Trenchless Foundation Course in HDD

Program Conducted By:

IndSTT

Indian Society for Trenchless Technology (IndSTT)

HR IN TRENCHLESS TECHNOLOGY

The Human Resource in Trenchless Technology Industry, due to its professional nature and specialization, is the most crucial aspect of any Trenchless construction or rehabilitation activities. Till date, the Global Trenchless industry has this resource developed through actual hands-on activities assisted by partial or informal academia-designers-manufacturers interactions, essential lectures and trainings. With the limited number of projects in the past, such human resources were able to meet the project demands but with the advent of major construction and rehabilitation projects in Indian Trenchless Sector, the present strength is getting completely overwhelmed leading to either untrained persons being put on the projects or the project delays beyond acceptable limits. Though a formal education system to develop Trenchless Technologists, by IndSTT jointly with Assam University, is already underway, looking at the market requirements the need today is to accelerate the HR development process. In this direction IndSTT is now initiating fast track Trenchless Professional courses in various Trenchless Technology techniques titled **Trenchless Foundation Program**. Proceeding sections discusses the program and invites the stakeholders to join the initiative.

TRENCHLESS FOUNDATION PROGRAM - HDD

Introduction

Trenchless Foundation-HDD is a program developed for providing the founding knowledge of essential topics required for Horizontal Directional Drilling (HDD) Technique. The program is structured to assist the trainee in the successful execution of HDD project Design & Construction. Working experience backed with the knowledge acquired through this program shall be quite useful to the practicing Trenchless Professional in becoming self reliant in the selected sphere of technology application. This program will also provide the much required technical inputs to the new entrants and other engineering fraternity members interested in various issues related to HDD Projects.

Program overview

The course comprises of 12 different modules on various topics of HDD Technology. Module contents have been developed through extensive research of technical books, documents, research and project reports, and other relevant sources, and evaluated on sound engineering practices. Upon conclusion of this course the trainee shall have the training of basic issues of HDD technique & would be expected to be capable conducting regular HDD operations. Details about the courses modules are provided later. The course is designed for working professionals and the schedule is also detailed hereafter.

COURSE COVERAGE

Trenchless Foundation-HDD Program has been divided in three levels, **Basic, Intermediate & Advanced**. Course coverage of each level is as follows:

- **Basic Course**—It covers HDD Project Design, Tracking and Surveying Basics, Drilling fluids & Subsurface Investigations.
- **Intermediate Course**—It covers Stress Calculations for Plastic Pipes, Stress Calculations for Steel Pipes, Borehole Stability, and Drilling Operations Management.
- **Advanced Course—**It Covers Rock Drilling, Down hole Tools, Stuck Pipe Prevention & Retrieval and Contract conditions.

Basic Level Course Contents

Course Structure		Course Fee	
Day	**Module**	**Member**	**Non-Member**
Day 1	HDD Project Design	Rs. 50,000/- + GST	Rs. 72,000/- + GST
Day 2	Tracking & Surveying		
Day 3	Drilling Fluids		
Day 4	Subsurface Investigations		
Day 5	Examination		

- **HDD Project Design** - HDD Design Basics, HDD Project Design Considerations, Drill-Path Design, Pipe Stress Criteria, Directional Accuracy and Tolerances, Product-Pipe Considerations, Multiple Pipe Installations, Machine Size Selection and other related considerations.

- **Tracking & Surveying** — HDD Tracking, Walkover System, Wireline System, Interference and HDD Location Systems, Surveying in Rock Formations, Surveying Water Crossings, HDD Survey, Bore-Profile Calculations, Construction Monitoring, Drilled Path, Pilot Hole, and HDD Performance.

- **Drilling Fluids** — Make-up of a Drilling Fluid, Normal Drilling Fluids and Special Drilling Fluids, Drilling Fluid Classification Systems, and Drilling Fluid Additives.

- **Subsurface Investigations** — Basic Considerations, Scope, and Geotechnical Investigation: Objectives, Stages, Scope, and Planning.

Course Eligibility

Diploma in Engineering with 2 years experience or Degree in any branch of Engineering.

Intermediate Level Course Contents

Course Structure		Course Fee	
Day	**Module**	**Member**	**Non-Member**
Day 1	Stress Calculations - Steel Pipe	Rs. 50,000/- + GST	Rs. 72,000/- + GST
Day 2	Stress Calculations - Plastic Pipe		
Day 3	Borehole Stability		
Day 4	Managing Drilling Operations		
Day 5	Examination		

- **Stress Calculations - Steel —** Steel Product-Pipe Stress Analysis, Installation, Product-Pipe Pull Loads, Calculating the Pull Loads, Defining the Bore Path, Total Pulling Loads, Calculating the Installation Stresses, Calculating Operating Loads and Stresses.

- **Stress Calculations - Plastic —** Bore-Path Profile, Bore-Path Geometry for Plastic Pipe, Pullback Loads, Frictional Resistance, Pulling Force, Hydrokinetic Pressure, Axial Tensile Stress, and Resistance to External Collapse Pressure during Pullback Installation.

- **Borehole Stability** — Unstable boreholes - reasons and consequences, The principle of a stability analysis, calculation of minimum mud weight required to prevent borehole collapse, Evaluation of the method and the results, Other aspects of practical importance.

- **Managing Drilling Operations**— Contingency planning, contracts, economics, optimizations & problem solving issues related to drilling operations.

Course Eligibility

Successful completion of HDD Basic Foundation Course.

Advanced Level Course Contents

Course Structure		Course Fee	
Day Module		**Member**	**Non-Member**
Day 1	**Stuck Pipe Prevention & Retrieval**	**Rs. 50,000/- + GST**	**Rs. 72,000/- + GST**
Day 2	**Down Hole Tools**		
Day 3	**Rock Drilling**		
Day 4	**Contract Conditions**		
Day 5	**Examination**		

- **Stuck Pipe Prevention & Retrieval** —Stuck Pipe Problems, Introduction, Recognizing Problem Situations, Mechanics of Differential Sticking, Preventing Stuck Pipe.

- **Down Hole Tools** - Deflection tools and techniques, Jetting, Requirements for jetting, Jetting Assemblies, Nozzling the Jetting Bit, Procedure for Jetting, Advantages of Jetting, Disadvantages of Jetting Downhole motor and bent sub, Reactive torque.

- **Rock Drilling**—Rock elasticity, failure mechanisms, and stability during drilling.

- **Contract Conditions—**General Information, Turnkey Contracts, Footage Contracts, Day work Contracts, Risk Sharing, Technical Specification and Drawings, Sample Technical Specification Such as Scope of Work, Standards, Materials, Safety, Measurement and Payment, Construction Schedule, Contractor Qualifications, Products and Execution.

Course Eligibility

Successful completion of HDD Intermediate Foundation Course.

Batch Strength

- Maximum batch strength shall be 35 participants.
- Minimum batch strength shall be 10 participants. In case of lesser registrations, the particular batch may be merged with the subsequent batches.

FOR REGISTRATIONS OR FURTHER ENQUIRIES AND DETAILS, PLEASE CONTACT:

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