

MD AFROJ ALAM

PMP®, MICE (UK), CEng, PEng
Senior Geotechnical Manager



Contact

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Location: Riyadh-Saudi Arabia

Transferable Iqama

Qualifications

- **M.Tech** Geotechnical Engineering), Indian Institute of Technology (IIT) Kharagpur, India
- **B.Tech** Civil from Aligarh Muslim University (AMU) Aligarh-India

Core Skills

- Strategic Leadership and delivery
- Design Governance
- Team and Resource Management
- Risk, interface and dependency
- Contractor and stack holder alignment
- QA, QC, Regulatory Compliance
- Cost, value and change management
- People driving management
- Commercial & Risk Management

Technical Skills:

- Advanced

- RS2 (Phase2)
- Swedge
- Unwedge Slide2D, Slope/W
- Roc Lab, Roc Support
- LPile, AllPile
- GINT
- MAT3D, FDN 3D, AFES

- Intermediate

- BIM
- Aconex
- GeoStudio Suite
- Math CAD
- PLAXIS

- Working Knowledge

- SeisImage
- NOVA Point
- PIKWIN, COM624
- KID, GGU Settle

Professional Overview

Chartered, Professional and PMP-certified Geotechnical Engineer with **20 years** of global experience shaping and delivering complex infrastructure project for Giga/Mega projects across Saudi Arabia, UAE, Kuwait, India, South Korea, Singapore, Vietnam, Finland, Sweden, Denmark and Bangladesh.

With a strong focus on Geotech & Tunnel has a proven track record of delivering efficient and innovative solutions for challenging geotechnical conditions supported by advanced skills in design through linear & finite modelling. Adept at steering design strategy, governing multidisciplinary engineering team, guiding project teams through high-value design, to driving efficiency, and ensuring seamless coordination across multiple projects.

High level knowledge of international codes and standards, along with a strong commitment to quality, safety, and regulatory compliance.

Recognized for deep technical capability in geotechnical (soil and rock mechanics) and operation across the full lifecycle of project with a leadership philosophy centred on vision, driving operational excellence, optimizing workflows, and leading high-performing engineering teams, consistently delivering profitable, and enabling project success across EPC/PMC/PMO environments.

Area	Expertise/Exposure
Technical/ Management	<ul style="list-style-type: none">• Provide strategic design leadership, for high-quality output for geotechnical and tunnel deliverables across full cycle of design management from inception to completion.• Lead and manage the ground engineering team, providing direction on ground investigation, soil and rock engineering, foundation design assessment, earthworks, ground improvement, fill characteristics, and all underground structure interface area.• Review of numerical modeling, including soil-structure interaction analysis, FEM analysis, deep excavation analysis, kinematic analysis, stress-deformation analysis, and slope stability evaluation, earth retaining structure design etc.• Serve as the primary liaison with internal design team with external key stakeholders, for technical support to multidisciplinary projects (Highways, Structures, Rail, Metro, high speed rail, Water, Mixed development) on complex technical interfaces• Facilitate regular design review meetings, provide technical guidance and feedback to clients, consultants, and contractors to enhance design quality, optimize solutions, bids, proposals, technical methodologies etc.• Lead the implementation of advanced engineering principles, theories, and concepts, emerging technologies, and regulatory changes, integrating advancements to ensure the delivery of reliable, innovative, and cost-effective design solutions.• Evaluation and recommendation. Evaluate and endorse technical review, assumption, design variation orders/concession request, specifications submitted by the contractor or sub consultant.• Assess risks and monitor progress, identify opportunities, design challenges, conflict to add value, assess risks, enhance productivity and improve technical and team performance.• Monitor progress of regional office, Coordinate with the regional/home office to obtain the required technical support, ensure budget utilization and earning capacity targets, conduct annual performance appraisal to review employees' work performance,• Oversee project documentation, maintaining comprehensive records of design decisions, change orders, approvals, and compliance reports for auditability and transparency.• Engage with regulatory authorities to obtain permits and approvals while integrating the latest technical advancements into design solutions.
Project Oversight	<ul style="list-style-type: none">• Supervise filed investigation, testing program, site compliance and provide technical leadership during construction.• Review and approve construction methodologies, temporary works, foundation, ground improvement, underground stations, bridges, and associated structures.• Resolve construction-stage technical issues through engineering analysis, redesign, and value engineering.• Oversee geotechnical investigations, ground support design, and implementation of monitoring and instrumentation systems.• Ensure QA/QC compliance, design integrity, risk management, and constructability throughout execution.• Support site teams with technical guidance, method statements, and constructability solutions.

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Code and standard

- IS code,
- BS Code,
- Euro code
- Saudi Building Code
- Dubai & Abu Dhabi Municipalities
- Japanese code
- BNBC
- SWCC,
- Saudi Aramco & SABIC standard
- KOC & KNPC standard.
- AREMA guideline
- AASHTO, ASTM

Certification & Membership

- PMP® – Project Management Institute
- Chartered Engineer (CEng), Institution of Engineers
- Professional Engineer (PE), Engineering Council of India
- Life Member – Indian Geotechnical Society
- Life Member – ISRMTT (Tunnelling & Rock Mechanics)
- Member – International Tunnelling Association
- Life Member – Consulting Engineers Association of India

Achievements/Publication:

- Selected for DGM – Geotech, DMRC (Govt. of India), 2021
- Invited Speaker – “Tunnel Construction in India,” Grand Hyatt Mumbai
- Selected for SMEC Young Dynamic Engineer Program, 2018

Professional Trainings/ Workshops

- Rocscience (2D–3D Slope Analysis)
- MDP for Engineering Leadership
- Advanced Geotechnical Workshops
- PMP training by Red Sea Global
- Effective Communication Management
- Quality Management Training

Language Known:

- English,
- Arabic,
- Hindi,
- Urdu,
- Persian
- Finnish

- Coordinate multidisciplinary teams (engineering, procurement, BIM/digital, commercial, delivery) for integrated project execution.
 - Lead stakeholder interfaces with Clients, PMC, Authorities, and statutory bodies.
 - Champion safety culture and competency development within technical and construction teams.
 - Manage techno-commercial matters including prequalification, vendor empanelment, RFIs, variations, concessions, and technical approvals.
 - Lead mentoring and training programs, fostering continuous improvement in sustainable engineering practices
- Oversee software licensing, managing costs, and aligning tools.

Career Conspectus

Senior Geotech Manager
RED SEA GLOBAL (RSG), Riyadh, Saudi Arabia
Mar 2023 – Present

Key Responsibilities

- Lead the technical delivery of major infrastructure and civil design packages for mega-projects (including AMAALA and The Red Sea), ensuring compliance with quality, safety, and constructability standards.
- Develop and implement Standard Operating Procedures (SOPs) such as RSG design Guideline & construction specification to ensure consistent technical governance and risk management across the infrastructure program.
- Provide senior technical due diligence for new packages, including design validation, specification for infrastructure packages including, road, bridges, drainage, causeway, foundation, tunnel etc.
- Oversee constructability reviews, risk assessments, method statements, and execution strategies, ensuring alignment with cost, schedule, safety, and performance objectives.
- Review and endorse design variations, concessions, and change requests submitted by consultants in line with contractual and technical requirements.
- Act as the technical authority approval for all civil infrastructure works including documents, drawings, specifications, calculations, and material submittals to ensure compliance with RSG standards and codes.
- Conduct site inspections to monitor progress, identify risks, deviations, and potential variations, and implement corrective actions.
- Represent the organization in technical committees and industry forums, reinforcing RSG's leadership in civil Structural engineering.
- Promote best practices, innovation, and sustainable engineering solutions to optimize project outcomes.

Key Achievements

- Delivered multiple infrastructure packages with zero design rework and sustained technical compliance.
- Achieved 12–15% cost savings by optimizing piling, ground improvement, and terrain modeling solutions.
- Reduced Tunnel design conflicts by 30% through structured oversight and multidisciplinary governance.
- Optimized ground improvement and rock-anchor design strategies, achieving 25–30% cost savings.
- Strengthened internal capability through structured training programs and design-review frameworks.

Senior Engineering Manager- geotech
LARSEN & TOUBRO (L&T ECC), India
May 2021 – Mar 2023

Key Responsibilities

- Led multidisciplinary teams of 20+ engineers (Tunnel, Geotech & CMP) to deliver large-scale Geotech & Tunnel projects across Heavy civil, Hydro, Highway and railway.
- Held end-to-end accountability for project delivery, ensuring technical excellence, constructability, safety compliance, cost control, schedule adherence, and commercial profitability.
- Produced high-quality technical reports, progress reviews, and performance dashboards to enable data-driven decision-making and clear stakeholder communication.
- Strengthening organizational engineering capability through mentoring programs, technical workshops, and structured knowledge-transfer initiatives.
- Provided technical leadership to tendering teams, contributing to bid strategies through risk assessment, value engineering, constructability reviews, and solution optimization.

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- Fostered inclusive, high-performance leadership across multinational teams, providing clear technical direction during constructability assessments and proactive risk forecasting.
- Oversaw technical audits covering quality, reliability, compliance, and constructability to ensure alignment with industry standards and project requirements.
- Acted as the senior technical interface with key clients, consultants, contractors, and regulatory authorities.
- Built and sustained client confidence by demonstrating depth of engineering expertise and organizational capability.
- Drove the adoption of advanced digital technologies, including BIM, digital twins, AI/ML applications, automation, and smart construction tools.
- Evaluated and finalized TBM specifications, cutterhead design, ground conditioning methods, and cliff stabilization at portal Face under complex shear zone geological profiles.

Key Achievements

- Improved TBM performance by 18% through refined specification and cutterhead strategies.
- Prevented excavation delays through early detection of high-risk geological zones and proactive mitigation.
- Achieved 100% technical compliance across all client engineering submissions.
- Strengthened tunnelling design governance through structured modelling and technical review processes.

Team Lead – Geotechnical

SMEC (Surbana Jurong Group), India & Bangladesh

Apr 2017 – Mar 2021

Key Responsibilities

- Provide strategic technical leadership across projects, ensuring buildability, constructability, value engineering, and cost efficiency.
- Lead multidisciplinary design, engineering, and site teams to deliver integrated and high-quality outcomes.
- Establish and govern technical, quality, and risk management frameworks across all project stages.
- Drive innovation and best-practice adoption in construction methods, materials, and delivery approaches.
- Manage key relationships with Tier-1 contractors, consultants, clients, and stakeholders to ensure alignment and performance.
- Resolve complex technical challenges to support timely, informed, and commercially sound decisions.
- Champion cost control, value optimization, and commercial awareness across technical teams.
- Led geotechnical and tunnelling design for Metro UG stations and elevated corridors, ensuring design alignment with system-wide requirements.
- Conducted advanced FEM modelling, settlement simulations, liquefaction evaluations, and slope-stability analysis using PLAXIS and geotechnical suites.
- Prepared GIRs, optimized ground improvement systems, and designed deep foundations, D-walls, secant piles, and raft systems.
- Review and approve method statements related to handling, placement, anchoring, overlapping, and protection of geotextiles/geofabrics.

Key Achievements

- Delivered design packages with zero NCRs from client reviewers.
- Enhanced settlement prediction accuracy by refining geo-material models and calibration methods.
- Ensured timely delivery of DDC packages for 3km viaduct, 7km underground metro packages, strengthening client confidence.

Lead Design Engineer – Geotech & Tunnel

RAMBOLL (REC), Finland/Sweden/India

April 2014 – Apr 2017

Key Responsibilities

- Lead technical evaluation, review, and specialist support for complex civil and structural engineering deliverables.
- Provide cross-disciplinary technical leadership, ensuring all designs comply with applicable engineering codes, standards, best practices, and client requirements.
- Oversee resource planning and allocation, including workload distribution between the India office and other Ramboll regional offices, while supporting succession planning and capability building.

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- Serve as the primary technical interface for the Finland and Sweden Civils teams, as well as other framework and discipline leads.
- Champion the adoption of new technologies, tools, and processes to enhance framework delivery.
- Identify technical and capability gaps within the team and develop structured training, upskilling, and strategic development plans aligned with organizational and framework objectives.
- Provided internal training on FEM modelling, geotechnical interpretation, and design governance practices.
- Supported business development teams with technical inputs and feasibility-stage risk insights.
- Led geotechnical design for Helsinki Airport development and Stockholm motorway tunnels, ensuring Eurocode-aligned deliverables.
- Conducted deep excavation modelling, sheet-pile and secant-pile design, FEM analysis, and ground-behavior assessments.
- Design of Retaining and Sheet Pile Walls using advanced analytical programs, including D-Sheet, to optimize design efficiency and structural performance.
- Analysis for Excavation Support under complex loading conditions, evaluating wall deflection and ground movement around excavations.
- Geotechnical Design Development for Foundations systems, ensuring stability, load-bearing capacity, and compliance with project specifications and site conditions.
- Advise on suitable foundation types (piles, caissons, mat foundations) based on soil conditions.
- Recommend soil improvement techniques (compaction, grouting, stabilization) when necessary.
- Evaluate seismic risks and design foundations for earthquake resilience.

Key Achievements

- Delivered Metro Rial geotechnical packages ahead of schedule, strengthening Ramboll's client reputation.
- Reduced risk-class deviations through rigorous design checks and optimized modelling approaches
- Expertise in developing and implementing shoring systems to ensure the stability and safety of excavations throughout the project lifecycle.

Senior Project Engineer -CSA

SK ENGINEERING & CONSTRUCTION (SK E&C), South Korea

Aug 2010 – Apr 2014

Key Responsibilities

- Supervised TBM operations for high-speed rail, ensuring safety, efficiency, and schedule compliance.
- Monitored segment installation, annulus grouting, TBM performance, and geotechnical responses.
- Provided design feedback, alignment adjustments, and technical progress reports during tunneling.
- Coordinated with OEM specialists and field teams to resolve machine-performance and ground-behavior issues.
- Led multidisciplinary teams, including TBM operators, segment crews, and geotechnical specialists, ensuring seamless operations.
- Ensured tunneling maintained precise alignment, gradient, and tolerances in line with high-speed rail standards.
- Reviewed geotechnical analyses to assess ground conditions and potential risks.
- Collaborated with project managers and engineers to optimize tunnel design and construction plans, developing solutions to technical challenges.

Key Achievements

- Provided timely design feedback and technical reporting, enabling real-time alignment corrections and enhanced tunnel quality.
- Successfully supervised TBM tunneling operations, achieving 100% adherence to alignment and gradient tolerances for high-speed rail corridors.

Geotechnical Engineer

GULF CONSULT, Saudi Arabia

Jun 2007 – Jul 2010

Key Responsibilities

- Executed GI, borehole logging, CPT/SPT campaigns, lab testing, GIR preparation, and foundation recommendations.
- Performed bearing-capacity calculations, settlement modelling, slope stability assessments, and dewatering design.

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- Interfaced with design teams for Riyadh Metro, Aramco, and water-transmission projects, ensuring alignment with ground conditions.
- Conducted construction-stage geotechnical checks and provided on-site technical support.
- Supported feasibility studies with soil-profile interpretations and risk screenings.
- Evaluate seismic and dynamic effects on metro structures.
- Address desert-specific issues like collapsible soils, expansive clays, and high evaporation.

Project Portfolio

Sector	Projects
Mixed Development/ Town city	<ul style="list-style-type: none">• Laheq Island Red Sea, Saudi Arabia• Laheq Mudra Crossing Bridge (3.8 km length)• Triple Bay Amaala- Saudi Arabia• King Salman Bay- Jeddah• Ridge Residency- AMAALA• Meghban project- Bangladesh• Taltrikinmäk- Finland
Rail/ Road/Bridges/ Tunnel	<ul style="list-style-type: none">• Chennai Metro (Elevated and Underground)-India• Mumbai Metro -India• Four Lanning Highway, Chertalai -Thiruvananthapuram NH-47• Riyadh Metro-Saudi Arabia• Etihad Rail -UAE• Mumbai–Ahmedabad High-Speed Rail Corridor, (400km)• Honam High-Speed Rail (Section 1-1 & Section 2-2)- South Korea• Dedicated Rail freight Corridor, Package CTP-11, CTP-14, CPT 3R- India• Udhampur to Ramban Highwayl, National way NH-1A (110Km)• Salang Tunnel-Afghanistan• Zojila Tunnel-India• Mumbai Coastal Road Tunnel-India• Förbifart Stockholm – Sweden
Airport	<ul style="list-style-type: none">• Helsinki Airport – Finland• Kabalega International Airport, Uganda• Noida International Airport-India