

# Expert Trenchless Consulting, Design, and Engineering

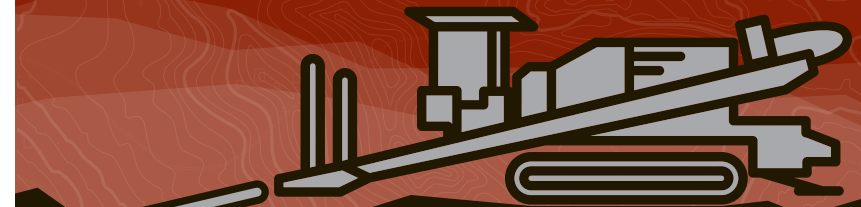
Underground utility infrastructure projects often face challenges in congested cities, environmentally sensitive areas, and when crossings are required under highways, railways, or waterways. Trenchless methods provide effective solutions to minimize surface disruption while delivering efficient, safe, and cost-effective underground installations.

Terracon offers comprehensive trenchless design and engineering services for every project stage, from feasibility studies and geotechnical investigations to methods consulting, design, permitting, and construction support. Our team brings decades of geotechnical expertise and experience with the full range of small-diameter tunneling and trenchless technologies, including horizontal directional drilling, microtunneling, pipe jacking, and auger boring. We begin with detailed assessments of geology, geometry, and geography, as well as thermal performance for high-voltage installations, to recommend the best-fit solution.

Whether installing new pipelines, burying high-voltage cables, or rehabilitating aging systems, we help protect your schedule and budget while reducing project risks and community impact.

*Trenchless  
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**Terracon is a top North American  
trenchless engineering firm**

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# Trenchless Services Across the Project Lifecycle

From site selection through construction, Terracon's data-driven insights and in-house trenchless design and engineering expertise can help.

## PLANNING AND PRE-DESIGN PHASE

### Land Assessment

- Siting and Suitability Studies
- Desktop Environmental and Subsurface Condition Studies
- Environmental Site Assessments (Phase I, Phase II)
- Environmental Planning/NEPA
- Natural/Cultural Resource Studies
- Topography and Utilities
- Geohazard and Scour Surveys Permitting

### Existing Structures

- Environmental Due Diligence
- Underground Utilities
- Land Use
- Traffic Management
- Off-Street Access
- Nearby Structurally Sensitive Buildings and Utilities

## PRELIMINARY TO COMPLETE DESIGN PHASE

### Trenchless Design and Engineering

- Feasibility Studies/Alternatives
- Subsurface Investigation
- Detailed Design Reviews
- Project Delivery Method Consulting
- Preliminary and Final Trenchless Designs
- Permitting and Stakeholder Coordination

### Site Issue Mitigation

- Risk Register
- Ground Modification/Improvements
- Preconstruction Survey
- Prequalification
- Geotechnical Instrumentation
- Independent Constructability Review
- Forensic and Litigation Support

## CONSTRUCTION PHASE

### Quality Assurance/Quality Control

- Testing and Inspection of Construction Materials
- Observation and Recording of Trenchless Construction Activities
- Detection of Changed Conditions
- Construction Administration Support
- Construction Consulting/Owner's Rep Services
- Vibration Monitoring
- Settlement/Heave Monitoring Observations and Consulting

### Environmental Compliance

- Monitor Project Alignment Daily for Inadvertent Returns
- Construction Monitoring for Environmental Compliance
- Monitoring of Drill Mud Returns
- Monitoring of Downhole Pressure Sensors
- Stormwater Pollution Prevention (SWPPP)



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