Trenchless Best Practices for Damage Prevention

PrePlan

- Existing underground structures, utilities and facilities expected in the area should be determined, including privately owned sewer lines and French drains
- 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

Locate 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
    - Utilities must be exposed by hand digging or vacuum excavation, if:
        - within 18-24 inches (depending on local regulations) of the bore path, exit/entrance pits or anchoring position
        - at the point of crossing – depths are not consistent from one location to another
- Confirmation that locates have been completed should be obtained

- Photo of locates should be taken
- If locates are damaged, unclear, obscured, covered by snow, etc. they must be repeated.
- Locator must be contacted if there are any questions about the marks. Assumptions must not be made.
- All nearby sewer lines should be located either by GPR or with a beacon and locator.

Prepare

- Ensure extra batteries are available for tracking equipment and communication devices
- New batteries must be installed in the beacon at the start of every shift
- Replace batteries in tracker when indicated on display
- Beacon and tracker must be calibrated at the start of every shift
- Frequency for tracking must be determined for the jobsite
- Replace batteries in communication devices for operator and tracker as needed
- Electric strike system must be set up and tested at the beginning of each shift
- Setup location must be determined considering the following:
    - Ability to drive anchors
    - Depth needed
    - Setback distance needed
    - Nearby utilities
        - near anchors
        - directly in front of drill

Crew protection

- If there is any chance of drilling within 10 feet of a buried electric line
    - Drill operator should wear electrically insulated boots and have electrically insulated gloves within reach
    - Tracker should wear electrically insulated boots with pants tucked into tops of boots
- Everyone must be briefed on the electrical strike system and procedures
    - No one should touch the drill while it is drilling
- Manual pipe loading must be done only after drilling has stopped
    - A ground mat is recommended If a second person is helping load/unload pipe ground mat
- Anchors must be driven from the operator's platform
- Anchors must be driven to full depth for grounding or a ground rod should be used
- Tracker should step away from bore path while drill head is moving and track drill head only after it has stopped.

Drilling/Tracking

- Drill head must not enter the tolerance zone of other installed utilities
    - Backreamer size must be considered when determining appropriate pilot bore location
- Drill head must ALWAYS be tracked during pilot bore every ½ to full length of installed drill rod
    - Drilling must be stopped anytime the ability to track is lost or hampered
    - Each tracking location should be marked and the depth recorded
    - Tracker should periodically review marks to ensure planned bore path is being followed
- Drilling depth must be carefully planned. (Drilling below 10' requires special precautions.)

- When crossing a utility during pilot bore and backream, the crossing must be visually observed, even if under pavement. If visual observation is not possible, another bore path should be taken.
- Drill head should always be rotated unless steering
- When drilling parallel to existing utility, the following guidelines should be used:

If drilling parallel within…	Utility must be exposed	Drill head must be tracked
3' of existing utility	every 50'	every 5'
5' of existing utility	every 200'	every 10'

- An as-built map should be created
- A camera inspection of sewer lines in the area must be conducted after the work is complete.

Emergency response

- Reference horizontal directional drill operator's manual
- In case of an electric strike
  - Anyone on equipment must remain on equipment
  - Anyone off equipment must remain in place and not touch equipment
  - Operator should pull back drill string to attempt to break contact
  - Strike system should be used after one full minute to re-check for a strike
  - Electric company should be contacted as soon as possible
- In case of natural gas strike
  - Machine must be shut down and all sources of ignition extinguished immediately
  - Gas company and 911 must be contacted as soon as possible
  - Everyone in the area should be notified of the strike
  - Evacuation is recommended, especially if the ground is frozen or covered with snow
- In case of fiber optic cable strike
  - Everyone should be kept from looking at the damaged cable to prevent eye damage
  - Cable company should be contacted as soon as possible

Construction Safety Guidelines

Prior to performing work involving HDD under a Right-of-Way the operator and crew shall consider the following safety guidelines:

- Perform all operations in compliance with OSHA guidelines and insure that all personnel are properly trained and equipped to work in the public right-of-way;
- Insure that the approved traffic control plan is implemented and followed at all times;
- Insure that all storm water pollution prevention measures are implemented and followed at all times;
- Insure all setbacks, offsets, and clearances are maintained;
- Insure that utility One-Calls and City or other utility coordination requirements have been met
- Positively identify (by potholing) all crossed utilities that are expected to be
  - Above and within 5' of the proposed vertical alignment,

  - Below and within 3' of the proposed vertical alignment,
  - and additionally as requested by the owner of the right of way and/or the owner of the utilities being crossed.

- Positively identify (by potholing) all parallel utilities at the beginning and ending of all bores and
  - Every 200' if it is within 5' of the proposed alignment,
  - Every 50' if it is within 3' of the proposed alignment,
  - and additionally as requested by the owner of the right of way and/or the owner of the utilities in parallel.

- The HDD Operator shall have a planned response in the event of a utility strike including utility owner notification and
  - Avoiding electrocution in the event of an electric strike,
  - Avoiding combustion in the event of a gas line strike,
  - and avoiding contamination in the case of a sewer strike.