

Horizontal Directional Drilling Toolbox

Professional Edition – Version 2.0

Applications Description	Reference, Standard and/or Document Source
1. Drilling Fluids Hydraulics & Management in HDD	
1.1 Analysis of Drilling Fluids Quantity Requirements in HDD	A.G.A/PRCI Report, PR-227-9321 (L51725) API RP 13D, Fifth Edition, June 2006
1.2. Frictional Pressure Losses and Mud Pump Requirements	API RP 13D, Fifth Edition, June 2006 A.G.A/PRCI Report PR-227-9321 (L51725)
1.3.Pump Output (Duplex/Triplex)	Baroid Drilling Fluids Handbook
1.4. Maximum Allowable Mud Pressure	US Army Corp of Engineers “Technical Report CPAR-GL-98-1”, Final Report, Appendix B, April 1998
1.5. Minimum Allowable Mud Pressure	Aritartnam et al, “Predicting and Controlling Hydraulic Fracturing During Horizontal Directional Drilling”, American Society of Civil Engineers
1.6. Cuttings Transport and Slip Velocity Analysis	API 13D Recommended Practice, Fifth Edition, 2006 Larsen et. al: “Development of New Cutting Transport Model for High Angle Well including Horizontal Wells” SPE 25872
1.7. API Method for Determining Drilled Solids System Performance	API Method 1999 Baroid Drilling Fluids Handbook
1.8. Mud Weight Decrease Calculations 1.8.1 Volume Increase Tolerated 1.8.2 Final Volume Specified	Baroid Drilling Fluids Handbook
1.9. Mud Weight Up Calculations 1.9.1 Volume Increase Tolerated 1.9.2 Final Volume Specified	Baroid Drilling Fluids Handbook
2. Installation of Steel Pipe by Horizontal Directional Drilling	
2.1 Pull Force and Installation Stresses Detail Analysis	A.G.A/PRCI Report, PR-227-9424 (L51730)
2.2. Post Installation & Operational Stresses: Steel Pipeline Crossings Highway (Gas & Liquid Pipelines)	API RP 1102, Seventh Edition, December 2007 GRI Report 92/0202, PC-PISCES
2.3. Post Installation & Operational Stresses: Steel Pipeline Crossings Railroad (Gas & Liquid Pipelines)	API RP 1102, Seventh Edition, December 2007 GRI Report 92/0202, PC-PISCES
2.4. Operational Stresses: Other Crossings	A.G.A/PRCI Report, PR-227-9424 (L51730)

3. Installation of Plastic Pipe by Horizontal Directional Drilling	
3.1 Pull Force and Installation Stresses Detail Analysis (Pipe Deflection, Unconstrained Collapse, Hydrokinetic Pressure, Tensile Stress,...)	ASTM/ANSI F 1962 – 99 “Handbook of PE Pipe”, Plastic Pipe Institute, 2009
3.2. Allowable Tensile Load for Polyethylene Gas Pipe during Pull-In Installation	ASTM/ANSI F 1804 – 03
3.3. Post Installation & Operational Stresses – PE Pipe: 3.3.1 Road/Highway Crossings 3.3.2 Railroad Crossings 3.3.3 River Crossings	ASTM/ANSI F 1962 – 99 “Handbook of PE Pipe”, Plastic Pipe Institute, 2009
4. Installation of Cable in Conduit (CIC) by HDD	
4.1 Pulling Loads and Frictional Forces Analysis	Maximum Safe Pulling Lengths for Solid Dielectric Insulated Cables, 2 Volume Cable User’s Guide, Electric Power Institute “Handbook of PE Pipe”, Plastic Pipe Institute, 2009
5. Integrated Databases	
5.1 Steel Pipe Database	API 5L and ASTM/ANSI B36.10
5.2. PE Pipe Database	ASTM/ANSI D2513
5.3. Mechanical Properties of Soils	USCE EM 1110-1-1904,
6. Utilities	
6.1. Document Management System	
6.2. Application Management System	

Note: All mathematical methods and procedure are well documented in the online Help context sensitive system.