

Basic and Detailed Engineering Design



Tetra Tech's full-service design teams provide design solutions across all stages of development of a mine opportunity.

Basic and Detailed Engineering

As a mine project progresses through the feasibility study stage, some aspects of the project might need to be designed at a basic or detailed level to further progress the project through various stages of development or to improve the accuracy of the capital cost estimate. Tetra Tech provides engineering design to any level needed to support project development goals and financial requirements.

We provide design and detailed engineering services for processing, mechanical, civil, geotechnical, layout, piping, architectural, structural, electrical, and instrumentation and controls. In support of the design, we also provide program and portfolio management, procurement and logistics support, project controls, estimating, scheduling, construction management, and construction quality oversight services. We are a full-service engineering, procurement, and construction management firm.

Design Team Capabilities

Our engineering design teams cover all aspects of mining process facilities. We offer professional engineers, designers, and drafters with expertise and experience in the following areas:

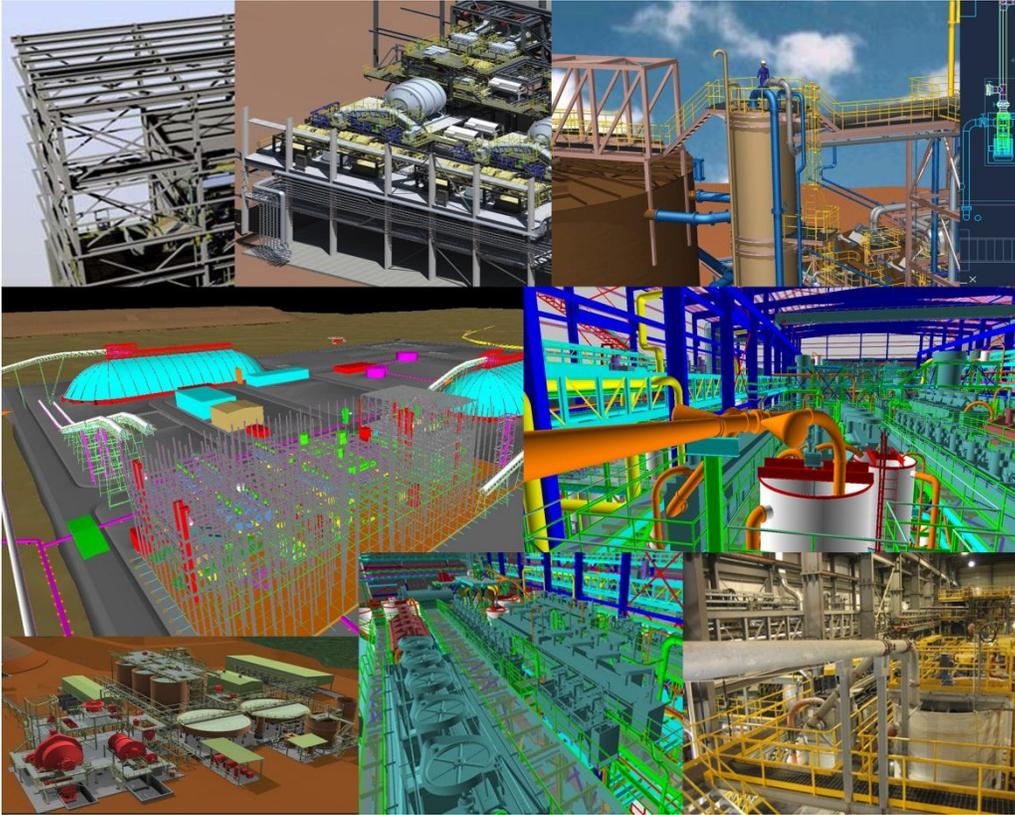
- Project management and controls
- Program management
- Mining engineering
- Process metallurgy and chemical engineering
- Environmental support
- Layout
- Geotechnical engineering
- Civil engineering
- Structural engineering
- Mechanical and piping engineering
- Electrical engineering
- Architectural engineering
- Instrumentation and controls
- Cost estimating
- Procurement
- Logistics
- Operation support and maintenance

Tetra Tech's integrated engineering design teams can execute a full range of designs and specifications for all aspects of plant facilities within the mine and milling complex for global mining projects.

Our engineering design capabilities cover the complete spectrum of requirements for mining and milling operations. Our design teams provide multidisciplinary engineering design for new greenfield sites to achieve a fully operational mine or milling facility. We have successfully executed numerous brownfield projects and are acutely aware of the in-plant engineering challenges of working in existing facilities.

Application of our expertise starts with the design of open-pit, underground, or solution mining facilities and extends to multidisciplinary detailing for construction of the process facility and other site facilities. Our engineering teams can cover process optimization; mine and mill expansions; and concentrator, smelter, refinery, power plant, tailings, and maintenance engineering projects.

Tetra Tech is a leading provider of consulting, engineering, program management, construction management, and technical services. The Company supports government and commercial clients by providing innovative solutions to complex problems focused on water, environment, energy, infrastructure, and resource management. With 13,000 employees worldwide, Tetra Tech's capabilities span the entire project life cycle.



Our engineers, designers, and technicians are able to undertake mining projects of any scale in any region.

Diverse Commodity Types

on our projects include gold, silver, platinum, palladium, aluminum, copper, nickel, and zinc, alloys of iron with chromium, manganese, silicon, tungsten, molybdenum, vanadium, coal, rare earths, and more

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Tetra Tech Mining & Minerals

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Brazil	Belo Horizonte, Minas Gerais State
Canada	Jonquière, Québec Vancouver, British Columbia Toronto, Ontario
Chile	Santiago, Santiago Province
UK	Swindon, Wiltshire
US	Golden, Colorado Salt Lake City, Utah

Engineering and Layout Design Capabilities

Tetra Tech develops conceptual layouts in the study phases of a project through detailed design and construction drawings for the overall mine site, processing, and operating facilities. Our various discipline designers and engineers work closely to coordinate multidisciplinary design efforts, using the latest software suites to conceptually model systems integrations and develop final construction drawing deliverables.

- Process flow diagrams
- Piping and instrumentation diagrams
- Underground mining site arrangement drawings
- Site arrangement drawings
- Mechanical, structural, piping, HVAC, civil, electrical, and architectural engineering
- Mechanical general arrangements, detail drawings, and fabrication drawings
- Piping general arrangements, detail drawings, and isometrics
- 3D modeling
- Electrical line diagrams
- Control system architecture diagrams
- Line list, instrument index, circuit schedule, value list
- Finite element analysis