Hydrovac Excavator Safety Talk

Hydrovac (hydro-excavation) uses pressurized water and a vacuum system to loosen and remove soil while exposing buried utilities. When applied correctly, vacuum excavation can reduce mechanical strike risk, but introduces high-energy hazards from pressurized water, vacuum hose forces, airborne debris, and unstable excavations.

Important Hazards to Control

- **Utility strikes and arcing**: Mislocation, aggressive nozzle use, or metal tooling can damage energized electrical, gas, fiber, or pipeline assets.
- **Hose burst / whip and coupling failure**: Pressurized water lines and vacuum hoses can recoil violently, causing struck-by injuries and lacerations.
- **Soil discharge and projectile hazards**: Spoil ejection and debris blowback can injure eyes/face and create slip hazards.
- **Engulfment and cave-in**: Soil can collapse without warning; even small volumes can crush and suffocate.

Pre-Job Controls (before excavation starts)

- **Control water pressure and standoff**: Use the lowest effective pressure and reduce pressure as the excavation approaches the utility. Maintain a deliberate standoff distance and keep the nozzle moving to avoid cutting or pin-holing.
- **Hose burst prevention**: Route hoses to avoid sharp edges, pinch points, and traffic. Restrain/secure hoses where practical, keep couplings out of walk paths, and maintain an exclusion zone around pressurized lines during startup and pressure changes
- **Soil discharge management**: Direct discharge away from people, excavations, and traffic lanes. Control spoil piles to prevent roll-back into the hole and reduce slip/trip hazards; maintain housekeeping around wet slurry.
- **Engulfment prevention**: Treat the hole as an excavation subject to collapse requirements; provide protective systems or safe slopes/benching when entry is possible or required. Keep heavy equipment and spoil back from edges.

Stop-Work Triggers and Emergency Response

Immediate stop-work is required for unexpected utility contact, smell of gas, arcing, abnormal hose swelling, coupling movement, loss of vacuum control, ground cracking/sloughing, or water undermining. Secure the area, notify the utility owner/operator, and follow site emergency procedures.

Personal Protective Equipment and Visibility

Hydrovac operations generate high-pressure water spray, flying debris, slurry splash, and elevated noise levels. Appropriate PPE is required at all times, including hard hats, eye and face protection rated for impact and splash, cut-resistant gloves, waterproof footwear with slip-resistant soles, and high-visibility garments suitable for traffic environments.

Hearing protection is required when operating near vacuum blowers or water pumps that exceed permissible exposure levels. PPE must be inspected prior to use and replaced when damaged or contaminated with slurry, fuels, or chemicals, as degraded equipment can provide a false sense of protection and increase injury risk.

Summary

Hydrovac excavation is an effective method for safely exposing underground utilities when hazards specific to pressurized water, vacuum systems, and soil instability are properly controlled. Adhering to utility location requirements, maintaining equipment integrity, managing hose and discharge hazards, and preventing excavation collapse are essential to reducing the risk of utility strikes, struck-by injuries, and engulfment events.

Discussion points:

1. *What conditions or equipment warning signs should trigger immediate stop-work during hydrovac excavation operations?*
2. *How can hose routing, pressure control, and spoil placement be adjusted to reduce struck-by and engulfment risks as excavation depth increases?*