1. Purpose
   a. The purpose of this procedure is to establish a safe working environment during hot
      work operations in accordance with 29 CFR 1910.252. This includes, but is not limited to
      brazing, cutting, grinding, soldering, and/or welding.

2. Scope
   a. Workers performing hot work such as welding, cutting, brazing, soldering, and grinding
      are exposed to the risk of fires from ignition of flammable or combustible materials in
      the workplace, and from leaks of flammable gas into the space. Uncontrolled hot work
      may create fires, explosions, smoke conditions and other health & safety risks to
      building occupants and the campus community.

3. Responsibilities
   a. This procedure applies to any employee or contractor whose work requires them
      to use brazing, cutting, grinding, soldering and/or welding processes involving hot
      work activities on campus.

4. Definitions
   a. The Maintenance and Operations office issues, inspects the work area, and
      manages and the Supervisor coordinates the Hot Work Permit System whenever
      welding, cutting or brazing is planned on campus.

b. The **Hot Work Supervisor** assigns competent qualified staff to serve as **Fire
   Watch** staff during and after Hot Work is completed based on their qualifications
   and knowledge of the worksite. The **Hot Work Supervisor** is responsible for
   ensuring the permit required work is conducted in accordance with the hot work
   program, including an inspection of the area the work is being conducted in prior
to the permit being issued.

d. **Fire Watch** staff observes the workplace and communicates with the **Hot Work Supervisor** to ensure the safety of the workplace. If established practices are not implemented the **Fire Watch** staff communicates problems immediately to the **Hot Work Supervisor**.

e. **Environment, Health & Safety (EHS)** supports the Hot Work Permit System by arranging training and maintaining employee training records.

f. **Contractors** must designate **Hot Work Supervisors, Competent Qualified Workers** and **Fire Watch** staff when performing hot work, in accordance with the campus Hot Work Permit Program.
   
   i. **Contractors** must receive approval from **Maintenance and Operations** before performing hot work on campus
   ii. **Contract Hot Work Supervisors, Competent Qualified Workers** and **Fire Watch** staff must have the documented hot work training and appropriate work experience.

5. Procedure

a. This procedure does not apply to selected hot work areas. However, people who work in these areas must be **Competent Qualified Workers** under a **Hot Work Supervisor**. Also, the Environmental Health and Safety Office shall designate when annual reviews are conducted in the following locations:
   
   i. Central Heating Plant – Welding Bench
   ii. Service Area Garage: Welding Room
   iii. MOC: Welding Area, Maintenance / Plumbing Shops
   iv. Hawkins Hall: Basement Shop (Room 010)
   v. Myers Fine Arts: Ceramic Studio / Kiln Area & Metal Studio & Patio Area
   vi. Hudson Hall: Glass Lab & Geology (Rock Preparation) Labs

b. Basic Precautions for Fire Prevention
   
   i. Seek alternative work methods to avoid hot work whenever possible.
   
   ii. Perform hot work in a safe location, or with fire hazards removed or controlled. Remove all combustibles materials within 35 feet whenever possible.
iii. Use guards, shields or non-combustible curtains to confine the heat, sparks, and slag, and protect the immovable fire hazards.

iv. Never perform hot work on containers or pipes when flammable gases, liquids, or vapors are present.

c. Hot Work Permit and Procedures

i. Managing the Hot Work Permit Form

ii. Part 1: Hot Work Supervisor obtains and returns Part 1 of the Form from Maintenance and Operations after inspecting and before work is started to ensure precautions are in place.

iii. Part 2: Hot Work Supervisor / Fire Watch staff retains Part 2 of the Form at the worksite and returns it to the Maintenance and Operations after work is completed to close out the permitted job.

iv. Specific Requirements for Hot Work Supervisors - Ensure the Following Precautions are Taken

d. Notify the Maintenance Operations Center (MOC) whenever hot work is anticipated. Whenever possible, ensure sprinkler systems are active in hot work areas whenever hot work is performed.

e. Request the MOC to assign a qualified electrician to disable smoke / heat detection systems in hot work areas to prevent their accidental activation.

f. Request the MOC to assign Fire Watch staff when hot work is conducted. After the work is completed notify the MOC to re-activate the smoke / heat detection systems.

g. Whenever possible, remove combustible materials at least 35 feet away from the hot work to prevent their accidental ignition. This applies to hot work areas even when screens and shields are used.

h. Seal wall or floor openings within a 35-foot radius expose combustible material in adjacent areas. Seal all floor and wall penetrations that may allow ignitions sources to escape.

i. Remove combustible materials on the opposite side of metal partitions, walls, ceilings, or roofs.

j. Secure the equipment and assign Fire Watch staff for at least 30 minutes whenever hot work is stopped (i.e., lunch break, overnight).
k. Do not perform hot work where flammable gases, vapors or combustible materials exist. Work and equipment should be relocated outside of the hazardous areas, when possible. If hot work is required where flammable gases are present special precautions are required (as described below).

l. Ensure ABC fire-extinguishers or suitable fire extinguishing equipment is readily available in the workplace.

m. Inspect the work area to ensure that all fuel and ignition sources are isolated by shielding, clearing the area, and employing Lockout/Tagout as needed.

n. When performing hot work, use appropriate PPE, such as face shield, leather welder's vest, and gauntlet gloves. Wear cotton or denim clothing; do not wear synthetic or flammable clothing.

o. Use fire retardant shields on walls, partitions, ceilings or roofs constructed of combustible materials. Provide UV shielding for arc welding where practical.

p. When working above hung ceilings, remove ceiling tiles to enable Fire Watch staff to see if a fire may be created. Use fire retardant blankets to control sparks and hot embers in the work area.

q. Inspect welding and cutting equipment before use (arc or gas welding/burning). Leak test gas torches, gauges, and hoses in accordance with the manufacturers’ specifications.

r. Ensure adequate ventilation from toxic welding and cutting fumes.

s. Barricade all work areas with tape and post appropriate signs to notify workers and pedestrians of hot work activities.

**t. Specific Requirements for Fire Watch Staff**

i. Remain at the work site whenever hot work is performed and maintain the fire watch at least 30 minutes after completing hot work to identify and extinguish potential fires.

ii. Know the status of the fire suppression and smoke / heat detection systems in the hot work area. Identify the closest location to activate a fire alarm in the event of a fire. If you do not have access to the fire alarm, then call 911 immediately.

iii. Ensure ABC fire-extinguishers or suitable fire extinguishing equipment is readily available and Fire Watch staff is trained in their proper use.
iv. Watch for fires and try to extinguish them only when within the capacity of the equipment available. In all cases, sound the alarm or call 911 before trying to extinguish the fire.

v. Stop hot work if it is being done in an unsafe manner. In these instances, the Fire Watch staff should notify the Hot Work Supervisor immediately.

vi. Return the Hot Work Permit and notify the Supervisor and MOC staff when the Fire Watch is completed.

u. **Special Hazards: Flammable Gases**

i. Flash fires or explosions may result from accumulations of flammable gases (natural gas, propane, methane, etc.).

v. **Specific Requirements: Flammable Gases**

i. Identify the source of the gas and eliminate it before starting hot work whenever possible.

ii. Use a flammable gas detector whenever flammable gases or vapors may be present to ensure the atmosphere is safe before performing hot work. All gas detectors must be calibrated with documented certification records.

iii. When flammable gas sources are present, continuously monitor the atmosphere with a gas detector. If a flammable or combustible gas exceeds 10 percent of the lower explosive level (LEL), the work must be stopped.

iv.

w. **Special Hazards: Hot Work in Confined Spaces**

i. Fire and health hazards are caused by flammable / toxic gases when performing Hot Work inside a Confined Space (see Confined Space Permit System).

x. **Specific Requirements: Hot Work in Confined Spaces**

i. Use a Confined Space Entry Permit to document the authorization to enter, specific safety precautions, and gas monitoring performed whenever flammable / toxic gases or an oxygen-deficient atmosphere may exist.

ii. Both Hot Work and Confined Space Entry Permits may be required for welding, cutting or brazing within a confined space.
iii. Ventilate toxic metal fumes mechanically before entering a confined space such as underground vaults, tanks, hoppers, sumps or pits. Ensure exhaust ventilation equipment is intrinsically safe if it is used inside a confined space where flammable gases may exist.

iv. A hazardous oxygen-deficient atmosphere is less than 19.5 percent oxygen, whereas a hazardous oxygen-enriched atmosphere is more than 23.5 percent oxygen. When performing hot work in a confined space use a calibrated gas detector (oxygen, carbon monoxide) to test the safety of the atmosphere before entering the space.
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

Date: ________________

HOT WORK BEING DONE BY:

☐ EMPLOYEE
☐ CONTRACTOR

DATE: ________________ WORK ORDER # ________________

LOCATION: BUILDING AND FLOOR

NAME OF PERSON DOING HOT WORK

☐ Fire Safety Supervisor
A. Verify precautions listed right (or do not proceed with the work)
B. Complete and retain Part 1
C. Part 1A is a copy for expanded hot work awareness

☐ Issue Part 2 to person doing the job

DATE: ________________ TIME: ________________ AM / PM

NOTE: EMERGENCY NOTIFICATION ON BACK OF FORM. USE AS APPROPRIATE FOR YOUR FACILITY.

REQUIRED PRECAUTIONS CHECKLIST

☑ Work on Enclosed Equipment
☐ Yes
☐ No
☐ Enclosed equipment cleaned of all combustibles
☐ Containers purged of flammable liquids/vapors
☐ Pressurized vessels, piping and equipment removed from service, isolated and vented

☐ Work on Walls, Ceilings or Roofs
☐ Yes
☐ No
☐ Construction is noncombustible and without combustible covering or insulation
☐ Combustibles on other side of walls, ceilings or roofs are moved away.
☐ Available sprinklers, hose streams and extinguishers are in service/operable
☐ Disable fire alarms with a time/initial
☐ Enable fire alarms at the end of the job Time/Initial

☐ Hot Work Equipment in Good Repair
☐ Yes
☐ No
☐ Equipment outside of FS & CTU out of service
☐ Nonmetallic, replaceable, insulating, fire resistant insulating
☐ Floors swept clean
☐ Combustible floors wet down, covered with damp sand or fire resistant sheets
☐ Remove other combustible where possible, otherwise protect with fire resistant tarpaulins or metal shields
☐ All wall and floor openings covered
☐ Fire resistant tarpaulins suspended beneath work
☐ Protect or shut down ducts and conveyors that might carry sparks to distant combustibles.

☐ Fire Watch/Hot Work Area Monitoring
☐ Yes
☐ No
☐ Record time Hot Work is started and initial
☐ Fire Watch will be provided during and for 30 minutes after work, including coffee and/or lunch breaks
☐ Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose
☐ Fire watch is trained in use of equipment and in sounding alarms
☐ Fire watch may be required in adjoining areas, above and below
☐ Monitor Hot Work area for 30 minutes after job is completed
☐ Record time Hot Work is ended and initial

Other precautions taken:

☐

PART 1