

TUNNELING & TRENCHLESS



TUNNEL vs TRENCHLESS - WHAT'S THE DIFFERENCE?

TUNNELING includes water transmission, sewer interceptors, stormwater conveyance, transportation and other utilities. Excavations exceed 72 inches in diameter up to nearly 60 feet and equipment is man operated from the tunnel during construction.

TRENCHLESS are water lines, sewers and other infrastructure in the 24-72 inch diameter range. Trenchless construction methods include auger boring, microtunneling, pipe jacking and horizontal directional drilling. Trenchless excavation equipment is remote operated from the surface.

TUNNELING & TRENCHLESS TECHNOLOGY

(T&TT) is a construction method used to construct a wide variety of utility and transportation projects where other conventional methods are too disruptive, too expensive or infeasible. T&TT has been a specialized service offered to clients for many years by Freese and Nichols (FNI), originating in FNI's water transmission business for road and waterway crossings.

The T&TT market has seen an increased share of the total capital expenditures on water, wastewater and sewer infrastructure over the last 10 years. Continued technological

advancements in excavation, support and lining systems allows tunnels to be constructed today where they were not cost effective or possible in years past.

Project Drivers that often necessitate T&TT solutions include:

- Road/Utility Crossings
- Population Growth
- Topography
- Community & Environmental Impact
- EPA Consent Decree (CSO/SSO)
- System Consolidation to Reduce Operation Expense
- Resiliency/Infrastructure Hardening
- Flood Risk Reduction



BENBROOK TUNNEL
Tarrant Regional Water District

The 4-mile long and approximately 140 foot deep Benbrook Tunnel provided a critical connection to Lake Benbrook for terminal raw water storage as part of the Benbrook Connection Project. Tunneling facilitated this connection through challenging topography while minimizing pumping and operating costs.



Why choose FNI?

- Reputation for Technical Excellence
- Innovative approaches, practical results, outstanding service
- Trusted advisor - we know your system
- National caliber expertise delivered locally

SERVICES AND CAPABILITIES

STUDIES & PLANNING

- Concept Development
- Data Collection & GIS Management
- Tunnel Route Studies
- System Hydraulics Evaluation
- Desktop Environmental/Remedial Investigations
- Alternatives Analysis
- Tunnel Excavation Method Evaluation
- Economic Evaluation
- Cost & Schedule Estimates
- Shaft Site Selection

DETAILED DESIGN SERVICES

- Tunnel and Pipe Design
- Permitting & Regulatory Approvals
- Public Input Support
- Environmental/Remedial Design
- Hydraulic & Surge Modeling
- Hydraulic Physical Modeling
- Odor Control/Cleaning Facilities
- Procurement & Bid Reviews
- Bidder Pre-qualification
- Geotechnical Investigation & Interpretation

SERVICES DURING CONSTRUCTION

- Resident Engineers & Project Representatives
- Cost Control & Trend Analysis
- Construction Inspection



Freese and Nichols, Inc. is a professional consulting firm serving clients across the Southwest and Southeast United States. With sustainability in mind, Freese and Nichols plans, designs and manages infrastructure projects. It is the first engineering/architecture firm to receive the Malcolm Baldrige National Quality Award.



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