

Nadeem Ilyas

Construction Engineer Dam & Tunnel / Geo Technical Engineer
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Over 11 years of proven experience in the execution and management of mega hydro power projects. Demonstrated expertise in the construction and supervision of Tunnels, slope stabilization, dam foundation works, and complex geotechnical operations. Adept at coordinating multidisciplinary teams, ensuring adherence to safety and quality standards to delivering high-value infrastructure projects on time and within budget. Strong track record of solving technical challenges in difficult terrains and contributing to the sustainable development of energy infrastructure.

Area of Expertise

Project planning & Execution | Site Supervision & Management | Cost Estimation & Budget control | Construction Safety compliance (HSE Standards) | Quality Assurance & Quality control (QA/QC) | Team Leadership & workforce coordination | Stakeholder communication. | Tunnels & Slope Excavation & Stability | Geological Mapping slope, Tunnels & Foundation.

ADDITIONAL SKILLS: Dips | Auto Cad | Microsoft Office | S-wedge

Professional Experience

Torojena Dam / NEOM Consultant: BECHTEL

MAY 2025 – Present

Site Construction Engineer

- Review technical drawings, specifications, and RCC mix designs to ensure compliance with project requirements.
- Coordinate with design engineers to resolve constructability issues.
- Oversee and supervise RCC dam construction activities such as foundation treatment, formwork, batching, transport, spreading, and compaction.
- Monitor placement rates to achieve required lift thickness and continue.
- Ensure compliance with quality standards for RCC production, placement, compaction, and curing.
- Supervise field/lab testing (compressive strength, density, temperature, gradation, moisture content).
- Monitor thermal control measures to minimize cracking and ensure proper joint bonding between lifts.
- Enforce health, safety, and environmental (HSE) standards at the site.
- Ensure safe handling of equipment, materials, and explosives.
- Implement erosion control, dust suppression, and proper waste disposal practices.
- Liaise with consultants and client representatives to ensure smooth execution.
- Conduct daily/weekly progress meetings and prepare site reports.
- Coordinate logistics for continuous RCC placement (since delays affect bond quality).
- Prepare daily progress reports.
- Maintain as-built records for dam structure, instrumentation, and foundation treatment.
- Supervise installation of dam safety instruments (piezometers, thermometers, strain gauges, settlement markers).
- Monitor readings and report deviations to ensure structural safety.
- Resolve site issues such as segregation, cold joints, inadequate compaction, or equipment breakdowns.

Frontier Works Organization / 4500 MW Diامر Basha Dam

Dec 2023 – Apr 2025

Lead Tunnel Construction Engineer / Geotechnical Engineer

PROJECT: The Diامر Basha Hydro Power project is a colossal 4500 MW hydroelectric facility on the Indus River, situated approximately 315 km upstream of Tarbela Dam. This impressive structure features a Roller Compacted Concrete (RCC) dam reaching a towering height of 272m. It creates a massive reservoir with a storage capacity of 10.0 cubic kilometers and generates an astounding 4500 MW of hydropower through two underground powerhouses located on opposite riverbanks. The construction involves the utilization of two underground diversion canals and one tunnel to reroute the river flow.

- Supervision for construction of (NATM) Flushing & Access Tunnels with support system installation such as SN rock bolting, forepoling, canopy Tubes, Lattice Girders, wire-mesh & SFR plain shotcrete.
- Lead the execution of Flushing & Access Tunnels, including excavation, support system using drill & Blast Method.
- Plan and manage daily site operations ensuring alignment with project schedule, quality standard, & safety requirement.
- Monitor ground behavior, settlement and Tunnel stability using appropriate geotechnical instruments and implement corrective measures when necessary.
- Manage and allocate construction resources efficiently, including crew, equipment, and materials, to optimize productivity and control costs.

- Supervise and coordinate multidisciplinary team, including Engineers, supervisor, to ensure effective execution of work.
- Review Engineer Drawing, identify potential issues, and propose solutions to avoid delay or technical conflicts.
- Assessed geological conditions and rock properties to determine the appropriate drilling and blasting parameters, contributing to achieving safe and efficient tunnel construction.
- Monitored and analyzed geological conditions during tunnel excavation, resulting in minimized risk of collapses and ensuring safe progress.
- Conducted geological surveys of Tunnels & Dam to identify potential hazards, providing recommendations for ground support systems like rock bolts, Tendons or wire-mesh shotcrete to enhance stability.
- Collaborated with geotechnical engineers to assess the potential impact of geological features, such as fault zones or groundwater, on slope & tunnel construction.

**Power China Construction Corporation/4500 MW Diamer Basha Dam
Tunnel Construction Engineer**

Jun 2020–Jul 2023

PROJECT: The Diamer Basha Hydro Power project is a 4500 MW facility on the Indus River, located about 315 km upstream of Tarbela Dam. It features an RCC (Roller Compacted Concrete) dam with a maximum height of 272m. The dam creates a storage capacity of 10.0 cubic kilometers and has the capacity to generate 4500 MW of hydropower through two underground powerhouses, one on each riverbank. Construction includes two underground diversion tunnels and one canal to reroute the river flow.

- Planned and supervised excavation of diversion tunnels (16m diameter), adit tunnel (8m diameter) using Sequential Excavation Method.
- Managed tunnel construction activities according to approved design drawings, drilling & blasting patterns, and excavation methods.
- Managed design compliance with safety and quality standards.
- Supervised drill & blast excavation of diversion tunnels, access adits, conveyor Belt Tunnel.
- Organized crew, estimated timelines and materials, ensured quality assurance, upheld safety protocols, and maintained site cleanliness.
- Supervised the installation of fully grouted rock bolts (SN), shotcrete, wire mesh, lattice girders, and spilling bolts for ahead-of-face support.
- Conducted tunnel face mapping and rock classification using Barton's Q system.
- Managed quality control for installing support elements according to international standards and project specifications. Monitored early strength shotcrete performance and supervised concrete lining of diversion tunnel, including formwork and tests such as slump and core drilling.
- Supervised excavation of tunnel portal bench slopes and implemented rock support measures.
- Prepared daily, weekly, and monthly progress reports for the Tunnel Construction Manager, monitored site activities, coordinated with the client and consultant engineer, and enforced safety standards.

**Yangtze Three Gorges Technology & Economy | Development, CO., Ltd (Section II)/720MW Karot HPP
Tunnel Construction Engineer**

Mar 2016–Jun 2020

PROJECT: The Karot Hydropower Project is a 720 MW facility on the Jhelum River in Rawalpindi District, Pakistan. It features a reservoir with a storage capacity of 164.5 million cubic meters and is expected to cost approximately \$2 billion. The Asphaltic Concrete Core Rockfill Dam (ACCRD) stands at a height of 95.5 meters and spans 460 meters across the Jhelum River. The reservoir stretches approximately 27 km upstream of the dam. The powerhouse consists of four Vertical Francis Turbines.

- Supervised excavation of Diversion Tunnel (Dia: 14.50m), Headrace Tunnel (Dia: 12.50m), and other tunnels using Sequential Excavation Method. Implemented approved drilling & blasting patterns, excavation method statements, design drawings, and specifications.
- Supervised installation of Tunnel Monitoring System (including Convergence Monitoring Sections, Multi-Point Extensometer, Rebar Stress Meter, Joint Meter, Strain Meter, Non-Stress Meter, Steel Plate Meter, Piezometer) and analyzed data as required by project specifications.
- Managed installation of slope stabilization (Rock Bolts, Wire Mesh, Shotcrete ,Pre-Stress Anchor Cables) and instrumentation (Anchor Bar Stress Meter, Inclinator, Multi-Point Extensometer, Horizontal Displacement Points) per project specifications.
- Monitored joint orientation meticulously to prevent wedge failure and conducted daily checks on tunnel safety and ventilation systems.

**M/S Techno Time Construction Company
Engineering Geologist**

Sep 2014–Feb 2015

PROJECT: This is a 102 MW hydropower project located in Azad Jammu & Kashmir where the two Korean companies DAELIM & LOTTE are working in a joint venture. My company i.e. Techno Time Construction Company pvt is here by working as a sub-contractor of joint venture.

- Mapped weir slope using standard geotechnical classification method (RMR) and determined rock grade. Investigated ground conditions at each stage of cofferdam foundation and slopes.
- Mapped cofferdam face and tunnel using the RMR system. Investigated ground conditions of the tunnel and prepared geological profiles, resulting in a detailed geological understanding for project planning and execution.
- Completed geological face mapping of weir access road slopes after excavation. Managed rock surface crack grouting and assessed discontinuities during conventional excavation of diversion tunnels.

- Mapped geology, surveyed rock mass, and quantified discontinuities in agreement with the Engineer. Implemented agreed support methods including rock bolting, shotcreting, wire mesh, steel ribs, and lattice girder installation.
- Prepared rock core boxes and calculated RQD, ensuring construction conformed to relevant drawings, specifications, and project quality plan. Conducted slope stability analysis using Rock science software and compiled daily, weekly, and monthly progress reports.

Patrined Hydropower Project

Dec 2013–Mar 2014

Assist Engineering Geologist

- Supervised installation of rock bolts (PT Rock anchors (SSL), Rock Bolts expansion shell, and rock dowels) to stabilize rock surface, resulting in around a 30% improvement in stability and enhanced safety measures.
- Conducted geological surface mapping of sand trap and weir slopes and calculated RMR. Mapped the face of the tunnel for strength and functional assessment.
- Led effective team collaborations, adapting to new environments, excelling under pressure, and demonstrating strong communication skills. Applied expertise in assessing and minimizing risks in hazardous areas.
- Develop and implement managerial public relations initiatives to uphold and promote the organization's image and objectives.

Education

BS GEOLOGY (Honors): 2009-2013 University of Azad Kashmir | HHC: 2009 Mirpur Board AJK | SSC: 2007 Mirpur Board AJK