

## Job Hazard Analysis (JHA)

### Task: Fiber Optic Retrieval from a Confined Space 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 Fiber Optic Retrieval from a Confined Space 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 confined space permits; incomplete retrieval plan; lack of utility coordination	Conduct tailboard/JSA meeting; review confined space entry (CSE) permit; confirm 811/One-Call ticket; coordinate with utility owners; assign stop-work authority.	☑
2	Material staging (retrieval equipment, PPE, tripod, ventilation, gas monitors)	Struck-by shifting equipment; trip hazards; improper storage	Stage materials on level ground; barricade staging area; inspect retrieval tools and tripod; maintain housekeeping.	☑
3	Traffic control setup (if manhole/vault in roadway/sidewalk)	Vehicle strikes; inadequate signage; pedestrian exposure	Deploy MUTCD-compliant traffic control plan; cones, barricades, signage; certified flaggers; ANSI/ISEA 107 high-visibility garments; night work lighting.	☑
4	Confined space assessment	Oxygen deficiency; toxic gases (H <sub>2</sub> S, CO); explosive atmosphere; poor visibility	Test atmosphere with calibrated 4-gas monitor (O <sub>2</sub> , LEL, CO, H <sub>2</sub> S); monitor continuously; provide lighting; ventilate with blower prior to entry.	☑
5	Establishing entry and rescue system	Falls into opening; lack of retrieval capability	Barricade opening; install tripod/winch with full-body harness; designate standby attendant and rescue plan per OSHA 1910.146.	☑
6	Lowering retrieval equipment into space	Struck-by falling tools; pinch points; electrical contact	Use tool lanyards; maintain exclusion zone around opening; use non-conductive rods or retrieval devices.	☑

Step No.	Task Description	Potential Hazards	Controls / Safe Work Practices	Initial RAC
7	Entry of authorized worker into confined space	Engulfment from flooding or collapse; fall/slip; exposure to confined atmosphere	Permit-required entry only; trained entrants; continuous communication with attendant; ladder access; PPE (harness, gloves, boots).	?
8	Locating and retrieving fiber optic cable	Cuts/lacerations from sharp jacket or edges; ergonomic strain; eye injury from fiber shards	Use cable retrieval rods or pulling grips; wear cut-resistant gloves; dispose of fiber shards in sharps container; use safety glasses with side shields.	?
9	Handling slack fiber or coiled cable	Entanglement; musculoskeletal strain	Keep fiber organized with spools or reels; use team lifts; avoid wrapping fiber around body; maintain proper bend radius.	?
10	Bonding/grounding metallic elements (if encountered)	Electrical shock; arc flash	Only qualified personnel handle grounding; use insulated tools; verify de-energization; follow NESC clearance rules.	?
11	Exiting confined space	Trips or falls during exit; improper retrieval of entrant	Maintain ladder or retrieval line at all times; attendant assists with retrieval; perform slow, controlled egress.	?
12	Backfilling or resealing vault/manhole (if applicable)	Struck-by cover; pinch points	Use proper lifting tools; never use hands directly; covers replaced flush with surface; confirm lock/bolt if required.	?
13	Housekeeping and site cleanup	Slips/trips from leftover fiber scraps, tools, or debris	Collect and dispose of all debris; coil cables neatly; verify site safe before demobilization.	?
14	Traffic control removal & demobilization	Vehicle strikes during removal	Remove devices in reverse order; flaggers remain until last cone collected; perform final walkdown.	?
15	Documentation & turnover	Missing confined space log; incomplete QC records	Complete CSE permit; record retrieval footage and cable ID; photograph installation/removal; submit to utility owner/inspector.	?

## PPE Requirements

- **Head/Face/Eye:** Hard hat (ANSI Z89.1); safety glasses with side shields (ANSI Z87.1); face shield when handling fiber shards.
- **Hearing:** Hearing protection when operating vac trucks, generators, or other noisy equipment >85 dBA.
- **Hands:** Cut-resistant gloves for cable handling; chemical-resistant gloves if solvents are used for cleaning.
- **Feet:** Safety-toe boots with slip-resistant soles; waterproof boots if water is present in vault.
- **High-Visibility Apparel:** ANSI/ISEA 107 Type R, Class 2 (day) or Class 3 (night/high-speed).
- **Fall Protection/Confined Space:** Full-body harness with retrieval line; tripod/winch system; lifeline attached to entrant at all times.

- **Respiratory:** Dust mask for fiber debris; respirator if hazardous atmosphere detected.
  - **Weather-Specific:** Rain gear, thermal PPE, or UV protection as applicable.
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### **Regulatory & Industry Practice Alignment (summary)**

- **OSHA:** 29 CFR 1910.146 (Permit-Required Confined Spaces), 29 CFR 1926 Subpart P (Excavations if vault exposed), Subpart E (PPE), Subpart M (Fall Protection), Subpart O (Motor Vehicles/Mechanized Equipment), Subpart Z (Hazardous Substances—fiber shards, chemical solvents).
- **NIOSH:** Best practices for confined space entry, ergonomics in fiber handling, and prevention of fiber shard inhalation.
- **ANSI/ISEA:** ANSI/ISEA 107 (high-visibility apparel), ANSI Z87.1 (eye protection), ANSI Z359 (fall protection), ANSI Z89.1 (head protection).
- **NESC:** Bonding/grounding rules for metallic components; clearance from energized equipment.
- **MUTCD:** Traffic control standards for confined space telecom work in or near roadways.