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| <p><b>Task Description:</b></p> <p>General access requirements for entering and performing common tasks on a construction site at LLNS. Task includes standard requirements for construction site and activities such as, but not limited to, manual and power tools, lifting and exerting force, use and handling of sharps, general construction site boundaries, and disposal and recycling.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• <b>HOLD POINT:</b> Complete LLNS construction worker training curriculum.</li> <li>• <b>HOLD POINT:</b> Ensure completion of required LLNS Wildlife Biologist site assessment, pre-activity surveys, and if necessary, exclusion zones and exclusion fencing assessment.</li> </ul>   | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Electrical Equipment</li> <li>• Ergo - Awkward Positions</li> <li>• Ergo - Force (Lifting/Pushing/Pulling/Gripping)</li> <li>• Ergo - Repetition</li> <li>• Mechanical - Flying Objects/Debris</li> <li>• Mechanical - Pinch Points</li> <li>• Mechanical - Rotating Equipment</li> <li>• Mechanical - Sharp Tools/Edges</li> <li>• Noise</li> <li>• Slip / Trip / Fall</li> <li>• Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Pedestrians may access area, resulting in vehicle / construction area hazards.</li> <li>• Lifting loads 30 - 50 lbs., with occasional lifts to 80 lbs., several times daily may result in strain/sprain or overexertion injury.</li> <li>• Awkward or cramped work locations possible, along with difficult to grip items.</li> <li>• Extended use of hand tools may result in repetitive motion injuries, or strain / sprain injuries.</li> <li>• Construction site activities can generate noise greater than 85 dB, which can damage hearing.</li> <li>• Cutting tools and jagged cut edges are sharp and can cause punctures or lacerations.</li> <li>• Powered tool use may result in noise exposure.</li> <li>• Powered tools can cause eye / face injury due to flying debris or dust.</li> <li>• Reciprocating or rotating tool parts may snag hands or clothing, resulting in injury.</li> <li>• Prolonged tool use can result in repetitive motion injuries.</li> <li>• Faults in electrical equipment wiring or use in damp environments can cause electrical shock.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• UL listed, 12-gauge or larger, outdoor rated extension cords.</li> <li>• UL listed, double insulated, or grounded tools.</li> <li>• GFCI outlet.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Limit lifting to below the ACGIH lifting threshold limit values. <ul style="list-style-type: none"> <li>○ Use 2 or more people to lift bulky, or awkward, objects.</li> </ul> </li> <li>• Use mechanical means (e.g., dolly, cart, pallet jack) whenever possible.</li> <li>• Install blade covers and recap sharps when not in use.</li> <li>• Keep hands and body out of the point of operation when cutting or driving fasteners.</li> <li>• When using cutting tools, keep edges sharp. Dull edges are more likely to slip.</li> <li>• Use tools in accordance with manufacturer's instructions and recommendations.</li> <li>• Plug equipment into a GFCI outlet when working outdoors or in wet conditions.</li> <li>• Do not daisy chain extension cords.</li> <li>• When using cutting tools: <ul style="list-style-type: none"> <li>○ Do not leave unprotected sharps on work surfaces, in drawers, or toolboxes where accidental contact is possible.</li> <li>○ Keep the non-cutting hand and body out of the line of cut.</li> </ul> </li> <li>• Do not wear jewelry or clothing that presents an entanglement hazard and secure/tie back long hair.</li> <li>• Unplug tools, or remove batteries, when adjusting, tightening, or replacing accessories (e.g., blades, bits, belts, chucks, collars, and adjustable guards) unless power is required to complete adjustment.</li> <li>• Document periodic noise surveys, using calibrated sound level meters or noise dosimeters, justifying the level of hearing protection used on the construction site.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract and worksite access requirements, and including: <ul style="list-style-type: none"> <li>○ Wear ANSI Z89.1 approved hard hat, ANSI Z87.1 approved safety glasses with side shields, shirts with a minimum of 4-inch sleeves, ANSI approved class II high visibility safety vest, long pants, and ASTM approved safety toe work boots.</li> <li>○ Wear leather or cut-resistant gloves when handling cutting tools or materials with sharp edges, unless there is a risk of gloves being caught in rotating machinery.</li> <li>○ Wear hearing protection with a Noise Reduction Rating (NRR) of 28 when noise levels exceed 85 dBA, 8-hr TWA. <ul style="list-style-type: none"> <li>▪ Wear double hearing protection (ear plugs and muffs) when noise levels exceed 105 dBA, 8-hr TWA.</li> </ul> </li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• Ensure all activities are performed within the LLNS defined construction areas.</li> <li>• If the project involves land disturbance, or has potential for storm water impact, maintain continual storm water pollution prevention and perform work to avoid discharge of pollutants into the storm drainage system. <ul style="list-style-type: none"> <li>○ Cover excavated materials.</li> </ul> </li> <li>• If pollution is leaving the project site, stop work and implement necessary corrective measures and report discharges to the LLNS CM.</li> <li>• Characterize all materials (e.g., asphalt, soil, concrete) prior to disposal or reuse.</li> <li>• Perform dust control by spraying water on loose soil that may become airborne and cover stockpiled soil.</li> <li>• Do not discharge wash or rinse waters into a storm drain, drainage channel, or other bodies of water.</li> <li>• Use a secondary container for storage of oil and petroleum tanks/containers with volumes of 55 gallons or more.</li> <li>• <b>HOLD POINT:</b> If cultural or paleontological resources are unearthed during construction activities, immediately stop work, and notify the CM. <ul style="list-style-type: none"> <li>○ Do not, under any circumstances, remove or disturb such resources.</li> </ul> </li> <li>• Do not feed wildlife.</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• Operating heavy equipment.</li> <li>• Use of ladders, scaffolding, platforms, or lifts.</li> <li>• Carrying loads while ascending or descending ladders, unless using a backpack or toolbelt.</li> <li>• Excavation or trenching.</li> <li>• Core drilling in walls, ceilings, floors, concrete/asphalt, or ground.</li> <li>• Use of chemicals, paints, adhesives, sealants, or epoxies.</li> <li>• Working with hazardous materials (e.g., asbestos, beryllium, lead, silica).</li> </ul> | <ul style="list-style-type: none"> <li>• Barricade work area with DANGER/CAUTION/CONSTRUCTION tape, or otherwise control access to the area.</li> <li>• Ensure Storm Water Pollution Prevention Program elements are appropriately implemented.</li> <li>• Inspect tools and equipment before use. Tag and remove damaged tools and equipment from service. <ul style="list-style-type: none"> <li>○ Ensure guards are in place, in good condition, and functioning properly.</li> <li>○ Ensure cutting tools have sharp edges and blades are properly installed prior to use. Sharpen or dispose tools with dull cutting edges.</li> </ul> </li> <li>• Perform tool inspections to ensure power cords and plugs are not damaged.</li> <li>• Review new chemical hazards with workers prior to use each day.</li> <li>• Ensure all required PPE is available prior to commencing work.</li> </ul> |   |   |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |   |   |   |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ None</li> <li>○ None</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• First aid supplies and an eye wash station located in contractor job trailer. An AED is recommended. <ul style="list-style-type: none"> <li>○ In addition, stage eyewashes within area of use for corrosive or seriously irritating chemicals.</li> </ul> </li> <li>• If a worker is bitten, stung, or otherwise requires emergency assistance, then notify Emergency Dispatch immediately by calling 911 from a land line, or 925-447-6880 from a cellular phone.</li> </ul>   |   |   |  |

Example

- Deposit food scraps, paper and aluminum wrappers, food containers, cans, bottles, and other trash from the project area in covered and closed trash containers that are not accessible by wildlife.
- Do not attempt to capture or handle any wildlife.
- **HOLD POINT:** If workers encounter unexpected, impacted soil and debris or suspect items (e.g., drums, boxes, cans, bottles), stop work and notify the LLNS CM.
  - Coordinate disposal of materials demonstrating visual/detectable contamination through the LLNS CM.
- If portable equipment with internal combustion engines rated greater than 50 horsepower are used, provide LLNS CM with the use records for the duration of use on the project.
- Do not use or bring any controlled items or materials as defined in the Environmental Specifications provided by LLNS.
- Ensure all recyclable materials, universal wastes, and municipal wastes are segregated, labeled, and disposed of properly.
- Manage the following as hazardous waste through RHWM:
  - Unused, unhardened putties, epoxies, sealants, lubricants, and adhesives
  - Rags used to clean / degrease oily parts
  - Used oil, mercury switches, contaminated chiller water and refrigerants
  - Unused or non-functioning aerosol
  - Treated wood waste (TWW)
- Dispose of empty containers of cleaners, spray paint cans, lubricants, and adhesives in the municipal waste.
- Dispose of sharps in a hard-walled container, or cover edges with tape.
- Clean and collect metal fines and scrap metal at the end of work shift, containerize, and recycle/dispose fines in accordance with the LLNS Environmental Specifications (DIV-1 Document).
- Collect intact electronic equipment, wires/cables, and electronic boards/cards, containerize and recycle/dispose in accordance with the LLNS Environmental Specifications (DIV-1 Document).

**Training Controls:**

- Per contract requirements and including:
- 1. IN1000, Contracted Construction Worker Briefing
- 2. For work performed outdoors at Site-200 the following is required: EP0026, Natural Resources Protection at the Livermore Site
- 3. For work performed at Arroyo Mocho the following is required: EP0027, Natural Resources Protection at Arroyo Mocho
- 4. For work performed at Site-300 the following is required: EP0028, Natural Resources Protection at S300; HS0096W, Valley Fever Awareness Training; DT0095W, S300 Safety Orientation Training

**Pre-Approval Actions:**

- None

**Post-Approval Actions:**

- None

**Ongoing Actions:**

- None

**RI Reminders:**

- None

**Pre-Job Talking Points:**

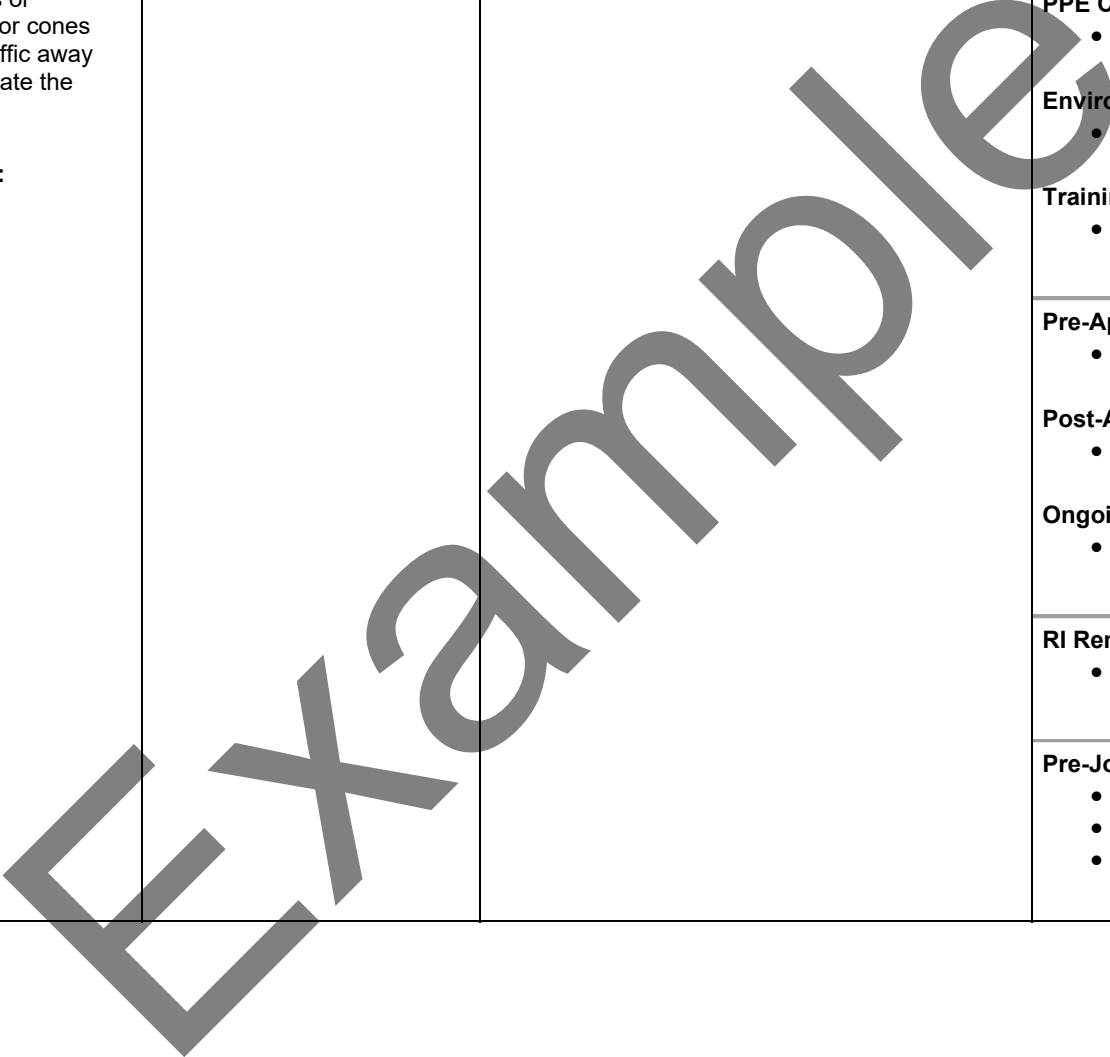
- Size up a load and make a preliminary lift to ensure it is within your capacity.
  - If the load is beyond your capability, get help or use a mechanical lifting device.
- Use mechanical means (e.g., dolly, cart, pallet jack) whenever possible.

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|  |  |  |  | <ul style="list-style-type: none"><li>• Pay attention to vehicles in the work area. Look for traffic and listen for back-up alarms.</li><li>• Prior to use, inspect tools (including cord and plug for powered tools), and tag/remove damaged tools from service.</li><li>• Use re-sheathable or retractable cutting tools.</li><li>• Ensure blades are properly installed prior to use and do not apply too much pressure when cutting, especially when blades are new.</li><li>• Cover blades when not in use.</li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Use portable ladders, stairs, or scaffolding for access to guarded work platforms or as an elevated work location; includes use of fixed facility ladders to access elevated work locations.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Obtain an ANSI/OSHA Type 1 or better ladder (e.g., Type 1A) capable of supporting the weight of the user and tools, and of the appropriate height for the area to be accessed and/or the task to be performed.                     <ul style="list-style-type: none"> <li>Ensure manufacturer labels identify the weight limit and recommended use.</li> </ul> </li> <li>Secure the work area using barricade tape or equivalent when working in doorways and walkways, and when there is a possibility for dropped objects to fall into occupied areas.</li> <li>Obtain any accessories required to safely transport tools (e.g., bucket, rope, tool belt) up and down ladder.</li> <li>Verify scaffold inspection has been completed by a competent person daily, or by shift if working multiple shifts.</li> <li>Inspect ladders prior to use for defects.                     <ul style="list-style-type: none"> <li>Tag and remove defective ladders from job site.</li> </ul> </li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Ladder</li> <li>Scaffolding</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Work at heights of greater than 6 feet and/or work on ladders may result in falls that could lead to serious injury or death.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Set up the ladder correctly:                     <ul style="list-style-type: none"> <li>For extension ladders this includes a 4:1 vertical to horizontal ratio and extended 3 feet above the landing.</li> </ul> </li> <li>Ensure ladder sits evenly on a firm ground surface and lock bars are engaged.</li> <li>Use proper ladder climbing technique.</li> <li>Do not exceed ladder load rating.</li> <li>Maintain 2 points of contact with the ladder when working, and 3 points of contact while ascending and descending the ladder.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>  |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Work that requires a ladder climbing device or fall protection.</li> <li>Access or work on unguarded, elevated work locations (i.e., stepping from the ladder to an unguarded work location such as a roof edge) which require fall protection.</li> <li>Work from a fixed facility ladder.</li> <li>Setup and dismantling of scaffolding systems.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |  |   | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |  |   | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Ensure ladders are in good condition, constructed of suitable material, and of the proper height and type for the work intended. Remove any ladder from service that is defective or unsuitable for use.</li> <li>Use barricades or equivalent (e.g., locking a door) when in doorways, walkways, or when there is the possibility for dropped objects to fall into occupied areas.</li> <li>Do not carry objects or loads that could cause loss of balance.</li> <li>Face the ladder while climbing and keep your belt buckle within the side rails of the ladder.</li> <li>Maintain 3 points of contact while ascending and descending.</li> <li>Inspect portable ladders before use for:                     <ul style="list-style-type: none"> <li>Loose, cracked, or broken steps or rungs</li> <li>Split, cracked, or broken rails</li> <li>Loose nuts, bolts, or rivets; missing, broken, or damaged base shoes</li> <li>Condition of hinges and spreaders</li> <li>Oil, grease, or other slippery material on ladder parts</li> <li>Paint that could conceal defects in ladder parts</li> <li>"Duty rating" displayed on side rail (ANSI Type 1 or greater)</li> </ul> </li> </ul> |

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| <p><b>Task Description:</b></p> <p>Work in the vicinity of vehicular hazards (e.g., clearing storm drains, accessing utilities in roadways, redirecting traffic, working in parking lots or construction areas with vehicle traffic).</p> | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Submit a Maintenance of Traffic (MOT) for LLNS review. <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Obtain LLNS approval of MOT before starting activities that disturb regular traffic/pedestrian patterns.</li> <li><b>HOLD POINT:</b> When changes to the MOT are needed, including pedestrian control, contact LLNS CM.</li> </ul> </li> <li>When working in parking lots or roadways, install barricades or cones and detour signs to divert traffic away from the work area, or to isolate the work from moving vehicles.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Vehicular Traffic</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Severe injury or death can occur when moving motor vehicles strike or run over workers.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Use proper CA MUTCD compliant traffic control devices to control public traffic.</li> <li>Utilize safety barriers, tape, barrels, cones, lights, and signs, particularly when pedestrian traffic is a possibility.</li> <li>Use designated flaggers to include "Slow" and "Stop" signs.</li> <li>Communicate (Traffic Controllers) by approved means, including hands signals, radio, cellular phone, and voice.</li> </ul>  |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |  |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>                   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |   | <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Be attentive to surroundings. Look for moving vehicles, listen for vehicle sounds.</li> <li>Do not distract the attention of fellow workers.</li> <li>If you observe unsafe condition, stop the work.</li> </ul> |



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| <p><b>Task Description:</b></p> <p>Work from scissor or boom type aerial lifts.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Perform documented pre-operational inspections each work shift during which the lift will be used.</li> <li>Only Certified/qualified operators will operate aerial lifts.</li> </ul>                         | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Aerial Lifts</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Work from an aerial lift poses a fall hazard and a crush / caught-between hazard when raising or moving the lift.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Outdoor use of an aerial lift in inclement weather.</li> <li>Using an aerial lift within 10 feet of energized electrical components (e.g., energized bridge crane rails).</li> <li>Indoor use of internal combustion-powered aerial lifts.</li> </ul> | <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Submit a fall protection plan and obtain LLNS approval if it is necessary to exit lifts or platforms at height.</li> <li>Verify fall protection equipment is current within annual inspection requirements.</li> </ul> |   |   | <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Only currently trained aerial lift operators may operate equipment.</li> <li>Connect the short fall restraint lanyard to the lift's anchorage points to prevent extending the body's center of gravity outside the guardrail.</li> <li>Deploy stabilizers if equipped.</li> <li>Ensure materials and personnel are within manufacturers capacity rating.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including:                             <ul style="list-style-type: none"> <li>Wear a full-body safety harness and a short fall restraint lanyard when operating the aerial lift.</li> </ul> </li> </ul>  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>  | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |   | <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |   |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Adjust lanyard as short as possible while still allowing the work.</li> <li>Remind workers of hazards existing in the day's work area.                             <ul style="list-style-type: none"> <li>Look for soft or loose soil, drop offs or holes (including floor plates), slopes, ditches or bumps, debris.</li> <li>Look up for overhead obstructions and live electrical systems.</li> </ul> </li> <li>Barricade or control access to the area if needed. Keep an eye out for unauthorized persons.</li> <li>Use a spotter as needed when accessing tight locations.</li> <li>Be attentive to weather. Stop work if conditions such as heat, wind or lightning increases the hazard in the work area.</li> </ul> |

Example

[PMO005] v.1.0.1 - Operate Heavy Equipment

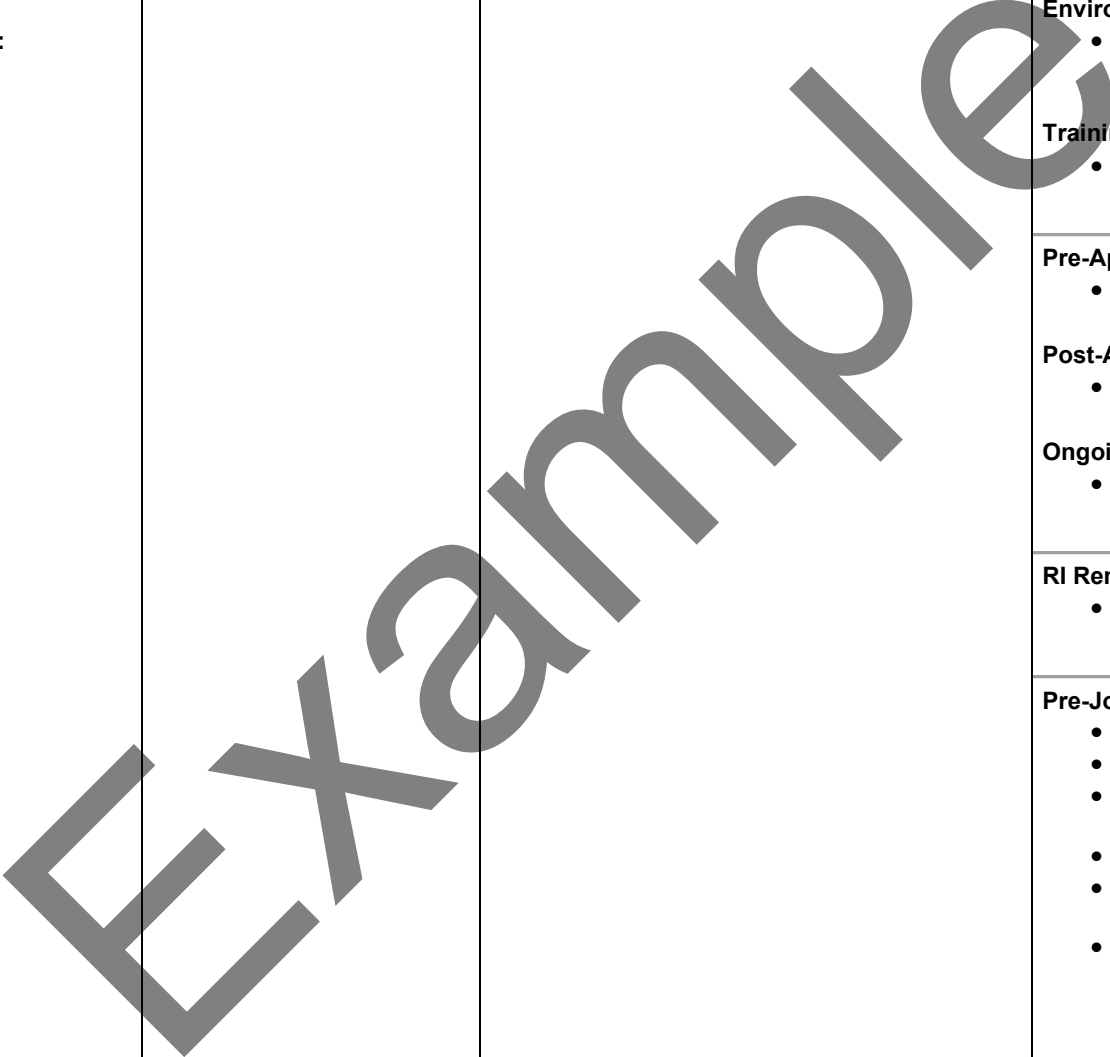
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| <p><b>Task Description:</b></p> <p>Operate heavy equipment (e.g., power shovels, scrapers, paving machines, graders, trench digging machines, bulldozers, PITs, and dump trucks).</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Ensure certified/qualified operators are available to operate heavy equipment.</li> <li>• Perform daily vehicle pre-use inspection. <ul style="list-style-type: none"> <li>○ Include inspection for leaks of fuel, coolant, hydraulic fluids, or lubricants.</li> </ul> </li> <li>• Inspect jobsite looking for soil/floor conditions (including sloping/uneven ground), overhead utility lines, vehicle hazards, and slip/trip/fall hazards.</li> <li>• Establish sufficient swing radius and stability of surfaces beneath the equipment/loads.</li> <li>• Verify that equipment attachments (extensions, drum-grabbers) are supplied and/or approved by the manufacturer.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Discharge to Air</li> <li>• Mechanical - Crush Hazard</li> <li>• Noise</li> <li>• Overhead Utilities</li> <li>• Suspended Load - PITs</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Motor vehicle accidents may result in personal injury, property damage, or fire.</li> <li>• Overhead utilities may be present at some work sites. Striking utilities with a vehicle may result in shock, arc flash burns, fire, or utility damage.</li> <li>• Motor vehicles may move unexpectedly while being loaded or unloaded, resulting in struck-by injuries.</li> <li>• Improper use of PITs can result in equipment or facility damage, or injury or death to the operator and/or bystanders.</li> <li>• Work is performed in or near LLNL roadways in close proximity to moving traffic. Injury can occur when moving motor vehicles strike or run over workers.</li> <li>• Some heavy equipment operations can generate noise greater than 85 dB, which can damage hearing.</li> <li>• Emissions from diesel vehicles are regulated by the State of California.</li> <li>• Carbon monoxide is a chemical asphyxiant.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• Reverse signal (back-up) alarm.</li> <li>• Physical hold devices (dump trucks).</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Only qualified operators may operate heavy equipment.</li> <li>• Observe California Vehicle Code requirements (driver's license, seat belts when provided, and speed limits).</li> <li>• Lift loads the minimum height necessary to clear the ground or other obstacles when equipment is traveling. <ul style="list-style-type: none"> <li>○ Do not lift loads over personnel.</li> </ul> </li> <li>• Ensure a warning device or signal person is used when there is danger to persons from moving equipment (e.g., swinging loads, buckets, booms, dump boxes).</li> <li>• Use physical holding device on dump trucks to prevent accidental lowering of the dump box while maintenance or inspection work is being done.</li> <li>• Do not leave running vehicles unattended. Remain in the driver's seat when the engine is running unless the vehicle has equipment (e.g., fluid pump, lift gate, winch) that the engine is required to power. <ul style="list-style-type: none"> <li>○ Chock the vehicle wheels when the engine is running to supply power to equipment.</li> </ul> </li> <li>• When running combustion driven equipment indoors: <ul style="list-style-type: none"> <li>○ Open bay doors and position equipment in a manner that emissions are not directed towards air intakes.</li> </ul> </li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract and worksite entry requirements</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• Do not idle for more than 5 minutes when operating on-road diesel-fueled vehicles &gt;10,000 pounds, and off-road diesel vehicles &gt;25 horsepower.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• Use of mobile cranes</li> <li>• Free rigging (rigging directly from PIT forks).</li> <li>• Ordinary (over 2000 lbs), Special-Ordinary, or Critical lifts.</li> <li>• Lifting of personnel.</li> <li>• Use of combustion driven equipment indoors for more than 10 minutes.</li> </ul> |   |  |  |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• None</li> </ul>  | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |  |  |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ None</li> </ul>   |   |  |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• What is today's route? Is it clear, well-lit, and any obstructions removed or marked? Will you need a spotter for areas with tight clearances or pedestrian traffic?</li> <li>• Use a spotter for areas with tight clearances or pedestrian traffic. Have spotters be aware of positioning to prevent being crushed.</li> <li>• Keep forks tilted back, and 4-6 inches off the driving surface when traveling.</li> <li>• Park the truck on a level surface (or chock the wheels) with forks on the ground, mast tilted forward, controls in neutral with parking brake set.</li> </ul>   |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Review weather conditions and prepare as necessary for heat, cold, rain, wind, or other.</li></ul> |
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Example



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| <p><b>Task Description:</b></p> <p>Installation and removal of temporary fencing, gates, and fence screen.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Obtain approved penetration permit from LLNS when disturbing soil.</li> <li><b>HOLD POINT:</b> Evaluate weight, size, distance, and path of movement, as well as potential lifting hazards and appropriate controls.</li> <li>Verify that fork-tine attachments (extensions, drum-grabbers) are supplied and/or approved by the manufacturer.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Discharge to Air</li> <li>Suspended Load - PITs</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Powered Industrial Truck will be used to unload material. PITs have overload and roll-over hazards, along with potential for dropped load.</li> <li>Emissions from diesel vehicles are regulated by the state of California</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Only operators with current operator card for the specific class of PIT used may operate PIT.</li> <li>Use zip-ties, wire, fence clamps, or other means to fasten fence screen to fence panel.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Do not idle for more than 5 minutes when operating on-road diesel-fueled PIT &gt;10,000 pounds, and off-road diesel PIT &gt;25 horsepower.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>  |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Penetration into ground without a penetration permit.</li> </ul>   |   |  |   |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |   |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>                                    |   |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Inspect the load for sharp edges, slivers, and wet or greasy spots.</li> <li>Consider the distance over which the load is to be carried.</li> <li>Inspect the route over which the load is to be carried and remove obstructions and/or clean spills that could cause tripping or slipping.</li> <li>Pay attention to vehicles in the work area. Look for traffic and listen for back-up alarms.</li> <li>Maintain good communication (use of signals) between heavy equipment operators and workers in vicinity.</li> <li>Evaluate today's load and route:             <ul style="list-style-type: none"> <li>What is today's load? Does it fit within the rated capacity of the truck?</li> <li>Are any attachments qualified for use, via manufacturer?</li> <li>What is today's route? Is it clear, well-lit, and any obstructions removed or marked?</li> <li>Has vehicular / pedestrian traffic been re-routed accordingly?</li> <li>Will you need a spotter for areas with tight clearances or pedestrian traffic?</li> <li>Are there any overhead obstructions / utilities?</li> </ul> </li> <li>Maintain forks tilted back, and 4-6 inches up when traveling.</li> <li>Park PIT on a level surface (or chock the wheels) with forks on the ground, mast tilted forward, controls in neutral with parking brake set.</li> <li>Ensure load is secure at the end of the move.</li> <li>Do not idle diesel PITs for greater than 5 minutes. Instead, shut them off.</li> </ul> |



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| <p><b>Task Description:</b></p> <p>Trench, pothole, and excavate using heavy equipment for all utility install, duct banks, manholes, aggregate, etc.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Obtain approval of a LLNS Soil Excavation Penetration permit.</li> <li>Inspect worksite looking for soil conditions, overhead utility lines, and other obstructions. <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> If there is a potential for contact with overhead utilities, pause and post "Caution - Overhead High Voltage Transmission Lines" signs.</li> </ul> </li> <li>Verify that excavation or trench has been inspected by a competent person prior to allowing personnel to enter. <ul style="list-style-type: none"> <li>Do not work in excavations with standing water.</li> </ul> </li> <li>For trenches or excavation greater than 5 feet deep, obtain LLNS approval of the trenching and excavation plan. <ul style="list-style-type: none"> <li>Ensure manufacturer's specifications and tabulated data for trench boxes and protective systems is available on-site.</li> </ul> </li> <li>Obtain a dig permit from the LLNS CM prior to breaking ground. <ul style="list-style-type: none"> <li>Maintain a minimum distance of 10 feet or more based upon voltage, as required by OSHA 1926 minimum approach, for overhead power lines.</li> </ul> </li> <li>When required, ensure all imported fill material is tested and meets LLNL's Soil Reuse Criteria before being brought onto the project site.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Disturbance to Soil</li> <li>Hidden Utilities</li> <li>Mechanical - Crush Hazard</li> <li>Overhead Utilities</li> <li>Oxygen Deficiency or Asphyxiant</li> <li>Trenching &amp; Excavation</li> <li>Unguarded Utilities</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Excavation may have atmospheric hazards, such as oxygen deficiency, flammable or toxic gases.</li> <li>Trenches can cave in, resulting in burial, injury or death to the workers and/or bystanders.</li> <li>Hidden utilities can be struck by digging tools, resulting in shock, arc flash, and property damage.</li> <li>Heavy equipment operations in construction areas can lead to struck-by and crush injuries.</li> <li>Excavation can disturb sensitive habitats, or damage historical artifacts.</li> <li>Soils must be categorized for reuse or disposal. Failure to manage soils can result in regulatory fines and permit violations.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>Trench boxes and support systems.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>When applicable, use trench boxes and support systems in accordance with manufacturer's designs and tabulated data.</li> <li>Hand dig, pothole, or use non-destructive means within 30 inches of utility to locate/support the marked utilities before using mechanized equipment. <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Stop Work and contact supervisor if utilities not identified by line locator are uncovered or if utility line is damaged.</li> </ul> </li> <li>When an excavation is greater than 4 feet in depth, or if there is a potential for excavations to contain a hazardous atmosphere, perform &amp; document (by a competent person) atmospheric testing using a calibrated direct reading instrument during daily inspections and as conditions change. <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Do not enter the space if acceptable air conditions are not met. Terminate entry if safe entry conditions cannot be met.</li> </ul> </li> <li>Provide ladders, stairways, or ramps for excavation or trenches that are more than 4 feet in depth. <ul style="list-style-type: none"> <li>Ensure ladders, stairways, or ramps is within 25 feet of travel for workers.</li> </ul> </li> <li>For excavations more than 5 feet deep, utilize trench boxes or support systems.</li> <li>Keep spoil piles, or other materials, at least 2 feet away from excavation/trench edges.</li> <li>Do not work under suspended or raised loads and materials.</li> <li>Use water to suppress dust.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans).</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Characterize all materials (e.g., asphalt, soil, concrete) prior to disposal or reuse.</li> <li>Protect wildlife in excavations greater than 1 foot deep by: <ul style="list-style-type: none"> <li>Covering excavations completely at the end of the shift</li> <li>Providing animal escape ramps constructed of earth fill or wooden planks at least 6" wide</li> <li>Cap pipe ends in open excavations</li> <li>Inspecting excavations or trenches for trapped animals before re-filling</li> </ul> </li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements and including: <ul style="list-style-type: none"> <li>1. For work performed at Site-200 the following is required: EP0026, Natural Resources Protection at the Livermore Site</li> <li>2. For work performed at Arroyo Mocho the following is required: EP0027, Natural Resources Protection at Arroyo Mocho</li> <li>3. For work performed at Site-300 the following is required: EP0028, Natural Resources Protection at S300; HS0096W, Valley Fever Awareness Training; DT0095W, S300 Safety Orientation Training</li> </ul> </li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>LOTO (see PMO025, 26, 27, and 28)</li> <li>Digging or trenching contaminated soil/dirt.</li> <li>Trenching or excavation beyond minor soil disturbance at Site 300.</li> <li>Excavation or ground disturbance within 50 feet of Arroyo las Positas.</li> <li>Trenching or excavation in confined spaces.</li> </ul> |   |   |   |   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>[PMO028] Join a Group LOTO</li> </ul>  |   |   |   |   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul>  | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |   |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p>  |

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|  |  |  |  | <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Review dig permit.</li> <li>• Pay attention to vehicles in the work area. LOOK for traffic and LISTEN for back-up alarms.</li> <li>• Are there any overhead obstructions / utilities?</li> <li>• Are the trenches, or excavation, deeper than 4 feet? <ul style="list-style-type: none"> <li>○ If yes, has the work area been inspected by the competent person?</li> </ul> </li> <li>• Were there changes to the trenched or excavation space based on the previous workday? <ul style="list-style-type: none"> <li>○ If yes, has the work area been inspected by the competent person?</li> </ul> </li> <li>• Are there any changes or new hazards in the excavated or trenched space? <ul style="list-style-type: none"> <li>○ If yes, has the work area been inspected by the competent person?</li> </ul> </li> <li>• Is the soil disposition path (i.e. landfill, re-use, etc.) defined and understood by workers?</li> <li>• Monitor, including gas monitoring with a calibrated device, for any hazardous condition inside and outside of the space. <ul style="list-style-type: none"> <li>○ Post gas detection equipment in trench that will identify relevant atmospheric hazard(s) and alert workers.</li> </ul> </li> <li>• Discuss the conditions for safe entry into the space.</li> <li>• Will a spotter be needed for areas with tight clearances or pedestrian traffic?</li> <li>• Has vehicular / pedestrian traffic been re-routed accordingly?</li> <li>• Maintain good communication (use of signals) between heavy equipment operators and workers in vicinity.</li> </ul> |
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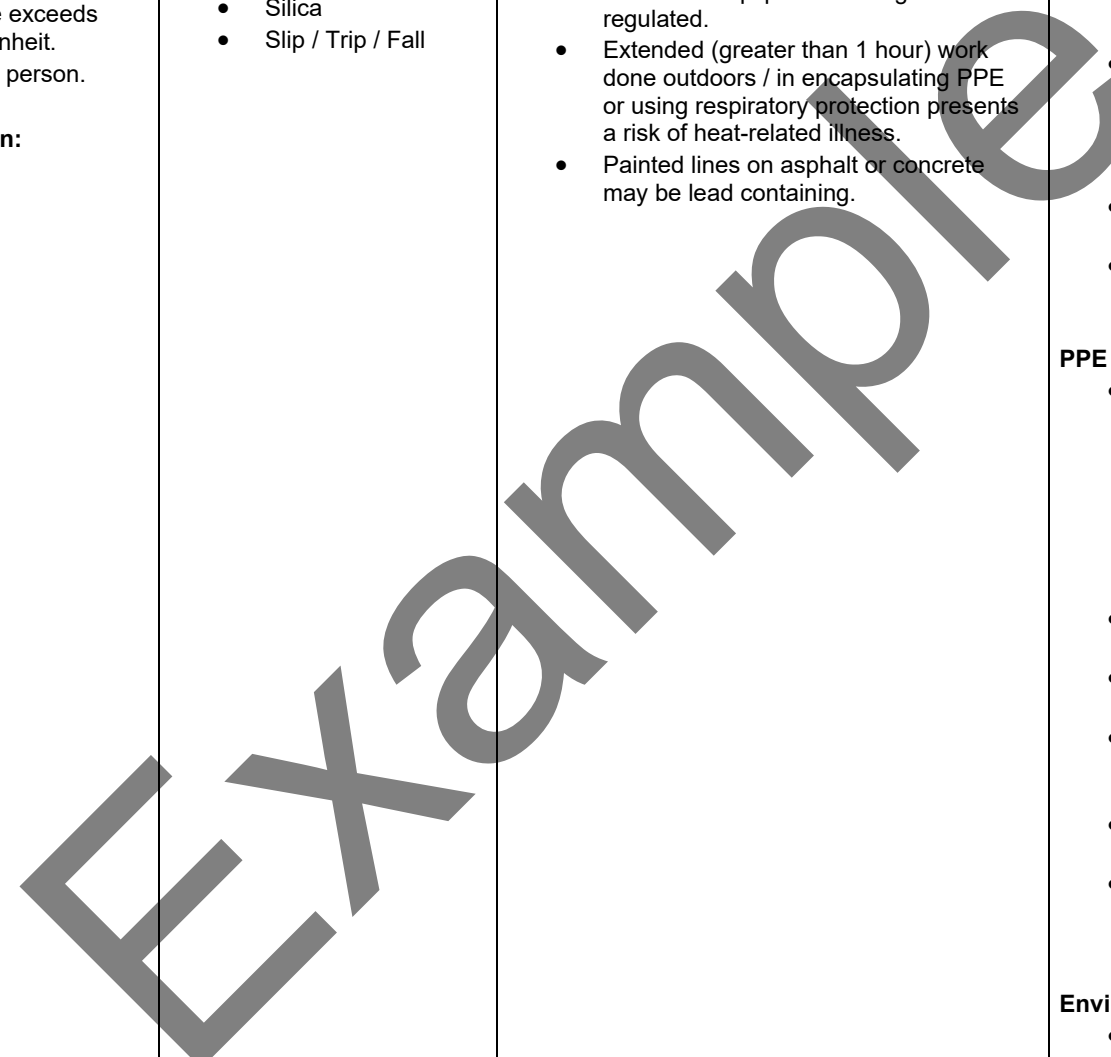
Example

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| <p><b>Task Description:</b></p> <p>Tree removal and the use of chippers and trucks to haul debris off site.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Inspect worksite looking for overhead utility lines, and other obstructions.                     <ul style="list-style-type: none"> <li>Maintain a minimum distance of 10 feet or more based upon voltage, as required by OSHA 1926 minimum approach, for overhead power lines.</li> </ul> </li> </ul>   | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Disturbance to Biological Resources</li> <li>Hidden Utilities</li> <li>Mechanical - Sharp Tools/Edges</li> <li>Nuisance Dust</li> <li>Unguarded Utilities</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Flying debris from tool use may result in eye or face injury.</li> <li>Cutting tools and jagged cut / pruned edges are sharp and can cause punctures, lacerations, or amputations.</li> <li>Electrical utility lines may be buried in ground and contacted during planting, stump grinding, etc., resulting in electrical shock or arc flash burns.</li> <li>Workers may come across animals (frogs, salamanders, birds) or their nests. Some of these animals are protected by regulation and require special notifications and precautions.</li> <li>Inhalation of wood dust can cause respiratory irritation.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>LOTO (see PMO025, 26, 27, and 28)</li> <li>Climbing trees to prune.</li> <li>Removal of oak and walnut trees.</li> <li>Trimming trees within 10 feet of an energized overhead transmission line.</li> </ul>  | <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> If there is a potential for contact with overhead utilities, pause and post "Caution - Overhead High Voltage Transmission Lines" signs.</li> </ul>   |  |  | <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Follow the approved Tree Felling Plan.</li> <li>Only allow authorized and trained personnel within barricaded work area.                     <ul style="list-style-type: none"> <li>Only allow authorized and trained personnel within established Control Access Zone (CAZ) during chipper and grinder operations.</li> </ul> </li> <li>Use flaggers and proper delineation during clearing and grubbing operations to direct vehicular and pedestrian traffic when it is necessary to go through work area.</li> <li>Position discharge chute in desired location away from pedestrians or co-located workers.</li> <li>Position activities that create wood dust away from workers' breathing zones (e.g., downwind when possible).</li> <li>Turn engine off and remove key when unclogging or refueling equipment.</li> <li>For combustion driven equipment, utilize secondary containment when the potential for hazardous or contaminated material exists. Use plastic sheeting and/or tarps on the ground when necessary.</li> </ul> |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>[PMO028] Join a Group LOTO</li> </ul>   | <ul style="list-style-type: none"> <li>Obtain approval of submitted Tree Felling Plan from LLNS.</li> <li>Obtain approval of submitted Penetration Permit for stump removal.</li> <li>Barricade work area with DANGER/CAUTION/CONSTRUCTION tape, or otherwise control access to the area when trimming trees or using tools that can throw debris (powered saws, grinders, chippers). If area cannot be barricaded, stop tool use when pedestrians are in the area</li> <li>Establish a Control Access Zone (CAZ) around chipping and grinding activities.</li> <li>Establish a notification, such as blowing a whistle, prior to felling trees or limbs.</li> </ul> |  |  | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including:                     <ul style="list-style-type: none"> <li>Wear chaps and a face shield when operating a chain saw.</li> <li>Wear a face shield when operating the stump grinder.</li> <li>Wear double hearing protection (ear plugs and muffs) when operating chippers, chain saws, or stump-grinders.</li> </ul> </li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |  | <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
|   |  |  |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
|   |  |  |  | <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
|   |  |  |  | <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
|   |  |  |  | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
|   |  |  |  | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Keep tripping hazards in mind on wet grass, muddy, or uneven surfaces.</li> </ul>  |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Prior to initiating work, inspect the work area for adequate lighting and trip and fall hazards.</li><li>• Wear leather or cut resistant gloves for sharp-edged or rough material handling. Do not wear loose gloves, clothing, jewelry, or lanyards that can become caught in rotating power tools or chipper.</li><li>• Do not wear loose-fitting clothing or gauntlet-type gloves when operating the woodchipper.</li><li>• Feed woodchipper from curbside; pivot away when material is being pulled.</li><li>• Turn engine off and remove key when unclogging or refueling equipment.</li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Demolish and remove concrete or asphalt (e.g., curbing, walkways, pads, potholes). Includes use of gas-powered concrete saws, handheld grinders, walk behind concrete saws, pneumatic or electric impact/ jackhammers and sledgehammers.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Obtain a dig permit from the LLNS CM prior to breaking ground.</li> <li><b>HOLD POINT:</b> If cutting through rebar is required, then obtain an approved Hot Work Permit             <ul style="list-style-type: none"> <li>Ensure that the work area is inspected at least daily by a LLNS Fire Inspector.</li> </ul> </li> <li>Schedule work activities during cooler times of the day.             <ul style="list-style-type: none"> <li>Provide cool water and shade when temperature exceeds 95 degrees Fahrenheit.</li> </ul> </li> <li>Designate silica competent person.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Discharge to Ground, Soil, Storm Drain</li> <li>Ergo - Vibration</li> <li>Heat Stress</li> <li>Hidden Utilities</li> <li>Lead</li> <li>Overhead Utilities</li> <li>Pressure System - Compressed Air</li> <li>Silica</li> <li>Slip / Trip / Fall</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Demolition of concrete or asphalt can result in airborne crystalline silica. Inhalation can cause silicosis and/or lung cancer.</li> <li>Jackhammers and impact hammers can cause significant vibration injuries.</li> <li>Hidden utilities can be struck by digging tools, resulting in shock, arc flash, and property damage.</li> <li>The release of wastewater from cement demolition equipment rinsing is regulated.</li> <li>Extended (greater than 1 hour) work done outdoors / in encapsulating PPE or using respiratory protection presents a risk of heat-related illness.</li> <li>Painted lines on asphalt or concrete may be lead containing.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>Certified wet/dry HEPA vacuum for dust cleanup and housekeeping.</li> <li>Jackhammer or powered chipping tools: integrated HEPA dust collection system OR applied water spray.</li> <li>Handheld grinders: integrated HEPA dust collection system OR integrated water delivery system.</li> <li>Handheld or walk-behind saws: integrated water delivery system.</li> </ul>   |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>LOTO (see PMO025, 26, 27, and 28)</li> <li>Demolition or removal indoors.</li> <li>Work outdoors when temperatures exceed 110 degrees Fahrenheit.</li> <li>Manual concrete/asphalt demolition that exceeds 45 consecutive minutes per worker.</li> <li>Work in a confined space.</li> <li>Use of HEPA-filtered equipment without current certification.</li> <li>Using compressed air, dry brushing, or dry sweeping to clean silica-containing dust from work area or clothing.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |  | <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Hand dig, pothole or use non-destructive means within 30 inches of utility to locate/support the marked utilities before using mechanized equipment.             <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Stop work and contact supervisor if utilities not identified by line locator are uncovered or if utility line is damaged.</li> </ul> </li> <li>Apply water to the cut or jackhammer area with a hose and spray nozzle to suppress all visible dust.             <ul style="list-style-type: none"> <li>Use integral water applicators on equipment if available and supplement with water hose if dust is still visible.</li> <li>Use grinder equipped with shroud and HEPA equipped dust collection system.</li> </ul> </li> <li>Ensure excavators or heavy equipment maintain a 10 feet distance from overhead power lines.</li> <li>Use a certified HEPA-filtered vacuum to remove dust from clothing and other surfaces.             <ul style="list-style-type: none"> <li>Use a wet/dry HEPA vacuum certified within the past year to clean up slurry.</li> </ul> </li> </ul>  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>[PMO008] Felling Trees</li> <li>[PMO028] Join a Group LOTO</li> </ul>  |  |  |  | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including:             <ul style="list-style-type: none"> <li>When electrical utilities are known, or suspected, within the area of demolishing concrete or asphalt:                 <ul style="list-style-type: none"> <li>Wear Type 0 voltage-rated gloves when sawing or jackhammering.</li> <li>Wear voltage-rated (EH) safety shoes.</li> </ul> </li> <li>Wear double protection hearing protection (ear plugs and muffs) when jackhammering.</li> </ul> </li> <li>RESPIRATOR: Wear powered air purifying respirator, i.e. loose fitting face piece, OR a full-face respirator, with P100 filters, when jackhammering on concrete or asphalt.</li> <li>RESPIRATOR: Wear half-face air purifying respirator, with P100 filters when using a handheld grinders on concrete or asphalt.</li> <li>RESPIRATOR: Wear half-face air purifying respirator, with P100 filters when using a handheld power saw on concrete or asphalt for more than 4 hours or when operating indoors.</li> <li>RESPIRATOR: Wear half-face air purifying respirator, with P100 filters when using a walk-behind saw on concrete or asphalt outdoors.</li> <li>RESPIRATOR: Wear powered air purifying respirator, i.e. loose fitting face piece, OR a full-face respirator with P100 filters when sawing on concrete or asphalt indoors or enclosed areas.</li> </ul> |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul>  |  |  |  | <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Characterize all materials (e.g., asphalt, soil, concrete) prior to disturbance, disposal, or reuse.</li> <li>Stage removed concrete and/or asphalt separately from construction debris and soil on plastic lined area.             <ul style="list-style-type: none"> <li>Clearly label each pile.</li> <li>Cover each pile with plastic to prevent rain runoff.</li> </ul> </li> <li>If there is lead based paint associated with demolition debris, ensure LLNS CM contacts LLNS EA for waste characterization and final disposition.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> <p><b>Pre-Approval Actions:</b></p>   |



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|  |  |  |  | <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |
|  |  |  |  | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |
|  |  |  |  | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Make saw cuts or jackhammer only within the marked perimeter of the location survey.</li> <li>• Push rather than pull, slide rather than lift.</li> <li>• Avoid creating visible dust. Apply water to suppress it when seen.</li> <li>• Keep slurry off skin. Wash skin with soap and water immediately after contact.</li> <li>• Do not use compressed air to remove dust from anything.</li> <li>• Do not allow wastewater to enter the sanitary sewer, storm drains, or surface waters.</li> <li>• Maintain at least a 3-inch clearance from any perpendicular obstruction such as a wall when sawing or jackhammering.</li> <li>• Maintain a maximum 1-inch score depth when saw cutting within 30 inches of identified utility markings.</li> </ul> |

Example

[PMO010] v.2.1.1 - Install Concrete

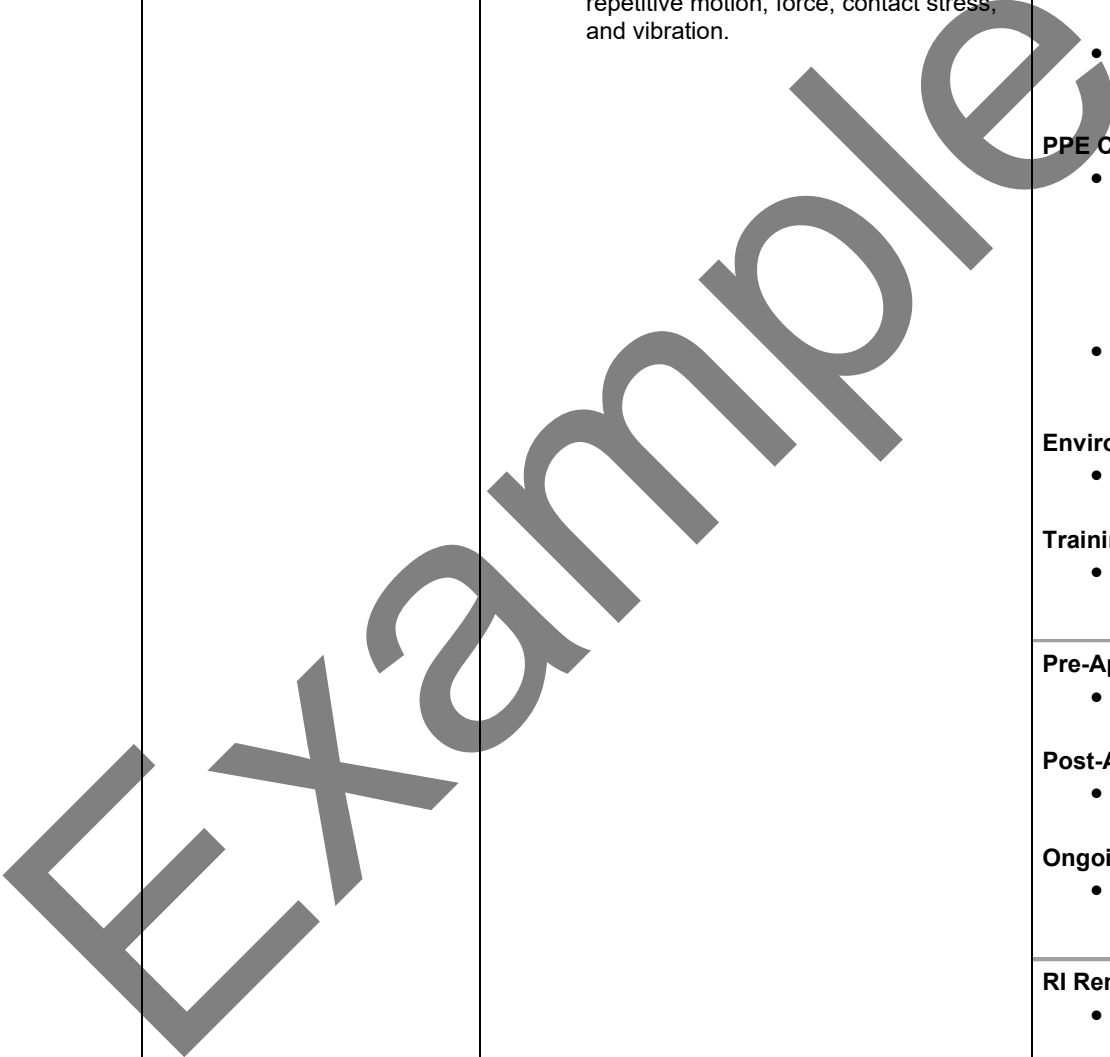
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| <p><b>Task Description:</b></p> <p>Install concrete using dry mix and / or ready-mix concrete. Concrete trucks include rear-discharge concrete transport trucks, advanced front discharge trucks, boom pumper trucks and volumetric concrete mixers. Tasks include transport of the concrete to the jobsite, pouring concrete, vibrating the concrete, troweling, and finishing the concrete surface.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Cap all reinforcing steel (rebar) and form stakes with a 4-inch x 4-inch square cap meeting Cal OSHA impalement protection test criteria. <ul style="list-style-type: none"> <li>Cap all protruding reinforcing steel (rebar) that do not present impalement potential with a mushroom safety cap, or equivalent cap.</li> </ul> </li> <li>Identify and mark irremovable obstacles and trip hazards.</li> </ul>   | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Chemical Other - Liquids</li> <li>Corrosive Liquids</li> <li>Corrosive Solids</li> <li>Discharge to Ground, Soil, Storm Drain</li> <li>Ergo - Vibration</li> <li>Irritants/Sensitizers Liquids</li> <li>Silica</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Contact with wet cement (pH 12 to 13) will cause severe irritation/burns to the eyes and skin and can lead to allergic reactions.</li> <li>Cement contains crystalline silica. Inhalation can cause silicosis and/or lung cancer.</li> <li>Exposure to concrete sealer mist can cause skin and respiratory tract irritation and allergic reaction.</li> <li>Wastewater from cement mixing and equipment rinsing may be released to the ground or storm-drain system.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>Positive fail-safe joint connectors for compressed air hoses.</li> <li>Manufacturer guards.</li> <li>Brake system, and parking brake system.</li> <li>Impalement caps.</li> <li>Wheel/tire chock.</li> <li>Certified wet/dry HEPA vacuum.</li> <li>HEPA equipped dust collection system.</li> </ul>   |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Installing concrete on elevated surfaces where a fall hazard is present.</li> <li>Use of HEPA-filtered equipment without current certification.</li> <li>Using compressed air, dry brushing, or dry sweeping to clean silica-containing dust from work area or clothing.</li> <li>Manual mixing of concrete greater than 2-hours per work shift.</li> </ul> | <ul style="list-style-type: none"> <li>Bend down all tie-wire to avoid punctures through boots.</li> <li>Ensure storm drains have been isolated with straw waddles or similar.</li> <li>Establish an access route and staging area for all concrete trucks. Roads, structures, and shoulders will be competent to handle the expected loads.</li> <li>Ensure equipment has a brake system and a parking brake system capable of stopping and holding the equipment while fully loaded on the grade of operation.</li> <li>Establish a staging and clean-out area for concrete trucks away from work and traffic areas.</li> <li>Ensure clean water is available for deluge.</li> <li>Inspect hydraulic hoses and fittings on concrete trucks daily. <ul style="list-style-type: none"> <li>Ensure they are secured to prevent chance of cutting or chafing while in operation.</li> </ul> </li> <li>Designate silica competent person.</li> </ul> |   |  | <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Verify that there are no overhead utilities prior to operation of the boom truck pumpers.</li> <li>Ensure concrete mixers equipped with 1-yard or larger loading skips are equipped with a mechanical device to clear the skip of material, and have guardrails installed on each side of the skip.</li> <li>Verify all chutes, booms, nozzles (and any other implements) are properly secured prior to moving equipment/truck.</li> <li>Ensure concrete pumping systems are equipped with positive fail-safe joint connectors for compressed air hoses.</li> <li>Ensure all guards on concrete mixers and pumpers are in place.</li> <li>Ensure outriggers on pumper, if used, will have adequate support prior to placement.</li> <li>Ensure personnel are at a safe distance from truck or mixer during operations.</li> <li>Maintain a Safety Zone consisting of a 25 feet radius around all working concrete equipment. <ul style="list-style-type: none"> <li>If access is needed, make eye contact with the operator, and await a "Go/No Go" from the operator prior to entry into the Safety Zone.</li> </ul> </li> <li>Do not stand and/or place body parts in the path of flowing concrete.</li> <li>Use Spotters as needed while positioning concrete mixers and pumpers for pours. <ul style="list-style-type: none"> <li>If visual contact of boom hose and operator is obscured, assign an individual the responsibility of watching boom location and signaling moves required to operator.</li> </ul> </li> <li>Use wheel chock when equipment is parked on uneven ground.</li> <li>Watch form during pour for failures. <ul style="list-style-type: none"> <li>Stop pour immediately if failure occurs and remove unnecessary workers from pour site until shoring/repairs to the form are made.</li> </ul> </li> <li>Avoid wet concrete between boots and legs or accumulation on work clothes and skin. <ul style="list-style-type: none"> <li>Change clothes and wash skin that has contacted wet concrete as soon as possible.</li> </ul> </li> <li>Turn vibrator off while changing locations to avoid flinging concrete.</li> <li>Immediately pull nails out of stripped form work.</li> <li>Apply water to the cut or finishing area with a hose and spray nozzle to suppress all visible dust. <ul style="list-style-type: none"> <li>Use integral water applicators on equipment if available and supplement with water hose if dust is still visible.</li> </ul> </li> <li>Use a certified HEPA-filtered vacuum to remove dust from clothing and other surfaces. <ul style="list-style-type: none"> <li>Use a wet/dry HEPA vacuum certified within the past year to clean up slurry.</li> </ul> </li> </ul> |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |   |  |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>Defined area for washing body parts that have been exposed to wet concrete.</li> </ul>  |   |  | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including: <ul style="list-style-type: none"> <li>Wear long sleeve shirt and rubber boots when working with, or around, wet concrete.</li> <li>Wear rubber or latex gloves during concrete pour, and when using handheld trowels or applying concrete sealers.</li> <li>Wear cut resistant or leather gloves and arm protection when handling or working around cut rebar and hanging water stop.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Collect unused concrete in drums or lined containers.</li> <li>Discharge wash water from cleaning concrete trucks and concrete handling equipment in drums or lined containers and properly dispose off-site.</li> </ul>  |



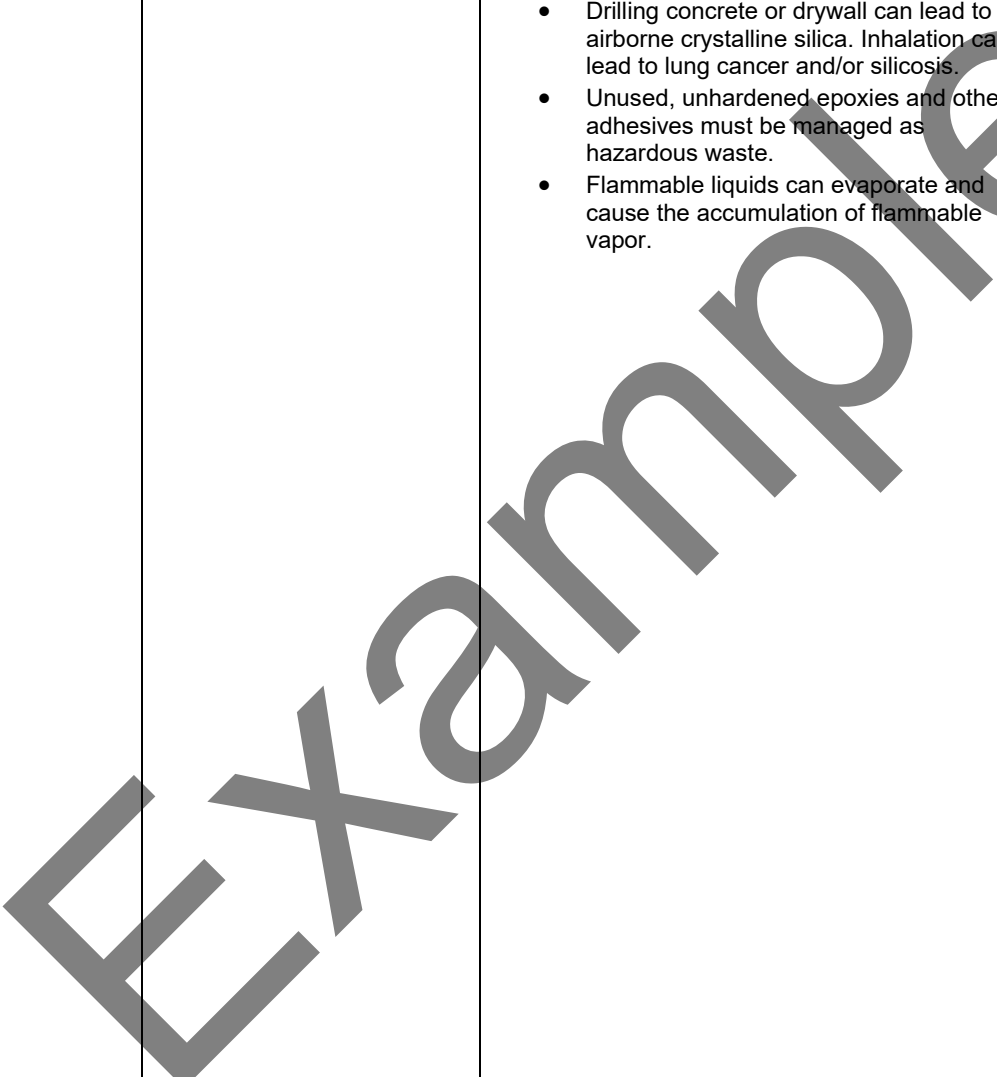
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|  |  |  |  | <ul style="list-style-type: none"> <li>Remove dried, excess concrete for proper disposal off-site and report the total quantity disposed of or recycled to the LLNS STR.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> <hr/> <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <hr/> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <hr/> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Watch your footing in wet work areas. Clean up debris and tripping hazards as you go.</li> <li>Stay out from between equipment and other objects.</li> <li>Use caution while working around chutes, boom and nozzles.</li> <li>Use a spotter during backup operations when in high traffic or congested areas or when visibility is reduced.</li> <li>Watch boom location and movement overhead while in operation.</li> <li>Keep wet cement off skin. Wash skin with soap and water immediately after contact with wet cement.</li> <li>If cement gets in your eyes, flush with cool water and remove contacts if worn. Report any eye or skin irritation to your immediate supervisor; seek medical attention as soon as practicable.</li> <li>Do not dump excess concrete in access paths or walking areas.</li> <li>Do not use compressed air to remove dust from anything.</li> <li>Use knee pads (or foam) when kneeling for extended periods of time.</li> <li>Limit use of water and do not allow wastewater to enter the sanitary sewer, storm drains, or surface waters.</li> </ul> |
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Example

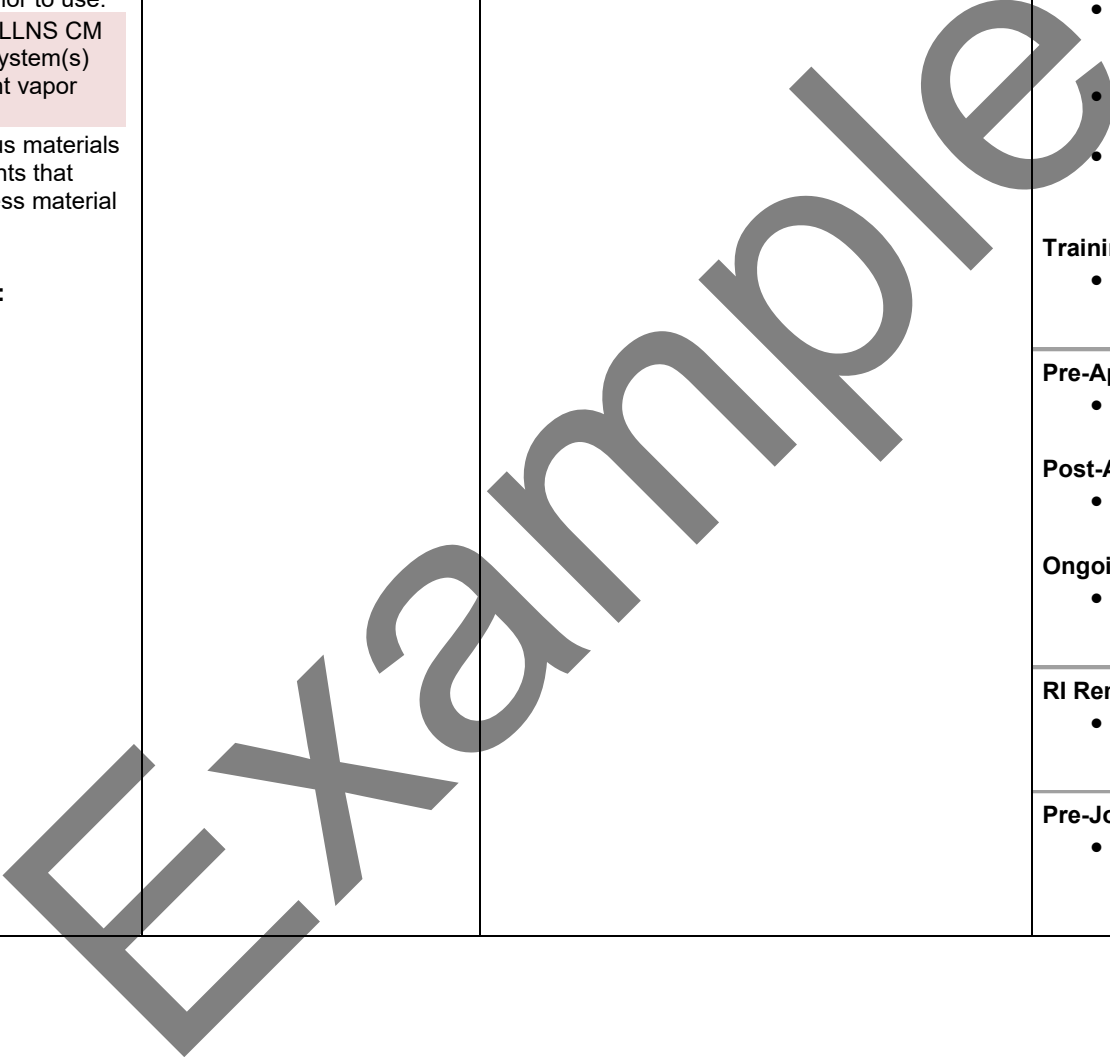
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| <p><b>Task Description:</b></p> <p>Drill cores in concrete or drywall walls, floors, ceiling, and other structures for utility pipes, conduits, and other. Includes core drilling in various sizes up to 5 feet in diameter.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Ensure LLNS approved penetration permit is available when penetrating concrete walls, ceilings, or floors.</li> <li>• Request the LLNS CM review and approve the routing and penetration locations of drywall.</li> <li>• Ensure LLNS CM obtain a dig permit prior to breaking ground.</li> <li>• Designate silica competent person.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Hidden Utilities</li> <li>• Silica</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Hidden utilities (electrical wiring, piping) may be struck when penetrating facility surfaces.</li> <li>• Drilling concrete or drywall can lead to airborne crystalline silica. Inhalation can lead to lung cancer and/or silicosis.</li> <li>• Extended use of hand tools, and kneeling / awkward postures may result in pain, numbness, tingling, stiffness, cramping, and the inability to hold objects or loss of grip strength due to repetitive motion, force, contact stress, and vibration.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• Certified wet/dry HEPA vacuum for cleanup and housekeeping.</li> <li>• Rig mounted drill or core saw: integrated HEPA dust collection system.</li> <li>• Handheld or stand mounted drill or core saw: integrated water delivery system.</li> </ul>   |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• LOTO (see PMO025, 26, 27, and 28)</li> <li>• Drilling/core drilling greater than 5 feet</li> <li>• Drilling through asbestos-containing or lead containing material.</li> <li>• Use of HEPA-filtered equipment without current certification.</li> <li>• Using compressed air, dry brushing, or dry sweeping to clean silica-containing dust from work area or clothing.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |   |   | <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Hand dig, pothole or use non-destructive means within 30 inches of utility to locate/support the marked utilities before using mechanized equipment.             <ul style="list-style-type: none"> <li>○ <b>HOLD POINT:</b> Stop work and contact supervisor if utilities not identified by line locator are uncovered or if utility line is damaged.</li> </ul> </li> <li>• Apply water to the cut area with a hose and spray nozzle to suppress all visible dust.             <ul style="list-style-type: none"> <li>○ Use integral water applicators on equipment if available and supplement with water hose if dust is still visible.</li> </ul> </li> <li>• Use a certified HEPA-filtered vacuum to remove dust from clothing and other surfaces and dispose of properly.</li> </ul> |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• [PMO028] Join a Group LOTO</li> </ul>  |   |   |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including:             <ul style="list-style-type: none"> <li>○ When electrical utilities are known, or suspected, within the area of core drilling concrete or drywall:                 <ul style="list-style-type: none"> <li>▪ Wear voltage rated (EH) safety shoes.</li> <li>▪ Wear voltage-rated (0) gloves with leather protectors.</li> </ul> </li> </ul> </li> <li>• RESPIRATOR: Wear half-face respirator with P100 cartridges when core drilling greater than 8-inch diameter holes.</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul>  |   |   |   | <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements</li> </ul>   |
|  |   |   |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |
|  |   |   |   | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |
|  |   |   |   | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |



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| <p><b>Task Description:</b></p> <p>Secure or anchor equipment to concrete, drywall, or studs in floors, walls, or ceilings to install seismic anchors and to attach support brackets/clips for utility pipes, conduits, boxes, or panels with screws, molly bolts, and similar fasteners.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Ensure LLNS approved penetration permit is available when penetrating concrete walls, ceilings, or floors.</li> <li>• Request the LLNS CM review and approve the routing and penetration locations of drywall.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Discharge to Air</li> <li>• Flammable Liquids</li> <li>• Hidden Utilities</li> <li>• Irritants/Sensitizers Liquids</li> <li>• Silica</li> <li>• Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Hidden utilities (electrical wiring, piping) may be struck when penetrating facility surfaces.</li> <li>• Epoxies are severely irritating to the eyes. Fumes can be irritating when inhaled.</li> <li>• Resins and hardeners can cause skin irritation and may cause sensitization (allergic skin reaction) upon repeated exposure.</li> <li>• Drilling concrete or drywall can lead to airborne crystalline silica. Inhalation can lead to lung cancer and/or silicosis.</li> <li>• Unused, unhardened epoxies and other adhesives must be managed as hazardous waste.</li> <li>• Flammable liquids can evaporate and cause the accumulation of flammable vapor.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• Certified wet/dry HEPA vacuum.</li> <li>• HEPA equipped dust collection system.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Maintain awareness of the hazards of adhesives and epoxies by consulting the SDS and manufacturer's label.</li> <li>• Use epoxies/adhesives in areas with good general ventilation, away from sources of ignition.</li> <li>• Use certified HEPA-filtered vacuum at point of dust generation or use wet methods at all points of penetration.             <ul style="list-style-type: none"> <li>○ Use wet/dry HEPA vacuum to clean up slurry or use a wet disposable rag to collect debris and/or water.</li> </ul> </li> <li>• Use a certified HEPA-filtered vacuum to remove dust from clothing and other surfaces and dispose of properly.</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• Use of VOC containing products that are not compliant with regional air quality rules and regulations.</li> <li>• Drilling through asbestos-containing or lead-containing material.</li> <li>• Drilling greater than 3-inch diameter hole.</li> <li>• Non-consumer epoxies and adhesives.</li> <li>• Using epoxies and adhesives beyond "consumer scale use." Each container of adhesive / epoxy is less than or equal to 1 pound or less than or equal to 16 fluid ounces.</li> <li>• Adhesives or epoxies containing isocyanates that would exceed ACGIH TLV.</li> <li>• Use of HEPA-filtered equipment without current certification.</li> <li>• Using compressed air, dry brushing, or dry sweeping to clean silica-containing dust from work area or clothing.</li> <li>• Use of powder actuated tools.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |  |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>○ Wear appropriate gloves when using and/or handling adhesives and epoxies.</li> <li>○ When electrical utilities are known, or suspected, within the area of penetration:                 <ul style="list-style-type: none"> <li>▪ Wear voltage rated (EH) safety shoes.</li> <li>▪ Wear voltage-rated (0) gloves with leather protectors.</li> </ul> </li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• Manage unused, unhardened epoxies, sealants, and adhesives as hazardous waste through RHWM.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements</li> </ul>                                   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |   |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ "Secure" generally means ensuring stability and firm attachment, while "anchor" specifically refers to attaching or fastening an object to a stable base or foundation to prevent movement or dislodgment.</li> </ul>   |   |  |   | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Ensure an approved penetration permit is available at the job site.</li> <li>• Wash hands after work involving adhesives and epoxies.</li> </ul>  |



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| <p><b>Task Description:</b></p> <p>Install cove base, carpet tiles, epoxy flooring base, and VCT tiles.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Ensure VOC containing products are BAAQMD or SJVAQMD compliant.</li> <li>Inspect tools and equipment before use. Tag and remove damaged tools and equipment from service.                             <ul style="list-style-type: none"> <li>Ensure guards are in place, in good condition, and functioning properly.</li> <li>Ensure cutting tools have sharp edges and blades are properly installed prior to use.</li> </ul> </li> <li><b>HOLD POINT:</b> Confirm with LLNS CM that the local facility HVAC system(s) have been isolated to prevent vapor recirculation.</li> <li>Obtain toxic and/or hazardous materials in container sizes and amounts that minimize the amount of excess material generated by the work.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Discharge to Air</li> <li>Flammable Liquids</li> <li>Irritants/Sensitizers Liquids</li> <li>Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Adhesives are severely irritating to the eyes. Lubricants and adhesives are dermal and respiratory irritants.</li> <li>Solvent emissions from adhesives are regulated by Regional Air Boards.</li> <li>Unused, unhardened adhesives must be managed as hazardous waste.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Avoid skin contact with epoxies/adhesives and wash hands with soap and water promptly after handling.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Do not discharge hazardous chemicals into the sanitary system.                             <ul style="list-style-type: none"> <li>Obtain approval from the LLNS CM prior to discharging material into the sanitary sewer system.</li> </ul> </li> <li>Dispose of cured epoxy and waste generated from mixing epoxy (e.g., gloves, cups, stirrers) in the municipal trash.</li> <li>Manage unused, unhardened epoxies and other adhesives as hazardous waste through RHWM.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Use of VOC containing products that are not compliant with BAAQMD or SJVAQMD rules and regulations.</li> <li>Abatement, surface preparation (e.g., stripping), or any disturbance of asbestos containing materials.</li> <li>Bead blasting of surfaces.</li> <li>Adhesives or epoxies containing isocyanates that would exceed ACGIH TLV.</li> </ul> |  |  |   |   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |   |   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
|   |  |  |   | <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
|   |  |  |   | <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
|   |  |  |   | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
|   |  |  |   | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Keep containers of adhesives and epoxies closed when not in use to minimize solvent evaporation.</li> </ul>  |



**Task Description:**  
 Cut, shape, bend and thread, assemble, maintain and inspect pipe and plumbing fixtures using hand, powered and stationary machine tools, hydraulic coupling tool, video inspection and hydrojet equipment. Includes the use of commercially available pipe-cutting lubricants, putties, sealants and caulks, adhesives, thread sealants, and rinse/flush materials such as, but not limited to, bleach-water mixtures or simple green. Includes installing and removing fiberglass pipe insulation. Includes using small cylinders of compressed nitrogen or air to pressure test piping or components to determine integrity.

- Boundary Conditions, this task does not include:**
- LOTO (see PMO025, 26, 27, or 28)
  - Work on any piping systems with potential biological, chemical, explosives, or radiological contamination.
  - Remediation (scraping, removal) of asbestos materials or lead-containing paint.
  - Penetrations or core drilling into concrete or drywall.
  - Working in permit required confined space.
  - Grinding on lead-containing surfaces.
  - Removal/disturbance of, or work on, asbestos containing materials.
  - Welding or torch cutting such as MIG, TIG, Flux-Core, Stick Welding or Oxy-fuel torch cutting, brazing, and soldering.

- Related PATs:**  
 The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:
- [PMO028] Join a Group LOTO

**Task Notes:**  
*This is used to document assumptions made during analysis or other technical details.*

- Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.

- Prerequisites:**
- Contact LLNS CM to obtain a LLNS hot work permit when grinding metal or otherwise producing sparks.
  - **HOLD POINT:** Follow LLNS approved fall protection plan identifying fall protection equipment to be used when approaching a leading edge, or unprotected elevated work surface, 6' or greater in height.
    - Verify fall protection equipment is current within annual inspection requirements.
  - Verify any Pressure Relief Devices used with compressed gas cylinders are within certification date.
  - When required, receive LLNS Fire Marshall approval and contact LLNS CM to coordinate fire sprinkler system shut down.
    - Return sprinklers back to service at the end of each day.

- First-Aid & Emergency Information:**
- Immediately report any spills of sewage to the LLNS CM.

- Hazard ID:**
- Biological Material - Human Source Materials
  - Confined Space - Non-Permit
  - Corrosive Liquids
  - Fire - Spark Ignition Source
  - Haz Energy Source - De-energized, Cord/Plug Control
  - Haz Energy Source - Mechanical
  - Irritants/Sensitizers Liquids
  - Lead
  - Pressure System - Compressed Air
  - Pressure System - Low Pressure
  - Recycling - Non-Regulated Metals
  - Waste - Hazardous

- Hazards & Environments Aspects:**
- Surface grinding on metals may produce sparks that can be an ignition source around flammable or combustible materials.
  - Putties, sealants, lubricants, adhesives, and flush materials may be skin and eye irritants.
  - Flushing materials (e.g., bleach) are corrosive, and can cause eye and face injury.
  - Unused putties, sealants, lubricants, and adhesives must be managed as hazardous waste.
  - Surfaces may be coated with lead-based paint. Disturbance may lead to airborne contaminants and dermal exposure.
  - Piping systems are pressure tested at ~150 psi, using small cylinders of nitrogen or compressed air. Failure of pressurized components can lead to equipment damage or injury.
  - Working on sewers, drain lines, and related systems poses the risk of contact with raw sewage. Sewage can contain bacteria, viruses, and human blood, which can cause illnesses.
    - Scrap metal (e.g., pipes, fittings, flashing) can be recycled.
    - Metal grinding debris can be an eye irritant.
    - Non-permit confined spaces have limited entry and egress, which can complicate evacuation.

- Engineering Controls:**
- None

- Administrative Controls:**
- Maintain awareness of the hazards of putties, sealants, lubricants, adhesives, and flush materials by consulting the SDS and manufacturer's label.
  - Decontaminate tools contaminated with raw sewage.
  - Wash hands with soap and warm water immediately after work involving raw sewage or lead containing paint.
  - Remove combustible materials from area when grinding.

- PPE Controls:**
- Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including:
    - If contact with raw sewage is possible, wear full-length coveralls, mid-length rubber boots, and mid-forearm rubber gloves.
      - Wear face shield or goggles if there is a splash potential.
    - Wear safety glasses with side shields and a face shield when using grinders or wire wheels that may produce sparks.
    - Wear appropriate gloves when using and/or handling cleaners, putties, sealants, adhesives, solvents, lubricants, and flush materials.
    - Wear nitrile gloves when handling pipes coated with lead containing paint.

- Environmental / Waste Controls:**
- Ensure all recyclable materials (e.g. copper, aluminum, steel, brass, iron alloys) are segregated and disposed of properly.
  - Manage unused, unhardened putties, epoxies, sealants, lubricants, and adhesives as hazardous waste through RHWM.
  - IAW PEL-M-331310, coordinate with LLNS EA to collect and test samples of the material(s) used to flush piping systems.
    - The environmental analyst will subsequently provide instructions for disposal of the material.
    - Do not dispose of flushing material without instructions from the LLNS environmental analyst.

- Training Controls:**
- Per contract requirements

- Pre-Approval Actions:**
- None

- Post-Approval Actions:**
- None

- Ongoing Actions:**
- None

- RI Reminders:**
- None

- Pre-Job Talking Points:**
- Do not use tool-handle extensions (cheater bars).
  - Surface grinding on metals may produce sparks that can ignite flammable or combustible materials. Obtain a Hot Work Permit prior to performing work.
  - Wash hands after work with sealants, lubricants, or adhesives.

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|  |  |  |  | <ul style="list-style-type: none"><li>• Wash hands after work involving raw sewage.</li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Install, inspect, maintain, repair, and replace heating, ventilation, air conditioning, and refrigeration systems (e.g., compressors, motors, HVAC controls, air handling equipment, refrigerant gas systems, natural gas systems, pneumatic control systems). Includes the use of commercially-available refrigerant gases, nitrogen and carbon dioxide cylinders to purge lines, cleaners, degreasers, lubricants, sealants and adhesives.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Contact LLNS CM to obtain a LLNS hot work permit when grinding metal or otherwise producing sparks outside of an approved location.</li> <li>Contact LLNS CM for Fire Protection Engineer inspection before placing fire or smoke damper out-of-service.</li> <li>Contact the LLNS CM to coordinated collection and sampling of wastewater from chiller units.</li> <li><b>HOLD POINT:</b> Follow LLNS approved fall protection plan identifying fall protection equipment to be used when approaching a leading edge, or unprotected elevated work surface, 6 feet or greater in height.             <ul style="list-style-type: none"> <li>Verify fall protection equipment is current within annual inspection requirements.</li> </ul> </li> <li>When working on natural gas or LPG systems, monitor for LFL/LEL.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Confined Space - Non-Permit</li> <li>Discharge to Air</li> <li>Electrical Equipment</li> <li>Fire - Spark Ignition Source</li> <li>Flammable Gases</li> <li>Flammable Liquids</li> <li>Hot Surfaces</li> <li>Irritants/Sensitizers Gases</li> <li>Irritants/Sensitizers Liquids</li> <li>Irritants/Sensitizers Solids</li> <li>Lead</li> <li>Pressure System - Compressed Air</li> <li>Recycling - Electronic Equipment</li> <li>Recycling - Non-Electronic Equipment</li> <li>Waste - Hazardous</li> <li>Waste - Universal</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>HVAC systems may expose workers to rotating fans and belts, thermal, mechanical, hydraulic, or pneumatic energy sources. Unexpected startup or release of stored energy can result in serious injury or death to workers.</li> <li>Motors, compressors, or other equipment may have hot surfaces capable of causing burns.</li> <li>Surface grinding on metals may produce sparks that can be an ignition source around flammable or combustible materials.</li> <li>Metal grinding debris can be an eye irritant.</li> <li>Freon refrigerants are irritants and asphyxiants. Some may be flammable, and / or toxic by inhalation.</li> <li>Compressed gas systems contain stored energy. Failure can result in blast, shrapnel, equipment damage, or personnel injury.</li> <li>Natural gas and LPG are extremely flammable and can form explosive mixtures in air. Some solvents may also be flammable.</li> <li>Skin contact with liquid refrigerant may cause burns or frostbite.</li> <li>Inert gases are asphyxiants, and can reduce or displace the normal oxygen in a room, resulting in suffocation.</li> <li>Lubricants, cleaners, and epoxy adhesives can cause dermal and respiratory irritation. Epoxies may cause sensitization (allergic skin reaction) upon repeated exposure.</li> <li>Surfaces may be coated with lead-based paint. Disturbance may lead to airborne contaminants and dermal exposure.</li> <li>Solvent emissions from adhesives, degreasers, and some cleaners are regulated by Regional Air Boards.</li> <li>Freon is considered an ozone-depleting substance.</li> <li>Batteries, thermostats, lamps, pressure or vacuum gauges, and circuit boards must be recycled or managed as universal waste.</li> <li>Switches and gauges containing mercury must be managed as hazardous waste.</li> <li>Spent or unused degreasers and lubricants, and unhardened epoxies and other adhesives must be managed as hazardous waste. Rags used with degreasers or oils must be managed as hazardous waste.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>Certified CFC and HCFC recovery units.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>When working on refrigerant lines:             <ul style="list-style-type: none"> <li>Perform work in a well-ventilated area.</li> <li>Ensure refrigerants are handled per EPA requirements, follow EPA procedures, and evacuate refrigerant systems to specified levels when opening.</li> <li>Use pressure rated system components and tools (e.g. low loss fittings) as specified by manufacturer.</li> </ul> </li> <li>Maintain awareness of the hazards of lubricants, cleaners, and adhesives by consulting the SDS and manufacturer's label.</li> <li>Utilize tools (sticks, spatulas) to avoid skin contact with epoxies/adhesives.</li> <li>Allow motors, burners, and other equipment that operate at high temperatures to cool prior to handling.</li> <li>Wash hands after working on surfaces potentially coated with lead.</li> <li>For storage and transport of gas cylinders:             <ul style="list-style-type: none"> <li>Secure gas cylinders when not in use.</li> <li>Do not transport gas cylinders and disposable gas cylinders within the covered areas of a vehicle.                 <ul style="list-style-type: none"> <li>Remove regulator and place valve cap on gas cylinders prior to transport.</li> </ul> </li> <li>Use a gas cart with restraining chain when moving full size cylinders. Use a 4-wheeled cylinder cart when moving Standard No. 1 or larger cylinder.</li> </ul> </li> <li>Remove combustible materials from area when grinding.</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>LOTO (see PMO025, 26, 27, or 28)</li> <li>Working in or on ventilation systems contaminated with radiological, biological, or chemical materials.</li> <li>Working on surfaces contaminated with beryllium and lead.</li> <li>Welding or torch cutting such as MIG, TIG, Flux-Core, stick welding or oxy-fuel torch cutting, brazing, and soldering.</li> <li>Using inert gas cylinders greater than 90 cubic feet to purge gas lines.</li> <li>Disturbing concrete or insulated lines/pipes/ducts that potentially contain asbestos.</li> <li>Lifting HVAC equipment requiring the use of rigging or rigger support to and from final location.</li> <li>Work that requires an Energized Electrical Work Permit (EEWP).</li> <li>Work on electrical systems and components containing &gt;600 volts.</li> <li>Work on facility electrical distribution system up to and including the disconnect.</li> <li>Core drilling or penetrations into concrete or drywall.</li> <li>Working in permit required confined space.</li> <li>Remediation (scraping, grinding, removal) of asbestos materials or lead-based paint.</li> <li>Removal/disturbance of, or work on, asbestos-containing materials.</li> <li>Adhesives or epoxies containing isocyanates that would exceed ACGIH TLV.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>Report any mercury spills to the LLNS Construction Manager</li> </ul>  |  |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including:             <ul style="list-style-type: none"> <li>Wear a face shield and safety glasses, or goggles, if there is a splash potential when draining and filling liquid refrigerants or oils.</li> <li>Wear a face shield and safety glasses with side shields when using grinders or wire wheels that may produce sparks.</li> <li>Wear appropriate gloves when using and/or handling epoxies, adhesives, solvents, and lubricants.</li> <li>Wear nitrile gloves when working on surfaces potentially coated with lead containing paint.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Manage unused, unhardened putties, epoxies, sealants, lubricants, adhesives, non-functioning aerosol cans, used oil, mercury switches, contaminated chiller water, and refrigerants as hazardous waste through RHWM.</li> <li>Place equipment in secondary containment, use catch pans, or drain liquids from equipment if there is a risk of unintentional release of fluids during activities.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>[PMO028] Join a Group LOTO</li> </ul>   |  |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |

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| <p><b>Task Notes:</b><br/> <i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul> |  |  | <ul style="list-style-type: none"> <li>• Non-permit confined spaces have limited entry and egress, which can complicate evacuation.</li> </ul> | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <hr/> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Restore and test, per manufacturer's specification, any fire or smoke rated duct damper placed Out-of-Service at the completion of work.</li> <li>• Wash hands upon completing work with lubricants, adhesives and epoxies, or if wall penetrations have been made.</li> <li>• Use knee pads or foam pads for kneeling.</li> <li>• To prevent head injury exercise caution when entering blower fan compartment area.</li> <li>• Always keep hands and feet away from moving or rotating parts.</li> <li>• Close or secure cover opening during breaks and at the end of the task.</li> <li>• Avoid accidental discharge of refrigerants to air by protecting refrigerant lines and tanks.</li> <li>• Prior to initiating work, inspect the work area for adequate lighting and trip and fall hazards.</li> <li>• Be aware of hot surfaces and equipment in the work area.</li> </ul> |
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Example



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| <p><b>Task Description:</b></p> <p>Perform general electrical work which may include stripping, splicing, and terminating wire and cables, as well as installation, operation, and/or replacement of electrical systems and equipment designed to operate at less than 600 volts (e.g., standby generators, Automatic Transfer Switches, relays, circuit breaker panels, wiring and conduit, electrical switches and receptacles, lighting fixtures, and electric motors). Includes the use of heat guns, and commercially available cable-pulling lubricants, WD-40, cleaners, adhesives, and epoxies.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Follow LLNS approved fall protection plan identifying fall protection equipment to be used when approaching a leading edge, or unprotected elevated work surface, 6 feet or greater in height.             <ul style="list-style-type: none"> <li>Verify fall protection equipment is current within annual inspection requirements.</li> </ul> </li> <li>Remove combustible material from area when using heat guns.</li> <li>Purchase epoxies/adhesives in closed containers of 1 pound or 16 fluid ounces or less to comply with the Regional Air Board requirements.</li> <li>Contact the LLNS CM to obtain a LLNS hot work permit when using heat gun.             <ul style="list-style-type: none"> <li>When using heat guns, remove combustible materials from area.</li> </ul> </li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Confined Space - Non-Permit</li> <li>Discharge to Air</li> <li>Electrical Equipment</li> <li>Fire - Heat Ignition Source</li> <li>Haz Energy Source - De-energized, Cord/Plug Control</li> <li>Hot Surfaces</li> <li>Irritants/Sensitizers Liquids</li> <li>Irritants/Sensitizers Solids</li> <li>Lead</li> <li>Recycling - Electronic Equipment</li> <li>Recycling - Non-Electronic Equipment</li> <li>Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Electronic components (small circuit boards, wires, cables) and scrap metal can be recycled.</li> <li>Heat guns operate at high temperatures and may cause burns or ignite nearby flammables or combustibles.</li> <li>Adhesives are severely irritating to the eyes. Lubricants, cleaners, and adhesives are dermal and respiratory irritants. Epoxies may cause sensitization (allergic skin reaction) upon repeated exposure.</li> <li>Surfaces may be coated with lead-based paint. Disturbance may lead to airborne contaminants and dermal exposure.</li> <li>Solvent emissions from adhesives, paints, and some cleaners are regulated by Regional Air Boards.</li> <li>Unused, unhardened epoxies and other adhesives must be managed as hazardous waste.</li> <li>Non-permit confined spaces have limited entry and egress, which can complicate evacuation.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Utilize heat guns to warm up cold insulation to facilitate stripping.</li> <li>File sharp edges of material and equipment.</li> <li>Allow motors and other equipment that operate at high temperatures to cool prior to handling.</li> <li>Maintain awareness of the hazards of lubricants, cleaners, and adhesives by consulting the SDS and manufacturers label.</li> <li>Utilize tools (e.g., sticks, spatulas) to avoid skin contact with epoxies/adhesives.</li> <li>Wash hands after working on surfaces potentially coated with lead containing paint.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including:             <ul style="list-style-type: none"> <li>Wear nitrile gloves when working on surfaces potentially coated with lead containing paint.</li> <li>Wear appropriate gloves when using and/or handling epoxies, adhesives, solvents, and lubricants.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Dispose of empty containers of cleaners, lubricants, and adhesives in the municipal waste.</li> <li>Dispose cured epoxy and waste generated from mixing epoxy (gloves, cups, stirrers, etc.) in the municipal trash.</li> <li>Manage unused, unhardened epoxies as hazardous waste through RHWM.</li> <li>Collect intact electronic equipment, wires/cables, and electronic boards/cards, containerize and recycle/dispose in accordance to the LLNS Environmental Specifications (DIV-1 Document).</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>LOTO (see PMO025, 26, 27, or 28)</li> <li>Energized electrical work.</li> <li>Work that requires an Energized Electrical Work Permit (EEWP)</li> <li>Use of tools on hazardous materials or surfaces:             <ul style="list-style-type: none"> <li>Asbestos</li> <li>Beryllium</li> <li>Cadmium-coated conduit</li> <li>Concrete or other silica-containing materials</li> <li>Explosives or reactive materials</li> <li>Lead (other than lead paint)</li> <li>Radioactive materials</li> </ul> </li> <li>Work on systems with potential radiological, chemical biological, or explosive contamination.</li> <li>Working in permit required confined space.</li> <li>Disturbing insulation or wiring that potentially contains asbestos.</li> <li>Adhesives or epoxies containing isocyanates that would exceed ACGIH TLV.</li> <li>Core drilling or penetrations into concrete or drywall.</li> <li>Welding or torch cutting such as MIG, TIG, Flux-Core, Stick Welding or Oxy-fuel torch cutting, brazing, soldering, and grinding.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |   |   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>[PMO028] Join a Group LOTO</li> </ul>   |  |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements</li> </ul>   |  |  |   | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Be prepared for oils to leak from motors or other equipment by having trays and rags/towels.</li> <li>Wash hands upon completing work with lubricants, adhesives, and epoxies.</li> <li>Use knee pads or foam pads for kneeling.</li> <li>Wear cut resistant gloves for sharp-edged material handling and when stripping/splicing wires and cables.</li> </ul>   |

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| <p>within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</p> |  |  |  | <ul style="list-style-type: none"><li>• Do not use a heat gun near combustible or flammable materials, including open containers of flammable liquids. Always switch heat gun off before putting it down on any surface.</li><li>• Use knee pads or foam pads for kneeling.</li><li>• Be aware of hot surfaces and equipment in the work area.</li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Prepare interior and exterior surfaces for painting (e.g., fill holes and cracks with caulk, putty, or plaster) using hand tools. Sand, tape and texture wall surfaces using hand tools. Apply adhesives, paint, varnish, stain, enamel, or lacquer with brushes, rollers, aerosol cans, and spray guns. Includes the use of power washers.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Follow LLNS approved fall protection plan identifying fall protection equipment to be used when approaching a leading edge, or unprotected elevated work surface, 6 feet or greater in height.             <ul style="list-style-type: none"> <li>Verify fall protection equipment is current within annual inspection requirements.</li> </ul> </li> <li>Ensure a disposal path and containers are available for waste residues.</li> <li>If working in street/parking lot, install barricades or cones and detour signs to divert traffic away from the work area, or to isolate the work from moving vehicles.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Chemical Other - Liquids</li> <li>Fire - Spark Ignition Source</li> <li>Flammable Liquids</li> <li>Irritants/Sensitizers Liquids</li> <li>Silica</li> <li>Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Adhesives and lubricants may be dermal and eye irritants.</li> <li>Incidental eye and skin exposure to solvents may result in irritation and/or rash, or respiratory irritation.</li> <li>Epoxies may be severely irritating to the eyes. Fumes may be irritating when inhaled.</li> <li>Taping compounds contain silica. Inhalation of silica dust can lead to respiratory illness.</li> <li>Paints and thinners may be flammable and combustible.</li> <li>Solvent emissions from adhesives are regulated by Regional Air Boards.</li> <li>Surface grinding on metals may produce sparks that can be an ignition source around flammable or combustible materials.</li> <li>Unused, unhardened adhesives are hazardous waste.</li> <li>Hazardous wastes (i.e., oil based paint, lacquer, thinner and filters) may be generated.</li> <li>Sanding drywall can release respirable crystalline silica into the air. Inhalation can cause silicosis and/or lung cancer.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>Certified wet/dry HEPA vacuum.</li> <li>HEPA equipped dust collection system.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Use wet methods when manually sanding less than 100 square feet.</li> <li>Use a sanding pole attached to a HEPA vacuum when sanding greater than 100 square feet.</li> <li>Work in a well-ventilated area.</li> <li>Maintain awareness of the hazards of paints, epoxies, varnishes, stains, lacquers, cleaners, and adhesives by consulting the SDS and manufacturers label.             <ul style="list-style-type: none"> <li>Wash hands after working on surfaces potentially coated with lead containing paint.</li> </ul> </li> <li>Store bulk quantities of flammable and combustible liquids and materials in a flammable storage cabinet.</li> <li>Remove combustible materials from area when grinding.</li> <li>Use a certified HEPA-filtered vacuum to remove silica-containing dust from clothing and other surfaces and dispose of properly.</li> </ul>  |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Sandblasting or bead blasting.</li> <li>Performing powder coating operations.</li> <li>Performing work in permit required confined spaces.</li> <li>Adhesives or epoxies containing isocyanates that would exceed ACGIH TLV.</li> <li>Remediating (i.e., scraping or removal) of lead-containing paint or asbestos-containing surfaces.</li> <li>Removal/disturbance of, or work on, asbestos-containing materials.</li> <li>Sanding or other surface prep on building materials potentially containing asbestos (e.g., skim coat or joint compound).</li> <li>Working on surfaces contaminated with beryllium and lead.</li> <li>Use of HEPA-filtered equipment without current certification.</li> <li>Using compressed air, dry brushing, or dry sweeping to clean silica-containing dust from work area or clothing.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>Wear a face shield when using powered grinders or wire wheels.</li> <li>Wear nitrile gloves when working with lead-containing paints.</li> <li>Wear appropriate gloves when using and/or handling paints, epoxies, varnishes, stains, lacquers, cleaners, and adhesives.</li> </ul> </li> <li>Wear half-face respirator, with P100 filter when manually removing fiber-cement board or drywall, i.e., sledgehammer or saws, without dust collectors.</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Enclose painting operations, as appropriate, to be consistent with local air quality regulations.</li> <li>Dispose of unused/unhardened epoxies, the waste generated from mixing epoxy (gloves, cups, stirrers, etc.), other adhesives, and spray booth filters as hazardous waste through RHWM.</li> <li>Dispose of general industrial paint wastes like solvents, thinners, excess/old paint as hazardous waste through RHWM.</li> </ul> |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |  |   | <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |   |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Inspect ladders and tools (including cord and plug) prior to use, and tag/remove damaged ladders and tools from service.</li> </ul>   |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Ensure cutting tool blades are correctly installed. Keep fingers, hands, and body parts out of the point of operation when cutting or installing fasteners. Cut away from the body when possible.</li></ul> |
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| <p><b>Task Description:</b></p> <p>Rig and hoist/move equipment and material using the following types of equipment: cables, slings, synthetic/wire ropes, pulleys, winches, blocks and sheaves, powered and hand operated hoists and lifting equipment, facility mounted and mobile cranes, PITs, gantries, and rollers/dollies. Includes selecting, assembling, attaching, and securing lifting devices, lifting, and moving the load, and disassembling and inspecting equipment.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Verify that the requirements of the LLNS approved Material Handling Plan and/or the Lift Plan can be followed if a plan was needed per Division 1 General Safety Provisions. Verify that overhead utility hazards have been addressed in the lift plan, if applicable. Pause work and contact the CM if any plan requirement cannot be met.</li> <li>Verify that the lift area access is secure. Evacuate interior/exterior areas and erect barricades at office spaces, parking lots, sidewalks, etc. where personnel are at risk from falling objects or within the swing radius.</li> <li>Notify personnel in the immediate area to stay clear of the work in progress.</li> <li>Remove loose items or tools from the load before lifting.</li> <li>Verify wheel chocks are in place if using a lift on an incline.</li> <li>Perform pre-operational inspections of all equipment. Remove defective equipment from service.</li> <li>Determine response actions if a load was dropped or spilled.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Cold Surfaces</li> <li>Discharge to Air</li> <li>Hot Surfaces</li> <li>Irritants/Sensitizers Solids</li> <li>Mechanical - Crush Hazard</li> <li>Mechanical - Pinch Points</li> <li>Mechanical - Sharp Tools/Edges</li> <li>Overhead Utilities</li> <li>P&amp;T - Transport On-Site - Large items requiring two individuals or mechanical methods to load</li> <li>Suspended Load - Crane</li> <li>Suspended Load - Jacks</li> <li>Suspended Load - PITs</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Equipment falling, slipping, or loss of control of the load due to rigging or hoist failure, or overloading could lead to severe injury, death, and property damage.</li> <li>Hoisting has many pinch points. If body parts are caught between the rigging and load, under the load, or in cables or chains, severe injury can result.</li> <li>Improper use of PITs can result in equipment or facility damage, injury, or death to the operator and/or bystanders.</li> <li>Workers exposed to diesel exhaust face the risk of health effects ranging from irritation of the eyes and nose, headaches, and nausea, to respiratory disease and lung cancer. The State of California regulates emissions.</li> <li>Hands can be hurt by surfaces of equipment and loads due to heat or cold, sharp edges, or by having a risk for splinters.</li> <li>Cranes and other tall equipment can contact overhead utilities causing electrocution and property damage.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> If synthetic slings are used and are in contact with edges, corners, or protrusions, then protect slings from cutting damage with sufficient cut protection per product manufacturer recommendations or a determination made by a qualified person. The load rating must be determined by the cut protection.</li> <li>Conduct a pre-lift meeting.</li> <li>During and after lifting:             <ul style="list-style-type: none"> <li>Keep the load as close to the ground as possible.</li> <li>Keep the travel path clear.</li> <li>Do not place any part of your body underneath the load.</li> <li>Keep hands and body clear of pinch points.</li> <li>Use a signal person if the load could strike people or property.</li> <li>Use a spotter for all obstructed view moves.</li> <li>Verify the load is secured and stable before leaving it.</li> <li>Store and protect rigging equipment from damage.</li> </ul> </li> <li>Operate combustion driven equipment indoors as follows:             <ul style="list-style-type: none"> <li>Limit running time to 10 minutes or less.</li> <li>Open exterior doors when engines are running.</li> <li>Direct emissions away from air intake locations.</li> </ul> </li> <li>Perform all required annual, monthly, and daily inspections. Maintain certification and inspection records at the job site.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per site access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans), and including:             <ul style="list-style-type: none"> <li>Wear safety glasses with side shields and safety shoes when rigging or hoisting a load.</li> <li>Wear a hard hat in the work area if the load is lifted above head height.</li> <li>Wear leather or other cut-resistant gloves if the load has sharp edges, if there is a risk for splinters, or surfaces are hot or cold.</li> <li>Wear a Class 2 vest if signaling or spotting.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Do not idle for more than 5 minutes when operating on-road diesel-fueled vehicles &gt;10,000 pounds, and off-road diesel vehicles &gt;25 horsepower.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements and including:             <ol style="list-style-type: none"> <li>Operator certification by the National Commission for Certification of Crane Operators (NCCCO) or other organization recognized by the U.S. Department of Labor</li> <li>Rigger/Signalman certification by the National Commission for Certification of Crane Operators (NCCCO) or other organization recognized by the U.S. Department of Labor</li> </ol> </li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Use of PIT attachments not provided by the manufacturer or not covered by an Engineering Safety Note.</li> </ul>   |   |  |   |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>[PMO028] Join a Group LOTO</li> </ul>   |   |  |   |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>LLNS may need to establish LOTO if overhead utilities may be encroached upon. If possible, add PMO028 to the JHA.</li> <li>This PAT assumes that if a Material Handling Plan or Lift Plan is required per Division 1 GSPs, it has already been developed and approved by LLNS.</li> <li>GOVERNANCE: SCM Division 1 General Safety Provisions; May 2023; <a href="https://supplychain.llnl.gov/supplier-information/special-provisions">https://supplychain.llnl.gov/supplier-information/special-provisions</a></li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p>   |

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|  |  |  |  | <ul style="list-style-type: none"><li>• None</li></ul>                                |
|  |  |  |  | <b>Pre-Job Talking Points:</b> <ul style="list-style-type: none"><li>• None</li></ul> |

Example

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| <p><b>Task Description:</b></p> <p>Inspect, install, remove, and repair roof components and drainage systems. Includes inspecting and prepping the surface, removing old roofing, and applying the new roofing using composition shingles/sheets, wood shingles, pressure-treated lumber, coating systems, asphalt, gravel, or sheet metals. Includes installing gutters, drains, power brooming, hot air welding of roof membrane, and scuppers. Includes using commercially available roof patching cement, adhesives, and solvents.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Barricade work area underneath roof/deck installation with red danger tape.</li> <li>Contact the LLNS CM to obtain a LLNS hot work permit when grinding metal, or otherwise producing sparks, or hot air welding outside of an approved location.</li> <li>Ensure LLNS approval of a penetration permit is available when penetrating walls or ceilings.</li> <li><b>HOLD POINT:</b> Follow LLNS approved fall protection plan identifying fall protection equipment to be used when approaching a leading edge, or unprotected elevated work surface, 6 feet or greater in height.             <ul style="list-style-type: none"> <li>Verify fall protection equipment is current within annual inspection requirements.</li> </ul> </li> <li>Designate silica competent person.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Discharge to Air</li> <li>Falling Objects</li> <li>Fire - Heat Ignition Source</li> <li>Fire - Spark Ignition Source</li> <li>Flammable Liquids</li> <li>Hidden Utilities</li> <li>Irritants/Sensitizers Liquids</li> <li>Lead</li> <li>Roof</li> <li>Silica</li> <li>Specifically Regulated Solids</li> <li>Toxic Solids</li> <li>Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Work at heights of greater than 6 feet and/or work on ladders, or from scaffold systems, may result in falls that could lead to severe injury or death.</li> <li>Hidden utilities (electrical wiring, piping) may be struck when penetrating facility surfaces.</li> <li>Surface grinding on metals may produce sparks that can be an ignition source around flammable or combustible materials.</li> <li>Heat from air welding can be a source of ignition when used around flammable material.</li> <li>Roofing materials (e.g., felt, mastic) may contain asbestos and arsenic. Disturbing surfaces may result in a skin contact or inhalation hazard. Inhalation of asbestos can cause lung disease.</li> <li>Roofing mastics, asphalt fumes, and adhesives may contain Stoddard Solvent. Inhaling solvent vapors can cause respiratory irritation. Dermal or eye contact can cause skin or eye irritation.</li> <li>Pressure-treated woods may contain arsenic or toxic copper chemicals and must be managed as hazardous waste.</li> <li>Handling and repairing flashing, paint, and some other materials (e.g., metacrylics) can cause ingestion exposure to lead. Lead is a cumulative and reproductive toxin.</li> <li>Disturbing gypsum board, DensDeck, power brooming, and penetrating concrete, can release respirable crystalline silica into the air. Inhalation can cause silicosis and/or lung cancer.</li> <li>Flammable and combustible liquids ignite and burn easily which can cause burns to skin and damage to property.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>Certified wet/dry HEPA vacuum.</li> <li>HEPA equipped dust collection system.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Keep combustible and flammable materials away from heat and ignition sources.</li> <li>Handle and store chemicals per SDS.</li> <li>Store bulk quantities of flammable and combustible liquids in an NRTL listed flammable liquid storage cabinet.</li> <li>Follow the approved fall protection plan.</li> <li>Follow approved penetration permit when penetrating walls or ceilings.</li> <li>Keep area wetted to minimize dust generation when power brooming, removing roof gravel, or disturbing DensDeck or similar roofing gypsum board.</li> <li>For penetrations into, or disturbance of, lead-containing material/paint, concrete, or drywall:             <ul style="list-style-type: none"> <li>Use wet methods at all points of penetration (shaving gel/cream, or wet sponge).</li> <li>Use wet/dry HEPA vacuum to clean up slurry or use a wet disposable rag to collect debris and/or water.</li> </ul> </li> <li>Use a certified HEPA-filtered vacuum to remove silica-containing dust from clothing and other surfaces and dispose of properly.</li> <li>Maintain awareness of the hazards of the materials used by consulting the SDS and following the manufacturer's precautions.</li> <li>Wash hands and face with soap and water promptly after penetrating potentially lead-based paint or working with or handling lead flashing and/or pressure-treated wood.</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Tear-off of roof systems containing friable asbestos material.</li> <li>Using tools to penetrate the following hazardous materials:             <ul style="list-style-type: none"> <li>Asbestos</li> <li>Beryllium</li> <li>Explosives or reactive materials</li> <li>Lead (other than lead-based paint)</li> <li>Radioactive Materials</li> </ul> </li> <li>Use of powered tear-off machines for roof tear-off.</li> <li>Any mechanical means to remove lead flashing.</li> <li>Cutting, sanding, or drilling into, or any mechanical means to remove pressure treated wood.</li> <li>Use of HEPA-filtered equipment without current certification.</li> <li>Using compressed air, dry brushing, or dry sweeping to clean silica-containing dust from work area or clothing.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>Wear safety glasses with side shields and a face shield when using grinders or wire wheels that may produce sparks.</li> <li>Wear voltage-rated (EH) safety shoes and voltage-rated (0) gloves when penetrating wall and ceiling surfaces.</li> <li>Wear nitrile gloves when working with lead-containing paints or lead flashing.</li> <li>Wear appropriate gloves when using and/or handling epoxies, adhesives, solvents, lubricants, or handlining pressure treated wood.</li> <li>Wear a half-face respirator, with P100 filter when manually removing fiber-cement board or drywall, i.e. sledgehammer or saws, without dust collection system.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Use plastic sheeting on the ground if working with pressure treated wood.             <ul style="list-style-type: none"> <li>Manage TWW as hazardous waste through RHWM.</li> </ul> </li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |   |   |   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>N/A</li> </ul>   |  |   |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>Obtain the STR's written approval prior to bringing any chemicals onsite.</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p>   |

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|  |  |  |  | <ul style="list-style-type: none"> <li>• None</li> </ul>   |
|  |  |  |  | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Do not exceed Load Limit ratings on roofs.</li> <li>• Inspect roof for icy/slippery surfaces, especially during periods of inclement weather.</li> <li>• Stand clear of all loads being lifted or moved.</li> <li>• Tether tools to keep them from falling on people below.</li> <li>• Review and discuss top heavy or awkward lifts to identify additional hazards or issues.</li> <li>• Use knee pads (or foam) when kneeling for extended periods of time.</li> <li>• Prior to use, inspect tools (including cord and plug for powered tools), and tag/remove damaged tools from service.</li> </ul> |

Example



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| <p><b>Task Description:</b></p> <p>Fabricate, install, repair, replace, adjust, and remove doors and door hardware, shelving, cabinets, furniture, wall mounted items, windows, window blinds, sheetrock/concrete, walls, ceilings, floors, floor coverings, stairs, decks, landings, awnings, bathroom partitions, forms, and stages. Includes use of commercially available construction adhesives, epoxies, and lubricants. Includes penetration of facility walls, floors, and ceilings that are constructed of non-hazardous materials but may contain lead-based paint.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Contact the LLNS CM to obtain a LLNS hot work permit when grinding metal or otherwise producing sparks outside of an approved location.</li> <li>Ensure LLNS approval of a penetration permit is available when penetrating walls, ceilings, or floors.</li> <li><b>HOLD POINT:</b> If approaching a leading edge or unprotected elevated work surface that is 6 feet or greater in height, then follow LLNS approved fall protection plan identifying fall protection equipment to be used.             <ul style="list-style-type: none"> <li>Verify fall protection equipment is within annual inspection requirements.</li> </ul> </li> <li>Designate silica competent person.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Discharge to Air</li> <li>Fire - Spark Ignition Source</li> <li>Hidden Utilities</li> <li>Irritants/Sensitizers Liquids</li> <li>Lead</li> <li>Mechanical - Flying Objects/Debris</li> <li>Mechanical - Sharp Tools/Edges</li> <li>Nuisance Dust</li> <li>Silica</li> <li>Specifically Regulated Solids</li> <li>Toxic Solids</li> <li>Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Hidden utilities (electrical wiring, piping) may be struck when penetrating facility surfaces.</li> <li>Surfaces may be coated with lead-based paint. Disturbance may lead to airborne contaminants and dermal exposure.</li> <li>Sanding and cutting hardwoods (oak, cedar, maple) can result in respirable sawdust. Hardwood dusts may be carcinogenic.</li> <li>Pressure-treated woods may contain arsenic or toxic copper chemicals and must be managed as hazardous waste.</li> <li>Adhesives may be severely irritating to the eyes. Lubricants and adhesives may be dermal and respiratory irritants.</li> <li>Solvent emissions are regulated by Regional Air Boards.</li> <li>Unused, unhardened adhesives must be managed as hazardous waste.</li> <li>Spent batteries are Universal waste.</li> <li>Surface grinding on metals may produce sparks that can be an ignition source around flammable or combustible materials.</li> <li>Sanding drywall can release respirable crystalline silica into the air. Inhalation can cause silicosis and/or lung cancer.</li> <li>Drilling into concrete can release respirable crystalline silica into the air. Inhalation can cause silicosis and/or lung cancer.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>Certified wet/dry HEPA vacuum.</li> <li>HEPA-equipped dust collection system.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Remove combustible material from area when grinding metal.</li> <li>For penetrations into, or disturbance of, lead-containing material/paint, concrete, or drywall:             <ul style="list-style-type: none"> <li>Use wet methods at all points of penetration (shaving gel/cream, or wet sponge).</li> <li>Use wet/dry HEPA vacuum to clean up slurry or use a wet disposable rag to collect debris and/or water.</li> </ul> </li> <li>Wash hands and face with soap and water promptly after penetrating potentially lead-containing paint or working with or handling pressure-treated wood.</li> <li>Maintain awareness of the hazards of lubricants, cleaners/solvents, and epoxies/adhesives by consulting the SDS and manufacturers label.</li> <li>Use a certified HEPA-filtered vacuum to remove silica-containing dust from clothing and other surfaces and dispose of properly.</li> </ul>  |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Remediation (i.e., scraping or removal) of lead-containing paint, mold, and asbestos.</li> <li>Using epoxies and adhesives beyond quantities specified in the Regional Air Quality permit.</li> <li>Cutting, sanding, or drilling into, or any mechanical means to remove pressure treated wood.</li> <li>Using tools on the following hazardous materials:             <ul style="list-style-type: none"> <li>Asbestos</li> <li>Beryllium</li> <li>Explosives or reactive materials</li> <li>Lead (other than lead paint)</li> <li>Radioactive materials</li> </ul> </li> <li>Adhesives or epoxies containing isocyanates that would exceed ACGIH TLV.</li> <li>Working on surfaces contaminated with beryllium and lead.</li> <li>Working in a permit required confined space.</li> <li>Use of HEPA-filtered equipment without current certification.</li> <li>Using compressed air, dry brushing, or dry sweeping to clean silica-containing dust from work area or clothing.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |   |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>Wear safety glasses with side shields and a face shield when using grinders or wire wheels that may produce sparks.</li> <li>Wear voltage-rated (EH) safety shoes and voltage-rated (0) gloves when penetrating wall, floor, and ceiling surfaces.</li> <li>Wear appropriate gloves when using and/or handling epoxies, adhesives, solvents, lubricants, or handling pressure treated wood.</li> <li>Wear nitrile gloves when working on surfaces potentially coated with lead containing paint.</li> </ul> </li> <li>RESPIRATOR: Wear half-face respirator, with P100 filter when manually removing fiber-cement board or drywall, i.e., sledgehammer or saws, without dust collectors.</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Use plastic sheeting on the ground if working with pressure treated wood.             <ul style="list-style-type: none"> <li>Manage TWW as hazardous waste through RHWM.</li> </ul> </li> <li>Dispose of cured epoxy and waste generated from mixing epoxy (gloves, cups, stirrers, etc.) in the municipal trash.</li> <li>Manage unused, unhardened epoxies and other adhesives as hazardous waste through RHWM.</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |   |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
| <p><b>Task Notes:</b></p> <p>This is used to document assumptions made during analysis or other technical details.</p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |   |   | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p>  |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Do not work on hazardous materials.</li><li>• Remove sawdust from personal clothing by gentle brushing or vacuuming prior to leaving job site. Do not use compressed air to blow sawdust off.</li><li>• Keep containers of adhesives or lubricants closed when not in use to minimize solvent evaporation.</li><li>• Avoid skin contact with epoxies/adhesives and wash hands with soap and water promptly after handling.</li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Install, troubleshoot, and inspection of electrical and communications equipment such as cables, switches, routers, and jacks. Includes work in telecom closets, vaults, above ceiling tiles, and use of various hand and power tools (including heat guns, electric and hydraulic cable pullers). Includes use of commercially available cable-pulling lubricants and adhesives / duct seal. Includes use of compressed air and nitrogen to expand cable housings to allow for cable pulling. Includes running cabling, installing equipment, and performing inspections below raised computer room floors.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Contact the LLNS CM to obtain a LLNS hot work permit when using heat gun. <ul style="list-style-type: none"> <li>When using heat gun, remove combustible materials from area.</li> </ul> </li> </ul> <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Confined Space - Non-Permit</li> <li>Fire - Heat Ignition Source</li> <li>Haz Energy Source - De-energized, Cord/Plug Control</li> <li>Hot Surfaces</li> <li>Irritants/Sensitizers Liquids</li> <li>Lead</li> <li>Mechanical - Pinch Points</li> <li>Mechanical - Rotating Equipment</li> <li>Mechanical - Sharp Tools/Edges</li> <li>Nuisance Dust</li> <li>Oxygen Deficiency or Asphyxiant</li> <li>Pressure System - Low Pressure</li> <li>Wall / Floor Openings</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Unintentional re-energizing of electronic equipment could result in electrical shock.</li> <li>Heat guns produce temperatures as high as 1200 degrees Fahrenheit. Contact may result in burns. Temperatures are capable of igniting nearby flammable and combustible materials.</li> <li>Hydraulic and electric cable pulling reels pose an entanglement and pinch point hazard, and can cause severe finger / hand injuries.</li> <li>Lubricants and adhesives are dermal and eye irritants.</li> <li>Nuisance dust above ceiling tiles may pose respiratory irritation.</li> <li>Pressure systems contain stored energy. Failures can lead to explosion, release of the gas, equipment damage, and personnel injury.</li> <li>Surfaces may be coated with lead-based paint. Disturbance may lead to airborne contaminants and dermal exposure.</li> <li>Ceiling tiles contain fiberglass and fiberglass can be respiratory/skin irritant.</li> <li>Nitrogen is an inert gas and can cause an oxygen deficient environment.</li> <li>Non-permit confined spaces have limited entry and egress, which can complicate evacuation</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Keep hands and body out of the points of operation when pulling cable or cutting or driving fasteners.</li> <li>Maintain cord and plug control to prevent inadvertent energization of equipment.</li> <li>Maintain adequate airflow in work area when using inert gases, lubricants, and adhesives.</li> <li>Utilize heat guns to warm up cold insulation to facilitate stripping.</li> <li>Allow material or equipment to cool to ambient temperature prior to handling when possible.</li> <li>When working above ceiling tiles, move tiles slowly and avoid tipping to avoid disturbing dust and debris. <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> If animal droppings, excessive piles of dust, or any signs of asbestos insulation from above the tile are found, then pause work, replace tile, and contact LLNS CM.</li> </ul> </li> <li>Block or secure any wheeled equipment left unattended near a floor opening.</li> <li>Maintain awareness of the hazards of adhesives, solvents, or lubricants by consulting the SDS and manufacturers label.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including: <ul style="list-style-type: none"> <li>Wear leather or other cut-resistant gloves when handling materials with sharp or jagged edges or using heat guns or cutting tools. <ul style="list-style-type: none"> <li>Do not wear gloves if there is a risk of gloves being caught in rotating machinery.</li> </ul> </li> <li>Wear long sleeves and gloves when working above ceiling tiles.</li> <li>Wear nitrile gloves when working on surfaces potentially coated with lead containing paint.</li> <li>Wear appropriate gloves when using and/or handling adhesives, solvents, or lubricants.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Work on energized electrical systems over 50 V.</li> <li>Welding or torch cutting (oxy-fuel, MIG, TIG, Flux-Core or Stick Welding).</li> <li>Trenching or excavating.</li> <li>Installation, maintenance and removal of utility poles.</li> <li>Work below raised floors.</li> <li>Perform work in permit required confined spaces.</li> <li>Use of tools on hazardous materials or surfaces: <ul style="list-style-type: none"> <li>Asbestos</li> <li>Beryllium</li> <li>Concrete or other silica-containing materials</li> <li>Explosives or reactive materials</li> <li>Lead (other than lead paint)</li> <li>Radioactive materials</li> </ul> </li> <li>Working on surfaces contaminated with beryllium, lead, or asbestos.</li> <li>Moving or remediating asbestos-containing ceiling tiles.</li> </ul> |  |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |  |   | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |  |   | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Use cones and caution tape/signage around wire reel.</li> <li>When working above ceiling tiles, move slowly and carefully to prevent hitting brace wires above ceiling and creating additional dust and debris. <ul style="list-style-type: none"> <li>Slide ceiling tiles over and try not to tip them dropping additional dust/debris.</li> </ul> </li> </ul>   |

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|  |  |  |  | <ul style="list-style-type: none"><li>○ If tiles are difficult to move or are hitting wires overhead, move another tile.</li><li>• Do not use a heat gun near combustible or flammable materials, including open containers of flammable liquids.<ul style="list-style-type: none"><li>○ Always switch heat gun off before putting it down on any surface.</li></ul></li><li>• Confirm any PRD is within certification. Do not use system if PRD is out of certification.</li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Join metal by Flux-cored or shielded metal arc welding processes in approved work locations. Approved base metals include carbon steel, zinc, and stainless steel.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Ensure LLNS CM obtain an approved LLNS hot work permit for temporary stick and flux core welding areas and verify that the work area is inspected as defined in the permit by a Fire Inspector.</li> <li>• Inspect area and remove combustible materials around and below hot work areas.</li> <li>• Obtain an appropriately rated fire extinguisher, listed welding blankets, pads, or curtains, and place them in the work area.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Fire - Open Flames Ignition Source</li> <li>• Irritants/Sensitizers Liquids</li> <li>• Oxygen Deficiency or Asphyxiant</li> <li>• UV / Visible</li> <li>• Waste - Hazardous</li> <li>• Welding Fumes</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Welding may cause burns or ignite nearby flammables or combustibles.</li> <li>• Exposure to welding fumes and gases, from coatings on the surface, base metal, gas by-products or shield gas, can include systemic poisoning, metal-fume fever, eye irritation, lung disease, lung irritation and cancer.</li> <li>• Self-contained shield gas and fumes from fluxes are respiratory and eye irritants.</li> <li>• Welding arc produces ultraviolet (UV) and infrared radiation (IR). UV may cause skin or eye burns (like sunburn, snow-blindness, or welder's flash) from acute exposure. Chronic exposure to UV may cause melanoma (skin cancer).</li> <li>• Solvents and lubricants are dermal and eye irritants.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• Local exhaust ventilation.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Maintain awareness of the hazards of base metal, electrode, and anti-splatter by consulting the SDS and manufacturer's precautions.</li> <li>• Keep electrodes in original manufacturer's containers, or label secondary containers with the material and hazards.</li> <li>• Use local exhaust ventilation or respiratory protection when performing stick or flux core welding activities.</li> <li>• Ensure main valve or control valves on the gas cylinder or hand-held torch are firmly shut off when not in use.</li> <li>• Clean the work area and surfaces (e.g., workbench or work product) by wet wiping with a pre-wetted disposable cloth after soldering or brazing operations.             <ul style="list-style-type: none"> <li>○ Dry sweeping and blowing are not permitted.</li> </ul> </li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>○ Wear appropriate gloves when using and/or handling base metal, electrode, and anti-splatter.</li> <li>○ Wear a fire resistant long-sleeved shirt and long pants.</li> <li>○ Wear dry leather gloves when directly handling hot parts.</li> <li>○ Wear flame-resistant gauntlet gloves, jacket, and welding cap, and a welding helmet with filter lens and cover plate shade 9 to 13 when welding.</li> </ul> </li> <li>• RESPIRATOR: Wear half-face respirator with P100 filter when Stick or Flux-Cored welding.</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• Clean and collect metal fines and scrap metal at the end of work shift, containerize, and recycle/dispose fines in accordance with the LLNS Environmental Specifications (DIV-1 Document).</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• Using lead-, cadmium, arsenic-, mercury-, or beryllium- containing base metal, filler, or alloy materials.</li> <li>• Work on metal partitions, walls, or roofs with combustible covering or with combustible construction materials, or in areas with impaired fire protection systems without Fire Marshall Approval.</li> <li>• Surface preparation on lead- or cadmium-containing painted surfaces.</li> <li>• Working in a confined space or enclosure or explosive environment.</li> <li>• Use of chlorinated solvent cleaners.</li> <li>• Working on surfaces contaminated with beryllium and lead.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |   |   |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |   |   |   |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ None</li> </ul>   |   |   |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Identify locations of fire suppression.</li> <li>• Barricade or control access to the area if needed. Keep an eye out for unauthorized persons.</li> <li>• Wash hands after work involving soldering/welding.</li> <li>• New material to be left bare of coatings or coatings to be removed prior to welding.</li> <li>• Consider new hazards, e.g., trapping heat, when selecting or developing custom shielding configurations for welding.</li> </ul>  |

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|  |  |  |  | <ul style="list-style-type: none"><li>• When feasible, avoid using alkaline coated electrodes when performing stainless steel welding to minimize hexavalent chromium generation.</li><li>• Perform welding in areas with good general ventilation.<ul style="list-style-type: none"><li>○ To the extent feasible, position self in a manner to minimize inhalation of fumes</li></ul></li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Join metal tubing and fittings with oxy-fuel, butane, propane, or MAPP-gas torch. Approved base metals include copper, brass, steel, galvanized sheet metal, and aluminum. Approved types of fluxes include C-Flux, resin, mineral-based flux, and 1%-15% Silver. Approved types of solders include: 95-5 Tin Antimony, 98-2 Tin Silver, and SilFos (Copper, Silver, Phosphorus).</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Ensure LLNS CM obtain an approved LLNS hot work permit for temporary stick and flux core welding areas and verify that the work area is inspected as defined in the permit by a Fire Inspector.</li> <li>• Obtain an appropriately rated fire extinguisher and place it in the work area.</li> <li>• Inspect area and remove combustible materials around and below hot work areas.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Fire - Open Flames Ignition Source</li> <li>• Flammable Gases</li> <li>• Irritants/Sensitizers Liquids</li> <li>• Pressure System - Low Pressure</li> <li>• Waste - Hazardous</li> <li>• Welding Fumes</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Soldering or brazing may cause burns or ignite nearby flammables or combustibles.</li> <li>• Exposure to soldering or brazing fumes and gases, from coatings on the surface, rosin fluxes, or solder, can include systemic poisoning, metal-fume fever, lung disease, and lung irritation.</li> <li>• Butane, propane, MAPP-gas, and acetylene are extremely flammable and can form explosive mixtures in air.</li> <li>• Some flux and flux cleaners contain chlorinated fluorocarbon solvents or corrosives and must be managed as hazardous waste.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Maintain awareness of the hazards of the flux and solder by consulting the SDS and the manufacturer's precautions.</li> <li>• Keep solder wire and flux in original manufacturer's containers.</li> <li>• Ensure main or control valves on gas cylinder or torch are firmly shut off when not in use.</li> <li>• For storage and transport of gas cylinders:             <ul style="list-style-type: none"> <li>○ Store the torch/cylinder away from sources of heat or ignition when not in use.                 <ul style="list-style-type: none"> <li>▪ Do not store the torch/cylinder in a flammable liquid cabinet.</li> </ul> </li> <li>○ When transporting full-sized gas cylinders:                 <ul style="list-style-type: none"> <li>▪ Remove regulator and place valve cap on gas cylinders prior to transport.</li> </ul> </li> <li>○ Do not transport gas cylinders and disposable gas cylinders within the covered areas of a vehicle.</li> </ul> </li> </ul>               |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• Using lead-, cadmium, arsenic-, or beryllium-containing base metal, filler, or alloy materials.</li> <li>• Work on metal partitions, walls, or roofs with combustible covering or with combustible construction materials, or in areas with impaired fire protection systems without Fire Marshall Approval.</li> <li>• Working in a permit required confined space.</li> <li>• Working on surfaces contaminated with beryllium and lead.</li> <li>• Surface preparation on lead- or cadmium-containing painted surfaces.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |   |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>○ Wear fire-resistant long-sleeved shirt and long pants.</li> <li>○ Wear leather gloves when soldering or brazing, handling material with sharp edges, and when directly handling hot parts.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• Manage unusable and/or excess flux waste, wipes, Q-tips, or other material used with flux, or flux cleaners, as hazardous waste.</li> <li>• Manage PPE, wipes, used solder wicks, or material with visible silver contamination as hazardous waste.</li> </ul>  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |  |   |   | <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements</li> </ul>  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ None</li> </ul>  |  |   |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Inspect the work area and soldering / brazing equipment before beginning work.</li> <li>• Perform welding in areas with good general ventilation.             <ul style="list-style-type: none"> <li>○ To the extent feasible, position self in a manner to minimize inhalation of fumes.</li> </ul> </li> <li>• Remove combustibles from the immediate area.</li> <li>• Identify locations of fire suppression.</li> <li>• Barricade or control access to the area if needed. Keep an eye out for unauthorized persons.</li> <li>• If solder is not recycled, then material must be managed as hazardous waste.</li> <li>• Consider wearing eye protection with a lens shade number 3 or 4 when brazing.</li> </ul> |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Consider wearing eye protection with a lens shade number 2 when torch soldering.</li></ul> |
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Example

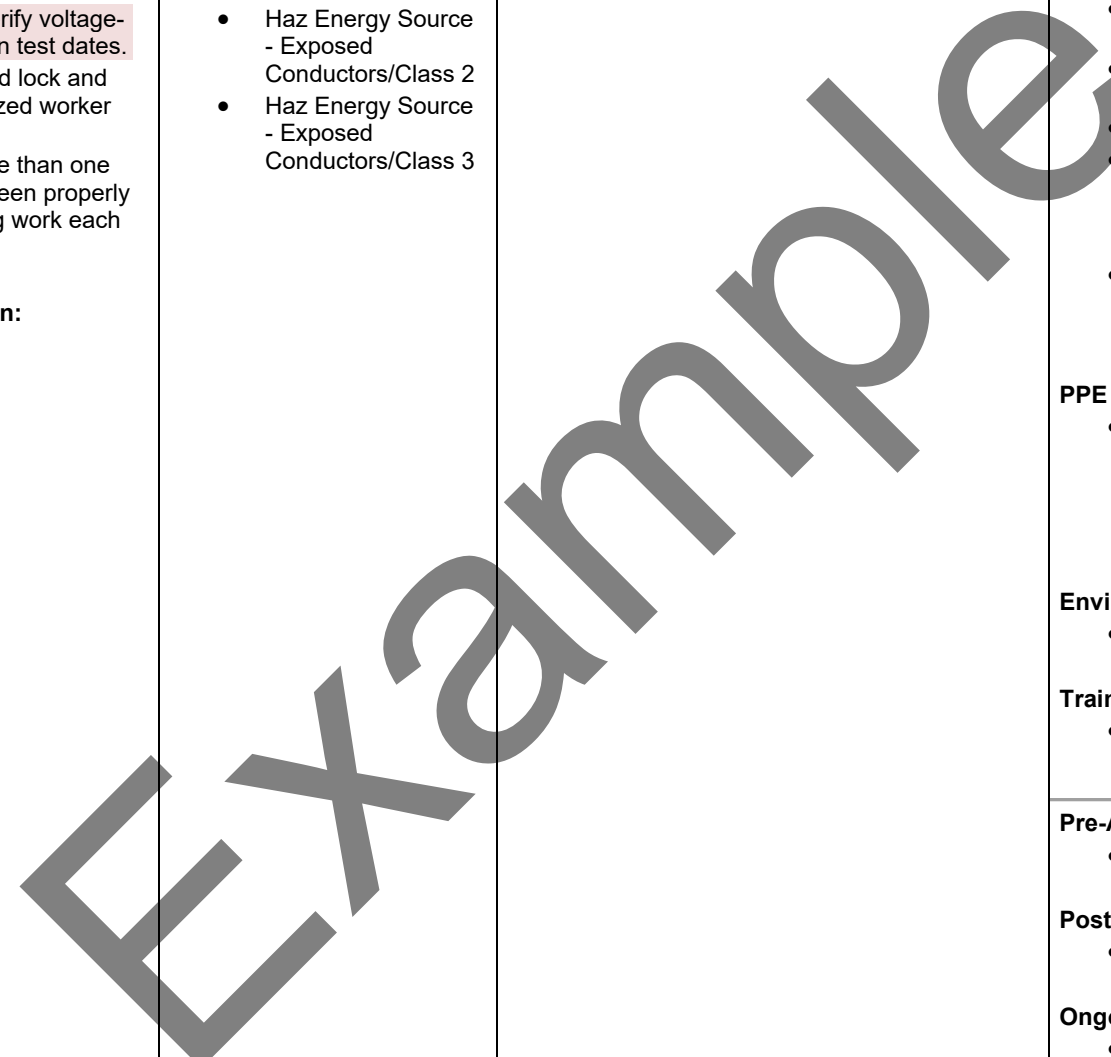


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| <p><b>Task Description:</b></p> <p>Join metal using GTAW, or TIG welding, in approved work locations. Approved base metals include copper, carbon steel, aluminum, zinc, nickel alloys, and stainless steel. Shield gases include Argon, Helium, or Argon / Carbon Dioxide.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Ensure LLNS CM obtains an approved LLNS hot work permit for temporary TIG welding areas and verify that the work area is inspected as defined in the permit by a Fire Inspector.</li> <li>• Obtain an appropriately rated fire extinguisher, listed welding blankets, pads, or curtains, and place them in the work area.</li> <li>• Inspect area and remove combustible materials around and below hot work areas.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Fire - Open Flames Ignition Source</li> <li>• Irritants/Sensitizers Liquids</li> <li>• Oxygen Deficiency or Asphyxiant</li> <li>• Pressure System - Low Pressure</li> <li>• UV / Visible</li> <li>• Waste - Hazardous</li> <li>• Welding Fumes</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Welding may cause burns or ignite nearby flammables or combustibles.</li> <li>• Exposure to welding fumes and gases, from coatings on the surface, base metal, gas by-products or shield gas, can include systemic poisoning, metal-fume fever, eye irritation, lung disease, lung irritation and cancer.</li> <li>• Shield gases are asphyxiants and can reduce or displace the normal oxygen in a room, resulting in suffocation.</li> <li>• Welding arc produces ultraviolet (UV) and infrared radiation (IR). UV may cause skin or eye burns (like sunburn, snow-blindness, or welder's flash) from acute exposure. Chronic exposure to UV may cause melanoma (skin cancer).</li> <li>• TIG welding activities may generate noise greater than 85 dB, which can damage hearing.</li> <li>• Solvents and lubricants are dermal and eye irritants.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Maintain awareness of the hazards of base metal, electrode, shield gas, and anti-splatter by consulting the SDS and manufacturer's precautions.</li> <li>• Keep electrodes in original manufacturer's containers, or label secondary containers with the material and hazards.</li> <li>• For storage and transport of gas cylinders:             <ul style="list-style-type: none"> <li>○ Store the torch/cylinder away from sources of heat or ignition when not in use.                 <ul style="list-style-type: none"> <li>▪ Do not store the torch/cylinder in a flammable liquid cabinet.</li> </ul> </li> <li>○ Remove regulator and place valve cap on gas cylinders prior to transport.</li> <li>○ Do not transport gas cylinders and disposable gas cylinders within the covered areas of a vehicle.</li> </ul> </li> </ul>   |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• Join metal using GMAW (MIG Welding).</li> <li>• Using lead-, cadmium, arsenic-, mercury-, or beryllium- containing base metal, filler, or alloy materials.</li> <li>• Work on metal partitions, walls, or roofs with combustible covering or with combustible construction materials, or in areas with impaired fire protection systems without Fire Marshall Approval.</li> <li>• Surface preparation on lead- or cadmium-containing painted surfaces.</li> <li>• Using thoriated tungsten electrodes.</li> <li>• Working in a confined space, enclosure, or explosive environment.</li> <li>• Use of chlorinated solvent cleaners.</li> <li>• Working on surfaces contaminated with beryllium and lead.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>  |   |  | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>○ Wear appropriate gloves when using and/or handling base metal, electrode, shield gas, and anti-splatter.</li> <li>○ Wear fire-resistant long-sleeved shirt and long pants.</li> <li>○ Wear leather gloves when handling material with sharp edges and when directly handling hot parts.</li> <li>○ Wear flame-resistant gauntlet gloves, jacket, and welding cap, and a welding helmet with filter lens and cover plate shade 10 to a shade 13.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• Clean and collect metal fines and scrap metal at the end of work shift, containerize, and recycle/dispose fines in accordance to the LLNS Environmental Specifications (DIV-1 Document).</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements</li> </ul> |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |  |   |  |   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ None</li> </ul>  |  |   |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Identify locations of fire suppression.</li> <li>• Barricade or control access to the area if needed. Keep an eye out for unauthorized persons.</li> <li>• Discuss specific area(s) to be joined.</li> <li>• New material to be left bare of coatings or coatings to be removed prior to TIG welding.</li> <li>• Consider new hazards, e.g., trapping heat, when selecting or developing custom shielding configurations for welding, brazing, and/or soldering,</li> <li>• Stay clear of fire alarms and sprinkler heads.</li> <li>• Perform welding in areas with good general ventilation.</li> </ul>         |

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|  |  |  |  | <ul style="list-style-type: none"><li>○ To the extent feasible, position self in a manner to minimize inhalation of fumes.</li><li>• Wash hands after work involving soldering/welding.</li></ul> |
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Example

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| <p><b>Task Description:</b></p> <p>Place electronic equipment in an electrically safe condition and establish LOTO on electrical distribution systems less than or equal to 600V.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Obtain LLNS approval of equipment specific LOTO plan or Complex LOTO plan when more than one energy source is required to be isolated.</li> <li><b>HOLD POINT:</b> Obtain LLNS CM approval prior to commencing LOTO.</li> </ul>   | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Haz Energy Source - De-energized, Complex LOTO Control</li> <li>Haz Energy Source - De-energized, Simple LOTO Control</li> <li>Haz Energy Source - Exposed Conductors/Class 1</li> <li>Haz Energy Source - Exposed Conductors/Class 2</li> <li>Haz Energy Source - Exposed Conductors/Class 3</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Contact with energized electrical components could result in electrical shock and/or arc flash burns.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Use a CAT III or higher measurement device or tool.</li> <li>Use NRTL listed, voltage rated tools.</li> <li>Determine Arc Flash Boundary based upon the arc flash equipment label.                         <ul style="list-style-type: none"> <li>For panels without an arc flash label, refer to nearest upstream panel, NFPA 70E, or LLNS CM.</li> </ul> </li> <li>Determine Limited Approach Boundary based on voltage levels in the Shock Protection Approach Boundaries table listed in NFPA 70E.</li> <li>Verify arc flash PPE is selected based on arc flash equipment label, arc flash risk assessment, or the task hazard/risk category classification.</li> <li>Verify shock PPE is selected based on voltage levels of potentially exposed conductors per NFPA 70E.</li> <li>Inspect arc flash and shock PPE in the field prior each use.</li> <li>Use barricade tape or equivalent, to prevent unauthorized personnel from entering the Arc Flash or Limited Approach Boundary, whichever is greater.                         <ul style="list-style-type: none"> <li>Don arc flash PPE before entering the Arc Flash Boundary.</li> <li>Don shock PPE before entering the Restricted Approach Boundary.</li> </ul> </li> <li>Hang individually keyed lock.                         <ul style="list-style-type: none"> <li>Fill out name and contact information on LOTO tag to be hung with lock.</li> <li>Sign LOTO Group log when Group LOTO is performed.</li> </ul> </li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including:                         <ul style="list-style-type: none"> <li>Arc flash PPE based upon the arc flash equipment label, arc flash risk assessment or the task hazard/risk category classification.</li> <li>Shock PPE based on voltage levels of potentially exposed conductors per NFPA 70E.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Work on energized electrical equipment that exceeds 600V.</li> <li>Work on energized electrical systems requiring an Energized Electrical Work Permit (EEWP).</li> </ul>   | <ul style="list-style-type: none"> <li>Obtain CAT III or higher measurement device and NRTL listed, voltage rated tools.</li> <li>Obtain electrical PPE.                         <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Verify voltage-rated PPE is within test dates.</li> </ul> </li> <li>Obtain an individually keyed lock and tag for each LOTO Authorized worker required to lock out.</li> <li>If the work extends for more than one day, re-verify energy has been properly controlled prior to restarting work each day.</li> </ul> |  |   |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |   |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul> |  |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Discuss hold point if equipment is not labeled for arc flash.</li> <li>Check V-rated gloves for wear, pinholes, and current within inspection date.</li> <li>Remove conductive badge lanyards, eyeglass chains, jewelry. when accessing energized equipment.</li> </ul>   |



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|  |  |  |  | <ul style="list-style-type: none"><li>• Stop work if the LOTO plan cannot be performed as required and report the issue to the LLNS Construction Manager.</li><li>• Test voltage-measuring devices before and after verifying zero voltage.</li></ul> |
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| <p><b>Task Description:</b></p> <p>Place equipment/system in a safe condition and establish LOTO. Sources of hazardous energy may include rotational (e.g., fans, motors, pumps, compressors, channel grinders), thermal (e.g., boilers, heaters, hot water, and steam lines), mechanical (e.g., dampers, bridge cranes, vehicle lifts), pressurized gases (e.g., compressed air, natural gas, building supplied gases) and pressurized fluids (e.g., water, hydraulics).</p> | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Obtain LLNS approval of equipment specific LOTO plan or Complex LOTO Plan when more than one energy source is required to be isolated.</li> <li><b>HOLD POINT:</b> Obtain LLNS CM approval prior to commencing LOTO.</li> <li>Obtain an individually keyed lock and tag for each LOTO Authorized worker required to join the group LOTO.</li> <li>If the work extends for more than one day, re-verify energy has been properly controlled prior to restarting work each day.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Flammable Gases</li> <li>Haz Energy Source - Chemical</li> <li>Haz Energy Source - De-energized, Complex LOTO Control</li> <li>Haz Energy Source - De-energized, Simple LOTO Control</li> <li>Haz Energy Source - Gravity</li> <li>Haz Energy Source - Hydraulic</li> <li>Haz Energy Source - Mechanical</li> <li>Haz Energy Source - Pneumatic</li> <li>Haz Energy Source - Thermal</li> <li>Hot Surfaces</li> <li>Pressure System - Intermediate Pressure</li> <li>Pressure System - Low Pressure</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Mechanical equipment and systems may expose workers to rotational, thermal, mechanical, hydraulic, pneumatic, chemical, or other energy sources. Unexpected startup or release of stored energy can result in serious injury or death.</li> <li>Opening pressurized systems may cause injury, blast, fire, or facility damage.</li> <li>Natural gas is flammable, and capable of causing explosions or fires if it accumulates.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>For simple LOTO, isolate energy and release stored energy from the system. <ul style="list-style-type: none"> <li>For rotational systems, secure and lock shafts, or blades. Ensure air movement cannot result in fan movement.</li> <li>For natural gas systems, purge piping with air or inert gas prior to opening the system.</li> <li>For hydraulic systems, close and lock closest shutoff valve, release pressure slowly into a proper container.</li> <li>For pneumatic systems, close and lock closest shutoff valve, vent system to ambient pressure.</li> <li>For thermal systems, allow the system to reach a safe temperature before starting work, drain hot water systems.</li> <li>For chemical systems, drain and vent system and piping into a proper container.</li> </ul> </li> <li>Follow LLNS approved equipment-specific procedure or Complex LOTO Plan. <ul style="list-style-type: none"> <li>Stop work if the LOTO cannot be applied in accordance with the procedure or plan.</li> </ul> </li> <li>Hang individually keyed lock. <ul style="list-style-type: none"> <li>Fill out name and contact information on the LOTO tag to be hung with lock.</li> <li>Sign LOTO Group log when Group LOTO is performed.</li> </ul> </li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Electrical LOTO.</li> <li>Work on equipment or systems containing: <ul style="list-style-type: none"> <li>Radioactive material</li> <li>Hazardous process chemicals</li> </ul> </li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |   | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including: <ul style="list-style-type: none"> <li>Wear leather or heat resistant gloves when directly handling or touching hot items or equipment.</li> </ul> </li> </ul>  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   |   |  |   | <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul>   |   |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Stop work if anyone's safety/health could be jeopardized.</li> <li>Stop work if the LOTO plan cannot be performed as required and report the issue to the LLNS Construction Manager.</li> <li>Treat all equipment as energized until proven otherwise.</li> <li>Compressed gases contain more stored energy than pressurized liquids.</li> <li>Confirm that stored energy has been properly controlled prior to restarting work after extended breaks, lunch periods or the next day.</li> </ul>   |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Be alert to possible gradual buildup of stored energy; establish a controlled pressure vent path for possible gradual stored energy buildup, such as opening a vent or drain valve, and tagging it open.</li></ul> |
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| <p><b>Task Description:</b></p> <p>Place equipment that contains both non-electrical energy and electrical energy, less than or equal to 600 volts, in a zero-energy safe condition.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Obtain LLNS approval of equipment specific LOTO procedure or Complex LOTO Plan.</li> <li><b>HOLD POINT:</b> Obtain LLNS CM approval prior to commencing LOTO.</li> <li>Obtain CAT III or higher measurement device and listed, voltage rated tools.</li> <li>Obtain electrical PPE.                     <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Verify voltage-rated PPE is within test dates.</li> </ul> </li> <li>Obtain an individually keyed lock and tag for each LOTO Authorized worker required to LOTO.</li> <li>If the work extends for more than one day, re-verify energy has been properly controlled prior to restarting work each day.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Flammable Gases</li> <li>Haz Energy Source - Chemical</li> <li>Haz Energy Source - De-energized, Complex LOTO Control</li> <li>Haz Energy Source - De-energized, Simple LOTO Control</li> <li>Haz Energy Source - Exposed Conductors/Class 1</li> <li>Haz Energy Source - Exposed Conductors/Class 2</li> <li>Haz Energy Source - Exposed Conductors/Class 3</li> <li>Haz Energy Source - Gravity</li> <li>Haz Energy Source - Hydraulic</li> <li>Haz Energy Source - Mechanical</li> <li>Haz Energy Source - Pneumatic</li> <li>Haz Energy Source - Thermal</li> <li>Hot Surfaces</li> <li>Pressure System - Intermediate Pressure</li> <li>Pressure System - Low Pressure</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Contact with energized electrical components could result in electrical shock and/or arc flash burns.</li> <li>Mechanical equipment and systems may expose workers to rotational, thermal, mechanical, hydraulic, pneumatic, chemical, or other energy sources. Unexpected startup or release of stored energy can result in serious injury or death.</li> <li>Opening pressurized systems may cause injury, blast, fire, or facility damage.</li> <li>Natural gas is flammable, and capable of causing explosions or fires if it accumulates.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Use a CAT III or higher measurement device or tool.</li> <li>Use NRTL listed, voltage rated tools.</li> <li>Determine Arc Flash Boundary based upon the arc flash equipment label.                     <ul style="list-style-type: none"> <li>For panels without an arc flash label, refer to nearest upstream panel, NFPA 70E, or LLNS CM.</li> </ul> </li> <li>Determine Limited Approach Boundary based on voltage levels in the Shock Protection Approach Boundaries table listed in NFPA 70E.</li> <li>Verify arc flash PPE is selected based on arc flash equipment label, arc flash risk assessment, or the task hazard/risk category classification.</li> <li>Verify shock PPE is selected based on voltage levels of potentially exposed conductors per NFPA 70E.</li> <li>Inspect arc flash and shock PPE in the field prior to each use.</li> <li>Use barricade tape or equivalent, to prevent unauthorized personnel from entering the Arc Flash or Limited Approach Boundary, whichever is greater.                     <ul style="list-style-type: none"> <li>Don arc flash PPE before entering the Arc Flash Boundary.</li> <li>Don shock PPE before entering the Restricted Approach Boundary.</li> </ul> </li> <li>Follow LLNS approved equipment-specific plan or Complex LOTO Plan.                     <ul style="list-style-type: none"> <li>Stop work if LOTO cannot be applied in accordance with the procedure or plan.</li> </ul> </li> <li>Hang individually keyed lock.                     <ul style="list-style-type: none"> <li>Fill out name and contact information on LOTO tag to be hung with lock.</li> <li>Sign LOTO Group log when Group LOTO is performed.</li> </ul> </li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including:                     <ul style="list-style-type: none"> <li>Wear leather or heat resistant gloves when directly handling or touching hot items or equipment.</li> <li>Arc flash PPE based upon the arc flash equipment label, arc flash risk assessment or the task hazard/risk category classification.</li> <li>Shock PPE based on voltage levels of potentially exposed conductors per NFPA 70E.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Work on energized electrical equipment that exceeds 600V.</li> <li>Work on energized electrical systems requiring an Energized Electrical Work Permit (EEWP). Work on equipment or systems containing:                     <ul style="list-style-type: none"> <li>Radioactive material</li> <li>Hazardous process chemicals</li> </ul> </li> </ul> |  |  |  |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |  |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul>                                 |  |  |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Discuss hold point if equipment is not labeled for arc flash.</li> </ul>  |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Stop work if anyone's safety/health could be jeopardized.</li><li>• Stop work if the LOTO procedure cannot be performed as required and report the issue to the LLNS Construction Manager.</li><li>• Treat all equipment as energized until proven otherwise.</li><li>• Compressed gases contain more stored energy than pressurized liquids.</li><li>• Confirm that stored energy has been properly controlled prior to restarting work after extended breaks, lunch periods or the next day.</li><li>• Be alert to possible gradual buildup of stored energy; establish a controlled pressure vent path for possible gradual stored energy buildup, such as opening a vent or drain valve, and tagging it open.</li><li>• Check V-rated gloves for wear, pinholes, and current within inspection date.</li><li>• Remove conductive badge lanyards, eyeglass chains, jewelry. when accessing energized equipment.</li><li>• Test voltage-measuring devices before and after verifying zero voltage.</li></ul> |
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| <p><b>Task Description:</b></p> <p>LLNS personnel will establish LOTO on all equipment and perform the Zero-Energy Verification (ZEV) to place it in a safe work condition. Subcontract personnel who are LOTO Authorized Workers will join a group LOTO after LLNS personnel have applied the first lock. Subcontract personnel can perform a secondary ZEV after the initial LLNS ZEV, after applying their lock(s), and before beginning work. LLNS will be the last to remove their lock in the sequence to reenergize the equipment and/or system.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Verify that LLNS has established LOTO and has applied the first lock.</li> <li>Challenge the LOTO before beginning work anytime the job site was left unattended.</li> </ul> <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Electrical Equipment</li> <li>Haz Energy Source - Chemical</li> <li>Haz Energy Source - Exposed Conductors/Class 1</li> <li>Haz Energy Source - Exposed Conductors/Class 2</li> <li>Haz Energy Source - Exposed Conductors/Class 3</li> <li>Haz Energy Source - Exposed Conductors/Class 4</li> <li>Haz Energy Source - Gravity</li> <li>Haz Energy Source - Hydraulic</li> <li>Haz Energy Source - Mechanical</li> <li>Haz Energy Source - Pneumatic</li> <li>Haz Energy Source - Thermal</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Contact with energized electrical components could result in electrical shock, electrocution, and/or arc flash burns causing severe physical injury or death.</li> <li>Unexpected startup or release of stored energy can result in serious injury or death (i.e., pressure, vacuum, electrical, movement, chemical, radiation, etc.).</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Contact the CM to coordinate with LLNS personnel to establish LOTO, perform a ZEV, and apply the first lock.</li> <li>Apply individually keyed lock by filling out name and contact information on LOTO tag and sign the LOTO log.             <ul style="list-style-type: none"> <li>Electrical LOTO: An NFPA 70E qualified electrical worker can verify the LLNS ZEV using a CAT III or higher measurement device with appropriately rated leads to test each phase conductor or circuit part before beginning work.</li> <li>Mechanical LOTO: Workers can verify the LLNS ZEV by challenging the operation controls such as on/off switch, selector switch, valve, interlock, etc. before beginning work.</li> </ul> </li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans).</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements and including:             <ol style="list-style-type: none"> <li>LOTO Authorized Worker</li> <li>NFPA 70E qualified electrical worker (required if subcontractor elects to perform a secondary ZEV and any test before touch checks on electrical equipment that has been LOTO by LLNS)</li> </ol> </li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Non-construction work such as subcontracted service providers performing service and maintenance activities as part of a manufacturer or other authorized service agreement for specific equipment.</li> <li>Work on energized electrical equipment.</li> <li>LOTO on electrical equipment or systems greater than 600V.</li> <li>Use of non-contact voltage testers to perform zero-energy verifications (ZEV) or any test before touch checks on electrically powered equipment.</li> </ul>   |  |   |  |   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |   |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>GOVERNANCE: NFPA 70E (2021), Standard for Electrical Safety in the Workplace</li> <li>GOVERNANCE: OSHA 29 CFR 1926.417, Lockout and tagging of circuits</li> <li>GOVERNANCE: OSHA 29 CFR 1910.147, The control of hazardous energy (lockout/tagout)</li> <li>GOVERNANCE: OSHA 29 CFR 1910.333, Selection and use of work practices</li> <li>INTERNAL POLICY: PRO-2402, Performing LOTO (USQ), Rev. 5, Effective 04/15/2021</li> <li>INTERNAL POLICY: DES-2401, LLNL Lockout/Tagout</li> </ul> |  |   |  | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>LLNS personnel must apply the first LOTO lock and will be the last lock off.</li> <li>Challenge the LOTO before beginning work for the day and anytime the job site was left unattended.</li> <li>LOTO Authorized Workers joining a group LOTO are not required to observe zero energy verification but can request it.</li> <li>Treat all equipment as energized until proven otherwise.</li> <li>Be aware of dangers associated with built-up residual energy.</li> </ul>   |

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| <p>(LOTO) Program (USQ), Rev. 5, Effective 04/15/2021</p> <ul style="list-style-type: none"><li>○ The content of this PAT is only for construction subcontractors. The governance and policies captured within this PAT only apply to construction subcontractors. Governance and policy for other types of work will be different.</li><li>○ Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li></ul> |  |  |  |  |
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| <p><b>Task Description:</b></p> <p>Install landscaping, trees, sod/grass, aggregates as well as irrigation systems, pavement markings, and other site surface improvements.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Obtain a LLNS Soil Excavation Penetration permit.</li> <li>For excavation or trenching activities, obtain a dig permit from LLNS prior to breaking ground.                             <ul style="list-style-type: none"> <li>Maintain a minimum distance of 10 feet or more based upon voltage, as required by OSHA 1926 minimum approach, for overhead power lines.</li> <li><b>HOLD POINT:</b> If there is a potential for contact with overhead utilities, pause and post "Caution - Overhead High Voltage Transmission Lines" signs.</li> </ul> </li> <li>Ensure all imported fill material is tested and meets LLNS's Soil Reuse Criteria before being brought onto the project site.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Disturbance to Biological Resources</li> <li>Flammable Liquids</li> <li>Hidden Utilities</li> <li>Slip / Trip / Fall</li> <li>Unguarded Utilities</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Wet grass and uneven outdoor terrain can lead to slips/trips/falls causing physical injury.</li> <li>Electrical utility lines may be buried in ground and contacted during planting, stump grinding, etc., resulting in electrical shock or arc flash burns.</li> <li>Excavation can disturb sensitive habitats, or damage historical artifacts.</li> <li>Soils must be categorized for reuse or disposal. Failure to manage soils can result in regulatory fines and permit violations.</li> <li>Workers may come across animals (frogs, salamanders, birds) or their nests. Some of these animals are protected by regulation and require special notifications and precautions.</li> <li>Thermoplastics contain flammable solvents.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Use flaggers and proper delineation during operations to direct vehicular and pedestrian traffic when it is necessary to go through work area.</li> <li>Hand dig, pothole, or use non-destructive means within 30 inches of utility to locate/support the marked utilities before using mechanized equipment.                             <ul style="list-style-type: none"> <li><b>HOLD POINT:</b> Stop work and contact supervisor if utilities not identified by line locator are uncovered or if utility line is damaged.</li> </ul> </li> <li>Keep soil piles or other materials at least 2 feet away from excavation/trench edges.</li> <li>Keep flammable liquids (i.e., paints) in an approved flammable cabinet.</li> <li>Keep ignition sources away from flammable liquids.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including:                             <ul style="list-style-type: none"> <li>Wear long-sleeved shirt and leather, or other cut-resistant gloves, when using tools or hot thermoplastics.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Implement erosion control measures as identified by LLNS, such as native seeding and burlap straw wattles.                             <ul style="list-style-type: none"> <li>Do not use materials containing plastic monofilament, nylon net, plastic net, or photodegradable netting.</li> </ul> </li> <li>Protect wildlife in excavations greater than 2 feet deep by:                             <ul style="list-style-type: none"> <li>Covering excavations completely at the end of the shift</li> <li>Covering excavations completely at the end of the shift</li> <li>Inspecting excavations or trenches for trapped animals before re-filling</li> </ul> </li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements and including:                             <ol style="list-style-type: none"> <li>For work performed at Site-200 the following is required: EP0026, Natural Resources Protection at the Livermore Site</li> <li>For work performed at Arroyo Mocho the following is required: EP0027, Natural Resources Protection at Arroyo Mocho</li> <li>For work performed at Site-300 the following is required: EP0028, Natural Resources Protection at S300; HS0096W, Valley Fever Awareness Training; DT0095W, S300 Safety Orientation Training</li> </ol> </li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>LOTO (see PMO025, 26, 27, or 28)</li> <li>Trenching or excavation at depths of 4 feet or more.</li> <li>Applying pesticides, insecticides or herbicides (other than Roundup ProMax) by State Licensed Applicators.</li> <li>Baiting, trapping and removal of wild animals.</li> <li>Removal of any existing paints.</li> <li>Applying thermoplastic markings in an enclosed area.</li> </ul> |  |  |  |   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>[PMO008] Felling Trees</li> <li>[PMO028] Join a Group LOTO</li> <li>[PMO007] Trenching and Excavating</li> </ul>  | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |  |   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul>   |  |  |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Keep tripping hazards in mind on wet grass, muddy, or uneven surfaces.</li> <li>Is the soil disposition path (i.e. landfill, re-use, etc.) defined and understood by workers?</li> </ul>   |

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|  |  |  |  | <ul style="list-style-type: none"><li>• Wear leather or cut resistant gloves for sharp-edged or rough material handling.<ul style="list-style-type: none"><li>○ Do not wear loose gloves, clothing, jewelry, or lanyards that can become caught in rotating power tools or chipper.</li></ul></li></ul> |
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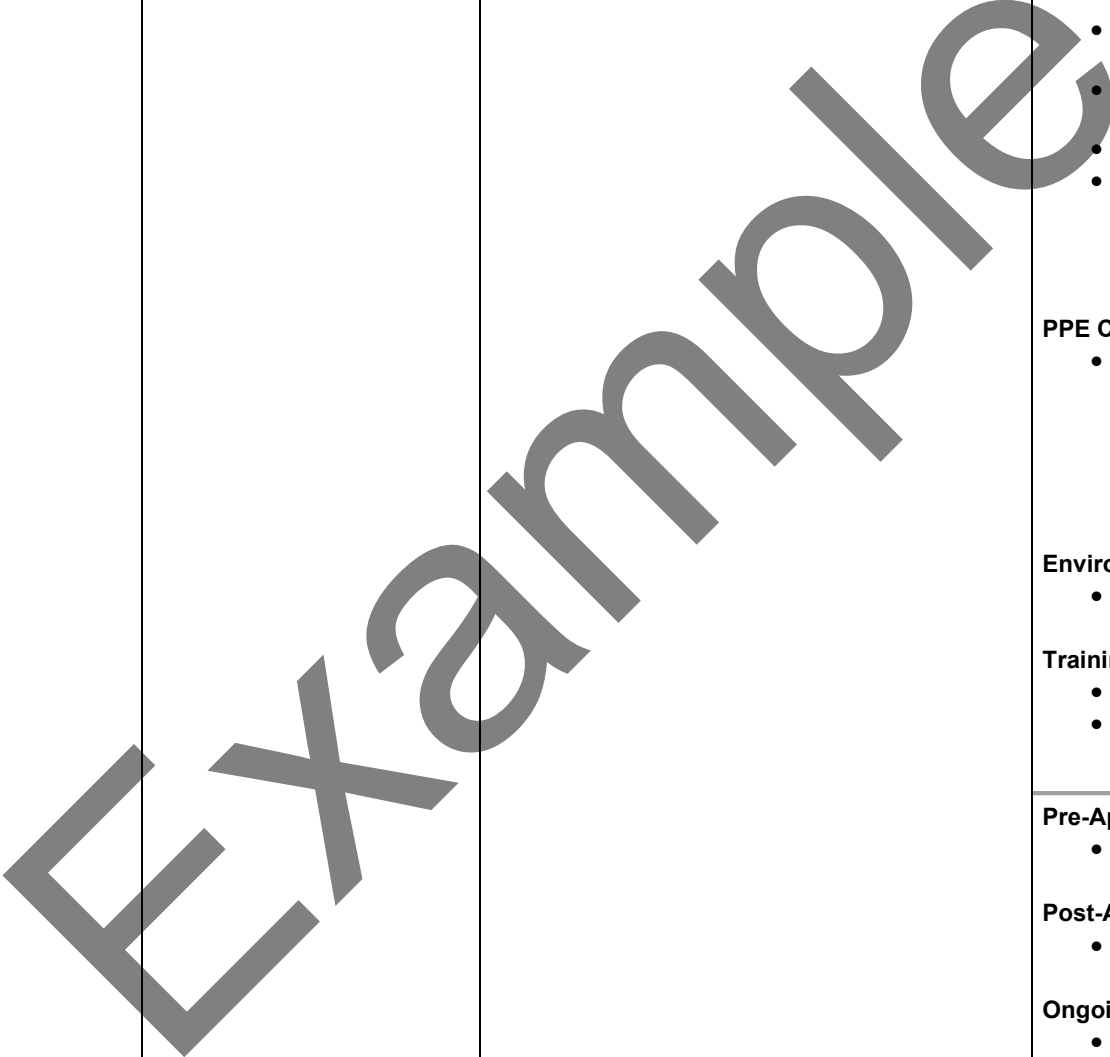
Example

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| <p><b>Task Description:</b></p> <p>Perform moderate exertion activities, as defined by ACGIH TLV, for periods of time greater than 1 hour either outdoors or indoors when temperatures are &gt;90 degrees Fahrenheit in normal work clothing.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Erect shade structure(s) and provide adequate seating for everyone on the work crew when temperature is forecasted to be 80 degrees Fahrenheit or above anytime during the day.</li> <li>Provide 2 gallons per worker of cool water when temperature exceeds 95 degrees Fahrenheit.                     <ul style="list-style-type: none"> <li>Replenish water at lunch time to ensure that there are 2-gallons of water per worker on site.</li> </ul> </li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Heat Stress</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Extended (greater than 1 hour) work done outdoors or in hot areas presents a risk of heat-related illness.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Assess temperature of outdoor or indoor environment.</li> <li>Implement work-rest regimen when temperature exceeds 95 degrees Fahrenheit; rest in shaded, cool areas.                     <ul style="list-style-type: none"> <li>From 95-100 degrees: 45 minutes work / 15 minutes rest.</li> <li>From 100-105 degrees: 30 minutes work / 30 minutes rest.</li> <li>From 105-110 degrees: 15 minutes work / 45 minutes rest.</li> </ul> </li> </ul>   |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Use of respiratory protection other than filtering face-piece respirators, aka dust masks (e.g., N95, N100).</li> <li>Work outdoors when temperatures exceed 110 degrees Fahrenheit.</li> <li>Moderate work in climates with relative humidity greater than 50%.</li> <li>Continuous roof tear-offs and maintenance and repair activities that exceed 45 minutes.</li> <li>Any abatement, D&amp;D, and/or concrete demolition work that exceeds 45 consecutive minutes.</li> <li>Use of synthetic, non-breathable PPE/clothing (e.g., Tyvek coverall).</li> <li>Performing high exertion activities, as defined by ACGIH TLV.</li> </ul> | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |  |  | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul>   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   |   |  |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>Moderate exertion work can typically include activities that involve moderate physical effort and energy expenditure including continuous or intermittent physical activities that require some level of exertion but are not extremely strenuous. Some examples may include light to moderate lifting, walking, standing, some machine operation, carrying relatively light equipment/supplies, using hand tools like shovels and hoes for short periods of time, and tasks that involve moderate physical activity without prolonged heavy labor.</li> </ul>                   |   |  |  | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Discuss the expected weather/temperatures, and signs of heat-related illnesses.</li> <li>Reinforce the need to take breaks and drink plenty of fluids. Discuss location of water and shade.</li> <li>Rotate job functions to reduce overexertion and heat exposure.</li> <li>Discuss increased water breaks and rest during temperatures exceeding 90 degrees Fahrenheit and increased break times based upon task demands and temperature.</li> <li>Discuss emergency response plan for signs/symptoms of heat-related illness, especially if work is in a remote location.</li> <li>Wear sunscreen and/or light-colored long sleeve clothing.</li> </ul> |

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| <p><b>Task Description:</b></p> <p>Run conduit, cabling, install equipment, and perform inspections below raised floors.</p>  | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Arrange for installation of guardrails if large numbers of tiles will be removed, or if the open area cannot be constantly attended.</li> <li>• Ensure LLNS CM contacts LLNS Alarms Group to arrange for impairment of gaseous fire suppression or smoke/fire detectors when removing more than a few floor tiles and performing work, other than visual inspection, under the floor.</li> <li>• Ensure LLNS CM contacts LLNS Alarms Group to arrange for impairment of fire sprinkler system if work underfloor has the potential for striking a sprinkler.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Confined Space - Non-Permit</li> <li>• Fire - Impairment of Building Fire Suppression/Alarm System</li> <li>• Wall / Floor Openings</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Removal of floor tiles to access under-floor work areas exposes a 2 to 4 foot drop, posing a fall risk, or risk of wheeled equipment falling into hole.</li> <li>• Under-floor fire suppression systems may be triggered by striking heads or disturbing dust.</li> <li>• Non-permit confined spaces have limited entry and egress, which can complicate evacuation.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Completely remove floor tiles that are over the area where work will be performed. Do not tunnel under floor tiles.</li> <li>• When tile removal and work can be completed without leaving the area:             <ul style="list-style-type: none"> <li>○ Constantly attend the opening to warn passers-by.</li> <li>○ Do not leave the area.</li> </ul> </li> <li>• If leaving area uncovered for any length of time:             <ul style="list-style-type: none"> <li>○ Barricade open floor area with guardrails.</li> <li>○ Post "Danger Open Floor" signs at access points, or outside of the immediate work area.</li> </ul> </li> <li>• Block or secure any wheeled equipment left unattended near a floor opening.</li> <li>• Replace removed floor tiles when finished with work.</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• "Tunneling" under floor tiles.</li> <li>• Perform work in permit required confined spaces.</li> <li>• Working on surfaces contaminated with beryllium, lead and asbestos.</li> </ul> |   |  |  | <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract and worksite entry requirements</li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements</li> </ul>   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• None</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• If the underfloor gaseous fire suppression system or fire sprinklers are activated, evacuate the area immediately and contact the LLNS CM.</li> </ul>   |  |  |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ None</li> </ul>  |   |  |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |
|   |   |  |  | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |
|   |   |  |  | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Discuss how to enter and exit the area.             <ul style="list-style-type: none"> <li>○ Never jump into or out of the below-floor area.</li> <li>○ Determine the optimal path based on obstacles, height of workers, and depth of raised floor.</li> <li>○ Never walk on top of tile supports after the tile is removed.</li> </ul> </li> <li>• Ensure adequate lighting is available for underfloor work areas.</li> <li>• Be careful around underfloor fire sprinklers, if present, when working in these areas.             <ul style="list-style-type: none"> <li>○ Do not hit or vibrate.</li> </ul> </li> </ul>  |

Example

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| <p><b>Task Description:</b></p> <p>Test, troubleshoot, and adjust electrical equipment/systems less than or equal to 600V. Includes removing equipment covers to expose energized conductors.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>• Verify voltage-rated PPE is within test dates.</li> <li>• Obtain arc flash PPE as required.</li> <li>• Obtain CAT III or higher measurement device and NRTL listed, voltage rated tools.</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>• Haz Energy Source - Exposed Conductors/Class 1</li> <li>• Haz Energy Source - Exposed Conductors/Class 2</li> <li>• Haz Energy Source - Exposed Conductors/Class 3</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>• Contact with or work near energized electrical components could result in electrical shock and/or arc flash burns.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>• Engineered guards/enclosures.</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>• Use engineered guards/enclosures when making adjustments with covers removed.</li> <li>• Use a CAT III or higher measurement device or tool.</li> <li>• Use NRTL listed, voltage rated tools.</li> <li>• Determine Arc Flash Boundary based upon the arc flash equipment label. <ul style="list-style-type: none"> <li>○ For panels without an arc flash label, refer to nearest upstream panel, NFPA 70E, or LLNS CM.</li> </ul> </li> <li>• Determine Limited Approach Boundary based on voltage levels in the Shock Protection Approach Boundaries table listed in NFPA 70E.</li> <li>• Verify arc flash PPE is selected based on arc flash equipment label, arc flash risk assessment, or the task hazard/risk category classification.</li> <li>• Verify shock PPE is selected based on voltage levels of potentially exposed conductors per NFPA 70E.</li> <li>• Inspect arc flash and shock PPE in the field prior each use.</li> <li>• Use barricade tape or equivalent, to prevent unauthorized personnel from entering the Arc Flash or Limited Approach Boundary, whichever is greater. <ul style="list-style-type: none"> <li>○ Don arc flash PPE before entering the Arc Flash Boundary.</li> <li>○ Don shock PPE before entering the Restricted Approach Boundary.</li> </ul> </li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>• Per worksite access requirements and LLNS-approved subcontractor submittals (e.g., safety policies, procedures, plans) and including: <ul style="list-style-type: none"> <li>○ Arc flash PPE based upon the arc flash equipment label, arc flash risk assessment or the task hazard/risk category classification.</li> <li>○ Shock PPE based on voltage levels of potentially exposed conductors per NFPA 70E.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>• Per contract requirements and including: <ul style="list-style-type: none"> <li>• 1. NFPA 70E Qualified Electrical Worker</li> </ul> </li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>• LOTO (see PMO025, 26, 27, or 28)</li> <li>• Work on energized electrical equipment that exceeds 600V.</li> <li>• Work on energized electrical systems requiring an Energized Electrical Work Permit (EEWP).</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |   |  |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>• [PMO028] Join a Group LOTO</li> </ul>   |   |   |  |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>○ Subcontractor LOTO ability restricted due to requirements within DES-2401, LLNL Lockout/Tagout (LOTO) Program (USQ), Rev. 5, effective 4/15/2021. If LOTO is needed, use PMO025, 26, or 27 for warranty work and use PMO028 for all other work.</li> </ul> |   |   |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |
|   |   |   |  | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>   |
|   |   |   |  | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>• Discuss hold point if equipment is not labeled for arc flash.</li> <li>• Check V-rated gloves for wear, pinholes, and current within inspection date.</li> <li>• Remove conductive badge lanyards, eyeglass chains, jewelry. when accessing energized equipment.</li> <li>• Inspect V-rated tools for damage prior to use, and tag/remove damaged tools.</li> </ul>   |

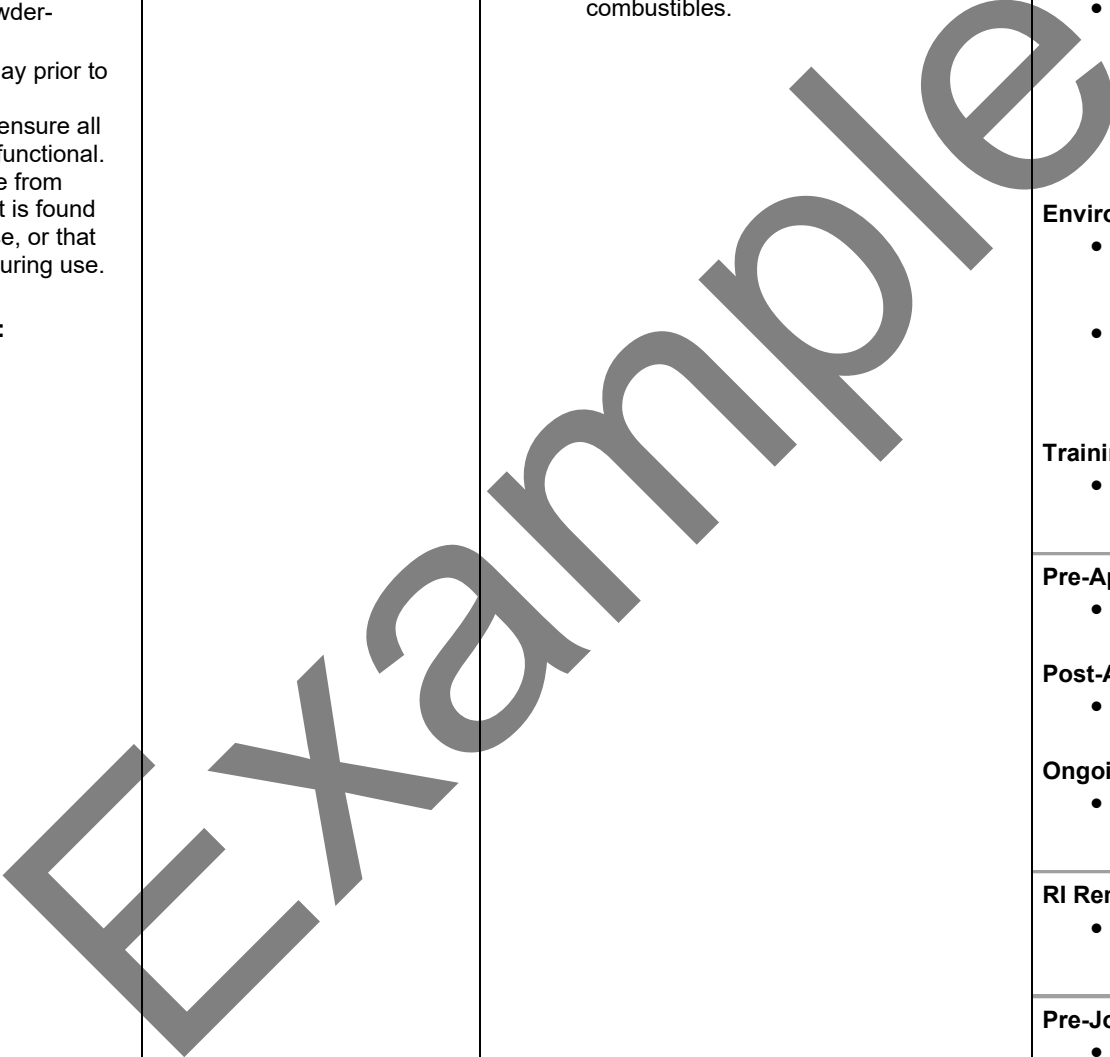


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|  |  |  |  | <ul style="list-style-type: none"><li>• Review precaution to identify when work becomes manipulative and requires an EEWP or de-energization.</li></ul> |
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Example



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| <p><b>Task Description:</b></p> <p>Use of powder and gas actuated tools.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Notify and obtain approval from LLNS CM and Security before bringing powder actuated tools on site.</li> <li>Establish a work zone, delineated with signage, around the area of usage.</li> <li>Contact the LLNS CM to obtain a LLNS hot work permit.</li> <li>Ensure LLNS approval of a penetration permit is available when penetrating walls, ceilings, or floors.</li> <li>Ensure only tool-specific trained workers may operate the powder-actuated tool.</li> <li>Inspect and test tools each day prior to use following manufacturers recommended procedure to ensure all safeguards are present and functional. <ul style="list-style-type: none"> <li>Immediately remove from service any tool that is found defective prior to use, or that develops a defect during use.</li> </ul> </li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Fire - Heat Ignition Source</li> <li>Hidden Utilities</li> <li>Noise</li> <li>Powder-Actuated Tools</li> <li>Recycling - Non-Regulated Metals</li> <li>Silica</li> <li>Waste - Hazardous</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Driving fasteners into timber or metal can generate noise greater than 85 dB, which can damage hearing.</li> <li>Driving fasteners into concrete can lead to airborne crystalline silica. Inhalation can lead to lung cancer and/or silicosis.</li> <li>Hidden utilities (electrical wiring, piping) may be struck when penetrating facility surfaces.</li> <li>Heat from fasteners may cause burns or ignite nearby flammables or combustibles.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Use powder/gas actuated tools, fasteners, and charges according to manufacturer(s) instructions.</li> <li>Load powder/gas actuated tools just prior to intended operation.</li> <li>Do not leave powder/gas actuated tools unattended.</li> <li>Properly store powder/gas actuated tools, fasteners, and charges when not in use.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including: <ul style="list-style-type: none"> <li>Wear double hearing protection when using powder/gas actuated devices.</li> <li>When electrical utilities are known, or suspected, within the area(s) of penetration: <ul style="list-style-type: none"> <li>Wear voltage rated (EH) safety shoes.</li> <li>Wear voltage-rated (0) gloves with leather protectors.</li> </ul> </li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>Collect unused, mis-fired, and dud-powder loads (casings) in a manufacture-recommended container. <ul style="list-style-type: none"> <li>Turn over to LLNS for appropriate disposal.</li> </ul> </li> <li>Collect used, fired powder loads (casings) and empty gas cylinders in a manufacture-recommended container. <ul style="list-style-type: none"> <li>Turn over to LLNS for management as scrap metal.</li> </ul> </li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Shooting directly into concrete without a substrate (e.g., frame track, metal stud).</li> <li>Using powder/gas actuated tools in areas where an existing sprinkler system is impaired.</li> <li>Use of powder/gas actuated tools in flammable or explosive environments.</li> </ul> |  |   |  |  |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>  |  |   |  |  |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>   | <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |  |  |
|  |  |   |  | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
|  |  |   |  | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
|  |  |   |  | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Avoid driving fasteners into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.</li> <li>Avoid driving fasteners into a spalled area caused by an unsatisfactory fastening.</li> </ul>   |



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| <p><b>Task Description:</b></p> <p>Build, dismantle, modify, and inspect scaffold systems, work platforms, and stages. Includes working at unguarded elevated work locations.</p>   | <p><b>Prerequisites:</b></p> <ul style="list-style-type: none"> <li>Barricade work area with DANGER/CAUTION/CONSTRUCTION tape, or otherwise control access to the area around the base of the scaffold.</li> <li>Inspect job site for soil/floor conditions, utility lines, crane bus bars, and other obstructions.</li> <li>Inspect scaffold material, fall protection equipment, and tools to ensure they are in good condition.             <ul style="list-style-type: none"> <li>Tag and remove from service any damaged or defective fall protection equipment, tools, or scaffold components.</li> </ul> </li> </ul> <p><b>First-Aid &amp; Emergency Information:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> | <p><b>Hazard ID:</b></p> <ul style="list-style-type: none"> <li>Falling Objects</li> <li>Noise</li> <li>Overhead Utilities</li> <li>Scaffolding</li> </ul> | <p><b>Hazards &amp; Environments Aspects:</b></p> <ul style="list-style-type: none"> <li>Work at heights of greater than 6 feet and/or work on ladders may result in falls that could lead to serious injury or death.</li> <li>Scaffold collapse or planking failure could lead to serious injury or death.</li> <li>Falling tools or debris could lead to serious injury or death.</li> <li>Working too close to energized lines could lead to shock or arc flash and burns.</li> </ul> | <p><b>Engineering Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Administrative Controls:</b></p> <ul style="list-style-type: none"> <li>Erect, move, dismantle, or alter scaffolding only under the supervision and direction of a competent person.</li> <li>Ensure scaffold sits evenly on a firm ground surface.             <ul style="list-style-type: none"> <li>Confirm lock bars are engaged.</li> </ul> </li> <li>Install guardrails and decking as soon as possible when erecting scaffolding, as each level is assembled.             <ul style="list-style-type: none"> <li>When disassembling scaffolding, remove guardrails just prior to disassembly of each level or section.</li> </ul> </li> <li>Do not exceed scaffold load rating.</li> </ul> <p><b>PPE Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract and worksite entry requirements, and including:             <ul style="list-style-type: none"> <li>Use fall protection in locations 10 feet or greater off the ground that are not protected by a guardrail system when erecting or dismantling scaffolding.</li> </ul> </li> </ul> <p><b>Environmental / Waste Controls:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Training Controls:</b></p> <ul style="list-style-type: none"> <li>Per contract requirements</li> </ul> |
| <p><b>Boundary Conditions, this task does <u>not</u> include:</b></p> <ul style="list-style-type: none"> <li>Construction of suspended, shore, or lean-to scaffold systems.</li> <li>Working within the limited approach distance (10 feet) of energized electrical lines/equipment.</li> <li>Using tools to penetrate facility surfaces (walls, ceilings, or floors).</li> </ul> |   |  |   | <p><b>Pre-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Post-Approval Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><b>Ongoing Actions:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
| <p><b>Related PATs:</b></p> <p>The following related PATs contain scope, hazards, and controls that may be needed or are commonly associated with this task:</p> <ul style="list-style-type: none"> <li>None</li> </ul>   |   |  |   | <p><b>RI Reminders:</b></p> <ul style="list-style-type: none"> <li>None</li> </ul>   |
| <p><b>Task Notes:</b></p> <p><i>This is used to document assumptions made during analysis or other technical details.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>  |   |  |   | <p><b>Pre-Job Talking Points:</b></p> <ul style="list-style-type: none"> <li>Ensure scaffolding components are compatible and from same manufacturer.</li> <li>Prevent potential fall hazards for scaffold users at any height 6 feet or above.</li> <li>Barricade area around the base of the scaffold to protect pedestrians from falling object hazards.</li> <li>When possible, tether tools to keep them from falling on people below.</li> <li>Add decking and handrails as soon as possible during the construction process to minimize the fall hazard potential.</li> <li>Review weather conditions and prepare as necessary for heat, cold, rain, wind, or other weather considerations.</li> <li>Lower/Raise materials by hand, rope, etc. Avoid dropping items to lower levels.             <ul style="list-style-type: none"> <li>Avoid dropping items to lower levels.</li> </ul> </li> </ul>  |

Example