

Job Hazard Analysis (JHA)

Task: Hydra-Vac Operations in the Telecom Industry

Risk Assessment Code (RAC) Legend

- **☒ Red (High Risk):** Unacceptable—stop work and implement controls before proceeding.
- **☑ Yellow (Moderate Risk):** Proceed with caution—implement and verify controls.
- **☑ Green (Low Risk):** Acceptable—maintain controls and continuous monitoring.

Overall Initial RAC for Hydra-Vac Operations Task: ☑ High Risk

Job Steps, Hazards, and Controls

Step No.	Task Description	Potential Hazards	Controls / Safe Work Practices	Initial RAC
1	Pre-job planning & scope review	Missing permits; incomplete utility locates; inadequate planning	Conduct tailboard/JSA meeting; review project prints; verify 811/One-Call ticket; coordinate with utility owners; assign stop-work authority.	☑
2	Material staging (vac truck, hoses, wands, PPE)	Struck-by rolling equipment; trip hazards; improper hose storage	Stage on level ground; secure hoses and tools; maintain housekeeping around truck and work zone.	☑
3	Traffic control setup (if work in roadway/shoulder)	Vehicle strikes; inadequate warning; poor visibility at night	MUTCD-compliant traffic control; cones, barricades, and signage; certified flaggers; ANSI/ISEA 107 high-visibility garments; night lighting as required.	☑
4	Site survey & utility verification	Striking underground utilities; electrical contact; misidentified marks	Use EM/RF locator or GPR; pothole to verify utility locations; maintain tolerance zone per state law; stop work if anomalies found.	☑
5	Setting up hydra-vac unit	Struck-by backing vehicle; hose whip; equipment failure	Spotter for vehicle backing; wheel chocks; inspect hoses, clamps, and relief valves; establish exclusion zone.	☑
6	High-pressure water/air excavation	Injection injury; contact with buried utilities; flying debris	Reduce pressure per utility owner specs (≤ 2000 psi near utilities); maintain wand at safe angle; use protective guards; wear face shield and gloves.	☑

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7	Vacuuming spoil into debris tank	Hose collapse; contact with contaminated soil; noise exposure	Use anti-collapse hoses; wear respiratory and cut-resistant gloves; keep hands away from hose inlet; use hearing protection.	?
8	Handling and moving hoses	Ergonomic strain; trip hazards; pinch points	Use team lifts or hose rollers; route hoses away from walk paths; wear gloves; avoid sharp bends.	?
9	Atmospheric testing (if near vaults/handholes)	Toxic or flammable gases; oxygen deficiency	Use calibrated gas detector; ventilate confined spaces; stop work if LEL > 0%; follow confined space entry procedures if required.	?
10	Disposal of spoil/debris	Contact with contaminated materials; environmental release	Dispose of spoil at approved facility; use sealed tanks; wear chemical-resistant gloves if hazardous; follow local/state regulations.	?
11	Working near overhead lines with boom	Electrocution; arcing; equipment contact with energized lines	Maintain OSHA/NESC approach distances; use spotter for boom movement; install boom stops; non-conductive hose extensions when needed.	?
12	Equipment noise and vibration	Hearing damage; hand-arm vibration	Hearing protection >85 dBA; rotate operators; use anti-vibration gloves; maintain equipment.	?
13	Weather/environmental conditions	Heat/cold stress; slips on ice or mud; lightning	Monitor weather; suspend operations during lightning; hydration and rest breaks in hot weather; insulated PPE in cold; de-ice work surfaces.	?
14	Backfilling/temporary restoration (if required)	Struck-by compaction equipment; trench collapse	Compact in lifts; spotter present during equipment use; restore surface per permit; maintain barricades.	?
15	Site cleanup and demobilization	Slips/trips from hoses or debris; vehicle strikes	Coil hoses neatly; secure equipment on truck; remove traffic control in reverse order; maintain flaggers until last cone collected.	?
16	Documentation & turnover	Missing records; regulatory non-compliance	Record pothole dimensions, utilities exposed, spoil disposal; photograph work; update as-builts; submit to utility owner.	?

PPE Requirements

- **Head/Face/Eye:** Hard hat (ANSI Z89.1); safety glasses (ANSI Z87.1); face shield when using water/air lance.

- **Hearing:** Hearing protection when operating vac trucks, compressors, or exposed to >85 dBA.
 - **Hands:** Cut-resistant gloves for hose handling; insulated gloves when working near energized lines; chemical-resistant gloves for contaminated soils.
 - **Feet:** Safety-toe boots with slip-resistant soles, waterproof when working in wet conditions.
 - **High-Visibility Apparel:** ANSI/ISEA 107 Type R, Class 2 (day) or Class 3 (night/high-speed).
 - **Fall Protection:** Harness and retrieval system if working near open vaults/holes >6 ft or classified as confined space.
 - **Respiratory:** Dust mask or respirator when exposed to silica, spoil dust, or contaminated soils.
 - **Weather-Specific:** Rain gear, thermal PPE, sun protection as applicable.
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Regulatory & Industry Practice Alignment (summary)

- **OSHA:** 29 CFR 1926 Subpart P (Excavations), Subpart E (PPE), Subpart O (Motor Vehicles/Equipment), Subpart M (Fall Protection), Subpart Z (Hazardous Substances), 1910.146 (Permit-Required Confined Spaces when applicable).
- **NIOSH:** Best practices for hydro/air excavation safety, noise control, ergonomic hose handling, and dust mitigation.
- **ANSI/ISEA:** ANSI/ISEA 107 (high-visibility apparel), ANSI Z87.1 (eye protection), ANSI Z359 (fall protection), ANSI Z89.1 (head protection).
- **NESC:** Minimum approach distances for work near energized overhead conductors.
- **MUTCD:** Traffic control standards for hydra-vac operations in or near roadways.