



Geotechnical Soil Investigation and Site Characterization Training Course



AGILE LEADERS
Training Center

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Overview

Geotechnical Soil Investigation and Site Characterization Training Course is a five-day professional course for geotechnical and civil engineers, investigation managers, drilling supervisors, laboratory teams, engineering geologists, clients, and contractors who leave with a Ground Investigation Plan and Reporting Framework. Participants connect project decisions, desk evidence, ground models, exploration, sampling, testing, groundwater, quality, interpretation, uncertainty, and reporting. The course turns field data into traceable engineering evidence. Agile Leaders Training Center addresses soil investigation through decision-led scope, controlled execution, and defensible interpretation.

Who Should Attend

- Geotechnical and civil teams responsible for investigation scope and engineering values
- Investigation managers responsible for procurement, coordination, safety, quality, and delivery
- Drilling and field teams responsible for boreholes, trial pits, sampling, testing, and records
- Laboratory teams responsible for sample condition, test selection, quality, and results
- Engineering geology teams responsible for ground models, logging, and geological interpretation
- Clients and construction teams responsible for commissioning investigations and managing ground uncertainty

The course assumes participants already work with civil projects, ground data, field operations, or laboratory results and leaves final engineering values and project-specific authorization to qualified responsible professionals.

Departments and Industries

The course supports departments and industries that need reliable subsurface evidence for design, construction, operation, or risk decisions.

- Geotechnical engineering, engineering geology, civil design, and site-investigation teams
- Road, rail, airport, building, utility, and infrastructure projects
- Energy, mining, quarrying, industrial, and coastal developments
- Water, dams, tunnels, earthworks, foundations, and retaining-structure teams
- Drilling contractors, geophysical providers, and materials laboratories
- Procurement, quality assurance, safety, asset management, and construction functions



Learning Objectives

By the end of this course, participants will be able to:

- Build a decision-led conceptual ground model and uncertainty register
- Design exploration coverage, methods, depths, samples, and observation points
- Evaluate drilling, logging, sampling, in-situ testing, and groundwater data
- Apply laboratory selection, sample control, calibration, and data-quality checks
- Analyze ground variability and derive traceable interpretive conclusions
- Produce a Ground Investigation Plan and Reporting Framework

Course Agenda

Day 1: Investigation Purpose and Ground Model

- Engineering Decision and Investigation-Objective Matrix
- Desk Study and Historical-Evidence Register
- Site Reconnaissance and Constraint Map
- Conceptual Ground Model Development
- Geotechnical Hazard and Uncertainty Register

Day 2: Exploration and Fieldwork Planning

- Borehole, Trial-Pit and Sounding Layout
- Investigation Depth and Coverage Rationale
- Drilling Method and Borehole-Support Selection
- Utility, Access and Fieldwork-Safety Plan
- Groundwater Installation and Observation Schedule

Day 3: Sampling, Logging and In-Situ Testing

- Disturbed and Undisturbed Sampling Plan
- Sample Recovery, Preservation and Chain-of-Control Record
- Soil and Rock Field-Logging Framework
- In-Situ Test Selection and Execution Sheet
- Geophysical Survey and Borehole-Logging Scope

Day 4: Laboratory Data and Interpretation

- Laboratory Test Selection Matrix
- Sample Suitability and Test-Quality Review
- Stratigraphic Correlation and Ground-Profile Sections
- Geotechnical Value Derivation Record
- Factual and Interpretive Reporting Structure

Day 5: Ground Investigation Review Practice

- Suggested Exercise: Diagnose an Investigation Brief
- Suggested Exercise: Review Borehole and Sample Records
- Suggested Exercise: Challenge a Laboratory Data Set
- Suggested Exercise: Update a Ground Model and Uncertainty Register
- Capstone Exercise: Ground Investigation Plan and Reporting Framework

Practical Exercises

Suggested activities connect investigation decisions, field evidence, laboratory data, and interpretive accountability.

- Suggested activity: turn project geometry, loading, performance questions, desk evidence, geology, groundwater, adjacent assets, access, and hazards into objectives and a conceptual ground model.
- Suggested activity: prepare an exploration schedule covering locations, depths, drilling, trial pits, samples, field tests, groundwater instruments, utilities, permits, safety, supervision, and adaptation triggers.
- Suggested activity: review logs, recovery, sample disturbance, preservation, test suitability, calibration, anomalous results, missing intervals, groundwater records, and chain of control for data-quality weaknesses.
- Suggested activity: combine factual records, ground profiles, engineering-value derivation, variability, limitations, unresolved hazards, recommendations for further work, and reporting responsibilities in the capstone framework.

FAQs

What is geotechnical soil investigation and site characterization?

Geotechnical soil investigation gathers and interprets subsurface evidence to support engineering decisions. Site characterization integrates desk study, reconnaissance, geology, boreholes, trial pits, samples, in-situ tests, geophysics, groundwater, laboratory results, and uncertainty into a ground model suited to the intended use.

Who is the soil investigation course for, and what does it assume?

The course suits engineers, geologists, investigation managers, drilling supervisors, laboratory teams, clients, and construction professionals. It assumes familiarity with civil projects or ground information but does not replace professional responsibility for project-specific interpretation, engineering values, or authorization.



How does soil investigation differ from an earthworks construction course?

Soil investigation establishes ground conditions, variability, water, samples, test results, engineering values, and uncertainty before or during design. Earthworks construction training focuses on converting that information into excavation, slope, fill, compaction, drainage, inspection, and field-control arrangements.

How are borehole and sampling locations selected?

Locations and depths follow project decisions, structure geometry, loading, geological variability, hazards, access, existing evidence, groundwater, anticipated failure mechanisms, and the consequences of missing significant strata. The plan should adapt when field evidence differs from the conceptual ground model.

What is the difference between factual and interpretive ground investigation reporting?

Factual reporting presents methods, records, logs, observations, test results, and deviations without converting them into engineering conclusions. Interpretive reporting evaluates the evidence, updates the ground model, selects values, explains variability and uncertainty, identifies hazards, and states limitations and further-work needs.

Conclusion

Participants leave with a Ground Investigation Plan and Reporting Framework containing objectives, a ground model, exploration coverage, methods, samples, tests, groundwater observations, quality controls, interpretation steps, uncertainties, and report boundaries. The framework turns scattered subsurface records into traceable engineering evidence. It supports proportionate investigation and clearer decisions about residual ground risk.



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