

 <p>Carnegie Mellon University Environmental Health &amp; Safety FIRE   LAB   WORK</p>	<p><b>Environmental Health and Safety</b></p> <p><b>Fire Protection System Impairment Program</b></p> <p><b>Guideline</b></p>
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## I. Introduction

The probability of casualties and major structural damage increases when fire alarm and fire protection systems are impaired. The risk of damages and their severity increases the longer systems remain impaired. Therefore, it is necessary to minimize the duration and scope of any impairment. This document contains an effective management program used to minimize the risks associated with fire alarm and fire protection impairments.

## II. Scope

This program provides instructions to authorized individuals who wish to request or modify the normal operation of the University's fire alarm and fire protection systems during demolition and/or construction, outages, maintenance, testing and system impairments of occupied buildings. This document does not include guidance on hot work activities.

## III. Definitions

- a. **Applicant** – An approved person who is either an FMCS Electrician, or Contractor who is filling out an impairment permit with Environmental Health and Safety (EHS).
- b. **Authorized Person** – An FMCS personnel or approved vendor by EHS who has specialized knowledge of fire alarm systems, fire extinguisher operation and has completed fire watch training. This person is permitted to initiate an impairment permit application to work on university fire alarm and fire protection systems.
- c. **Central Monitoring Station** – Approved third party monitoring company (it is not University Police or central dispatch).
- d. **Contractor** – A person or persons who is performing work under a contract and is managing construction activities, which require the modification of the University's fire alarm or fire protection system.
- e. **Disabling Devices** - Disabling or "turning off" specific alarm initiating devices and/or signals by using the fire alarm control panel function keys, while allowing the rest of the alarm system to remain active.
- f. **Disabling Panel** – Any panel alteration that prevent it from receiving inputs or communicating alarms. Disabling an entire panel is not permitted without EHS authorization.
- g. **Environmental Health and Safety (EHS)** – EHS Director, Fire Safety Manager and/or Fire Safety Specialist.
- h. **Emergency Impairment** - An unexpected system failure.
- i. **Facilities Management and Campus Services** - FMCS Electrician or Life Safety Personnel.
- j. **Fire Alarm Panel Watch** – An authorized individual or individuals whose sole responsibility is to monitor the fire alarm panel for activation of a fire alarm signal(s).

- k. Fire Alarm System** - A system, or portion of a combination system consisting of devices (i.e. smoke and heat detectors) arranged to monitor and annunciate the status of a fire emergency and then to initiate the appropriate response to those signals.
- l. Fire Protection System** - Approved devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire, or any combination thereof.
- m. Fire Watch** – University Police or designated person(s) who sole responsibility is to look for fires within a designated area or areas. He or she must have specialized training on fire alarm systems activation, fire extinguisher operation and fire watch training.
- n. Impairment** - Any loss of the fire alarm system functionality. Examples of impairments include:
  - i. Pump testing,
  - ii. Maintenance and repair,
  - iii. Disconnecting, bypass, or disabling signal circuits,
  - iv. Deactivating Alarm initiating devices,
  - v. System testing,
  - vi. Emergencies,
  - vii. Impaired fire alarm and fire protection equipment,
  - viii. Powering down the fire alarm control panel,
  - ix. A system “on hold” with the Central Monitoring Station, or
  - x. Maintenance.
- o. Impairment Permit** – A document completed and issued by EHS to an authorized person. The permit provides permission to impair whole or part of a fire alarm system. (Appendix A includes an example permit and signage).
- p. Project Manager (PM)** – University employee, typically Campus Design and Facility Development (CDFD) or FMCS managing the work or project requiring the system impairment.
- q. Proprietary Supervising Station Services** – University Police, specifically central dispatch.
- r. On Hold or On Hold for Testing** – A condition in which the communication between the fire alarm panel and Central Monitoring Station has been temporarily suspended, the start of a system impairment.
- s. On line** – A condition in which the communication between the fire alarm panel and Central Monitoring Station has been restored, the end of a system impairment.
- t. Outage** - A condition in which the power supply to the fire alarm panel or other fire alarm devices is not available, it has been bypassed or the signal circuit is disabled.
- u. Record of Fire Alarm Device (logbook)** – A logbook used by an authorized person to document fire alarm system impairments and the type of work activities performed.

### III. Roles and Responsibilities:

Impairment notice signs shall be posted during all events when the fire alarm notification system will not be functional, and signs shall be removed immediately after impairment has been terminated.

#### a. Contractor

- i. Notifies PM at least 72 hours in advance that work activities require a system impairment.
- ii. Applies for an impairment permit in person from EHS at least 72 hours prior to starting work.

- iii. Obtains a new impairment permit when the scope of work changes or to receive permit extensions. Permits are valid for one day only and will expire at the end of the business day unless specified by EHS. It is up to the discretion of EHS to issue permits on an individual basis prior to 72 hours' notice and extended permit period as necessary.
- iv. Maintains a copy of the impairment permit at the work site and follows the requirements include on the document.
- v. Contacts University Police and PM immediately in the event of a fire emergency.

**b. Project Manager**

- i. Assists Contractors with the impairment permit process.
- ii. Communicates the job details requiring fire alarm modification to EHS and FMCS.
- iii. Coordinates with FMCS Service Response to assist and distribute to FMS Announce of impairment and shutdown notice
- iv. Identifies and communicates the oracle charge string for fire watch activities when needed.

**c. Facilities Management Campus and Services, Electrician or Life Safety Personnel**

- i. Works closely with EHS, PM, and Contractors during the impairment process.
- ii. Functions as the authorized person responsible for:
  - o Contacting EHS when the building or area is ready to be placed "on hold" and placed back "on line,"
  - o Monitoring impaired building fire alarm systems,
  - o Bringing fire systems back "on line" when work is complete, and
  - o Inspecting and testing the fire alarm system.
- iii. Documents impairment details (i.e. devices impaired, point numbers, name of electrician performing impairment) in appropriate building logbook.
- iv. Requests a new logbook from EHS when necessary.
- v. Coordinates immediate response and repairs during emergency impairments.

**d. Environmental Health and Safety (EHS)**

- i. Issues the completed impairment permit.
- ii. Contacts University Police to place buildings "on hold" and back "on line."
- iii. Issues updated permit to University Police, as needed.
- iv. Provides new panel logbook when needed.
- v. Maintains expired permits electronically for a minimum of 1-year.
- vi. May issue permits on an individual basis prior to 72 hours' notice and
- vii. Can extended permit period as necessary.

**e. University Police**

- i. Receives and maintains copies of active impairment permits. Expired permits are discarded.
- ii. Places buildings "on hold" and back "on line."
- iii. Places all buildings that have been placed "on hold" back "on line" at the end of the business day, unless otherwise noted.
- iv. Conducts Fire Watch activities, based on availability

## IV. Impairment

In the majority of instances, construction dust is the primary trigger of false alarms by activating a local smoke alarm. In lieu of disabling the smoke detector(s) and/or fire alarm system, alternate detection and notification systems are recommended. These alternate systems must be approved by EHS and FMCS Life Safety Personnel before implementation.

If the fire alarm system needs to be impaired, the PM and/or Contractor must provide at least 72-hour notice to EHS and FMCS. This advanced notice will allow for planning, coordination and obtaining an impairment permit.

Only authorized personnel are permitted to interface or impair a building fire alarm panel and fire protection system.

### a. Planning for impairments

During impairment planning, the PM will notify EHS and FMCS of the project plan, which should include the scope and duration of the project, the extent of the required impairment, and the precautions put in place.

- i. When the impairment duration will last longer than 10-hours within a 24-hour period:
  - o The PM will need to:
    - Evacuate the building or the portion of the building affected by the system impairment, or
    - Schedule with University Police as an approved fire watch, and
    - Implement an approved program to eliminate potential ignition sources, and
    - Limit the amount of fuel contained within the affected area.
  - o EHS will:
    - Notify CMU's Insurance Services Manager.

### b. Initiating an impairment

Impairment permits are obtained through EHS. All permits are valid for 1-day only, will include a unique tracking number and will expire at the end of the business day, unless:

- i. Requested and been approved for an extension by EHS,
- ii. The impairment is within an active construction site with an operational fire monitoring system, or
- iii. FMCS is requesting the permit for monthly testing purposes, in which case the permit will be valid for 1-week.

The completed permit and impairment details will be shared with University Police.

The appropriate impairment signage shall be posted at all the affected building entrances and elevator lobbies, at a minimum of 2-hours prior to the start of the job. An authorized person (i.e., FMCS) will update the panel logbook with impairment information.

An Authorized Person (i.e., FMCS) will maintain oversight of the impaired building's fire alarm system, and work with the Contractors to ensure appropriate procedures are followed throughout the impairment.

If a fire alarm occurs outside of the impairment area, such as in an adjacent building or space, the Fire Alarm Panel Watch via FMCS or an approved agency permitted to work on the panel will

enable and activate the fire alarm system notification devices, alerting occupants of fire emergency. At the same time, the Fire Alarm Panel Watch must call University Police and the PM.

If the project plan or scope changes at any time during the project and the planned impairment is affected, the PM must coordinate with EHS and FMCS to appropriately adjust the system impairment. An updated impairment permit must be obtained by the Contractor, and EHS must share the updated information with University Police.

**c. Terminating an impairment:**

As soon as the impairment is no longer required, the authorized person will restore all fire alarm and fire protection systems to conditions found. Once the system is functioning correctly, the PM can be notified that the system has been restored.

Any posted signage and the impairment tag shall be removed. Notify EHS that the job is complete, and system has been restored.

EHS will contact University Police and request that the building be placed back "on line". University Police will contact the Central Monitoring Station, noting them that the building/system is back "on line."

**V. Emergency Impairment**

In the event of an unexpected system failure where the fire alarm and/or protection system cannot notify the building occupants, FMCS will notify EHS, University Police and Contractors. University Police will perform one of the following:

- Evacuate the building affected by the system impairment, or
- Have an authorized person function as an approved fire watch.

EHS will continue to retain the responsibility of notifying University Police of the impairment and in turn, University Police will contact the Central Monitoring Station. If the emergency is anticipated to last longer than 10-hours in a 24-hour period EHS will notify CMU's Insurance Services Manager of the emergency. An impairment permit must be obtained as soon as possible. If the impairment occurs after hours when the EHS office is closed, a permit shall be obtained the next business day.

**VI. Building Impairment Notifications**

Impairment notifications to building occupants are required when there is a system outage for any length of time.

If the audio and visual fire alarm notification components are impaired and the building is equipped with a public address system, an announcement shall be made prior to and at the end of the impairment by the Contractor or designee. Signage shall be placed at all building entrance doors and elevator lobbies immediately. The announcement should notify building occupants of the impairment and may include the following as an example:

*May I have your attention; may I have your attention please? The fire alarm system for this building will be temporarily out of service. You will be notified in the event of an emergency. If you discover smoke or fire within your space, begin evacuating and contact University Police or 911.*

Once the impairment is complete, the Contractor or designee shall remove all building signage. In buildings with a public address system an announcement shall be made informing building occupants that the fire alarm system is back in service. The announcement may include:

*May I have your attention; may I have your attention please? The fire alarm system for this building is now back in proper working order. Any future alarm activation will be due to a true fire emergency. You must take immediate action and evacuate the building as quickly as possible.*

## **VII. References**

Specific codes referenced during the development of this policy include:

- NFPA 25 for the impairment of sprinkler systems
- NFPA 72 for the impairment of the fire alarm system

## **VIII. Revisions**

<b>Date</b>	<b>Documented Changes</b>	<b>Initials</b>

Appendix A

Impairment Permit