

<b>DEPT OF GOVERNMENT OPERATIONS</b> Policies and Procedures <b>DIVISION OF FACILITIES</b> <b>CONSTRUCTION AND MANAGEMENT</b>	Ref 64-05.0	Page 1 of 9
	Effective Date 11-9	Revision Date 07-01-2022
SUBJECT: Hot Works Policy	Revised by Thomas Peterson	

**CITATION REFERENCE: OSHA CFR 29 Part 1910.252; NFPA 51B, 2009 EDITION; 2021 International Fire Code**

## **I. PURPOSE**

State of Utah employees and State of Utah construction projects often are required to perform Hot Work in existing buildings. Hot Work is considered all temporary operations involving open flames or producing heat and/or sparks, which includes, but is not limited to, grinding/cutting, brazing, soldering; thawing frozen pipes by torch; and torch applied roofing and welding.

This activity presents a significant opportunity for fire and injury. Following the guidelines set forth in OSHA CFR 29 Part 1910.252, and in compliance with State adopted International Fire Code and NFPA 51B, 2019 Edition, the State of Utah requires that all precautions of the following program must be applied prior to commencing any welding or hot work by employees, general contractors and/or any subcontractors.

In order to protect employees, contractors and the general public from hazards accompanying Hot Work activities, the following Hot Work Program has been adopted.

## **II. POLICY**

All employees, and contractors on state owned or managed properties or construction projects shall conform to the procedures described in this Hot Work Program.

## **III. PROCEDURES**

- 1.0 All facilities shall comply with procedures described in the Hot Work Program. Any employee authorized as a Permit Authorizing Individual, a Hot Work Operator and a Fire Watch will be trained in the proper use of this program. The fire watch and the person completing the hot work must be trained in the use of appropriate fire equipment whether an employee or Contractor.
- 2.0 Training will consist of the following:
  - 2.1 View the Interactive PowerPoint Training Program annually
  - 2.2 Obtain the successful completion certificate
  - 2.3 Read this Hot Work Policy
  - 2.4 Submit the Hot Work Training Certificate to the DFCM Administrative office,

agency office or DFCM Project Manager responsible for the project.

- 2.5 For DFCM FM Group or agencies, appoint two Permit Authorizing Individuals (PAI's) per complex, and share this information with crew members.
  - 2.6 When performing Hot Work, each entity, PAI, HWO & Fire Watch, need to know just what their duties and responsibilities are.
- 3.0 Also included in the Program is the required Permit and signage, which must be printed out and posted before Hot Work is authorized to commence.

#### **IV. REQUIREMENTS**

##### 1.0 Purpose

- 1.1 DFCM, Contractors, and Agency employees often are required to perform Hot Work, which includes any activity producing heat or sparks. This presents a significant opportunity for fire and injury. In compliance with NFPA 51B, 2019, this policy requires that all precautions of this program must be applied prior to commencing any welding or hot work by employees or outside contractors.

##### 2.0 Definitions of Hot Work Procedures and Requirements

- 2.1 Hot Work: any activity involving open flames or producing heat and/or sparks. This includes, but is not limited to, grinding/cutting, brazing, soldering; thawing frozen pipes by torch; and torch applied roofing and welding.
  - 2.1.1 Examples of Hot Work: Cutting, brazing, soldering, thawing frozen pipes by torch, torch applied roofing, grinding and welding.
  - 2.1.2 Special Hazard Occupancies: Any area containing flammable liquids, dust accumulation, gases, plastics, rubber and paper products.
- 2.2 Designated Area: An area where hot work may be performed without the need for a permit to be assigned. Examples of these areas include, but are not limited to, welding booths in tech colleges and areas designated for hot work activities in UDOT Maintenance Facilities, etc.
- 2.3 Permit Authorizing Individual(s) (PAI): In conjunction with management, responsible for the safe operation of Hot Work activities. There shall be two PAI's established per complex.
- 2.4 Hot Work Operator (HWO) This includes outside contractors: The individual responsible for completing the hot work, under the direction of the PAI(s).
- 2.5 Fire Watch: Individual assigned to watch the area for sparks, or any other unsafe conditions. The person doing the hot work should never be the fire watch. The only focus of this person shall be fire watch.
- 2.6 Welding Blanket: A heat-resistant fabric designed to cover and protect machinery and to prevent ignition of combustibles such as wood. Intended to lie horizontally on the equipment and protect against light to moderate exposures from chipping, grinding, heat treating, sand blasting and light horizontal welding.

- 2.7 Welding Curtain: A heat-resistant fabric designed to prevent sparks from escaping a confined area. Intended to vertically hang, and will protect from light to moderate exposures resulting from chipping, grinding, heat treating, sand blasting and light horizontal welding.
- 2.8 Welding Pads: A heat-resistant fabric designed to be placed directly under a Hot Work operation to prevent the ignition of combustibles. Intended to lie underneath horizontally, and protects from severe exposures resulting from molten substances or heavy horizontal welding.
- 3.0 All personnel involved with construction should be trained in correct procedures of identifying hot work, obtaining the authorization and permit, and functioning in the assigned capacity of PAI, HWO, or Fire Watch.
  - 3.0.1 Training will consist of:
  - 3.0.2 Annual completion of on-line Hot Work PowerPoint, and Quiz.
  - 3.0.3 Annual review of this Hot Work Policy
  - 3.0.4 Establishment of responsibilities of Hot Work, i.e., PAI, HWO, or Fire Watch.
- 4.0 Management and/or Supervisor and/or PAI must consider before Hot Work is authorized:
  - 4.1 Is there an acceptable alternative to Hot Work?
    - 4.1.1 Remember that the State of Utah has limited "Designated Areas." So, a Hot Work Permit is almost always required.
    - 4.1.2 Is the proposed work to be performed in a nonpermissible area? If so, there is no authorization and a permit will not be issued.
    - 4.1.3 Nonpermissible areas are those:
      - 4.1.3.a. Where sprinklers are impaired
      - 4.1.3.b. In the presence of explosive atmospheres
      - 4.1.3.c. In the presence of equipment that may contain explosive materials
      - 4.1.3.d. Where combustible dust could accumulate
      - 4.1.3.e. On walls of combustible sandwich-type panel construction
      - 4.1.3.f. Windy or other weather conditions create an unsafe environment.
  - 4.2 Is the proposed work to be performed in a permissible area? If so, a permit is required.
  - 4.3 Management and/or PAI shall ensure that all involved in the Hot Work operations, including contractors, are familiar with the provisions of this standard. Management and PAI are responsible for the safe operations of Hot Work activity.
    - 4.3.1 All those involved (contractors) in the Hot Work need to be advised about site-specific flammable materials, hazardous processes or condition, or other potential fire hazards.
    - 4.3.2 Before starting any work, contractors shall discuss the planned project, with the type of Hot Work to be performed and the hazards in the area.

#### 4.4 Possible alternatives to Hot Work may be:

- 4.4.1 Mechanical removal and relocation of frozen piping to a heated area
- 4.4.2 Manual hydraulic shears
- 4.4.3 Mechanical bolting
- 4.4.4 Screwed, flanged, or clamped pipe
- 4.4.5 Reciprocating saw
- 4.4.6 Mechanical pipe cutter
- 4.4.7 Approved self-drilling or compressed air-actuated fasteners

#### 5.0 Documentation Process

##### 5.1 All Hot Work is required to have an authorizing written Hot Work Permit issued before beginning work. Part of the permit is the attached sign(s) which must be posted as well as the Permit.

- 5.1.1 The work area must be made fire-safe either by removing or protecting combustibles from ignition sources.
- 5.1.2 While the Hot Work is being performed, signs must be posted designating the area as a Hot Work area. Post as many as needed to inform anyone of the need for caution.
- 5.1.3 A copy of the signed Hot Work Permit must be posted before Hot Work can be performed.
- 5.1.4 Hot work will not be permitted in areas where sprinklers are impaired, in the presence of explosive atmospheres, in the presence of equipment that may contain explosive materials, or where combustible dust could accumulate, or on walls of combustible sandwich-type panel construction.
- 5.1.5 Before a Hot Work Permit is issued, the PAI must ensure the following has occurred:
  - 5.1.5.a Hot Work equipment is in satisfactory operating condition and good repair. Otherwise it is taken out of service.
  - 5.1.5.b Combustible materials (paper clippings, wood shavings, etc.) on the floor are swept off for a radius of 35 ft (11m).
  - 5.1.5.c Wet down, cover with wet sand, or cover with fire-retardant or non-combustible material combustible floors and protect from electric shock those operating welding equipment. The material must be a UL Listed or approved welding curtain, blanket, pad, or equivalent.
  - 5.1.5.d Relocate all combustibles at least 35 ft in all directions from the work site, unless impractical, then they must be covered with fire-retardant or non-combustible material. The material must be made tight to prevent sparks from entering area.
  - 5.1.5.e Cover or seal cracks in walls and floors or ducts within a 35 ft radius with fire-retardant or non-combustible material.
  - 5.1.5.f Shield or shut down conveyor systems.
  - 5.1.5.g Shield walls, partitions, ceilings or roofs, including preventing ignition of combustibles on the other side of walls or ceilings being worked on, or else provide a Fire Watch for that area.

- 5.1.5.h Do not attempt Hot Work on a partition, wall, ceiling, or roof that has a combustibile covering or insulation, or on walls or partitions of combustibile sandwich-type panel construction.
- 5.1.5.i Make sure that Hot Work on pipes or metal in contact with walls will not cause ignition.
- 5.1.5.j The appropriate type of fire protection equipment must be immediately available at the work area. It must be fully charged and operable.
- 5.1.5.k Connect existing fire hose lines. They are not required to be unrolled or charged. An ABC fire extinguisher must be located within 25 feet of the hot work.
- 5.1.5.l Temporarily disable fire detection system for area if applicable. All precautions should be taken to prevent the activation of the fire protection system. If there is a potential of activation, the fire marshal or department special deputy should be consulted for proper protection of the system. If impairment is required, refer to IFC 3504.1.8 for proper impairment procedures.
- 5.1.5.m Protect nearby personnel from heat, sparks, slag, etc. Extend the distance from the Hot Work if necessary to protect them.
- 5.1.5.n If the tools, equipment, etc. used to conduct the Hot Work is known to be incapable of emitting heat sparks, slag, etc., to the limits planned for (35 feet) then the distance can be reduced. These distances need to be described on the Permit.
- 5.1.5.o Determine the length of time Permit is valid. A Permit is required for each calendar day work will be performed.
- 5.1.5.p Set up appropriate inspection reviews of no less than once daily and note inspection time on permit.
- 5.1.5.q Permit is filled out, all check boxes are completed, and signs are posted.
- 5.1.5.r After completion of Hot Work, successful and safe inspection of area, cancellation of Hot Work Permit and removal of signs, PAI must file the cancelled permit with the appropriate maintenance office supervisor.
- 5.1.5.s PAI must inspect area before leaving for the day to detect any smoldering flames.

6.0 Supervisor or Permit Authorizing Individual(s) Responsibilities: There shall be two PAI's established per complex. The PAI(s) shall:

- 6.1 Ensure the safety of the Hot Work operator and Fire Watch by considering PPE needed, flammable materials present, hazardous materials present, other potential fire hazards present in the work location or other special hazards beyond Hot Work.
- 6.2 Ensure the protection of combustibles, or reschedule hot work so that operations do not expose combustibles to ignition.
  - 6.2.1. If not possible, PAI can decide not to perform the hot work at this site.
  - 6.2.2 Another option is to schedule Hot Work operations so that exposure of

combustibles to ignition will not occur during the Hot Work operation.

- 6.3 Determine that adequate fire protection equipment is available and in safe operating condition.
  - 6.4 Determine if a Fire Watch is required and if so, is available.
  - 6.5 Inspect the area at least once a day while Hot Work is being performed to ensure it is still fire- safe. Stop Hot Work if unsafe conditions develop. A minimum 60-minute fire watch is required after the completion of any hot work being performed.
  - 6.6 Check one half hour after completion of Hot Work for smoldering fires if Fire Watch is not needed.
  - 6.7 Determine length of time permit is valid, and post the signed Hot Work Permit and all needed signs at the work site.
  - 6.8 Close out Hot Work Permit after inspection of area and finding area safe and secure. Remove signage.
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- 7.0 Hot Work Operator (HWO) Responsibilities (This includes outside contractors) The HWO must handle equipment safely and not endanger lives and property. The HWO shall:
    - 7.1 Have the PAI's approval and signed permit prior to performing Hot Work. HWO must also sign permit on appropriate space before commencing work.
    - 7.2 Ensure all equipment is in safe operating condition, and if not, get repaired prior to use, or put out of service.
    - 7.3 Ensure that fire protection equipment is available in area.
    - 7.4 Stop work if unsafe conditions develop, and notify PAI for reassessment of the situation.
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- 8.0 Fire Watch. This may also be the PAI under certain conditions. Where the HWO is a third-party vendor or State employee, a separate individual not performing the work must provide the Fire Watch.
    - 8.1 A Fire Watch shall be required when Hot Work is performed within the footprint of a building or where the following conditions exist:
      - 8.1.1 Combustible materials in building construction or contents are closer than 35 ft (11 m) to the point of operation.
      - 8.1.2 Combustible materials are more than 35 ft (11 m) away from the point of operation but are easily ignited by sparks.
      - 8.1.3 Wall or floor openings within a 35 ft (11 m) radius expose combustible materials in adjacent areas, including concealed spaces in walls or floors.
      - 8.1.4 Combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited.
    - 8.2 The Fire Watch shall:
      - 8.2.1 Be trained annually to understand the hazards of the work site and of Hot Work.
      - 8.2.2 Ensure that safe conditions are maintained during Hot Work operations

- 8.2.3 Stop Hot Work operations if unsafe conditions develop
- 8.2.4 Have fire protection equipment available, and be familiar with the facilities and procedures for sounding an alarm in case of a fire.
- 8.2.5 Watch for fires in all exposed areas and try to extinguish them only when it is within their capacity. Otherwise, they must sound the alarm immediately. More than one is required if the operation cannot be directly observed by the initial fire watch.
- 8.2.6 Continuously monitor Hot Work area one hour after completion of work.
- 8.2.7 Sign permit after initial inspection of area (before Hot Work is completed) and after completion of Hot Work and successful Fire Watch inspection of area has been completed (minimum of 60 minutes after completion).
- 8.2.8 May perform other duties, but none that distract them from fire watch responsibilities.

## 9.0 Summary of Hot Work Procedures

- 9.1 There is a mutual responsibility for safety in Hot Work procedures between management, contractors, the PAI, HWO, and Fire Watch. When Hot Work needs to be performed, these procedures shall be followed.
  - 9.1.1 Determine if the work can be done any other way besides using Hot Work methods. If determined necessary, and approved by the supervisor or facility coordinator, proceed according to DFCM Hot Work Program
  - 9.1.2 The PAI, HWO, Fire Watch are determined and communicated with so everyone understands the possible hazards, protection needed, and any restrictions. If contractors are involved, they must be trained and shall follow DFCM Standards.
  - 9.1.3 PAI inspects the Hot Work area, equipment, walls, ceilings, floor coverings as stated in Section 4.0 and 5.0. If determined permissible, PAI must complete, obtain all signatures, sign and post a written Hot Work Permit, and post as many signs as needed to inform others in the area.
  - 9.1.4 The appointed HWO, after being authorized by the PAI, follows the procedures as stated in Section 5.0, proceeds with the Hot Work, and reports to the PAI upon completion of Hot Work.
  - 9.1.5 The Fire Watch completes tasks as referred to in Section 8.0, and reports to the PAI upon completion of Fire Watch activities. Fire Watch signs Permit before HWO begins, and after successful and safe inspection of area is completed (minimum of 60 minutes after Hot Work is completed).
  - 9.1.6 PAI re-inspects area to insure safety, waiting at least one hour after Hot Work is complete, signs off on Permit, removes signage and cancels Hot Work Permit if area is safe and secure.
  - 9.1.7 PAI files cancelled Permit with the applicable maintenance office.
  - 9.1.8 PAI must check the area one more time before leaving for the day to verify there are no smoldering flames or embers a minimum of one hour after hot works completion.

## 10.0 Designated Areas.

10.1 A designated hot work area is a permanent location designed for hot work. These areas do not require a daily permit to perform hot work. Designated areas are only permitted to be used when the structure in which they are done has all fire protective systems (I.A. fire alarm and suppression systems) that are completely functional. A designated hot work area shall be:

- Non-combustible, fire-resistive construction, free of combustibles and flammables to the distances shown in the illustrations of section 11 of this policy.
- The working surface for the use of the soldering and brazing activities should be of a non-combustible material (i.e. Steel, Laboratory bench top, Duraboard, tile, etc).
- Suitably segregated from adjacent areas.
- Equipped with fire extinguisher(s).
- Equipped with mechanical or other ventilation to control smoke and fumes.
- Inspected and approved by Facility Management on a quarterly basis.

## 11.0 Illustration of the 35-foot rule



