

Job Hazard Analysis (JHA)

Task: Installing Fiber in Conduit 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 Installing Fiber in Conduit 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	Incomplete prints; missing permits; unverified conduit paths	Conduct tailboard/JSA meeting; review as-builts and pulling plan; confirm One-Call (811) ticket; coordinate with utility owners; assign stop-work authority.	☒
2	Material staging (fiber reels, lubricants, pullers, PPE, tools)	Struck-by rolling reels; trip hazards; chemical exposure	Chock fiber reels; stage materials on stable ground; barricade staging area; review SDS for lubricants; secure puller equipment.	☒
3	Traffic control setup (if vaults/handholes/pull boxes in roadway/sidewalk)	Vehicle strikes; pedestrian hazards	Deploy MUTCD-compliant traffic control; cones, barricades, signage; certified flaggers; ANSI/ISEA 107 high-vis apparel; night work lighting.	☒
4	Inspecting conduit and vaults before pulling	Confined space hazards; sharp edges; standing water	Conduct atmospheric testing with 4-gas monitor if vault entry; ventilate as needed; pump out water; wear gloves and boots.	☒
5	Setting up fiber reel stand and puller	Reel runaway; caught-between hazards; equipment malfunction	Use reel stands with brakes; chock wheels; maintain exclusion zone; inspect puller and capstan before use; follow manufacturer's load limits.	☒

Step No.	Task Description	Potential Hazards	Controls / Safe Work Practices	Initial RAC
6	Feeding fiber into conduit	Fiber snap-back; eye injury from shards; ergonomic strain	Wear safety glasses; keep fiber under control; use rollers and guides; maintain bend radius; rotate workers to reduce strain.	?
7	Operating puller/capstan to pull fiber	Line snap-back; entanglement; electrical hazards in shared ducts	Exclusion zone around pull path; keep hands/body clear; monitor pulling tension; maintain OSHA/NESC clearances when near energized utilities.	?
8	Applying cable lubricant during pull	Chemical exposure (skin/eye irritation); slip hazard from spills	Wear chemical-resistant gloves and safety glasses; apply lubricant evenly; clean spills immediately; dispose of containers per SDS.	?
9	Monitoring tension and conduit fill	Overstress of fiber; equipment failure; conductor heating if shared duct with power	Use dynamometer or pull meter; never exceed manufacturer's max tension; comply with NESC separation requirements.	?
10	Pulling long sections or multiple vault passes	Ergonomic strain; snap-back hazard	Use intermediate pullers or break up runs; maintain communication between vault crews; exclusion zones enforced.	?
11	Removing fiber from reel and final placement	Dropped reel; cable damage; back strain	Lower reel slowly; use team lift or equipment; coil and store excess fiber properly; avoid kinks.	?
12	Securing fiber in vaults, pedestals, or nodes	Cuts from tools; pinch points; trip hazards from loose fiber	Use proper cutting tools; coil slack neatly; secure with straps; maintain housekeeping.	?
13	Weather/environmental hazards	Heat stress, cold stress, lightning, wet/slippery ground	Provide shade/hydration in heat; thermal PPE in cold; slip-resistant boots; suspend work during storms or lightning.	?
14	Housekeeping and cleanup	Slips/trips from leftover string, rods, or debris	Remove all pull lines and scrap; coil cables neatly; dispose of lubricant containers properly; clear work zone.	?
15	Removing traffic control & demobilization	Vehicle strikes during removal	Remove devices in reverse order; flaggers remain until last cone collected; perform final walkdown.	?
16	Documentation & turnover	Missing records; incomplete QC reports	Record conduit ID, fiber footage, tension logs, and splice points; photograph installations; update as-builts; submit QC documentation.	?

PPE Requirements

- **Head/Face/Eye:** Hard hat (ANSI Z89.1) when working near overhead hazards; safety glasses with side shields (ANSI Z87.1); face shield if cutting armor.
 - **Hearing:** Hearing protection when using pullers, generators, or vac trucks >85 dBA.
 - **Hands:** Cut-resistant gloves for fiber handling; chemical-resistant gloves for lubricant use.
 - **Feet:** Safety-toe boots with slip-resistant soles.
 - **High-Visibility Apparel:** ANSI/ISEA 107 Type R, Class 2 (day) or Class 3 (night/high-speed).
 - **Fall Protection/Confined Space:** Harness and retrieval line if vault entry required (>6 ft); tripod/winch if classified as permit-required confined space.
 - **Respiratory:** Dust mask when working in dusty vaults; respirator if hazardous atmosphere detected.
 - **Weather-Specific:** Rain gear, thermal PPE, UV/sun 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), Subpart E (PPE), Subpart O (Motor Vehicles/Mechanized Equipment), Subpart M (Fall Protection), Subpart Z (Hazardous Substances—lubricants, silica/dust).
- **NIOSH:** Fiber handling safety, confined space best practices, ergonomic strain prevention, noise/vibration controls.
- **ANSI/ISEA:** ANSI/ISEA 107 (high-visibility apparel), ANSI Z87.1 (eye protection), ANSI Z89.1 (head protection), ANSI Z359 (fall protection).
- **NESC:** Separation and clearance requirements for telecom conduit with other utilities; maximum pulling tensions per cable design.
- **MUTCD:** Work zone traffic control requirements for roadside vault/conduit work.