



SAFETY & HEALTH PROCEDURE #19

REVISION HISTORY

Rev	Date	Description
Orig	10 JULY 2007	Original

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Date: 7/16/07

HOT WORK

- REFERENCE: (a) Chapter 296-24-695 WAC, Fire Prevention and Protection
(b) NFPA Standard 51B, Fire Prevention During Welding, Cutting, and Other Hot Work
(c) FM Global Property Loss Prevention Data Sheet 10-3, Hot Work Management

I. PURPOSE & SCOPE

- A. This procedure is intended as the *minimum* guideline for the management of hot work on Snohomish County premises. It shall be referred to by County employees, as well as contractors performing work on behalf of the County. Contractors must comply with all requirements of the hot work permitting process, and shall be overseen by an authorized County employee.

- B. The purpose of this procedure is to establish the *minimum* requirements intended to adequately protect employees, the public, and Snohomish County property from the hazards associated with hot work.
- C. As defined by the Washington State Department of Safety and Health (DOSH), “*hot work*” is an operation such as riveting, welding, cutting, burning, and heating, that can provide a source of ignition. A “*hot work permit*” is a written authorization to perform these operations.

II. GENERAL REQUIREMENTS

- A. Hot work shall be permitted only in areas that have been made fire-safe. A fire-safe work area is that part of a space that hot work will be performed in where the danger of fire has been essentially eliminated by the removal of flammable and combustible materials and/or enclosed or “boxed” by the use of welding curtains, pads, and other fire-resistive material. Consideration must also be given to adjacent spaces that may be exposed to the same fire hazard as the area where work is conducted. If the area cannot be made fire safe, *then hot work shall not be performed.*
- B. It is always preferable that hot work be performed in a specific area designed for such work, such as a maintenance shop. Such areas should be of non-combustible or fire-resistive construction, essentially free of combustible or flammable contents, and suitably segregated from adjacent areas.
- C. If the object of the hot work cannot be readily moved, then all movable fire hazards (i.e. combustible and/or flammable materials) in the vicinity shall be taken to a safe place for the duration of the hot work procedure.
- D. If the object of the hot work cannot be moved *and* if all the fire hazards cannot be removed, then guards shall be used to confine the hot work to the extent that all immovable fire hazards are protected.
- E. For the duration of any hot work, automatic sprinkler protection and other fixed fire protection systems that are normally in service must be maintained and fully operational.
- F. Manual firefighting equipment (i.e. portable fire extinguishers) appropriate for the hazards during hot work must be readily available.
- G. All hot work equipment must be maintained in good repair.

- H. *Hot work must be separated from combustible materials by a minimum of 35 ft. (11 m) of open space from grade level hot work areas.* If this cannot be accomplished, a suitable alternative is to use appropriate and approved fire resistive welding blankets and screens to properly isolate the hot work from the adjacent combustible occupancies.
- I. Suitable fire precautions must be made to isolate fuels from sparks and open flames during hot work. For example, floors must be swept clean of debris, grease, and oil. Cover floors made of combustible material with fire-resistant tarpaulins or other non-combustible material.
- J. Remove all flammable liquids from the hot work area.
- K. Close all doors and cover or plug all wall and floor openings where sparks may escape during hot work.
- L. Shut down or eliminate any nearby processes that generate or may generate an explosive atmosphere.
- M. Hot work shall not be performed on any partition, wall, ceiling, or roof that has a plastic covering or core.
- N. Schedule hot work during “off hours” whenever practical.
- O. For hot work on vessels or boilers, use only contractors who are qualified by a nationally or internationally recognized boiler and pressure vessel code.
- P. Assign a designated fire watch to the hot work operation *before* the work is started. Maintain a continuous fire watch during the hot work activity, including during break and lunch periods, and for at least one (1) hour after hot work operations have been completed. Beyond this period, the area must be monitored for up to an additional three (3) hours, depending on conditions and environment.

III. HOT WORK PROCEDURE

- A. The person authorized to act on behalf of the County for supervision of a hot work project shall be designated as the “*fire safety supervisor*”. The authorized person shall be approved to act in this capacity by the supervisor of the department responsible for the hot work to be performed. Selection shall be based on the person’s knowledge, training, and experience. The fire safety supervisor shall be familiar with all phases of the project, including confirming the correct location of the work and verification of all precautions before the work begins.

- B. *The fire safety supervisor shall be responsible to fill out and authorize the hot work permit for use.* An expiration date and time must be indicated in the space provided on the hot work permit (See Figures 1-2). The limit of time allowed on any one (1) hot work permit is 8 hours or the duration of a single shift. If hot work is performed on consecutive days or shifts, then a new permit must be issued on each day and each shift. *The fire safety supervisor may issue a hot work permit only after they visibly verify that all needed fire prevention precautions are implemented and the fire watch is present.*
- C. The hot work permit must be posted in a visible place within the work area (See Figure 3). All employees affected by work must be notified. Welding operations must be properly shielded to prevent unprotected employees from possible exposure to the extreme light and rays created by such work.
- D. While the hot work is being performed, the fire watch must maintain a constant vigil over the work (including during breaks and lunches), and be ready to provide the initial fire response. Fire watch duties can be assigned to anyone who understands the hazard of the hot work being performed. The fire watch has the *responsibility* to make sure the hot work area is maintained in a fire-safe condition and has the *authority* to stop hot work if unsafe conditions are observed. *The fire watch must be trained in the use manual, portable fire extinguishers and know all appropriate emergency procedures.*
- E. When hot work is completed the fire watch must remain in the area for one hour to maintain a fire-safe environment. This includes watching adjacent rooms and areas.
- F. After verifying that no fire hazard exists, the fire watch then signs the hot work permit and notifies the fire safety supervisor.
- G. Depending on the type of hot work and conditions, the work must be monitored for up to an additional three hours. Determining the duration of monitoring can be made by either the fire watch or the fire safety supervisor.
- H. When the monitoring period has ended, the fire safety supervisor (or alternate authorized personnel as defined in Item A of this section) shall conduct a final inspection of the area and signs the permit. The permit shall then be removed and retained as a record of the work.

IV. CONTRACTORS AND HOT WORK

- A. Never assume that a contractor knows their job when hired to perform hot work. Studies show that the risk to the employer can increase up to 100% when outside contractors are involved [Source: FM Global Property Loss Prevention Data Sheet

10-3]. All safeguards and controls must be considered by the department responsible for the hot work to ensure appropriate safe work practices are met by the contractor.

- B. An authorized County employee must be assigned to supervise hot work performed by outside contractors.
- C. Contractors **must not** be allowed to authorize their own hot work permits.
- D. Contractors **must not** be allowed to remove or impair fixed fire equipment (e.g. fire sprinklers) without direction from an authorized County employee.
- E. ***Review this procedure with Contractors before they begin any hot work.***
- F. The employee designated to supervise hot work performed by contractors has the authority to stop work at any time when a fire hazard or any other unsafe condition caused by the contractor is observed.

V. RESPONSIBILITIES

A. Supervisors:

- i. For hot work operations, the supervisor has the responsibility to designate one or more employees as authorized to act in the capacity of “fire safety supervisor”. Selection shall be based on the subject’s knowledge, training, and experience relevant to the job.
- ii. The supervisor may also be a fire safety supervisor, but must be able to demonstrate the knowledge and experience necessary to satisfactorily meet the requirements of this procedure.
- iii. The supervisor has the responsibility to designate, either directly or through the authority of the fire safety supervisor, one or more employees to act in the capacity of fire watch as necessary during hot work operations.
- iv. The supervisor has the responsibility to ensure all employees performing hot work are adequately trained to be able to effectively conduct hot work according to this procedure.
- v. The supervisor has the responsibility to ensure that all contractors performing hot work on Snohomish County premises follow all applicable established safety and hot work procedures.

B. Employees:

- i. As assigned, employees are responsible to conduct hot work operations in a safe and professional manner.
- ii. Any employee conducting the duties as described in this procedure must be adequately trained by an authorized instructor in all applicable elements of the hot work being performed.

- iii. An employee must always be ready to demonstrate that they possess the knowledge and skill to adequately perform hot work under the requirements of this procedure.

C. The Safety Office:

- i. The Safety Office is responsible to monitor the hot work program for effectiveness.
- ii. The Safety Office shall review this procedure on a periodic basis, or when new regulations become known, and make the necessary changes to keep the intent of this procedure intact.
- iii. The Safety Office shall coordinate with departments and supervisors to ensure that all necessary training is conducted and that documentation is maintained.
- iv. The Snohomish County Safety Officer, or employee designated by the Safety Office, has the authority to stop any hot work being performed by employees or contractors that is considered to be a fire hazard or is otherwise unsafe.

V. DISCIPLINARY ACTION

- A. Any *employee* who violates established safety procedures, or puts themselves or their co-workers in a hazardous or other unsafe condition is subject to disciplinary action as provided by applicable standards of conduct and labor agreement(s).
- B. Any *contractor* who violates prescribed safe work procedures is subject to a stop work notice and/or dismissal from the job as provided in the contract.


HOT WORK PERMIT

**BEFORE INITIATING HOT WORK, CAN THIS JOB BE AVOIDED?
IS THERE A SAFER WAY?**

This Hot Work Permit is required for any temporary operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Torch Applied Roofing and Welding.

INSTRUCTIONS	PART 1 REQUIRED PRECAUTIONS CHECKLIST				
<p>1. Firesafety supervisor:</p> <p>A. Verify precautions listed at right (or do not proceed with the work).</p> <p>B. Complete and retain Part 1. (Part 1A is a copy for expanded hot work awareness).</p> <p>C. Issue Part 2 to person doing job.</p> <p>HOT WORK BEING DONE BY</p> <p><input type="checkbox"/> EMPLOYEE</p> <p><input type="checkbox"/> CONTRACTOR</p> <p>DATE _____ JOB NUMBER _____</p> <p>LOCATION/BUILDING AND FLOOR _____</p> <p>NATURE OF JOB _____</p> <p>NAME OF PERSON DOING HOT WORK _____</p> <p>I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.</p> <p>SIGNED (Firesafety Supervisor/Operations Supervisor) _____</p> <table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 2px;">PERMIT EXPIRES</td> <td style="border: 1px solid black; padding: 2px;">DATE</td> <td style="border: 1px solid black; padding: 2px;">TIME</td> <td style="border: 1px solid black; padding: 2px;">AM PM</td> </tr> </table> <p>NOTE: EMERGENCY NOTIFICATION ON BACK OF FORM. USE AS APPROPRIATE FOR YOUR FACILITY.</p>	PERMIT EXPIRES	DATE	TIME	AM PM	<p><input type="checkbox"/> Available sprinklers, hose streams and extinguishers are in service/operable.</p> <p><input type="checkbox"/> Hot Work equipment in good repair.</p> <p>Requirements within 35 ft (11 m) of work</p> <p><input type="checkbox"/> Flammable liquids, dust, lint and oily deposits removed.</p> <p><input type="checkbox"/> Explosive atmosphere in area eliminated.</p> <p><input type="checkbox"/> Floors swept clean.</p> <p><input type="checkbox"/> Combustible floors wet down, covered with damp sand or fire-resistive sheets.</p> <p><input type="checkbox"/> Remove other combustibles where possible. Otherwise protect with FM approved welding pads, blankets, and curtains, fire-resistive tarpaulins or metal shields.</p> <p><input type="checkbox"/> All wall and floor openings covered.</p> <p><input type="checkbox"/> FM Approved welding pads, blankets, and curtains installed under and around work.</p> <p><input type="checkbox"/> Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.</p> <p>Work on walls, ceilings or roofs</p> <p><input type="checkbox"/> Construction is noncombustible and without combustible covering or insulation.</p> <p><input type="checkbox"/> Combustibles on other side of walls, ceilings or roofs are moved away.</p> <p>Work on enclosed equipment</p> <p><input type="checkbox"/> Enclosed equipment cleaned of all combustibles.</p> <p><input type="checkbox"/> Containers purged of flammable liquids/vapors.</p> <p><input type="checkbox"/> Pressurized vessels, piping and equipment removed from service, isolated and vented.</p> <p>Fire watch/Hot Work area monitoring</p> <p><input type="checkbox"/> Fire watch will be provided during and for 60 minutes after work, including any coffee or lunch breaks.</p> <p><input type="checkbox"/> Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose.</p> <p><input type="checkbox"/> Fire watch is trained in use of equipment and in sounding alarm.</p> <p><input type="checkbox"/> Fire watch may be required in adjoining areas, above and below.</p> <p><input type="checkbox"/> Monitor Hot Work area for 3 hours after job is completed.</p> <p>Other Precautions Taken:</p> <p><input type="checkbox"/> _____</p>
PERMIT EXPIRES	DATE	TIME	AM PM		

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Figure 1

WARNING!

HOT WORK IN PROGRESS WATCH FOR FIRE!

INSTRUCTIONS	PART 2						
<p>1. Person doing Hot Work: Indicate time started and post permit at Hot Work location. After Hot Work, indicate time completed and leave permit posted for Fire Watch.</p> <p>2. Fire Watch: Prior to leaving area, do final inspection, sign, leave permit posted and notify Firesafety Supervisor.</p> <p>3. Monitor: After 3 hours, do final inspection, sign and return to Firesafety Supervisor.</p>	<p style="text-align: center;">REQUIRED PRECAUTIONS CHECKLIST</p> <p><input type="checkbox"/> Available sprinklers, hose streams and extinguishers are in service/operable.</p> <p><input type="checkbox"/> Hot Work equipment in good repair.</p> <p>Requirements within 35 ft (11 m) of work</p> <p><input type="checkbox"/> Flammable liquids, dust, lint and oily deposits removed.</p> <p><input type="checkbox"/> Explosive atmosphere in area eliminated.</p> <p><input type="checkbox"/> Floors swept clean.</p> <p><input type="checkbox"/> Combustible floors wet down, covered with damp sand or fire-resistive sheets.</p> <p><input type="checkbox"/> Remove other combustibles where possible. Otherwise protect with FM approved welding pads, blankets, and curtains, fire-resistive tarpaulins or metal shields.</p> <p><input type="checkbox"/> All wall and floor openings covered.</p> <p><input type="checkbox"/> FM Approved welding pads, blankets, and curtains installed under and around work.</p> <p><input type="checkbox"/> Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.</p> <p>Work on walls, ceilings or roofs</p> <p><input type="checkbox"/> Construction is noncombustible and without combustible covering or insulation</p> <p><input type="checkbox"/> Combustibles on other side of walls, ceilings or roofs are moved away.</p> <p>Work on enclosed equipment</p> <p><input type="checkbox"/> Enclosed equipment cleaned of all combustibles.</p> <p><input type="checkbox"/> Containers purged of flammable liquids/vapors.</p> <p><input type="checkbox"/> Pressurized vessels, piping and equipment removed from service, isolated and vented.</p> <p>Fire watch/Hot Work area monitoring</p> <p><input type="checkbox"/> Fire watch will be provided during and for 60 minutes after work, including any coffee or lunch breaks.</p> <p><input type="checkbox"/> Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose.</p> <p><input type="checkbox"/> Fire watch is trained in use of equipment and in sounding alarm.</p> <p><input type="checkbox"/> Fire watch may be required in adjoining areas, above and below.</p> <p><input type="checkbox"/> Monitor Hot Work area for 3 hours after job is completed.</p> <p>Other Precautions Taken:</p> <p><input type="checkbox"/> _____</p>						
<p>HOT WORK BEING DONE BY</p> <p><input type="checkbox"/> EMPLOYEE</p> <p><input type="checkbox"/> CONTRACTOR _____</p> <p>DATE _____ JOB NUMBER _____</p> <p>LOCATION/BUILDING AND FLOOR _____</p> <p>NATURE OF JOB _____</p> <p>NAME OF PERSON DOING HOT WORK _____</p> <p style="background-color: yellow; padding: 5px;">I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.</p> <p>SIGNED (Firesafety Supervisor/Operations Supervisor) _____</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">TIME STARTED</td> <td style="width: 50%;">TIME FINISHED</td> </tr> <tr> <td style="text-align: center;"> <input type="checkbox"/> AM <input type="checkbox"/> PM </td> <td style="text-align: center;"> <input type="checkbox"/> AM <input type="checkbox"/> PM </td> </tr> <tr> <td style="text-align: center;"> PERMIT EXPIRES DATE _____ </td> <td style="text-align: center;"> TIME _____ AM PM </td> </tr> </table> <p style="background-color: yellow; padding: 5px;">FIRE WATCH SIGNOFF: Work area and all adjacent areas to which sparks and heat might have spread were inspected during the watch period and were found fire safe.</p> <p>Signed: _____</p> <p style="background-color: yellow; padding: 5px;">FINAL CHECKUP: Work area was monitored for 3 hours following Hot Work and found fire safe.</p>	TIME STARTED	TIME FINISHED	<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM	PERMIT EXPIRES DATE _____	TIME _____ AM PM	<div style="border: 1px solid black; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">7088844</div>
TIME STARTED	TIME FINISHED						
<input type="checkbox"/> AM <input type="checkbox"/> PM	<input type="checkbox"/> AM <input type="checkbox"/> PM						
PERMIT EXPIRES DATE _____	TIME _____ AM PM						

Figure 2



Figure 3