




City of Phoenix

FIRE DEPARTMENT
FIRE PREVENTION DIVISION

Explanatory Policy – Hot Work Permit Program

SUBJECT: Hot Work Permit Program	EFFECTIVE DATE: July 19, 2019
REFERENCES: The Phoenix Fire Code (2018 Edition) Section 3503.3	REVIEW DATE: July 2024
APPROVED:  John Mertens, Fire Marshal	

Scope:

The requirements to conduct a Hot Work Permit Program and a review of other Fire Code requirements for open torches and other hot work operations.

Hazards of Hot Work Operations

Hot work includes welding, cutting, Thermit welding, brazing, soldering, grinding, thermal spraying, any operation involving open flame torches or any other similar activity. The primary hazard associated with hot work is the creation of ignition sources such as sparks, hot slag, radiant heat, or convective heat which can ignite nearby combustible material. A secondary hazard is the storage/use and handling of compressed gas cylinders such as acetylene, oxygen, argon and carbon dioxide.

Commonly Used Hazardous Materials

Chemical Name	CAS No.	PFC Classification	704 H	704 F	704 R
Acetylene	74-86-2	Flammable Compressed Gas	0	4	2
Argon	7740-37-1	Non-Flam Compressed Gas	0	0	0
Butane	106-97-8	Flammable Liquid Gas	0	4	0
Carbon Dioxide	124-3809	Non-Flam. Compressed Gas	0	0	0
Nitrogen	7727-37-9	Non-Flam. Compressed Gas	0	0	0
Oxygen	7782-44-7	Oxidizer Compressed Gas	0	0	0

Overview of Hot Work Program Permits

When a business has more than two employees who are trained to conduct hot work operations, they must obtain a Hot Work Program Permit to manage their own hot work program Phoenix Fire Code Section 3503.3. This is a permitted program, carried out by an approved facility-designated person, called the “Hot Work Permit Issuer,” that allows him/her to oversee and issue permits for hot work



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conducted at their facility. The intent is to have a trained, on-site, responsible person to ensure that required hot work safety measures are taken to prevent fires and fire spread. A Hot Work Program Permit must be reviewed and approved by the Fire Department. The purpose of this guide is to assist you in creating your own Hot Work Program.

Creating a Hot Work Permit Program

When approved, the fire code official shall issue a permit to carry out a Hot Work Program. This program allows approved personnel to oversee and issue internal permits for hot work conducted by their personnel or at their facility.

The Hot Work Program is administered by a Hot Work Program Manager. The Hot Work Program Manager, employees and contractors, shall be trained in the fire safety aspects denoted in Chapter 35 of the Phoenix Fire Code. A Hot Work Program must include the issuance of an internal hot work permit.

The Hot Work Program submittal should include the following information (where applicable):

- ❑ Purpose and Scope
- ❑ Personnel Responsibilities
 - ✓ Individual performing hot work
 - ✓ Manager/Supervisor
 - ✓ Hot Work Permit Issuer Responsibilities
 - ✓ Management
- ❑ Contact Information
 - ✓ Name/contact information for the Hot Work Program Manager
 - ✓ Name/contact information for the facility-designated person (FDP) who will issue Hot Work Permits
- ❑ Type of Work Performed
 - ✓ Welding, cutting, braising
 - ✓ Electric Arc
 - ✓ Calcium Carbide
 - ✓ Acetylene Generators
- ❑ Hot Work Permit Procedures
 - ✓ Sample of the Hot Work Permit tag
 - ✓ Pre-work check completed by FDP prior to hot work
 - ✓ Length of time hot work permit is valid
- ❑ Recordkeeping Management
 - ✓ Fire Watch Procedures



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- ✓ Employee Training
 - Safe Operation of Equipment
 - Fire Extinguisher Training
 - Pre-Work Checklist
 - Emergency Procedures Taken During a Fire
- Maps Showing Location of:
 - ✓ Permissible areas designated for hot work
 - ✓ Areas not approved for hot work
 - ✓ Storage of compressed gas cylinders

If the quantity of hazardous materials in storage/use/handling exceed the permit quantity listed in Phoenix Fire Code Table 5003.1.1 an operational permit is required. The permit quantity for common welding gases is as follows:

Flammable gases (ex., acetylene)	200 cu. ft.
Oxidizer gases (ex., oxygen)	504 cu. ft.
Non-flammable gases (ex., argon, carbon dioxide, nitrogen)	200 cu. ft.



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Sample Program

1.0 INTRODUCTION

The following procedure details the Hot Work Program utilized by ABC Welding & Supply Company.

- 1.1 **Purpose**—The purpose of the Hot Work Permit program is to ensure that proper safeguards and procedures are followed before commencing any hot work and necessary safeguards are taken to minimize the potential for unintentional fires.
 - 1.1.1 For the purpose of this policy, “hot work” is defined as *welding, cutting, Thermit welding, brazing, soldering, grinding, thermal spraying, any operation involving open flame torches or any other similar activity.*
 - 1.1.2 The primary hazard associated with hot work is the creation of ignition sources such as sparks, hot slag, radiant heat, or convective heat which can ignite nearby combustible material.
 - 1.1.3 A secondary hazard is the storage/use and handling of compressed gas cylinders such as acetylene, oxygen, argon and carbon dioxide.
- 1.2 **Scope**—This procedure applies to all employees, supervisors, managers and contractors working at ABC Welding and Supply at 123 N. Central Ave., Phoenix, AZ.

2.0 RESPONSIBILITIES

All personnel listed below shall follow the requirements of this section:

- 2.1 **Individuals Performing Hot Work**—Employees and contractors are responsible for complying with this safety procedure. Individual performing hot work shall:
 - 2.1.1 Perform only task in locations assigned, maintain, handle and store equipment according to instructions.
 - 2.1.2 Not perform any welding and cutting operations that are not deemed safe or where the conditions for cutting or welding are not safe.
 - 2.1.3 Perform only the operations for which they are thoroughly trained.
 - 2.1.4 Utilize appropriate protective safety equipment.
 - 2.1.5 Contact their supervisor if they have questions regarding safety.
 - 2.1.6 Have a fire extinguisher readily available before/during/after conducting hot work.
 - 2.1.7 Know how to complete a Hot Work Permit.
 - 2.1.8 Know the address of the facility and how to report a fire.
 - 2.1.9 Inspect equipment prior to each use and remove from service any equipment found defective or which poses a safety hazard.
 - 2.1.10 Maintain a Fire Watch for a minimum of 30 minutes following any hot work.



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- 2.2 Supervisors**—Managers and supervisors shall ensure that the contents of this procedure is clearly communicated to all affected employees and contractors, and are responsible for administering and implementing this procedure. Supervisors shall:
- 2.2.1 Ensure that their individuals working under their direction receive periodic training to verify that they are using the proper techniques and safety precautions when performing hot work.
 - 2.2.2 Ensure that their employees have the proper personal protective equipment.
 - 2.2.3 Ensure that pre-inspection check has been done and a hot work permit completed.
 - 2.2.4 Ensure that employees/contractors are thoroughly trained to perform their assigned tasks.
 - 2.2.5 Ensure that all the requirements of this Hot Work Program are fulfilled before work is performed.
- 2.3 Hot Work Permit Issuer**— The facility-designated personnel assigned as the “Hot Work Permit Issuer” shall to oversee and issue permits for hot work conducted at the facility and shall ensure that hot work safety measures are taken to prevent fires and fire spread. The Hot Work Permit Issuer shall:
- 2.3.1 Ensure that pre-inspection check list has been completed.
 - 2.3.2 Review/approve the hot work permit prior to work beginning.
 - 2.3.3 Ensure that a Fire Watch has been established for a minimum of 30 minutes following hot work.
 - 2.3.4 Sign-Off Hot Work Permit at completion of work and forward for record-keeping.
- 2.4 Hot Work Program Manager**—The Hot Work Program Manager shall be responsible for monitoring the implementation of the Hot Work Program and ensure that it is being effectively administered. The Hot Work Program Manager shall:
- 2.4.1 Designate one or more personnel as the “Hot Work Permit Issuer” who will be responsible to issue hot work permits.
 - 2.4.2 Coordinate safety training for all employees, supervisors and designated personnel regarding hot work.
 - 2.4.3 Maintain records of all employee safety training related to hot work.
 - 2.4.4 Maintain records of all Hot Work Permits issued within the previous 12 months.
 - 2.4.5 Conduct periodic audits to ensure that employees are utilizing approved equipment, materials, and work methods, and records are properly maintained.
- 2.5 Management**—Management shall ensure continued compliance with all elements of this Hot Work Program. Management shall:
- 2.5.1 Establish this policy to strictly enforce a permit system, which ensures that any hot work operations are not initiated until fire safety considerations have been addressed.



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2.5.2 Designate one person to function as Hot Work Program Manager.

3.0 CONTACT INFORMATION

3.1 Personnel approved to perform hot work include:

1. *Name*
2. *Name*
3. *Name*
4. *Name*

3.2 Personnel authorized to issue hot work permits and designated as a “Hot Work Permit Issuer” include:

1. *Name*
2. *Name*

3.3 The Hot Work Program Manager is: *Name* _____.

4.0 HOT WORK PROCEDURES

The following procedures shall apply when conducting hot work operations.

4.1 **Pre-Hot Work Inspection**—Prior to conducting any hot work the individual performing hot work shall conduct an inspection that includes the following:

- 4.1.1 Hot work equipment is in satisfactory operating condition.
- 4.1.2 Hot work site is clear of combustibles materials (at least 35 feet), or such materials are protected.
- 4.1.3 Combustible material within 35 feet shall be removed or provided with appropriate shielding to prevent sparks, slag or heat from igniting exposed combustibles.
- 4.1.4 Combustibles on the other side of walls are removed or otherwise protected.
- 4.1.5 Openings within 35 feet are protected or covered.
- 4.1.6 Floors are kept clean.
- 4.1.7 Flammable liquids, dust, lint and oil deposits are removed.
- 4.1.8 Approved actions have been taken to prevent accidental activation of fire detection/suppression equipment.
- 4.1.9 Fire extinguishers and fire hoses (where provided) are operable and available.

4.2 **Hot Work Permit**— Once the Pre-Work Inspection has been completed, the person performing hot work will consult with the Hot Work Issuer. The Hot Work Issuer will review the proposed hot work, and once approved, will fill out the Hot Work Permit.

4.3 **Prohibited Areas** —Hot work shall **NOT** be conducted in the following locations



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4.3.1 Hot work shall Not be conducted in a building with an automatic fire sprinkler system that is impaired, or in areas where flammable or combustible liquids or vapors are present or in areas where lint, dust, or combustible storage is at risk of being ignited by sparks or hot metal.

4.4 **Fire Watch**—A person shall be assigned during all hot work activities and continue for a minimum of 30 minutes after the conclusion of the work. This person shall:

- 5.1.1 Have ready access (within 30') to a portable fire extinguisher with a rating of at least 2A:20BC.
- 5.1.2 Be trained in the use of the fire extinguisher and hose lines (where provided).
- 5.1.3 Shall be responsible to FIRST call 9-1-1 to notify the Fire Department, and then extinguish spot fires.
- 5.1.4 The Fire Watch shall include the entire hot work area with additional personnel assigned when there are fire exposures that are not observable by a single individual.

5.0 OTHER SAFETY PRECAUTIONS

Compressed Gas — Storage, handling and use of compressed gas cylinders shall be as follows:

- 5.1.5 Portable cylinders/tanks are secured.
- 5.1.6 Caps or other valve protection is in place.
- 5.1.7 Valve protection caps shall NOT be used to lift cylinders.
- 5.1.8 Cylinder shall be secured in an upright position at all times.
- 5.1.9 Each cylinder must bear the proper DOT label to identify the contents.
- 5.1.10 Vehicle impact protection (traffic bollards) in place where needed.
- 5.1.11 Flammable gases (ex., acetylene) shall are incompatible with oxidizer gases (ex. Oxygen) and shall be stored by a partition wall or by at least a 20' line of site separation.
- 5.1.12 Signs shall be prominently identify the gases stored (ex., NON-FLAMMABLE GAS ONLY and FLAMMABLE GAS ONLY).
- 5.1.13 Equipment located inside of buildings shall be stored in a well ventilated dry location at least 20 feet from combustible materials, elevators, stairs or means of egress.
- 5.1.14 Cylinder, valves, regulators, hose, and other apparatus and fittings for oxygen, shall be kept free from oil or grease. They shall not be handled with oily hands, gloves, or greasy tools or equipment.
- 5.1.15 Cylinder, piping, and equipment used for acetylene gas shall be approved. Gas pressure, including piping, hosing and manifolds shall not exceed 15 pounds per square inch.
- 5.1.16 The acetylene line on an oxy/acetylene cart shall have a back flow check valve. Each torch shall have a back flash arrestor.
- 5.1.17 When changing out a cylinder, ensure that the cap is secure, avoid dragging or sliding cylinders and use proper lifting techniques.



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5.1.18 Fuel gas hose shall have contrasting color (red for acetylene, green for oxygen).

5.2 Electric Arc Hot Work— The following safety precautions shall be taken for arc welding:

- 5.2.1 Welding equipment shall be maintained in good operating condition.
- 5.2.2 Cables shall be kept dry and free of oil and suspended when possible.
- 5.2.3 Cables shall be protected if exposed to falling sparks.
- 5.2.4 Electrode holders shall be fully insulated and in good condition.
- 5.2.5 Operator shall make certain all electrical connections are secure made prior to starting.
- 5.2.6 Operator shall maintain a dry working area.
- 5.2.7 Operator shall wear rubber-soled shoes to provide resistance to electrical flow.
- 5.2.8 Electrical welding equipment is properly grounded and a disconnecting switch supplied if the equipment does not have one.
- 5.2.9 A switch or circuit breaker shall be provided so that fixed electric welder and control equipment can be disconnected from the supply circuit and marked EMERGENCY DISCONNECT.
- 5.2.10 If other employees in the vicinity of the welding operations, it must be screened so that employees cannot see the arc.

5.3 Other

- 5.3.1 Hot work shall NOT be performed on containers or equipment that contains or has contained flammable liquids, gases or solid until the container and equipment have been thoroughly cleaned, inerted or purged.
- 5.3.2 Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag or flame, will not reach them.

6.0 PERSONNEL PROTECTIVE EQUIPMENT

The following protective equipment will be utilized when conducting hot work:

- 6.1 **Eye Protection**—When performing hot work, the eye is exposed to sparks, slag, fumes and the flash, all of which can severely damage the eye. All employees performing hot work shall wear eye protection appropriated for that type of hot work.
- 6.2 **Clothing**—Employees are responsible for wearing the protective clothing that they feel is necessary. This may include cotton work gloves, a long sleeve heavy wool or cotton shirt or welding jacket.
- 6.3 **Respirator**—When welding or cutting for 15 minutes or more within an 8 hour time frame, a respirator may be required.



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6.4 Helmet—When required, a welding helmet or shield will be worn during welding operations.

7.0 TRAINING

Employees who perform hot work shall be trained to conduct hot work in a safe fashion.

- 7.1 Employees who perform hot work shall understand the following:
 - 7.1.1 The steps required to perform welding, cutting, brazing and other hot work.
 - 7.1.2 How to properly ground an arc welder.
 - 7.1.3 How to properly transport compressed gas cylinders.
 - 7.1.4 Proper storage of electrode holders to prevent electrical contact with people, conducting objects, fuels or compressed gas cylinders.
 - 7.1.5 How to prevent electrical shock including splicing requirement and the safe handling of welding electrode cables.
 - 7.1.6 Personal protective equipment required when performing the different types of hot work.
 - 7.1.7 Health hazards associated with hot work.
 - 7.1.8 How and when to perform inspection of hot work equipment.



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SAMPLE—HOT WORK PROGRAM

APPENDIX A—SAMPLE

HOT WORK PERMIT

BEFORE BEGINNING HOT WORK MAKE SURE ALL PRECAUTIONS ARE IN PLACE!

This hot work permit is needed for any welding, cutting, Thermit welding, brazing, soldering, grinding, thermal spraying, any operation involving open flame torches, or any other similar activity.

SUPERVISOR INSTRUCTIONS

1. Verify Pre-Work Inspection Checklist has been completed (or do NOT proceed with work).
2. Complete and retain this permit.

- Available sprinklers and hose streams are in service and operable.
- Hot work equipment is in good repair.
- Hot work site is clear or protected by at least 35 feet.
- Combustibles on the other side of walls are removed.
- Openings within 35 feet are protected or covered.
- Floors are swept clean.
- Flammable liquids, dust, lint and oil deposits are removed.
- Fire alarm company has been notified.
- Fire extinguishers available and readily accessible.

DATE	JOB NO.
NAME OF PERSON DOING HOT WORK	
WORK TO BE DONE	
LOCATION/FLOOR	
SPECIAL PRECAUTIONS NEEDED	
IS A FIRE WATCH REQUIRED? <input type="checkbox"/> Yes <input type="checkbox"/> No	
FIRE WATCH SIGN-OFF I verify that the above location has been inspected, the Pre-Work Inspection Checklist has been completed and the Special Precautions indicated have been taken. SIGNED:	
FINAL CHECKUP Work area was monitored for a reasonable amount of time following hot work and found safe. SIGNED: _____ Time: _____	
THIS PERMIT IS GOOD FOR ONE DAY ONLY!	

FIRE WATCH REQUIREMENTS

- Fire Watch is provided with a suitable extinguisher and/or a charged hose line.
- Fire Watch shall continue for a minimum of 30 minutes after hot work completed.
- If fire occurs, Fire Watch shall confirm that 9-1-1 has been called.
- Fire Watch is trained in the use of equipment and shall be responsible to extinguish spot fires.

OTHER PRECAUTIONS TAKEN:

PRE-WORK INSPECTION CHECKLIST