



smart stewardship

STANDARD OPERATING GUIDELINE (SOG) 4-2013–HOT WORK

I PURPOSE

The intent of this guideline is to define the rules for performing hot work within state owned buildings in the Capitol Complex to eliminate and/or minimize the possibility of injury or property damage due to improper management of open flame/high temperature processes. This guideline covers the following hot work processes: Welding and allied processes, heat treating, grinding, thawing pipes, powder-driven fasteners, hot riveting, and similar applications producing a spark, flame or heat.

II DEFINITIONS

Approved: Acceptable to the authority having jurisdiction.

Authority Having Jurisdiction (AHJ): The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

Hot Work: Any work involving burning, welding, or similar operations that is capable of initiating fires or explosions.

Permit: A document issued by the authority having jurisdiction for the purpose of authorizing performance of a specified activity.

Permit Authorizing Individual (PAI): The individual designated by management to authorize hot work. The PAI can not be the hot work operator.

Welding and Allied Processes: Those processes such as arc welding, oxy-fuel gas welding, open-flame soldering, brazing, thermal spraying, oxygen cutting, and arc cutting.

Permissible Areas: Hot work shall be allowed only in areas that are or have been made fire safe. Hot work shall be performed in either designated areas or permit-required areas.

Designated Areas: A designated area shall be a specific area designed or approved for such work, such as a maintenance shop or a detached outside location that is of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas.

Permit-Required Area: A permit-required area shall be an area that is made fire safe by removing or protecting combustibles from ignition sources.

III PROCEDURES

For any hot work performed in a location that is not designated as a hot work area, a hot work permit must be issued by a PAI within the General Services Division (GSD) prior to commencement of work. Once notified, the PAI is responsible for checking the area for fire-safe working conditions. The PAI is also responsible for making sure that stand-by-fire extinguishers are present, assigning a fire watch and making certain that all personnel in the area are properly warned of the work to be done. The PAI will then issue a hot work permit.

The PAI will identify on the hot work permit:

- The location and nature of the hot work
- The name of the person (employee or contractor) doing the job
- The expiration date and time
- The emergency notification procedure

The employee or contractor must hang the permit in a visible place in the work area. The permit will be kept there until the job is completed, including the time allotted for the fire watch.

A fire extinguisher, and if available, a water hose must be kept in the immediate area while work is performed. If the Hot work will be done in a confined space, all confined space entry procedures must be followed. The completed permit must be turned in at the end of the job to the PAI.

IV. FIRE PROTECTION SYSTEMS

No employee or contractor will disable any fire protections systems for hot work. The GSD-PAI will be responsible for these procedures. When a PAI disables a fire protection system for hot work, they will notify GSD staff, Security and those working in the area. If the fire protection system is required to be out of service for longer than 24-hours, the PAI will notify the Helena Fire Department (HFD). The PAI may require the employee or contractor to provide a fire watch at any time a fire protection system is out of service. Once the work is complete, the fire protection system must be put back in service immediately.

V. RESPONSIBILITIES

Permit Authorizing Individual (PAI) - In conjunction with management, the PAI shall be responsible for the safe operation of hot work activities. They will determine site-specific flammable materials, hazardous processes, or other potential fire hazards present or likely to be present in the work location.

The PAI will ensure there is protection of combustibles from ignition by the following means:

- A. Ensure the work is moved to a location free from combustibles.
- B. If the work cannot be moved, ensure the combustibles are moved to a safe distance or have the combustibles properly shielded against ignition.
- C. Ensure hot work is scheduled such that operations that could expose combustibles to ignition are not started during hot work operations
- D. If A, B and C can not be met, then the hot work must not be performed at that time.

The PAI will ensure that fire protection and extinguishing equipment are properly located at the site. They will also make a determination on whether a fire watch is needed and ensure they are on site. If a determination is made by the PAI not to have a fire watch, then the PAI will make a final checkup ½ hour after the completion of hot work operations to detect and extinguish possible smoldering fires. The PAI may also request Security to check the area periodically throughout their shift.

Hot Work Operator – The hot work operator shall handle the equipment safely and use it as follows so as not to endanger lives and property.

- A. The operator shall have the PAI's approval before starting hot works operations.
- B. The operator shall cease hot work operations if unsafe conditions develop and shall notify their supervisor and the PAI for reassessment of the situation.

Fire Watch – The fire watch must be aware of the inherent hazards of the work site and of the hot work. They will ensure that safe conditions are maintained during hot work operations.

- A. The fire watch has authority to stop the hot work operation if unsafe conditions develop.
- B. The fire watch must have fire-extinguishing equipment readily available and must be trained in its use.
- C. The fire watch must be familiar with the facilities and procedures for sounding an alarm in the event of a fire.
- D. The fire watch will watch for fires in all exposed areas and try to extinguish them only when the fires are obviously within the capacity of the extinguishment equipment available. **If the fire watch determines that the fire is not within the capacity of the equipment, he or she will sound the alarm immediately and call 911.**
- E. The fire watch shall be maintained for at least ½ hour after completion of the hot work operation in order to detect and extinguish smoldering fires.
- F. More than one fire watch may be required if combustible materials that could be ignited by the hot work operation cannot be directly observed by the initial fire watch.

VI. FIRE SAFETY PRECAUTIONS FOR HOT WORK

1. Establish whether or not it is practical to move the work to a safer location
2. Clear the area surrounding the work of hazards up to a 35-ft radius.
3. Sweep floors clean. Clean and remove grease and oils.
4. Where practical, stop other operations and processes involving flammable or combustible material.
5. Where practical, remove all flammable or combustible material from the work area; do not just seal the containers.
6. Cover combustible and flammable materials that cannot be removed with fire resistant material, and isolate the area with welding curtains, if practical.
7. Close all manhole covers or other openings in vessels that contain flammable liquids in the area.
8. Remove or protect all cylinders containing compressed gases in the area.
9. Close all doors and fire doors to prevent sparks from escaping.
10. Make sure automatic sprinklers are in service and fully operational, if available.
11. Keep hot work equipment in good repair. Check all hoses and their attachments for cracks and leaks.
12. When performing hot work on walls and ceilings, move combustibles away from the opposite side
13. Evaluate all sewers within 50 ft. of the work area for the possibility of flammable vapors.
14. Isolate the hot work or ignition source work site from the other hazardous areas. Close doors, seal cracks in walls, floors, and doors, and seal trenches.
15. Prohibit chlorinated solvents from use in or adjacent to all welding operations. Decomposition products such as phosgene can be formed as a result of the reaction of these solvent vapors with the radiation energy produced during welding operations.

VII. AREAS ON THE COMPLEX WHERE HOT WORK IS NOT PERMITTED

1. In areas not authorized by management.
2. In sprinklered buildings while such protection is impaired.
3. In the presence of explosive atmospheres (that is, where mixtures of flammable gases, vapors, liquids, or dust with air exist)
4. In explosive atmospheres that can develop inside uncleaned or improperly prepared drums, tanks, or other containers and equipment that have previously contained such materials.
5. In explosive atmospheres that can develop in areas with an accumulation of combustible dust