

# MINE ENGINEERING STUDIES

## BEST FOR PROJECT

Our Best for Project philosophy is focused on safety and backed by engineering expertise and construction experience. This ensures that our studies are comprehensive and bankable.

Full project stewardship or an advisory role. Cementation brings value at any stage of the project life cycle: from concept to feasibility study, detailed design, project delivery, sustaining capital and project closure.

## EXPERTISE

- Mine Design and planning
- Optimization
- Estimating and Scheduling
- Equipment Selection
- Site Investigations
- Physical hazard and stability assessments
- Rehabilitation for legacy mines
- Regulatory Compliance
- Trade-Off Studies
- Due diligence, Audits
- Reliability
- Financial models
- Material handling and delivery systems
- Ground control and treatment
- Risk Analyses, Mitigation
- Water Management
- Ventilation

## SAFETY BY DESIGN

Our goal is to deliver the safest designs and achieve the greatest value for our Clients.

We manage safety by eliminating or controlling hazards and incorporating safeguards for the construction and operation phases of the mine.

## PROJECT LIFE CYCLE

We can contribute at any phase of technical study: concept to full feasibility and operational readiness, as part of an overall study or individual analyses.

### MAXIMIZING VALUE:

Cementation draws on lessons learned from design, detailed engineering and construction perspectives. We implement designs that will benefit your project. Cementation's best for project philosophy and engineering excellence is integral to our services.

### MULTI-DISCIPLINE TEAMS:

Mine access and underground infrastructure are core areas of expertise for Cementation while Cementation AG (Above Ground) offers EPC capacity in minerals processing systems and Terra Nova Technologies Inc. is a global leader in the design and supply of material handling systems.

### EARLY INVOLVEMENT:

Early involvement can dramatically increase project success, optimize constructability and reduce safety, technical and commercial risk. We offer flexibility with our involvement in projects, from a business case advisory role right through to full project stewardship.

### KPIs:

Cost, design, schedule, safety, reliability, risk assessments and mitigation options, revenue flow, capital expenditures, minimizing dilution. Our work will align to the overall project to meet your goals.

# INNOVATIVE, HOLISTIC

All mining stages and impact on processes are identified to maximize value and minimize risk.

## GLOBAL FOOTPRINT

The Cementation Group of Companies operate globally. Our international teams have experience in many regions of the world so that local conditions whether it be economic or workforce productivity are incorporated into our studies.

## INFRASTRUCTURE

Technical deliverables with flexible “right-sized” project management systems can be tailored to suit any size of project or delivery model. Our combined engineering teams offer expertise in:

- Mine shafts; shaft liners through all rock types and ground conditions
- Hoisting systems; hoists, headframes, bin-houses, shaft guidance systems, loading pockets
- Ramp, lateral and raise development
- Underground material handling; bins, loadouts, conveyors, ore/waste passes, grizzlies, rock-breakers, crushers, feeders
- Services; piping, power distribution, communications, controls
- Mine dewatering; pumping systems, cover drilling
- Mine ventilation; shaft sizing, fan selection and system design
- Underground facilities; shops, magazines, refuge stations
- Surface infrastructure: workshops, warehouses, bins, load-outs, fuel storage, offices, changehouses, concrete systems, sub-stations, temporary set-ups

# BETTER BY DESIGN

Cementation’s core of excellence in mine access and underground infrastructure construction allows our combined engineering teams to complete efficient trade-off studies and develop optimized solutions.

Our solutions translate into safe, constructible, operable and maintainable designs, derived from our real-world construction experience.

- Cost certainty, discipline and one-point accountability throughout our projects
- Early planning phases to optimized designs for greatest return on investment.
- Transparent and robust project scope, budget and schedule
- Disciplined approach to delivery using sound change management principals.

We believe that Cementation’s Engineer, Procure & Construct approach ensures that your project stays on course.



# THE CEMENTATION WAY

We believe engineering should be an integral part of the construction process and a design-build approach is especially effective on technically challenging projects. Our multi-disciplinary engineering group encompasses expertise in mining, electrical, mechanical, dewatering, structural and infrastructure design. Our Engineering Studies team have added expertise to meet all your needs.



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