

CRAFT SPECIFIC JOB HAZARD ANALYSIS (CHA)

Construction (Building Trades) Millwright

Rev 3, 12/02/2013

Work Scope Description: This hazard analysis covers a Construction Millwright performing general craft specific work activities. This hazard analysis is used in conjunction with the General Industrial Hazards Analysis document, and does not cover the environment in which these activities may be performed.

Characteristic Duties and Responsibilities: The tasks listed are examples of the variety and general nature of duties performed by a Construction Millwright. The list is descriptive only and should be used for no other purpose. It is not intended that any position include every duty listed nor is it intended that related duties cannot be required.

Fully qualified journeyman capable of making all types of repairs. Lay out, fabrication, assemble, and install machinery and equipment. Test, diagnose, repair and maintain machinery and equipment. Operate power-driven tools, such as drill presses, hacksaws, and related types of

Comments: This hazard analysis covers general work activities that the worker performs routinely with limited work instructions. The hazards and controls listed in this hazard analysis are those that the worker is expected to “recognize and mitigate” based on their training and experience.

This hazard analysis is to be used in conjunction with PRC-WKM-PRO-079, Job Hazard Analysis, and Appendix B. After reviewing the work scope, location, the hazards involved, an evaluation is made to determine if this hazard analysis adequately bounds the work activity and can be considered skill-based.

Position Hazards and Controls

Hazards	Controls
<p>Falls from elevations – ladders</p> <p>Note: Work from ladders where worker’s feet are above 6 feet requires the completion of a Fall Protection Work Permit (FPWP). This does not apply to situations where the ladder is used solely for access purposes (ascending and/or descending).</p>	<p>Use only Safety approved ladders Spreaders on step-ladder are firmly locked/fully engaged as ‘open’ Maintain the three-point contact rule when ascending and/or descending Keep area around base of ladder maintained clear (housekeeping). Position ladder (set-up) to prevent leaning or over-reaching (in relation to work zone), work within the plane of the ladder. Select ladder of proper style, size, capacity (duty rating), and composition</p>

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	<p>Conduct pre-use inspection- verify annual inspection is current and ladder is in good condition</p> <p>Identify any overhead electrical power or other overhead hazards</p> <p>Keep steps/platform free of tools or materials.</p> <p>Straight or extension ladders:</p> <ul style="list-style-type: none">• Minimum 3 feet ladder extension above intended landing area• Securely tie off top of ladder and stabilize base• Set ladder at 4-to-1 angle <p>Rolling ladders:</p> <ul style="list-style-type: none">• Casters/brakes on the ladder are fully locked before use.• Ladder shall not be moved while an employee is positioned on a step or the platform.• Platform is equipped with a guardrail.• Use handrails for ascending and descending.• Use only on level surfaces NO modifications / alterations shall be made to equipment without written permission from the manufacturer. <p>Verify adequacy of supporting foundation for ladder setup.</p> <p>Wear adequate footwear (substantial with defined heel) to prevent slipping and to maintain balance/stability. (Wear rubber overshoes when using a ladder while wearing anti-contamination clothing)</p> <p>Use hand lines or tool belts for material handling (keep both hands free).</p> <p>Control any impalement hazards.</p> <p>Use three point contact when using ladder during ascending and descending</p>
Scaffolding Safety	<p>All scaffold users must be trained to recognize hazards associated with the use of the scaffold being used and the procedures to control or minimize the hazards (examples of hazards ...Electrical, falls, falling objects, proper handling of materials etc.)</p> <p>Read scaffold tags prior to performing any work on scaffolds.</p>

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	<p>Assure Tags are current</p> <p>Verify scaffold has been inspected shiftly by a competent person prior to use.</p> <p>NO modifications / alterations shall be made to scaffold equipment</p> <p>Use tether ropes/cords to transfer tools and equipment</p> <p>Ensure workers below are protected or removed from the area</p> <p>Falls Hazard Recognition training is completed</p> <p>Scaffold Users training is completed.</p> <p>Understand scaffold MIL prior to work/loading</p> <p>During erection/dismantle do not loiter in immediate work area</p>
<p>Fall from elevations –Aerial lifts, raised platforms, high shelves, etc.</p>	<p>Only trained and qualified personnel shall operate elevated work platforms and aerial lifts</p> <p>Aerial Lift training is completed</p> <p>Fall Hazard Recognition training is required for all operators and users</p> <p>Follow manufactures instructions for Aerial lifts</p> <p>NO modifications / alterations shall be made to equipment without written permission from the manufacturer</p> <p>Equipment shall be operated on firm level surface (unless specifically designed for rugged terrain)</p> <p>DO NOT exceed the rated load capacity of the equipment</p> <p>Lifts should not be moved while in elevated positions (should moving in elevated positions be required a spotter shall be used)</p> <p>Aerial lifts and elevated work platforms shall not be operated within 15 feet of energized power lines</p> <p>Provide Spotters or barricade when operating in congested areas (to prevent personnel from being caught between / or by rotating equipment and prevent</p>

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	<p>equipment damage(s)</p> <p>Access / egress shall be in accordance with manufactures design (ladder ways, gated access etc.)</p> <p>DO NOT use toe-boards, handrails or other means to gain additional height.</p> <p>Fall protection (Personal Fall Restraint System) MUST be used when using Aerial Lifts and Scissor Lifts (when and as specified by the employer or manufacturer)</p> <p>DO NOT tie off to adjacent poles, structures, or equipment while working from an elevated platform. Use identified equipment attachment points, if available.</p> <p>Do NOT use elevating work platforms to hoist materials that require hoist and rigging equipment</p>
Falls into trenches or other openings	<p>Do not enter an excavation/trench prior to evaluation by Project Safety and/or Industrial Hygiene</p> <p>Excavations/trenches shall be inspected by the "Competent Person" daily prior to work activities.</p> <p>Use identified means of egress provided in trenches</p> <p>Cover floor holes of 2 inches (5.1 cm) or greater</p> <p>Observe "walk-path", looking for potential trip hazards and uneven walking/working surfaces.</p>
Hazards from falling objects	<p>Identify any overhead hazards</p> <p>Check work area for loose or unstable materials.</p> <p>Wear head protection</p> <p>Keep objects from the edge such that they cannot go over the edge if accidentally displaced.</p> <p>Ensure/request toe boards are in place to prevent objects from falling from higher levels.</p> <p>Secure overhead objects</p>

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	<p>Secure tools when not using them</p> <ul style="list-style-type: none"> Do not place corded equipment in elevated position unless cord is properly routed and equipment is secured/controlled <p>Avoid working directly underneath others or under suspended loads.</p> <p>Tether small objects</p> <p>Set up barricade around work area to restrict unauthorized personnel</p>
<p>Hazards from struck by and struck against objects</p> <p>(Examples: doors, heavy equipment operations, motor vehicles, chutes, adjacent activities /equipment, unbalanced loads, overhead obstructions, and objects carried by others.)</p>	<p>Identify any overhead hazards</p> <p>Check work area for loose or unstable materials</p> <p>Wear head and foot protection</p> <p>Avoid stacking materials which could shift and tip over easily, stack and store objects properly</p> <p>Avoid working directly underneath others or under suspended loads</p> <p>Setup barricades around the work area to restrict unauthorized personnel.</p> <ul style="list-style-type: none"> Consider adjacent pedestrians/work (above, below, or next to) <p>Don't leave tools or loose parts on window ledges, shelves, cranes, or working platforms.</p> <p>Do not lean long/tall objects against walls, racks, posts, or equipment.</p> <p>Mark low beams, pipes, and ceilings with proper <i>Low Clearance</i> – Caution signs</p> <p>Identify and consider overhead objects in the work area when working with long, lengthy materials that have the potential to strike overhead/adjacent lighting, utilities, or personnel.</p>
<p>Hazardous energy sources (includes lockout/tag out)</p>	<p>Review the energy source(s).</p> <p>Adhere to the company hazardous energy control program.</p> <p>Be aware of “Look-Alike-Equipment” – equipment that is similar in size, shape, and construction to the equipment that has been identified for the activity</p>

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<p>Machine guarding issues</p> <p>Consideration for guarding measures should be given to any machine/device with exposure to nip/pinch points, rotating components, transverse motion, cutting surfaces, shearing action, opposing rollers, bending action, punching or power press motions.</p> <p>Some items to be considered include: V-Belts, Cranks, Fly Wheels, Connecting Rods, Tail Rods, Extension Rod Pistons, Shafting, Projected Shaft Ends, Key Ways, Projected Keys of Set Screws, Belt, Rope and Chain Drives, Gear, Sprocket and Anc Chains, Collars, Couplings, and Pulleys.</p>	<p>Ensure manufacturer-installed or recommended guards are in place and operational.</p> <p>Do not remove or modify guards</p> <p>Remove or properly control loose clothing, gloves, jewelry, badge lanyards, and long hair.</p> <p>Block parts against motion</p> <p>Keep hand, finger, and body away from moving parts</p> <p>Apply Lock out/Tag out</p> <p>Wear additional PPE as specified by OS/IH</p> <p>Ensure barricades are established and with proper setback distances for guarded tools that generate high velocities/rpm</p> <ul style="list-style-type: none">• Ensure tool attachments (saw blades, grinding/sanding discs, etc.) match the tool RPM rating and are inspected prior to use <p>Ensure pneumatic tools have safety connections in-place</p> <p>Ensure hose(s) are rated for source pressures</p>
<p>Use and/or handling of hazardous material chemicals/chemical products</p> <p>Examples: Oils, grease, glues, solvents, spraying, scraping, sanding, or mixing of hazardous materials.</p> <p>(Does not include asbestos, beryllium, hexavalent chromium, carcinogens, and explosive or shock sensitive chemicals)</p>	<p>Keep MSDS/SDS (GHS) and manufacturer's instructions for use available</p> <p>Ensure MSDS/SDS is current and approved for work scope</p> <p>Verify Product on hand before ordering new.</p> <p>Maintain proper storage of chemicals.</p> <p>ALL flammable / combustible materials shall be stored in their original (approved) container(s) and should have original, legible hazard warning labels. (Where hazard warning labels have become unreadable, new labels shall be attached to the container)</p> <p>If transferring use approved safety containers. Flammable / Combustible materials shall be stored in FLAMMABLE storage cabinets when not in use.</p>

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	<p>When using or handling chemicals in radiological areas minimize generation of mixed wastes.</p> <p>Disposition used or unused chemicals per approved methods when job is complete. (Contact environmental compliance if in doubt)</p> <p>Verify the Company Hazard Label is on secondary containers containing chemicals.</p> <p>Smoking is not permitted within 35 feet of flammable materials</p> <p>Wear proper PPE as specified by MSDS/SDS/OS&IH</p>
<p>Dust and Toxic fumes</p> <p>Examples: Chemical products, exhaust fumes (Wood/steel coatings/finishes, stainless steel, carcinogen materials), soldering (lead, fluoride flux) ,etc.</p>	<p>Keep MSDS/SDS for chemical products.</p> <p>Review MSDS/SDS with IH when appropriate</p> <p>Wear proper PPE as specified by MSDS/SDS/OS&IH</p> <p>Housekeeping to reduce dust</p> <p>"Dust Goggles / Glasses" with foam edge protection should be worn during dust creating activities</p> <p>Assure cutting material fumes/exhaust does not create a hazard.</p>
<p>Significant noise sources > 85db</p>	<p>ALL personnel are required to use hearing protection, ear plugs and/or ear muffs, in areas posted as hearing protection areas and where employees are subject to noise levels equal to or greater than 85dBA.(Ex. grinding, sanding, abrasive cutting, equipment operations, etc.)</p> <p>Contact Project Safety / Industrial Hygiene professional if protection requirement is in question.</p> <p>Adhere to requirements of posted high noise areas</p>
<p>Sharp Objects</p>	<p>Use proper tools for the task.</p> <p>Use gloves suited for the task (cut resistant gloves, etc.)</p> <p>Use "deliberate speed" – work pace adjusted/appropriate for task</p>

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	<p>Keep your eyes and your mind focused on the task.</p> <p>Do not use your hands or fingers to test for sharp objects.</p> <p>Never try cutting something by pulling the blade towards you.</p> <p>Keep the location of all body parts in mind while handling or near sharp objects.</p> <p>Read and follow manufacturer safety recommendations for portable tools and sharp equipment.</p> <p>When there is the potential for injury to arms or legs, etc. leather protection (or other cut protection materials should be considered):</p> <ul style="list-style-type: none"> • As a minimum long sleeved shirts and full length pants shall be worn. <p>When disposing of sharp objects, wrap, tape, et.c. the object to protect the “handler” of the waste materials.</p> <p>Place protective caps, sheaths or barriers on sharp objects when not in use</p>
<p>Awkward posture</p>	<p>Limit working with the hand(s) above the head, or the elbow(s) above the shoulder.</p> <p>Limit working with the neck or back bent more than 30 degrees (without support and without the ability to vary posture).</p> <p>Limit squatting without a break.</p> <p>Limit kneeling without a break.</p> <p>Use a work bench to elevate or lower the working surface.</p> <p>Use an aerial lift to position the worker closer to the working surface (if qualified).</p>
<p>High-hand force</p>	<p>Limit pinching of an unsupported object(s).</p> <p>Limit gripping an unsupported object(s).</p>
<p>Highly repetitive motion</p>	<p>Limit repeating the same motion with the neck, shoulders, elbows, wrists, or hands (excluding keying activities) with little or no variation.</p> <p>Limit intensive keying to no more than 4 hours total per day.</p>

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<p>Repeated impact</p>	<p>Do not use hand (heel/base of palm), body parts, or knee as a hammer.</p> <p>Limit lifting objects weighing more than 25 pounds above the shoulders, below the knees, or at arm's length.</p>
<p>Moderate to high hand-arm vibration</p>	<p>Limit use of impact wrenches, chain saws, percussive tools (jack hammers, scalars, riveting or chipping hammers) or other hand tools that typically have high vibration levels.</p> <p>Limit use of grinders, sanders, jig saws or other hand tools that typically have moderate vibration levels.</p> <p>Use anti-vibration gloves.</p>
<p>Static positioning -"same position" (Working in the same place with limited mobility includes such activities as standing, pulling and twisting motions)</p>	<p>Employees are encouraged to stretch prior and during these activities.</p> <p>Employees are encouraged to take breaks when needed</p> <p>Employees are encouraged to rotate personnel when performing these activities.</p>
<p>Heavy, frequent, or awkward lifting</p>	<p>If you are prone to injury from bending, kneeling, or lifting, get help or use tools that minimize risk.</p> <p>Use proper lifting techniques (knees bent, back straight, load close to body)</p> <p>Do not attempt to singularly lift objects that exceed physical capabilities or are greater than 55 pounds.</p> <p>Limit lifting objects weighing more than 25 pounds above the shoulders, below the knees, or at arm's length.</p> <p>Repetitive lifting should be shared with coworkers.</p> <p>For repetitive tasks take frequent breaks and stretch verses longer breaks less often.</p> <p>Use a lifting device (e.g., hand truck, Tommy lift, chain fall, pallet jack, or shoulder sling).</p> <p>Use special handles designed to grasp or be attached to the object to be lifted. (e.g., hay hooks, ice clamps, or temporary handles).</p>
<p>Frequent/repetitive kneeling</p>	<p>Limit duration of repetitive motion.</p>

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	<p>If you are prone to injury from bending, kneeling, or lifting, get help or use tools that minimize risk.</p> <p>Knee pads.</p>
<p>Crawling Motions (i.e. attic, crawl spaces, low clearance areas)</p>	<p>Limit duration of repetitive motion.</p> <p>Limit distance crawling.</p> <p>Wear head protection for overhead Obstructions attics, crawls space, etc.</p> <p>Knee pads.</p> <p>Hand Protection - Appropriate work glove.</p>
<p>Climbing Motions (i.e. stairs, ladders ramps)</p>	<p>Inspect stairs, ladders, and ramps prior to use</p> <p>Check that railings seem stable prior to use</p> <p>Use handrails</p> <p>Keep your hands free whenever possible</p> <p>Minimize turning while going up or down stairs.</p> <p>Use lift equipment (i.e. elevator, aerial/scissor lifts) to minimize climbing and carrying objects</p> <p>Utilize proper footwear.</p> <p>Watch footing to avoid hazards</p> <p>Be on the lookout for tripping hazards</p>
<p>Potential animal, or snake bites</p>	<p>Be alert to possible animals and snakes.</p> <p>Be mindful of dark damp areas that may harbor insects and animals.</p> <p>Use due caution to shake out all clothing prior to donning.</p> <p>IF SNAKES ARE FOUND: AVOID THEM AND CALL PEST CONTROL @ 376-PEST (376-7378)</p>
<p>Poor lighting conditions</p>	<p>Use temporary lighting.</p>

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	<p>Inspect lighting equipment for proper guards, electrical cords, plugs, and function.</p> <p>ALL work performed during NON-DAYLIGHT hours or in dimly lit areas shall have ample auxiliary lighting.</p> <p>Contact Project Safety / Industrial Hygiene for further evaluations as needed.</p>
<p>Pinch Points</p> <p>Pinch points are present in any number of situations and equipment operations. Some examples are: hand, stationary, electronic, air or gas powered tools, cutting sawing, sanding and grinding tools.</p>	<p>Keep body part away from moving parts (blades, presses, belts, rollers, and bits.</p> <p>Be aware of fingers, or areas where any portion of the body could become caught and/or pinched in these areas</p> <p>Avoid distractions.</p> <p>Be aware and stay clear of rotating equipment.</p> <p>Ensure manufacturer-installed or recommended guards are in place and operational.</p> <p>Control loose clothing, gloves, jewelry, lanyards, and long hair.</p> <p>Use caution when working around heavy equipment.</p> <p>Do not position yourself in crushing or pinch point areas.</p> <p>Do not cross in front of equipment, until eye contact is made with the operator and intention is verified.</p> <p>A 360 degree walk-around is required when moving/relocating equipment</p>
<p>Flying objects</p> <p>Flying objects can be created by wind or use of tools and equipment. Some examples are: hand, stationary, electronic, air or gas powered tools, cutting sawing, sanding and grinding tools.</p>	<p>Keep body part away from moving parts (blades, presses, belts, rollers, and bits.</p> <p>Be aware of fingers, or areas where any portion of the body could become caught and/or pinched in these areas</p> <p>Avoid distractions.</p> <p>Be aware and stay clear of rotating equipment.</p> <p>Ensure manufacturer-installed or recommended guards are in place and operational.</p> <p>Control loose clothing, gloves, jewelry, lanyards, and long hair.</p>

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<p>Hot Work (Includes electric arc, oxy-fuel gas welding/cutting operations, heavy grinding, brazing, light grinding, tig or mig welding, or similar activities)</p> <p>Note: Hexavalent Chromium can be produced when welding, grinding, torch-cutting, metal buffing or metal polishing on stainless steel, chromium-containing alloy steel or chromium-containing non-ferrous alloys. It is formed when chromium-containing materials are vaporized especially when plasma arc cutting or gouging, SMAW “stick” or FCAW “flux core” welding. Chromium can be in the base metal, the welding rod or the wire. Zinc from galvanized materials. Always check the MSDS/SDS for product contents before welding.</p>	<p>Check the MSDS/SDS for product contents before welding.</p> <p>Have Industrial Hygiene evaluate the process and the properties of the materials being used, including welding rod and base and filler material, and establish appropriate controls to protect workers from carcinogenic agents.</p> <p>Assign a designated trained fire watch.</p> <p>Fire retardant personal protective equipment</p> <p>Wear proper PPE for the task (previously IH approved - i.e. leather gloves, protective coveralls, leathers or FR rated clothing, protective goggles, respirator, and hoods.)</p> <p>Remove the paint/coating at least 4 inches (10.2 cm) in every direction from the hot work.</p> <ul style="list-style-type: none"> • When grinding wear face shield and safety glasses. • Ensure lead check of paint prior to removal <p>Inspect all leads, tools and equipment prior to use.</p> <p>Physically ensure that the grounding lead has a good connection before you start welding.</p> <p>Hot Work Permit - Follow applicable Hot Work Permit issued for work to be performed and have permit available for review</p> <p>All flammables / combustible material shall be kept clear of hot work areas.</p> <p>Perform housekeeping regularly to prevent the build-up of flammables / combustibles (cardboard boxes, paper, etc.).</p>

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	<p>Utilize “flash-shields” when other employees or visitors may be exposed to grinding activities or ultra-violet rays (from welding arc).</p> <p>Ensure adequate ventilation / local exhaust is in use for welding, cutting, and burning operations. Ensure cross ventilation does not interfere with capture of local exhaust.</p> <p>When possible, position work so that worker is upwind of welding fumes.</p>
<p>Electrical shock hazard</p>	<p>Nonconductive portable ladder.</p> <p>Visually inspect and ensure all electrical equipment is in good working order.</p> <p>Use ground-fault circuit interrupters (GFCIs) on all 120-vlt, single-phase, 15- and 20-ampere receptacles, or have an assured equipment grounding conductor program (AEGCP).</p> <p>Use only equipment approved to meet NRTL standards.</p> <p>Do not modify cords or use them incorrectly.</p> <p>Use only cords, connection devices, and fittings that are equipped with strain relief.</p> <p>Use factory assembled cord sets and only extension cords that are 3-wire type.</p> <p>Look for overhead power lines and buried power line cables.</p> <p>Stay at least 10 feet away from overhead power lines and assume they are energized.</p> <p>Avoid standing in wet areas when using portable electric tools.</p>
<p>Outside Temperature – Normal ranges</p>	<p>During seasonal temperatures clothing should be appropriate for the work environment.</p> <p>During winter months dress in layers, protect exposed skin and take warming breaks as needed.</p> <p>During summer months dress appropriately for the work environment and work activity have water on hand.</p> <p>Thermal stress conditions (heat or cold stress/hypothermia) contact Industrial Hygiene as additional PPE that may be required.</p> <p>For ALL temperature extremes be aware of your surroundings and watch co-</p>

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	workers for temperature induced abnormalities. Stay hydrated.
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