

Geotechnical Engineer interview questions

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What to expect

Interviews for geotechnical engineer roles usually mix technical design questions with scenario-based judgement questions, because so much of the job involves making decisions on incomplete ground information. Expect a panel that includes at least one senior geotechnical engineer who will probe your reasoning, not just your final answer.

- **Technical design:** Questions on how you approach foundation, retaining wall or slope stability design, including software choice and assumptions.
- **Scenario / judgement:** Hypothetical situations involving unexpected ground conditions or conflicting time and safety pressures, testing how you make calls with incomplete data.
- **Safety and site process:** Questions on WHS controls for fieldwork, excavation inspection and laboratory handling.
- **Client-facing communication:** How you explain technical risk to contractors, clients or non-technical stakeholders.
- **Behavioural:** Past examples of managing deadlines, changing design assumptions, or working across field and office teams.

Most processes start with a recruiter or HR screen on experience and availability, followed by a technical panel interview with one or two senior engineers covering design reasoning and scenario questions. Some employers add a short task, such as reviewing a sample borehole log or ground model, or ask you to talk through a past project in detail.

1. Walk me through how you would approach designing a retaining wall for a site with a variable clay and rock profile.

Why they ask

This tests whether you understand the full design sequence, from site characterisation through to modelling assumptions, rather than just software operation.

How to structure your answer

Technical walkthrough: describe the process in order, from data gathering to design output, naming the decisions and checks at each stage.

Example answer

"I'd start by reviewing the existing investigation data, borehole logs and any CPT results, to understand where the clay to rock transition sits across the site. If coverage was thin in a critical area, I'd recommend additional testing before locking in design parameters. From there I'd derive strength and stiffness parameters for each layer, build a model in PLAXIS to check wall deflection and stability under the expected loading, and cross-check against a simpler limit equilibrium method as a sanity check. I'd document the assumptions clearly in the report so the design intent is traceable if ground conditions differ during construction."

2. During excavation, the contractor hits ground conditions that don't match the original geotechnical investigation. What do you do?

Why they ask

Unforeseen ground is one of the most common real risks in this role, and interviewers want to see a structured, safety-first response rather than guesswork.

How to structure your answer

Scenario / judgement under pressure: state your immediate priority, then the steps you'd take to assess and resolve the issue.

Example answer

"My first priority is site safety, so I'd get the contractor to stop work in the affected area until it's assessed. I'd go out to inspect the exposed ground myself, take photos and, if needed, samples, and compare what's there against the original investigation report. If the difference is significant, I'd update the ground model and rerun the affected design checks rather than assume the original design still holds. Throughout that process I'd keep the client and contractor informed, because delays are easier to manage when people understand why they're happening."

3. Tell me about a time you had to explain a geotechnical risk to a client or contractor who didn't have an engineering background.

Why they ask

Reports and advice from this role often go straight to non-specialists, so clear communication is a genuine job requirement, not a soft add-on.

How to structure your answer

STAR: situation, task, action, result.

Example answer

"On a project with a marginal slope stability result, the client was a developer without engineering background and was focused on cost. I explained the risk in terms of what could actually happen on site, rather than factors of safety, describing the consequence of a slip during heavy rain and what it would mean for the build program. I then presented two mitigation options with rough cost implications rather than a single technical recommendation. The client chose the more conservative option once they understood the practical risk, and the works proceeded without any stability issues during construction."

4. What controls would you expect to see in place before entering an excavation to carry out a shoring inspection?

Why they ask

Fieldwork carries real safety exposure, and employers want to know you take WHS obligations seriously rather than treating them as paperwork.

How to structure your answer

Safety and process: list the controls in a logical order, from planning to on-site checks.

Example answer

"Before I'd go near the excavation, I'd check that a safe work method statement covers entry and that the shoring has been signed off by whoever is responsible for it on site that day. I'd confirm there's safe access and egress, that the excavation has been inspected after any rain or ground movement, and that I'm wearing the right PPE for the site. If anything looks off, like cracking or water ingress in the shoring, I wouldn't enter until it's been reassessed, even if that holds up my inspection."

5. How do you decide whether to use PLAXIS or GeoStudio for a slope stability or retaining wall problem?

Why they ask

This checks whether you understand the tools' capabilities and limits, rather than defaulting to whichever one you know best.

How to structure your answer

Technical reasoning: compare the tools against the specific problem requirements.

Example answer

“GeoStudio is my go-to for straightforward slope stability problems where limit equilibrium methods give a reliable answer and I need to run several scenarios quickly. If the problem involves complex staged construction, soil-structure interaction, or I need to understand deformation rather than just a factor of safety, like a propped retaining wall, I'd move to PLAXIS for the finite element analysis. The choice comes down to what question the design actually needs answered, not just which software gives a result.”

6. Describe a time a laboratory test result changed your design assumptions partway through a project.

Why they ask

This probes how you handle new information that contradicts earlier work, which happens often given how much geotechnical design relies on limited sampling.

How to structure your answer

STAR: situation, task, action, result.

Example answer

“On one project, initial index testing suggested a fairly uniform clay layer, but strength testing that came back later showed a weaker zone than we'd assumed in the preliminary footing design. I flagged it immediately rather than waiting for the full report, reran the bearing capacity checks with the updated parameters, and found the original footing sizes needed adjusting in one area. I updated the design and explained the change to the client with the lab data attached, so they could see it was based on evidence rather than caution. The revised design went ahead without further issues during construction.”