



Accredited Africa Training Institute for Capacity Development

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COURSE BROCHURE

Geotechnical Construction Management For Civil Engineers Training

Physical Planning and Construction / Physical Planning, Design and Management

Unit Standard 113973 · NQF Level 5 · 20 Credits · 17 Days

COURSE OVERVIEW

This course equips civil engineers with the specialised skills needed to manage geotechnical construction projects effectively. It covers site investigation, foundation design, soil mechanics, and risk management, ensuring compliance with South African standards and regulations.

Category	Physical Planning and Construction
Subfield	Physical Planning, Design and Management
Unit Standard	113973
Accreditation	SAQA Accredited · NQF Level 5 · 20 Credits
Duration	17 days
Training Method	Online, On-Campus, In-House
Certificate	Issued via AATICD LMS – verifiable online

LEARNING OUTCOMES

- Apply geotechnical principles to manage construction projects, including site investigation and soil classification.
- Analyze geotechnical data to design safe and cost-effective foundation systems.
- Evaluate ground improvement techniques and their suitability for specific site conditions.
- Implement risk management strategies to mitigate geotechnical hazards such as slope instability and settlement.
- Demonstrate compliance with relevant South African standards (e.g., SANS) and environmental regulations.
- Design monitoring programs to assess geotechnical performance during and after construction.

WHO SHOULD ATTEND

- Civil engineers and construction managers involved in geotechnical projects, including those responsible for planning, supervision, and quality control of earthworks and foundations.

COURSE OUTLINE

Day 1: Introduction to Geotechnical Engineering and Construction Management

- Overview of geotechnical engineering principles.
- Importance of site investigation and soil mechanics.
- Introduction to construction management frameworks.
- Common geotechnical risks and failures in SA.
- Regulatory and professional standards (SANS, SAQA).

Day 2: Soil Mechanics and Classification

- Soil formation and types.
- Particle size distribution and Atterberg limits.
- Soil classification systems.
- Compaction and consolidation basics.
- Permeability and seepage.

Day 3: Site Investigation Techniques

- Stages of site investigation.
- Boring, sampling, and trial pits.
- In-situ tests: SPT, CPT, vane shear.
- Geophysical methods (resistivity, seismic).
- Reporting and data presentation.

Day 4: Groundwater and Seepage Control

- Groundwater flow and Darcy's law.
- Flow nets and seepage analysis.
- Dewatering methods (wellpoints, deep wells).
- Drainage systems and filters.
- Impact of water on excavation stability.

Day 5: Slope Stability and Retaining Structures

- Types of slope failures.
- Factor of safety and stability analysis.
- Retaining wall types (gravity, cantilever, anchored).
- Earth pressure theories (Rankine, Coulomb).
- Drainage for retaining structures.

Day 6: Shallow and Deep Foundations

- Bearing capacity equations (Terzaghi, Meyerhof).
- Settlement analysis (elastic, consolidation).
- Spread footings and rafts.
- Pile types and installation methods.
- Pile load testing and integrity.

Day 7: Ground Improvement Techniques

- Mechanical compaction and dynamic compaction.
- Vibro-compaction and stone columns.
- Grouting (permeation, jet grouting).
- Soil reinforcement with geosynthetics.

- Preloading and vertical drains.

Day 8: Geotechnical Construction Methods – Earthworks and Excavation

- Cut and fill operations.
- Excavation support systems (shoring, sheet piles).
- Compaction equipment and specifications.
- Quality control (field density tests).
- Safety in earthworks.

Day 9: Geotechnical Instrumentation and Monitoring

- Types of instruments (piezometers, inclinometers, settlement gauges).
- Installation and data logging.
- Real-time monitoring systems.
- Trigger levels and contingency plans.
- Case studies of monitoring.

Day 10: Risk Management in Geotechnical Projects

- Risk identification and classification.
- Quantitative and qualitative risk analysis.
- Contractual allocation of risk.
- Insurance and warranties.
- Lessons learned from failures.

Day 11: Contracts and Procurement for Geotechnical Works

- Standard forms (FIDIC, NEC, GCC).
- Scope of work and specifications.
- Bill of quantities for geotechnical items.
- Tendering process and evaluation.
- Subcontractor management.

Day 12: Quality Management and Testing

- Quality assurance vs. quality control.
- Laboratory tests (triaxial, direct shear, consolidation).
- Field tests (plate load, CBR).
- Statistical process control.
- Non-conformance reporting.

Day 13: Health, Safety and Environment (HSE) in Geotechnical Construction

- Legal framework (OHS Act, COIDA, NEMA).
- Construction safety plans.
- Hazard identification (excavation, heavy machinery).
- Environmental impact assessment.
- Emergency response procedures.

Day 14: Geotechnical Design for Roads and Railways

- Pavement design methods (TRH, AASHTO).
- Subgrade evaluation and improvement.
- Drainage for roads.
- Railway formation and ballast.
- Slope stability along corridors.

Day 15: Geotechnical Aspects of Dams and Water Retaining Structures

- Dam types and foundation requirements.
- Seepage control (cutoffs, drains).
- Grouting for dam foundations.
- Instrumentation for dams.
- Case studies of dam failures.

Day 16: Advanced Topics – Deep Excavations and Tunnelling

- Top-down and bottom-up construction.
- Diaphragm walls and secant piles.
- Tunnelling methods (TBM, NATM).
- Ground settlement prediction.
- Compensation grouting.

Day 17: Project Management and Integration

- Work breakdown structure for geotechnical works.
- Scheduling and resource levelling.
- Cost estimation and control.
- Communication and reporting.
- Final project presentation.

ASSESSMENT & CERTIFICATION

Delegates are assessed through exercises and a final test. A mark of **50% or above** earns an **AATICD Certificate of Completion**, issued digitally with a unique verification code. This course carries **20 NQF credits** at **NQF Level 5**.

PRICING (PER DELEGATE, EX-VAT)

Delegates	Training Method	Price per Delegate	Total
1	Online	R 56,500.00	R 56,500.00
1	In-House	R 73,400.00	R 73,400.00
1	On-Campus (Pretoria)	R 84,700.00	R 84,700.00

UPCOMING SESSIONS

Start	End	Method	Venue
10 Aug 2026	01 Sep 2026	On-Campus	Dubai, UAE
11 Aug 2026	02 Sep 2026	On-Campus	Pretoria, South Africa
12 Aug 2026	03 Sep 2026	On-Campus	Abu Dhabi, UAE
13 Aug 2026	04 Sep 2026	On-Campus	Durban, South Africa
13 Aug 2026	04 Sep 2026	On-Campus	Mauritius
14 Aug 2026	07 Sep 2026	On-Campus	Cape Town, South Africa
17 Aug 2026	08 Sep 2026	On-Campus	Pretoria, South Africa
18 Aug 2026	09 Sep 2026	On-Campus	Abu Dhabi, UAE

Contact us if no suitable date is listed – on-demand sessions can be arranged for groups.

HOW TO GET A QUOTE OR APPLY

1. **Get an instant quotation online:** visit www.aaticd.co.za, open the page for this course (Unit Standard 113973) and click **Get A Quote / Apply**. Select your training method and number of delegates – your quotation is generated immediately and emailed to you with the course brochure attached.
2. **Apply by email:** send the course title, your preferred training method (Online, In-House or On-Campus Pretoria), the number of delegates and your preferred dates to apply@aaticd.co.za – our team will reply with a formal quotation.
3. **Apply by phone or WhatsApp:** call **+27 12 004 8389** or WhatsApp **+27 65 077 6310** and we will prepare your quotation and reserve your seats.
4. **Confirm your booking:** accept the quotation and settle the invoice. As soon as payment is confirmed your delegates are enrolled and receive their AATICD LMS login details by email, along with joining instructions for their chosen training method.

Group discounts apply automatically – the more delegates you enrol, the lower the price per delegate. No payment is required to request a quotation.

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