



Northern Illinois
University

Hot Work Program

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Hot Work Program

PURPOSE

The purpose of the Hot Work Program (Program) is to establish safety procedures for employees, and contractors engaging in any temporary operation involving open flame or producing heat and/or sparks capable of initiating fires or explosions on campus property. Such operations include, but are not limited to torch cutting, brazing, grinding, open-flame soldering, oxygen cutting, arc welding/cutting, oxy-fuel gas welding, hot taps, thawing pipes, hot riveting, heat treating, powder-driven fasteners, torch-applied roofing and cadwelding.

POLICIES AND REGULATIONS

- NIU Health and Safety Policy
- Facilities Management and Campus Services EH&S Policy
- 56 IL Admin Code Part 350 Health and Safety Code
- Occupational Safety and Health Administration (OSHA) 1910 Subpart Q-Welding, Cutting and Brazing and 1926 Subpart J-Welding and Cutting.
- National Fire Protection Association (NFPA) 51B, Standard for Fire Prevention during Welding, Cutting, and Other Hot Work.

SCOPE AND APPLICATION

This Program applies to capital project and maintenance-related operations within Facilities Management and Campus Services (FMCS) on all NIU campuses. Operations involving the use of open flame devices and/or that generate sparks for academic and research purposes shall be performed in designated hot work areas under the direction of the Office of Research Compliance, Integrity and Safety (ORCIS).

DEFINITIONS

Hot Work: Any operation that involves the use of an open flame or one that can generate sparks, slag, or other material capable of igniting ordinary combustible materials, flammable liquids, gases, dusts or vapors or otherwise cause a fire or explosion.

Hot Work Permit (Permit): A form completed by the Competent Person to ensure appropriate precautions are taken before, during and after hot work is conducted outside of Designated Hot Work Areas. A fillable PDF permit form is available on the EH&S Website.

Hot Work Permit Warning Notice (Notice): Serves to represent the Permit and is posted on-site before beginning hot work operations. The notice contains the date, time, and associated work order number. The Notice is removed once the Fire Watch has deemed the permit-required area to be fire-safe.

Designated Hot Work Area: This type of area is specifically designed and approved for hot work operations and does not require a Permit. Such areas shall be maintained fire-safe, such as a maintenance shop or a detached outside location, that is of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas. Such areas must be clearly demarcated as such, equipped with fire extinguishers,

approved by the Competent Person or designee, and inspected periodically to ensure conditions remain intact.

Hot Work Prohibited Area: An area that meets one or more of the following criteria:

- Areas that do not meet the requirements of a Designated Hot Work Area.
- Sprinklered buildings where the sprinkler system is out of service or impaired unless specific impairment requirements are properly implemented
- Areas where explosive atmospheres or combustible dusts can be present.
- Areas with an accumulation of combustible debris, dust, lint, and oily deposits.
- Areas near the storage of exposed, readily ignitable materials.
- Containers such as a barrel, drum or tank that contain materials that will emit toxic gases or vapors when heated; and
- Confined spaces, until the space has been inspected and determined to be safe. Refer to the NIU Confined Space Entry Program.

Permit-Required Area: Any area other than a Designated Hot Work Area that can be made safe for hot work by removing or protecting combustibles from ignition sources.

RESPONSIBILITIES

Competent Person must be knowledgeable of the site-specific scope of work to ensure the risk assessment of the permit-required area is accurately completed while verifying “Required Precautions” as listed on the Permit are in place. The Competent Person will also assign a Fire Watch if one is required. Once all requirements on the permit have been satisfied and the permit is signed by the Competent Person, the Notice must be posted in the permit-required area. The Competent Person also verifies contractors in which they have direct oversight follow this procedure.

Hot Work Operators (HWOs) determines the need to perform hot work based upon the project scope of work and advises the Competent Person should a Permit be needed. HWOs shall also ensure all cutting and welding equipment is in satisfactory condition and in good repair. A HWO must ensure hot work is performed within the scope of the Permit and that all precautionary measures listed on the Permit are in effect.

Fire Watch monitors the safety of hot work operations and has the authority to stop such operations and initiate an emergency response if unsafe conditions develop. This includes having fire extinguishing equipment available on hand and being prepared to sound the alarm as needed in the event of a fire. The Fire Watch monitors the permit-required area during coffee breaks and for at least 60 minutes after hot work has been completed.

The Fire Watch must:

- Not have any other duties that can hinder their ability to adequately perform duties of the Fire Watch
- Not leave the permit-required area during hot work unless properly relieved by another Fire Watch
- Sign the Permit noting the date/time the permit-required area was deemed fire-safe.
- The HWO can assume the duties of Firewatch upon completion of hot work operations.

Project Managers (PM) instruct contractors to reference this Program as needed in preparation for scheduling hot work on a construction project. Project Managers shall also advise contractors about site-specific flammable materials, hazardous processes or other potential fire hazards that may impact hot work operations.

Contractors working on campus are required to comply with this Program. This may include providing a copy of the contractor's safety program including procedures specific to hot work and verification that contractor employees have completed training in hot work, fire extinguishers, and associated emergency response procedures. Contractors shall also submit copies of completed Permits to the Project Manager upon completion of hot work operations.

Environmental Health and Safety Department (EH&S) is responsible for developing and updating this Program as needed. Additional responsibilities may include providing training, providing technical assistance where necessary, and conducting periodic program audits to monitor compliance.

GENERAL REQUIREMENTS

- Work should be performed using alternative methods other than hot work whenever possible.
- Hot work should be performed in Designated Hot Work Areas whenever it is practical.
- A Permit is valid for a time not exceeding 24 hours and shall be posted in the permit-required area for the duration of the hot work. Contractors may elect to extend the Permit on construction sites if:
 - The Competent Person performs periodic site inspections each day during the extension of which should not exceed five days,
 - The scope of hot work and safety precautions as outlined in the Permit remain unchanged, and
 - A fire watch confirms the permit-required area is fire-safe post completion of the hot work.
- Project Managers shall keep Permits on file for a minimum of 12 months for compliance purposes.
- The Competent Person shall submit completed Permits to the Physical Plant Work Order Desk upon completion of the hot work.
- A Fire Watch must be posted by the Competent Person if any of the following conditions exist:
 - Appreciable flammable or combustible materials, in building construction or contents, cannot be removed from within a 35-foot radius of the hot work.
 - Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.
 - Wall or floor openings within a 35-foot radius expose flammable or combustible materials in adjacent areas, including concealed spaces in walls or floors.
 - Flammable or combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.
 - Openings or cracks in the walls, floors, or ducts that are potential travel passages for sparks, heat, and flames.
 - "Fire weather" (i.e. dry, dusty and windy, etc.) conditions outdoors if hot work is planned near buildings and/or near combustible vegetation.

- The HWO must check out a fire extinguisher from the Materials Distribution Center before performing hot work. Contractors shall provide their own fire extinguishers and ensure they are in good working condition.
- The Physical Plant Electrical Shop shall properly cover and protect smoke detectors in the permit-required area for the duration of hot work to prevent false alarms, and damage to the detectors. Such devices shall be restored to operation once hot work is complete. Contractors shall provide the Project Manager a minimum of 24 hours' notice so the Project Manager can facilitate assistance from the Electrical Shop.
- Fire suppression systems in the permit-required area shall remain operational during hot work operations.

PERMIT PROCEDURE

- The HWO determines the need to perform hot work based upon the project or assignment scope of work.
- The HWO advises the Competent Person should a Permit be needed.
- The Competent Person performs a risk assessment of the permit-required area to determine if it is safe to perform hot work and to verify safety requirements listed in the Required Precautions checklist on the Permit have been implemented. This also includes determining whether a Fire Watch is required. Contractors assuming this role shall provide advance notice to the Project Manager as the Project Manager may serve as a resource in communicating site-specific operations and processes that could present potential fire hazards.
- Once all safety requirements are satisfied as outlined in the Permit, and the Fire Watch is in place if required, the Competent Person signs the Permit and ensures the Notice is posted in the permit-required area. The HWO proceeds with performing the hot work.
- The Fire Watch shall *continuously* monitor hot work operations during coffee breaks and until at least 60 minutes after hot work operations are complete. Roof-applied hot work operations require monitoring for at least two hours upon completion of hot work operations.
- Once monitoring is complete, the Fire Watch removes the Notice and signs and notes the date/time the permit-required area was deemed fire-safe.

TRAINING

Competent persons, HWOs and Fire Watch personnel must complete awareness level training on the rules and procedures listed herein upon initial assignment and every 5 years thereafter or more often as deemed necessary. This includes:

- Purpose of the Program
- Review of regulatory requirements
- Hazard awareness and recognition of inherent risks associated with hot work
- Hazard awareness and recognition of site-specific hazards (existing or potential)
- Activities that are considered hot work and when a fire watch is necessary
- General precautions related to fire protection
- Specific responsibilities as outlined in this Program
- Precautionary measures as outlined in the Permit
- Safe use of equipment
- Use of fire extinguishers
- Understanding how to activate emergency response procedures and site-specific alarm systems.

Other safety training may be required as needed based upon the type of hot work operation. This may include but not be limited to Personal Protective Equipment, Compressed Gas Cylinders and Confined Space Entry. Departments are required to maintain training documentation on file for compliance purposes. Contractors must provide evidence of training upon request.



Northern Illinois University

WARNING!

**HOT WORK IN
PROGRESS!**

**BE ALERT FOR FIRE
IN CASE OF EMERGENCY
CALL 911**

Date: _____

Time: _____

Work Order #: _____

This notice does not purport to set forth all hazards nor to indicate that other hazards do not exist.

HOT WORK PERMIT

BEFORE INITIATING HOT WORK, CAN THIS JOB BE AVOIDED?
IS THERE A SAFER WAY?

This 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, welding, hot riveting, heat treating, powder-driven fasteners, and cadwelding.

INSTRUCTIONS

- A. Competent Person to verify Required Precautions are in place (or do not proceed with work).
- B. Complete Permit and retain on-file.
- C. Post Warning Notice on-site.
- D. Fire watch to confirm site is fire-safe.
- E. Remove Warning Notice once complete.

HOT WORK PERFORMED BY:

NIU DEPT: _____
CONTRACTOR: _____

DATE:	WORK ORDER #		
LOCATION/BUILDING & FLOOR & ROOM NUMBER:			
NATURE OF JOB:			
HOT WORK OPERATOR:			
FIRE WATCH:			
I verify a risk assessment of the above location has been performed, the precautions checked on the Required Precautions Checklist have been implemented to prevent fire, and permission is authorized for this work.			
SIGNED: COMPETENT PERSON			
PERMIT EXPIRES	DATE	TIME	A.M. P.M.
Permit-required area and adjacent areas to which sparks and heat may have spread were monitored for 60 minutes following hot work and found to be fire-safe.			
SIGNED: FIRE WATCH			
FIRE WATCH EXPIRES	DATE	TIME	A.M. P.M.

REQUIRED PRECAUTIONS CHECKLIST

- Available sprinklers, extinguishers and other fire protection equipment are in service/operable.
- Hot work equipment in good repair.
- Submit impairment including notifying Electrical Shop 24 hours in advance if fire protection equipment needs to be temporarily impaired.

Requirements within 35 feet of work

- Flammable liquids, dust, lint and oily deposits removed.
- Explosive atmosphere in area eliminated.
- Floors swept clean.
- Combustible floors wet down, covered with damp sand or fire-resistant sheets.
- Remove other combustibles where possible. Otherwise protect with fire-resistant tarpaulins or metal shields.
- All wall and floor openings covered.
- Fire resistant tarpaulins suspended beneath work.
- Protect or shut down ducts/conveyors that might carry sparks to distant combustibles.

Work on walls, ceilings, or roofs

- Construction is noncombustible and without combustible covering or insulation.
- Combustibles on other side of walls, ceilings, and roof moved away.
- Prevent conduction of heat onto adjacent areas.

Work on enclosed equipment

- Enclosed equipment cleaned of all combustibles.
- Containers purged of flammable liquids/vapors.
- Pressurized vessels, piping and equipment removed from service, isolated and vented.

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 may be extended to 2 hours for roof work.
- Fire watch is supplied with suitable extinguishers, and where practical, charged small hose.
- Fire watch is trained in use of emergency equipment and in sounding alarm.
- Fire watch may be required for outdoor hot work especially during "fire weather" (dry, dusty, and windy) conditions and/or near combustible vegetation.
- Means (i.e. radio/cell phone) to call **911** for emergency.

Other precautions taken including but not limited to:

- Confined space entry permit completed.
- Lockout/tagout procedure completed.
- Ample ventilation to remove smoke from work area.
- Appropriate personal protective equipment available for use