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1.0 PURPOSE

The purpose of this program is to prevent injury or loss to property while ensuring safe work conditions during welding, cutting, brazing, and grinding operations.

2.0 APPLICABILITY AND SCOPE

Welding, torching, brazing, and grinding operations are conducted by FPM, university faculty, staff, and students, and independent contractors throughout university property for activities that include repairs, remodeling, glassblowing, or new construction. Equipment owners must ensure that their equipment is code-compliant, in safe working order, and that users are properly trained.

3.0 DEFINITIONS

Hot Work - Welding, cutting, brazing, grinding, and other operations capable of producing sufficient heat to initiate combustion or create an explosion.

4.0 APPLICABLE REGULATIONS AND STANDARDS

- California Fire Code 2018 Chapter 35 - Welding and Other Hot Work
- NFPA 2009 51B
- Best Practices – [AIG Insight: Hot Work](#)

5.0 RESPONSIBILITIES

Fire Safety & Emergency Planning (FSEP) will:

- a) Oversee the administration of this program.
- b) Provide technical assistance.
- c) Inspect areas where hot work is conducted.
- d) Facilitate hot work permit registration through the FSEP Hot Work web site.

Department / Instructor/ Supervisor will:

- a) Establish safe areas for cutting and welding (refer to section 7.0).
- b) Ensure the following:
 - i. Safe use of cutting, welding, brazing, and grinding equipment in their work areas.
 - ii. Hot work procedures are being implemented and followed.
 - iii. Cutters and welders are trained in the safe operation of the equipment.
 - iv. Ensure that contractors meet or exceed University procedures and practices.
- c) Review expired permits to ensure proper implementation of this program.

Employee / Student

Authorized users must receive training regarding the contents of this program and safe use of the specific equipment they will be working with. It is the responsibility of each authorized user to observe safe working practices while performing hot work.

6.0 HOT WORK PERMIT PROCEDURE

1. A hot work permit is required for any operation involving open flames or producing heat and/or sparks. This includes, but is not limited to, brazing, cutting, grinding, soldering, thawing pipe, torch-applied roofing, and welding.
2. Apply for a hot work permit at <https://sites.usc.edu/fsep/fire-safety/hot-work-permit/> and complete all fields.
3. Save the form using the upper right “Save Form” button. Applicants will receive email notification of their submittals. See Figure 6.1
4. FSEP receives the submittal for review and will issue approval or denial of a submittal. An email notification will be sent to the applicant.
5. Approved submittals are issued as Hot Work Permits that include emergency contact information and a Hot Work Fact Sheet. See Figures 6.2 – 6.4.
6. Post issued Hot Work Permit(s) in conspicuous location(s) at the hot work site(s).
7. **NOTE:** The following permit conditions must be met prior to starting hot work.
 - a. Inspect/examine the location where hot work is to be performed and confirm that:
 - i. Fire sprinklers are operational and will not be taken out of service until this work is completed.

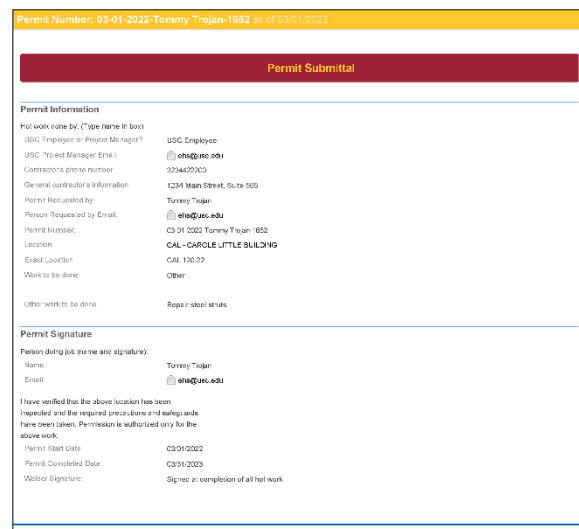


Figure 6.1 Hot Work Permit Submittal

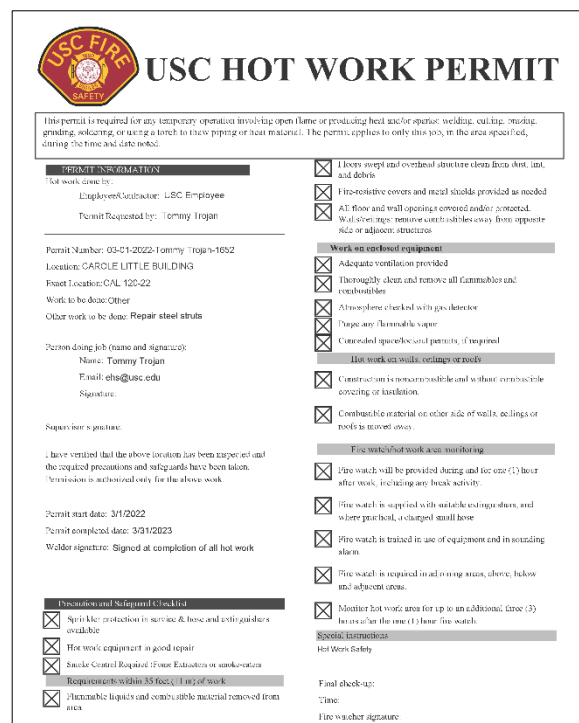


Figure 6.2 Hot Work Permit

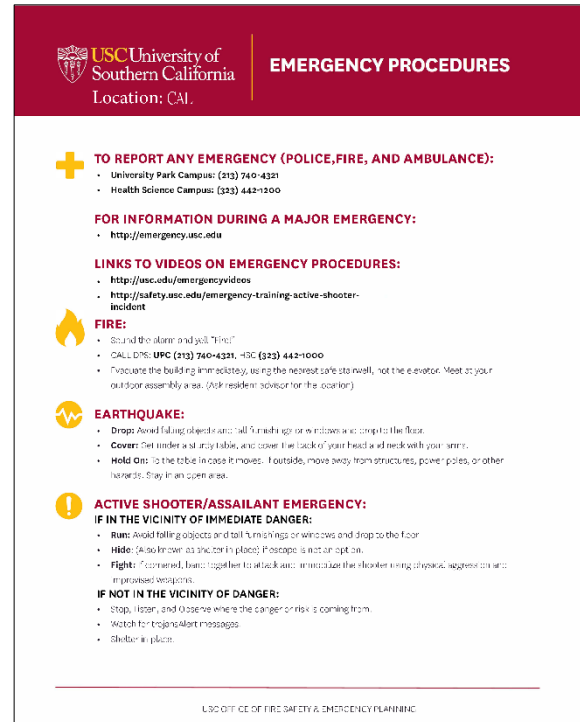
- ii. No flammable lint, dust, vapors and liquids, and unpurged tanks or equipment are in the area.
- iii. Work will be confined to the area or equipment specified in the permit.
- b. Ensure that the following safeguards are in place:
 - i. Floors and surrounds are swept clean and wet down.
 - ii. Adequate portable extinguishing equipment (e.g., fire hose, extinguishers, and water pails) is present.
- c. Ensure additional safeguards are present if the work involves cutting, welding, or other spark-producing activity:
 - i. All combustibles are located 35 ft. from the operation and the remainder protected with fire-resistant tarpaulins or metal shields.
 - ii. All floors and wall openings within 35 ft. of operations are covered tightly.
 - iii. Responsible personnel are assigned to watch for dangerous sparks in the area, as well as floors above and below.
 - iv. Flame or spark-producing equipment to be used is inspected and found in good repair.
 - v. Arrangements are made for a patrol of the area, including floors above and below, during active work, lunch, and rest periods and for at least one-half hour after the work is completed.

8. Contact firesafety@usc.edu or (213) 740-8611 for assistance or general inquiries.

7.0 DESIGNATED "SAFE AREAS" FOR HOT WORK

Departments that regularly conduct hot work activities can designate a safe area where individual permits are not required. This area must:

- a) Contain a functioning automatic sprinkler system.
- b) Have fire extinguishers of the proper type in the immediate vicinity.
- c) Be located at least 35ft. (11m) away from combustible, flammable, and explosive materials.
- d) Be shielded visually from other areas.
- e) Have adequate ventilation.
- f) Have a "Warning" sign posted to warn of potential hazardous fumes from welding operations.



USC University of Southern California
Location: CAI

EMERGENCY PROCEDURES

TO REPORT ANY EMERGENCY (POLICE, FIRE, AND AMBULANCE):

- University Park Campus: (213) 740-4321
- Health Science Campus: (323) 442-1200

FOR INFORMATION DURING A MAJOR EMERGENCY:

- <http://emergency.usc.edu>

LINKS TO VIDEOS ON EMERGENCY PROCEDURES:

- <http://usc.edu/emergencyvideos>
- <http://safety.usc.edu/emergency-training-active-shooter-incident>

FIRE:

- **Stand:** Stand clear and yell "Fire!"
- **CALL THE UFG (213) 740-4321, HRC (323) 442-1000**
- **Evacuate:** the building immediately, using the nearest safe exit, not the elevator. Meet at your outdoor assembly area. (Ask resident advisor for the location)

EARTHQUAKE:

- **Drops:** Avoid falling objects and fall 5 inches ago or windows and drop to the floor.
- **Cover:** Get under a sturdy table, and cover the back of your head and neck with your arms.
- **Hold On:** to the table in case it moves. If outside, move away from structures, power poles, or other hazards. Stay in an open area.

ACTIVE SHOOTER/ASSAILANT EMERGENCY:

IF IN THE VICINITY OF IMMEDIATE DANGER:

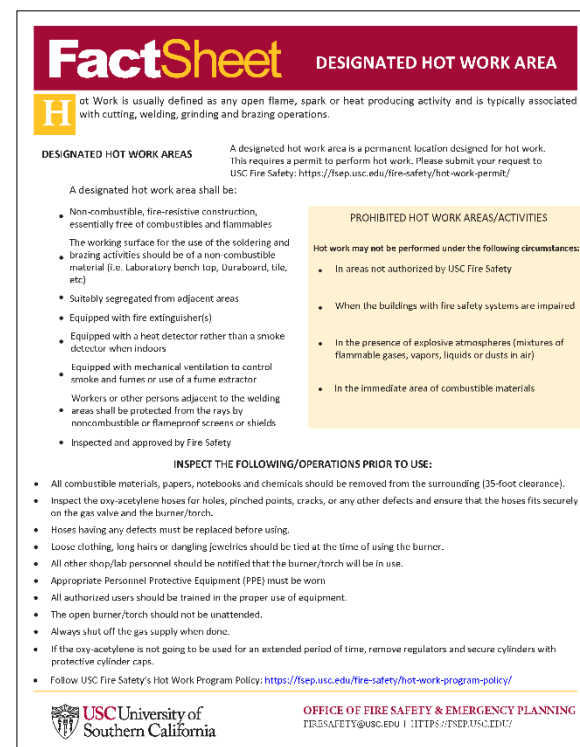
- **Run:** Avoid falling objects and fall 5 inches ago or windows and drop to the floor.
- **Hide:** (ask resident advisor for location) Hide in a secure place.
- **Fight:** (if trained), team together to attack and immobilize the shooter using physical aggression and pepper spray.

IF NOT IN THE VICINITY OF DANGER:

- **Stop, Hide, and Communicate:** if the danger or risk is coming from
- Watch for text/alert messages
- Shelter in place.

USC OFFICE OF FIRE SAFETY & EMERGENCY PLANNING

Figure 6.3 Emergency Procedures



FactSheet DESIGNATED HOT WORK AREA

Hot Work is usually defined as any open flame, spark or heat producing activity and is typically associated with cutting, welding, grinding and brazing operations.

DESIGNATED HOT WORK AREAS A designated hot work area is a permanent location designed for hot work. This requires a permit to perform hot work. Please submit your request to USC Fire Safety: <https://fsep.usc.edu/fire-safety/hot-work-permit/>

A designated hot work area shall be:

- Non-combustible, fire-resistant construction, essentially free of combustibles and flammables
- The working surface for the use of the soldering and brazing activities should be of a non-combustible material (i.e. Laboratory bench top, Duraboard, tile, etc)
- Suitably segregated from adjacent areas
- Equipped with fire extinguisher(s)
- Equipped with a heat detector rather than a smoke detector when indoors
- Equipped with mechanical ventilation to control smoke and fumes or use of a fume extractor
- Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields
- Inspected and approved by Fire Safety

PROHIBITED HOT WORK AREAS/ACTIVITIES

Hot work may not be performed under the following circumstances:

- In areas not authorized by USC Fire Safety
- When the buildings with fire safety systems are impaired
- In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids or dusts in air)
- In the immediate area of combustible materials

INSPECT THE FOLLOWING/OPERATIONS PRIOR TO USE:

- All combustible materials, papers, notebooks and chemicals should be removed from the surrounding (35-foot clearance).
- Inspect the oxy-acetylene hoses for holes, pinched points, cracks, or any other defects and ensure that the hoses fit securely on the gas valve and the burner/torch.
- Hoses having any defects must be replaced before using.
- Loose clothing, long hairs or dangling jewelry should be tied at the time of using the burner.
- All other shop/lab personnel should be notified that the burner/torch will be in use.
- Appropriate Personnel Protective Equipment (PPE) must be worn
- All authorized users should be trained in the proper use of equipment.
- The open burner/torch should not be unattended.
- Always shut off the gas supply when done.
- If the oxy-acetylene is not going to be used for an extended period of time, remove regulators and secure cylinders with protective cylinder caps.
- Follow USC Fire Safety's Hot Work Program Policy: <https://fsep.usc.edu/fire-safety/hot-work-program-policy/>

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Figure 6.4 Hot Work Fact Sheet

8.0 VENTILATION

Ensure mechanical local exhaust ventilation is provided and used for hot work in all confined spaces and in welding areas where any of the following conditions exist:

- The ceiling height is less than 16 feet.
- There is less than 100 cubic feet of space per welder.
- Exposures to toxic gases or welding fumes are not known or exceed published occupational exposure limits.

9.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Determine appropriate PPE (e.g., eyewear, gloves, fire- and flash resistant clothing) for use in hot work by completing the [Shop Safety Risk Assessment \(SSRA\) tool](#). NOTE: If air purifying respirators (APR) are needed for hot work, then medical surveillance, fit testing, and training are required prior to use.

10.0 SAFE HANDLING AND STORAGE OF GAS CYLINDERS

Review Section 10. Chemical Inventory, Storage, and Transport of the [USC Shop Safety Manual](#) for safe handling and storage of compressed gas cylinders.

11.0 PROGRAM REVIEW/REVISION

Reviewed by: T. Tyler, J. Pendley, R. Forsberg, and A. Bouziane

Date: 04/02/2013

Revised by: R. Forsberg, and A. Bouziane

Date: 03/02/2022

Reviewed/approved by:

Date: