

**Beth Israel Deaconess Medical Center
Environment of Care Manual**

Title: *Hot Work Procedure*

Policy #: *EC-83*

Purpose:

This procedure shall cover provisions to prevent loss of life and property from fire or explosion as a result of hot work. Hot work permits are required for any temporary operation involving open flames or producing heat and/or sparks. All hot work shall conform to the requirements in the Fire Prevention Regulations for the Commonwealth of Massachusetts (527 CMR 39.00), BFD/City of Boston regulations, NFPA 241 and OSHA regulations (29CFR 19.26 Subpart J and 29CFR 1910 Subpart Q).

Scope:

This program applies to all medical center locations, including off-site facilities (under the BIDMC license). This procedure shall cover but not limited to the following hot work procedures:

- Welding and allied processes.
- Heat Treating.
- Grinding.
- Thawing pipe.
- Powder-driven fasteners.
- Hot riveting.
- Open flame soldering
- Similar applications producing a spark, flame or heat.
- Additional requirements for hot work operations in confined spaces.
- Torch-applied roofing.

Procedure:

A. General

1. The following actions shall be performed by the BIDMC employee who is responsible for project oversight along with the vendor. BIDMC employees include but not limited to: Facilities Project Managers, Facilities Fire Protection Program Manager (FPPM), Research Facilities Project Managers, IS Managers/Project Managers, Telecom Managers/Project Managers, Trade Supervisors, Maintenance Supervisors, Security Project Managers, and Trade Lead Personnel.

2. The provisions of this document shall be considered necessary to provide a reasonable level of protection from loss of life and property from fire and explosion.
3. Hot work shall be allowed only in areas that are or have been made fire safe. Hot work shall be performed in either permanently designated areas or permit-required specific areas.
4. A designated area shall be a specific area designed or approved for such work, such as a maintenance shops essentially free of combustible and flammable contents, and suitably segregated from adjacent areas.
5. When no hot work is being performed, refer to [EC-75 Fire Watch Procedure for Hot Work, Impaired Fire Detection and/or Fire Alarm Suppression Systems](#)

B. Management/Supervisory Responsibilities

1. BIDMC Management and supervisors shall be responsible for the overall safe operations of all hot work activity.
2. The hot work safety team includes the following key roles. Each of these roles are required to be trained and certified by completing the National Fire Protection Association (NFPA) – Hot Works Safety Certificate 1-Day Program:
 - Permit Authorizing Individual (PAI) *Note: The PAI is often the Project Manager (PM)*
 - Hot Work operator
 - Fire Watch
3. BIDMC Management shall ensure that all individuals involved in the hot work operations are familiar with the provisions of this procedure. These individuals shall be trained in the safe operation of their equipment and the safe implementation of the process. These individuals shall have an awareness of the inherent risks involved and understand BIDMC's emergency procedures in the event of a fire.
4. BIDMC Project managers and general contractor superintendents shall advise all outside contractors about site-specific flammable materials, hazardous processes, or other potential fire hazards.
5. The designated BIDMC Project Manager shall oversee implementation of this program for their individual projects. The person requesting the hot work serves as the PAI. The Fire Protection Program Manager or designee has overall authority over all Hot Work Permits and anyone assigned to this

role shall have completed the NFPA Hot Works Safety Certificate training.

C. Hot Work Permits

I. Permit Procedures - Contractors

1. The contractor shall submit to BFD/local fire department a completed **BFD Application for Cutting/Welding and other Hot work**. Included in the permit application will be the complete list of all contractors' names and NFPA Hot Work training certification number for all individuals that will be doing the hot work and fire watch.
2. Contractor will pick up from BFD the approved **Permit (Attachment A sample)**. Contractor will submit Permit to PM/PAI. At the time of the permit issuance, the BFD will make the determination if a fire department Paid Detail will be required. Permits must be posted on-site.
3. The **“Hot Work Permit (Attachment B, Part 1 Left Column)** shall be completed jointly by Contractor and PM/PAI to assure that all standards are met. Per regulation, this form must include the NFPA Training Certificate number for both the person doing the hot work AND the person responsible for the Fire Watch. PM/PAI will also review and check off with the Contractor all applicable sections in **Attachment B, Part 1 Right Column “Required Precautions Checklist”**. The Contractor will also review and sign the **Part 1 Section “Fire Watch/Work Area Monitoring”**. **These steps must be done after the permit is received and prior to any work commencing. This requires a site visit by the PM/PAI to assure all requirements are met.**
4. Contractor and PM/PAI to complete **Attachment B Part 2 (carbon copy of Part 1 with addition of Fire Watch Sign Off and Final Checkup sections)** at the same time as Part 1 completed.
5. PM/PAI to also complete **Part 2, “Warning Hot Work in Progress”** in case of emergency section with Code Red alarm directions: Pulling the closest pull station AND calling 2-1212/or specific facility notification number.
6. Contractor to post at site entrance the Hot Work Site Warning Notification (**Attachment B Part 2 Warning Notification**) while hot work is on-going. At completion of hot work, the warning is to be removed and filed by the PM/PAI.
7. All hot work scheduled for evenings, nights and weekends shall be

coordinated by the Project Manager. All necessary permits shall be obtained during normal work hours. In extreme emergencies, the Director of Facilities and Engineering or designee may issue permit in lieu of PM/PAI.

II. Permit Procedures – In-House

1. Hot Work on designated locations the main campus performed by hospital staff is covered by an annual HW Permit issued by BFD. For all other locations, hospital staff to follow local permit requirements. Hospital staff performing hot work and fire watch must also have their NFPA Hot Work Certificate as proof that they have completed the training.
2. The hospital permit does not cover outside vendors contracted by a specific department. Such outside vendors need their own permit and to follow the requirements outlined in this procedure/local jurisdiction.

III. Pre-Inspection Procedure (Refer to Attachment D Part 1 and 2)

The PM requesting the Hot Work Permit serves as the PAI. Review of safety requirements for hot work is recommended to occur during any of the following and can include safety consultation with the Environmental Health and Safety - Safety Officer:

- Pre-Construction Risk Assessment (PCRA)
- Interim Life Safety Management (ILSM)
- During work site visits

Essential role of the PM/PAI includes: training in health and safety issues regarding hot work; is familiar with types of hot work; visits the work site to evaluate to continually ensure that the following occurs before and during hot work:

1. Evaluate if the work can be done without the use of open flame or welding.
2. Consider moving the work to a location free from combustibles.
3. If the work cannot be moved, ensure the combustibles are moved to a safe distance or have the combustibles properly shielded against ignition.
4. Ensure hot work is scheduled such that operations that could expose combustibles to ignition are not started during hot work operations.
5. Where combustible materials, such as paper clippings, dust, lint, wood shavings, or textile fibers, are on the floor, the floor shall be swept clean for a radius of 35 ft. Floor shall be clean of debris, grease and oils.
6. Combustible floors (except wood on concrete) shall be kept wet, be covered with damp sand, or be protected by noncombustible or fire-retardant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.
7. All combustibles shall be relocated at least 35 ft horizontally from the

work site. If relocation is impractical, combustible shall be protected with fire-retardant covers or otherwise shielded with metal or fire-retardant guards or curtains. Edges of covers at the floor shall be tight to prevent sparks from going under them, including where several covers overlap when protecting a large pile.

8. Openings or cracks in walls, floors, or ducts within 35 ft of the work site shall be tightly covered with fire-retardant or noncombustible material to prevent the passage of sparks to adjacent areas. Floor openings should be plugged with a Factory Mutual Research Corporation (FMRC) Approved material.
9. Conveyor systems that might carry sparks to distant combustibles shall be shielded.
10. Ducts and ductwork are to be sealed with metal covers built for the vent, or covered with fire resistant tarpaulins. Ductwork can potentially circulate the products of combustion throughout the facility. If possible, the ventilation system should be shut down. Caution should also be exercised because the ductwork may be dusty and/or contain combustible insulating material.
11. If hot work is done near walls, partitions, ceilings, or roofs of combustible construction, fire-retardant shields or guards shall be provided to prevent ignition.
12. If hot work is to be done on a wall, partition, ceiling, or roof, precautions shall be taken to prevent ignition of combustibles on the other side by relocating combustibles. If it is impractical to relocate combustibles, a fire watch on the opposite side from the work shall be provided.
13. Fully charged, certified up to date and operable fire extinguishers that are appropriate for the type of possible fire shall be available immediately at the work area. If existing hose lines are located within the hot work area defined by the permit, they shall be connected and ready for service, but shall not be required to be unrolled or charged.
14. During hot work, special precautions shall be taken to avoid accidental operation of automatic fire detection or suppression systems (for example, special extinguishing systems or sprinklers).
15. When hot work is performed at an elevated level, it should be noted that the sparks or slag could fall at a trajectory and land further than 35 ft horizontally from a point directly under the hot work operator.
16. All flammable & combustible liquids and gases such as paints, oils, thinners, and lacquers shall be removed from the immediate work area, and properly stored.
17. The potential for explosive atmospheres must be considered.
18. Hot work done on or near pipes shall be examined for the possibility of conduction of heat to an area beyond that of the area of hot work. Unless special permission is granted by the fire department and FPPM, sprinklers in work area must remain live. If so, additional measures will be taken such as increased fire extinguishers within the area and will always involve a fire watch.

IV. General Precautions

1. Only approved apparatus, such as torches, manifolds regulators or pressure-reducing valves shall be used.
2. Hot work shall not be attempted 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.
3. Hot work that is performed on pipes or other metal that is in contact with combustible walls, partitions, ceilings, roofs, or other combustibles shall not be undertaken if the work is close enough to cause ignition by conduction.

V. Hot Work Operator

1. Hot Work operator must have an NFPA Hot Work Safety training certificate number demonstrating completion of the course
2. The operator shall have a written hot work permit before starting hot work operations.
3. The PM/PAI shall inspect the site prior to beginning any hot work.
4. The hot work operator shall inspect the equipment before beginning work.
5. The operator shall handle the equipment safely.
6. The operator shall cease hot work operations if unsafe conditions develop and shall notify the PM/PAI, the contractor supervisor, for reassessment of the situation.

VI. Fire Watch

1. Fire Watch person(s) must have an NFPA Hot Work Safety training certificate number demonstrating completion of the course.
2. Refer to [EC-75 Fire Watch Procedure for Hot Work, Impaired Fire Detection and/or Fire Alarm Suppression Systems](#).

VII. Applicable Codes, Standards, and Regulations

- Chapter 41 of 527 CMR 1.00 Massachusetts Comprehensive Fire Safety Code

- ANSI/ASC Z49.1 – Safety in Welding, Cutting, and Allied processes
- NFPA 51B – Fire Prevention During Welding, Cutting or other Hot Work
- NFPA 1 – Fire Prevention Code
- NFPA and City of Boston Hot Work Training Certificate requirement
- NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations (Regarding torch applied roofing)
- 29 CFR 1910.252 – OSHA Welding, Cutting & Brazing Standard

Attachment A: BFD Permit Sample

Attachment B: BIDMC Insurance Form Part 1, Part 2 and Warning Notice

Vice President Sponsor: David Flanagan VP Capital Facilities and Engineering

Approved By:

EOC Committee: 7/13/2022

**K. Murray & D. Flanagan
Co-Chair**

**Requestor Names: John Pagani, Director, Engineering and Infrastructure
Jarrod Dore, Director, Capital Facilities
Christine Powers, Director, Environmental Health and Safety**

Original Date Approved: 7/2019

Next Review Date: 7/25

Revised:

Eliminated:

References

EC-83 Attachment A : BFD Cutting,Welding/Other Hot Work Pennit
SAMPLE



MarUn J. Walsh
Mayor

Boston Fire Departm ent
 Fire Prevention Division
 1010 Massachusetts Ave- 4th Floor
 Boston, MA 02118

Cutting/Welding/Other Hot Work
 PERMIT

Pennit:
 Issued:
 Start:
 End:
 Fire District:

Applicant: _____ Phone: _____
 Company: _____ Mobile: _____
 Address: _____ Fax: _____
 Email: - _____

In accordance with the provisions of Chapter 28 of the Ordinances of 1979 known as the Boston Fire Prevention Code, MOL Ch48 and 527CMR 1.00 of the Board of Fire Prevention Regulation and amendments thereto, this pennit is granted to be exercised at:

Subject to compliance with the applicable provisions of said Code and with the safeguards and other conditions herein presented, to conduct the following:

Work type: _____
 Reason for work: _____
 Location of work: _____
 NFPA Certification Number: _____ Property Owned by a State or Federal Agency: _____
 Additional requirements: _____

Acetylene Tanks:	Acetylene CuFt:	Oxygen Tanks:	Oxygen CuFt
Acetylene B Tanks:	Acetylene (B) Cuft	Propylene Tanks:	Propylene Cuft
Aluminum Tanks:	Aluminum Cuft	Number of Torches:	
CO2 Tanks	CO2 Cuft	Number of Welders:	
Liquid Oxygen Tanks:	Liquid Oxygen Cuft:	Number of Miggrs:	
Multipass Tanks:	Multipass Cuft	Specify How Work:	

Safeguards and Conditions Prescribed:

Contractor listed above is responsible to maintain a fire watch (minimum of 10) until completion of the work. BFD Form 517
 CMR 1.00c 41

The person accepting this permit shall conform to the Statutes of the Commonwealth, Commonwealth of Massachusetts Fire Prevention Code, the Ordinances of the City of Boston and the conditions of this permit. This permit may be revoked at any time by the Head of the Fire Department; a violation of any of its conditions shall result in an immediate revocation of the permit. The person to whom this permit is issued shall indemnify and save harmless the City or Boston from any damage it may sustain, or be required to pay by reason of the exercise of this permit or by reason of any violation of any condition of this permit.

Granted by: Joseph E. Finn
 Joseph E. Finn - Convener / Chief of Department

Accepted: John Dempsey
 John Dempsey - Fire Marshal


This is an original permit and MUST AT ALL TIMES BE KEPT POSTED ON THE PREMISES.
 A renewal certificate must be obtained upon expiration from the BOSTON FIRE DEPARTMENT.

HOT WORK PERMIT

STOP!

Avoid hot work or seek an alternative/safer method, if possible.

This *HotWork 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	Part I Required Precautions Checklist
<p>1. Firesafety supervisor:</p> <p>A. Verify precautions listed at right (or do not proceed with the work).</p> <p>B. Complete and retain Part I. (Part 1A is for quality assurance documentation, if necessary.)</p> <p>C. Issue Pall 2 to person performing hot work.</p>	<p><input type="checkbox"/> Available sprinklers, hose streams and extinguishers are in service/operable,</p> <p><input type="checkbox"/> Hot work equipment in good working condition.</p> <p>Requirements within 35ft. (11 m) of hot work</p> <p><input type="checkbox"/> Flammable liquid, dust and oily deposits removed.</p> <p><input type="checkbox"/> Explosive atmosphere in area eliminated.</p> <p><input type="checkbox"/> Floors swept clean.</p> <p><input type="checkbox"/> Combustible floors wet down, covered with damp sand or fire-resistive sheets.</p>
<p>Hot work by</p> <p><input type="radio"/> Employee</p> <p><input type="radio"/> Contractor</p> <p>Date _____ Job number _____</p>	<p><input type="checkbox"/> Remove other combustible material where possible. Otherwise, protect with FM Approved welding pads, blankets and curtains, fire-resistive tarpaulins or metal shields.</p> <p><input type="checkbox"/> All wall and floor openings covered.</p> <p><input type="checkbox"/> FM Approved welding pads, blankets and curtains installed under and around work.</p> <p><input type="checkbox"/> Protect or shut down ducts and conveyors that might carry sparks to distant combustible material.</p>
<p>location/building and floor</p>	<p>Hot work on walls, ceilings or roofs</p> <p><input type="checkbox"/> Construction is noncombustible and without combustible covering or insulation.</p> <p><input type="checkbox"/> Combustible material on other side of walls, ceilings or roofs is moved away.</p>
<p>Nature of job</p>	<p>Hot work on enclosed equipment</p> <p><input type="checkbox"/> Enclosed equipment cleaned of all combustible material.</p> <p><input type="checkbox"/> Containers purged of flammable liquid/vapor.</p> <p><input type="checkbox"/> Pressurized vessels, piping and equipment removed from service, isolated and vented.</p>
<p>Name (print) and signature of person performing hot work</p>	<p>Fire watch/hot work area monitoring</p> <p><input type="checkbox"/> Fire watch will be provided during and for 60 min. after work, including any break activity.</p> <p><input type="checkbox"/> Fire watch is supplied with suitable extinguishers, and where practical, a charged small hose.</p> <p><input type="checkbox"/> Fire watch is trained in use of equipment and in sounding alarm.</p> <p><input type="checkbox"/> Fire watch may be required in adjoining areas, above and below.</p> <p><input type="checkbox"/> Monitor hot work area for an additional three (3) hours after the 60-min. fire watch.</p>
<p>I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.</p>	<p>Other precautions taken:</p> <p><input type="checkbox"/></p>
<p>Name (print) and signature of firesafety supervisor/operations supervisor</p>	<p>ALL TANKS NEED TO BE REMOVED OUT OF THE MEDICAL CENTER EACH DAY</p>
<p>Permit Expires _____ Date _____ Time _____ a.m. / p.m.</p>	
<p>Note: Emergency notification on back of form. Use as appropriate for your facility.</p>	
<p>To order additional hot work permits or other FM Global resources, order online 24 hours a day, seven days a week, at www.fmglobalcatalog.com.</p>	
<p> 1'2630 (REV. 6/07) Printed in USA (6/07) © 2003-2007 FM Global All rights reserved.</p>	

WARNING

HOT WORK IN PROGRESS! Watch for fire!

Instructions for the Safety Supervisor:

- Specify the precautions to take.
- fill out and keep Part 1 during the hot work process.
- Issue Part 2 to the person doing the job.
- Keep Part 2 on file for future reference, including signed confirmation that the one-hour fire watch and three-hour monitoring have been completed.

HOT WORK BY <input type="radio"/> Employee <input type="radio"/> Contractor	
DATE	JOB NUMBER
SPECIFIC LOCATION/BUILDING AND FLOOR	
NATURE OF JOB	
NAME (PRINT) AND SIGNATURE OF PERSON PERFORMING HOT WORK	
NAME (PRINT) AND SIGNATURE OF PERSON PERFORMING FIRE WATCH	
I verify the above location has been examined, the precautions checked on the Required Precautions Checklist have been taken to prevent fire, and permission is authorized for this work.	
NAME (PRINT) AND SIGNATURE OF FIRE SAFETY SUPERVISOR/OPERATIONS SUPERVISOR	
TIME STARTED: _____ Permit Expires _____	TIME FINISHED: _____ TIME _____
Fire watch sign-off: Work area and all adjacent areas to which sparks and heat might have spread were inspected during the watch period and were found fire-safe.	
Signed: _____	
Final check-up: Work area was monitored for three (3) hours following completion of the one (1) hour fire watch and found fire-safe.	
Signed: _____	

Part 2 Required Precautions Checklist

Y	NA	
DO		The fire pump is in operation and switched to automatic.
DO		Control valves to water supply for sprinkler system are open.
DO		Hose streams and extinguishers are in service/operable.
DO		Hot work equipment is in good working condition.
		Requirements within 35 ft (11 m) of hot work
DO		Ignitable liquid, dust, lint and oily deposits removed.
DO		Explosive atmosphere in area eliminated.
DO		Floors swept clean.
DO		Combustible floors wet down, covered with damp sand or fire-resistant sheets.
DO		Remove other combustible material where possible. Otherwise, protect with FM Approved welding pads/blankets and curtains, fire-resistant tarpaulins or metal shields.
DO		All wall and floor openings covered.
DO		FM Approved welding pads, blankets and curtains installed under and around work.
OO		Protect or shut down ducts and conveyors that might carry sparks to distant combustible material.
		Hot work on walls, ceilings or roofs
DO		Construction is non-combustible and without combustible covering or insulation.
DO		Combustible material on other side of walls, ceilings or roofs is moved away.
		Hot work on enclosed equipment
DO		Enclosed equipment cleaned of all combustible material.
DO		Containers purged of ignitable liquid/vapor.
DO		Pressurized vessels piping and equipment removed from service, isolated and vented.
		Fire watch/hot work area monitoring
DO		Fire watch will be provided during and for one (1) hour after work, including party break activity.
DO		Fire watch is supplied with suitable extinguishers and where practical, a charged small hose.
DO		Fire watch is trained in use of equipment and in sounding alarm.
DO		Fire watch may be required in adjoining areas above and below.
DO		Monitor hot work area for up to an additional 1.5 hours after the one (1) hour fire watch.
OO		Other precautions taken:

ALL TANKS NEED TO BE REMOVED
 OUT OF THE MEDICAL CENTER
 EACH DAY

WARNING!

HOT WORK IN PROGRESS

Watch for fire!

In case of emergency:

Call: _____

At: _____

ACTIVATE CODE RED
CALL 2-1212

WARNING!

