

OSHA All Job Hazard Analysis (JHA) Bundle

FORBES SAFETY SOLUTIONS

Complete bundle — 36 templates included

Editable Word/Excel/PowerPoint versions available at forbessafety.com/downloads/

Table of Contents

1. Jha Abrasive Blasting
2. Jha Aerial Lift
3. Jha Asphalt Paving
4. Jha Bess Maintenance
5. Jha Cable Pulling
6. Jha Concrete Cutting
7. Jha Concrete Formwork
8. Jha Concrete Pour
9. Jha Confined Space Entry
10. Jha Demolition
11. Jha Directional Drilling
12. Jha Drywall
13. Jha Electrical Roughin
14. Jha Energized Electrical
15. Jha Excavation Trenching
16. Jha Firewatch
17. Jha Hvac
18. Jha Mechanical Insulation

19. Jha Mobile Crane
20. Jha Overhead Power Line
21. Jha Painting Coating
22. Jha Pipeline Utility
23. Jha Pole Setting
24. Jha Rigging Crane
25. Jha Road Work Zone
26. Jha Roofing Operations
27. Jha Scaffolding
28. Jha Solar Panel
29. Jha Steel Erection
30. Jha Structural Welding
31. Jha Substation
32. Jha Tree Trimming
33. Jha Underground Vault
34. Jha Waterproofing
35. Jha Welding Cutting
36. Jha Wind Turbine

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Abrasive Blasting

REGULATORY REFERENCES

- 29 CFR 1926.57 — Ventilation
- 29 CFR 1910.94 — Ventilation (General Industry)
- 29 CFR 1926.1153 — Respirable Crystalline Silica
- 29 CFR 1926.101 — Hearing Protection
- 29 CFR 1926.62 — Lead Exposure in Construction
- OSHA Fact Sheet: Abrasive Blasting Safety

SCOPE & DESCRIPTION

This JHA covers abrasive blasting operations including containment setup, equipment inspection, active blasting, dust/air monitoring, cleanup, and waste disposal. Abrasive blasting generates extreme noise levels (120+ dB), airborne silica and toxic particulates, and high-velocity ricochet hazards. All work must comply with the applicable OSHA standards and the site-specific silica exposure control plan.

PROJECT INFORMATION

Project Name:		Date:	
Project Number:		Location:	
Contractor:		Supervisor:	
JHA Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Containment Setup	Silica dust release during setup Struck by containment materials Falls from elevation	M	Install blast enclosure/containment per engineering plan Use dust-rated tarps and negative-pressure ventilation Secure scaffolding/platforms with fall protection Pre-wet surfaces if feasible to suppress dust
2. Equipment Inspection	Pressurized hose failure Defective nozzle — uncontrolled blast Electrical hazards (compressor)	H	Inspect blast pot, hoses, couplings, and nozzles before each shift Verify dead-man switch is operational Check compressor grounding and lockout capability Replace worn nozzles and damaged hoses immediately
3. Blasting Operations	Silica/toxic dust inhalation (TLV exceedance) Extreme noise (120+ dB) Ricochet/flying particles Visibility reduction inside containment Skin abrasion from blast stream	H	Mandatory Type CE or Type C supplied-air respirator Double hearing protection (plugs + muffs) — NRR 30+ Full-body blast suit, leather gloves, metatarsal boots Maintain dead-man switch at all times Restrict access to blast zone — minimum 50 ft exclusion Use blast-rated lighting inside containment Continuous air monitoring for silica (PEL 50 µg/m ³)
4. Dust Monitoring	Overexposure to respirable crystalline silica Lead paint blast residue Inadequate ventilation	H	Conduct personal air sampling per 29 CFR 1926.1153 Monitor lead levels if paint contains lead (>0.06%) Verify negative-pressure ventilation is operational Document all exposure monitoring results Implement medical surveillance program
5. Cleanup	Residual dust inhalation Slip/trip on spent media Manual handling of heavy waste bags	M	Wear respirator during cleanup (minimum P100 or APF 10) Use HEPA-filtered vacuum — no dry sweeping Wet down spent media before collection Use proper lifting techniques; limit bag weight to 50 lbs Maintain ventilation until cleanup is complete
6. Waste Disposal	Hazardous waste exposure (lead, chromium) Improper disposal — environmental violation Ergonomic strain from heavy containers	M	Characterize waste per RCRA requirements Label and store in approved hazardous waste containers Coordinate with licensed hazardous waste hauler Maintain waste manifests and disposal records Use mechanical aids for heavy containers

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	
☐ Type CE Supplied-Air Blast Helmet	☐ Full-Body Blast Suit (leather/canvas)
☐ Double Hearing Protection (plugs + muffs, NRR 30+)	☐ Leather Blast Gloves
☐ Steel-Toe/Metatarsal Safety Boots	☐ P100 Respirator (cleanup operations)
☐ Safety Glasses (outside blast zone)	☐ High-Visibility Vest (outside containment)

EMERGENCY PROCEDURES

1. **SILICA/TOXIC DUST OVEREXPOSURE:** Immediately remove affected worker to fresh air. Administer oxygen if available. Call 911 if worker shows respiratory distress. Report to site safety officer.
2. **HOSE FAILURE/PRESSURE RELEASE:** Activate dead-man switch immediately. Shut down compressor. Evacuate blast zone. Do not re-enter until pressure is fully bled down and equipment is inspected.
3. **EYE/SKIN INJURY FROM RICOCHET:** Flush eyes with emergency eyewash for minimum 15 minutes. For skin abrasion, clean wound and apply sterile dressing. Seek medical evaluation for all eye injuries.
4. **NOISE-INDUCED INJURY:** Remove from noise exposure. If worker reports hearing loss, ringing, or pain, transport to occupational health clinic immediately.
5. **FIRE IN CONTAINMENT:** Activate fire alarm. Evacuate containment immediately. Use dry chemical extinguisher (Class ABC). Do not re-enter until fire department clears the area.
6. **EMERGENCY CONTACTS:** 911 for all emergencies. Site Safety Officer: _____. Poison Control: 1-800-222-1222.

ADDITIONAL NOTES / SITE-SPECIFIC REQUIREMENTS

- A written Silica Exposure Control Plan must be on-site and accessible to all workers.
- Alternative blast media (garnet, steel grit, walnut shell) should be evaluated to reduce silica exposure.
- All blasters must complete site-specific abrasive blasting safety orientation before starting work.
- Environmental containment must prevent off-site migration of blast residue.
- Medical surveillance is required for workers exposed above the action level ($25 \mu\text{g}/\text{m}^3$) for 30+ days/year.

WORKER SIGN-OFF

By signing below, I confirm that I have reviewed and understand this JHA, including all identified hazards and required control measures.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

REVISION HISTORY

Revision	Date	Description	Approved By
0		Initial Release	
1			

DISCLAIMER: This Job Hazard Analysis is a guideline for identifying hazards and implementing controls. It does not replace site-specific safety plans, competent person assessments, or regulatory requirements. All workers must comply with applicable OSHA standards and company safety policies. This JHA must be reviewed and updated whenever work conditions change.

JOB HAZARD ANALYSIS

Aerial Lift / Boom Lift Operations

Regulatory References: 29 CFR 1926.453, ANSI A92.22

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	JHA-031
Supervisor:		Reviewed By:	
Trade/Activity:	Aerial Lift / Boom Lift Operations	Permit Required:	☐ Yes ☐ No

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level	Control Measures
1. Pre-Use Inspection	Mechanical failure Hydraulic leaks Defective controls Tire/outrigger damage	H M H M	Complete manufacturer's pre-use checklist before each shift Inspect hydraulic hoses, fittings, and cylinders for leaks or damage Test all controls (lift, lower, swing, drive, emergency stop) at ground level Check tires for proper inflation; inspect outriggers for cracks Verify fall protection anchor points and SRL operation Tag out and remove from service any defective equipment
2. Work Area Assessment	Overhead power lines Unstable ground Overhead obstructions Pedestrian traffic	H H M M	Survey for overhead power lines — maintain min. 10 ft clearance (20 ft for >350kV) Assess ground conditions: slope, soft soil, holes, debris Identify overhead obstructions (beams, pipes, trusses) Establish barricades and exclusion zone around work area Coordinate with other trades to prevent simultaneous overhead work Check weather — wind speed, lightning risk
3. Lift Positioning & Setup	Tip-over on uneven ground Struck-by during positioning Outrigger failure	H M M	Position on firm, level surface; use cribbing or pads under outriggers Set outriggers fully before elevating platform Use spotter when driving/positioning lift near edges or obstacles Engage wheel locks / parking brake before elevating Verify rated capacity includes all occupants, tools, and materials Do NOT exceed manufacturer's maximum platform load
4. Elevated Work Operations	Falls from basket Electrocution Struck by boom Entanglement	H H H M	Wear full-body harness with lanyard attached to basket anchor point at all times Keep both feet on platform floor — do NOT stand on railings or use ladders in basket Maintain minimum approach distances to energized power

FORBES SAFETY SOLUTIONS

Task Step	Hazard	Risk Level	Control Measures
	Dropped objects	M	lines Do NOT wrap limbs or lanyards around structural members Use tool lanyards; secure all materials to prevent dropped objects Do NOT exceed rated platform capacity Keep platform gate/chain closed during operation
5. Repositioning	Tip-over during travel Struck-by pedestrians Overhead contact	H M H	Lower platform to stowed (travel) position before driving Use a ground spotter when traveling near personnel or obstructions Travel at slow speed; watch for floor openings, slopes, and debris Re-assess work area conditions at each new position Never drive with platform elevated unless machine is designed for it
6. Shutdown & Securing	Unauthorized use Hydraulic energy release Equipment damage	M L L	Lower platform fully; retract outriggers Turn off engine/power; remove and secure key Set parking brake and wheel chocks Clean platform of debris, tools, and materials Complete post-use inspection log Report any deficiencies discovered during operation

Additional Notes: All operators must possess valid aerial lift operator certification. Daily pre-use inspections are mandatory per ANSI A92.22. Wind speed must be monitored — cease operations if gusts exceed manufacturer limits (typically 28 mph).

FORBES SAFETY SOLUTIONS

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Required PPE	
☒ Hard Hat (ANSI Z89.1)	☒ Safety Glasses (ANSI Z87.1)
☒ Full-Body Harness w/ Lanyard	☒ High-Visibility Vest (Class 2/3)
☒ Steel/Composite Toe Boots	☒ Dielectric Gloves (near power lines)
☒ Hearing Protection (if applicable)	☒ Fall Restraint / SRL

EMERGENCY PROCEDURES

- In case of tip-over: Brace yourself inside the basket; do NOT jump. Activate emergency stop.
- Contact with power lines: Do NOT touch the machine or ground simultaneously. Jump clear with feet together if evacuation is necessary. Call 911 immediately.
- Fall from basket: Initiate rescue plan immediately. Ensure trained personnel perform aerial rescue within minutes to prevent suspension trauma.
- Medical emergency at height: Lower the platform to ground level if possible. Administer first aid. Call 911.
- Emergency lowering: Know location and operation of ground-level emergency controls on every machine used.
- Report all incidents, near-misses, and equipment malfunctions to the supervisor immediately.

FORBES SAFETY SOLUTIONS

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for the work to be performed.

#	Print Name	Signature	Company	Date	Time
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

REVIEW & APPROVAL

Role	Name / Signature	Title	Date
Prepared By			
Reviewed By			
Approved By			
Site Supervisor			

REVISION HISTORY

Rev.	Date	Description	Author
0		Initial Release	
1			

JOB HAZARD ANALYSIS

Asphalt Paving

Regulatory References: 29 CFR 1926.200-203 (Signaling), NIOSH Asphalt Fumes Criteria Document, 29 CFR 1926.601

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	JHA-034
Supervisor:		Reviewed By:	
Trade/Activity:	Asphalt Paving Operations	Permit Required:	☐ Yes ☐ No

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level	Control Measures
1. Traffic Control Setup	Struck by passing vehicles Pedestrian intrusion Worker visibility	H M H	Implement Traffic Control Plan (TCP) per MUTCD standards Deploy signs, cones, arrow boards, and barricades before work begins All workers in Class 3 high-visibility garments Certified flaggers at all ingress/egress points Establish buffer zone between live traffic and work zone Conduct traffic control briefing with all crew before starting
2. Surface Preparation / Milling	Silica dust from milling Noise exposure (100+ dB) Struck by milling machine Pinch points	H H M M	Wet milling or dust suppression to control silica exposure Wear hearing protection — double protection recommended Maintain safe distance from milling drum during operation Spotter required when machine is backing or turning Sweep/vacuum milled surface before tack coat application Lock out milling machine before any maintenance or drum inspection
3. Asphalt Delivery & Transfer	Burns from hot mix (300-350°F) Struck by haul truck Backing vehicle incidents	H H H	Truck drivers follow paver operator signals only — one designated signal person Spotter guides all backing trucks into the paver hopper No personnel between truck and paver during coupling Wear heat-resistant gloves and long sleeves during material transfer Inspect truck bed for hang-ups before raising — stand clear of dump bed Do NOT ride on truck bed or tailgate
4. Paving Operations	Burns from hot asphalt Asphalt fume inhalation Pinch points on paver Heat stress	H H M H	Position workers upwind of paver when possible to reduce fume exposure Screed fume extraction system operational at all times if equipped Monitor asphalt fume exposure — provide respirators if PEL exceeded Keep hands/fingers clear of auger, conveyor, and screed

FORBES SAFETY SOLUTIONS

Task Step	Hazard	Risk Level	Control Measures
			pinch points Never reach into paver hopper — use shovels/lutes for material management Implement heat illness prevention: mandatory water, rest breaks, shade
5. Compaction / Rolling	Struck by roller Pinch/crush between roller and paver Burns from hot mat Vibration exposure	H H M M	Roller operators maintain 360° awareness — use mirrors and spotter No ground personnel within roller operating zone during compaction Sound horn before reversing direction Keep workers off freshly paved mat until cooled below 160°F for foot traffic Limit vibrating roller exposure time to reduce whole-body vibration Roller operators must have clear line of sight at all times
6. Traffic Control Removal	Struck by traffic during removal Premature traffic release Trip hazards	H M L	Remove traffic control devices in reverse order of installation (farthest from work zone first) Maintain traffic control until pavement is safe for public traffic Workers face oncoming traffic during device removal Verify all equipment, tools, and materials are removed from roadway Flaggers remain until all devices are collected Conduct final walk-through of work zone before opening to traffic

Additional Notes: Monitor ambient temperature and enforce heat illness prevention plan. Ensure water, rest, and shade per OSHA heat guidance. All flaggers must have valid traffic control certification.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Required PPE	
☒ Hard Hat (ANSI Z89.1)	☒ Safety Glasses (ANSI Z87.1)
☒ High-Visibility Vest / Shirt (Class 3)	☒ Steel/Composite Toe Boots (heat-resistant soles)
☒ Long Sleeves & Long Pants (burn protection)	☒ Heat-Resistant Gloves
☒ Hearing Protection (NRR 25+)	☒ Respirator (if fume levels exceed PEL)
☒ Sunscreen / Shade (heat stress)	☒ Knee Pads (hand work)

EMERGENCY PROCEDURES

- Burn from hot asphalt (300°F+): Cool burn with water immediately for at least 20 minutes. Do NOT attempt to remove adhered asphalt. Cover with sterile dressing and seek medical attention.
- Asphalt fume overexposure: Move worker upwind to fresh air. Seek medical evaluation for respiratory distress or nausea.
- Struck by vehicle/equipment: Call 911 immediately. Administer first aid. Secure the work zone to prevent additional incidents.
- Heat illness (heat stroke/exhaustion): Move to shade, cool with water/ice, call 911 if altered consciousness, confusion, or high body temperature.
- Equipment fire: Evacuate area. Use dry chemical or foam extinguisher — NOT water on hot asphalt fire. Call 911.
- Report all incidents, near-misses, and safety concerns to supervisor immediately.

FORBES SAFETY SOLUTIONS

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for the work to be performed.

#	Print Name	Signature	Company	Date	Time
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

REVIEW & APPROVAL

Role	Name / Signature	Title	Date
Prepared By			
Reviewed By			
Approved By			
Site Supervisor			

REVISION HISTORY

Rev.	Date	Description	Author
0		Initial Release	
1			

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Battery Energy Storage System (BESS) Maintenance

Document No: FSS-JHA-047

Regulatory References: NFPA 855 (Energy Storage Systems), 29 CFR 1910.269, NFPA 70E, UL 9540

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Work Description:	Battery Energy Storage System (BESS) Maintenance	Revision:	0

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. System Isolation and LOTO	Electrical shock (600V+ DC) Arc flash (high energy DC) Stranded energy — batteries remain energized even after isolation	H H H	Follow site-specific LOTO procedure; use Group LOTO for multiple workers Perform arc flash study; wear PPE per NFPA 70E incident energy calculation Verify zero energy state at each work point with CAT IV rated meter; batteries cannot be fully de-energized — maintain electrical safe work practices at all times
2. Enclosure Access and Environmental Monitoring	Oxygen depletion in enclosed space Toxic gas exposure (HF, HCN from thermal event) Heat exposure inside enclosure	H H M	Continuous atmospheric monitoring with 4-gas detector (O ₂ , LEL, CO, H ₂ S); add HF monitor for lithium-ion systems Verify ventilation system is operational before entry; establish evacuation alarm at 1 ppm HF Monitor temperature inside enclosure; ensure HVAC is functional; provide cooling PPE if needed
3. Battery Module Inspection	Electrical shock from module terminals Thermal runaway — battery fire with toxic gas Electrolyte exposure (skin/eye burns)	H H H	Wear voltage-rated gloves (Class 0 minimum); use insulated tools only; never bridge terminals Use thermal imaging to inspect modules before contact; identify swollen/damaged cells; do NOT disturb suspect modules — evacuate and contact manufacturer Wear chemical splash goggles and face shield; have spill kit with neutralizing agent; emergency eyewash within 10 seconds of travel
4. DC Bus Work and Connections	DC arc flash (extreme energy — does not self-extinguish) Electrical shock (600V+ DC) Dropped tools creating short circuits	H H H	Perform detailed arc flash risk assessment for DC systems; DC arcs do NOT cross zero — use DC-rated PPE and clearing devices Verify isolation; use insulated tools; maintain safe approach boundaries Use tool tethers; remove all metallic jewelry; cover exposed bus bars with insulating blankets
5. Thermal Management System Service	Refrigerant exposure Electrical contact with HVAC components	M M M	EPA Section 608 certified technicians only; use refrigerant leak detectors; ensure ventilation LOTO HVAC electrical feeds; verify de-energized before

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	Working in confined areas		service Follow confined space entry procedures if applicable; maintain communication with attendant
6. Re-Energization and System Verification	Arc flash during energization Unexpected fault current Thermal event during startup	H H M	Clear all personnel from arc flash boundaries; only qualified operators energize; close disconnects remotely if possible Verify all connections torqued to specification; remove all tools and temporary grounds before energization Monitor BMS for cell voltage/temperature anomalies during ramp-up; have fire suppression system armed and verified

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Arc-rated clothing per NFPA 70E arc flash study (often 40+ cal/cm² for BESS)
- Voltage-rated gloves (Class 0 minimum, 1000V DC) with leather protectors
- Arc-rated face shield and balaclava
- Safety glasses (ANSI Z87.1) under face shield
- Chemical splash goggles for electrolyte exposure risk
- Steel-toe/composite-toe EH-rated boots (ASTM F2413)
- 4-gas atmospheric monitor (O₂, LEL, CO, H₂S) + HF monitor
- Self-contained breathing apparatus (SCBA) staged at entry point for emergency
- Cut-resistant gloves for non-electrical tasks
- High-visibility vest when working in traffic areas

ADDITIONAL SAFETY REQUIREMENTS

- BESS systems contain stranded energy — batteries CANNOT be fully de-energized; treat all components as energized at all times
- Only manufacturer-trained and qualified electrical workers shall perform BESS maintenance
- Battery Management System (BMS) alarms must be reviewed before any enclosure entry
- Thermal imaging scan required before physical contact with any battery module
- Fire suppression system must be verified operational before maintenance begins
- Coordinate with utility/grid operator for system isolation; verify no remote energization capability
- Emergency response plan specific to thermal runaway must be reviewed with all workers before each shift

EMERGENCY PROCEDURES

- THERMAL RUNAWAY RESPONSE: Evacuate immediately; do NOT attempt to fight lithium-ion battery fire with water unless system is specifically designed for it; call 911; notify utility/system operator
- For toxic gas exposure (HF/HCN): Move to fresh air immediately; call 911; apply calcium gluconate gel to any skin exposure; do NOT induce vomiting
- For electrical shock: De-energize source if safe; do NOT touch victim in contact with energized equipment; call 911; begin CPR/AED if trained
- For arc flash burns: Remove from source; cool burns with water; do NOT remove melted clothing; call 911
- Emergency shutdown procedure posted at: _____
- Fire suppression system activation: _____
- First aid kit, AED, and SCBA located at: _____
- Nearest hospital/emergency room: _____
- Manufacturer emergency hotline: _____

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for this work activity.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Next Review Date
Prepared By			
Reviewed By			
Approved By			
Site Safety Manager			

DISCLAIMER: This JHA is a template provided by Forbes Safety Solutions for general guidance. It must be reviewed, customized, and approved by a qualified safety professional before use on any specific project. Site-specific conditions may require additional hazard controls not listed herein.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Cable Pulling / Wire Stringing

Regulatory References: 29 CFR 1910.269, 29 CFR 1926 Subpart V, IEEE 524

Document No: FSS-JHA-039 | Revision: 0 | Date: _____

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS TABLE

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Reel Setup & Pulling Equipment Positioning	Heavy reel handling (tip-over, crush) Equipment struck-by Uneven ground/terrain Traffic near setup area	H M M M	Use mechanical means (forklift, crane) to position reels; never roll by hand on grade Set reel jacks on firm, level ground; chock to prevent movement Verify pulling equipment capacity exceeds maximum pulling tension Establish traffic control for roadside operations per MUTCD Brief crew on pulling plan, communication signals, and emergency stops Position equipment to minimize cable bends and crossing hazards
2. Cable Feeding & Pulling Tension Monitoring	High pulling tension (cable snap/whip) Pinch points at sheaves/rollers Cable abrasion damage Communication failure	H H M M	Set tension limiter on puller per cable manufacturer MSBP specifications Monitor dynamometer continuously; stop if tension exceeds limits Apply approved cable lubricant to reduce friction per IEEE 524 Keep all personnel clear of cable path and behind sheave guards Establish continuous radio communication between reel and puller ends Emergency stop capability at both ends of pull
3. Cable Routing Through Conduit/Duct Bank	Cable jamming Existing cable damage Confined space in manholes Chemical exposure (lubricants)	M H H L	Conduct duct survey (mandrel test) before pulling to verify clear path Identify and protect existing cables in shared duct banks Follow confined space entry procedures for all manhole entries (29 CFR 1910.146)

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
			Atmospheric testing before and during manhole operations Use cable guides/rollers at all direction changes to prevent damage Use SDS-approved cable lubricants; provide PPE for chemical handling
4. Splice/Termination Preparation	Electrical contact (adjacent energized cables) Sharp cable edges/cutting tools Chemical exposure (splice materials) Ergonomic strain	H M M M	Verify zero-energy state on cable to be spliced/terminated; use LOTO Identify and maintain safe distance from adjacent energized cables Use proper cable-cutting and stripping tools; cut away from body Follow manufacturer splice/termination procedures exactly Use chemical-resistant gloves when handling splice compounds Provide adequate lighting and ergonomic positioning for workers
5. Testing & Energization Preparation	High-voltage testing (hipot) shock Incorrect cable identification Premature energization	H H H	Clear all personnel from cable route before high-potential testing Post warning signs: 'DANGER - HIGH VOLTAGE TESTING IN PROGRESS' Verify cable phase identification with multiple methods (tone, tag, trace) Ground all cable ends not being tested per IEEE 400 Confirm LOTO clearance before energization steps Notify control center and receive authorization before switching
6. Cleanup & Demobilization	Trip/slip hazards from materials Reel handling injuries Unsecured manhole/vault covers	L M M	Remove all pulling equipment, lubricant containers, and debris Secure all manhole and vault covers flush with grade Verify all cable openings are properly sealed (fire-stop, duct seal) Return reels and equipment using mechanical handling Conduct final site walkthrough for housekeeping Complete as-built documentation and pulling records

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

☐ Hard Hat (ANSI Z89.1 Type I, Class E)	☐ Safety Glasses (ANSI Z87.1)
☐ Leather Work Gloves (abrasion-resistant)	☐ Steel-Toe Boots (ASTM F2413)
☐ High-Visibility Vest (ANSI/ISEA 107 Class 2)	☐ FR-Rated Clothing (near energized lines)
☐ Hearing Protection (pulling equipment noise)	☐ Full-Body Harness (if working at height or near openings)
☐ Rubber Insulating Gloves (if near energized conductors)	☐ Knee Pads (for conduit work)

EMERGENCY PROCEDURES

1. If cable snaps or whips under tension, all personnel immediately take cover behind solid barriers. Do NOT attempt to grab a cable under tension. Account for all workers.
2. For pinch-point injuries at sheaves or rollers, stop all pulling operations immediately. Administer first aid and call 911 for crush injuries. Do NOT reverse equipment to free trapped limbs without medical guidance.
3. If overhead line contact occurs, assume everything in the work area is energized. Do NOT touch any equipment or cables. Evacuate using shuffle step (feet together). Call utility for emergency de-energization.
4. For manhole/confined space emergencies, do NOT enter for rescue without proper equipment. Activate retrieval system from surface. Call 911 and initiate confined space rescue plan.
5. For heavy reel handling injuries (strain, crush), stop operations and assess injury. Apply RICE protocol for strains. Call 911 for crush or suspected fracture injuries.
6. All incidents require immediate work stoppage, supervisor notification, and incident report within 24 hours.

Emergency Contact:	911 / Site-specific: _____
Assembly Point:	
Nearest Hospital:	
First Aid Kit Location:	

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures.

#	Print Name	Signature	Company	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Name / Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

Next Review Date:	
Revision Notes:	

FORBES SAFETY SOLUTIONS | *Committed to Zero Incidents*

This document is valid only when all sections are completed and signatures obtained.

JOB HAZARD ANALYSIS

Concrete Cutting & Sawing

Regulatory References: 29 CFR 1926.1153 (Silica), 29 CFR 1926.300, Table 1 Silica Rule

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	JHA-033
Supervisor:		Reviewed By:	
Trade/Activity:	Concrete Cutting & Sawing	Permit Required:	☐ Yes ☐ No

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level	Control Measures
1. Layout & Marking	Striking embedded utilities/rebar Slips/trips Silica dust (pre-existing)	H L M	Scan concrete with GPR or X-ray to identify rebar, conduit, and utilities Mark cut lines clearly with chalk or marking paint Clear work area of debris, tools, and obstructions Verify depth of cut will not contact embedded utilities Review structural drawings to confirm cut will not compromise integrity Obtain engineering approval for structural cuts
2. Saw / Equipment Setup	Blade failure/breakage Electrical hazards Improper guarding	H H M	Inspect blade for cracks, missing segments, warping, or damage — replace if defective Verify blade RPM rating matches saw specifications Check all guards are in place and functioning properly Ensure GFCI protection on all electrical connections Inspect power cords for damage; route away from water and cutting path Test emergency shut-off before starting work
3. Wet Cutting Operations	Silica dust (reduced but present) Electrical shock from water Slurry slip hazard Blade kickback	M H M H	Provide continuous water flow to blade per Table 1 requirements Use GFCI protection on ALL electrical equipment in wet environment Contain slurry with berms/vacuum — prevent runoff to drains or waterways Maintain firm footing; use anti-slip footwear Allow blade to reach full speed before contacting concrete Never force blade; let it cut at its own pace to prevent kickback Operator must use both hands on saw at all times
4. Dry Cutting with Vacuum	Silica dust exposure Noise (95-110 dB) Flying debris	H H M	Use saw with integrated dust collection (vacuum shroud) per Table 1 Ensure HEPA vacuum is operating at manufacturer-specified

FORBES SAFETY SOLUTIONS

Task Step	Hazard	Risk Level	Control Measures
	Fire from sparks	M	flow rate Operator wears half-face APR with P100 filters as backup Wear hearing protection — double protection if >100 dB Wear face shield over safety glasses Clear all combustible materials within 35 ft of cutting area Have fire extinguisher within 25 ft
5. Material Removal	Heavy lifting (concrete sections) Pinch points Sharp edges Collapse of cut sections	M M M H	Plan removal sequence to prevent uncontrolled collapse of cut sections Use mechanical lifting (forklift, crane) for sections over 50 lbs Wear cut-resistant gloves when handling cut concrete Support cut sections before making final cuts to prevent falling Keep hands and feet clear of pinch points during removal Stack removed material in designated area away from work zone
6. Cleanup	Silica in settled dust Slurry disposal Tripping hazards	M M L	Use HEPA vacuum for dry dust cleanup — NEVER dry sweep or use compressed air Collect and properly dispose of slurry per local environmental regulations Decontaminate equipment before leaving the work area Remove all PPE carefully to avoid secondary silica exposure Inspect area for remaining trip hazards; patch or barricade open cuts Complete silica exposure log for the shift

Additional Notes: Silica exposure control plan required per 29 CFR 1926.1153. Follow Table 1 controls for each saw type. Maintain exposure monitoring records. All operators must complete silica awareness training.

FORBES SAFETY SOLUTIONS

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Required PPE	
☒ Hard Hat (ANSI Z89.1)	☒ Safety Glasses / Goggles (ANSI Z87.1)
☒ Face Shield (during cutting)	☒ Hearing Protection (NRR 25+)
☒ Respirator (N95 min / Half-Face APR w/ P100 for silica)	☒ High-Visibility Vest
☒ Steel/Composite Toe Boots	☒ Cut-Resistant Gloves
☒ Knee Pads (for slab cutting)	☒ Waterproof Clothing (wet cutting)

EMERGENCY PROCEDURES

- Blade contact injury: Apply direct pressure to wound. Call 911 for deep lacerations or amputations. Do NOT remove embedded blade fragments.
- Silica overexposure: Remove worker from exposure area. Seek medical evaluation for respiratory symptoms.
- Electrical shock (wet cutting): De-energize equipment. Do NOT touch the victim if still in contact with power. Call 911. Use GFCI on all circuits.
- Fire from dry cutting sparks: Use ABC fire extinguisher on-site. Clear combustibles from cutting area before work begins.
- Eye injury from debris: Flush eyes with clean water for 15 minutes. Seek medical attention.
- Report all incidents, near-misses, and equipment malfunctions to supervisor immediately.

FORBES SAFETY SOLUTIONS

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for the work to be performed.

#	Print Name	Signature	Company	Date	Time
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

REVIEW & APPROVAL

Role	Name / Signature	Title	Date
Prepared By			
Reviewed By			
Approved By			
Site Supervisor			

REVISION HISTORY

Rev.	Date	Description	Author
0		Initial Release	
1			

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

CONCRETE FORMWORK & SHORING

29 CFR 1926 Subpart Q — Concrete and Masonry Construction

PROJECT INFORMATION

Company Name:		Date:	
Project Name:		Supervisor:	
JHA Number:		Revision:	
Work Activity:	Concrete Formwork & Shoring Operations		
References:	29 CFR 1926 Subpart Q; 29 CFR 1926.703; ACI 347; OSHA STD 03-11-002		

HAZARD ANALYSIS

TASK STEP	HAZARD	RISK LEVEL	CONTROL MEASURES
1. Form Layout & Preparation	- Manual handling strain (heavy form panels 50-100+ lbs) - Struck-by falling panels during unloading - Pinch points during assembly - Uneven ground / trip hazards	HIGH	- Use mechanical lifting devices (crane/forklift) for panels >50 lbs - Tag lines on suspended loads; never stand under - Leather gloves required during handling - Pre-task housekeeping; level staging area - Two-person minimum for panel handling - Stretch & flex program before shift start
2. Shoring / Reshoring Installation	- Formwork collapse / structural failure - Falls from elevated work surfaces - Struck-by falling shoring components - Crushing during jack/post adjustment	HIGH	- Engineered shoring design by qualified person per 29 CFR 1926.703(b) - Inspect all shoring components before installation - Fall protection required above 6 ft (guardrails or PFAS) - Hard hats mandatory in shoring zone - Do not exceed rated load capacity—verify manufacturer specs - Exclusion zone below active shoring installation
3. Rebar Placement & Tying	- Impalement on protruding rebar - Cuts / lacerations from rebar ends and tie wire - Repetitive motion injury (tying) - Falls from elevated rebar mats	HIGH	- Rebar caps (mushroom type) on all protruding vertical rebar per OSHA - Cut-resistant gloves (ANSI A4 minimum) required - Automatic rebar tying tools to reduce repetitive strain - Fall protection on rebar mats above 6 ft; use rebar runner planks - Pre-shift inspection of rebar caps and covers
4. Form Inspection Before Pour	- Formwork blowout during pour (catastrophic failure) - Undetected damage to ties, braces, or strongbacks - Unauthorized modifications to engineered system	MEDIUM	- Qualified person inspection before each concrete pour per 1926.703(e) - Document inspection on pre-pour checklist - Verify form tie spacing matches engineering drawings - Check all braces, walers, and strongbacks for secure connection - Stop-work authority for any deficiency found
5. Concrete Placement (Pump / Bucket / Chute)	- Concrete burns (alkaline pH 12–13 causes chemical burns) - Silica dust exposure (cutting / grinding cured concrete)	HIGH	- Full concrete PPE: rubber boots, long sleeves, alkali-resistant gloves, splash goggles - Immediate skin wash stations within 25 ft of pour area - Pump operator certification; safety meeting before pump setup

	• Struck-by from concrete pump hose whip • Engulfment in wet concrete (wall / deep forms) • Noise exposure from pumps and vibrators		• Hose restraint cables on all pump line couplings • Workers shall not enter forms during placement • Hearing protection required near pumps/vibrators (>85 dBA)
6. Form Stripping & Shoring Removal	• Premature stripping (structural collapse) • Falls during elevated stripping work • Struck-by falling form panels and hardware • Concrete edge sharpness (lacerations)	HIGH	• Concrete cylinder break tests must meet minimum PSI before stripping • Qualified person authorization required—document on permit • Controlled demolition sequence per engineering plan • Exclusion zone below stripping operations; barricade and signage • Fall protection (PFAS or guardrails) on all elevated stripping • Cut-resistant gloves during handling of stripped forms

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

PPE ITEM	STANDARD	NOTES
Hard Hat (Type I, Class E)	ANSI/ISEA Z89.1-2014	Required at all times in work zone
Safety Glasses / Goggles	ANSI/ISEA Z87.1-2020	Splash goggles during concrete pour
Alkali-Resistant Gloves	ANSI/ISEA 105-2016	Rubber/nitrile for wet concrete; leather for form handling
Steel-Toe Rubber Boots	ASTM F2413-18	Waterproof rubber boots during concrete placement
High-Vis Safety Vest (Class 2)	ANSI/ISEA 107-2020	Required on all active construction sites
Fall Protection Harness	ANSI Z359.11-2021	Full-body harness for work above 6 ft
Hearing Protection	ANSI S3.19 / S12.6	Required near pumps, vibrators, saws (>85 dBA)
Respiratory Protection	NIOSH 42 CFR Part 84	N95 minimum when cutting/grinding concrete (silica)
Long Sleeves / Coveralls	—	Prevent concrete contact burns; alkali-resistant material preferred

EMERGENCY PROCEDURES

Emergency Contact: 911 for all life-threatening emergencies

First Aid Station: Located at _____ (identify before each shift)

Concrete Burns: Immediately flush affected skin with clean water for 20+ minutes. Remove contaminated clothing. Seek medical attention for persistent irritation or chemical burns.

Eye Contact: Flush eyes immediately with clean water for at least 15 minutes at nearest eyewash station. Seek medical attention.

Formwork Collapse: Evacuate area immediately. Account for all personnel. Do not re-enter until qualified engineer inspects and clears the area. Notify Project Manager and Safety Department.

Fall Injury: Do not move injured person unless in immediate danger. Call 911. Provide first aid as trained. Document incident per company procedures.

Fire / Pump Fuel Spill: Use nearest fire extinguisher if safe to do so. Evacuate to designated muster point. Call fire department.

Nearest Hospital: _____ (identify before each shift)

CREW ACKNOWLEDGMENT & SIGN-OFF

By signing below, I acknowledge that I have reviewed this JHA, understand the identified hazards and required control measures, and agree to follow all safety procedures.

#	PRINTED NAME	SIGNATURE	COMPANY / TRADE	DATE	UNDERSTOOD (INITIALS)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

REVIEW & APPROVAL

ROLE	SIGNATURE	DATE	PRINTED NAME
Prepared By:			
Reviewed By (Supervisor):			
Approved By (Safety Mgr):			
Client/GC Representative:			

DISCLAIMER

This JHA is a template intended to be customized for site-specific conditions. It does not replace a qualified safety professional's assessment. Employers remain responsible for compliance with all applicable OSHA standards and local regulations. This document should be reviewed and updated whenever work conditions change.

JOB HAZARD ANALYSIS

Concrete Placement & Finishing Operations

Applicable Standards: 29 CFR 1926 Subpart Q (1926.700–1926.706) — Concrete & Masonry; 29 CFR 1926.1153 — Respirable Crystalline Silica; ACI 347 — Formwork

Project Name: _____	Date: _____
Location: _____	Supervisor: _____
Crew Members: _____	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
1	Inspect formwork, shoring, and bracing for structural adequacy	Formwork collapse under concrete weight; shoring failure; workers struck by falling forms	Competent person inspects all formwork per ACI 347 and 1926.703(a). Verify shoring designed by qualified engineer for anticipated loads. Check bracing connections, wedges, and tie spacing. No worker under forms being raised/moved.	
2	Place and tie reinforcing steel (rebar) and embed items	Impalement on exposed rebar ends; cuts/lacerations from wire ties; manual handling strain; falls from elevated rebar mats	Install rebar caps (mushroom type) on all exposed vertical rebar per 1926.701(b). Cut-resistant gloves for tie wire work. Two-person carry for rebar >20 ft. Planking over rebar mats for worker access. Rebar impalement protection required at all heights.	
3	Set up and position concrete pump truck — outriggers, boom reach, and exclusion zone	Pump truck tip-over; boom contact with overhead power lines; struck-by from boom swing; outrigger bearing failure	Level truck on firm ground. Fully extend outriggers with timber cribbing pads. Maintain min 20-ft clearance from power lines per 1926.1408. Establish swing radius exclusion zone. Certified pump operator only. Pre-pour safety briefing with all crew.	
4	Receive and place concrete from ready-mix trucks	Struck-by from chute swing; contact with wet concrete (alkaline burns pH 12+); silica dust from dry areas; slip hazards	Spotter guides trucks — wheel chocks on grade. Long sleeves, waterproof gloves, rubber boots, and splash-proof goggles for all workers contacting concrete. Eye wash station on-site. Wash skin immediately upon contact. No kneeling in wet concrete.	
5	Consolidate concrete using internal vibrators	Hand-arm vibration syndrome (HAVS); electrical shock from vibrator in wet conditions; noise exposure >85 dBA	GFCI protection on all electrical vibrators. Limit continuous vibrator use to 15-min intervals. Anti-vibration gloves. Hearing protection required (ear plugs + muffs near pump). Rotate vibrator operators to limit exposure.	
6	Screed, bull float, and finish concrete surface	Ergonomic strain (bending/kneeling for extended periods); silica exposure during power trowel operations; slips on wet surface	Knee boards for finishing. Rotate finishers every 30 min. Wet methods during cutting/grinding per 1926.1153 Table 1. Non-slip rubber boots. Power trowel operators trained — kill switch functional. Dust mask or respirator for dry finishing.	
7	Apply curing compound or wet cure methods	Chemical inhalation from curing compounds (VOC exposure); skin irritation; slip hazard on treated surfaces	Review SDS for curing compound. Apply with low-pressure sprayer to minimize aerosolization. Half-face respirator with OV cartridge in enclosed areas. Chemical-resistant gloves. Barricade cured areas to prevent foot traffic until set.	
8	Strip forms and remove shoring per engineered sequence	Premature form removal (structural collapse); falling forms/shores; pinch points between forms and structure; nail punctures	Strip only after concrete reaches specified strength (cylinder break tests or maturity method). Follow engineer's reshoring sequence. Two workers minimum for panel	

⚠️ This JHA must be reviewed and signed by all crew members before work begins. Conditions on the jobsite may change — reassess hazards throughout the shift and update this JHA as necessary.

REVIEW & APPROVAL

Reviewed By (Print Name)

Signature

Date _____

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

JHA INFORMATION			
JHA Title:	Confined Space Entry	JHA Number:	FSS-JHA-027
Project Name:		Date:	
Location:		Revision:	0
Regulatory References:	29 CFR 1910.146 (Permit-Required Confined Spaces); 29 CFR 1926 Subpart AA (Confined Spaces in Construction)		
Prepared By:		Approved By:	
Competent Person:		Supervisor:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Space Identification & Hazard Assessment	- Unidentified permit-required conditions - Unknown atmospheric hazards - Engulfment potential - Energy sources not identified	H	- Survey and inventory all confined spaces on site - Classify each space as permit-required or non-permit per 1910.146 - Post warning signs at all confined space entries ("DANGER — Confined Space") - Review historical data, SDS, and process info for each space - Identify all energy sources requiring lockout/tagout - Conduct pre-entry hazard assessment with competent person
2. Atmospheric Testing	- Oxygen deficiency (<19.5%) - Oxygen enrichment (>23.5%) - Toxic gas exposure (H₂S, CO) - Flammable atmosphere (>10% LEL)	H	- Calibrate multi-gas detector before each use per manufacturer specs - Test atmosphere before entry in this order: O₂, combustibles, toxics - Test at multiple levels (top, middle, bottom) of space - Continuous monitoring required during all entry operations - Establish action levels: O₂ 19.5-23.5%, LEL <10%, H₂S <10ppm, CO <25ppm - Document all readings on entry permit - Evacuate immediately if readings exceed action levels
3. Ventilation Setup	- Inadequate air circulation - Introduction of contaminants via ventilation - Recirculation of hazardous atmosphere - Noise exposure from blowers	M	- Position blower intake in clean air source — away from exhaust/contaminants - Direct forced air to lowest point of space for heavier-than-air gases - Allow adequate ventilation time before entry (minimum 15 minutes) - Re-test atmosphere after ventilation before allowing entry - Maintain continuous mechanical ventilation during all entry operations - Use intrinsically safe ventilation equipment in flammable atmospheres
4. Entry Permit Completion	- Incomplete hazard communication - Missing authorization - Inadequate rescue planning - Untrained personnel entry	M	- Complete all sections of confined space entry permit - Verify atmospheric test results recorded on permit - Confirm rescue plan and rescue team availability - List all authorized entrants, attendants, and entry supervisor - Verify all entrants have current confined space training - Entry supervisor signs permit — post at entry point - Permit valid for one shift only; renew for subsequent shifts
5. Entry & Work Operations	- Atmospheric changes during work - Engulfment by stored materials - Entrapment in converging geometry - Electrical/mechanical energy contact	H	- Attendant stationed at entry point at all times — no exceptions - Maintain continuous communication (visual, voice, radio, or hardwired) - Entrants wear retrieval harness with lifeline attached to tripod/davit - Continuous atmospheric monitoring with audible/visual alarms - All energy sources locked out/tagged out before entry - Limit number of entrants to essential personnel only - Entrants authorized to self-evacuate at any time without question
6. Exit & Permit Closeout	- Residual hazards left in space - Incomplete documentation - Failure to secure space after exit	L	- All entrants exit space and are accounted for - Remove all tools, equipment, and materials from space - Close and secure space entry point to prevent unauthorized entry - Entry supervisor cancels permit and documents closeout

			• Review any incidents or near-misses during entry • File completed permit with project safety records • Debrief crew on lessons learned
--	--	--	--

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	Specification / ANSI Standard	Condition / Notes
Hard Hat	ANSI/ISEA Z89.1, Type I or II	Bump cap may be acceptable in low-clearance spaces
Safety Glasses / Goggles	ANSI/ISEA Z87.1+	Splash-proof goggles if liquid hazards present
Full-Body Harness with Retrieval D-Ring	ANSI/ASSP Z359.1	Dorsal D-ring for fall arrest; sternal for retrieval
Supplied Air Respirator (SAR) or SCBA	NIOSH 42 CFR Part 84; ANSI Z88.2	Required when atmosphere cannot be made safe
Chemical-Resistant Gloves	ANSI/ISEA 105; EN 374	Select based on chemical exposure present
Steel-Toe Safety Boots	ASTM F2413 (I/75 C/75)	Chemical-resistant soles if needed
High-Visibility Vest	ANSI/ISEA 107, Class 2	Required for surface crew visibility
Hearing Protection	ANSI S3.19 / S12.6 (NRR ≥ 25 dB)	Required when ventilation noise exceeds 85 dBA

EMERGENCY PROCEDURES

Atmospheric Emergency / Alarm:

- All entrants evacuate space IMMEDIATELY upon alarm activation
- Attendant initiates rescue procedures — does NOT enter the space
- Attendant calls 911 and activates on-site rescue team
- Account for all entrants by name — report to rescue team
- Provide rescue team with atmospheric data and space configuration
- On-site rescue team enters only with proper equipment and training

Entrant Down / Unresponsive:

- Attendant attempts non-entry rescue using retrieval system (tripod/davit)
- Call 911 and activate confined space rescue team
- NEVER enter the space to attempt rescue without proper equipment and backup
- If extracted, begin CPR/AED and treat for atmospheric exposure
- Provide EMS with SDS information on potential chemical exposures

Engulfment Emergency:

- Shut off all material flow sources immediately
- Call 911 — request confined space rescue with engulfment capability
- Do not attempt to pull victim from engulfment material
- Maintain communication with victim if conscious
- Provide rescue team with material type and estimated depth

Emergency Contact Information:

- Emergency Services: 911
- Confined Space Rescue Team: [Insert Name & Phone]
- Site Safety Manager: [Insert Name & Phone]
- Nearest Hospital: [Insert Name, Address & Phone]
- Poison Control: 1-800-222-1222

WORKER SIGN-OFF — I HAVE READ AND UNDERSTAND THIS JHA

#	Print Name	Signature	Company / Trade	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Initials
Prepared By (Author)			
Reviewed By (Safety Manager)			
Approved By (Project Manager)			
Client / Owner Rep			

This JHA must be reviewed and updated whenever job conditions change, after any incident, or at minimum annually.

FORBES SAFETY SOLUTIONS**JOB HAZARD ANALYSIS****DEMOLITION — JOB HAZARD ANALYSIS**

Reference: 29 CFR 1926 Subpart T — Demolition

PROJECT INFORMATION

Company Name:	[Enter Company Name]
Project Name:	[Enter Project Name]
Date:	[MM/DD/YYYY]
Supervisor:	[Enter Supervisor Name]
JHA Number:	[JHA-DM-001]
Work Activity:	Demolition — 29 CFR 1926 Subpart T

JOB HAZARD ANALYSIS — TASK STEPS & CONTROLS

The following analysis identifies task steps, associated hazards, risk levels, and control measures for demolition operations. All workers must review this JHA before commencing work.

Task Step	Hazard(s)	Risk Level (H/M/L)	Control Measures
1. Engineering Survey & Pre-Demolition Planning	Unidentified structural weaknesses, unknown hazardous materials, incomplete utility mapping, adjacent structure damage	H	• Engineering survey conducted by competent person per 1926.850(a) • Written demolition plan developed and reviewed • Structural drawings obtained and reviewed • Adjacent properties assessed for exposure risk • Survey documented and kept on-site at all times
2. Utility Disconnection & Verification	Electrical contact/electrocution, gas line rupture/explosion, water main flooding, telecom/fiber damage	H	• All utilities identified, disconnected, and capped by utility provider • Written confirmation obtained from each utility company • Lockout/tagout (LOTO) procedures applied per 1926.417 • Test all conductors as de-energized before work begins • Utility map posted at site entrance
3. Hazardous Material Abatement (Asbestos, Lead, PCBs)	Asbestos fiber inhalation (mesothelioma), lead dust exposure, PCB contamination, silica dust, chemical burns	H	• Comprehensive hazmat survey by licensed inspector before demolition • Asbestos abatement by licensed contractor per 1926.1101 • Lead abatement per 1926.62; blood lead level monitoring for workers • Negative air pressure enclosures for abatement areas • Air monitoring throughout abatement; clearance testing before proceeding • Waste manifested and disposed at licensed facility
4. Structural Weakening Sequence	Premature/uncontrolled collapse, falls from height, struck-by falling debris, floor/wall failure	H	• Sequential demolition plan followed top-down per 1926.850(e) • No workers permitted on structures being weakened unless protected • Continuous structural monitoring by competent person • Temporary shoring/bracing installed as required • Exclusion zones established and enforced around weakening areas • Floor openings covered or barricaded per 1926.502
5. Mechanical Demolition (Excavator, Wrecking Ball, Shears)	Struck-by debris/projectiles, equipment rollover, dust inhalation (silica), noise exposure, flying glass/concrete	H	• Minimum exclusion zone of 1.5x building height maintained • Dust suppression: continuous water spray on demolition face • Silica exposure monitoring per 1926.1153 (Table 1 or exposure assessment) • ROPS/FOPS on all demolition equipment • Operator protected in enclosed cab with HEPA filtration • Spotters posted at exclusion zone perimeter
6. Debris Removal & Material Sorting	Struck-by falling debris, crushing by heavy equipment, rebar puncture wounds, hidden hazmat in rubble, dust exposure	M	• Debris chutes or crane/bucket for upper floor removal • No materials dropped from height outside designated chutes • Workers clear of equipment swing radius at all times • Material sorted: concrete, metals, wood, hazmat waste • Dust suppression maintained during loading/hauling • All loads secured before transport per DOT requirements
7. Site Stabilization & Final Clearance	Unstable foundations/basements, open excavations, standing water, residual contamination	M	• Below-grade structures filled or properly shored • Environmental clearance sampling completed • Open excavations barricaded or backfilled • Final site inspection documented by competent person • Erosion and sediment controls installed per SWPPP

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- ☐ Hard hat (ANSI Z89.1 Type I, Class E) — required at all times on site
- ☐ Safety glasses with side shields (ANSI Z87.1) — required at all times; goggles for dust exposure
- ☐ High-visibility vest (ANSI/ISEA 107 Class 2 minimum) — required at all times
- ☐ Steel-toed boots (ASTM F2413) with puncture-resistant soles and metatarsal guards
- ☐ Cut-resistant gloves (ANSI A4 minimum) for debris handling; chemical-resistant gloves for hazmat
- ☐ Hearing protection (NRR 25+) required during mechanical demolition operations
- ☐ Respiratory protection: N95 minimum for dust; half-face P100 for lead; full-face with HEPA for asbestos
- ☐ Personal Fall Arrest System (PFAS) for work above 6 feet
- ☐ Disposable Tyvek coveralls during hazardous material abatement operations
- ☐ Face shield for cutting/sawing operations with projectile hazards

EMERGENCY PROCEDURES

Emergency Contact Number:	<i>[Enter Phone Number]</i>
Nearest Hospital:	<i>[Enter Hospital Name & Address]</i>
Site Assembly Point:	<i>[Enter Location]</i>
First Aid Kit Location:	<i>[Enter Location]</i>
AED Location:	<i>[Enter Location]</i>
Fire Extinguisher Locations:	<i>[Enter Locations]</i>
Hazmat Spill Kit Location:	<i>[Enter Location]</i>
Decontamination Station:	<i>[Enter Location — Required for Hazmat Operations]</i>

CREW SIGN-OFF — I HAVE REVIEWED AND UNDERSTAND THIS JHA

By signing below, each crew member acknowledges they have reviewed this Job Hazard Analysis, understand the identified hazards and control measures, and agree to follow all safety procedures outlined herein.

Printed Name	Signature	Date

ADDITIONAL HAZARDS / SITE-SPECIFIC NOTES

Use this section to document any additional hazards, site-specific conditions, or supplemental control measures not covered above.

JHA REVIEW & APPROVAL

Role	Name / Signature	Date
Prepared By (Competent Person):		
Reviewed By (Site Superintendent):		
Approved By (Project Manager):		

DISCLAIMER: This JHA template is provided as a starting point for site-specific hazard analysis. It must be reviewed and customized by a competent person familiar with the specific project conditions. Forbes Safety Solutions is not liable for misuse or failure to adapt this template to actual site conditions. Always consult current OSHA regulations and site-specific safety plans.

JOB HAZARD ANALYSIS

Directional Drilling / Boring

Regulatory References: 29 CFR 1926.651, CGA Best Practices, 811 Call Before You Dig

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	JHA-032
Supervisor:		Reviewed By:	
Trade/Activity:	Directional Drilling / Boring	Permit Required:	☐ Yes ☐ No

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level	Control Measures
1. Utility Locate Verification	Striking unmarked utilities Inaccurate locate markings Incomplete records	H H M	Verify 811 ticket is current and all utilities have responded Pothole/vacuum excavate to physically expose utilities within 5 ft of bore path Compare field marks against utility maps and as-built drawings Mark all exposed utilities with flags/stakes and record depths If discrepancies found, stop work and re-request locates Use ground-penetrating radar (GPR) for added verification in congested areas
2. Drill Rig Setup	Heavy equipment tip-over Caught-in/between Noise exposure Traffic hazards	H M M H	Position rig on firm, level ground; use crane mats if needed Establish traffic control plan with signs, cones, flaggers per MUTCD Set exclusion zone around rig — minimum 10 ft from rotating components Inspect all rig safety guards, E-stops, and shutdown devices Verify pipe rack is secure and pipe handling area is clear Conduct safety briefing with all crew before startup
3. Pilot Bore	Striking existing utilities Drilling fluid release (frac-out) Entanglement in drill string	H H H	Use electronic locating/sonde to track bore head position and depth continuously Monitor drilling fluid pressure — do NOT exceed formation fracture pressure Maintain 2 ft minimum separation from known utilities Station spotter at bore path to watch for surface heaving or fluid emergence Never reach into rotating drill string; use wrenches designed for breakout Wear hearing protection; rig produces 85-95 dB
4. Back-Ream	Entanglement Fluid spill High torque / sudden release	H M M	Ensure reamer guards are installed and rotating parts are shielded Maintain safe distance from reamer and drill string during rotation

FORBES SAFETY SOLUTIONS

Task Step	Hazard	Risk Level	Control Measures
	Noise	M	Monitor mud returns — loss of returns indicates potential frac-out Use proper pipe handling tools (no hands near threads under torque) Keep mud containment pits/tanks maintained and not overflowing Have vacuum truck on standby for fluid management
5. Product Pullback	Pipe whip/snap Heavy load handling Trench collapse at exit pit Entanglement	H M H H	Inspect swivel, pulling head, and product pipe connections before pullback Keep personnel clear of pipe under tension — establish exclusion zone Shore or slope exit pit per 29 CFR 1926.652 Use tag lines on suspended pipe — never guide by hand near rotating joints Monitor pull force — stop if resistance exceeds design parameters Spotter at exit pit to guide product emergence
6. Cleanup & Demobilization	Slips/trips on drilling mud Heavy equipment movement Environmental contamination	M M M	Pump out and properly dispose of all drilling fluid per local regulations Backfill entry/exit pits and compact to original grade Clean up all spilled drilling fluid from surrounding areas Restore ground surface, seed/sod as required by permit Secure all equipment for transport; check load securement Complete as-built documentation with bore depth and alignment records

Additional Notes: All utility locates must be verified and valid (within 10-14 business days depending on jurisdiction).
Pothole/vacuum excavate to expose all utilities within 5 ft of bore path. Maintain bore logs with depth and fluid pressure records.

FORBES SAFETY SOLUTIONS

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Required PPE	
☒ Hard Hat (ANSI Z89.1)	☒ Safety Glasses (ANSI Z87.1)
☒ High-Visibility Vest (Class 2/3)	☒ Steel/Composite Toe Boots
☒ Hearing Protection (NRR 25+)	☒ Cut-Resistant Gloves
☒ Face Shield (during fluid ops)	☒ Rubber Boots (wet conditions)

EMERGENCY PROCEDURES

- Utility strike (gas): Evacuate area immediately. Do NOT operate switches/ignition. Call 911 and gas utility emergency line.
- Utility strike (electric): Stay clear of equipment. Assume all ground in area is energized. Call 911 and utility provider.
- Utility strike (water/sewer): Shut down drill. Notify utility. Contain flow to prevent environmental damage.
- Drilling fluid release (frac-out): Stop drilling immediately. Contain fluid with berms/vacuum truck. Notify environmental coordinator.
- Entanglement injury: Activate E-stop on drill rig immediately. Do NOT attempt to reverse rotation. Call 911.
- Report all incidents, near-misses, and utility contacts to supervisor and 811 immediately.

FORBES SAFETY SOLUTIONS

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for the work to be performed.

#	Print Name	Signature	Company	Date	Time
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

REVIEW & APPROVAL

Role	Name / Signature	Title	Date
Prepared By			
Reviewed By			
Approved By			
Site Supervisor			

REVISION HISTORY

Rev.	Date	Description	Author
0		Initial Release	
1			

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Drywall Hanging & Finishing

Document No: FSS-JHA-049

Regulatory References: 29 CFR 1926 Subpart M (Fall Protection), 29 CFR 1926.1153 (Respirable Crystalline Silica)

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Work Description:	Drywall Hanging & Finishing	Revision:	0

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Material Staging and Delivery	Heavy lifting (4×12 sheet = 90+ lbs) Struck by falling material Slips/trips over staged materials	H M M	Use mechanical aids (drywall cart, boom lift) for transport; team lift for sheets; limit manual carries to 2 people per sheet minimum Stack sheets vertically against structural walls; secure to prevent tipping; establish exclusion zones during overhead lifts Maintain clear walkways; designate staging areas; housekeeping throughout shift
2. Sheet Cutting and Fitting	Knife cuts Dust from scoring/cutting Eye irritation from gypsum particles	M L L	Use retractable utility knives; cut away from body; replace blades frequently (dull blades require more force) Score and snap rather than saw when possible; use dust collection on power tools Safety glasses required at all times; dust mask for extended cutting operations
3. Hanging (Walls and Ceilings)	Ergonomic strain — overhead work, heavy sheets Falls from stilts or scaffolding Screw gun injuries Struck by falling sheet	H H L M	Use drywall lift (panel hoist) for all ceiling work; rotate overhead tasks every 20 minutes; provide anti-fatigue mats Drywall stilts: max 24" height on level surfaces only, no near openings/edges; scaffolding must be fully decked with guardrails per 1926 Subpart M Wear appropriate gloves; keep fingers clear of bit; use depth-setting clutch Two-person minimum for ceiling sheets; secure sheets immediately after positioning
4. Taping and Mudding	Ergonomic strain (repetitive arm/shoulder motion) Skin irritation from joint compound Eye irritation from compound dust	M L L	Use automatic taping tools (bazooka/flat box) to reduce repetitive motion; take breaks every 30 minutes Wear nitrile gloves; wash hands frequently; moisturizing skin care program Safety glasses required; ventilate workspace
5. Sanding	Silica dust exposure (respirable crystalline silica) Eye irritation from joint	H M H	MANDATORY: Use vacuum-attached sanding system per 29 CFR 1926.1153 Table 1; if not feasible — full exposure assessment and medical surveillance required; never dry

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	compound dust Falls from stilts/scaffolding Noise from power sanders	M	sand without dust controls Wear safety goggles (sealed); face shield for overhead sanding Same stilt/scaffold requirements as hanging; additional caution — reduced visibility from dust Hearing protection required when using power sanders; maintain below 85 dB TWA with engineering controls
6. Cleanup	Silica dust (re-suspended during cleanup) Slips on compound residue Cuts from scrap materials	H M L	Use HEPA-filtered vacuum for all dust cleanup — NEVER dry sweep silica-containing dust; wet methods as secondary control Damp-mop compound residue from floors; post wet floor signs Wear cut-resistant gloves when handling scrap; use covered waste containers

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Safety glasses (ANSI Z87.1) — required at all times; sealed goggles for sanding operations
- N95 respirator minimum for sanding operations (half-face APR with P100 for extended sanding)
- Hard hat (ANSI Z89.1) when overhead hazards present
- Cut-resistant gloves (ANSI A3) for handling sheets and cutting
- Nitrile gloves for taping/mudding
- Steel-toe/composite-toe boots (ASTM F2413)
- Knee pads for lower wall work
- Hearing protection for power sanding operations (NRR 25+)
- Back support belt (optional, for material handling — does not replace proper lifting technique)
- High-visibility vest if working near other trades

ADDITIONAL SAFETY REQUIREMENTS

- Silica exposure control plan must be established per 29 CFR 1926.1153 before any sanding operations
- Competent person required for all scaffold erection and use
- Pre-task safety briefing required before each shift
- All stilts must be inspected daily; damaged stilts removed from service immediately
- Material Safety Data Sheets (SDS) for joint compounds must be available on site
- Housekeeping is continuous — maintain clear egress paths at all times

EMERGENCY PROCEDURES

- Call 911 for all serious injuries; notify site supervisor immediately
- For eye exposure to dust/compound: Flush with clean water for 15 minutes; seek medical attention if irritation persists
- For falls from stilts/scaffolding: Do not move victim; stabilize and call 911; report incident to supervisor
- For deep lacerations: Apply direct pressure; elevate limb; call 911 if bleeding cannot be controlled
- For suspected silica overexposure: Move to fresh air; seek medical evaluation; document exposure incident
- First aid kit located at: _____
- Nearest hospital/emergency room: _____
- Emergency assembly point: _____
- Site emergency contact: _____

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for this work activity.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Next Review Date
Prepared By			
Reviewed By			
Approved By			
Site Safety Manager			

DISCLAIMER: This JHA is a template provided by Forbes Safety Solutions for general guidance. It must be reviewed, customized, and approved by a qualified safety professional before use on any specific project. Site-specific conditions may require additional hazard controls not listed herein.

JOB HAZARD ANALYSIS

Electrical Rough-In — Commercial & Residential

Applicable Standards: 29 CFR 1926 Subpart K (1926.400–1926.449) — Electrical; NFPA 70E — Electrical Safety in the Workplace; 29 CFR 1926.405 — Wiring Methods; NEC Article 210–230

Project Name: _____	Date: _____
Location: _____	Supervisor: _____
Crew Members: _____	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
1	Review electrical drawings and conduct panel board layout / circuit identification	Errors from outdated drawings leading to incorrect installation; conflict with other trades; energized existing circuits in remodel work	Verify drawings are latest revision (RFI log current). Coordinate with GC and other trades on routing conflicts. Use non-contact voltage tester on ALL existing wiring before handling. Lock-out/tag-out (LOTO) per 1926.417 on any energized panel.	
2	Install electrical boxes (junction, device, and panel enclosures)	Struck-by from overhead work; cuts from sheet metal box edges; falls from ladders or scaffolds; dust/debris in eyes	Wear safety glasses and cut-resistant gloves. Inspect ladder before each use — three-point contact. Secure boxes per NEC mounting requirements. Hard hat in multi-trade work areas. Deburr box knockouts before pulling wire.	
3	Run conduit (EMT, rigid, or PVC) and support per NEC spacing requirements	Musculoskeletal injury from overhead conduit installation; struck-by from falling conduit; cuts from conduit reaming; silica dust from concrete penetrations	Use mechanical benders — no improvised bending methods. Two-person lift for runs >10 ft. Support per NEC 358.30 (EMT) intervals. Ream all cut ends to prevent wire insulation damage. Core drill with dust collection or wet method for concrete penetrations.	
4	Pull conductors through conduit and cable tray systems	Electrical shock from contact with existing energized conductors; hand/finger pinch or crush injuries at pull points; eye injury from wire snap-back	Confirm circuits de-energized — LOTO verified with voltage tester at point of work. Wear leather gloves at pull points. Safety glasses mandatory. Communication between puller and feeder (radios for long runs). Wire pulling lubricant to reduce tension.	
5	Make conductor terminations and splices in junction boxes	Electrocution from energized circuits; arc flash from improper connections; cuts from wire strippers; confined space in electrical rooms	Zero-energy verification at each termination point. Use insulated tools rated for voltage class. Proper wire nut or compression connector sizing — no electrical tape as primary splice method. Follow NEC box fill calculations (314.16).	
6	Install grounding electrode system and equipment bonding conductors	Electrocution during ground rod driving; struck-by from hammer/driver; inadequate grounding creating future shock hazard	De-energize all circuits during grounding work. Use ground rod driver — never strike rod directly with hammer. Verify ground resistance with fall-of-potential test (<25 ohms per NEC 250.53). Torque all bonding connections to manufacturer specs.	
7	Install temporary power distribution and GFCI protection	Electrical shock from improper temporary wiring; fire from overloaded circuits; tripping hazards from cords	All temporary power circuits protected by GFCI per 1926.405(a)(2)(ii). Assured equipment grounding conductor program as alternative. No daisy-chaining power strips. Protect cords from damage — elevate or use cord covers across walkways.	
8	Conduct insulation resistance testing (megger test) on completed circuits	Electric shock from test voltage (500V–1000V DC); damage to sensitive equipment; miswired circuits	Verify all circuits isolated before testing. Post warning signs at both ends during megger test. Only qualified electricians perform testing. Discharge conductors after testing.	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
			Document readings per circuit.	
9	Energize panels and perform circuit verification / labeling	Arc flash during initial energization; electrocution; burns from fault current; incorrect circuit identification	Energize with panel door closed — stand to the side (arc flash protection position). Wear appropriate PPE per NFPA 70E arc flash risk assessment (Category 2 minimum for 208V panels). Verify each circuit with receptacle tester. Label all breakers accurately.	

 **This JHA must be reviewed and signed by all crew members before work begins.** Conditions on the jobsite may change — reassess hazards throughout the shift and update this JHA as necessary.

REVIEW & APPROVAL

Reviewed By (Print Name)

Signature

Date

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Energized Electrical Work

Regulatory References: NFPA 70E, 29 CFR 1910.331-335, 29 CFR 1926 Subpart K

Document No: FSS-JHA-037 | Revision: 0 | Date: _____

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS TABLE

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Energized Work Permit & Justification	Unnecessary exposure to electrical hazards Inadequate planning Failure to justify energized work	H H M	Complete Energized Electrical Work Permit (EEWP) per NFPA 70E Document justification: de-energizing creates greater hazard or is infeasible Obtain approval from qualified electrical safety supervisor Perform shock and arc flash risk assessments Brief all workers on specific hazards, boundaries, and emergency plan
2. Approach Boundary Establishment	Unauthorized personnel in danger zone Incorrect boundary distances Arc flash exposure	H H H	Determine Limited, Restricted, and Arc Flash boundaries per NFPA 70E Table 130.4(E)(a) Mark boundaries with barricades, tape, and warning signs Post arc flash labels with incident energy (cal/cm ²) on equipment Only qualified persons within Limited Approach Boundary Attendant posted to control access at boundary perimeter
3. Arc Flash PPE Donning	Inadequate PPE rating Improper donning Heat stress from PPE	H M M	Select PPE based on incident energy analysis (cal/cm ² rating) Inspect all PPE for damage, cleanliness, and proper rating before use Don arc-rated layers: base layer, coverall/flash suit, hood, gloves, boots Verify all gaps sealed: no exposed skin within arc flash boundary Monitor workers for heat stress; rotate personnel as needed

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
4. Voltage Testing & Verification	Contact with energized parts Faulty test equipment Incorrect readings	H M H	Use voltage-rated test instruments rated for the voltage present Verify tester operation on known live source BEFORE and AFTER testing (Live-Dead-Live method) Maintain safe approach distances while testing Use insulated tools and one-hand technique Communicate readings clearly to all team members
5. Energized Work Execution	Arc flash (temps to 35,000°F) Arc blast (pressure wave) Electrical shock Burns Secondary blast-force injuries	H H H H H	Only qualified electrical workers perform energized tasks Work one phase/conductor at a time; insulate adjacent conductors Use insulated hand tools rated for voltage Position body to minimize exposure; turn face away from potential arc Maintain minimum approach distance per NFPA 70E Safety watch/attendant present with rescue equipment ready No loose clothing, jewelry, or conductive items
6. Re-establishment of Covers/Barriers	Accidental contact during closeout Unsecured covers Incomplete restoration	H M M	Replace all covers, guards, and barriers before removing PPE Verify all connections are secure and properly torqued Confirm no tools or materials left inside equipment Update arc flash labels if modifications were made Close out Energized Electrical Work Permit Document all work performed and any anomalies found

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

☐ Arc-Rated Face Shield / Hood (cal/cm ² per hazard analysis)	☐ Arc-Rated Coveralls or Flash Suit
☐ Voltage-Rated Insulating Gloves with Leather Protectors	☐ Safety Glasses (ANSI Z87.1) under face shield
☐ Dielectric Safety Boots	☐ Hard Hat (ANSI Z89.1 Type I, Class E)
☐ Hearing Protection (arc blast noise)	☐ Arc-Rated Balaclava
☐ FR Underwear/Base Layers	☐ Voltage-Rated Insulating Blankets/Mats

EMERGENCY PROCEDURES

1. In case of arc flash event, evacuate all personnel from the immediate area. Call 911 immediately. Do NOT attempt to touch the victim until power is confirmed de-energized.
2. For electrical shock, de-energize the circuit from a safe location using insulated tools. Begin CPR/AED if victim is unresponsive. Do NOT move the victim unless in immediate danger.
3. For arc blast injuries (pressure wave), assess for internal injuries, hearing damage, and burns. Treat burns with sterile dressings; do NOT apply ointments or remove fused clothing.
4. If secondary fire occurs from arc flash, use Class C fire extinguisher (CO2 or dry chemical). Evacuate if fire cannot be controlled within 30 seconds.
5. All arc flash incidents require immediate notification to safety department, investigation, and incident report within 24 hours regardless of injury severity.
6. Ensure AED is staged within 2 minutes of the work area. Two qualified first aid/CPR responders must be present.

Emergency Contact:	911 / Site-specific: _____
Assembly Point:	
Nearest Hospital:	
First Aid Kit Location:	

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures.

#	Print Name	Signature	Company	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Name / Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

Next Review Date:	
Revision Notes:	

FORBES SAFETY SOLUTIONS | *Committed to Zero Incidents*

This document is valid only when all sections are completed and signatures obtained.

JOB HAZARD ANALYSIS

Excavation & Trenching Operations

Applicable Standards: 29 CFR 1926 Subpart P (1926.650–1926.652); OSHA Excavation Standard; 29 CFR 1926.651(c) — Utility Locates

Project Name: _____	Date: _____
Location: _____	Supervisor: _____
Crew Members: _____	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
1	Conduct pre-excavation site survey and review utility locate markings (811 call confirmation)	Utility strikes (gas, electric, water, fiber); unmarked underground hazards	Verify 811 utility locate completed (min. 48 hrs prior). Review as-built drawings. Hand-dig within 18" of marked utilities. Use ground-penetrating radar for unknown areas.	
2	Establish excavation perimeter barricades and traffic control	Struck-by from vehicles or mobile equipment; unauthorized entry into excavation zone	Install high-visibility barricades and warning signs per MUTCD standards. Assign flaggers for active roadways. Maintain 6-ft setback for spoil piles from trench edge.	
3	Perform soil classification by competent person (visual and manual tests)	Incorrect soil classification leading to inadequate protective systems; cave-in risk	Competent person conducts thumb penetration, plasticity, and dry strength tests per 29 CFR 1926.652 Appendix A. Document soil type (A, B, or C) in writing. Reassess after rain events.	
4	Excavate trench using hydraulic excavator	Equipment tip-over; struck-by from bucket swing; overhead power line contact	Ensure operator is trained/certified. Maintain 10-ft clearance from power lines (20-ft for >350kV). No workers in swing radius. Ground guide with radio communication required. Spotters for blind spots.	
5	Install protective system — shoring, shielding, or sloping per soil classification	Cave-in / trench collapse; engulfment; crushing injuries	Install system before any worker enters trench >5 ft deep (OSHA 1926.652). Use tabulated data for shoring specs. Hydraulic shores installed from top down. Trench boxes rated for soil type and depth.	
6	Place access/egress ladders within 25 ft of lateral travel for all workers	Inability to escape during emergency; falls from ladder; ladder displacement	Position ladders per 1926.651(c)(2) — max 25 ft travel distance. Ladders extend 3 ft above trench edge. Secure at top to prevent displacement. Inspect daily before use.	
7	Monitor atmospheric conditions in trench (>4 ft deep)	Oxygen deficiency; toxic gases (H ₂ S, CO, methane); hazardous atmosphere from nearby operations	Continuous atmospheric monitoring with 4-gas meter (O ₂ , LEL, CO, H ₂ S). Calibrate instrument daily. Ventilate with mechanical blowers if readings are abnormal. Rescue plan and retrieval system in place.	
8	Perform work activities within the trench (pipe installation, utility repair, etc.)	Struck-by from falling materials/tools; manual handling injuries; water accumulation	Keep materials/tools 2 ft back from trench edge. Use buckets or tool lanyards to lower items. Pump standing water continuously. No workers under suspended loads. Competent person inspects trench daily and after weather events.	
9	Backfill operations and compaction	Workers caught between equipment and trench wall; uncontrolled soil movement; vibration exposure	Clear all personnel from trench before backfilling. Remove shoring bottom-up. Backfill in lifts and compact per engineer specs. Operator maintains visual contact with spotter. Anti-vibration gloves for compaction equipment.	
10	Demobilize equipment and restore site	Struck-by during equipment movement; unguarded open	Barricade any open excavations left overnight with steel plates or fencing. Restore traffic	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
		excavations; trip hazards	control. Final inspection by competent person. Document JHA completion and any incidents.	

 **This JHA must be reviewed and signed by all crew members before work begins.** Conditions on the jobsite may change — reassess hazards throughout the shift and update this JHA as necessary.

REVIEW & APPROVAL

Reviewed By (Print Name)

Signature

Date

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Firewatch Operations

Regulatory References: 29 CFR 1926.352, NFPA 51B, OSHA Hot Work Requirements

Document No: FSS-JHA-040 | Revision: 0 | Date: _____

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS TABLE

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Fire Watch Area Preparation (35-ft Radius)	Undetected combustible materials Failure to identify fire pathways Inadequate preparation scope	H H M	Inspect minimum 35-foot radius in ALL directions from hot work (including floors above/below) Remove or cover all combustible materials with fire-resistant blankets Wet down combustible floors, walls, and surfaces that cannot be removed Seal floor openings, cracks, and gaps where sparks could travel Verify no flammable vapors or gases present (use combustible gas indicator) Document all conditions on the Hot Work Permit before work begins
2. Fire Suppression Equipment Staging	Inadequate equipment for fire type Equipment malfunction Inaccessible extinguishers	H M M	Stage minimum one 20-lb ABC fire extinguisher within 10 feet of hot work Verify extinguisher inspection is current (monthly tag, annual service) Stage fire hose or water supply if available on site Position fire blankets within arm's reach of fire watch position Verify all fire extinguishers are unobstructed and accessible Confirm fire watch knows extinguisher operation (PASS technique)
3. Hot Work Monitoring	Fire/explosion from sparks/slag Distraction from duty Burns from hot materials Smoke inhalation	H H M M	Fire watch must maintain CONTINUOUS visual observation of hot work area Fire watch has NO other duties during monitoring - sole responsibility is fire detection Monitor for sparks, slag, and heat transfer to combustibles in all directions

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
			Maintain line of sight to all areas sparks could reach Fire watch has STOP WORK authority if unsafe conditions develop Position upwind from smoke/fumes; wear respiratory protection
4. Post-Work Fire Watch (Min 30 Min NFPA / 60 Min Some Sites)	Smoldering material (delayed ignition) Premature fire watch termination Failure to detect hidden hot spots	H H M	Continue fire watch minimum 30 minutes after hot work per NFPA 51B (or 60 min per site requirements) Check all surfaces within 35-ft radius for heat using back of hand (do NOT touch directly) Use thermal imaging camera if available to detect hidden hot spots Monitor areas above, below, and behind walls/partitions from hot work location Do NOT leave post until watch period is complete and area is confirmed cold If ANY heat or smoke is detected, restart the post-work watch timer
5. Area Release & Permit Closeout	Premature area release Incomplete permit documentation Residual hazards unaddressed	M L M	Conduct final area inspection - confirm no hot spots, smoke, or odors Remove fire-resistant coverings and verify no hidden damage beneath Sign and close the Hot Work Permit with time and date Notify the hot work operator and permit issuer of completion Return fire suppression equipment to proper storage locations Restore all fire protection systems that were impaired (sprinklers, alarms)
6. Documentation & Recordkeeping	Incomplete records (audit/compliance failure) Lost permits/documentation Failure to record near-miss events	M L M	Complete all sections of the Hot Work Permit (front and back) Record start time, end time, and post-watch completion time Document any abnormal conditions, near misses, or concerns File completed permit per site document retention policy (min 1 year) Report all fire incidents and near misses to safety dept within 24 hours Include fire watch records in daily safety documentation package

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

☐ Hard Hat (ANSI Z89.1)	☐ Safety Glasses (ANSI Z87.1)
☐ FR-Rated Clothing	☐ Steel-Toe Boots (ASTM F2413)
☐ Leather Work Gloves	☐ High-Visibility Vest (ANSI/ISEA 107 Class 2)
☐ Hearing Protection (as needed near hot work)	☐ Respiratory Protection (N95 minimum for smoke/fumes)
☐ Face Shield (if near active hot work)	☐ Fire-Resistant Blanket/Shield (for spark protection)

EMERGENCY PROCEDURES

1. If fire is detected: Attempt extinguishment ONLY if safe and fire is small (incipient stage). If fire exceeds extinguisher capability, evacuate immediately and call 911.
2. Activate fire alarm and building notification systems if fire cannot be controlled within 30 seconds. Initiate site evacuation per emergency action plan.
3. For burn injuries, cool the burn with clean, cool running water for at least 10 minutes. Do NOT apply ice, butter, or ointments. Cover with sterile dressing and seek medical attention.
4. If smoke inhalation is suspected, move the victim to fresh air immediately. Administer oxygen if available and trained. Call 911 for any respiratory distress.
5. For explosion events, evacuate all personnel to a minimum 500-ft radius. Account for all workers. Do NOT re-enter until hazardous materials team clears the area.
6. Fire watch must NOT leave the area until formally relieved by a qualified replacement or the required post-work watch period is complete.

Emergency Contact:	911 / Site-specific: _____
Assembly Point:	
Nearest Hospital:	
First Aid Kit Location:	

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures.

#	Print Name	Signature	Company	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Name / Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

Next Review Date:	
Revision Notes:	

FORBES SAFETY SOLUTIONS | *Committed to Zero Incidents*

This document is valid only when all sections are completed and signatures obtained.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

HVAC Installation & Service

Document No: FSS-JHA-050

Regulatory References: 29 CFR 1926 Subpart K (Electrical), 29 CFR 1910.147 (LOTO), EPA Section 608 (Refrigerants)

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Work Description:	HVAC Installation & Service	Revision:	0

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Equipment Placement/Rigging	Heavy lifting (condensing units 150-400+ lbs) Falls from rooftops/ladders Struck by suspended loads Crane/rigging failure	H H H H	Use crane or mechanical lifting equipment; never exceed equipment load ratings; rigging by qualified riggers only 100% tie-off for rooftop work; ladder safety (3-point contact, 4:1 ratio, secured at top); guardrails at roof edges Establish exclusion zone under suspended loads; use tag lines; never stand under crane boom Inspect all rigging equipment before each lift; qualified signal person required; pre-lift meeting for all critical lifts
2. Ductwork Fabrication and Installation	Sharp sheet metal cuts Falls from ladders/lifts Noise from fabrication tools Ergonomic strain (overhead installation)	H M M M	Wear cut-resistant gloves (ANSI A4+); deburr all cut edges; handle sheet metal with proper technique — never slide hands along edges Use appropriate access equipment (scissor lift preferred over ladders); fall protection per 1926 Subpart M Hearing protection required during fabrication; maintain below 85 dB TWA where possible Use mechanical lifts for duct sections; limit overhead work duration; rotate tasks
3. Refrigerant Line Brazing	Burns from torch/molten brazing material Fire — combustible materials ignition Toxic fumes from brazing flux Oxygen displacement in confined spaces	H H M H	Wear heat-resistant gloves and long sleeves; keep fire extinguisher within 10 feet; fire watch for 30 min after brazing Clear combustibles within 35 feet; use fire blankets on adjacent surfaces; hot work permit required per NFPA 51B Ensure adequate ventilation; use low-fume brazing alloys; respiratory protection if ventilation inadequate Never braise in confined spaces without ventilation and atmospheric monitoring; nitrogen purge lines during brazing to prevent oxidation and copper contamination
4. Electrical Connections	Electrical shock/electrocution Arc flash Incorrect wiring (fire risk)	H H M	LOTO all circuits per 29 CFR 1910.147; verify de-energized with rated meter; only qualified electricians perform connections Arc flash PPE per NFPA 70E hazard assessment; maintain approach boundaries Verify against wiring diagrams; use appropriately rated

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
			wire/breakers; torque all connections to specification
5. System Startup and Commissioning	Refrigerant exposure (asphyxiation risk in enclosed spaces) Electrical contact during testing High-pressure line failure	H M M	EPA Section 608 certified technicians only; check for leaks with electronic detector before startup; ensure ventilation in mechanical rooms; refrigerant monitors in enclosed spaces Use insulated test equipment; maintain clearances from energized components; only qualified personnel test Verify all connections and fittings before pressurizing; use nitrogen for initial pressure test; stand clear of fittings during test
6. Maintenance/Service Work	Electrical contact with live components Refrigerant burns (rapid expansion) and inhalation Confined spaces (ductwork, mechanical rooms) Biological hazards (mold, bacteria in drain pans/coils)	H H H M	LOTO before any service; verify de-energized; assume all wiring is live until tested Recover refrigerant before opening system; wear safety goggles and gloves for potential releases; EPA 608 compliance Evaluate for confined space entry per 29 CFR 1910.146; atmospheric testing, attendant, rescue plan if applicable Wear N95 respirator and gloves when cleaning coils/drain pans; use EPA-registered biocide; avoid pressure washing mold (aerosolization)

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Safety glasses (ANSI Z87.1) — required at all times
- Hard hat (ANSI Z89.1 Type I, Class E) when overhead hazards present
- Cut-resistant gloves (ANSI A4+) for sheet metal handling
- Heat-resistant gloves for brazing operations
- Voltage-rated gloves for electrical work (class per voltage level)
- Steel-toe/composite-toe EH-rated boots (ASTM F2413)
- Hearing protection (NRR 25+) for fabrication and power tool use
- N95 or half-face respirator for confined space and coil cleaning
- Full-body harness with shock-absorbing lanyard for rooftop/elevated work (ANSI Z359)
- Arc-rated clothing per NFPA 70E for electrical work
- High-visibility vest for exterior work areas

ADDITIONAL SAFETY REQUIREMENTS

- EPA Section 608 certification required for all technicians handling refrigerants
- Hot work permit required for all brazing operations per NFPA 51B
- Confined space entry permit required for ductwork and mechanical room entry where applicable
- Pre-task safety briefing required before each shift or when conditions change
- All LOTO procedures must follow site-specific energy control program per 29 CFR 1910.147
- Refrigerant leak detection and recovery equipment must be on site during all commissioning and service
- Coordinate with other trades to prevent conflicting operations (e.g., welding near refrigerant lines)

EMERGENCY PROCEDURES

- Call 911 for all serious injuries; notify site supervisor immediately
- For refrigerant inhalation: Move to fresh air immediately; administer oxygen if available; call 911; do NOT induce vomiting if ingested
- For refrigerant skin/eye contact (frostbite): Do NOT rub affected area; flush with lukewarm water; seek medical attention
- For electrical shock: De-energize if safe; do NOT touch victim in contact with source; call 911; begin CPR/AED if trained
- For burns from brazing: Cool with water for 20 minutes; do not apply ice; cover loosely; seek medical attention for burns larger than palm-sized
- For falls: Do not move victim; stabilize and call 911; activate rescue plan for suspended workers
- Fire response: Use ABC extinguisher; activate fire alarm; evacuate per site plan
- First aid kit and AED located at: _____
- Nearest hospital/emergency room: _____
- Emergency assembly point: _____
- Site emergency contact: _____

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for this work activity.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Next Review Date
Prepared By			
Reviewed By			
Approved By			
Site Safety Manager			

DISCLAIMER: This JHA is a template provided by Forbes Safety Solutions for general guidance. It must be reviewed, customized, and approved by a qualified safety professional before use on any specific project. Site-specific conditions may require additional hazard controls not listed herein.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Mechanical Insulation / Pipe Wrapping

REGULATORY REFERENCES

- 29 CFR 1926.1101 — Asbestos (removal of existing insulation)
- 29 CFR 1910.132 — General Requirements for PPE
- 29 CFR 1926.451 — Scaffolding (General Requirements)
- 29 CFR 1926.1053 — Ladders
- 29 CFR 1910.1200 — Hazard Communication
- EPA NESHAP 40 CFR 61, Subpart M — Asbestos

SCOPE & DESCRIPTION

This JHA covers mechanical insulation and pipe wrapping operations including existing insulation assessment and removal (with asbestos identification), surface preparation, insulation cutting and fitting, metal jacketing and banding, sealing and finishing, and waste disposal. Legacy insulation may contain asbestos, requiring specialized abatement procedures. Workers face hazards from thermal burns on hot pipes, sharp tool injuries, ergonomic strain from overhead work, fiber inhalation, and falls from scaffolding or ladders.

PROJECT INFORMATION

Project Name:		Date:	
Project Number:		Location:	
Contractor:		Supervisor:	
JHA Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Existing Insulation Assessment / Removal	Asbestos exposure (friable ACM) Other hazardous fibers (refractory ceramic) Falls from scaffolding/ladders Cuts from removal tools	H	AHERA-accredited inspector must assess before any disturbance Assume ACM until lab analysis confirms otherwise (NESHAP) Licensed asbestos abatement contractor for confirmed ACM Full negative-pressure enclosure for friable ACM removal Workers in powered air-purifying respirators (PAPR) Disposable Tyvek suits, gloves, boot covers Wet removal methods to minimize fiber release Air monitoring during and after removal
2. Surface Preparation	Thermal burns from hot pipes/equipment Sharp edges on pipe supports/hangers Chemical exposure from cleaning solvents Residual asbestos fibers	M	Verify pipe/equipment temperature — lockout/tagout if feasible Heat-resistant gloves rated for pipe temperature Cut-resistant gloves for handling sharp metal Confirm asbestos clearance before surface prep begins Clean surfaces per insulation manufacturer specifications
3. Insulation Cutting & Fitting	Knife/tool cuts (box cutters, insulation knives) Dust/fiber inhalation (fiberglass, mineral wool) Eye irritation from fibers Ergonomic strain — overhead/awkward positions	M	Use retractable safety knives; cut away from body Cut-resistant gloves mandatory N95 respirator minimum for fiberglass/mineral wool cutting Safety glasses or goggles — no contact lenses Long sleeves and pants to prevent skin irritation Rotate overhead work; use adjustable scaffolding to optimize height Pre-cut insulation at ground level when possible
4. Jacketing / Banding	Lacerations from sheet metal edges Pinch points during banding tool operation Falls from scaffolding Dropped tools/materials from height	H	Cut-resistant gloves (ANSI A4 minimum) for metal handling Deburr all cut metal edges before installation Banding tool training required — keep hands clear of tensioner 100% tie-off on scaffolding above 6 ft Scaffold daily inspection by competent person Tool lanyards for all hand tools at height Toe boards and debris nets to protect workers below
5. Sealing & Finishing	Chemical exposure (sealants, mastics, adhesives) Slippery surfaces from sealant overspray Ergonomic strain from	M	Review SDS for all sealants and adhesives Chemical-resistant gloves; avoid skin contact Ventilation in enclosed areas — organic vapor respirator if needed Clean overspray immediately to prevent slip hazard

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	repetitive motion		Ergonomic breaks; alternate between tasks
6. Waste Disposal	Asbestos waste handling (regulated) Fiberglass/mineral wool skin irritation Sharp metal scraps — puncture/laceration Manual handling of heavy waste bags	M	Asbestos waste double-bagged in labeled 6-mil poly bags Non-ACM insulation waste in covered containers Metal scraps in designated sharp-waste bins All waste characterized and disposed per EPA/state regulations Proper lifting techniques; limit bag weight to 50 lbs Maintain waste manifests for all hazardous materials

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	
☐ Hard Hat (ANSI Z89.1)	☐ Safety Glasses / Goggles (fiber protection)
☐ N95 or P100 Respirator (fiber cutting/removal)	☐ PAPR (asbestos removal operations)
☐ Cut-Resistant Gloves (ANSI A4 for jacketing)	☐ Heat-Resistant Gloves (hot pipe work)
☐ Long-Sleeve Shirt / Tyvek Coveralls	☐ Steel-Toe Safety Boots
☐ Fall Protection Harness (scaffolding above 6 ft)	☐ Tool Lanyards (work at height)

EMERGENCY PROCEDURES

1. ASBESTOS FIBER RELEASE: Stop work immediately. Evacuate area and seal off. Notify site safety officer and client. Do NOT attempt cleanup — licensed abatement contractor required. Air monitoring must be conducted before re-entry.
2. THERMAL BURN FROM HOT PIPE: Cool burn with clean, cool water for 10+ minutes. Remove clothing near burn unless adhered. Cover with sterile dressing. Seek medical attention for second-degree burns or larger.
3. SEVERE LACERATION (METAL/KNIFE): Apply direct pressure with clean cloth. Elevate injured limb. Call 911 if bleeding is uncontrolled. Do not remove embedded objects.
4. FALL FROM SCAFFOLDING: Call 911. Do not move victim if spinal injury suspected. If in fall arrest harness, initiate suspension trauma rescue within 15 minutes. Monitor vitals.
5. FIBER INHALATION / RESPIRATORY DISTRESS: Move to fresh air. If difficulty breathing, administer oxygen if available. Call 911. Provide SDS information on fiber type to responders.
6. EMERGENCY CONTACTS: 911 for all emergencies. Site Safety Officer: _____. Poison Control: 1-800-222-1222. Asbestos Abatement Coordinator: _____.

ADDITIONAL NOTES / SITE-SPECIFIC REQUIREMENTS

- All existing insulation must be surveyed for asbestos content before any disturbance per NESHAP requirements.
- Insulation workers must complete asbestos awareness training per 29 CFR 1926.1101(k)(9).
- Scaffolding must be erected and inspected by a competent person per Subpart L.
- Hot pipe insulation requires temperature verification — lockout/tagout of heat source preferred.
- Material Safety Data Sheets for all insulation products, adhesives, and sealants must be on-site.

WORKER SIGN-OFF

By signing below, I confirm that I have reviewed and understand this JHA, including all identified hazards and required control measures.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

REVISION HISTORY

Revision	Date	Description	Approved By
0		Initial Release	
1			

DISCLAIMER: This Job Hazard Analysis is a guideline for identifying hazards and implementing controls. It does not replace site-specific safety plans, competent person assessments, or regulatory requirements. All workers must comply with applicable OSHA standards and company safety policies. This JHA must be reviewed and updated whenever work conditions change.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

JHA INFORMATION			
JHA Title:	Mobile Crane Lift Operations	JHA Number:	FSS-JHA-030
Project Name:		Date:	
Location:		Revision:	0
Regulatory References:	29 CFR 1926 Subpart CC (Cranes & Derricks in Construction); ASME B30.5 (Mobile and Locomotive Cranes); OSHA 29 CFR 1926.1400-1442		
Prepared By:		Approved By:	
Competent Person:		Supervisor:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Lift Planning & Load Chart Review	• Crane overload / tip-over • Incorrect load weight estimation • Unanticipated boom/load radius • Inadequate lift plan for critical lifts	H	• Conduct lift planning meeting with operator, rigger, and signal person • Determine actual load weight (weigh or calculate — add rigging weight) • Reference crane load chart for configuration, radius, and boom length • Ensure lift does not exceed 75% of rated capacity (critical lift threshold) • Develop written Critical Lift Plan for loads >75% capacity or special conditions • Review swing path, travel route, and landing zone for obstructions • Verify operator certification (NCCCO or equivalent) is current
2. Ground Preparation & Crane Setup	• Ground failure under outriggers • Crane instability on slopes • Underground voids / utilities • Insufficient outrigger extension	H	• Evaluate ground conditions — bearing capacity must support crane + load reactions • Place outrigger pads/mats sized to distribute ground bearing pressure • Extend all outriggers fully and level crane within 1% grade • Call 811 / utility locate before setting up over unknown subsurface • Confirm level using crane's built-in level indicator • Barricade swing radius to prevent unauthorized access • Set up on compacted, stable surface — no soft fill or excavation edges
3. Rigging & Load Attachment	• Rigging failure / sling breakage • Improper hitch causing load shift • Struck by rigging hardware • Pinch points during attachment	H	• Qualified rigger selects rigging based on load weight and sling angles • Inspect all slings, shackles, and hardware before each lift — reject damaged gear • Match sling capacity to load — account for sling angle reduction factor • Use proper hitch type (basket, choker, vertical) for load geometry • Ensure load is properly balanced and center of gravity identified • Rig tag lines to control load orientation during lift • Never stand under suspended load — stay out of fall zone
4. Load Pick & Travel	• Tip-over during lift or swing • Overhead power line contact • Struck by swinging load • Two-blocking the hoist • Loss of load control in wind	H	• Use designated signal person with clear communication (hand signals or radio) • Perform initial test lift — raise load 6 inches, hold, verify stability • Maintain minimum 20-ft clearance from power lines (or de-energize / use spotter) • Anti-two-block device must be functional — test at start of shift • Monitor wind speed — cease operations if wind exceeds crane chart limits • Clear all personnel from swing radius and load travel path • Operator must have clear line of sight to load at all times • Never travel with load over occupied areas
5. Load Placement & Unhooking	• Pinch/crush during placement • Load shift on landing • Premature unhooking • Unstable load support	M	• Land load on adequate dunnage/cribbing to support weight evenly • Use tag lines to guide load into final position — never push/pull by hand • Do not unhook until load is confirmed stable and properly

			supported • Rigger signals all clear before operator slacks rigging • Keep hands and body clear of pinch points during landing • Block and secure load against movement before releasing rigging • Verify load placement matches engineered drawings if applicable
6. Crane Breakdown & Demobilization	• Boom contact with structures during retraction • Outrigger retraction on unsupported crane • Transport hazards on roadway • Improper securing for transport	M	• Retract boom fully and secure in boom rest/travel position • Retract outriggers only after boom is fully secured • Verify swing lock is engaged before transport • Inspect crane for damage and document in operator log • Ensure all loose components are secured for transport • Develop transport plan for oversized loads (permits, escorts) • Restore site — remove outrigger pads, fill any ground depressions • File completed lift plan and inspection records with project documentation

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	Specification / ANSI Standard	Condition / Notes
Hard Hat	ANSI/ISEA Z89.1, Type I, Class E	Required for all personnel in crane operating zone
Safety Glasses	ANSI/ISEA Z87.1+	Impact-rated with side shields
High-Visibility Vest	ANSI/ISEA 107, Class 2 minimum	Required for all ground personnel
Work Gloves (Rigger's Gloves)	ANSI/ISEA 105, Cut Level A4+	Leather palm for rigging work
Steel-Toe Safety Boots	ASTM F2413 (I/75 C/75)	Puncture-resistant soles recommended
Fall Protection Harness	ANSI/ASSP Z359.1	Required when working at heights on crane or load
Hearing Protection	ANSI S3.19 / S12.6 (NRR ≥ 25 dB)	Required near crane engine operations
Communication Radio	N/A — operational requirement	Dedicated channel for crane operator, signal person, rigger

EMERGENCY PROCEDURES

Crane Tip-Over / Structural Failure:

- Sound alarm — all personnel evacuate crane operating zone immediately
- Call 911 — report crane incident with potential trapped persons
- Establish exclusion zone (minimum 1.5x boom length radius)
- Account for all personnel at assembly point
- Do not approach overturned crane — risk of fuel/hydraulic spill and secondary collapse
- Notify crane manufacturer/engineer for recovery planning
- Preserve scene for OSHA investigation

Overhead Power Line Contact:

- Operator stays in cab — DO NOT exit crane (equipotential zone)
- If crane is drivable, move away from power line contact
- If must exit: JUMP clear — do not step down (step potential danger)
- Call 911 and utility emergency — report power line contact
- Keep all personnel at least 35 feet from crane and any grounded equipment
- Do not touch crane or load until utility confirms line is de-energized

Rigging Failure / Dropped Load:

- Operator sets brakes and secures crane — do not attempt to recover
- Evacuate drop zone and establish exclusion perimeter
- Account for all personnel — check for injuries
- Call 911 if any injuries or structural damage to occupied areas
- Inspect all rigging and crane before any further lifts
- Conduct incident investigation and root cause analysis

Emergency Contact Information:

- Emergency Services: 911
- Crane Company Emergency: [Insert Name & Phone]
- Site Safety Manager: [Insert Name & Phone]
- Nearest Hospital: [Insert Name, Address & Phone]
- Utility Emergency: [Insert Local Utility Number]

WORKER SIGN-OFF — I HAVE READ AND UNDERSTAND THIS JHA

#	Print Name	Signature	Company / Trade	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Initials
Prepared By (Author)			
Reviewed By (Safety Manager)			
Approved By (Project Manager)			
Client / Owner Rep			

This JHA must be reviewed and updated whenever job conditions change, after any incident, or at minimum annually.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

JHA INFORMATION			
JHA Title:	Overhead Power Line Work	JHA Number:	FSS-JHA-026
Project Name:		Date:	
Location:		Revision:	0
Regulatory References:	29 CFR 1926.1408 (Power Line Safety — Equipment Operations); 29 CFR 1910.269 (Electric Power Generation, Transmission & Distribution); NESC (National Electrical Safety Code)		
Prepared By:		Approved By:	
Competent Person:		Supervisor:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Pre-Work Planning & Utility Notification	- Unknown energized lines - Incorrect voltage identification - Inadequate clearance planning - Failure to notify utility owner	H	- Contact utility owner to identify all overhead lines and voltages - Obtain and review as-built drawings of line locations - Conduct pre-job safety briefing with all crew members - Develop written work plan specifying minimum approach distances (MAD) - Verify utility has been notified per 29 CFR 1926.1408 - Assign qualified electrical worker as crew lead
2. Establishing Minimum Approach Distances	- Electrocution from insufficient clearance - Arc flash exposure - Induced voltage on equipment - Misjudged distances	H	- Reference OSHA Table A (29 CFR 1926.1408) for MAD by voltage - Post MAD signage at work area boundaries - Use non-conductive measuring devices to verify distances - Install visible warning barriers (cones, flagging, barricades) - Designate a dedicated spotter for all equipment movement - Brief all personnel on MAD requirements — no exceptions
3. Equipment Setup & Grounding	- Electrical contact during setup - Inadequate grounding - Equipment tip-over on uneven terrain - Ground faults	H	- Set up equipment outside MAD zone; use outrigger pads on firm ground - Install protective grounds per utility requirements - Use ground-fault circuit interrupters on all portable tools - Verify continuity of grounding system before work begins - Ensure aerial lifts have insulated booms rated for voltage present - Conduct equipment pre-use inspection per manufacturer specs
4. Conductor Work (De-Energized or Hot Stick)	- Electrocution / arc flash - Falls from structures/poles - Induced voltage from adjacent energized lines - Tool drop strikes	H	- Confirm lockout/tagout and test-before-touch on de-energized circuits - Use insulated hot-stick tools rated for voltage class - Wear arc-rated FR clothing meeting NFPA 70E requirements - Install personal grounds at worksite bracket - Use 100% tie-off fall protection on poles/structures - Employ tool lanyards to prevent dropped objects - Maintain communication with ground crew at all times
5. Re-Energization & Testing	- Premature energization - Arc flash during switching - Personnel in danger zone - Residual stored energy	H	- Remove all grounds and protective devices in reverse order - Verify all personnel clear of MAD zone before re-energization - Coordinate with utility control center for switching sequence - Use proper switching PPE (arc flash suit per incident energy calc) - Perform step-and-touch voltage testing after energization - Document all switching operations in job log
6. Site Restoration	- Residual energized components - Trip/fall hazards from equipment - Incomplete cleanup - Public access to hazard area	M	- Verify all circuits are properly energized or de-energized per plan - Remove all barriers, signs, grounds, and temporary equipment - Inspect work area for debris, tools, and hardware left behind - Restore public barriers and warning signs as needed - Conduct post-job debrief with crew — document lessons learned - File completed JHA with project safety records

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	Specification / ANSI Standard	Condition / Notes
Hard Hat (Class E — Electrical)	ANSI/ISEA Z89.1, Class E (20kV rated)	Inspect before each use; replace if damaged
Arc-Rated FR Clothing	NFPA 70E; ASTM F1506	Cal rating must meet or exceed incident energy
Insulated Rubber Gloves w/ Leather Protectors	ASTM D120; OSHA 1910.137	Class matched to voltage; test per schedule
Safety Glasses / Arc-Rated Face Shield	ANSI/ISEA Z87.1+	Arc-rated face shield for switching operations
Dielectric Safety Footwear	ASTM F2413 (EH rated)	Electrical hazard rated; inspect soles for damage
Fall Protection Harness & Lanyard	ANSI/ASSP Z359.1; ANSI Z359.13	100% tie-off required above 4 ft
High-Visibility Vest	ANSI/ISEA 107, Class 2 minimum	Required in all roadway/traffic areas
Hearing Protection	ANSI S3.19 / S12.6 (NRR ≥ 25 dB)	Required during loud operations

EMERGENCY PROCEDURES

Electrical Contact / Electrocutation:

- DO NOT touch the victim if still in contact with energized source
- Call 911 immediately and request utility emergency response
- De-energize the circuit if safe to do so (utility switching)
- If victim is clear, begin CPR/AED — electrical injuries require cardiac monitoring
- Treat for burns — cover with sterile dressings, do not apply ointments
- All electrical contact incidents require hospital evaluation regardless of apparent severity

Arc Flash Burn:

- Remove victim from hazard zone to safe area
- Cool burns with clean water — do not remove adhered clothing
- Cover burns with sterile, non-adherent dressings
- Call 911 for burns involving face, airway, hands, or large body area
- Monitor for shock symptoms and keep victim warm

Fall from Height:

- Call 911 immediately — do not move victim unless in immediate danger
- Stabilize head and neck — assume spinal injury until cleared
- Control bleeding with direct pressure
- Monitor breathing and circulation; provide CPR if needed
- Activate site emergency plan and notify project management

Emergency Contact Information:

- Emergency Services: 911
- Utility Emergency Dispatch: [Insert Local Utility Number]
- Site Safety Manager: [Insert Name & Phone]
- Nearest Hospital: [Insert Name, Address & Phone]
- Poison Control: 1-800-222-1222

WORKER SIGN-OFF — I HAVE READ AND UNDERSTAND THIS JHA

#	Print Name	Signature	Company / Trade	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Initials
Prepared By (Author)			
Reviewed By (Safety Manager)			
Approved By (Project Manager)			
Client / Owner Rep			

This JHA must be reviewed and updated whenever job conditions change, after any incident, or at minimum annually.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Painting & Coating (Industrial)

REGULATORY REFERENCES

- 29 CFR 1926.66 — Spraying Operations
- 29 CFR 1910.107 — Spray Finishing Using Flammable/Combustible Materials
- 29 CFR 1926.55 — Gases, Vapors, Fumes, Dusts, and Mists
- 29 CFR 1926.155 — Definitions (Fire Protection)
- 29 CFR 1910.1200 — Hazard Communication (GHS/SDS)
- NFPA 33 — Standard for Spray Application Using Flammable or Combustible Materials

SCOPE & DESCRIPTION

This JHA covers industrial painting and coating operations including surface preparation, mixing/thinning of coatings, spray application, brush/roller application, drying/curing phases, and cleanup with solvent handling. These operations involve significant exposure to flammable vapors, toxic fumes (isocyanates, VOCs), and fire/explosion risks. Strict adherence to ventilation, PPE, and hot work permit requirements is mandatory.

PROJECT INFORMATION

Project Name:		Date:	
Project Number:		Location:	
Contractor:		Supervisor:	
JHA Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Surface Preparation	Dust/particulate inhalation Chemical exposure (degreasers, etching agents) Noise from power tools Eye injury from grinding/wire brushing	M	Use local exhaust ventilation or respiratory protection Wear chemical-resistant gloves and splash goggles Hearing protection required for power tool use Full face shield for grinding/wire brush operations Review SDS for all cleaning chemicals before use
2. Mixing / Thinning	Flammable vapor ignition Toxic fume inhalation (isocyanates, solvents) Skin/eye contact with chemicals Spill — environmental contamination	H	Mix in designated, well-ventilated area only No ignition sources within 20 ft of mixing area Wear organic vapor respirator (APF 10 minimum) Chemical-resistant gloves, apron, and splash goggles Use grounded/bonded containers to prevent static Have spill kit and fire extinguisher within 25 ft Follow manufacturer mixing ratios exactly
3. Spray Application	Flammable vapor accumulation — explosion risk Toxic fume inhalation (isocyanates, VOCs) Overspray — skin/eye exposure Fire from static discharge Falls from elevated platforms	H	Maintain continuous forced-air ventilation (10% LEL max) Supplied-air respirator for isocyanate coatings Full Tyvek suit, chemical gloves, hood, and face shield Ground all spray equipment and conductive flooring Post NO SMOKING / NO OPEN FLAME signs Fall protection required above 6 ft Continuous LEL monitoring in spray area Hot work permit required if any ignition sources nearby
4. Brush / Roller Application	VOC inhalation in confined/poorly ventilated areas Skin contact with coatings Ergonomic strain (repetitive motion, awkward postures) Slips on wet/coated surfaces	M	Ensure adequate ventilation — minimum 4 air changes/hour Organic vapor respirator in enclosed areas Chemical-resistant gloves; long sleeves Anti-fatigue mats; rotate tasks to reduce strain Non-slip footwear; clean spills immediately
5. Drying / Curing	Continued off-gassing of VOCs/isocyanates Fire risk from heat lamps or curing ovens Unauthorized entry to curing area	M	Maintain ventilation during entire curing period Monitor VOC levels until below PEL Keep heat sources away from flammable vapors Barricade and sign curing area — restricted access Fire watch as required per hot work permit
6. Cleanup & Solvent Handling	Flammable solvent ignition	H	Clean equipment in designated ventilated area Organic vapor respirator and chemical gloves

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	Toxic vapor inhalation during cleaning Improper disposal — environmental violation Spontaneous combustion (solvent-soaked rags)		required Dispose of solvent waste in approved, sealed containers Solvent-soaked rags in self-closing metal cans ONLY No solvent down drains — use licensed waste hauler Bond and ground solvent containers during transfer

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	
☐ Supplied-Air Respirator (isocyanate coatings)	☐ Organic Vapor Respirator (standard coatings)
☐ Full Tyvek Coveralls / Chemical Suit	☐ Chemical-Resistant Gloves (nitrile or neoprene)
☐ Splash-Proof Safety Goggles / Face Shield	☐ Steel-Toe Safety Boots (non-sparking soles)
☐ Hearing Protection (power tool operations)	☐ High-Visibility Vest (outdoor operations)

EMERGENCY PROCEDURES

1. FIRE / EXPLOSION: Activate fire alarm. Evacuate all personnel from spray area. Use Class B fire extinguisher (dry chemical or CO2). Do not use water on solvent fires. Call 911.
2. CHEMICAL INHALATION: Move victim to fresh air immediately. If not breathing, begin CPR. Call 911. Provide SDS to emergency responders. Do not administer mouth-to-mouth if isocyanate exposure is suspected — use bag-valve mask.
3. SKIN / EYE CONTACT: Remove contaminated clothing immediately. Flush skin with water for 15+ minutes. For eye exposure, use emergency eyewash for minimum 15 minutes. Seek medical attention.
4. CHEMICAL SPILL: Evacuate immediate area. Don appropriate PPE. Contain spill with absorbent material. Do not wash into drains. Notify environmental coordinator.
5. FALL FROM ELEVATION: Do not move the victim. Call 911. Keep victim warm and monitor breathing. If fall arrest system activated, treat for suspension trauma.
6. EMERGENCY CONTACTS: 911 for all emergencies. Site Safety Officer: _____. Poison Control: 1-800-222-1222. Local Fire Department: _____.

ADDITIONAL NOTES / SITE-SPECIFIC REQUIREMENTS

- Safety Data Sheets (SDS) must be available on-site for all coatings, thinners, and solvents.
- Atmospheric monitoring (LEL, O2, VOC) is required in enclosed/confined spray areas.
- Hot work permits are required when spray operations are near welding, cutting, or grinding.
- Isocyanate-containing coatings require specific medical surveillance per OSHA guidelines.
- All spray equipment must be inspected and maintained per manufacturer specifications.

WORKER SIGN-OFF

By signing below, I confirm that I have reviewed and understand this JHA, including all identified hazards and required control measures.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

REVISION HISTORY

Revision	Date	Description	Approved By
0		Initial Release	
1			

DISCLAIMER: This Job Hazard Analysis is a guideline for identifying hazards and implementing controls. It does not replace site-specific safety plans, competent person assessments, or regulatory requirements. All workers must comply with applicable OSHA standards and company safety policies. This JHA must be reviewed and updated whenever work conditions change.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Pipeline / Underground Utility Installation

Applicable Standards: 29 CFR 1926 Subpart P (Excavations) • 29 CFR 1926.651 (General Requirements) • 29 CFR 1926.652 (Protective Systems) • CGA Best Practices (Common Ground Alliance 811) • MUTCD (Traffic Control) • 29 CFR 1926.353 (Ventilation for Welding) • 29 CFR 1910.146 (Permit-Required Confined Spaces)

PROJECT INFORMATION

Company Name:		Date:	
Project/Site:		JHA Number:	
Supervisor:		Work Activity:	
Location/Address:		Permit #:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

TASK STEP	HAZARD	RISK (H/M/L)	CONTROL MEASURES
1. Utility Locate & Potholing (811 Verification)	- Struck-by existing utilities (gas, electric, fiber, water) - Electrocution from unmarked power lines - Damage to pressurized gas line - Inadequate locate markings	H	- Call 811 minimum 48–72 hours before excavation — verify ticket is active and valid - Obtain utility locate maps and cross-reference with as-built drawings - Pothole (soft-dig) with vacuum excavation or hand tools within 24" of marked utilities - Competent person verifies all locates before mechanical excavation - Mark tolerance zones with white paint per CGA Best Practices - Photograph all markings before work begins for documentation
2. Excavation & Trench Setup	- Cave-in / trench collapse - Engulfment - Falls into excavation - Hazardous atmosphere (methane, CO, H₂S, low O₂) - Contact with groundwater - Heavy equipment struck-by	H	- Competent person performs soil classification per 29 CFR 1926.651 - Install trench protective system: sloping, benching, shoring, or trench shield per soil type - Excavations >4 ft. deep require protective system; >20 ft. requires PE-stamped design - Atmospheric monitoring before entry and continuously in deep trenches (>4 ft.) - Install barricades, guardrails, and warning signs around excavation perimeter - Ladders within 25 ft. of all workers for emergency egress - Spotter required for all heavy equipment near trench edge - Daily trench inspection by competent person; re-inspect after rain or changed conditions
3. Pipe Laying / Welding	- Struck-by pipe or materials during lifting - Caught-between during pipe placement - Welding burns and UV radiation - Fire/explosion from hot work near gas utilities	H	- Rigging inspection before each lift — competent rigger directs crane/excavator - Tag lines on all suspended loads; no workers under suspended pipe - Hot work permit required for all welding/cutting operations - Welding screens/curtains to protect nearby workers from UV/sparks

TASK STEP	HAZARD	RISK (H/M/L)	CONTROL MEASURES
	- Ergonomic strain (heavy lifting) - Fume inhalation		- Fire watch with extinguisher during and 30 min. after hot work - Welding fume extraction or natural ventilation for trench welding - Proper lifting techniques; mechanical assists for pipe >50 lbs. - Gas detection monitor in continuous operation near gas utilities
4. Backfill & Compaction	- Struck-by heavy equipment - Crushing/caught-between compaction equipment and trench walls - Damaged pipe from improper backfill - Noise exposure >85 dBA - Whole-body vibration	M	- Spotter for all heavy equipment operations near trench - Verify no workers in trench during machine backfill operations - Follow engineered backfill specifications (lift thickness, material type) - Compaction testing per project specifications - Hearing protection required near compaction equipment - Anti-vibration gloves and equipment operator rest intervals - Maintain minimum safe distance from trench edge for equipment (per soil type)
5. Pressure Testing	- High-pressure line failure / rupture - Projectile hazard from fitting failure - Exposure to test medium (water, air, or inert gas) - Noise from pressurized release	H	- Written pressure test procedure approved by engineer - Establish exclusion zone — no personnel within blast radius during pressurization - Inspect all fittings, joints, and connections before test initiation - Gradual pressurization in stages with hold periods per specification - Calibrated pressure gauges — minimum two independent gauges - Bleed pressure safely before disconnecting any fittings - Hearing protection during controlled pressure release - Emergency shutoff valve accessible at all times
6. Site Restoration & Demobilization	- Traffic exposure on roadways - Uneven ground / trip hazards - Remaining excavation openings - Improper waste disposal	M	- Traffic control plan (TTC) per MUTCD — flaggers, cones, signs, arrow boards - High-visibility Class 3 vests for all workers near traffic - Verify all excavations backfilled and compacted to grade - Install permanent surface restoration (asphalt, concrete, sod) per permit requirements - Remove all construction debris and dispose per environmental regulations - Conduct final site walk-through with supervisor — document with photos - Update as-built drawings with actual utility locations

FORBES SAFETY SOLUTIONS

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

PPE ITEM	SPECIFICATION / STANDARD	WHEN REQUIRED
Hard Hat	ANSI/ISEA Z89.1, Type I, Class E (electrical rated)	All times within excavation work zone
High-Visibility Vest	ANSI/ISEA 107, Class 3 (for roadway/traffic exposure)	All workers on site; Class 3 required near traffic
Steel/Composite Toe Boots	ASTM F2413 — puncture-resistant, metatarsal guard recommended	All times on site; waterproof if groundwater present
Safety Glasses	ANSI Z87.1 — impact-rated, anti-fog	All times; goggles for grinding, cutting, or dusty conditions
Hearing Protection	ANSI S3.19 — NRR 25+ dB (plugs or muffs)	Near heavy equipment, compaction, or pneumatic tools (>85 dBA)
Cut-Resistant Gloves	ANSI/ISEA 105, Cut Level A4 minimum	Pipe handling, material moving, general excavation tasks
Welding Hood / Shield	ANSI Z87.1, Shade 10-12 for arc welding	All welding and cutting operations
Welding Gloves	ANSI/ISEA 105 — heat and flame resistant	All welding and hot work operations
Respiratory Protection	NIOSH-approved P100 or supplied air as required	Trench atmospheres with contaminants; welding fume exposure
Fall Protection Harness	ANSI Z359.11 — full body harness with lanyard	Work adjacent to excavations >6 ft. deep without guardrails
Gas Detection Monitor	4-gas monitor: O ₂ , LEL, CO, H ₂ S — bump tested daily	All personnel entering excavations >4 ft. deep

EMERGENCY PROCEDURES

EMERGENCY PROCEDURES
Trench Rescue: If a cave-in occurs, call 911 immediately. Do NOT enter the trench to rescue — this is a confined space rescue requiring trained technical rescue teams. Protect remaining trench walls from further collapse.
Struck Utility — Gas: Evacuate upwind immediately. Establish 300 ft. exclusion zone. Call gas company emergency line. Do NOT attempt to cap or repair. Eliminate ignition sources.
Struck Utility — Electric: Assume all conductors are energized. Do NOT touch the line or equipment in contact with it. Call utility emergency number. Establish exclusion zone equal to wire span length.
Hazardous Atmosphere: Remove worker from trench immediately if gas monitor alarms. Ventilate with mechanical blower. Do not re-enter until atmosphere is confirmed safe by competent person with calibrated monitor.
Medical Emergency: Administer first aid. Call 911 and provide exact location and nature of injury. Designate someone to guide emergency vehicles to site. First aid kit and AED on site at all times.
Emergency Contacts: Competent Person: _____ 811 Ticket #: _____ Local EMS: 911 Gas Co. Emergency: _____ Electric Co. Emergency: _____

FORBES SAFETY SOLUTIONS

WORKER ACKNOWLEDGMENT & SIGN-OFF

By signing below, I acknowledge that I have reviewed this JHA, understand the identified hazards and control measures, and agree to follow all safety procedures outlined herein. I have been trained on the use of required PPE and emergency procedures for this work activity.

#	PRINTED NAME	SIGNATURE	DATE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

JHA REVIEW & APPROVAL

This JHA must be reviewed and approved before work commences. Review is required whenever scope, conditions, personnel, or site conditions change. The competent person must re-assess the trench and protective systems at the start of each shift.

ROLE	NAME	SIGNATURE	DATE
Prepared By (Safety Professional)			
Reviewed By (Competent Person)			
Approved By (Project Manager)			
Approved By (HSE Manager)			

REVISION HISTORY

REV #	DATE	DESCRIPTION	REVISED BY

DISCLAIMER: *This JHA template is provided as a guide for safety planning and does not replace site-specific hazard assessments. Employers are responsible for ensuring compliance with all applicable OSHA standards, state and local regulations, utility owner requirements, and company-specific safety programs. The competent person must adapt this document to reflect actual site conditions, soil classification, protective systems, and personnel qualifications.*

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Pole Setting / Utility Pole Installation

Regulatory References: 29 CFR 1910.269, 29 CFR 1926 Subpart V, NESC

Document No: FSS-JHA-038 | Revision: 0 | Date: _____

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS TABLE

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Hole Augering / Excavation	Underground utility strike Excavation cave-in Auger caught on obstruction Noise/vibration exposure	H H M M	Complete 811 utility locate request minimum 48 hours prior Hand dig within 18 inches of marked utilities (tolerance zone) Verify auger guard and emergency shutoff are operational Maintain safe distance from rotating auger (10-ft minimum) Barricade open holes immediately; cover if left unattended Wear hearing protection during augering operations
2. Pole Inspection & Rigging	Defective pole (rot, splits, cracks) Improper rigging failure Struck by during handling	M H H	Inspect pole for damage, splits, rot, and hardware defects per ANSI O5.1 Reject any pole failing visual or sounding inspection Attach rigging at designated lift point (manufacturer recommendation) Use tag lines to control pole swing (minimum 2 tag lines) All personnel clear of swing radius during rigging Verify sling/choker capacity exceeds pole weight by 5:1 safety factor
3. Pole Setting with Crane/Boom Truck	Struck by pole during setting Overhead line contact Crane tip-over Pinch points	H H H M	Conduct pre-lift meeting covering load weight, radius, ground conditions Maintain minimum approach distance (MAD) from energized lines per 29 CFR 1926.1408 Use a qualified signal person; establish clear hand signals Set outriggers on firm ground with cribbing; verify level

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
			Do NOT exceed crane load chart capacity at any boom angle Keep all personnel out of the swing/fall zone Use tag lines to guide pole into hole; never use hands directly
4. Pole Tamping & Backfill	Pole shifting/falling before secured Hand/foot injury during tamping Ergonomic strain	H M M	Do NOT release crane/boom until pole is plumb and tamped Tamp in 6-inch lifts with approved tamping equipment Keep hands and feet clear of tamping zone Verify pole plumb with level before final backfill Compact backfill to prevent future pole settlement Use mechanical tamper for large-diameter holes when available
5. Hardware & Crossarm Installation	Falls during climbing Dropped tools/materials Overhead line proximity	H M H	100% fall protection required when climbing or working above 4 feet Use approved climbing equipment (belt, gaffs, positioning lanyard) Haul hardware and tools up with hand line; never carry while climbing Install tool lanyards on all hand tools Maintain MAD from all energized conductors Use insulated tools if working near energized lines
6. Conductor Stringing	Overhead line contact Conductor snap-back Falls from elevation Traffic near work zone	H H H M	Establish proper grounding/bonding before stringing near energized lines Use calibrated tension equipment; do not exceed conductor rated tension All workers on poles tied off 100% during stringing Establish traffic control per MUTCD for road crossings Use pulling ropes and guards at road crossings Clear area below stringing operations of all personnel

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

☐ Hard Hat (ANSI Z89.1 Type I, Class E)	☐ Safety Glasses (ANSI Z87.1)
☐ High-Visibility Vest (ANSI/ISEA 107 Class 2)	☐ Steel-Toe Boots (ASTM F2413)
☐ Leather Work Gloves	☐ FR-Rated Clothing (near energized lines)
☐ Climbing Belt and Positioning Lanyard	☐ Fall Protection Harness (100% tie-off above 4 ft)
☐ Hearing Protection (during augering)	☐ Rubber Insulating Gloves (if near energized lines)

EMERGENCY PROCEDURES

1. If a pole begins to fall uncontrolled, all personnel move perpendicular to the fall path. Sound air horn or yell 'POLE DOWN' immediately.
2. For overhead line contact with equipment, assume all metal is energized. Stay in the cab or hop clear with feet together. Do NOT touch the ground and equipment simultaneously.
3. In case of excavation cave-in, do NOT enter the excavation. Call 911 and initiate rescue per the site-specific rescue plan.
4. For crane tip-over, evacuate the radius of the boom length plus pole length. The operator should remain in the cab if safer than exiting.
5. For falls from poles, call 911 immediately. Do NOT move the victim unless in immediate life-threatening danger. Administer first aid for suspension trauma.
6. All struck-by incidents require immediate medical evaluation even if no visible injury. Report to site supervisor and complete incident documentation.

Emergency Contact:	911 / Site-specific: _____
Assembly Point:	
Nearest Hospital:	
First Aid Kit Location:	

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures.

#	Print Name	Signature	Company	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Name / Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

Next Review Date:	
Revision Notes:	

FORBES SAFETY SOLUTIONS | *Committed to Zero Incidents*

This document is valid only when all sections are completed and signatures obtained.

JOB HAZARD ANALYSIS

Rigging & Crane Lift Operations

Applicable Standards: 29 CFR 1926 Subpart CC (1926.1400–1926.1442) — *Cranes & Derricks*; ASME B30.5 — *Mobile Cranes*; ASME B30.9 — *Slings*; OSHA 1926.1431 — *Hoisting Personnel*

Project Name: _____	Date: _____
Location: _____	Supervisor: _____
Crew Members: _____	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
1	Conduct pre-lift planning — review lift plan, load weight, crane capacity at required radius	Crane overloading (structural failure/tip-over); incorrect load weight estimate; inadequate ground conditions	Qualified rigger calculates total load (object + rigging + block). Verify crane load chart at planned radius and boom length — stay below 75% of rated capacity for routine lifts. Review ground bearing capacity. Document lift plan — critical lifts (>75% capacity) require engineered lift plan.	
2	Set up crane on firm, level ground — extend outriggers and verify LMI/anti-two-block function	Crane tip-over from inadequate ground support; outrigger pad failure; LMI malfunction leading to undetected overload	Level crane within 1% grade (or per manufacturer spec). Outriggers fully extended with timber mats rated for ground pressure. Function-test LMI (Load Moment Indicator) and anti-two-block device before first lift. Daily crane inspection per 1926.1412.	
3	Inspect all rigging hardware — slings, shackles, hooks, and spreader beams	Rigging failure from damaged or overloaded hardware; dropped load; struck-by from failed rigging component	Qualified rigger inspects all rigging per ASME B30.9 — reject any sling with visible damage, broken wires, or missing ID tags. Verify hardware WLL (Working Load Limit) exceeds calculated sling loads. Use proper sling angles (never <30° included angle). Document inspection.	
4	Rig the load — attach slings, connect shackles, verify center of gravity, install taglines	Crush injuries during rigging attachment; pinch points between load and rigging; unbalanced load; tag line entanglement	Only qualified riggers attach hardware to loads. Hands clear of pinch points — use push/pull sticks. Verify CG with trial lift (raise 6-12 inches and pause). Install taglines of sufficient length — never wrap around hands. Use softeners on sling contact edges.	
5	Clear the lift zone — establish swing radius barricades and verify power line clearance	Workers struck by suspended load or crane components; boom contact with overhead power lines (electrocution); unauthorized entry into lift zone	Barricade swing radius plus 10 ft. Assign signal person with dedicated radio channel. Verify min 20-ft clearance from power lines per 1926.1408 (or use table for voltage >350kV). No personnel under suspended load at any time. Air horn for lift initiation warning.	
6	Execute the lift — signal person directs crane operator through pick, swing, and travel	Struck-by from load swing; crane tip-over during dynamic loading; loss of communication between operator and signal person; two-blocking	Standard hand signals or radio per 1926.1419–1926.1421. Smooth, controlled movements — no sudden stops or swings. Monitor LMI continuously. One signal person at a time (designated). Stop lift immediately for any "all stop" signal from any worker.	
7	Set and land the load at designated location	Crush injuries during landing; workers caught between load and structure; loss of load control in wind; rigging snagging on structure	Tagline operators guide load to within 12 inches. Landing zone crew clear until load is within 2 ft of landing. Use dunnage/cribbing at set point. Workers approach from upwind side only. Release load tension before disconnecting rigging. Wind speed limit: suspend lifts if sustained winds >20 mph (or per lift plan).	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
8	Disconnect rigging from landed load	Load shift after tension release; falling hardware when disconnecting; residual energy in rigging (snap-back)	Verify load is stable and fully supported before disconnecting. Rigger confirms no residual tension on slings. Remove rigging from topside when possible. Stack rigging hardware properly — never leave on ground in walkways. Inspect rigging for damage before next lift.	
9	Multi-crane lifts (when applicable) — coordinated dual-crane operations	Unequal load sharing leading to overload; boom collision; communication failure between operators; loss of synchronization	Engineered lift plan mandatory for all multi-crane lifts. Each crane limited to 75% of capacity at max radius. Dedicated signal person for each crane + lift director. Pre-lift meeting with all operators. Continuous radio communication. Abort procedure agreed upon and rehearsed.	
10	Secure crane at end of shift — boom stow, lockout, and documentation	Unattended crane movement; boom interference with other operations; theft/vandalism	Boom lowered and secured per manufacturer procedure. Swing lock engaged. Main disconnect locked out. Remove keys. Complete operator daily log — note any deficiencies. Report maintenance items to crane coordinator. Barricade crane perimeter if left on-site.	

 **This JHA must be reviewed and signed by all crew members before work begins.** Conditions on the jobsite may change — reassess hazards throughout the shift and update this JHA as necessary.

REVIEW & APPROVAL

Reviewed By (Print Name)

Signature

Date

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Road / Highway Work Zone Operations

REGULATORY REFERENCES

- 29 CFR 1926.200-203 — Signs, Signals, and Barricades
- Manual on Uniform Traffic Control Devices (MUTCD), Part 6
- OSHA Work Zone Safety Guidance
- 23 CFR 630 Subpart J — Work Zone Safety and Mobility
- OSHA Fact Sheet: Highway Work Zone Safety
- ANSI/ISEA 107 — High-Visibility Safety Apparel

SCOPE & DESCRIPTION

This JHA covers road and highway work zone operations including Temporary Traffic Control (TTC) setup per approved traffic control plans, pavement marking/stripping, guardrail installation, sign placement, milling/patching, and TTC removal. Struck-by incidents from motorized traffic are the leading cause of death in highway work zones. All personnel must maintain extreme situational awareness and comply with MUTCD and state DOT requirements at all times.

PROJECT INFORMATION

Project Name:		Date:	
Project Number:		Location:	
Contractor:		Supervisor:	
JHA Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. TTC Setup per Plan	Struck by traffic (highest risk) Struck by work vehicles placing devices Workers exposed to high-speed traffic Inadequate taper/buffer distances	H	Deploy TTC per MUTCD-compliant Traffic Control Plan (TCP) Install signs and devices in direction of traffic flow Use truck-mounted attenuator (TMA) as shadow vehicle All workers in ANSI Class 3 high-visibility apparel Spotter/flagger positioned per TCP Advance warning signs placed first before lane closures Minimum buffer space per MUTCD Table 6C-2
2. Pavement Marking / Striping	Struck by passing traffic Inhalation of paint/thermoplastic fumes Burns from thermoplastic equipment (400°F+) Moving equipment in active lanes	H	Positive lane separation (barriers or channelizers) Organic vapor respirator for thermoplastic operations Heat-resistant gloves and face shield near kettle Spotter required for all equipment movement Maintain work vehicle escape route at all times High-visibility apparel mandatory; reflective at night
3. Guardrail Installation	Struck by traffic Struck by equipment (pile driver, bobcat) Crush hazard — guardrail sections during handling Noise exposure from pile driving	H	Positive barrier protection where feasible Designated equipment swing zone — no workers in radius Two-person minimum for guardrail section handling Mechanical lifting for heavy sections Double hearing protection for pile driving operations Communication protocol: radio + hand signals
4. Sign Placement	Struck by traffic while placing/adjusting signs Overhead utility contact (tall signs) Manual handling injuries Wind-related sign blow-over during installation	M	Place signs from behind barrier where possible Utility locate completed before post driving Minimum 10 ft clearance from overhead power lines Sandbag bases for temporary signs in wind Never stand on traffic side of sign being placed High-visibility apparel at all times
5. Milling / Patching	Struck by traffic or work zone equipment Heat stress from asphalt and sun exposure Burns from hot-mix asphalt (300°F+) Noise from milling machine (100+ dB) Silica dust from milling operations	H	TTC in place per approved TCP before operations begin Heat stress prevention: water, shade, rest breaks per OSHA guidance Long sleeves, heat-resistant gloves near hot mix Hearing protection mandatory (NRR 25+) Wet milling or dust suppression for silica control Air monitoring for silica if dry cutting/milling Equipment operators maintain 360° awareness
6. TTC Removal	Struck by traffic (devices removed against traffic)	H	Remove devices against the direction of traffic

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	flow) Struck by other work vehicles Distracted motorists entering work zone		flow Use TMA shadow vehicle during removal All workers in Class 3 high-visibility apparel Maintain lane closure until all devices and personnel are clear Final sweep to ensure no devices remain in travel lanes Notify traffic management center of reopening

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	
☐ ANSI Class 3 High-Visibility Vest/Shirt (reflective for night)	☐ Hard Hat (ANSI Z89.1 Type I, Class E)
☐ Steel-Toe Safety Boots	☐ Hearing Protection (NRR 25+ for milling/pile driving)
☐ Heat-Resistant Gloves (asphalt/thermoplastic)	☐ Safety Glasses / Tinted Safety Glasses
☐ Organic Vapor Respirator (striping/thermoplastic)	☐ P100 Respirator (milling/silica operations)
☐ Sun Protection (SPF 30+ sunscreen, wide-brim hard hat)	☐ Cut-Resistant Gloves (guardrail handling)

EMERGENCY PROCEDURES

1. **STRUCK-BY-VEHICLE INCIDENT:** Call 911 immediately. Do NOT move victim unless in imminent danger of further strikes. Activate emergency TTC — close lane(s) to protect scene. Administer first aid / control bleeding. Assign someone to guide emergency vehicles to scene.
2. **VEHICLE INTRUSION INTO WORK ZONE:** Sound air horn / alert all workers. All personnel move behind positive barrier or to designated escape route. Activate emergency traffic control. Do not attempt to stop or redirect the intruding vehicle.
3. **HEAT-RELATED ILLNESS:** Move worker to shaded area. Remove excess clothing. Apply cool water/ice packs to neck, armpits, groin. If confusion, loss of consciousness, or no sweating — call 911 (heat stroke). Provide water if conscious.
4. **THERMAL BURN (HOT MIX/THERMOPLASTIC):** Cool with clean water for 10+ minutes. Do not remove adhered material. Cover with sterile dressing. Seek medical attention for burns >3 inches.
5. **EQUIPMENT CONTACT WITH OVERHEAD UTILITIES:** Stay in equipment cab if possible. If exiting, JUMP clear — do not step. Call utility company and 911. Establish 35 ft exclusion zone. No one touches equipment until de-energized.
6. **EMERGENCY CONTACTS:** 911 for all emergencies. Site Safety Officer: _____. State DOT TMC: _____. Utility Emergency: _____.

ADDITIONAL NOTES / SITE-SPECIFIC REQUIREMENTS

- An approved Traffic Control Plan (TCP) must be on-site and followed at all times.
- All flaggers must hold current state flagger certification.
- Night work requires retroreflective apparel meeting ANSI 107 Class 3 requirements.
- Internal traffic control plans (ITCP) required for equipment movement within the work zone.
- Pre-shift safety briefing must include escape routes, TMA position, and communication protocol.
- Speed monitoring/enforcement should be coordinated with law enforcement when available.

WORKER SIGN-OFF

By signing below, I confirm that I have reviewed and understand this JHA, including all identified hazards and required control measures.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				

10				
----	--	--	--	--

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

REVISION HISTORY

Revision	Date	Description	Approved By
0		Initial Release	
1			

DISCLAIMER: This Job Hazard Analysis is a guideline for identifying hazards and implementing controls. It does not replace site-specific safety plans, competent person assessments, or regulatory requirements. All workers must comply with applicable OSHA standards and company safety policies. This JHA must be reviewed and updated whenever work conditions change.

JOB HAZARD ANALYSIS

Roofing Operations — Commercial & Residential

Applicable Standards: 29 CFR 1926 Subpart M (1926.500–1926.503) — Fall Protection; 29 CFR 1926.501(b)(10) — Roofing; OSHA 3150 — Fall Protection in Construction

Project Name: _____	Date: _____
Location: _____	Supervisor: _____
Crew Members: _____	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
1	Establish roof access via ladder, scaffold, or aerial lift	Falls from height during access/egress; ladder tip-over or displacement; overreaching	Extension ladder extends 3 ft above roof edge. Secure at top and base. 4:1 ratio setup. Use ladder stabilizer on soft ground. Three-point contact rule enforced. Workers wear 100% tie-off harness when transitioning to roof.	
2	Install perimeter fall protection (guardrails, warning line system, or personal fall arrest)	Unprotected roof edge — falls to lower level (leading cause of roofing fatalities)	Install guardrails meeting 1926.502(b) — 42" top rail, 21" mid rail, capable of 200 lb force. For low-slope roofs: warning line at 6 ft from edge + safety monitor OR personal fall arrest system. Anchor points rated 5,000 lbs per worker.	
3	Hoist materials to roof level using crane, conveyor, or manual methods	Struck-by from falling materials; overloaded hoist; musculoskeletal injuries from manual lifting	Establish exclusion zone below hoisting area. Tag loads — no riding loads. Inspect rigging hardware pre-use. Limit manual carries to <50 lbs per person. Two-person lift for bundles. Hard hats mandatory in hoist zone.	
4	Remove existing roofing materials (tear-off operations)	Falls through weakened decking or skylights; exposure to asbestos/lead in older buildings; nail puncture wounds	Survey for fragile decking and skylights — cover or guard per 1926.502(i). Pre-demolition hazmat survey for buildings pre-1980. Cut-resistant gloves and puncture-resistant boot insoles. Debris chute or controlled drop zone for waste.	
5	Inspect and repair roof deck substrate	Structural collapse of weakened deck; falls through openings; splinter/cut injuries	Competent person evaluates structural integrity before loading. Cover all deck openings — secure covers labeled "HOLE" per 1926.502(i). Replace rotted decking before proceeding. Maximum material staging load per structural engineer limits.	
6	Install underlayment, insulation, and vapor barrier	Heat illness (especially on dark roofs in summer); slips on smooth membrane; adhesive/solvent fume inhalation	Implement heat illness prevention plan — water, rest, shade per OSHA guidance. Cool-down breaks every 20 min when >90°F. Non-slip footwear required. Half-face respirator with OV cartridge for adhesive application. Ventilation for enclosed areas.	
7	Install primary roofing system (shingles, membrane, or metal panels)	Repetitive motion injuries; nail gun injuries; burns from hot-applied materials (BUR/modified bitumen); electrical contact with rooftop equipment	Sequential trigger on nail guns only (no bump firing). Hot kettle operators trained and certified — fire extinguisher within 25 ft. Maintain 10-ft clearance from electrical equipment. Rotate task assignments to reduce repetitive strain.	
8	Perform edge and flashing detail work (drip edge, valley, penetrations)	Falls from roof edge during low-position work; lacerations from sheet metal; dropped tools striking workers below	100% personal fall arrest at roof edge — 6-ft max free fall. Use retractable SRL when working near edge. Cut-resistant gloves for metal flashing. Tool lanyards on all hand tools. Drop zone barricaded below.	

Step #	Job Steps	Potential Hazards	Hazard Controls	Responsible Person
9	Conduct final inspection, cleanup, and debris removal	Puncture wounds from exposed fasteners; trip hazards from debris; struck-by during waste removal	Magnetic nail sweeper on deck and ground level. Bundle debris for controlled lowering — no throwing materials. Maintain fall protection until last worker descends. Final walkthrough by supervisor. Document punch list items.	

 **This JHA must be reviewed and signed by all crew members before work begins.** Conditions on the jobsite may change — reassess hazards throughout the shift and update this JHA as necessary.

REVIEW & APPROVAL

Reviewed By (Print Name)

Signature

Date

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

JHA INFORMATION			
JHA Title:	Scaffolding Erection & Dismantling	JHA Number:	FSS-JHA-029
Project Name:		Date:	
Location:		Revision:	0
Regulatory References:	29 CFR 1926.451 (General Requirements — Scaffolds); 29 CFR 1926.452 (Specific Types); 29 CFR 1926.453 (Aerial Lifts); 29 CFR 1926.454 (Training)		
Prepared By:		Approved By:	
Competent Person:		Supervisor:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Site Assessment & Base Preparation	• Unstable ground conditions • Underground utilities • Overhead power line proximity • Uneven or sloped terrain • Pedestrian/vehicle traffic	H	• Competent person conducts site survey before erection begins • Verify soil bearing capacity at scaffold location — compact or improve as needed • Call 811 / utility locate to identify underground utilities • Survey for overhead power lines — maintain minimum 10 ft clearance (20 ft for >50kV) • Level ground surface; use compacted gravel fill if needed • Barricade scaffold zone to restrict unauthorized access • Establish traffic control plan if near vehicle routes
2. Mud Sill / Base Plate Placement	• Point loading causing settlement • Base plate sliding/shifting • Uneven load distribution • Improper sill sizing	M	• Place mud sills (min 2x10 lumber or engineered sills) under all base plates • Mud sills must extend minimum 6 inches beyond base plate on each side • Ensure base plates are centered on mud sills • Verify level with spirit level — shim as needed (no scrap wood for shimming) • Never use concrete blocks, bricks, or unstable materials as base support • Lock screw jacks after leveling — do not exceed maximum extension
3. Frame Erection & Bracing	• Falls during erection (no guardrails yet) • Scaffold collapse from improper bracing • Struck by falling components • Manual handling injuries	H	• Erectors must use personal fall arrest systems (harness + lanyard) until guardrails installed • Install cross-bracing on every frame bay — both sides • Plumb and level each lift before proceeding to next tier • Use manufacturer's coupling/locking pins — no substitutions • Two-person minimum for frame erection — use tag lines for heavy components • Secure components against wind during erection (tie-off partially erected sections) • Install tie-ins to structure per manufacturer specs (every 26 ft vertical, 30 ft horizontal)
4. Platform Installation & Guardrails	• Falls from incomplete platforms • Planks sliding or tipping • Gaps between planks > 1 inch • Missing guardrail components	H	• Install scaffold planks full width — maximum 1-inch gap between planks • Planks must extend minimum 6 inches beyond support, maximum 12 inches • Secure planks to prevent displacement (cleats, hooks, or wire ties) • Install guardrails: top rail at 38-45 inches, mid rail, and toe board (4 inches min) • Guardrail must withstand 200 lb force at any point in any direction • Install access ladder or stair tower — no climbing on cross-braces • Inspect all planks for defects — reject cracked, warped, or damaged planks
5. Scaffold Inspection & Tagging	• Use of uninspected scaffold • Overloading beyond rated capacity • Defects missed during inspection • Unauthorized modifications	M	• Competent person inspects scaffold before each work shift • Apply scaffold tag system: GREEN (safe), YELLOW (restrictions), RED (do not use) • Document inspection findings on scaffold inspection form • Post load capacity signage on scaffold (must not exceed 4x max intended load) • Re-inspect after any alteration, weather event, or extended non-use

			- Do not modify scaffold without competent person approval - Train all scaffold users on tag system and load limits per 1926.454
6. Dismantling (Reverse Sequence)	- Falls during dismantling - Scaffold instability as components removed - Struck by falling components - Premature removal of ties/bracing	H	- Dismantle in reverse order of erection — top down - Erectors wear personal fall arrest at all times during dismantling - Do not remove tie-ins until dismantling reaches that level - Lower components to ground — never throw or drop - Maintain bracing integrity at each stage of dismantling - Barricade exclusion zone below dismantling operations - Stack and organize components for transport/storage upon removal - Competent person supervises entire dismantling operation

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	Specification / ANSI Standard	Condition / Notes
Hard Hat	ANSI/ISEA Z89.1, Type I, Class E	Chin strap required during erection/dismantling
Full-Body Fall Arrest Harness	ANSI/ASSP Z359.1; Z359.11	Required for erectors until guardrails installed
Self-Retracting Lifeline (SRL)	ANSI/ASSP Z359.14	Preferred over shock-absorbing lanyard for scaffold work
Safety Glasses	ANSI/ISEA Z87.1+	Impact-rated with side shields
Work Gloves (Cut-Resistant)	ANSI/ISEA 105, Cut Level A4+	Dexterity sufficient for pin/coupler handling
Steel-Toe Safety Boots	ASTM F2413 (I/75 C/75)	Ankle support; slip-resistant soles
High-Visibility Vest	ANSI/ISEA 107, Class 2 minimum	Required at all times on scaffold operations
Hearing Protection	ANSI S3.19 / S12.6 (NRR ≥ 25 dB)	Required when hammering or using power tools

EMERGENCY PROCEDURES

Fall from Scaffold:

- Call 911 immediately — do not move the victim unless in immediate danger
- Stabilize head and neck — assume spinal injury until medically cleared
- Control bleeding with direct pressure; apply tourniquet if trained and needed
- Cover victim to prevent shock — keep warm and still
- Clear area below scaffold and restrict access
- Preserve scene for investigation — do not alter scaffold

Scaffold Collapse / Structural Failure:

- Sound alarm — evacuate all personnel from scaffold and surrounding area
- Call 911 and report potential trapped/injured workers
- Establish exclusion zone — no re-entry until structural engineer clears area
- Account for all personnel by name at assembly point
- Do not attempt rescue from collapsed structure without professional rescue team
- Preserve all evidence for OSHA and incident investigation

Struck by Falling Object:

- Clear area and provide first aid to injured worker
- Call 911 for head injuries, fractures, or significant bleeding
- Apply ice/pressure to impact site; immobilize fractures
- Monitor for signs of concussion (dizziness, nausea, confusion)
- All head impacts require medical evaluation — do not allow worker to refuse

Emergency Contact Information:

- Emergency Services: 911
- Site Safety Manager: [Insert Name & Phone]
- Competent Person: [Insert Name & Phone]
- Nearest Hospital: [Insert Name, Address & Phone]
- OSHA Area Office: [Insert Local Number]

WORKER SIGN-OFF — I HAVE READ AND UNDERSTAND THIS JHA

#	Print Name	Signature	Company / Trade	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Initials
Prepared By (Author)			
Reviewed By (Safety Manager)			
Approved By (Project Manager)			
Client / Owner Rep			

This JHA must be reviewed and updated whenever job conditions change, after any incident, or at minimum annually.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Solar Panel Installation

Document No: FSS-JHA-046

Regulatory References: 29 CFR 1926 Subpart M (Fall Protection), NFPA 70, 29 CFR 1926 Subpart K (Electrical)

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Work Description:	Solar Panel Installation	Revision:	0

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Racking/Mounting Structure Installation	Falls from roof/elevated structure Struck by falling materials Heat stress (rooftop work) Pinch points during assembly	H M H M	100% tie-off; install guardrails/warning lines per 1926 Subpart M Establish controlled access zone below; use tool lanyards Implement heat illness prevention plan (water, rest, shade); monitor wet-bulb globe temperature Wear cut-resistant gloves; use proper torque wrenches for fasteners
2. Panel Placement and Securing	Falls from height Struck by panels in wind Ergonomic strain (repetitive bending/kneeling) Electrical shock — panels energized by sunlight	H H M H	Personal fall arrest system (PFAS) with roof anchors rated to 5,000 lbs Stop work when winds exceed 25 mph; two-person lifts; secure panels immediately Use knee pads; rotate tasks every 30 min; provide ergonomic training Cover panels with opaque material during handling; wear voltage-rated gloves; assume all panels are energized in daylight
3. DC Wiring and String Connections	Electrical shock from DC voltage (cannot fully de-energize during daylight) Arc flash at connectors Cuts from wire stripping	H H L	Work with voltage-rated gloves (Class 00 min); use insulated tools; cover exposed conductors immediately Verify polarity before making connections; use MC4-rated connectors only; never disconnect under load Use proper wire strippers; wear cut-resistant gloves
4. Inverter/Combiner Box Installation	Electrical shock (AC and DC) Arc flash at combiner/inverter Heavy lifting	H H M	LOTO all AC sources; verify zero energy state; DC side — open all string disconnects and verify with rated meter Perform arc flash risk assessment per NFPA 70E; wear appropriate PPE category Use mechanical lifting aids; two-person team for units over 50 lbs
5. System Testing and Commissioning	Electrical shock during testing Arc flash at high-voltage points Unexpected energization	H H M	Only qualified electrical workers perform testing; use CAT III/IV rated meters Wear arc-rated PPE per NFPA 70E; maintain approach boundaries Establish clear communication protocol; use lockout tags on

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
			all disconnects until final commissioning
6. Site Cleanup	Falls from ladders Cuts from debris/packaging Slip/trip hazards	M L M	Three-point contact on ladders; inspect before use Wear cut-resistant gloves; dispose of packaging properly Clear walkways continuously; remove tools and debris from roof surface

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Hard hat (ANSI Z89.1 Type I, Class E)
- Safety glasses (ANSI Z87.1) with side shields
- Voltage-rated gloves (Class 00 minimum) with leather protectors for electrical work
- Arc-rated clothing per NFPA 70E hazard assessment
- Cut-resistant gloves (ANSI A4 minimum) for material handling
- Steel-toe/composite-toe boots (ASTM F2413)
- Full-body harness with shock-absorbing lanyard and roof anchor (ANSI Z359)
- High-visibility vest (ANSI/ISEA 107 Class 2)
- Knee pads for rooftop work
- Sunscreen (SPF 30+) and wide-brim hard hat attachment

ADDITIONAL SAFETY REQUIREMENTS

- Solar panels cannot be fully de-energized during daylight hours — treat all DC conductors as energized
- Pre-task safety briefing (tailgate talk) required before each shift
- Weather monitoring required — stop all rooftop work during lightning, high winds (>25 mph), or wet conditions
- All fall protection equipment must be inspected daily before use
- Only qualified electricians shall perform wiring and commissioning activities per NFPA 70
- Rooftop fire safety: maintain clear access to fire department connections and roof hatches at all times

EMERGENCY PROCEDURES

- Call 911 for all life-threatening injuries; notify site supervisor immediately
- For electrical shock: Do NOT touch the victim if still in contact with source; de-energize if safe to do so; call 911; begin CPR/AED if trained
- For falls: Do not move victim; stabilize and call 911; activate rescue plan for suspended workers within 6 minutes
- For heat-related illness: Move to shade immediately; apply cool water; call 911 if altered consciousness
- First aid kit and AED located at: _____
- Nearest hospital/emergency room: _____
- Emergency assembly point: _____
- Site emergency contact: _____

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for this work activity.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Next Review Date
Prepared By			
Reviewed By			
Approved By			
Site Safety Manager			

DISCLAIMER: This JHA is a template provided by Forbes Safety Solutions for general guidance. It must be reviewed, customized, and approved by a qualified safety professional before use on any specific project. Site-specific conditions may require additional hazard controls not listed herein.

FORBES SAFETY SOLUTIONS**JOB HAZARD ANALYSIS****STEEL ERECTION — JOB HAZARD ANALYSIS**

Reference: 29 CFR 1926 Subpart R — Steel Erection

PROJECT INFORMATION

Company Name:	[Enter Company Name]
Project Name:	[Enter Project Name]
Date:	[MM/DD/YYYY]
Supervisor:	[Enter Supervisor Name]
JHA Number:	[JHA-SE-001]
Work Activity:	Steel Erection — 29 CFR 1926 Subpart R

JOB HAZARD ANALYSIS — TASK STEPS & CONTROLS

The following analysis identifies task steps, associated hazards, risk levels, and control measures for steel erection operations. All workers must review this JHA before commencing work.

Task Step	Hazard(s)	Risk Level (H/M/L)	Control Measures
1. Site Preparation & Layout	Uneven terrain, underground utilities, overhead power lines, heavy equipment traffic	H	• Conduct site survey; identify/mark all utilities • Verify minimum clearance from power lines (20 ft for lines up to 350kV per Table A) • Establish equipment travel paths and barricades • Ground conditions assessed by competent person
2. Unloading & Staging Steel Members	Struck-by falling steel, crushing injuries during rigging, overloaded crane, pinch points	H	• Use tag lines to control loads; never stand under suspended loads • Inspect all rigging gear before each lift; remove defective slings • Establish exclusion zone around unloading area • Store steel on level ground with adequate dunnage and chocking
3. Column Erection & Plumbing	Falls from height, column tip-over, struck-by tools/bolts, structural instability	H	• 100% tie-off required above 15 ft (steel erection standard) • Anchor bolts inspected and verified per erection drawings • Columns guyed or braced immediately upon placement • Connectors use personal fall arrest systems with retractable lanyards
4. Beam Setting & Connection	Falls from height, struck-by steel beams, hand/finger crush injuries, unstable structural members	H	• Double connections or equivalent per 1926.756(c)(1) • Connectors positioned with PFAS to structural steel • Beam secured with minimum 2 bolts before load released • Communication via radio between crane operator, signalman, and connectors
5. Decking Installation	Falls through openings, falls from leading edge, slipping on unsecured decking, falling objects	H	• Controlled Decking Zone (CDZ) established per 1926.760 • CDZ limited to 90 ft / 3000 sq ft ahead of leading edge • Decking bundles secured immediately upon placement • Safety net systems or PFAS for workers outside CDZ
6. Bolt-Up & Final Connections	Falls from height, dropped tools/bolts striking workers below, hand injuries, ergonomic strain	M	• Tool lanyards required for all hand tools at height • Tethered bolt bags; no loose hardware in pockets • 100% tie-off maintained during bolt-up operations • Torque values verified per structural engineer specifications
7. Welding & Cutting Operations	Welding burns, arc flash eye injury, fire/explosion, toxic fume inhalation, hot work ignition	H	• Hot work permit obtained before each welding session • Fire watch maintained for 30 minutes after welding ceases • Welding screens/curtains deployed to protect adjacent workers • Forced ventilation or respiratory protection for confined areas • Fire extinguisher within 20 ft of welding operations

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- ☐ Hard hat (ANSI Z89.1 Type I, Class E) — required at all times on site
- ☐ Safety glasses with side shields (ANSI Z87.1) — required at all times
- ☐ Welding hood/goggles (Shade 10-14) — required during welding/cutting operations
- ☐ High-visibility vest (ANSI/ISEA 107 Class 2 minimum) — required at all times
- ☐ Steel-toed boots (ASTM F2413) with puncture-resistant soles
- ☐ Cut-resistant gloves (ANSI A4 minimum) for steel handling; welding gloves for hot work
- ☐ Personal Fall Arrest System (PFAS): full-body harness, shock-absorbing lanyard, and SRL
- ☐ Hearing protection (NRR 25+) when noise exceeds 85 dBA
- ☐ Welding leathers/flame-resistant clothing during welding and cutting operations

EMERGENCY PROCEDURES

Emergency Contact Number:	<i>[Enter Phone Number]</i>
Nearest Hospital:	<i>[Enter Hospital Name & Address]</i>
Site Assembly Point:	<i>[Enter Location]</i>
First Aid Kit Location:	<i>[Enter Location]</i>
AED Location:	<i>[Enter Location]</i>
Fire Extinguisher Locations:	<i>[Enter Locations]</i>
Rescue Plan for Fall Arrest:	<i>[Describe Suspension Trauma Rescue Procedure]</i>

CREW SIGN-OFF — I HAVE REVIEWED AND UNDERSTAND THIS JHA

By signing below, each crew member acknowledges they have reviewed this Job Hazard Analysis, understand the identified hazards and control measures, and agree to follow all safety procedures outlined herein.

Printed Name	Signature	Date

ADDITIONAL HAZARDS / SITE-SPECIFIC NOTES

Use this section to document any additional hazards, site-specific conditions, or supplemental control measures not covered above.

JHA REVIEW & APPROVAL

Role	Name / Signature	Date
Prepared By (Competent Person):		
Reviewed By (Site Superintendent):		
Approved By (Project Manager):		

DISCLAIMER: This JHA template is provided as a starting point for site-specific hazard analysis. It must be reviewed and customized by a competent person familiar with the specific project conditions. Forbes Safety Solutions is not liable for misuse or failure to adapt this template to actual site conditions. Always consult current OSHA regulations and site-specific safety plans.

JOB HAZARD ANALYSIS

Structural Steel Welding

Regulatory References: 29 CFR 1926.350-354, AWS D1.1 Structural Welding Code, 29 CFR 1926 Subpart R (Steel Erection)

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	JHA-035
Supervisor:		Reviewed By:	
Trade/Activity:	Structural Steel Welding	Permit Required:	☐ Yes ☐ No

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level	Control Measures
1. Weld Prep & Joint Fit-Up	Falls from steel (elevated work) Cuts from sharp edges Pinch points during fit-up Grinding sparks/debris	H M M M	100% tie-off when working at height — fall protection per Subpart R Inspect walking/working surfaces for ice, grease, debris Use cut-resistant gloves when handling steel members Verify bolt torque and fit-up alignment before welding Grind joint prep with guarded grinder; wear face shield Secure members with erection bolts/clamps before releasing crane
2. Equipment Setup & Cable Routing	Electrical shock Trip hazards from cables Damaged equipment	H M M	Inspect welding machine, cables, electrode holder, and ground clamp daily Replace damaged cables, connectors, or insulation immediately Route cables to minimize trip hazards; cover or elevate at walkways Ensure proper grounding — ground clamp directly on workpiece or structure Keep welder dry and away from standing water Verify correct voltage/polarity settings for weld procedure
3. Tack Welding	UV radiation (arc flash) Burns from spatter Fume exposure Fire	H M H H	Wear welding helmet (Shade 10-14) and FR clothing for ALL welds including tacks Erect welding screens/curtains to protect adjacent workers from UV Clear combustibles within 35 ft or cover with fire-resistant blankets Position fire extinguisher within 25 ft of welding location Assign fire watch for duration of work plus 30 minutes post-weld Verify adequate ventilation or use local exhaust / fume extraction
4. Multi-Pass Welding	Prolonged fume exposure (Mn, Cr ⁶⁺)	H H	Use local exhaust ventilation (LEV) positioned within 12-18 inches of arc

FORBES SAFETY SOLUTIONS

Task Step	Hazard	Risk Level	Control Measures
	UV radiation Burns Fire Fatigue at height	M H M	Wear P100 respirator with OV cartridge — required for galvanized or stainless steel Monitor exposure to manganese and hexavalent chromium per 29 CFR 1926.1152/1126 Take breaks to prevent fatigue — especially critical at elevated positions Maintain fire watch — continuous observation during multi-pass welding Inspect interpass temperature with contact thermometer per WPS requirements
5. Post-Weld Inspection	Burns from hot steel Falls during inspection Grinding hazards	M H M	Allow welds to cool before handling — test temperature before touching Maintain fall protection during inspection — do NOT remove harness Use magnetic particle or ultrasonic testing per AWS D1.1 inspection requirements Grind repairs with guarded grinder; wear face shield and hearing protection Mark rejected welds clearly for repair; document all inspection results Verify weld meets WPS parameters (size, profile, discontinuities)
6. Cleanup	Hot slag and spatter Welding rod stub disposal Fire from smoldering materials	M L M	Allow all slag and spatter to cool before sweeping up Collect used welding rod stubs in metal container — do NOT leave on steel members Fire watch inspects area 30 minutes after last weld — confirm no smoldering Disconnect and properly store welding cables and equipment Clean work area of all debris, tools, and consumables Complete weld log and daily inspection documentation

Additional Notes: Hot work permit required for all welding operations. Fire watch must remain 30 minutes after welding ceases. All welders must have current AWS certification for the applicable process (SMAW, FCAW, GMAW). Welding on galvanized steel requires enhanced respiratory protection for hexavalent chromium.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Required PPE	
☒ Hard Hat (ANSI Z89.1)	☒ Welding Helmet (Shade 10-14)
☒ Safety Glasses under Helmet (ANSI Z87.1)	☒ Welding Jacket / FR Clothing
☒ Welding Gloves (leather gauntlet)	☒ Steel/Composite Toe Boots
☒ Hearing Protection	☒ Respirator (P100 w/ OV cartridge for fumes)
☒ Fall Protection Harness & Lanyard	☒ Fire-Resistant Boot Covers / Spats

EMERGENCY PROCEDURES

- Fall from steel: Activate rescue plan immediately. Trained rescuers deploy to retrieve fallen worker within minutes to prevent suspension trauma. Call 911.
- Welding fume overexposure (manganese, hexavalent chromium): Move worker to fresh air immediately. Seek medical evaluation. Review ventilation adequacy.
- Burn injury: Cool burn with water. Remove smoldering clothing (not if adhered). Cover with sterile dressing. Seek medical attention.
- Fire from welding sparks: Use ABC fire extinguisher. Activate fire watch procedure. If fire cannot be controlled immediately, evacuate and call 911.
- Electrical shock from welder: De-energize equipment. Do NOT touch victim if still in contact with energized source. Administer CPR if needed. Call 911.
- Arc flash eye injury (flash burn): Irrigate eyes with clean water. Apply cool compress. Seek medical evaluation — symptoms may be delayed 6-12 hours.
- Report all incidents, near-misses, and equipment malfunctions to supervisor immediately.

FORBES SAFETY SOLUTIONS

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for the work to be performed.

#	Print Name	Signature	Company	Date	Time
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

REVIEW & APPROVAL

Role	Name / Signature	Title	Date
Prepared By			
Reviewed By			
Approved By			
Site Supervisor			

REVISION HISTORY

Rev.	Date	Description	Author
0		Initial Release	
1			

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Substation Maintenance

Document No: FSS-JHA-048

Regulatory References: 29 CFR 1910.269, NFPA 70E, NESC (National Electrical Safety Code), IEEE C2

PROJECT INFORMATION

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Work Description:	Substation Maintenance	Revision:	0

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Switching and Isolation	Arc flash (extreme energy levels) Electrocution during switching operations Induced voltage from adjacent energized equipment	H H H	Follow switching order approved by system operator; wear full arc flash PPE per incident energy study Only qualified switchmen perform operations; verify visible open gap on disconnect switches Maintain Minimum Approach Distance (MAD) per 1910.269 Table R-3; treat adjacent circuits as energized
2. Grounding and Testing	Step and touch potential Electrocution from stored energy (capacitance) Induced voltage on de-energized lines	H H H	Test for absence of voltage with rated equipment; apply temporary protective grounds (TPGs) on all phases Ground all capacitive sources; wait for discharge time; test with hot stick-mounted voltmeter Apply grounds as close to work location as possible; use equipotential zone grounding mat
3. Transformer Inspection/Maintenance	PCB exposure (older equipment) Hot oil burns Fall hazards (climbing transformer) SF6 gas exposure (gas-insulated equipment)	H H M H	Check nameplate for PCB content; if suspect, sample and test per EPA 40 CFR 761; use appropriate PPE and disposal Verify oil temperature before opening; wear heat-resistant gloves; have spill containment in place Use fall protection when climbing; three-point contact on ladders; ensure structural integrity of platforms SF6 is an asphyxiant — monitor oxygen levels; ventilate confined areas; by-products from arcing are toxic (use supplied air for suspected decomposition)
4. Breaker/Relay Testing	Unexpected breaker operation Stored spring energy (mechanism) Electrical contact during testing	H H M	Rack breaker to test position; verify control power isolated; follow manufacturer test procedures Block breaker mechanism before working on springs; wear face shield during spring compression work Use appropriately rated test equipment; maintain clearances; only qualified relay technicians perform testing
5. Bus Work and Connections	Arc flash during connection work Falls from elevated bus structures Induced voltage from parallel	H H H	Verify de-energized and grounded; apply equipotential grounding; wear arc-rated PPE Use aerial lifts or scaffolding with fall protection; 100% tie-off above 4 feet Install temporary protective grounds bracketing work area;

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	conductors		use insulated tools
6. Re-Energization	Arc flash during energization Equipment failure on first energization Personnel in restricted area	H H H	Remove all temporary grounds; verify all tools/personnel clear; energize remotely from control room when possible Perform insulation resistance testing before energization; have protection systems in service Complete personnel sweep; verify all LOTO devices removed; obtain authorization from system operator before switching

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Arc-rated clothing per NFPA 70E incident energy study (often 40+ cal/cm² for substation work)
- Arc-rated face shield with balaclava (or arc flash suit hood for higher incident energies)
- Voltage-rated gloves (class per voltage level) with leather protectors
- Safety glasses (ANSI Z87.1) under face shield at all times
- Dielectric overshoes or EH-rated safety boots (ASTM F2413)
- Hard hat (ANSI Z89.1 Type I, Class E) — arc-rated for flash hazard areas
- Hearing protection (breaker operation can exceed 85 dB)
- FR-rated high-visibility vest
- Respiratory protection available for SF₆/PCB exposure potential
- Fall protection harness (ANSI Z359) for elevated work

ADDITIONAL SAFETY REQUIREMENTS

- All work within substation requires approved switching orders and clearance tags
- Minimum Approach Distances (MAD) per 29 CFR 1910.269 Table R-3 must be maintained at all times
- Two-person rule: minimum two qualified workers present for all substation work
- Ground grid integrity must be verified before any maintenance activities
- Induced voltages from parallel circuits can be lethal — always apply temporary protective grounds
- Wildlife/pest inspection before work — snakes, wasps, and rodents common in substations
- All test equipment must be CAT IV rated for substation environments

EMERGENCY PROCEDURES

- For electrocution: De-energize using emergency trip if safe; do NOT touch victim in contact with energized equipment; call 911; begin CPR/AED if trained and victim is clear of source
- For arc flash: Evacuate area; do NOT remove melted clothing; cool burns with water; call 911; treat for shock
- For SF₆ exposure: Move victim to fresh air; administer oxygen if available; call 911; SF₆ decomposition products are extremely toxic — do NOT re-enter without SCBA
- For PCB spill: Contain with absorbent; avoid skin contact; notify EPA if spill exceeds 1 lb; document per 40 CFR 761
- Fire response: Use CO₂ or dry chemical extinguisher on electrical fires — NEVER water on energized equipment
- Emergency switching procedures posted at: _____
- First aid kit, AED, and emergency supplies located at: _____
- Nearest hospital/emergency room: _____
- Utility dispatch/control room: _____

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures for this work activity.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Next Review Date
Prepared By			
Reviewed By			
Approved By			
Site Safety Manager			

DISCLAIMER: This JHA is a template provided by Forbes Safety Solutions for general guidance. It must be reviewed, customized, and approved by a qualified safety professional before use on any specific project. Site-specific conditions may require additional hazard controls not listed herein.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

TREE TRIMMING / VEGETATION MANAGEMENT NEAR POWER LINES

29 CFR 1910.269 | ANSI Z133 — Arboricultural Operations Safety

PROJECT INFORMATION

Company Name:		Date:	
Project Name:		Supervisor:	
JHA Number:		Revision:	
Work Activity:	Tree Trimming / Vegetation Management Near Energized Power Lines		
References:	29 CFR 1910.269; 29 CFR 1910.331-335; ANSI Z133-2017; OSHA 1910.333(c)(3); MUTCD		

MINIMUM APPROACH DISTANCE (MAD) REFERENCE TABLE

Per 29 CFR 1910.269 Table R-6 / Table R-7 — Verify voltage with utility before work begins.

VOLTAGE RANGE	MAD — QUALIFIED LINE-CLEARANCE	MAD — UNQUALIFIED PERSONNEL
0 – 50 V	No specific distance	No specific distance
51 V – 750 V	Avoid contact	Avoid contact
751 V – 15 kV	2 ft 1 in (0.64 m)	10 ft (3.05 m)
15.1 kV – 36 kV	2 ft 4 in (0.72 m)	10 ft (3.05 m)
36.1 kV – 46 kV	2 ft 7 in (0.77 m)	10 ft (3.05 m)
46.1 kV – 72.5 kV	3 ft 3 in (0.98 m)	10 ft (3.05 m)
72.6 kV – 121 kV	3 ft 4 in (1.02 m)	10 ft (3.05 m)
138 kV – 145 kV	3 ft 10 in (1.17 m)	10 ft (3.05 m)
161 kV – 169 kV	4 ft 3 in (1.29 m)	16 ft (4.88 m)
230 kV – 242 kV	5 ft 3 in (1.59 m)	16 ft (4.88 m)

HAZARD ANALYSIS

TASK STEP	HAZARD	RISK LEVEL	CONTROL MEASURES
1. Pre-Work Site Assessment & Utility Coordination	• Unidentified energized power lines (electrocution) • Overhead widow-makers (dead/hanging limbs) • Uneven terrain / hidden ground hazards • Inadequate communication with utility provider	HIGH	• Contact utility company 72 hrs minimum before work; confirm line status • Walk-through hazard assessment by qualified person before work begins • Identify all power lines within work zone; determine voltage level • Reference MAD table to establish approach distances • Mark exclusion zones with flagging tape / barricades • Document assessment on pre-work checklist
2. Establishing Work Zone & Traffic Control	• Vehicle strikes on roadway work zones • Unauthorized pedestrian entry into drop zone • Inadequate sight distance for traffic	HIGH	• Traffic control plan per MUTCD (Manual on Uniform Traffic Control Devices) • Cones, signs, and flaggers as required for roadway work • High-visibility apparel Class 2 minimum; Class 3 for flaggers • Establish drop zone perimeter — no unauthorized entry • Spotter positioned for traffic exposure areas • Work vehicle emergency lighting activated
3. Aerial Lift Positioning & Setup	• Electrocution from boom contact with power lines • Aerial lift tip-over on uneven ground • Falls from aerial lift bucket • Entanglement with overhead conductors during positioning	HIGH	• Only line-clearance qualified workers within 10 ft of energized lines per 29 CFR 1910.269 • Insulated aerial lift (Category A or B per ANSI A92.2) for line-clearance work • Set outriggers on firm, level ground; use cribbing/pads as needed • Operator must wear full-body harness attached to boom/bucket anchor point • Pre-use inspection of lift per manufacturer checklist • Maintain MAD at all times — use spotter for boom movements
4. Limb Cutting & Removal Sequence	• Electrocution from limb contact with power line • Chain saw kickback • Struck-by falling limbs (gravity hazard) • Overhead widow-makers dropping unexpectedly • Hand/arm laceration from saw	HIGH	• Cut sequence planned to direct limb fall away from power lines • Three-cut method for large limbs (undercut, top cut, stub removal) • Chain saw with anti-kickback chain and chain brake engaged between cuts • Ground crew clear of drop zone; voice/radio communication before each cut • Inspect canopy for widow-makers before and during cutting • Never reach across or work between energized conductors • Use insulated tools rated for voltage present when within MAD
5. Chipper Operations	• Entanglement / caught-in chipper feed mechanism • Struck-by ejected material from discharge chute • Noise exposure (>100 dBA typical) • Flying debris eye/face injuries	HIGH	• Dedicated spotter positioned at chipper infeed at all times • No loose clothing, jewelry, or lanyards near chipper • Feed brush butt-end first; stand to the side of infeed • Emergency stop bar functional — test before each use • Position discharge chute away from personnel and traffic • Hearing protection required (NRR 25+ minimum) • Face shield and safety glasses required during chipper operation
6. Site Cleanup & Restoration	• Manual handling strain (heavy limbs/debris) • Tripping on debris during cleanup • Traffic exposure during barricade removal • Residual overhead hazards (partially cut limbs)	MEDIUM	• Team lifting for debris >50 lbs; use mechanical assistance when possible • Systematic cleanup — work outward from trunk to perimeter • Final overhead inspection before releasing work zone • Remove traffic control devices in reverse order of placement • Document completion on JHA close-out section

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

PPE ITEM	STANDARD	NOTES
Hard Hat (Type I, Class E)	ANSI/ISEA Z89.1-2014	Electrical rated; required at all times in work zone
Safety Glasses + Face Shield	ANSI/ISEA Z87.1-2020	Face shield for chipper / chain saw operations
Chain Saw Chaps (8+ layers)	ASTM F1897 / UL Certified	Required for all ground-level chain saw operations
Chain Saw Protective Gloves	ASTM F2675-19	Left-hand cut protection minimum
Steel-Toe / Chain Saw Boots	ASTM F2413-18 / F2413-11	Cut-resistant chain saw boots for ground operations
High-Vis Safety Vest (Class 2/3)	ANSI/ISEA 107-2020	Class 3 for flaggers; Class 2 minimum for all crew
Fall Protection Harness	ANSI Z359.11-2021	Full-body harness for aerial lift / climbing operations
Hearing Protection (NRR 25+)	ANSI S3.19 / S12.6	Required during chipper and chain saw operations
Dielectric Gloves (if applicable)	ASTM D120 / OSHA Table R-6	Voltage-rated rubber gloves for line-clearance qualified workers
Climbing Saddle / Lanyard	ANSI Z133-2017 Sec. 8	For tree climbing operations when aerial lift not feasible

EMERGENCY PROCEDURES

Emergency Contact: 911 for all life-threatening emergencies

First Aid Station: Located at _____ (identify before each shift)

Electrocution / Electrical Contact: DO NOT touch the victim if still in contact with energized source. Call 911 immediately. De-energize line if possible (utility dispatch: _____). Begin CPR/AED only after source is de-energized or victim is clear. All crew trained in CPR/AED required on site.

Fall from Height: Do not move injured person unless in immediate danger. Stabilize C-spine if suspected injury. Call 911. Provide first aid as trained.

Chain Saw Laceration: Apply direct pressure to wound. Use tourniquet for severe arterial bleeding per Stop the Bleed protocol. Call 911.

Chipper Entanglement: Hit emergency stop immediately. Call 911. Do not attempt to reverse-free a victim—wait for emergency services.

Struck-by Falling Limb: Assess injuries. Call 911 for head, neck, or back injuries. Maintain airway. Provide first aid as trained.

Nearest Hospital: _____ (identify before each shift)

CREW ACKNOWLEDGMENT & SIGN-OFF

By signing below, I acknowledge that I have reviewed this JHA, understand the identified hazards and required control measures, and agree to follow all safety procedures. Line-clearance qualified workers must be identified with (Q) next to their name.

#	PRINTED NAME	SIGNATURE	COMPANY / TRADE	DATE	UNDERSTOOD (INITIALS)
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

REVIEW & APPROVAL

ROLE	SIGNATURE	DATE	PRINTED NAME
Prepared By:			
Reviewed By (Supervisor):			
Approved By (Safety Mgr):			
Client/GC Representative:			

DISCLAIMER

This JHA is a template intended to be customized for site-specific conditions. It does not replace a qualified safety professional's assessment or utility coordination. Employers remain responsible for compliance with all applicable OSHA standards, ANSI Z133, and local regulations. Only line-clearance qualified workers may work within minimum approach distances of energized power lines. This document should be reviewed and updated whenever work conditions change.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Underground Vault Entry

Regulatory References: 29 CFR 1910.146, 29 CFR 1910.269(e)

Document No: FSS-JHA-036 | Revision: 0 | Date: _____

Project Name:		Date:	
Location:		JHA Number:	
Supervisor:		Permit Required:	☐ Yes ☐ No
Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS TABLE

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Vault Identification & Access	Traffic near vault opening Unauthorized access Unknown vault condition	H M H	Set up traffic control (cones, signs, flaggers) per MUTCD Verify vault location against utility maps Barricade work area with minimum 10-ft perimeter Post confined space entry signage Remove vault cover using proper lifting techniques/tools
2. Atmospheric Testing	Toxic atmosphere (H2S, CO) Oxygen deficiency/enrichment Explosive atmosphere (LEL)	H H H	Test atmosphere BEFORE entry at all levels (top, middle, bottom) Calibrate multi-gas detector per manufacturer specs O2: 19.5%-23.5%, LEL: <10%, CO: <25 ppm, H2S: <10 ppm Continuous atmospheric monitoring throughout entry Document all readings on confined space entry permit
3. Ventilation Setup	Inadequate air supply Recirculation of contaminated air Noise from blower equipment	H M M	Position forced-air ventilation blower at vault opening Ensure fresh air intake is upwind and away from exhaust sources Supply ductwork to bottom of vault for positive ventilation Run ventilation minimum 15 minutes before entry Retest atmosphere after ventilation and before entry
4. Entry & Work Operations	Falls during entry/exit Ergonomic strain (cramped space)	H M H	Use fixed ladder or approved entry/egress equipment Attendant stationed at vault opening at all times

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	Electrical contact Insects/vermin	M	Entrant wears full-body harness connected to retrieval system Verify all circuits de-energized and LOTO applied before work Rotate workers to minimize time in cramped positions Inspect vault for insects/vermin before and during entry
5. Cable/Equipment Work	Electrical contact with energized cables Pinch points Cuts from cable/tools Chemical exposure (cable insulation)	H M M L	Confirm zero-energy state on all cables before handling Use voltage-rated insulating gloves and tools Identify and mark ALL conductors in the vault Use proper cable-cutting tools; secure cable ends Wear chemical-resistant gloves if handling splicing compounds Maintain communication with surface attendant at all times
6. Exit & Securing Vault	Falls during exit Leaving vault unsecured Tool/equipment left below	M M L	Inventory all tools and materials before exiting Exit using fixed ladder with three-point contact Replace vault cover securely; verify flush with grade Remove traffic control devices only after vault is secured Complete confined space permit closeout documentation Debrief crew on any issues encountered

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

☐ Hard Hat (ANSI Z89.1 Type I, Class E)	☐ Safety Glasses (ANSI Z87.1)
☐ FR-Rated Clothing	☐ Steel-Toe Boots (ASTM F2413)
☐ Rubber Insulating Gloves (Class appropriate)	☐ Full-Body Harness with Retrieval Line
☐ Multi-Gas Detector (LEL, O2, CO, H2S)	☐ High-Visibility Vest (ANSI/ISEA 107 Class 2)
☐ Hearing Protection (if noise >85 dBA)	☐ Respiratory Protection (SCBA/SAR if required)

EMERGENCY PROCEDURES

1. If atmospheric alarm sounds, immediately evacuate the vault using the retrieval system. Do NOT re-enter until atmosphere is retested and verified safe.
2. In case of water intrusion or flooding, evacuate immediately. Notify supervisor and de-energize all electrical sources if safe to do so.
3. If a worker becomes unresponsive, activate the retrieval system from the surface. Do NOT enter the vault for rescue without proper equipment and training.
4. For electrical contact, de-energize the source if safe. Call 911 immediately. Begin CPR if the victim is unresponsive and not breathing.
5. Administer first aid for insect bites/stings. Seek medical attention for allergic reactions. Ensure EpiPen is available if known allergies exist.
6. Report all incidents to site supervisor immediately. Complete incident report within 24 hours.

Emergency Contact:	911 / Site-specific: _____
Assembly Point:	
Nearest Hospital:	
First Aid Kit Location:	

WORKER SIGN-OFF

By signing below, I acknowledge that I have reviewed and understand this Job Hazard Analysis, the associated hazards, and the required control measures.

#	Print Name	Signature	Company	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Name / Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

Next Review Date:	
Revision Notes:	

FORBES SAFETY SOLUTIONS | *Committed to Zero Incidents*

This document is valid only when all sections are completed and signatures obtained.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Waterproofing / Below-Grade Work

REGULATORY REFERENCES

- 29 CFR 1926 Subpart P — Excavations
- 29 CFR 1926.55 — Gases, Vapors, Fumes, Dusts, and Mists
- 29 CFR 1926.651 — Specific Excavation Requirements
- 29 CFR 1926.652 — Requirements for Protective Systems
- 29 CFR 1926.150-155 — Fire Protection and Prevention
- OSHA Technical Manual, Section V, Ch. 2 — Excavations

SCOPE & DESCRIPTION

This JHA covers waterproofing and below-grade construction operations including excavation access, surface preparation, primer and membrane application (cold-applied and torch/hot-applied), seam sealing, drainage board installation, and backfill coordination. Work occurs adjacent to or within excavations, creating combined hazards of cave-in, solvent vapor exposure, thermal burns, falls, and struck-by incidents from overhead operations.

PROJECT INFORMATION

Project Name:		Date:	
Project Number:		Location:	
Contractor:		Supervisor:	
JHA Prepared By:		Reviewed By:	

JOB HAZARD ANALYSIS

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Excavation Access	Cave-in / wall collapse Falls into excavation Struck by falling objects from surface Hazardous atmosphere (gases in soil)	H	Competent person must inspect excavation daily and after rain Shoring, sloping, or shielding per Subpart P Ladder access within 25 ft of all workers Barricades and warning signs around excavation perimeter Atmospheric testing before entry (O2, LEL, H2S, CO) Hard hats mandatory for all workers near excavation
2. Surface Preparation	Dust inhalation from grinding/cleaning Hand/arm vibration from power tools Struck by debris Proximity to excavation edge	M	Dust mask / P100 respirator for grinding operations Anti-vibration gloves; limit continuous tool use to 30 min Face shield and safety glasses for grinding Maintain 2 ft setback from unprotected excavation edge Secure tools to prevent dropping into excavation
3. Primer / Membrane Application	Solvent vapor inhalation (high VOC primers) Skin/eye contact with bituminous products Slippery surfaces from adhesive overspray Torch/hot-applied membrane — burn hazard	H	Organic vapor respirator in below-grade applications Forced-air ventilation to maintain vapors below PEL Chemical-resistant gloves, long sleeves, splash goggles Non-slip footwear; clean overspray immediately Hot work permit for torch-applied membranes Fire extinguisher within 10 ft of torch operations Fire watch for 30 minutes after torch use
4. Seam Sealing	Solvent/adhesive vapor exposure Burns from heat welding equipment Ergonomic strain (kneeling, bending)	M	Ventilation and respiratory protection as per primer application Heat-resistant gloves for heat-welded seams Knee pads and anti-fatigue mats for extended kneeling Rotate workers to minimize repetitive strain Inspect all seams per manufacturer quality requirements
5. Drainage Board Installation	Manual handling of heavy boards/rolls Cuts from utility knives Falls from ladders/staging Struck by overhead debris during installation	M	Two-person lifts for heavy rolls; mechanical aids when possible Cut-resistant gloves; retractable utility knives Ladder safety: 3-point contact, secured at top Hard hat required; overhead protection barriers Coordinate with crane/overhead operations
6. Backfill Coordination	Struck by heavy equipment Workers trapped between wall and equipment	H	Dedicated spotter for all backfill equipment operations No workers between wall and equipment — enforced exclusion zone

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
	Excavation collapse during backfill Vibration damage to fresh membrane		Competent person verifies membrane cure before backfill Backfill in controlled lifts per geotechnical spec High-visibility vests mandatory for all ground personnel Communication protocol between equipment operator and crew

PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	
☐ Hard Hat (ANSI Z89.1 Type I, Class E)	☐ Organic Vapor Respirator / P100 Combination
☐ Chemical-Resistant Gloves (nitrile or neoprene)	☐ Heat-Resistant Gloves (torch operations)
☐ Splash-Proof Safety Goggles	☐ Steel-Toe Safety Boots (puncture-resistant sole)
☐ High-Visibility Vest (Class 2 minimum)	☐ Knee Pads (membrane application)
☐ Face Shield (grinding operations)	☐ Hearing Protection (equipment operations)

EMERGENCY PROCEDURES

1. EXCAVATION COLLAPSE / CAVE-IN: Call 911 immediately. Do NOT enter the excavation to attempt rescue. Shut down all equipment. Initiate trench rescue protocol. Only trained trench rescue personnel may enter.
2. SOLVENT VAPOR OVEREXPOSURE: Remove worker to fresh air. Administer oxygen if available. If unconscious, place in recovery position. Call 911. Provide SDS to responders.
3. THERMAL BURN (TORCH/HOT MEMBRANE): Cool burn with clean, cool water for 10+ minutes. Do not remove adhered membrane from skin. Cover with sterile dressing. Seek immediate medical attention for burns larger than palm size.
4. FALL INTO EXCAVATION: Call 911. Do not move victim if spinal injury suspected. Lower rescue equipment, not personnel, unless trained. Keep victim warm and monitor vitals.
5. STRUCK BY EQUIPMENT/DEBRIS: Secure the area. Administer first aid. Call 911 for serious injuries. Preserve scene for incident investigation.
6. EMERGENCY CONTACTS: 911 for all emergencies. Site Safety Officer: _____. Poison Control: 1-800-222-1222.

ADDITIONAL NOTES / SITE-SPECIFIC REQUIREMENTS

- Competent Person for excavation must be identified and on-site during all below-grade work.
- Daily excavation inspection logs must be maintained and available for review.
- Waterproofing manufacturer's application guidelines must be followed for warranty compliance.
- All torch/hot-work operations require an active Hot Work Permit.
- Coordination meetings with backfill crew must occur before any heavy equipment approaches the work zone.

WORKER SIGN-OFF

By signing below, I confirm that I have reviewed and understand this JHA, including all identified hazards and required control measures.

#	Print Name	Signature	Date	Company/Trade
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

This JHA has been reviewed and approved by the following authorized personnel:

Role	Signature	Date
Prepared By (Safety Professional)		
Reviewed By (Site Supervisor)		
Approved By (Project Manager)		
Client Representative (if required)		

REVISION HISTORY

Revision	Date	Description	Approved By
0		Initial Release	
1			

DISCLAIMER: This Job Hazard Analysis is a guideline for identifying hazards and implementing controls. It does not replace site-specific safety plans, competent person assessments, or regulatory requirements. All workers must comply with applicable OSHA standards and company safety policies. This JHA must be reviewed and updated whenever work conditions change.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

JHA INFORMATION			
JHA Title:	Welding & Cutting Operations	JHA Number:	FSS-JHA-028
Project Name:		Date:	
Location:		Revision:	0
Regulatory References:	29 CFR 1926.350-354 (Welding & Cutting); ANSI Z49.1 (Safety in Welding, Cutting, and Allied Processes); NFPA 51B (Fire Prevention During Welding)		
Prepared By:		Approved By:	
Competent Person:		Supervisor:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

Task Step	Hazard	Risk Level (H/M/L)	Control Measures
1. Hot Work Area Preparation	• Fire from combustible materials nearby • Explosion near flammable storage • Inadequate ventilation • Unauthorized area access	H	• Survey 35-foot radius for combustible/flammable materials • Remove combustibles or protect with fire-resistant blankets/shields • Verify no flammable vapors present — use combustible gas detector • Ensure adequate ventilation (natural or mechanical) • Wet down combustible floors/surfaces if they cannot be relocated • Barricade hot work area and post warning signs • Coordinate with other trades to eliminate ignition sources
2. Equipment Inspection & Setup	• Gas leaks from regulators/hoses • Electrical shock from damaged cables • Cylinder tip-over • Flashback into cylinders	H	• Inspect all hoses, regulators, gauges, and connections for damage • Check welding leads and electrode holders for damaged insulation • Secure gas cylinders upright with chains/straps to a stable structure • Verify flashback arrestors installed on oxy-fuel equipment • Test all connections with soapy water for leaks — no open flame test • Confirm ground clamp securely attached to workpiece • Ensure fire extinguisher (minimum 20 lb ABC) within 20 feet
3. Fire Watch Establishment	• Undetected fire ignition • Sparks reaching hidden combustibles • Delayed response to fire • Fire watch leaving post prematurely	H	• Assign trained fire watch with no other duties during hot work • Equip fire watch with appropriate extinguisher and communication device • Fire watch must have clear view of all areas where sparks may reach • Fire watch authorized to stop work if unsafe conditions develop • Maintain fire watch for minimum 30 minutes after hot work ceases • Brief fire watch on alarm procedures and evacuation routes • Document fire watch assignments on hot work permit
4. Welding / Cutting Operations	• UV/IR radiation eye burns (arc eye) • Burns from molten metal/sparks • Toxic fume inhalation (manganese, hexavalent chromium, zinc) • Electrical shock • Noise exposure exceeding 85 dBA	H	• Wear proper shade lens (Shade 10-14 for arc; Shade 3-5 for oxy-fuel) • Use welding screens/curtains to protect nearby workers from UV • Position body to minimize fume inhalation — stay upwind • Use local exhaust ventilation or fume extraction at source • Wear dry insulated welding gloves — never touch electrode with bare hands • Keep body insulated from workpiece and ground • Monitor for fume fever symptoms (zinc) — seek medical attention if ill • Wear hearing protection in high-noise operations
5. Post-Work Fire Watch (30 Min Minimum)	• Smoldering materials • Hidden fire behind walls/ceilings • Delayed ignition of combustibles	M	• Continue fire watch for minimum 30 minutes after completion • Inspect all areas where sparks and heat may have traveled • Check behind walls, below floors, and above ceilings for hot spots • Use thermal imaging camera if available for hidden heat detection • Do not leave area unattended until fire watch period complete

6. Equipment Shutdown & Area Cleanup	• Residual heat on materials • Gas leaks from improperly closed valves • Trip hazards from leads/hoses • Improper cylinder storage	L	• Document fire watch completion time on hot work permit • Close cylinder valves, bleed lines, and release regulator pressure • Disconnect welding leads and coil neatly for storage • Allow hot materials to cool before handling — mark with "HOT" signs • Return cylinders to proper storage (oxygen separated from fuel by 20 ft or firewall) • Replace cylinder caps for transport/storage • Clean work area of slag, spatter, and electrode stubs • Close out hot work permit and file with safety records
---	---	--	---

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE Required	Specification / ANSI Standard	Condition / Notes
Welding Helmet (Auto-Darkening or Fixed Shade)	ANSI/ISEA Z87.1+; Shade 10-14 (arc)	Shade selected based on amperage/process
Safety Glasses (worn under helmet)	ANSI/ISEA Z87.1+ with side shields	Clear or shade 2 for under-helmet use
Flame-Resistant Welding Jacket/Sleeves	ANSI/ISEA 105; ASTM F2302	Leather or FR cotton — no synthetic materials
Welding Gloves (Insulated Leather)	ANSI/ISEA 105; EN 12477	Gauntlet style; dry at all times
Steel-Toe Safety Boots (Metatarsal Guard)	ASTM F2413 (I/75 C/75 Mt/75)	Leather uppers; no lace-up eyelets exposed
Respiratory Protection	NIOSH 42 CFR Part 84; ANSI Z88.2	P100 half-face minimum; SAR for confined areas
Hearing Protection	ANSI S3.19 / S12.6 (NRR ≥ 25 dB)	Required during grinding and high-amp welding
FR Skull Cap / Beanie	NFPA 2112	Protect scalp from spark/spatter

EMERGENCY PROCEDURES

Fire During Hot Work:

- Fire watch activates alarm and attempts extinguishment with provided extinguisher
- If fire exceeds extinguisher capability, evacuate area immediately
- Call 911 — provide location, type of fire, and materials involved
- Shut off gas cylinders if safe to do so
- Activate site fire alarm and evacuate to assembly point
- Account for all personnel at assembly area

Burn Injury:

- Remove victim from heat source to safe area
- Cool burns immediately with clean, cool water (20 minutes minimum)
- Remove clothing/jewelry near burn (do not remove if adhered to skin)
- Cover with sterile, non-adherent dressing
- Call 911 for second-degree burns larger than palm size, or any third-degree burns
- Do not apply butter, ointment, or ice to burns

Fume Inhalation / Respiratory Distress:

- Move victim to fresh air immediately
- Call 911 if victim has difficulty breathing, dizziness, or confusion
- Administer supplemental oxygen if trained and available
- Monitor for metal fume fever symptoms (flu-like onset 4-12 hours post-exposure)
- Provide EMS with welding rod/base metal SDS information

Emergency Contact Information:

- Emergency Services: 911
- Site Safety Manager: [Insert Name & Phone]
- Nearest Hospital: [Insert Name, Address & Phone]
- Poison Control: 1-800-222-1222
- Fire Department Non-Emergency: [Insert Local Number]

WORKER SIGN-OFF — I HAVE READ AND UNDERSTAND THIS JHA

#	Print Name	Signature	Company / Trade	Date
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

REVIEW & APPROVAL

Role	Name / Signature	Date	Initials
Prepared By (Author)			
Reviewed By (Safety Manager)			
Approved By (Project Manager)			
Client / Owner Rep			

This JHA must be reviewed and updated whenever job conditions change, after any incident, or at minimum annually.

FORBES SAFETY SOLUTIONS

JOB HAZARD ANALYSIS

Wind Turbine Maintenance & Inspection

Applicable Standards: 29 CFR 1926 Subpart M (Fall Protection) • 29 CFR 1910.269 (Electric Power Generation) • 29 CFR 1910.147 (LOTO) • NFPA 70E (Arc Flash) • OSHA Wind Energy eTool • ANSI Z359 (Fall Protection Systems) • ANSI/ISEA 121 (Dropped Object Prevention)

PROJECT INFORMATION

Company Name:		Date:	
Project/Site:		JHA Number:	
Supervisor:		Work Activity:	
Turbine ID:		Crew Size:	

JOB HAZARD ANALYSIS — TASK BREAKDOWN

TASK STEP	HAZARD	RISK (H/M/L)	CONTROL MEASURES
1. Pre-Task Safety Briefing & LOTO Verification	• Failure to identify hazards • Incomplete lockout/tagout • Energized components • Arc flash exposure	H	• Conduct tailboard meeting reviewing scope, hazards, and emergency plan • Verify LOTO per 29 CFR 1910.147 — each worker applies personal lock • Confirm zero-energy state with voltage tester • Review rescue plan and confirm rescue-trained personnel on site • Check weather forecast — abort if winds >35 mph or lightning within 30 miles
2. Climb/Ascent to Nacelle (Ladder or Service Lift)	• Falls from 300+ feet • Cardiac event during climb • Dropped objects • Fatigue/overexertion • Ergonomic strain	H	• 100% tie-off with dual-lanyard system or self-retracting lifeline (SRL) • Use climb-assist system or service elevator where available • Verify anchor points and SRL inspection current • Mandatory rest stops per climb protocol • Tool tethering for all hand tools and equipment • Radio communication maintained at all times • Medical fitness-for-duty certification current
3. Hub Access and Transfer	• Falls during nacelle-to-hub transfer • Confined space conditions in hub • Rotating equipment (blade pitch system) • Pinch points	H	• Verify blade pitch system is locked out before hub entry • Use hub-specific fall protection anchorage • Confined space entry permit if ventilation is inadequate • Atmospheric monitoring (O₂, LEL, CO, H₂S) before entry • Maintain communication with ground crew • Never work alone in hub — minimum two-person team
4. Gearbox / Generator Inspection & Service	• Electrical contact with energized components • Arc flash • Hydraulic fluid under pressure • Rotating equipment • Noise exposure >85 dBA • Slips on oil residue	H	• Verify LOTO on all energy sources (electrical, hydraulic, pneumatic) • Wear arc-rated PPE per NFPA 70E arc flash boundary calculations • Use insulated tools for electrical work • Bleed hydraulic pressure before disconnecting lines • Hearing protection required in nacelle • Clean spills immediately — maintain housekeeping • Follow OEM service manual procedures

TASK STEP	HAZARD	RISK (H/M/L)	CONTROL MEASURES
5. Blade Inspection / Repair	- Falls from blade or platform - Suspended at height in harness - Lightning strike - High wind gust exposure - Dropped tools/materials - UV/weather exposure	H	- Platform or rope-access crew with SPRAT/IRATA certification 100% tie-off with twin-leg Y-lanyard or SRL - Lightning 30-30 rule: suspend work if <30 sec between flash and thunder - Wind speed limit: abort exterior blade work at >25 mph sustained - All tools and materials tethered per ANSI/ISEA 121 - Sunscreen, hydration, and shade breaks for outdoor exposure
6. Descent & LOTO Release	- Falls during descent (fatigue) - Premature LOTO removal - Equipment left in nacelle - Incomplete task verification	M	- Controlled descent using climb-assist or service elevator 100% tie-off maintained until ground level - Systematic LOTO removal — each worker removes own lock - Verify all tools accounted for (tool inventory check) - Supervisor sign-off on completed work before energization - Post-task debrief documenting lessons learned

FORBES SAFETY SOLUTIONS

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

PPE ITEM	SPECIFICATION / STANDARD	WHEN REQUIRED
Full Body Harness	ANSI Z359.11 — Class III full body harness with dorsal D-ring	All work at height; donned before ascending tower
Twin-Leg SRL / Y-Lanyard	ANSI Z359.14 — self-retracting lifeline, 6 ft. max arrest distance	100% tie-off during climb, nacelle, hub, and blade work
Hard Hat with Chin Strap	ANSI/ISEA Z89.1, Type I, Class E — chin strap rated for at-height use	All times on site and during tower/nacelle operations
Arc-Rated Clothing	NFPA 70E — minimum 8 cal/cm ² arc rating (or per arc flash study)	Electrical inspection, LOTO verification, generator/switchgear work
Dielectric Gloves	ASTM D120 — Class 00 or higher, voltage-rated for task	Any work on or near energized electrical components
Safety Glasses / Goggles	ANSI Z87.1 — impact-rated, anti-fog	All maintenance tasks; goggles for grinding/cutting
Hearing Protection	ANSI S3.19 — NRR 25+ dB (plugs or muffs)	Inside nacelle during generator operation or when noise >85 dBA
Rescue/Descent Device	ANSI Z359.4 — controlled descent device, rated for user + tools	Staged at nacelle; all personnel trained in self-rescue
High-Visibility Vest	ANSI/ISEA 107, Class 2 minimum	Ground-level operations and when working near vehicles
Tool Lanyards / Tethers	ANSI/ISEA 121 — rated for tool weight	All hand tools and small equipment used at height

EMERGENCY PROCEDURES & RESCUE PLAN

EMERGENCY PROCEDURES
Rescue Plan: Trained rescue team on site with nacelle rescue kit (descent device, stretcher, trauma bag). Self-rescue and assisted-rescue drills completed within last 12 months.
Fall from Height: Activate rescue team immediately. Do not leave suspended worker hanging >6 minutes (suspension trauma). Use pre-rigged descent system to lower worker to ground.
Medical Emergency at Height: Stabilize worker in nacelle. Contact emergency services and advise of high-angle rescue need. Use service elevator for patient transport if available.
Severe Weather / Lightning: Monitor weather continuously via SCADA and portable weather station. Evacuate nacelle immediately if lightning within 30 miles (30-30 rule) or winds exceed safe threshold.
Fire in Nacelle: Evacuate immediately via controlled descent. Do NOT attempt fire suppression if automatic system fails. Account for all personnel at ground-level muster point.
Emergency Contacts: Site Safety Officer: _____ Local EMS: 911 Nearest Hospital: _____ Poison Control: 1-800-222-1222

FORBES SAFETY SOLUTIONS

WORKER ACKNOWLEDGMENT & SIGN-OFF

By signing below, I acknowledge that I have reviewed this JHA, understand the identified hazards and control measures, and agree to follow all safety procedures outlined herein.

#	PRINTED NAME	SIGNATURE	DATE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

JHA REVIEW & APPROVAL

This JHA must be reviewed and approved before work commences. Review is required whenever scope, conditions, or personnel change.

ROLE	NAME	SIGNATURE	DATE
Prepared By (Safety Professional)			
Reviewed By (Site Supervisor)			
Approved By (Project Manager)			
Approved By (HSE Manager)			

REVISION HISTORY

REV #	DATE	DESCRIPTION	REVISED BY

DISCLAIMER: This JHA template is provided as a guide for safety planning and does not replace site-specific hazard assessments. Employers are responsible for ensuring compliance with all applicable OSHA standards, manufacturer requirements, and company-specific safety programs. This document should be adapted to reflect actual site conditions, equipment, and personnel qualifications.