

Horizontal Directional Drilling

Coverage of Horizontal Directional Drilling (HDD) Technologies for Utility and Pipeline Applications



Course Description: The revised Horizontal Directional Drilling course is offered as a 3-day course that combines many of the topics covered in TTB's HDD Basic and Advance Courses. Based on the topics of key interest from our past courses we have tailored this course to provide in depth coverage of selected topics such as HDD basics; technology and equipment; feasibility; design; subsurface conditions; drilling fluids; borehole stability; hydro-fracture; surface settlement and heave; contracts and specifications; construction surveying and inspection.

Course Objective: To provide owners, engineers, inspectors, contractors and others working in the HDD industry with complete technical related information for HDD analysis, design, and construction. The course will focus on HDD projects with steel and plastic pipelines, including feasibility analysis, design criteria, and product pipe stress analysis. During the course we will also discuss how the subsurface conditions can impact the HDD operation, borehole stability, and feasibility. The course will provide coverage of how to estimate the potential for hydro-fracture, estimate the allowable borehole mud pressure, and calculate potential soil settlement in HDD applications. The course will provide many example calculations and a class room exercise using a HDD computer application.

Target Audience: All pipeline, utility and consulting engineers, superintendents, contractors, inspectors and other technical individuals with the responsibility of managing, operating, or maintaining pipeline, trunk or distribution systems.

Registration Fee: \$2,450 per person, which includes:

- Attendance to the course
- Course materials
- Evaluation copy of HDD Toolbox - Professional Edition

Instructor: David Willoughby is a Projects Manager for Rummel, Klepper & Kahl, a consulting engineering firm headquartered in Baltimore, MD. He has 28 years of experience in engineering, technical writing, and management in the natural gas, petroleum and pipeline industry. Mr. Willoughby is registered by the Council of Engineering Specialty Boards as a Petroleum Operations Engineer. Mr. Willoughby serves as the Project Manager for several major pipeline projects that include many HDD applications and has performed HDD consulting and designs on numerous water body and road crossings. He has a B.S. degree in Petroleum Engineering and has affiliations with the American Society of Petroleum Operations Engineers, Petroleum Equipment Institute, National Association of Corrosion Engineers, and the Society of Petroleum Engineers.



Class Outline

Day 1:

HDD Basics

- History of HDD
- HDD Basics

HDD Technology & Equipment

- HDD Rigs
- HDD Downhole Equipment
- HDD Fluid Equipment

HDD Design

- Project Planning
- Permitting
- Drill Path Design
- Entry and Exit Points
- Radius of Curvature
- Directional Accuracy and Tolerances
- Product Pipe Considerations
- Steel Pipe Stress Analysis
- Plastic Pipe Stress Analysis
- Class Exercise

HDD Feasibility

- Feasibility Considerations
- HDD Site Evaluation
- Surface Considerations
- Drilling Fluid Considerations
- Topographic Considerations
- Geological and Subsurface Considerations
- Geotechnical Investigation Requirements
- Economics
- HDD Risk Identification

Day 2:

Subsurface Conditions

- Definition of Soil and Rock
- Properties of Soil and Rock
- Impact of Subsurface Conditions on Drilling Fluids
- Analysis of Geotechnical Reports

Drilling Fluids

- Purpose of Drilling Fluids
- Drilling Fluid Composition
- Drilling Fluid Behavior
- Drilling Fluid Hydraulics
- Quantity Estimating
- Drilling Fluid Problems
- Field Testing of Drilling Fluids

Borehole Stability

Hydro fracture

Soil Settlement

Allowable Mud Pressure

Class Exercise

Day 3:

HDD Construction

- Work Plan
- Effective Drilling Practices
- Drilling Fluids and Soil Conditions
- Drilling Practices

Drilling Fluid Monitoring and Remediation HDD Tracking & Construction Monitoring

HDD Contracts

**Please complete the attached form
and fax to TTI at 713-630-0560**

Course Cost: \$2,450.00

Course Date:

Name

Company

Address

Address

City, State, ZIP

Country

Phone/Mobile

Fax

E-mail

Payment by Credit Card

Circle One: VISA MasterCard AMEX

CC Number

Expiration Date

Signature*

** By signing above I commit to paying the course fee when invoiced*

Terms & Conditions: One registration is required per person. Upon receipt of your above registration, an invoice will be generated for payment. Payment is due 30 days from receipt of invoice.



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