

## **Blacksmith Task List 2017**

### **Heat-Treat and Fabrication of Metal**

1. Heats metal by manually placing it in a furnace and then when heated, places it on an anvil and uses a hammer such as a ball peen hammer or sledge hammer in order to shape metal into a desired configuration such as a punch, pavement cutter, cold chisel, or pinch bar.
2. Tempers and hardens metal by heating and cooling the surface of the metal rapidly or slowly using high temperature and water, oil or air in order to increase the metals toughness and reduce excess hardness.
3. Sharpens hand and machine tools such as picks, punches, cold chisels, pinch bars, crowbars, hammers, axes, star drills, and caulking tools using machinery, tools, and equipment such as grinding stones, hammers, bench grinders, and belt dressings in order to create or refine a sharp edge on the tool.
4. Cuts and grinds metal using tools, equipment, and machinery including saws, bench grinders, portable angle grinders, bench mounted grinders, and shears by using various methods such as oxygen acetylene cutting, carbon arc cutting, and plasma arc cutting in order to replace and/or shape metals into desired configurations such as dipper teeth, scraper blades, hooks, U-bolts, brackets, pipe clamps, and metal ladders.
5. Brazes and solders metal using a torch and flux to melt and flow a filler metal such as copper, silver, brass, or bronze into the gap and over the base of two or more closely-fitted pieces of metal in order to join the metal together to construct or repair tools, equipment, and machinery.
6. Straightens steel vault covers, ramps, and structural steel members including i-beams using methods such as hitting it with a sledge hammer, placing it in a hydraulic press, or using an oxygen acetylene flame to heat the metal in order to fix damaged objects.
7. Threads bolts and pipes using a manual or power operated threading machine in order to fabricate tools, parts, equipment, and machinery such as lifting handles, restraint rods, and embed studs.
8. Welds pieces of metal together by applying heat directly to the base and filler metal using a torch in order to achieve desired configurations.
9. Reads hard-copy and electronic sketches and blueprints of equipment, machinery parts, and tools requiring repair or construction in order to obtain information such as the type, quantity, and size of materials necessary to complete the work.
10. Draws sketches of proposed work for approval by customers or supervisor after receiving a verbal or written request in order to provide a visual representation to ensure that what will be produced is consistent with the request and will meet the customers' needs.

## **Safety**

11. Adheres to department and Cal-OSHA safety rules and regulations by wearing appropriate clothing and proper personal protective equipment such as a face shield, steel toe boots, safety glasses, ear plugs, leather gloves, and leather apron when working with and around hot metal, machinery, and power tools in order to ensure safety of oneself by avoiding hazards such as pinch points, burn points, and projected materials.
12. Attends department mandated safety meetings and other training sessions covering topics such as fall protection, sexual harassment, fraud, and operation of department equipment such as forklifts and cranes in order to stay informed and perform work in accordance with current department policies and procedures and Cal-OSHA rules and regulations.
13. Inspects work area and equipment for safety hazards such as uneven or wet floor surfaces, clutter or obstructions in the walkway, or equipment that is damaged or doesn't have safety guards in place and takes necessary corrective measures to address the issue by labeling the equipment as out of operation, clearing the work area, and cleaning spills in order to ensure safety of oneself and others.

## **Communication**

14. Communicates with vendors, craft personnel, supervisors, and customers through telephone, e-mail or direct contact in order to coordinate work, request materials, supplies, and equipment, and obtain or provide information regarding work progress, project timeline, costs, work assignments, metal work methods, and limitations involved in repair procedures.

## **Other Related Tasks**

15. Trains apprentices, helpers, and other craft workers, such as Welders and Structural Steel Fabricators on-the-job by explaining and demonstrating work procedures including the appropriate equipment, tools, and machinery necessary to carry out activities specific to the work of a Blacksmith, and then observing the employee to determine if they perform the work in a safe and proper manner or if correction or additional training is needed.
16. Reviews projects assigned to apprentices and helpers including Mechanical Helpers and Apprentice - Metal Trades by measuring, testing, and visually inspecting their work in order to determine if they complied with instructions, blueprints, and sketches and used the appropriate materials, tools, and techniques or if revisions or additional work is needed complete the project.