

Appendix D - Activity Hazard Analysis

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ACTIVITY HAZARD ANALYSIS FOR BACKFILLING AND COMPACTION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Backfilling and Compacting Soils	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, tools, construction debris and other materials • Mark, identify, or barricade other obstructions 	Hi-vis vests, Hard hat, Safety glasses, Steel toe work boots	
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Struck by/ Against Heavy Equipment, Flying Debris, Protruding Objects	<ul style="list-style-type: none"> • Wear reflective hi-vis vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Barricade or enclose the work area • Restrict work area entry to authorized personnel only during construction activities • Wear hard hats, safety glasses with side shields, and steel-toe safety boots • Understand and review hand signals 		
	Vibration	<ul style="list-style-type: none"> • Rotate compaction tasks to minimize worker exposure to equipment vibration • Use compactors with vibration dampening devices 	anti-vibration gloves	
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Establish work/test schedule 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment

ACTIVITY HAZARD ANALYSIS FOR BACKFILLING AND COMPACTION

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none">• Backhoe, loader, compactor• Seatbelt, back-up alarm• Personal protective equipment• Hand tools• First-aid kit, fire extinguisher• Operations manual for the equipment	<ul style="list-style-type: none">• Inspect equipment and tools daily per manufacturers requirements• Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers)	<ul style="list-style-type: none">• Proper use of equipment and tools• Review JSA with all site personnel• Hand signal

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing, Grubbing	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> Wear reflective hi-vis vests worn when exposed to vehicular traffic Isolate equipment swing areas Make eye contact with operators before approaching equipment Understand and review hand signals 	Hi-vis vests, Hard hat, safety glasses, Steel toe work boots	
	Slips, Trips, Falls	<ul style="list-style-type: none"> Clear walkways work areas of equipment, tools, vegetation, excavated material and debris Mark, identify, or barricade other obstructions Maintain 3 point contact when ascending/descending ladders/ mounting/dismounting from heavy equipment Halt exterior work in high winds, lightning, severe weather 		
	Handling Heavy Objects	<ul style="list-style-type: none"> Observe proper lifting techniques Obey sensible lifting limits (60 lb. maximum per person manual lifting) Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Eye Injuries	<ul style="list-style-type: none"> Wear face shield, goggles when operating powered clearing / grubbing equipment 	Face shield, goggles	
	Sharp Objects	<ul style="list-style-type: none"> Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects Maintain all hand and power tools in a safe condition Keep guards in place during use Close doors, windows on heavy equipment to prevent injuries from tree branches and other vegetation 	Leather gloves	
	High Noise Levels	<ul style="list-style-type: none"> Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) Assess noise level with sound level meter if possibility exists that level may exceed 85 dBA TWA 	Ear plugs	Sound Level Meter
	Insect/ Snake Bites	<ul style="list-style-type: none"> Review injury potential and types of snakes with workers Avoid insect nests areas, likely habitats of snakes outside work areas 	Tyvek coveralls, duct tape bottom of coveralls to boots or	

ACTIVITY HAZARD ANALYSIS FOR CLEARING AND GRUBBING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Clearing, Grubbing (Continued)	Insect/ Snake Bites (cont)	<ul style="list-style-type: none"> Emphasize the Buddy System where such injury potential exists Use insect repellent, wear PPE to protect against sting/bite injuries 	latex boot covers	
	Contact Dermatitis	<ul style="list-style-type: none"> Wear PPE to avoid skin contact with contaminated soil, plants, or other skin irritants Identify and review poisonous plants with workers Apply protective cream/lotion to exposed skin to prevent poison oak or similar reactions 	Tyvek coveralls, duct tape bottom of coveralls to boots or latex boot covers	
	Operations of power clearing tools (brush saws, weed wackers)	<ul style="list-style-type: none"> Wear eye, face, hand & hearing protection when operating power clearing equipment Shut-off / idle power tools walking between work areas Store flammable liquids in well ventilated areas, away from work areas Shut off equipment during re-fueling Allow equipment to cool before re-fueling Use funnels to avoid fuel spillage Prohibit smoking while operating clearing equipment Provide ABC (or equivalent) fire extinguishers for all work areas 	Face shield, goggles, leather gloves, ear plugs, Steel toe work boots, chaps	
	High/Low Ambient Temperature	<ul style="list-style-type: none"> Monitor for Heat/Cold stress Provide fluids to prevent worker dehydration Establish work/rest 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> Brush saws, weed wackers, mowers First-aid kit, insect repellent Fire extinguisher Personal protective equipment Hand tools 	<ul style="list-style-type: none"> Inspect equipment and tools daily per manufacturers requirements Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> Proper use of equipment Review JSA with all site personnel

ACTIVITY HAZARD ANALYSIS FOR FENCE INSTALLATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Fence Installation	Sharp Objects	<ul style="list-style-type: none"> • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Clear walkways, work areas of equipment, tools, vegetation, excavated material, and debris • Mark, identify, or barricade other obstructions 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Eye Injuries	<ul style="list-style-type: none"> • Wear face shield, goggles when operating powered clearing / grubbing equipment 	Goggles and face shield	
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter
	Electrical Shock	<ul style="list-style-type: none"> • De-energize or shut off utility lines at their source before work begins • Use double insulated or properly grounded electric power-operated tools • Maintain tools in a safe condition • Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Use qualified electricians to hook up electrical circuits • Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation • Cover or elevate electric wire or flexible cord passing through work areas to protect from damage 	Lockout-Tagout Devices	Voltage Meter or [Tic] Tracer

ACTIVITY HAZARD ANALYSIS FOR FENCE INSTALLATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Fence Installation (cont)		<ul style="list-style-type: none"> • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Inspect all electrical power circuits prior to commencing work • Follow Lockout-Tagout procedures 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Establish work/rest schedule 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> • Forklift • Seatbelt • Back-up alarm • Hand tools and lifting devices • Ladders • First-aid kit, fire extinguisher • Operations manual for the equipment 	<ul style="list-style-type: none"> • Inspect equipment and tools daily per manufacturers requirements • Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Proper use of equipment and tools • Review JSA with all site personnel

ACTIVITY HAZARD ANALYSIS FOR PIPE WELDING ACTIVITIES

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Pipe Welding	Struck by/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective Hi-Vis vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Barricade or enclose the work area • Restrict entry to the work area to authorized personnel • Wear hard hats, safety glasses with side shields, and steel-toe safety boots • Understand and review hand signals 	Hi-Vis vests, Hard hat, Safety glasses, steel toe work boots	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions 		
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	
	Electrical Shock	<ul style="list-style-type: none"> • Use double insulated or properly grounded electric power-operated tools • Maintain tools in a safe condition • Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation • Cover or elevate electric wire or flexible cord passing through work areas to protect from damage 	Lockout-Tagout Devices	Voltage Meter or [Tic] Tracer

ACTIVITY HAZARD ANALYSIS FOR PIPE WELDING ACTIVITIES

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Pipe Welding (Continued)		<ul style="list-style-type: none"> • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely 		
	Burns	<ul style="list-style-type: none"> • Provide insulated storage container for heating element • Use proper work gloves, face shield/safety goggles to protect workers from skin burns when heating/welding PVC Pipe 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Establish work/rest schedule 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> • Pipe welding equipment • Hand tools • Personal protective equipment • First-aid kit, fire extinguisher • Operations manual for the equipment 	<ul style="list-style-type: none"> • Inspect equipment and tools daily per manufacturers requirements • Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers) • 	<ul style="list-style-type: none"> • Proper use of equipment • Review JSA with all site personnel

ACTIVITY HAZARD ANALYSIS FOR PIPELINE PRESSURE TESTING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Pipeline Pressure Testing	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, tools, construction debris and other materials • Mark, identify, or barricade other obstructions 		
	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Contact with Pressurized Water	<ul style="list-style-type: none"> • Provide workers with proper skin and eye protection based on the hazards present • Review hazardous properties of any site contaminants with workers before operations begin 	Tyvek coveralls, nitrile gloves, latex boots	
	Caught In/ Between Moving Parts	<ul style="list-style-type: none"> • Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar motions • Provide and use proper work gloves when the possibility of pinching, or other injury may be caused by moving/ handling large or heavy objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lock-out machinery before maintenance or service 	Leather gloves	
	Pressurized Lines	<ul style="list-style-type: none"> • Prepare written test procedure checklist • Place test in progress or similar signs / appropriate barriers to prevent access by unauthorized personnel to the testing area • All changes to test procedures must be approved by qualified engineer 	Hard hat, face shield and goggles	

ACTIVITY HAZARD ANALYSIS FOR PIPELINE PRESSURE TESTING

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Line Pressure Testing (Continued)		<ul style="list-style-type: none"> • Inspect testing equipment for defects prior to each use • Maintain an appropriate pressure release system to safely release pressures when testing is complete • Wire quick connections, temporary lines closed before operating 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Establish work/rest schedule 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> • First-aid kit • Operations manual for equipment • Compressed air • Pressurized water • Hand tools • Personal protective equipment 	<ul style="list-style-type: none"> • Inspect equipment and tools daily per manufacturers requirements • Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Proper use of equipment • Review JSA with all site personnel

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation of Soil	Underground/ Overhead Utilities	<ul style="list-style-type: none"> • Identify all utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 3 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kv) 15 feet phase to ground clearance; 31 feet phase to phase clearance 		
	Excavation Wall Collapse	<ul style="list-style-type: none"> • Construct diversion ditches or dikes to prevent surface water from entering excavation • Provide good drainage of area adjacent to excavation • Collect ground water/rain water from excavation and dispose of properly • Store excavated material at least 2 feet from the edge of the excavation; prevent excessive loading of the excavation face • Provide sufficient stairs, ladders, or ramps when workers enter excavations over 4 feet in depth • Place ladders no more than 25 feet apart laterally • Treat excavations over 4 feet deep as confined spaces • Complete confined space permit entry procedure • Monitor atmosphere for flammable/toxic vapors, and oxygen deficiency • Slope, bench, shore, or sheet excavations over 5 feet deep if worker entry is required • Assign a competent person to inspect, decide soil classification, proper sloping, the correct shoring, or sheeting • Inspect excavations (when personnel entry is required) daily, any time conditions change • Provide at least two means of exit for personnel working in excavations 	Hard hat, safety glasses, steel toe work boots	

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation of Soil (Continued)	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective Hi-Vis vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals 	Hi-Vis vests, hard hat, safety glasses, steel toe work boots	
	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	
	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions • Evaluate fall hazards above 4 ft.; use fall protection equipment (harness/lanyard), standard guardrails or other fall protection systems when working on elevated platforms above 6 ft. • Use heavy duty industrial (type IA) ladders • Install and inspect scaffolds according to manufacturers requirements • Only trained operators are permitted to use aerial lifts • Tie-off all straight/extension ladders or manually hold by co-worker at base • Anchor points for fall arrest systems must support at least 5,400 pounds for each worker 		

ACTIVITY HAZARD ANALYSIS FOR SOIL EXCAVATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Excavation of Soil (Continued)	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85 dBA TWA 	Ear plugs	
	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of site contaminants with workers before operations begin • Dampen soil using light water spray to prevent fugitive dust emissions 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Follow work/rest schedule 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Backhoe, loader, excavator • Seatbelt, back-up alarm • Personal protective equipment • Hand tools • First-aid kit, fire extinguisher • Operations manual for the equipment • Personal protective equipment 		<ul style="list-style-type: none"> • Inspect equipment and tools daily per manufacturers requirements • Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Proper use of equipment and tools • Review JSA with all site personnel • Hand signal 	

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment/ Facility Set-up	Slips, Trips, Falls	<ul style="list-style-type: none"> • Clear walkways work areas of equipment, tools, vegetation, excavated material and debris • Mark, identify, or barricade other obstructions • Evaluate fall hazards above 4 ft.; use fall protection equipment (harness/lanyard), standard guardrails or other fall protection systems when working on elevated platforms above 6 ft. • Use heavy duty industrial (type IA) ladders • Install and inspect scaffolds according to manufacturers requirements • Only trained operators are permitted to use aerial lifts • Tie-off all straight/extension ladders or manually hold by co-worker at base • Anchorage points for fall arrest systems must support at least 5,400 pounds for each worker • Halt roof, exterior scaffold work in high winds, severe weather 	Body harnesses/ lanyard (elevated platforms above 6 ft.)	
	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	
	Burns	<ul style="list-style-type: none"> • Wear proper work gloves, face shield/safety goggles, and leather apron to protect workers from skin burns when welding, cutting, and burning • Inspect burning/welding equipment, lines, valves, hoses before using equipment • Post fire watch for remote locations 	Tinted face shield	

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment/ Facility Set-up (Continued)	Sharp Objects	<ul style="list-style-type: none"> • Wear cut resistant work gloves when lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use 	Leather gloves	
	Electrical Shock	<ul style="list-style-type: none"> • De-energize or shut off utility lines at their source before work begins • Use double insulated or properly grounded electric power-operated tools • Maintain tools in a safe condition • Provide an equipment-grounding conductor program or employ ground-fault circuit interrupters • Use qualified electricians to hook up electrical circuits • Inspect all extension cords daily for structural integrity, ground continuity, and damaged insulation • Cover or elevate electric wire or flexible cord passing through work areas to protect from damage • Keep all plugs and receptacles out of water • Use approved water-proof, weather-proof type if exposure to moisture is likely • Inspect all electrical power circuits prior to commencing work • Label all electrical boxes > 200 volts with circuit voltage • Follow Lockout-Tagout procedures 	Lockout/Tagout Devices	Voltage Meter or Tic Tracer
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists to exceed 85 db A TWA 	Ear plugs	Sound Level Meter

ACTIVITY HAZARD ANALYSIS FOR SITE PREPARATION

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Equipment/ Facility Set-up (Continued)	Handling Heavy Objects	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads • Avoid carrying heavy objects above shoulder level • Avoid actions/activities that contribute to overexertion • Warm up muscles before engaging in manual lifting activities • Review lifting posture/techniques regularly at safety meeting 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Establish work/rest schedule 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Forklift, backhoe, loader • Seatbelt, back up alarm • First-aid kit, fire extinguisher • Operations manual for the equipment • Hand tools and lifting devices • Personal protective equipment 		<ul style="list-style-type: none"> • Inspect equipment and tools daily per manufacturers requirements • Inspect all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Proper use of equipment • Review JSA with all site personnel 	

ACTIVITY HAZARD ANALYSIS FOR TRUCK LOADING AND EQUIPMENT OPERATIONS

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Truck, Equipment Loading and Unloading	Struck By/ Against Heavy Equipment	<ul style="list-style-type: none"> • Wear reflective warning vests when exposed to vehicular traffic • Obey posted speed limits • Isolate equipment swing areas • Make eye contact with operators before approaching equipment •.. Understand and review hand signals 	Warning vests, Hard hat, Safety glasses, Steel toe work boots	
	Slips, Trips, Falls	<ul style="list-style-type: none"> •.. Clear walk ways, work areas of equipment, tools and debris •.. Mark, identify, or barricade other obstructions •.. Use 3 point contact when ascending/descending heavy equipment •.. Park heavy equipment on level ground to avoid potential sprains/strains when ascending/descending 		
	Sharp Objects	<ul style="list-style-type: none"> •.. Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects •.. Maintain all hand and power tools in a safe condition •.. Keep guards in place during use 	Leather gloves	
	High Noise Levels	<ul style="list-style-type: none"> •.. Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) •.. Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA 	Ear plugs	Sound Level Meter
	Caught In/ Between Moving Parts	<ul style="list-style-type: none"> •.. Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar motions •.. Assure guards are in place to protect from these parts of equipment during operation •.. Wear proper work gloves when the possibility of pinching, or other injury may be caused by moving/ handling large or heavy objects 		

ACTIVITY HAZARD ANALYSIS FOR TRUCK LOADING AND EQUIPMENT OPERATIONS

Task Breakdown	Potential Hazards	Critical Safety Practices	Personal Protective Clothing and Equipment	Monitoring Devices
Truck, Equipment Loading and Unloading (Continued)		<ul style="list-style-type: none"> •.. Maintain all equipment in a safe condition •.. Keep all guards in place during use •.. Avoid moving hydraulic, dump or loading equipment 		
	Handling Heavy Objects	<ul style="list-style-type: none"> •.. Observe proper lifting techniques •.. Obey sensible lifting limits (60 lb. maximum per person manual lifting) •.. Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads 		
	High/Low Ambient Temperature	<ul style="list-style-type: none"> •.. Monitor for Heat/Cold stress •.. Provide fluids to prevent worker dehydration •.. Establish work/rest schedule 	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment
EQUIPMENT TO BE USED		INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS	
<ul style="list-style-type: none"> • Backhoe, loader, dump truck • Valid drivers license • Seatbelt, back-up alarm • First-aid kit, fire extinguisher • Operations manual for equipment 		<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements ▪ Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Proper use of equipment • Review JSA with all site personnel • Hand signals 	

ACTIVITY HAZARD ANALYSIS FOR WELDING, CUTTING, AND GRINDING

Task Breakdown	Potential Hazards	Hazard Control Measures	Personal Protective Equipment	Monitoring Devices
Welding, Cutting, and Grinding	Fire Hazards	<ul style="list-style-type: none"> • Hot Work permit must be available and properly completed. • Provide a fire watch equipped with a fire extinguisher during and 30 minutes after welding / cutting. • Test atmosphere in enclosed space to be cut or welded for flammable/toxic vapors • Flush lines prior to cutting, welding or grinding. • If a tank must be inerted prior to cutting or welding contact SEI Health and Safety. • Prohibit smoking in welding / cutting area. • Combustible materials must be screened from slag, heat and sparks. • All torch valves and gas supply shut off when work is suspended. • When work is suspended, hoses, torch, etc., shall be removed from confined spaces. • The valve wrench or wheel shall be in operating position when cylinder is in use. • Cylinders shall be stored in well-ventilated locations. • Oxygen cylinders in storage and fuel gases shall be separated by a fire resistive wall or by a distance of 20 feet. • Oxygen shall not be used to blow dust out of clothes, hair, or to cool off. • "No Smoking" signs shall be posted around cylinder storage area. • The pressure on the working side of the acetylene regulator should not be greater than 15 psig. • Proper measures shall be taken for fire control. • Compressed gas cylinders shall be separated from flammable or combustible material by at least 40 feet. • All oxygen-fuel gas cutting or welding shall be equipped with reverse-flow check valves between torch & hoses. • Provide ABC (or equivalent) fire extinguishers • Store flammable liquids in well ventilated areas • Prohibit storage of flammable liquids in plastic containers • Store combustible materials away from flammables • Separate flammables and oxidizers by 20 feet minimum 		LEL/O ₂

ACTIVITY HAZARD ANALYSIS FOR WELDING, CUTTING, AND GRINDING

Task Breakdown	Potential Hazards	Hazard Control Measures	Personal Protective Equipment	Monitoring Devices
Welding, Cutting, and Grinding (Continued)	Equipment Failure / Damage	<ul style="list-style-type: none"> • Proper site-specific safety training for operator and crew • Inspect the welding equipment daily: • Do not interchange oxygen and acetylene hoses; oxygen is coded green and acetylene is coded red. • Do not force connections or strike or force valve wheels. • Before connecting cylinders, read the label to ensure that the proper gas is being used. • Cylinders must not be placed where they might form part of an electrical circuit. Keep cylinders away from grating, layout tables and piping systems that may be used for the grounding or electrical welding circuits. • Do not store tools or equipment in the recessed top of an acetylene cylinder, and do not allow water to accumulate there. • Inspect the welding hose for defects before each use. • All pressure gauges and regulators shall be in proper working order. • The electric welding unit shall be shutdown when leads are unattended. • Frames of electric powered welders shall be grounded. 		
	Inhalation and Contact with Hazardous Substances	<ul style="list-style-type: none"> • If surface to be cut or welded contains hazardous materials, e.g., lead-based or chromate paint, ensure medical and PPE programs are in place as required. • Provide workers proper skin, eye and respiratory protection based on the exposure hazards present. • Review hazardous properties of site contaminants with workers before welding / cutting operations begin. 	Tyvek coveralls, nitrile gloves, latex or neoprene boots	FID/PID, LEL/O ₂

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Task Breakdown	Potential Hazards	Hazard Control Measures	Personal Protective Equipment	Monitoring Devices
	Eye Injury / Burns	<ul style="list-style-type: none"> • Proper helmets, goggles, aprons, and gloves shall be available for welding and cutting operations. • Workers and the public shall be shielded from rays, flashes, sparks, molten metal and slag. • Identify all equipment that may have hot surfaces. • Allow objects to cool or cover hot surfaces with non-combustible material to protect workers from burns. • Never lay work that is to be heated or welded on a concrete floor because when sufficiently heated, concrete may splash and fly with danger of injury. 	ANSI-approved welding helmet (and cutting goggles, for cutting), aprons, and gloves, steel-toed boots, safety glasses/goggles	
Welding, Cutting, and Grinding (Continued)	Electric Shock	<ul style="list-style-type: none"> • Splices, repaired insulation, etc., must be within 10 feet of the rod holder. • Leads must not be in contact with metal parts supporting suspended scaffolds. • Leads shall not be placed near high voltage wires. 		
	Struck by/ Against Flying Particles, Protruding Objects, Liquid Splash	<ul style="list-style-type: none"> • Wear hard hats, safety glasses with side shields and steel-toed safety boots at all times • When stored, in transit, or regulator is not in place; the valve must be protected with cap. • All compressed gas cylinders shall be kept upright at all times, except when being hoisted. • Upright cylinders shall be secured against falling. • Keep all unauthorized personnel out of the welding area. • When welding, cutting or grinding, caution tape off area so that bystanders know that there is a hazard present. • Keep all guards and safety shields on grinding equipment. • Keep all unauthorized personnel out of the welding area. • When welding, cutting or grinding, caution tape off area so that bystanders know that there is a hazard present. 	Hard hat, safety glasses, safety boots	
	Musculoskeletal Disorders (MSD)	<ul style="list-style-type: none"> • Observe proper lifting techniques • Obey sensible lifting limits (60 lb. Maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) or more than one person to move large, awkward loads 		

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Task Breakdown	Potential Hazards	Hazard Control Measures	Personal Protective Equipment	Monitoring Devices
	Heat / Cold Stress	<ul style="list-style-type: none"> • Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Establish work/rest schedule 		Wet Bulb Globe Thermometer OR Oral thermometer and pulse
Welding, Cutting, and Grinding (Continued)	Caught In / Between Moving Parts	<ul style="list-style-type: none"> • Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar injuries • Assure guards are in place to protect from these parts of equipment during operation • Provide and use proper work gloves when the possibility of pinching, or other injury may be caused by moving/ handling large or heavy objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lock-out machinery before maintenance 	Leather gloves	
	High Noise Levels	<ul style="list-style-type: none"> • Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period). • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA TWA. 	Ear plugs	Sound Level Meter

EQUIPMENT REQUIRED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ul style="list-style-type: none"> • Welding machines and grinders • Compressed fuel gasses • Hoses • Personal protective equipment • Ladders • Hand tools • Extension cords & generator • Fire extinguishers, and first aid kit 	<ul style="list-style-type: none"> • Daily equipment inspections as per manufacturers requirements • Inspection of all emergency equipment (i.e.: first aid kits, fire extinguishers) 	<ul style="list-style-type: none"> • Proper use of equipment • Review JSA with all site personnel