

AHMET ALI MERT

Senior Geotechnical & Civil Engineer • PhD, MSc

Family member of EU citizen (eligible for EU residence/work rights) • Ankara, Türkiye

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Languages: Turkish (Native) • English (C2)

PROFESSIONAL PROFILE

Senior Geotechnical / Civil & Environmental Engineer with over 10 years of international experience in geotechnical engineering for large, safety-critical infrastructure. Expertise spans slope stability (static / pseudo-static / dynamic), deep excavations and retention systems, underground works (tunnels/portals), ground improvement, and geotechnical investigation planning and interpretation, supported by numerical modelling (LE/FE). Currently an owner-side Geotechnical Engineer at Türkiye's State Hydraulic Works (DSİ), working on spillways, diversion tunnels and appurtenant structures — including uplift/seepage-driven stability, hydraulic-structural-geotechnical coordination, and water-related performance checks in complex rock/soil interfaces. Background combines consultancy and national-scale project delivery with international research (MSc — The University of Texas at Austin) and a completed PhD focused on 2D FE/LE stability analyses, including parameter calibration/back-analysis, seismic loading cases, and constructible stabilization options. Experienced in coordinating multidisciplinary teams, critically reviewing consultant deliverables, and contributing to technical specifications, baseline/GBR-style documentation, and investigation/consultancy contract follow-up.

KEY QUALIFICATIONS & CORE EXPERTISE

- **Owner's Engineer & Client-Side Technical Authority:** 5+ years at a major public owner (DSİ) as an internal subject-matter expert — defining scopes, overseeing external consultants, and leading the technical review of design deliverables (assumptions, parameters, safety factors); issuing formal comments and revision requests; and ensuring robust, code-compliant solutions.
- **Underground Structures & Complex Geology:** Extensive experience with deep cuts, diversion tunnel portals, and slopes in challenging geology (ophiolites/mélanges, radiolarite-limestone alternations, mudstone-fill-colluvium units), including high groundwater, seepage and rapid-drawdown effects; delivers stability assessments and constructible mitigation (anchors/rock bolts/soil nails, retaining systems, drainage, regrading/benching, ground improvement).
- **Advanced Numerical Modelling & Design Analyses (Static-Dynamic):** Expert use of Slide2, RS2, PLAXIS 2D and UTEXAS4 for slope and underground stability (LE & FE), soil-structure interaction, and static/pseudo-static/dynamic response; experienced in seismic load-case development and parameter calibration via back-analysis of observed performance.
- **Geotechnical Investigations, Ground Modelling & Baseline-Style Documentation:** Plans and interprets large-scale site-investigation campaigns (drilling, in-situ & lab testing), derives robust design parameters, and produces integrated reports functionally equivalent to Geotechnical Baseline Report (GBR) documentation — defining assumptions, uncertainties and baseline ground conditions for ground-risk management.
- **International & Research-Driven Profile:** MSc in Geotechnical Engineering (UT Austin) and a completed PhD focused on slope behavior; award-winning Bachelor's thesis; strong academic writing and analytical skills; comfortable in international, multidisciplinary environments.
- **Contract & Multi-Stakeholder Coordination:** Experienced in public-sector procurement/contract frameworks; contributes to scopes of work, technical specifications, deliverable expectations and acceptance criteria, and coordinates interfaces across central directorates (Dams & HEPPs), regional offices and external design firms with clear responsibilities and traceable decisions.

PROFESSIONAL EXPERIENCE

Senior Geotechnical Engineer — General Directorate of State Hydraulic Works (DSİ), ICOLD Member

Aug 2019 – Present

Dams & Hydroelectric Power Plants Dept. • Ankara, Türkiye

- Act as the Owner's Technical Representative for national-scale hydraulic infrastructure (spillways, diversion tunnels/outlets, portals, deep excavations).
- Serve as lead client reviewer for external consultant deliverables (investigation reports, analyses/designs, stabilization proposals); identify parameter/method inconsistencies and issue formal written comments and revision requests for code-compliant, cost-effective and constructible solutions.
- Lead and perform LE/FE stability analyses for spillway excavations, abutments, diversion tunnel portals and access slopes under static, rapid-drawdown and seismic scenarios; execute independent numerical verification (Slide2 / RS2 / PLAXIS 2D), challenging

assumptions, groundwater conditions, design parameters and factor-of-safety basis, and compare stabilization/excavation-support alternatives.

- Develop risk-mitigation and stabilization concepts for observed instabilities and construction-stage problems (anchors, piles, MSE/retaining systems, drainage, reprofiling, ground improvement), supported by comparative assessments.
- Define scopes and prepare technical specifications / contractual requirements for geotechnical investigations and consultancy services; coordinate drilling, sampling and lab/in-situ testing and translate results into project-specific ground models and design parameters.
- Lead hydraulic-geotechnical interfaces for safety-critical structures (uplift/underpressure stability, flood-routing compatibility, energy-dissipation works, portal stability) and resolve multidisciplinary issues via formal technical correspondence across central departments and regional directorates.

Selected Project Highlights

- **Silvan Dam** (one of the world's highest CFRDs, ~175 m): geotechnical design and stabilization strategy for major spillway excavations in complex colluvial ground, including deep-seated support (high-capacity anchors) and forensic landslide back-analysis.
- **Koçali Dam**: remediation of major diversion-tunnel instability via expanded investigations, paleo-landslide back-analysis (InSAR/inclinometers), redesign into stable bedrock and an alternative Morning Glory shaft spillway concept.
- **Oğçular / Oyuklu / Hamzalı Dams**: owner-side technical coordination and design review ensuring technical consistency, constructability and contractual compliance.

Civil Works & Construction Manager — Huawei Technologies Co. Ltd.

May 2014 – Jan 2016

Istanbul, Türkiye

- Led nationwide civil-works delivery for Türkiye's first 4G LTE communication infrastructure, coordinating ~15 subcontractor teams across multiple concurrent sites to achieve critical coverage milestones.
- Directed field execution for civil packages (foundation works, small-scale structures, fibre-optic trenching, base-station construction), verifying compliance with design/specifications, QA/QC and HSE; resolved complex site-level technical and logistical issues to protect schedule.
- Prepared and validated Bills of Quantities (BoQ) and tender packages; supported contractor evaluation/selection and contract administration, including progress tracking and quantity validation for payments.
- Maintained AutoCAD drawing revisions and complete as-built/QA documentation, ensuring traceable handover and audit-ready records.

Geotechnical Design Engineer — Emay International Engineering & Consultancy Inc.

Oct 2012 – Dec 2013

Istanbul, Türkiye

- Delivered geotechnical design and reporting for major transportation and bridge projects, including the North Marmara Highway & 3rd Bosphorus Bridge (BOT) and municipal bridge-reinforcement works.
- Interpreted ground-investigation data (borings, laboratory and in-situ tests) to derive soil/rock design parameters and document design assumptions.
- Performed geotechnical analyses (settlement, bearing capacity, slope/global stability) supporting bridge foundations, high embankments and retaining structures.
- Prepared comprehensive geotechnical design and as-built reports in close coordination with structural and geological teams, with on-site/coordination support to capture ground conditions and construction outcomes.

Selected Internships — Anadolu University • Kiptaş Inc. • İstanbul Metropolitan Municipality

2010 – 2011

- Anadolu University Soil Mechanics Lab: geotechnical laboratory testing (Atterberg limits, 1-D consolidation) to support soil characterization and parameter derivation.
- Kiptaş Inc. & İstanbul Metropolitan Municipality: early field experience in construction-site supervision (QA/QC) and environmental soil/water analysis.

EDUCATION

PhD in Civil Engineering (Geotechnical) | Eskişehir Technical University, Türkiye | 2020–2026 | GPA 3.92/4.00 | Completed

Dissertation: *Static and Dynamic Stability Assessment of Slopes Adjacent to Appurtenant Hydraulic Structures and Stabilization Recommendations*. Case-history-based assessment with advanced numerical modelling (LE/FE) for rapid-drawdown and seismic inputs; stabilization of complex rock/soil masses, deep excavations and retaining structures.

MSc in Geotechnical Engineering | The University of Texas at Austin, USA | 2017–2019

Thesis: *Geotechnical Properties, 1-D Consolidation Behavior and Liquefaction Susceptibility of Glaciolacustrine Clays from the Oso Landslide*.
Coursework: Underground Openings; In-Situ Soil Characterization; Decision, Risk & Reliability; Advanced Geotechnical Analysis. Honor: Graduate Dean's Prestigious Fellowship Supplement.

MSc in Soil Mechanics & Geotechnical Engineering | *Istanbul Technical University, Türkiye* | 2013–2015 | GPA 3.63/4.00

Coursework completed. Selected coursework: Design of Underground Structures, Environmental Geotechnics, Experimental Soil Mechanics.

BSc in Civil Engineering (Double Major with Environmental Engineering) | *Anadolu University, Türkiye* | 2007–2012 | MÜDEK / EUR-ACE®
(Washington Accord)

Top-5 in Civil Engineering; Valedictorian (1st) in Environmental Engineering. TÜBİTAK 2nd Prize for Bachelor's thesis on Flood Mapping (GIS + hydrologic + hydraulic modelling). Erasmus Exchange — Brno University of Technology, Czech Republic (2010), GPA 3.67/4.00.

SELECTED PUBLICATIONS & RESEARCH

Tunnel Engineering & Seismic Stability

- **Mert, A.A.**, Salman, M. & Çalışkan, F. (2026). "Overcoming Geological Challenges in the Construction of a CFSGD Diversion Tunnel." Accepted, ITA-AITES World Tunnel Congress (WTC 2026), Montreal, Canada. — *Complex ground conditions, excavation challenges and support performance in hydraulic tunnel construction*.
- **Mert, A.A.** & Çalışkan, F. (2024). "Stability of Portal Slopes of a Diversion Tunnel after the February 6, 2023 Kahramanmaraş Earthquakes." ITA-AITES WTC 2024, Shenzhen, China. — *Post-disaster reconnaissance and forensic 2D LEM analysis under extreme seismic loading (Mw 7.8 & 7.5)*.

Geotechnical Risk & Site Characterization

- Demirdöğen, S., Yıldırım, S., Yelen, B., **Mert, A.A.** & Bilyay, D. (2024). "Performance of Sürgü, Kartalkaya and Tahtaköprü Dams During the February 6, 2023 Türkiye-Kahramanmaraş Earthquakes." Int'l Symposium on Dams and Earthquakes (7th EWG Meeting, ICOLD), Athens. — *Seismic deformation and performance of critical embankment dams near the rupture zone*.
- Wooten, R.L., Kulesza, S., El Mohtar, C., **Mert, A.A.**, et al. (2020). "Geotechnical Effects of Hurricane Harvey in the Houston, Beaumont, and Port Arthur Areas." ISSMGE Int'l Journal of Geoengineering Case Histories, 5(4). — *GEER team member; levee performance, rapid-drawdown failures and erosion resilience*.
- Karslıoğlu, A., **Mert, A.A.** & Onur, M.İ. (2021). "New Trends in Determination of Soil Properties." European Journal of Science and Technology, Special Issue 28. — *Emerging technologies in site investigation and parameter derivation*.
- **Mert, A.A.** (2019). "Geotechnical Properties, 1-D Consolidation Behavior and Liquefaction Susceptibility of Glaciolacustrine Clays from the Oso Landslide." MSc Thesis, The University of Texas at Austin.

TECHNICAL SKILLS

Geotechnical Engineering (Underground & Slopes)

Underground structures: design and stability checks for tunnels and portals; constructability-driven optioneering considering groundwater/seepage, staged excavation and support interactions.

Slope stability: static & seismic response (LE/FE), rapid-drawdown analysis, parameter calibration/back-analysis, and stabilization design for complex rock/soil masses.

Liquefaction & seismicity: CPT/SPT-based assessment workflows, seismic demand/capacity checks, dynamic response analysis.

Ground & support systems: deep excavations/retention, shallow/deep foundations, ground improvement. **Site investigation:** planning and interpretation of field/lab data into robust ground models.

Hydraulic Engineering (Owner-Side Design Review • DSI)

Spillway design & review: hydraulic head/discharge capacity (empirical/numerical), flood routing (PMF), crest-profile compliance (Ogee); energy dissipation (stilling basins, flip buckets, baffle blocks), cavitation risk and structural-hydraulic interfaces (slab stability under uplift).

Diversion tunnel analysis: capacity verification for multiple return periods; transient flow/surge during closure/operation; head-loss, flow transitions and bypass systems. **Interface management:** geotechnical-hydraulic interactions (lining pressures, seepage, cofferdam overtopping) and cross-discipline clash resolution.

Documentation, Contract & Software

Documentation & oversight: critical review of design reports/consultant deliverables; technical specifications and GBR-style baseline documentation; safety-factor and drainage evaluation per ICOLD/DSI and international guidelines.

Analysis / modelling: Slide2 • RS2 • PLAXIS 2D • GEO5 • MIDAS GTS NX • GeoStudio SLOPE/W • UTEXAS4 • DEEPSOIL

Engineering / GIS: HEC-HMS • HEC-RAS • AutoCAD • ArcGIS • SAP2000 • Sta4CAD • MS Office | **Programming:** MATLAB • C++ • Visual Basic

CERTIFICATIONS & TRAINING

QHSE Internal Auditor: ISO 9001 (Quality), ISO 14001 (Environment) and OHSAS 18001 (Occupational Health & Safety).

Engineering software: SAP2000 (Structural Analysis & Design); Netcad GIS (Infrastructure, Water & Road Project Design).

Specialized workshops: Waste Management & Treatment — Theory and Practice (FORGEA International & Anadolu University); Sustainability & Economics — T.I.M.E. European Summer School (TESS).

Language & safety: Academic English Program — UT Austin (ESL); Construction Safety protocols for telecom and civil works.

HONORS & SCHOLARSHIPS

• **Graduate Dean's Prestigious Fellowship Supplement** — UT Austin (Civil Engineering graduate program ranked #2 in the US by U.S. News & World Report at time of admission).

• **Republic of Türkiye MoNE-DSİ Scholarship (2016–2019)** — highly competitive full government sponsorship (tuition, living stipend, insurance) for graduate study at Global Top-500 universities (QS/THE/Shanghai).

• **TÜBİTAK Civil Engineering Project Fair — 2nd Prize** (National Research Council of Türkiye). • **Honor Graduate** — Civil & Environmental Engineering, Anadolu University.

PROFESSIONAL MEMBERSHIPS

Turkish Chamber of Civil Engineers (İMO) · Turkish Chamber of Environmental Engineers (ÇMO) · Turkish Foundation for Combating Soil Erosion (TEMA)

LEADERSHIP, VOLUNTEERING & INTERESTS

Professional volunteering: MÜDEK Student Evaluator — voluntary reviewer supporting engineering-program accreditation (EUR-ACE®).

Community & arts: Soloist & chorist, DSİ Turkish Folk Music Choir (current); former University Folk Music Society member; singer-songwriter (guitar & recorder); photography.

Emerging technologies: Generative AI & LLMs, Blockchain/Web3 (engineering applications). **Sports:** team sports (soccer, basketball) and fishing.

Academic leadership (undergraduate): Elected President, Faculty of Engineering & Architecture Student Government; President, Nature & Environment Society;