



## Company Background

PJ is a specialist pipeline engineering, procurement and construction management (EPCM) services company with expertise in all aspects of delivering pipeline transport systems globally.

Our staff has over 40 years of experience, and the skills required to deliver our Client's pipelines successfully. The expertise of our personnel in the hydraulic design of slurry pipelines has led the industry.

Our mission is to safely execute pipeline projects with minimal impact to the environment and the communities while meeting our Client's requirements.

## Slurry Pipeline Design

The people behind PJ have had involvement in the majority of the slurry pipelines in operation globally. On most of these projects our personnel have been involved from the conceptual engineering stages through to the commissioning and startup of the project. Our many years of experience with the different types of concentrates; ore and tailings disposal systems allow us to provide optimized solutions to our Clients.

Each pipeline system design and installation is unique, requiring specialized design consideration. The slurry product to be transported is analyzed to determine the process design characteristics. The pipe is sized, and the pumping system defined for optimum flow conditions and required design life.

While the design and installation methodology may be similar, consideration for site conditions, the materials used along with the construction equipment and experience level need to be accounted for. PJ has the experience in the latest fabrication and installation techniques.

PJ personnel have detailed experience developing special point designs including bridge installations, tunnel installations, water crossings, road crossings and other trenchless installations, etc.

PJ personnel have the practical experience and technical background to provide the appropriate design approach, according to the specific needs of each project, considering the type of product, geographic location, safety, environmental, legal and community challenges that might affect the design. Experience is critical to anticipating and overcoming such challenges.

## Services

- Slurry properties
- Laboratory testing
- Hydraulic design
- Process design
- Pipeline route selection
- Geotechnical testing
- Geohazard investigations
- Environmental management
- Authority permit management
- Land acquisition management
- Pipeline design
- Station design
- Contracts and Procurement support
- Bankable Capital & Operating Cost Estimates
- Contracts and procurement management
- Engineering follow-up in construction
- Construction management and inspection
- As-builts
- Pipeline integrity assessments and system setup
- Operations and maintenance plans, manuals and procedures



## Multi-Discipline Services

Professional services and specialized expertise are available for a full range of customer requirements, from feasibility evaluation through start-up of a completed installation. While process and mechanical design are the focus of pipeline engineering, PJ also offers complete multi-discipline services to permit fully integrated designs, which include hydraulics, pipeline, civil/structural, electrical, instrumentation, controls, telecommunications, procurement and construction services.

In addition, PJ personnel's responsibilities on past projects include the management of health, safety, legal, authority permits, environmental, social and land acquisition teams to provide a single point of responsibility to our Clients. Our team has the experience to deliver your projects from the early conceptual stages through all stages of engineering, procurement, construction, commissioning and startup, and handover for commercial operations.

The PJ staff have recent experience in oil and gas pipeline projects to bring the latest pipeline fabrication and installation technologies to meet your needs. Our global network of pipeline specialists allows us to call on industry experts to provide the best solutions to ensure the pipeline integrity throughout the design life of our client's pipelines.

PJ personnel also have experience providing expert witness support in legal arbitrations on pipeline projects.

## Types of Engineering

We provide a wide range of engineering services from conceptual design to detailed engineering:

**Studies:** Conceptual, Pre-Feasibility, and Feasibility Studies, route selection, economic evaluations, trade-off studies, hydraulic trouble shooting, laboratory test work for characterization of the slurry and CAPEX/OPEX estimates.

**Basic Engineering:** Pipeline route reconnaissance, aerial photogrammetry, satellite imagery, centerline survey, constraint mapping, preliminary alignment sheets, hydraulic analysis, transient analysis, process design, P&IDs, Flow Sheets (PFDs), basic design drawings and layouts, design specifications, equipment lists, major equipment specifications, control systems, instrumentation design, environmental assessments and CAPEX/OPEX estimates.

**Detailed Engineering:** Finalization of pipeline route, pipeline alignment sheets, special point design drawings, transient analysis, P&IDs, Flow Sheets (PFDs), detailed design drawings, general arrangements, section drawings, specifications and requisitions, tender packages, tender bid evaluations, contractor negotiations, change management, construction specifications, cathodic protection design and CAPEX/OPEX estimates.

**Other:** Value engineering, design reviews, peer reviews, risk workshops, gap analysis reviews, permit engineering, environmental support, procurement and contracts support engineering, engineering follow-up in construction, construction engineering and pipeline integrity assessments.

## Types of Projects

- Long-distance Concentrate Pipelines
- Ore Pipelines
- Tailings Disposal Systems
- High-density (Thickened) Tailings Disposal
- Water Pipelines
- Oil and Gas Pipelines

## Products

- Copper concentrate, ore and tailings
- Iron concentrate, ore and tailings
- Bauxite concentrate and tailings
- Coal slurry
- Gypsum
- Lead / Zinc
- Limestone
- Milk of lime
- Nickel laterite ore
- Phosphate concentrate
- Zinc concentrate and tailings
- Water
- Oil and Gas

*All work is in accordance to ISO 9001 and B31.4/B31.8.*