# NASTT's HDD Good Practices Course—November 2—Denver Broncos Stadium Ste. 423

## HDD Good Practices Short Course

**Your Instructors:**

Sam Ariaratnum received his B.A.Sc. in Civil Engineering from the University of Waterloo and his M.S. & Ph.D. from the University of Illinois at Urbana-Champaign. He is a co-author of NASTT's Horizontal Directional Drilling Good Practices Guidelines and Pipe Bursting Good Practices books, a member of NASTT's No-Dig Show Program Committee and a Technical Program Session Leader.

Aaron Cohen is the Associated General Contractors (AGC) Lecturer at Arizona State University where he teaches courses that focus on Heavy/Civil construction methods in the Del E. Webb School of Construction. Aaron holds a Bachelor of Science degree from Arizona State University as well as a Master of Science degree from DePaul University.

### HDD Good Practices Course Agenda

8:00AM ***Opening Remarks & Introductions***
8:15AM **Course Overview & Background**
8:30AM **HDD Applications & Processes**

- Cable and pipe installations for electric, fiber optic, CTV, gas, water, sewer (including gravity)
- Diameters from 2 to 65 in. (steel, HDPE, PVC, DIP)
- Lengths over 10,000 ft. +, but less than 1,000 ft. more common
- Installation beneath streets, rivers, bays, other obstacles, through soft soils to hard rock
- Pilot bore, including bore tracking
- Reaming
- Pullback of product
- Connections, demobilization and cleanup/site restoration

9:30AM **HDD Equipment and Materials**

- Types of rigs (small, medium, large)
- Thrust/Pullback and rotational torque characteristics
- Introduction to various models of rigs

10:15AM *Break*
10:30AM **HDD Tooling**

- Machine Performance, Capabilities, and Application Guidelines
- Drill Pipe
- Drill Bits and Downhole Tools
- Product Pipe
- Cable/Pipe Pulling Devices/Swivels
- Drilling Fluid Delivery, Recovery, and Containment Systems
- Drilling Fluids and Additives

11:15AM **Bore Tracking & Equipment**
11:45AM *Lunch*
1:00PM **HDD Design**

- Develop Project Performance and Design Criteria (Project Functional Requirements)
- Surface Investigation
- Utility Survey
- Geotechnical Site Investigations
- Permits and Requirements
- Construction Method Selection
- Impacts to Residents, Business, and Traffic
- Constrained Work Areas - Rig Relocation
- Design Analysis and Calculations
- Contact Grouting
- Conductor Casings
- Plans and Specifications
- Safety Plan

2:45PM *Break*
3:00PM **Overview of Drilling Fluids**

- Mixing Systems
- Holding Tanks
- Cleaning Systems
- Equipment for Containment, Collection, and Disposal
- General Drilling Fluid Functions and Properties
- Circulation
- Annular Volume
- Lost Circulation
- Drilling Fluid Pump Efficiency
- Drilling and Reaming Penetration Rates
- Field Tests for Drilling Fluid & Slurry Analysis

4:00PM **Bore Planning**

- Locates
- Site Walkover & Calibration of Transmitter/Receiver
- Bore Planning Tools
- Selection of Appropriate Equipment and Tooling
- Site Geometry, Topography, and Constraints
- Schedule Constraints (Project Completion, Work Hr)
- Drilling Fluid Support System

4:30PM **In-class Exercises**
5:00PM *Course Adjourns*

RMNASTT

PO Box 441069
Aurora, CO 80044

303.551.3266 p
720.230.4846 f

www.rmnastt.org

Email: broland@phoenix-amc.com