AECOM

Delivering Value for a Progressive Future

Delivering a better world

For more than 120 years, AECOM professionals have served the minerals industry, delivering engineering and environmental solutions worldwide.

aecom.com

Delivering Value for Our Clients

As the world's trusted infrastructure firm, AECOM is a leading provider of advanced engineering, environmental, planning, design, management and advisory services to clients in the water, energy, mining, government, and transportation markets.

With more than 51,000 employees worldwide, AECOM combines global reach, local knowledge, innovation, and technical excellence to deliver solutions that enhance and sustain the world's built, natural, and social environments. Our record of performance is built upon more than a century of experience in planning, permitting, designing, building and supporting operations for metal/mineral processing facilities around the world.

From conception to engineering, procurement, and construction management (EPC/CM) and decommissioning, our team works across the project life cycle to deliver:

- Environmental, Social, and Governance (ESG), Sustainability, and Indigenous Relations
- Planning
- Subsurface Investigation
- Underground Infrastructure
- Plant Engineering
- Water Management
- Tailings and Dams
- Ground Engineering
- Environmental Services
- Construction Services
- Operations
- Closure and Remediation

Our experience spans energy fuels, base and precious metals, and industrial minerals across some of the world's richest resource regions including the Americas, Africa, Australia, and Asia.

Project Delivery

We pride ourselves on consistently meeting or exceeding our clients' technical and operational requirements while enhancing their competitive advantage. In support of AECOM's commitment to continuous improvement of performance, we adhere to a rigorous project approach—Execution with Certainty. This creates a framework for how we deliver our work and incorporates the highest standards of business management, ethics, project execution, and safety. Execution with Certainty encompasses the policies, procedures, and values that guide every employee and provides each client with industry-leading performance. This approach guides our project teams to ensure the constant application of best practices and establishes a foundation for project execution that can be tailored based on a project's size and complexity.

Quality, Health, Safety and Environmental Management Systems

We have a strong safety focus, proactively managing the risks associated with our work and striving for continuous improvements to our safety performance. By applying the lessons and expertise from teams across AECOM's worldwide network, we ensure that we stay at the forefront of the latest tools, technologies and management systems. Through dynamic safety risk management, supported by a strong safety culture across our worldwide operations, we maintain our reputation as innovators, educators and leaders in safety.

Quality Management encompasses those actions that provide confidence that quality is achieved. In practice, it is the application of our Quality Management System (QMS) to achieve project success cost-effectively while continually improving our processes. AECOM's QMS supports the delivery of a wide range of quality work products and services, and contibutes to our clients' successes.

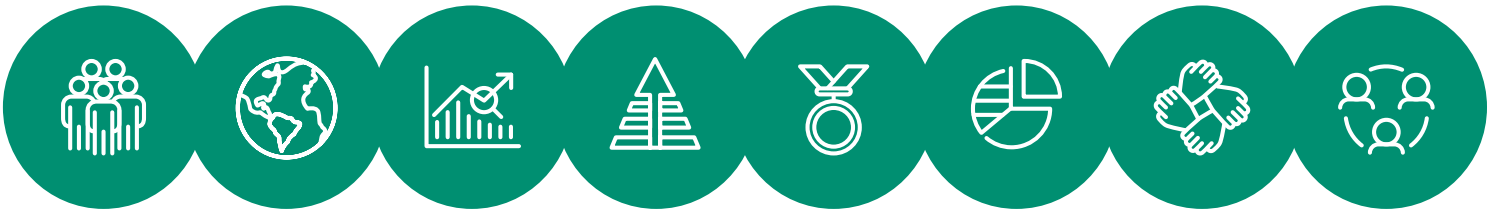
AECOM by the Numbers

51K
People

7
Continents

$16B
FY24 Revenue

#291
Fortune 500



Featured as one of *Fortune's* **"World's Most Admired Companies"** for eleven consecutive years and ranked #1 in our industry

Ranked #1 in Water, Transportation, Environmental Engineering, Green Design, Clean Air Compliance, Chemical Remidiation, Dams and Reservoirs on *Engineering News Record's* **2024 list of Top Design Firms**

Recognized with the **Equality 100 Award** by the *Human Rights Campaign Foundation's* **Corporate Equality Index**

Our Commitment to Sustainable Legacies

Partnering with clients to achieve positive, lasting outcomes for our communities and the planet.

As the world's trusted infrastructure consulting firm, leading in Environmental, Social & Governance (ESG) is essential to delivering positive, impactful, and Sustainable Legacies. We have a responsibility to embed ESG principles into everything we do – partnering with our clients and communities to solve their ESG challenges through innovation and fostering a culture where our global employees can work on projects that deliver environmental and social value. Our experienced professionals are driven to deliver Sustainable Legacies and are committed to ESG principles — and are energized by the idea that their work can contribute positively to the world and to society.

Learn more about AECOM's **Sustainable Legacies Strategy** at aecom.com

What actions are we taking to decarbonize?

OPERATIONAL NET ZERO by 2021

SCIENCE BASED NET ZERO by 2030, which includes:

BUSINESS TRAVEL EMISSIONS

50% reduction in business travel emissions by 2030, compared with 2018

VEHICLES AND ENERGY

Decarbonizing all fleet vehicles and switching to renewable energy tariffs

SUPPLY CHAIN

Developing carbon reduction targets in partnership with our supply chain

OFFSETTING

Offsetting residual carbon, including through creating our own nature based solution projects

SCOPE X™

Incorporating an ESG action plan for reducing carbon impact by at least 50 percent on all major projects (our 'ScopeX™' service)

Mine Reclamation and Closure Planning

Mining operations are developed based on defined resources and therefore each mine has a life expectancy. Mine life is determined from feed grades, commodity price, and production cost. AECOM offers you our global expertise and experience in construction closure, decommissioning, and reclamation.

Demolition and Closure

The first phase of closure consists of removing all facilities and equipment in an environmentally safe way. Removing decommissioned equipment requires special attention to prevent the spread of contaminated and hazardous materials.

Cradle-to-Grave Demolition Approach – Our demolition division has been recognized as the leader in the fields of demolition and dismantling. We have successfully performed thousands of major projects, removing structures to prepare project sites for future reuse or for remediation. We also have extensive global experience in:

- Asset recovery
- Asbestos abatement
- Waste management
- Dismantling
- Construction management
- Decontamination
- Radiological surveys
- Landfill construction
- Decommissioning

AECOM uses innovative demolition methods and specialized equipment in conjunction with a value engineering approach that results in a safe, expeditious, clean, and more economical project for you. Our demolition work is closely tied to the salvage, scrap, and recycling industry. We use the value of potential recovery and recycling to offset the costs of site decommissioning to provide you with maximum recovery value.

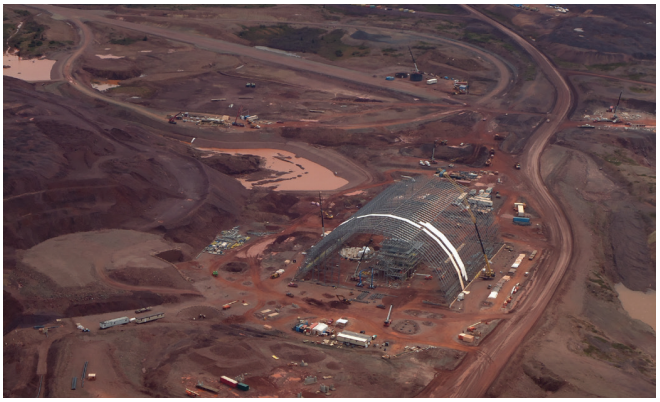
Reclamation

AECOM has developed innovative approaches to reclamation and closure, applying the best practices we have gained over a half century of operations experience. This includes baseline characterization through reclamation planning, and site reclamation through complete bond release. We work with you to develop and implement environmentally sound and economically feasible plans for closure including:

- Tailings management
- Water/wastewater management
- Mine dewatering
- Waste storage facility management
- Annual reclamation plans

For mine closure, AECOM performs a range of services from environmental auditing through closure design and construction management services for final reclamation bond release.

Engineering, Procurement, and Construction Management



A full-service, world-class provider of EPC/CM services, AECOM can furnish all ancillary and related infrastructure planning, engineering, and construction services necessary. Such services are often performed on a direct-hire basis or within the framework of a construction management contract, and may include any of the following facets:

- Construction management
- Safety, task training, and supervision
- Field planning/scheduling
- Contract administration
- Cost control
- Procurement, expediting, and logistics
- Field material control
- Quality assurance
- Commissioning, startup, and testing

Our construction management experience includes roads, water/runoff control, fuel/lubrication storage and dispensing, waste product containment, and mine support facilities, such as warehouse and inventory facilities, maintenance/repair shops, engineering and administrative offices, wash bays, and rail spurs and loadouts. Additionally, AECOM has designed and constructed several types of material handling plants, including crushers, reclaimers, conveying systems, and grinding plants.

Feasibility Studies

AECOM uses its global and local experience and resources to develop scoping, pre-feasibility, and feasibility studies.

Scoping Studies

Scoping studies for mines, process plants, and their enabling infrastructure are the first phase for determining the viability of a mining project, and AECOM understands the importance of this study for your company.

Pre-feasibility Studies

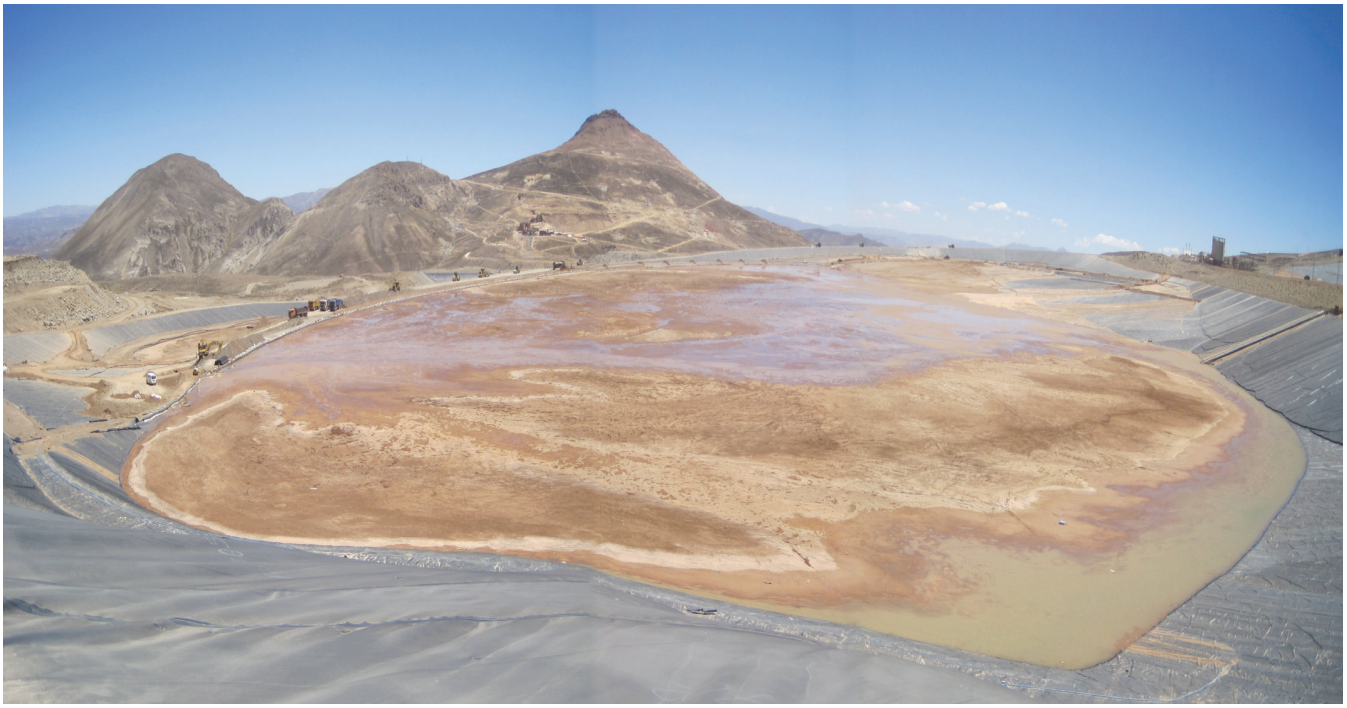
Pre-feasibility studies are an intermediate step in the evaluation of a given resource and development project. The goal is to determine the mining and milling extraction methods, process, environmental and permitting requirements, and estimated capital/operating costs and schedule associated with an expansion or greenfield and brownfield development project. In addition, pre-feasibility studies typically include geotechnical engineering design evaluations for waste dumps, mine design, tailings disposal, and enabling infrastructure.

Feasibility Studies

The feasibility study includes further refinement of the technical approach, environmental issues and mitigation strategies, including cost estimates and schedule development.

Key services that AECOM offers at any stage of the feasibility process include:

- Environmental and social impact assessments
- Conceptual through detailed engineering
- Infrastructure (rail, access roads, ports, loadouts)
- Power production and distribution
- Tailings and water management
- Project controls (estimating and scheduling)



Environmental, Social Assessment and Permitting

Mining is a fundamental building block to the economy and quality of life for many communities, states, and provinces throughout the world. However, the environmental, regulatory, social, and political environments in which mines explore and operate are constantly changing. By getting involved from an early stage, we work with engineering to develop environmental strategies that can minimize regulatory delays and environmental compliance costs, and include local stakeholder input.

We work collaboratively with you to develop permitting strategies, time frames, and data requirements necessary for development and operation of the mine facility in conjunction with in-house project delivery teams. We consult with regulators to prepare applications and project descriptions, and encompass the informational needs of all required permits. And we understand the permitting agencies, their requirements, and expectations for supporting documentation and have been very successful in obtaining permits for projects in sensitive environments.

Our other services include the following key areas of environmental policy compliance:

- Biophysical and social baseline surveys
- Third-party EAs and EISs
- Health and social impact assessments
- Cultural heritage advice
- Field studies
- Surface/groundwater investigations
- Air quality assessment and dust mitigation
- Noise/acoustics analyses
- Acid rock drainage and metal leaching studies
- Tailings and waste rock storage and management
- Water balance and water management/treatment
- Environmental monitoring program design, implementation and data assessment
- Community and stakeholder involvement
- Corporate social responsibility and sustainability

Engineering

AECOM has over a century of engineering design experience in large-scale mining projects. The breadth and depth of AECOM's staff expertise spans all engineering disciplines.

Facilities Design

AECOM personnel are experienced and knowledgeable in the selection of appropriate unit operations and process equipment for each project. Careful attention to subsystems in the design phase results in plant designs that can be easily constructed, operated, and maintained. A typical project generally includes the following:

- Preparation of detailed process flow diagrams
- Preparation of P&I diagrams
- Preparation of equipment specifications
- Preparation of engineering drawings, including general arrangements, concrete, structural, piping layout, and electrical
- Preparation of a construction cost estimate after partial completion of the engineering drawings

Geotechnical Engineering and Design

Recognized worldwide for our expertise in geotechnical engineering, we can provide:

- Site investigations
- Geological and geotechnical engineering analyses
- Foundation engineering
- Design and construction supervision services for tailings facilities, heap leach facilities, waste rock piles, water storage dams, and embankments
- Slope stability and deformation evaluation

Infrastructure

Infrastructure is a major cost component of any mining project. Mine site facilities must be carefully planned and designed, incorporating operational sustainability, to achieve a return on Engineering capital throughout the project life cycle. AECOM has extensive engineering experience and expertise in the design of mine haul roads, rail lines and spurs, overland conveyance systems, shipping facilities, air strips, roadways, and ancillary facilities, such as equipment shops, vehicle/equipment wash bays, and materials warehouses. Our long standing relationships with Class 1 railway companies enables us to expedite cost efficiently rail designs and design/build services.

Material Handling

We have some of the best qualified materials handling professionals to design and implement the following systems: ore receiving; concentrate dewatering; conveying systems; train loading/unloading; ports and shipping facilities; concentrate slurry pipelines; concentrate storage and load out; truck and shovel transportation; shipping and barges; port infrastructure; and reagent and materials handling, receiving, and storage.

Water Management

We provide integrated, comprehensive solutions to complex catchment and water management. There is an increasing pressure to reduce water consumption and improve water quality. We have a multidisciplinary team that works across the entire water cycle, and provides integrated engineering, environmental, and sustainability expertise across the following areas:

- Water sustainability
- Water footprinting
- Compliance and permitting
- Surface water design and management
- Water and wastewater treatment design and management
- Water quality evaluation and analysis
- Groundwater evaluation and analysis
- Water supply investigations and design
- Engineering design
- Numerical modeling (flood and breach analysis)
- Mitigation and remediation

Mining Hydrogeology

We provide the full range of hydrogeologic, geochemical, and groundwater modeling services that are necessary for projects in Mining and Mineral Expansion, Water Supply and Management, Groundwater Remediation, and Environmental Permitting, including:

- Hydrogeologic Assessments
- Groundwater Modeling
- Water Supply Development and Management
- Optimization of Groundwater Remediation Systems
- Contaminant Fate and Transport Studies
  - Organics, Inorganics, Metals, and Radionuclides
- Analyses of Surface Water and Groundwater Interactions
- Long-term Groundwater Monitoring Program Management
- Mining Dewatering and Water Management
- Mine Facility Design, Construction, and Expansion
- Closure and Reclamation
- Groundwater Monitoring and Remediation
- Groundwater Geochemistry and Forensics
  - Geochemical Waste Rock Characterization
  - Acid and Neutral Mine Drainage Studies
  - Geochemical Reaction Modeling
- Aquifer Protection Permitting

Providing effective solutions to groundwater problems requires practical experience as well as strong technical capabilities. AECOM has conducted more than 100 major hydrogeologic assessments and modelling analyses over the past 20 years, for a broad range of industry-leading clients.

Bulk Materials Handling

Our longstanding experience in the industry has focused on providing technically and financially appropriate solutions to ensure long-term operational sustainability. We can provide independent sound advice during the concept and prefeasibility stages of a project and also provides a full array of services during the feasibility and implementation phases including estimating and project execution planning.

Our team has decades of experience with bulk materials handling systems for surface and underground operations involving nearly all material types. We weave value into every project, improving efficiencies and sustainability wherever possible. AECOM provides a complete multidisciplinary engineering service including dynamic simulation modelling to ensure optimum equipment capacities are specified.

Our bulk materials handling capability encompasses all of the major components in the mining industry supply chain including underground and surface mines, transportation systems and ports. Our extensive experience allows to provide valuable concept screening and selection services to ensure that broad project parameters such as Truck and Shovel vs In Pit Crushing and Conveying, or Conveying vs Shaft Hoisting are correctly identified and selected.

Dump and Crushing Stations

Our specialists have designed crushing facilities for a wide range of metalliferous ores, coal and other materials, and we are fully conversant with all aspects of primary, secondary and tertiary crushing and screening. Our team is experienced in the application of many crusher types, including gyratory crushers, single and double toggle jaw crushers, cone crushers, feeder/breakers, sizers, hammer mills roll crushers and others.

Storage Systems

We design surface and underground storage bins and feeder stations, and have extensive experience designing silos, open stockpiles, covered storage buildings, tunnel reclamation and underground bins.

Transportation Systems

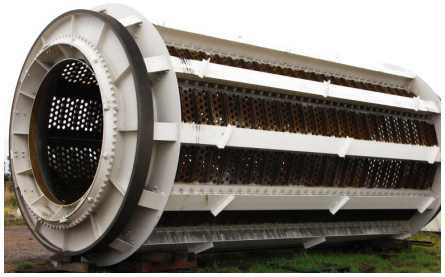
Our commissions have included major overland conveying systems, stacking and reclaiming systems, raw and product materials handling, collection, and trunk and decline conveying systems for underground mines. We also have extensive experience in truck haulage, surface and underground rail haulage, containerisation, special packaging (i.e., bags), and pneumatic systems.

Loading and Unloading Systems

Our experience includes loading and unloading systems for road, rail and shipping. We have designed volumetric train loading systems and have also procured mass weigh and batch weigh train loading systems.

Shaft Hoisting Systems

We have designed shafts and hoisting systems for many underground mines, and we have extensive experience with the limited number of established shaft sinking and hoisting subcontractors and suppliers available worldwide. We have developed analysis software for determining critical hoisting system parameters and benchmarked on many completed projects. Our expertise covers the design, manufacture, installation, operation, and maintenance of the many complex subsystems that make up a modern, automatic hoisting system.



Tailings and Mine Waste Management

Our center of excellence for Tailings and Mine Waste Management is comprised of professional staff and experts including geotechnical, civil, mechanical and water resource engineers, hydrogeologists and geochemists, with diverse backgrounds and global experience. Our strength derives from our ability to draw on local and international experience combined with the ability to draw on expertise and capabilities of staff across our worldwide network.

The collective experience of these engineers and geoscientists can be harnessed to develop safe, reliable and innovative designs that meet constructability criteria as well as environmental requirements. We focus on the end product and strive to develop appropriate solutions that are economical to construct, operate, maintain and rehabilitate. AECOM also provides EPCM services to our clients for construction of the mine waste management facilities and provides Quality Control and Quality Assurance for the facilities we design.

The primary services that AECOM offers for tailings and mine waste management includes:

- Permitting support
- Site selection & conceptual layout planning
- Seismic hazards assessment
- Tailings storage facility (TSF) design services including Pre-Feasibility and Feasibility, and definitive/Bankable Feasibility Studies (PFS/FS/BFS) and Detailed Design
- Tailings deposition planning
- Construction support / construction quality assurance
- Annual auditing
- Surface water hydraulic engineering and hydrology
- Pipelines and pumps
- Waste dumps and acid rock drainage mitigation
- Geochemical investigation and water chemistry
- Groundwater and integrated numerical modelling including contaminate fate and transport
- Seepage monitoring, capture and management Water treatment systems
- Closure, decommissioning, and rehabilitation
- A high level summary of each major service category is provided below. Further details of our capability and project experiences can be provided upon request.

Underground Mining Services

Over the past 20 years, we have become leaders in the design of systems for underground mines. Our attention to detail in this highly specialised area ensures essential issues such as the logistics for underground installation, access, and handling measurements for maintenance are fully addressed.

Mine Engineering Standards

Highly skilled in civil, mechanical, electrical and structural engineering services, our team has extensive experience in establishing underground mining services and standards.

Underground Dewatering

We have undertaken the design of a variety of underground pumping systems for both clean and dirty water applications which also covers rising mains and underground settlers.

Our team has conducted numerous investigations into the performance of existing pumping systems and have traveled widely to study overseas practice, especially in water clarification and mud disposal. Our experience in dynamic modelling of dewatering systems assists with the correct configuration and duty selection of the pumping system and enables us to address potential problems such as water hammer.

Materials Handling

Our team has designed conveying systems for a myriad of mining and bulk materials handling projects, including major overland conveying systems and stackers, and collection, trunk and decline conveying systems for underground mines. In addition, we have experience in the use of cable belt conveyors and high lift conveyors for specific applications.

Design of underground conveying systems is a specialised area requiring close attention to aspects such as access, minimum mined envelope dimensions, spillage cleanup, and handling of major components during maintenance. Tramp removal also often assumes much greater importance in underground operations due to the occurrence of tramp iron in the material conveyed. We have successfully addressed all of these issues in the course of designing conveying systems for many major underground mining projects.

Crushing System and Sizing Stations

We have earned a reputation as Australia's foremost designer of underground crushing stations for the mining industry. We have designed crushing facilities for a wide range of metalliferous ores, coal and other materials; and are fully conversant with all aspects of primary, secondary and tertiary crushing/screening.

We are also experienced in the application of any crusher types, including gyratory crushers, single and double toggle jaw crushers, cone crushers, feeder/breakers, sizers, hammer mills and rolls crushers. Our team carried out designs for all types of crusher feed/discharge systems as well as grizzly separation and rock-breaking.

Shaft Hoisting

We have designed shafts and hoisting systems for many underground mines. These systems provide transport for personnel, materials and ore, access for underground services, and passage of ventilation air and emergency egress.

Our capabilities cover the design, manufacture, installation, operation, and maintenance of the many complex subsystems that make up a modern, automatic hoisting system, including:

- shaft construction, including lining systems, sinking equipment and methods
- shaft furniture, including steel and rope guides, pentices, arrestors, gates and collar doors
- winding equipment, including drums/friction pulleys, sheaves, brakes, electric drives/controls
- in shaft equipment – ropes, cages, skips, etc
- headframes and towers – bins, detaching gear etc
- in-shaft services, including radio communications, cables, rising mains, fill and concrete lines
- emergency egress, including ladder ways, winches, gravity winding and pony drives
- maintenance systems.

Underground Mine Facilities

We have been responsible for the design of many underground mines and the provision of appropriate facilities for use by mine staff, as well as for storage of materials and maintenance of equipment.

- workshops, overhead cranes, office and stores
- maintenance and vehicle wash down bays crib rooms with/without emergency refuge

– ablution facilities, stores and changerooms
– office and control rooms
– fire refuges and fresh air stations.

Electrical HV and LV Systems

Our experience is extensive in the design of high voltage and low voltage systems for a wide range of underground mining projects. We are proficient in design, documentation and installation of all facets of 132kV, 22kV, 66kV, 11kV, 3.3kV and 415V power distribution.

We have gained significant experience in the design of high voltage and low voltage power distribution systems for underground Hard-Rock mines.

Controls and Communications

Our team has many years of experience in the design of control and communications systems for underground mines.

We are experienced in the design and documentation of control and communications systems including PLC and SCADA, CCTV, leaky feeder, telephone, telemetry, PED, tagging and fibre optic networks.

Underground Services Design

We have undertaken the design of the complete range of underground services for numerous mines. Services are the arteries of underground mines and can represent a significant component of capital cost, and unless properly designed, can make an unwelcome contribution to maintenance costs.

– water supply, both portable and process
– compressed air supply and reticulation
– fire protection
– high voltage and low voltage power reticulation
– emergency evacuation systems and fixed opening escapeways
– concrete slick lines
– electronic tagging systems
– gag doors and control stations
– gas monitoring and stone dust storage facility
– decline traffic control systems.

Mine Ventilation

We have the capability in-house to undertake the total design and documentation of mine ventilation systems, including circuit design, sizing and specification of fans, design of fan footings and shaft collars, ducting systems, ventilation doors, HV power supply, and controls.

In addition, we have prepared documentation for development of ventilation shafts by a variety of methods, including raisedrilling, blind boring and conventional sink, strip and line.

About AECOM

AECOM is the global infrastructure leader, committed to delivering a better world. As a trusted professional services firm powered by deep technical abilities, we solve our clients' complex challenges in water, environment, energy, transportation and buildings. Our teams partner with public- and private-sector clients to create innovative, sustainable and resilient solutions throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. AECOM is a Fortune 500 firm that had revenue of $16.1 billion in fiscal year 2024. Learn more at aecom.com.

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