contamination and soil clean-ups (hydrocarbons, heavy metals road salt)
- Waste repositories (coal, tailings, sediments, etc.)



Geotechnical and Mining Qualifications

Our investigation procedures include the following components:

- Site inspection, walkover surveys, damage surveys
- Geotechnical monitoring
- Site investigations:
 - Drilling
 - Geotechnical undisturbed sampling
 - Test pits
 - Foundation inspections
 - Drainage inspection
 - Geophysical techniques
 - Topographic surveys
- Field and laboratory geotechnical testing:
 - Soils
 - Sediments
 - Tailings
 - Waste
 - Geosynthetics
 - Concrete
- Engineering analyses with state of the art geotechnical software and numerical analyses with finite elements and finite differences models

In addition, we have extensive experience in detailed design and constructability reviews, value engineering analyses, scoping and preliminary design, cost analyses for the following issues:

- Slope stabilization and foundation soils ground improvement (soil mixing, micropiles, soil nail walls, mechanically stabilized earth, grouting, stone columns, surcharging)
- Dam, embankment, levee repairs and stabilization
- Soil and groundwater remediation (hydrocarbons, heavy metals, radionuclides)
- Engineering containment with slurry walls, soil mixing barriers, and capping
- Closure of waste impoundments (refinery waste, mine tailings, coal ash, sediment confined disposal facilities etc.)

Our Greatest Strength is Our Diversity

We provide 360° Services – a four-stage, closed-loop process that encompasses all aspects of a failure, injury, or accident.

1: Prevention

A review of the structures, materials, processes, and contingency plans to help reduce risk.

2: Investigation

An accurate, complete report that enables action informed by insight.

3: Remediation

A thorough exploration of what can be salvaged, restored, improved, or re-engineered, along with the technicalities and liabilities involved, as well as a complete cost analysis.

4: Risk Management

Ongoing outreach in the form of published research, education programs, and presentations to help designers of structures and products be more proactive in identifying and reducing insurance risk.

The Truth About Science

Evidence-based proof is all that matters when it comes to forensic reporting. No agenda.

No advocacy. Just credible, undeniable, unshakeable science.

We believe: knowledge enables action. Armed with the facts, you can plan your strategy more appropriately, whether it's winning a case or settling to better advantage.

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