

## Job Hazard Analysis (JHA)

### Task: Pipe Fusion 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 Pipe Fusion 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 scope; missing permits; improper coordination with utilities	Conduct tailboard/JSA meeting; review prints and fusion procedure; confirm 811 ticket and utility locates; identify fusion site and staging area; assign stop-work authority.	☑
2	Material staging (HDPE pipe, fusion machine, generator, tools)	Struck-by rolling pipe; trip hazards; manual handling strain	Chock/secure pipe bundles; store on level ground; use pipe rollers; mechanical assist for long/heavy sections; maintain clear work paths.	☑
3	Traffic control setup (if fusing near roadway/sidewalk)	Vehicle strikes; poor visibility; inadequate signage	Deploy MUTCD-compliant traffic control plan; cones, barricades, and warning signs; certified flaggers; ANSI/ISEA 107 Class 2/3 garments; lighting for night work.	☑
4	Inspecting fusion machine and tools	Equipment failure; pinch points; hydraulic leaks	Pre-use inspection; check clamps, heaters, facer, and hydraulics; replace worn parts; follow lockout/tagout for maintenance.	☑
5	Loading pipe into fusion machine	Pinch/crush points; hand injuries; dropped pipe	Use pipe rollers or lifts; maintain proper hand placement; wear cut-resistant gloves; use team lift for alignment.	☑
6	Facing/planing pipe ends	Flying debris; lacerations from facer blade; noise	Wear eye/face protection; keep body clear of rotating facer; inspect blade guard; hearing protection if >85 dBA.	☑

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7	Aligning pipe sections in clamps	Pinched hands/fingers; improper alignment	Keep hands clear of clamp closures; verify alignment before applying pressure; follow manufacturer alignment tolerances.	?
8	Heating pipe ends with fusion heater	Thermal burns; fire hazard; fume inhalation	Wear heat-resistant gloves; avoid contact with heating plate; place heater on insulated stand; keep flammables away; ventilate for fume control.	?
9	Joining pipe under pressure	Pinch/crush injury; high-pressure release	Maintain exclusion zone during pressurization; do not stand in line of pressure; monitor gauge readings; only trained operator applies hydraulic force.	?
10	Cooling/fused joint handling	Burns from hot pipe; joint separation if moved prematurely	Allow recommended cooling time; use caution handling pipe; verify joint visually before moving; barricade joint area until set.	?
11	Inspecting fusion joint	Cuts from sharp edges; missed defects leading to rework	Use deburring tools with gloves; inspect bead for uniformity; document inspection results; repeat fusion if defects noted.	?
12	Stringing fused pipe into trench/route	Strain injuries; struck-by moving pipe	Use pipe rollers, slings, or equipment; taglines for control; spotters during equipment movement; barricade exclusion zone.	?
13	Weather/environmental conditions	Heat stress, cold stress, slippery ground	Provide hydration and rest breaks in hot weather; thermal PPE in cold weather; de-ice work surfaces; suspend work during lightning.	?
14	Site restoration/backfilling (if trench open)	Struck-by equipment; trench collapse	Follow OSHA 1926 Subpart P excavation standards; compact in lifts; place warning tape above pipe; spotter required for equipment operations.	?
15	Housekeeping & cleanup	Slips/trips from debris; chemical waste	Dispose of shavings and debris in containers; store heater and machine properly; handle waste oil/fluids per SDS.	?
16	Documentation & turnover	Missing fusion logs; regulatory non-compliance	Record fusion parameters (time, pressure, temp); photograph joints; update as-builts; submit QC documentation to owner.	?
17	Traffic control removal & demobilization	Vehicle strikes during removal	Remove traffic control in reverse order; maintain flaggers until last cone removed; final walkdown inspection.	?

## PPE Requirements

- **Head/Face/Eye:** Hard hat (ANSI Z89.1); safety glasses with side shields (ANSI Z87.1); face shield when facing or heating pipe.
  - **Hearing:** Hearing protection when exposed to >85 dBA (facers, generators, vac trucks).
  - **Hands:** Cut-resistant gloves for pipe handling; heat-resistant gloves for heater operations.
  - **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:** Harness/retrieval system if working near vaults or trenches >6 ft.
  - **Respiratory:** Dust mask when facing pipe or working with shavings; respirator if working in poorly ventilated areas with fumes.
  - **Weather-Specific:** Rain gear, insulated PPE, sun protection as required.
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### **Regulatory & Industry Practice Alignment (summary)**

- **OSHA:** 29 CFR 1926 Subpart E (PPE), Subpart O (Motor Vehicles/Mechanized Equipment), Subpart P (Excavations), Subpart M (Fall Protection), Subpart Z (Hazardous Substances—thermal/fume exposure).
- **NIOSH:** Guidelines for safe handling of heated equipment, ergonomics in pipe handling, and prevention of heat/cold stress.
- **ANSI/ISEA:** ANSI/ISEA 107 (high-visibility apparel), ANSI Z359 (fall protection), ANSI Z87.1 (eye protection).
- **NESC:** Separation requirements when telecom conduits cross electrical infrastructure.
- **MUTCD:** Traffic control standards for work zones near roads and pedestrian areas.