

# STANDARD OPERATING PROCEDURE FOR HOT WORKS

(Including information about the Fire and Life Safety System Impairment Procedure)

**Department:** Facilities Management

**Date:** Dec 1, 2006

**Revised:** 12/2006

## PURPOSE

A Hot Works Permit is required for any temporary operation that involves open flames or produces heat and/or sparks. Such operations include, but are not limited to, brazing, cutting, grinding, soldering, thawing pipe, torch-applied roofing, and welding. The permit is intended to 1). Prevent the building fire detection system from accidentally activating 2). Control losses from accidentally igniting University of Minnesota property and 3). Ensure the safety of all building occupants while hot works procedures are being performed. These precautions are in accordance with 29CFR1910 Subpart Q (OSHA), the Minnesota Fire Code, and NFPA SIB.

## PRIMARY STEPS

- 1). Obtain a Hot Works Permit
- 2). Gain Authorization
- 3). Fill out the Hot Works Permit
- 4). Follow Required Precautions
- 5). Cancel the Hot Works Permit
- 6). Other Points

## PROCEDURES

### Step 1: Obtain a Hot Works Permit

1.1. Before doing any type of open flame or hot works operation, obtain a Hot Works Permit from the customer service representative in the particular zone where the work will be performed.

1.2. All units must fill out a permit, including but not limited to, Zone Maintenance, FM Construction and outside contractors. Outside contractors can hire University Security Monitors or provide their own staff for fire watches (when required).

1.3 No permits will be authorized when a fire suppression system is impaired, and permits will be cancelled if an emergency impairment occurs.

Appendix KK, Section 9 of the Standards and Procedures for Construction contains the "Request for Interruption of Building Services, Hot Works Permit, or Fire and Life Safety System Impairment" form.

[https://cpm.umn.edu/sites/cpm.umn.edu/files/appendixkk\\_part9\\_0.pdf](https://cpm.umn.edu/sites/cpm.umn.edu/files/appendixkk_part9_0.pdf)

## **Step 2: Gain Authorization**

2.1. The shift/operations supervisor shall review the Hot Works Permit and determine if and how the operation will affect the fire detection system in that area. If it does, BSAC must be notified for proper instructions, and the zone shall deactivate the fire detection systems.

2.2. The shift/operations supervisor shall reject or grant approval, and designate who will be the fire safety supervisor for Zone Maintenance, FM Construction and outside contractors.

2.3. Once authorization is granted, the designee assumes the role of the fire safety supervisor.

2.4. The fire safety supervisor must ensure that the precautions on the Hot Works Permit are followed. Authorization cannot be given unless all precautions are taken. (Refer to the permit for precautions.)

2.5. The fire safety supervisor shall sign off on the final check. (**Note:** If the work lapses into the next shift, the fire watch designee and the fire safety supervisor must delegate their responsibilities to a supervisor on the next shift.)

## **Step 3: Fill Out the Hot Works Permit**

3.1. Fill out the entire front page (Part 1) of the Hot Works Permit, except the final check item.

3.2. The fire safety supervisor and the shift/operations supervisor shall review the Hot Works Permit for the building.

3.3. The fire safety supervisor must post the top copy (Part 1) in the zone office for documentation (insurance purposes).

3.4. The tradesperson performing the hot works operation shall post the bottom copy (Part 2) of the permit on-site.

**Step 4: Follow Required Precautions:** All precautions that are checked on the permit in the space provided must be followed as per NFPA 51B.

## **Step 5: Cancel the Hot Works Permit**

- 5.1. After the final check, Part 2 of the permit shall be filed at the same location as Part 1.
- 5.2. Zone Maintenance, FM Construction or the outside contractor must provide a fire watch designee for at least 30 minutes after the hot works operation, including lunch and break times.
- 5.3. Once the fire watch is complete, the fire watch designee must inform the fire safety supervisor (as designated on the Hot Work Permit) upon completion of the watch.
- 5.4. The fire safety supervisor or designee must complete the final check no longer than one hour after the hot works operation has been completed. After the final check, the zone must reactivate the fire detection system.

### **Step 6:Other Points**

- 6.1. If the hang tag is missing when the supervisor goes out for the final check, the supervisor shall write up a statement and turn it into the zone office for filing and appropriate action. The statement shall include the craft, building, floor and room number. (This step does not apply to work performed in welding cages or deep steam tunnels.)

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Effective Date: 2/01/00		Revision Date: 04/2004

### **Policy Statement**

To establish procedures to be followed when a fire protection system (sprinkler system standpipe, fire alarm systems, special extinguishing system, fire pump, fire protection water supply, or the communication lines to BSAC), or other life safety equipment such as emergency generators or smoke control system is taken out of service for construction, alteration, or due to an emergency condition. Procedures set forth in this policy do not apply to routine scheduled maintenance or testing.

### **Scope**

This policy applies to any employee, including University employees, trade workers, or outside construction crews who will be working on a University fire protection or alarm system as described in Section 2. The attached matrix provides a broader overview of how this program is applied.

### **Standards**

NFPA 1, Uniform Fire Code  
NFPA 25, Maintenance of Water Based Fire Protection Systems  
NFPA 72, Fire Alarm Code  
NFPA 101, Life Safety Code  
International Fire Code

### **Program Components**

1. Responsibilities
2. Definitions
3. Impairment Coordination Procedures
4. Hang Tags and Forms

## **1. Responsibilities**

### **A. Building Code Office**

Assist the University community in developing and implementing legally required policies and procedures regarding fire safety

### **B. FM Management Team**

- Assure a fire impairment program is established for FM personnel and any contracted vendors.
- Provide the necessary support to restore and manage impaired protection systems and provide temporary protection for extended outages or emergency circumstances.

### **C. Zone Managers**

- Assure that fire system impairment policies and procedures are followed and complied with in their respective areas.

### **D. Shift/Operations Supervisors**

- Manage hazardous operations during the impairment.
- Determine any temporary fire protection requirements.
- Provide a Fire Watch in the affected area for emergency or extended impairments
- Assist and/or coordinate with the impairment coordinators when their respective line staff is performing work that will require impairments to a fire protection system.
- Schedule line staff to work on the fire protection system only after job has been reviewed and all necessary parts are on hand.
- Verify system has been returned to service-
- Serve as back-up to Zone Administrator

### **E. Zone Administrators**

- Assist and/or coordinate impairments when Shift/Operation Supervisor's line staff is performing work that will require impairments to a fire protection system.
- Serve as impairment coordinators on projects managed by University Project Managers.
- Notify BSAC, Fire Departments, Insurance Company, DEHS, Building Code Office and University Services' Risk Management prior to and after the impairment based upon the hazard level (see matrix).

- Generate an impairment hang tag
- Inform personnel on the next shift if the impairment will exceed 8 hours, or carry over to the next shift. The next shift may need to be scheduled to perform fire watch duty.
- Generate building postings
- Back-up to Shift/Operations Supervisor

**F. Building System Automation Center (BSAC) Operators**

- Receive calls and take necessary point information. Disable points to prevent false fire alarms.
- Return monitoring service to normal once coordinator gives authorization.

**G. University Project Managers**

- Facilitate impairments for their respective construction projects with customer(s) and appropriate Zone personnel.
- Review Fire & Life Safety Impairment Program with Contractors.  
NOTE: *Coordination must be accomplished through the University's Project Manager.*

**H. Line Staff (includes, but is not limited to, plumbers, electricians, BSAC technicians)**

- Post and retrieve impairment tags.
- Post the building describing the impaired system, location, emergency procedures, and dates of the impairment.
- Locate completed Hang Tag at site of impairment, on or near the impaired equipment and/or impaired fire system enunciator.
- Prior to beginning any work which impairs a fire and life safety system, make sure all necessary parts are at the job site to complete the job.
- Inform supervisor or impairment coordinator when job is complete so system may be reactivated promptly.
- Perform the necessary tests to verify the fire protection system is returned to service.

**I. Contractual Obligations:**

Contractors are **NOT** considered authorized impairment coordinators and are obligated to follow the University's Fire & Life Safety Impairment Program.

**2. Definitions**

***Impairment Coordinator:*** The person who manages the impairment while system work is being performed. The coordinator either schedules or works with someone to schedule the necessary work. Brings all affected personnel together prior to the impairment to assure an efficient, timely impairment schedule. Determines the level of impairment for each specific job. The coordinator will review the impairment hang tag and see that it is in place for the duration of the impairment. The coordinator will notify the fire department, BSAC, University Service's risk management, Building Code Office, DEHS and insurance company of the impairment (see matrix). This is particularly important when sprinkler pipes are being drained and refilled (refilling may activate a flow alarm). Prior to reactivating the fire system to its normal operating status, the coordinator should review the job with the persons who performed the work. All systems must be verified that they are back in service and fully operational. In some cases, i.e., an emergency breakdown that results in an impaired fire system, the coordinator will be the on-duty supervisor. This person will follow procedures established in this policy then relate all necessary information to the appropriate supervisor for the following day. At this time, the appropriate supervisor assumes the role of impairment coordinator until the job is completed.

***Level 1 Impairment:*** A single component (i.e., smoke or heat detector) is found to be defective during routine maintenance, and requires replacement. Fire watch is not required for level one impairments. Notification of the fire department, BSAC, risk management, the insurance company, or Building Code office is not necessary.

***Level 2 Impairment:*** A shutdown of a system, or portion thereof, for more detailed maintenance (i.e., replacement or rerouting of electrical systems or mechanical systems such as pipes or pump maintenance). Fire watch is required during non-working hours of the shutdown. All sprinkler system shutdowns are at least a level two impairment. Notification of the fire department, insurance company, DEHS, and the Building Code Office is required. Notify FM risk management if the impairment will extend over night.

**Level 3 Impairment:** This pertains only to sprinkler and alarm systems. This is a condition where the entire, or major portion of, the sprinkler water supply to the sprinkler or fire alarm system for a building is out of service, or the connection to BSAC is not available. Fire watch is mandatory during the entire duration of the impairment. Notify fire department, FM risk management, DEHS, the Building Code Office and the insurance company.

**Fire Watch:** A person designated to physically review the area where the fire protection system is impaired. Where utilized, fire watches shall be provided with at least one approved means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires (2000 International Fire Code: Ref. 901.7). A Fire Watch Log Sheet is to be completed indicating where the watch was performed and at what time. A sample form is included in section 5 of this policy. Fire watch is mandatory during Level 2 only during off hours and during all times for a Level 3.

### **3. Impairment Coordination Procedures**

- a) Schedule a meeting with all affected personnel. This includes, but is not limited to, line staff, BSAC technicians, contractors, supervisors, and University Project Manager. It is possible that DEHS the Building Code Office or user group representative(s) will also be included. At this time it should be noted what supplies and materials are needed for the necessary work. The impairment will not be scheduled, nor work started, until all needed materials are on hand.
- b) Determine any temporary fire protection requirements.
- c) Post the building describing the impaired system, location, emergency procedures, and dates of the impairment.
- d) The impairment coordinator will, or designate someone to, notify BSAC, fire department, insurance company, Building Code Office, DEHS, and University Service's risk management once the impairment is initiated.
- e) Generate an impairment hang tag and locate it at the site of the impairment, on or near the impaired equipment and/or impaired fire system annunciator.
- f) Inform personnel on the next shift if the impairment will exceed 8 hours, or carry over to the next shift. The next shift may need to be scheduled to perform fire watch duty.
- g) Continuous fire watch is required until the impairment is complete.



- h) No hot work (grinding, welding, soldering, etc.) is permitted in the location of a sprinkler impairment.
- i) Stop any hazardous operation, i.e., paint spraying, when required fire protection is to be performed
- j) No impairment is considered complete until all repairs have been made and any necessary system's testing is performed. Systems must be returned to service. Fire detection devices, notification appliances, and circuits must be tested for proper operation. A full flow main drain test must be completed after a control valve is reopened.
- k) Collect all impairment hang tags and keep on file for 5 years. The fire watch log should be attached and retained with the impairment.
- l) Notify departments that were contacted prior to the impairment that the systems are returned to service. (See (d) above.)

Note: In some cases, it may not be possible to order all needed material prior to initiating the impairment, but the coordinator is expected to use best judgment in implementing the impairment procedure. In the case of impairment emergencies occurring during off shift hours, the coordinator will provide the information to the next shift for complete resolution.

#### **4. Hang Tags**

1. Fire Impairment Hang Tag
2. Fire Watch Form Log Sheet
3. Impairment Matrix
4. Impairment Notice

# FIRE/LIFE SAFETY PROTECTION

# FIRE/LIFE SAFETY PROTECTION

## OUT OF SERVICE

## OUT OF SERVICE



# FIRE/LIFE SAFETY SYSTEM IMPAIRMENT PERMIT

SUPERVISORY COPY

Type of system impaired: \_\_\_\_\_

Location: Building (name/number): \_\_\_\_\_

Floor: \_\_\_\_\_

Check appropriate box:

Level 1 Impairment    Level 2 Impairment    Level 3 Impairment

Reason for Impairment: \_\_\_\_\_

Shut off (date/time): \_\_\_\_\_

System restored (date/time): \_\_\_\_\_

**NOTE:**

Building must be posted prior to initiating work.  
Notify BSAC of impairment.

**AFTER RESTORATION OF PROTECTION**

- Restoration verified
- Notify fire department
- Notify insurance carrier
- "Fire/Life safety Impairment Record" completed and filed

# WARNING!

## FIRE/LIFE SAFETY SYSTEM IMPAIRED

Please attach to closed valve or equipment out of service.

Shut off (date/time): \_\_\_\_\_

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Authorizing supervisor (impairment coordinator): \_\_\_\_\_

**Before impairment**

- Notify BSAC
- Have proper authorization to proceed
- Shut down hazardous operations
- No smoking
- Portable fire equipment ready

**During impairment**

- Work exclusively on impairment project
- No smoking
- No unrelated cutting or welding (Hot Works)
- Check here if fire watch required

# FIRE WATCH LOG SHEET

DATE: \_\_\_\_\_

SHIFT: \_\_\_\_\_

Fire watch needs to walk entire impaired area. Any fire doors in corridors need to be closed.

Time begin: \_\_\_\_\_

Enter the time in the box below. Next to the box, enter the building and floor inspected.


Please indicate the above floors were checked either by marking a check or writing the time visited in the corresponding box.

Time end: \_\_\_\_\_

Employee: \_\_\_\_\_

Corrective actions taken: \_\_\_\_\_

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This policy was rewritten in April 2004 by a committee with the following members:

Nancy Rudstrom  
Becky Hintz  
Jim Lindner  
Dave Stringfield  
Chantelle Swanson  
Karen Collins  
Doug Vickers  
Karl Novek, UMD

**REQUIRED APPROVALS:**

**Policy approved by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Rebecca Hintz  
Risk Management Specialist  
University Services

**Policy approved by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

William Chose  
Director of Maintenance Operations  
Facilities Management

**Policy approved by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Steven Spehn, Associate Vice President  
Facilities Management

**Policy approved by:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Gary Summerville, Director  
Project Delivery Services

<b>Impairment Level</b>	<b>Description</b>	<b>Fire Watch Requirements</b>	<b>U Services Risk Mgmt Contact</b>	<b>Insurance Carrier Contact</b>	<b>Fire Dept Contact</b>	<b>Bldg Code Official Contact</b>
1	A single component (I.e., smoke or heat detector) is found to be defective during routine maintenance, and requires replacement. Fire watch is not required for level one impairment. Notification of the fire department, insurance company, or Building Code Office is not necessary.	No	No	No	No	No
2	A shutdown of a system, or portion thereof, for more detailed maintenance (I.e., replacement or rerouting of electrical systems or mechanical systems such as pipes or pump maintenance). Fire watch is required during non-working hours of the shutdown. All sprinkler system shutdowns are at least a Level 2 impairment. Notification of the fire department and insurance company is required.	Only During Off-Hours	Yes	Yes	Yes	No
3	This pertains only to fire protection and alarm systems. This is a condition where the entire sprinkler or fire alarm system for a building is out-of-service, or the connection to BSAC is not available. Fire watch is mandatory during the entire duration of the impairment. Notification of the fire department and insurance company is required.	<i>All Hours</i>	Yes	Yes	Yes	Yes
Emergency Impairment	When fire or life safety systems are unavailable due to unforeseen circumstances. After impairment level is determined, follow appropriate precautions.	<i>All Hours</i>	<i>Yes (If impairment lasts longer than 1-day)</i>	<i>Yes (If impairment lasts longer than 1-day)</i>	No	No

# IMPAIRMENT NOTICE

(Revised 04/2004)

An editable version of this form is available at <http://www.uservices.umn.edu/riskmanagement/fls.html>

## PRECAUTIONS TAKEN (CHECK AS APPROPRIATE)

<input type="checkbox"/> Continuous Work Authorized		<input type="checkbox"/> Ongoing Fire Watch
<input type="checkbox"/> Public Fire Department Notified		<input type="checkbox"/> Hydrant Connected to Sprinkler Riser
<input type="checkbox"/> Hazardous Operations Support	<input type="checkbox"/>	<input type="checkbox"/> Pipe Plugs on Hand
<input type="checkbox"/> Hot Works Prohibited		<input type="checkbox"/> Fire Hose Laid Out
<input type="checkbox"/> Smoking Restricted	<input type="checkbox"/>	<input type="checkbox"/> User's Informed
<input type="checkbox"/> Other _____		

INSURED NAME: *University of Minnesota*

INSURED LOCATION (City, State)     Other Location: \_\_\_\_\_

Minneapolis, MN                       Duluth, MN                       Morris, MN                       Crookston, MN

INSURED PHONE NO.

INSURED FAX NO.

CHECK IF:  
 Sprinkler  
 Fire Pump  
 Fire Alarm  
 Smoke Control  
 Water Supply  
 Extinguishing System  
 Emergency Generator

SPRINKLER VALVE LOCATION:

AREA PROTECTED:

REASON FOR IMPAIRMENT:

PLANNED DATE / TIME TO BE CLOSED

PLANNED DATE / TIME TO BE OPEN

IMPAIRMENT COORDINATOR (PRINT):

AUTHORIZED BY (PRINT NAME):

FIRE PROTECTION EQUIPMENT OPERATOR  
(PRINT NAME):

# IMPAIRMENT NOTICE DISTRIBUTION INSTRUCTIONS

**Impairment Coordinator:**

**Fill out, using black ball-point pen for readability, sign and issue permit as follows:**

- (1) **Fax or E-Mail Impairment Notice to parties indicated below (Fire Department's require a phone call):**

	<u>Telephone #</u>	<u>Fax #</u>	<u>E-Mail</u>
TVA Fire and Life Safety, Inc.	877/916-2774	619/839-3892	<a href="mailto:impairment@tvafiresafety.com">impairment@tvafiresafety.com</a>
• Emergency Impairment	800/777-5914 (Pgr)		
City of Minneapolis Fire Marshall:	612/348-2345		
City of St. Paul Fire Marshall:	651/224-7371		
BSAC: Zone 1 & 3	612/624-3357	612/625-5079	
Zone 2,4,5, & UMD	612/625-0011	612/625-5079	
Building Code Office:		612/625-6667	
U Services Risk Management:	612/626-0552	612/626-0234	<a href="mailto:risk@facm.umn.edu">risk@facm.umn.edu</a>