

A comprehensive guide to all terms HDD to make sure you can "talk the talk" when on the job.



Horizontal directional drilling has been gaining ground for quite some time in the construction industry as the ideal solution for installing pipes and utilities without having to dig up long trenches. At Melfred Borzall, with our 70+ years of experience designing and building groundbreaking drilling solutions, we understand the best way to push the industry forward is to have innovative solutions and increase education about HDD.

In our HDD Glossary, we've compiled 70 HDD terms along with clear definitions for each term to help expert drillers and new drillers to all talk the same talk and help streamline communication on your next job.





"TALK THE TALK" HDD GLOSSARY

HDD Tooling & Equipment Terms

	TERM & ALTERNATE TERMS	DEFINITION
	ADAPTER Sub, Crossover, Tailpiece	Configurable adapter piece that allows drillers to use various manufacturer's drill bits and blades with others' starter rods, housings, and other configurations. Often customizable to fit specific needs of a jobsite tooling setup.
	AIR HAMMER	Tool used in HDD designed to bore through difficult rock formations using a combination of thrust, pressure and rotation to chip and carve rock from a hole.
B	BACKREAMER Reamer, Hole Opener, Expander	Cutting head attached to the leading end of a drill string to enlarge the pilot bore during a pull-back operation to enable the product pipe to be installed.
	BARREL Stabilizer, Pig, Centralizer	A large cylindrical add-on tool that centers reamer. It centers and stabilizes the drill rod, reamer and product pipe on center to create a round hole and successful bore.
	BENTONITE	A natural clay material having thixotropic properties which is used as a basic ingredient for drilling muds and lubricants.
	BIT Blade, Duck Bill, Drill Bit, Paddle, Steer Plate	Tools that excavate soil or rock and facilitate steering at the face of the bore. Common types of drill bits used in HDD include slant-face bits, slanted-face rock bits, rotary rock bits, and percussive bits.
	BREAKOUT WRENCH	Manual or hydraulic tool used to connect or break tool joints at access points forward of the drill rig.
	BURP HOLE	A hole dug along the bore path to relieve downhole pressure to help prevent inadvertent returns or hydrolocking.
0	CUTTINGS Spoil, Slurry	Earth, rock, and other materials removed during drilling
	DETERGENT Soap	One of several drilling fluid additives that reduces clay balling and keeps tooling clean.
	DRILL FLUID Mud Mix, Slurry	Largely comprised of water, drilling fluids usually include bentonite and if warranted other additives such as soda ash, polymers, and detergents to address water and soils properties that could compromise the successful completion of the HDD installation.

DRILL HEAD Housing, Transmitter Housing, Head, Sonde Housing	The lead portion of the drilling process that houses the transmitter inside to enable the locator to see where the drill bit is located underground. It comes in different bolt patters and can connect to various types of blades and bits depending upon the ground condition.
DRILL RIG Rig, Drill	A trenchless machine that installs pipes and cables by drilling a pilot bore to establish the location of the underground utility before enlarging the hole if needed and pulling back the product.
DRILL ROD Pipe	High strength hollow steel pipes joined to form a string used to transmit rotational torque and thrust, and to transport drilling fluid from the drill rig to the downhole tools.
DUCT PULLER Puller, Carrot, Towing Head, Pull Head	Device that connects duct, pipe or utility to a pullback device to ensure it won't disconnect downhole.
FILTER CAKE	A thin layer of bentonite drilling fluid that seals the borehole preventing the flow of liquids from the borehole into the native soil.
FLY CUTTER Wagon Wheel	Style of reamer that has an open blade configuration.
HOLE OPENER Rock Reamer	Downhole tool that uses rolling cutters to enlarge a hole in hard soil and rock formations.
(low-loader in British English, low-bed in western Canada and South Africa or float in Australia)	A semi-trailer with two drops in deck height: one right after the gooseneck and one right before the wheels. This allows the deck to be extremely low compared with other trailers.
MIXING SYSTEM	A system of pumps, hoppers, venturi mixers, hoses and tanks used to create the proper drilling fluid mixture suitable for the local geological conditions.
MUD MOTOR	Downhole tool for drilling in rock using pressurized fluid to power rotating cutterheads.
PDC BIT	PDC (Polycrystalline Diamond Compact) bits are suited to rocky conditions and offer extremely high ROP (rates of penetration) and long life in rock.
PDC REAMER	PDC (Polycrystalline Diamond Compact) Reamers are used in the same difficult rocky formations as PDC bits to give greater penetration power and life to your reamer.



PILOT BORE Pilot, Bore, Pilot Phase, Initial Bore	First, usually steerable, pass of any boring operation which later requires back-reaming or other enlargement. Most commonly applied to guided drilling, directional drilling and 2-pass microtunnelling systems.
PIPE ROLLER	Bearings placed beneath the pipe to prevent it from dragging on the ground before entering the pit.
R RECEIVER Locator, Guider, Magic Box	An electronic instrument used to determine the position and strength of electro-magnetic signals emitted from a transmitter sonde in the pilot head of a boring system, or an impact mole tool or from existing underground services which have been energised. Sometimes referred to as a Walkover System.
RECEIVING PIT Exit hole, Exit Pit	This is the final pit dug in which the successful bore will emerge at the end of the line. The reamer, utility or pipe being pulled back is attached in this pit.
RECYCLER Reclaimer	As part of the mud mix system, this machine separates solids from drilling fluid, and recirculate cleaned fluids back into the drill. Once only used on large pipeline jobs it is fast becoming common place on all HDD jobs due to the rising cost and scarcity of fluid disposal.
REMOTE DISPLAY Monitor, Display	A monitor, usually located on the drill rig, that allows the locator to view where the transmitter is located.
s SHACKLE Anchor Shackle, Clevis	Piece to connect the pulling grips and pullers to your swivel when connection type doesn't match up directly.
STARTER ROD EZ Connect, Quick Connect, Transition Rod	Threaded connector piece that allows for easy detachment and exchange of directional heads and reamers.
SWIVEL Pullback Swivel, Clevis Swivel, Thread-on Swivel	Devices placed between the reamer and the duct puller or pulling head to eliminate rotation of the product during pullback.
TRANSITION SUB Flex Sub	Transition subs connect directly between the drill pipe and the housing or backreamer. The overall length of the transition sub allows you to pull into the machine wrenches to make up or break loose from the drill pipe.
TRANSMITTER Beacon, Sonde, Probe	Transmitter located near the front of an HDD drill string that sends an electronic signal that provides location and depth of the drill string near the bit. The sonde signal also transmits pitch, roll, temperature, and battery status to the receiver.
VACUUM Sucker	Another word for "vacuum". This is a stand-alone piece of equipment used to suck drill fluid and slurry out of the pit or from burp holes while drilling.
z ZAPALERT Strike Alarm	System that installs to HDD rigs to alert crews to the possibility of a strike on an underground power line.

Soil Conditions

	TERM & ALTERNATE TERMS	DEFINITION
B	BOG	Wetland that accumulates peat, a deposit of dead plant material—often mosses, and in a majority of cases, sphagnum moss. It is one of the four main types of wetlands.
0	CALICHE	This is a sedimentary rock, a hardened natural cement of calcium carbonate that binds other materials—such as gravel, sand, clay, and silt.
	COBBLES	Rounded rock formations that come in various sizes. Best to find a way to push them out of the way rather than cut through them
	DECOMPOSED GRANITE	Rock of granitic origin that has weathered to the point that it readily fractures into smaller pieces of weak rock.
	GRAVEL	This is a loose aggregation of rock fragments. Classified by particle size, it can make for tricky drilling conditions if not using the proper equipment
F	HARD PAN	A layer of firm detrital matter, as of clay, underlying soft soil.
	LIMESTONE	A hard sedimentary rock, composed mainly of calcium carbonate or dolomite, used as building material and in the making of cement
R	RIVER ROCK	River rock can come in all sizes and colors depending upon the source. But all river rock has been smoothed by the forces of water and friction so that there are no sharp edges.
	RUNNING SAND	Running sand hazards can occur where excavations in the sand go below the water table, where springs occur at the base of sand outcrops, around leaking drains or mains water supply pipes or in entire sand bodies if vibrated (liquefaction) e.g. by an earthquake.
5	SANDSTONE	Sedimentary rock consisting of sand or quartz grains cemented together, typically red, yellow, or brown in color.
	SHALE	Soft, finely stratified sedimentary rock that formed from consolidated mud or clay and can be split easily into fragile slabs.





HDD Terms

TERM & ALTERNATE TERMS	DEFINITION
BEARING LIFE	The number of hours an individual bearing will operate before the first evidence of metal fatigue develops in the rings or rolling elements.
BEND RADIUS	The minimum radius one can bend a pipe, tube, sheet, cable or hose without kinking it, damaging it, or shortening its life. The smaller the bend radius, the greater is the material flexibility.
BORE	Void which is created to receive a pipe, conduit or cable.
BOX Female	The portion of an adapter or rod with a female thread connection type.
BREAK-OUT	The opposite of Make-up, Break-out is the uncoupling of threaded connections.
CYCLE RODS	The action of "cycling" rods refers to pushing forward then pulling back drill rod in the hole, in repetition, to clean or swab the path and avoid disruption.
FALL	Refers to the drop in slope over a given distance.
FRAC-OUT Inadvertent Returns	The inadvertent loss of drilling fluid from the borehole annulus to the surrounding soil as a result of excess downhole fluid pressure.
Gel STRENGTH	The measure of electrical attractive forces of the drilling fluid that allows the drilling fluid to suspend drilled solids as they are transported by the slurry out of the bore hole.
HYDROLOCK	This occurs when you lose flow and create a hydraulic cylinder in front of the reamer and/ or compactor and/or product line that can exert more pressure than your rig has thrust.
	Any point in the drilling system that has a tightened threaded connection.
ON-GRADE	The process of keeping a constant and correct grade between the pilot hole and receiving pit.
P PIN Male	The portion of an adapter or rod with a male thread connection type.
PULLBACK	That part of a guided boring or directional drilling operation in which the drill string is pulled back through the bore to the entry pit or surface rig, usually installing the product pipe at the same time.

PULLBACK FORCE	Tensile load applied to a drill string during pull-back. Guided boring and directional drilling rigs are generally rated by their maximum pull-back force.
PUSH	The action of stopping rotation of the drill bit and progressing slowly through soil to avoid objects or correct direction.
PUSH REAM Forward Reaming	Push reaming is a technique to resolve the issue of preventing drilling fluid from ending up in the exit recovery pit during the reaming process. It has been used on larger boring rigs for some time. Keeping the mud returns coming to the entrance recovery pit makes the recovery, cleaning and reuse of drilling fluid a lot more practical-particularly if there is no easy way to get fluid from the exit recovery pit back to the entrance recovery pit for processing.
ROTATE	The action of rotating around a center. The rotation of a drill pipe will always turn to the right.
SLOPE	A percentage of the grade, or line of the bore is at a higher or lower level than another.
THRUST	Measured in pounds or similar measurements of force; along with torque and pump capacity, one of three measurements typically used to describe and classify drill rigs and their suitability to successfully perform an installation.
TORQUE	Measured in Foot-pounds or similar measurements of rotational force; along with thrust/pullback and pump capacity, one of three measurements typically used to describe and classify drill rigs and their suitability to successfully perform an installation.
TRIP OUT	When all pipe and/or drill rod is pulled back out of the bore hole, whether it be prematurely or finishing the pullback process.
VISCOSITY	The resistance of a fluid to flow.

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TALK TO THE EXPERTS

Got a question about an upcoming HDD job or need HDD tooling insights from our engineering team? Contact us today.

Call **800-558-7500** or Visit **melfredborzall.com**





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