

**Hot Work Policy****64-05.0****Effective Date 11-09****Revision Date 12-20****CITATION REFERENCE:****OSHA CFR 29 Part 1910.252; NFPA 51B, 2009 EDITION****I. PURPOSE**

DFCM Facilities Management (FM) employees and DFCM 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 NFPA 51B, 2009 Edition, DFCM requires that all precautions of the following program must be applied prior to commencing any welding or hot work by FM 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 DFCM employees, contractors on DFCM managed facility properties or DFCM construction projects shall conform to the procedures described in the DFCM 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 a DFCM employee or Contractor.
- 2.0 Training will consist of the following:
  - 2.1 View the Interactive PowerPoint Training Program
  - 2.2 Obtain the successful completion certificate
  - 2.3 Read the Hot Work Program
  - 2.4 Submit the Hot Work Training Certificate with the DFCM Administrative office, sending it to Research Analyst or FM Program Support Specialist.
  - 2.5 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.

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- 1.1 Facilities Management (FM) 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, 2009, FM requires that all precautions of this program must be applied prior to commencing any welding or hot work by FM 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. For the use of FM personnel and any outside contractors, it has been determined that there will be no "designated areas." Therefore, when performing "Hot Work" a permit must always be obtained.
- 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 FM 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 is not allowed to be the fire watch. They cannot be focused on the job they are trying to complete and what is going on around them.
- 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.

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- 3.1 All FM personnel will 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.

Training will consist of:

3.1.1 Completion of on-line Hot Work PowerPoint, and Quiz.

3.1.2 Review of DFCM Hot Work Program

3.1.3 Establishment of responsibilities of Hot Work, i.e., PAI, HWO, or Fire Watch.

**Before Hot Work is Authorized**

- 4.0 Management (Facility Coordinator and/or Supervisor and/or PAI must consider before Hot Work is authorized:

4.1 Is there an acceptable alternative to Hot Work?

4.2 Remember that DFCM has no "Designated Areas." So, a Hot Work Permit is always required.

4.3 Is the proposed work to be performed in a permissible area? If so, there is no authorization, and a permit will not be issued.

4.3.1 Nonpermissible areas are those:

4.3.1.a. Where sprinklers are impaired

4.3.1.b. In the presence of explosive atmospheres

4.3.1.c. In the presence of equipment that may contain explosive materials

4.3.1.d. Where combustible dust could accumulate

4.3.1.e. On walls of combustible sandwich-type panel construction

4.4 Is the proposed work to be performed in a permissible area? If so, a permit is required.

4.5 Management and/or PAI shall insure 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.

4.5.1 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.

4.5.2 Before starting any work, contractors & their clients shall discuss the planned project, with the type of Hot Work to be performed and the hazards in the area.

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4.6 Possible alternatives to Hot Work may be:

4.6.1 Mechanical removal and relocation of frozen piping to a heated area

4.6.2 Manual hydraulic shears

4.6.3 Mechanical bolting

4.6.4 Screwed, flanged, or clamped pipe

4.6.5 Reciprocating saw

4.6.6 Mechanical pipe cutter

4.6.7 Approved self-drilling or compressed air-actuated fasteners

5.0 Documentation Process

5.1 Since there shall be no designated areas for Hot Work in DFCM managed facilities, 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.

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- 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 combustible covering or insulation, or on walls or partitions of combustible 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 . 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 903/907 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.

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- 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.
  - 5.1.6 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.
  - 5.1.7 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 FM 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.

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- 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 Cancel Hot Work Permit after inspection of area and finding area safe and secure. Remove signage.
- 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.
- 8.0 Fire Watch. This may also be the PAI under certain conditions. Where the HWO is a third party vendor, FM employee or a separate employee of the contractor not performing the work must provide the Fire Watch when stipulated as such..
  - 8.1 A Fire Watch shall be required by the PAI 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 mm) 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 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

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- 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 Check Hot Work area one half 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 Perform other duties, but none that distract them from fire watch responsibilities.
- 9.0 Summary of Hot Work Procedures
- 9.1 FM recognizes that 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, FM should follow these procedures.
    - 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 completely informed and must understand they must 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.



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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.

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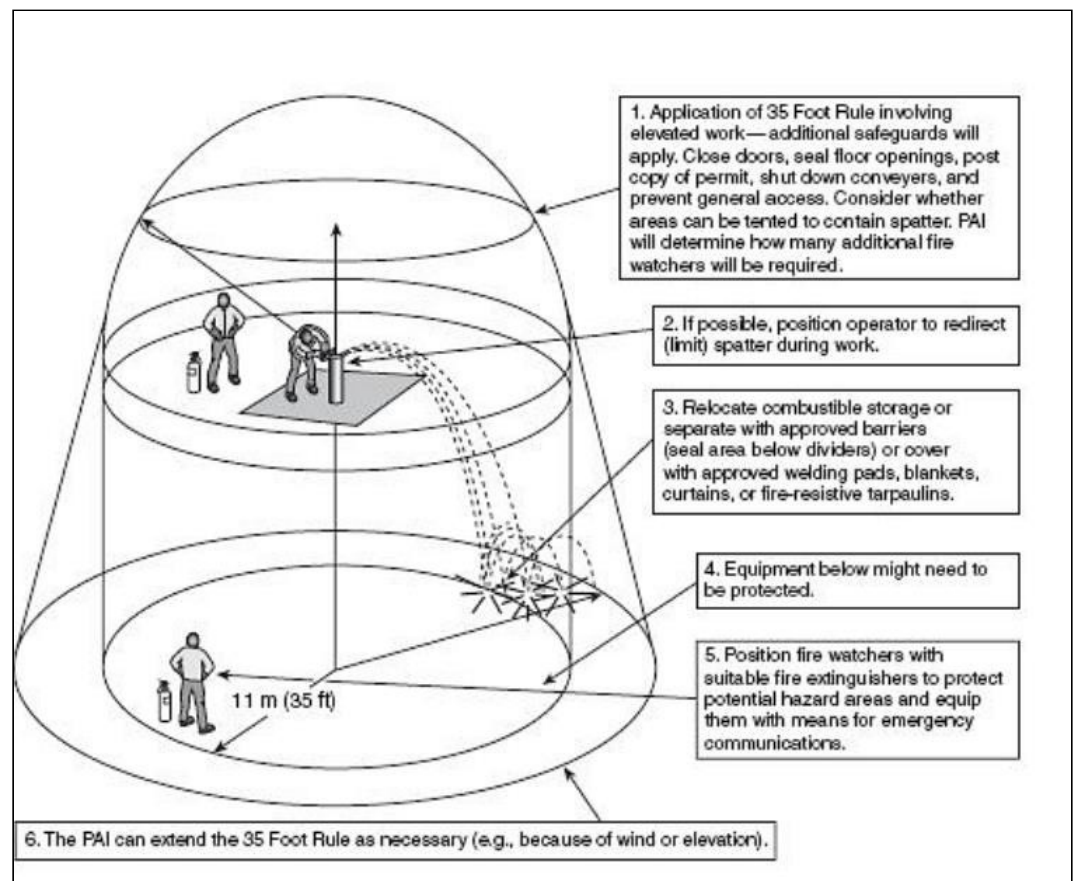
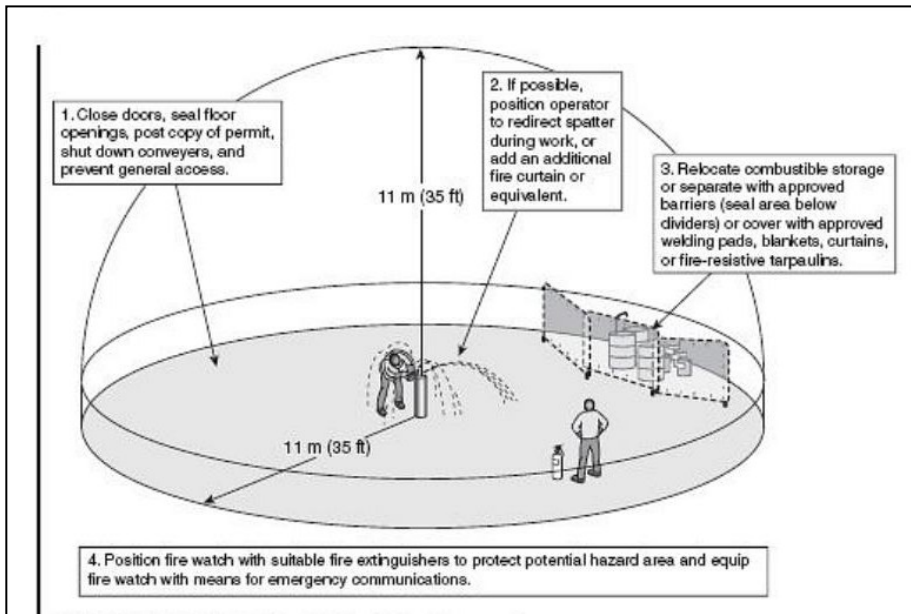
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**10.0 Illustration of the 35-foot rule**



**Hot Work Permit**

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# DFCM HOT WORK PERMIT

For operations involving open flames or producing heat and/or sparks

**Complete form and post in vicinity of hot work. Post attached sign in vicinity of hot work.**

Date	<b>This location has been examined , precautions marked on the checklist below have been taken, and permission is granted for this work</b>
Time Started                      Time Completed	
Location (Be Specific)	Signature – Permit Authorizing Individual (PAI)
Description of Work	Signature – Hot Work Operator (HWO)
<b>THIS PERMIT IS GOOD FOR ONE DAY ONLY</b>	Signature – Fire Watch

- ┌ **Sprinklers and hose streams in service/operable.**
- ┌ **Hot Work equipment in good condition (e.g., power source, welding leads, torches, etc.)**
- ┌ **Multi-purpose fire extinguisher and/or water pump can.**

**REQUIREMENTS WITHIN 35 FEET OF WORK**

- ┌ Floors swept down & trash removed – no dust, lint, debris, flammable liquids and oily deposits.
- ┌ Protect from electrical shock when floors are wet.
- ┌ Explosive atmosphere in area eliminated.
- ┌ Combustible floors (e.g., wood, tile, carpeting) wet down, covered with damp sand or fire blankets.
- ┌ Remove flammable and combustible material where possible. Otherwise protect with fire blankets, guards, or metal shields.
- ┌ All wall and floor openings covered.
- ┌ Ducts & conveyers that might carry sparks covered, protected, or shut down.
- ┌ Walkways protected beneath hot work.

**WORK ON WALLS OR CEILINGS**

- ┌ Combustibles moved away from other side of wall.
- ┌ Construction is noncombustible

**WORK IN CONFINED SPACES**

- ┌ Confined space cleaned of all combustibles (example: grease, oil, flammable vapors).
- ┌ Pressurized vessels, piping, equipment removed, isolated and vented.
- ┌ Containers purged of flammable liquids/vapors.

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**FIRE WATCH/HOT WORK AREA MONITORING**

- ┌ Fire Watch will be provided during and for 60 minutes after work, including any coffee or lunch breaks.
- ┌ Fire Watch is supplied with an extinguisher, and/or water pump can, also making use of ~~other~~ extinguishers in area
- ┌ Fire Watch is trained in use of this equipment and familiar with location of sounding alarm.
- ┌ Fire Watch may be required for opposite side of walls, above, and below floors and ceilings.

**FIRE WATCH SIGNOFF:**

Work area and all adjacent areas to which sparks and heat might have spread were inspected during the Fire Watch period and found to be fire safe.

Signed:

**FINAL CHECKUP (Minimum 60 minutes after Hot Work):**

Work area was monitored for \_\_\_\_\_ hours following Hot Work and Found fire safe

Signed:

# **WARNING!**

## **HOT WORK IN PROGRESS**

# **WATCH FOR FIRE!**

### **IN CASE OF AN EMERGENCY**

## **CONTACT DFCEM OFFICE**

CALL: \_\_\_\_\_

AT: \_\_\_\_\_

If your call is not answered, please call the local Fire Department at: \_\_\_\_\_