UCT The Underground Utilities Event
Underground Construction Technology | January 28-30, 2020 | Fort Worth, TX

Best Practices for Exposing Utilities and Avoiding Damage Underground

Chapman Hancock, Vacuum Excavation Product Manager at Ditch Witch

Agenda

- Training
- Project engineering
- Utility mapping
- Surveying area
- Utility locates
- Keyholing
- Vacuum excavation best practices
- Q & A

DON'T LEARN SAFETY BY ACCIDENT Ditch Witch SAFE

UNDERGROUND AWARENESS Safety starts with Awareness.

HDD Guidelines for Damage Prevention

Pre-plan

- Existing underground structures, utilities and facilities expected in the area should be determined, including privately owned sewer lines
- Other information, such as right-of-way and geological information should be obtained and reviewed
- The following should be determined and considered when creating the bore plan:
  - Requirements for clearance, vertical and horizontal, of underground structures, utilities and facilities
  - Size of pullback tools
  - Bend radius of pipe and product
  - Ability to track the bore
  - Ability to expose existing utilities and observe crossings
  - Surface structures for drill placement and setback requirements
- An emergency response plan should be created and communicated to entire crew in the case of an underground strike
  - Plan should include:
    - contacts with phone numbers
    - procedures for each type of event
    - assignments of responsibilities
- Communication method between operator and tracker must be provided
- Traffic and pedestrian control must be planned
- Required construction permits must be obtained
- Planned installation should be mapped, either through a software program or hand written
- Look and plan for conditions that can lead to drilling fluid inadvertent returns, such as:
  - Soil conditions to determine proper mud mix
  - Previous excavation that will be path of least resistance
  - Flow rates
  - Bit size

Locate existing utilities

- Proposed excavation and bore path must be marked with white paint or flags
- One-call (811) must be contacted to coordinate utility locates with member companies
- All utilities that do not participate in one-call must be contacted
- Locates must be verified
  - Personal locator
  - Visual inspection for any utilities that may have been missed
    - sunken areas indicating previous excavation
    - risers
    - outbuildings with utilities
    - light poles
    - meters

Color Codes for Utilities

- Red — Electric
- Orange — Telecommunication
- Yellow — Natural Gas
- Green — Sewer/Waste
- Blue — Drinking Water
- Violet — Reclaimed Water
- Pink — Unidentified Facilities
- White — Proposed Excavation

JOB SAFETY ANALYSIS

Ditch Witch® Horizontal Directional Drill

Ditch Witch SAFE

JOBSITE LOCATION: DATE:

JOBSITE SUPERVISOR: COMPLETED BY:

LOCATE TICKET #: CUSTOMER:

EMERGENCY PHONE #'S:

Jobsite Classification:
- ☐ Electric
- ☐ Natural Gas
- ☐ Crystalline Silica Dust
- ☐ Other

Recommended Personal Protective Equipment (PPE):
Safety glasses
Hearing protection
Electrically insulated boots & gloves
Hard hat
High visibility vest/clothing

TASK:	POTENTIAL HAZARD:	RECOMMENDED ACTION/PROCEDURE:
Maintenance	Fluid injection while checking for leaks	Check for leaks with engine off. If system is pressurized, use cardboard- not your hand-to check for leaks.
	Rotating or moving parts	Perform all maintenance and repairs with engine off. Wear proper PPE.
	Crushing weight while working under area that's supported by a stabilizer or cylinder	Be sure to use the cylinder locks or drill frame support, if provided, prior to working under a supported area.
Loading & unloading the drill from trailer	Struck by	Keep yourself and all bystanders at a safe distance. Load drill at low throttle.
Transporting drill on trailer	Loss of vehicle control, trailer sway	Ensure proper weight distribution. (Ten to fifteen percent of total trailer weight must be on the tongue.) Ensure tow vehicle is rated for the weight of the trailer and equipment. Consider any additional weight (downhole tools, water, mud, etc.)
	Unstable drill or loose parts/equipment	Tiedown machine properly. Secure any loose components.
Preparing jobsite	Working near traffic, struck by	Arrange for traffic control. Wear proper PPE, such as high visibility clothing.
	Striking existing utility while excavating	Whiteline proposed excavation area. Then, call your local One-Call to have underground utilities located before digging. Verify locates and expose any utilities in the planned path.
Setting up the drill	Machine rollover while mobiling on an incline	Complete a risk assessment to ensure slope and conditions are conducive to a safe working environment. Follow proper procedures in operator's manual while on inclines.
	Striking existing utility while driving anchors	Have utilities located and verified prior to beginning work. Operate only from the proper operator station or platform, if provided, while driving the anchors. Wear proper PPE, such as electrically insulated boots and gloves, when within 10' of an electric line.

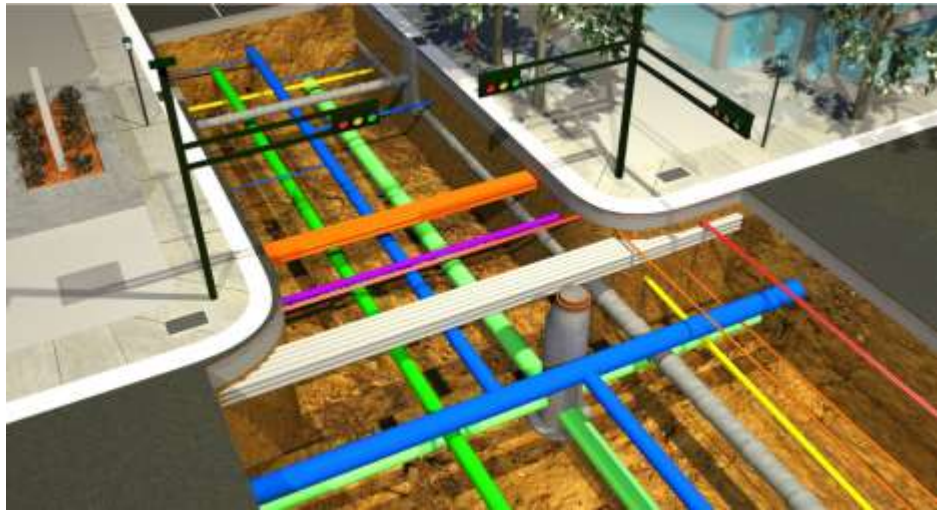
Always complete your own Job Safety Analysis based on the job and jobsite. You should always read and understand the operator's manual before operating any equipment.

For additional information, please e-mail [illegible] or visit ditchwitch.com/safe.

DON'T LEARN SAFETY BY ACCIDENT Ditch Witch SAFE

Project Engineering

- Where are the existing utilities?
  - Locate all existing utilities
- How do current utilities impact new installation?
  - Different methods of installation
- Implement best practices
  - Include best practices in the engineering specifications



Utility Mapping

- Advancing technology
- Sub 6” accuracy
- Integrated in equipment
- Mapping software
  - Geographic Information System (GIS)

Surveying Landscape

- Who should survey the job?
  - Engineer
  - Contractor
  - Operator

Before Breaking Ground

- Always call 811
- What to look for
  - Private utilities
  - Unmarkable utilities
  - Forgotten utilities

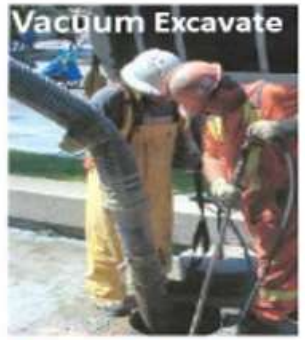
811®
Know what's below.
Call before you dig.

Keyhole

- Traditional methods
  - Saw cuts
  - Jack hammers
  - Backhoe/excavator
- Newly accepted methods
  - Coring

Why Keyhole Coring

- Less invasive
- Faster reinstatement
- Improved appearance
- Ergonomically friendly



Why Hydro Excavation

- Soft excavation
  - Safe
  - Damage prevention
  - Existing infrastructure
- Efficient
  - Smaller footprint
  - Minimizes or eliminates spoils
  - Reduces cost
- Regulations
  - Nationally recognized

Hydro Excavation Best Practices

- How to mitigate risk
  - Excavation Methods
  - Nozzle Selection
  - Air Vs Hydro

Q&A