

UNIVERSITY OF PITTSBURGH

Fire Prevention Planning for Construction, Renovation or Demolition Projects

*Potentially applicable Codes include International Fire Code Chapter 33: **Fire Safety During Construction and Demolition**. International Building Code Chapter 33: **Safeguards During Construction**. NFPA 241: **Standard for Safeguarding Construction, Alteration, and Demolition Operations**. NFPA 70: **National Electric Code**. NFPA 3: **Standard for Commissioning Fire Protection and Life Safety Systems**.*

Designers and contractors working on new construction, renovation or demolition projects at the University of Pittsburgh must familiarize themselves with the above Codes enforced by the City of Pittsburgh and/or State of Pennsylvania. A Fire Prevention Plan shall be included as part of construction documents. The project-specific Plan is to be developed by the contractor/construction manager and must be submitted to the University of Pittsburgh Facilities Management Division. Facilities Management shall submit each Fire Prevention Plan to Environmental Health and Safety for review.

During construction, renovation or demolition, especially within buildings that will remain occupied during any portion of the project, the Fire Prevention Plan should address the potential fire and life safety hazards created by the project, and the maintenance of conditions and control measures that allow for continued building occupancy. It is not acceptable for any project to have a condition that lacks the required fire notification, fire protection, or safe egress features.

A thorough review of the existing fire alarm and fire protection systems along with review of any proposed modifications to these systems should be performed by the design professionals for the project. This review shall determine how modifications or removal of devices in the work zone may impact adjacent areas or the entire building. Maintaining existing systems (in full or in part), installing temporary systems or devices; or a combination of these approaches must be included.

The following is an outline of the University's standards to be included in a Project's Fire Prevention Plan.

I. Fire Alarm Systems

1. For as long as possible or practical, the existing fire alarm system consisting of but not limited to smoke detectors, heat detectors, waterflow switches for the sprinkler system, valve tamper switches, pull stations, and notification devices (horns/strobes/speakers) shall remain operational.
2. For projects where the scope of work does not allow all system devices to remain in operation (especially during demolition), the following is needed:
 - a. A "minimal level" of detection must be maintained at all times. This is defined as active pull stations at both the primary and secondary egress points and notification devices in the work zone. Smoke detectors in and adjacent to the work zone should be temporarily bagged during construction to help reduce false alarms and keep dust from entering the devices. The bags must be removed at the end of each shift. Accepted bagging techniques involve paper bags temporarily fastened to the detector in a manner that covers the sensing device. Tape covering the sensing device is not an acceptable

method for bagging detectors. Specific detection devices (e.g. beam type detectors or duct detectors) may be temporarily disabled upon approval of EH&S. Every effort must be made to minimize the time that the devices are inactive.

- b. The Project's Fire Prevention Plan must address the removal of any devices on the fire alarm system, including the anticipated impact to adjacent areas on the fire alarm system (or loop). Adjacent areas or zones shall remain properly protected and the operation of the fire alarm system should remain unaffected. If programming changes may be needed to the fire alarm panel, these should be documented in the Plan and coordinated with the fire alarm panel manufacturer's approved technicians.
- c. If it is determined that there is no practical way to maintain fire alarm system components during any portion of the project, a fire watch will need to be established. The fire watch and the impacts to the fire alarm system must be detailed in the Plan.

3 All new system installations should comply with applicable standards as listed in the IFC, IBC and/or NFPA.

II. Fire Protection Systems

1. For as long as possible or practical, existing fire protection systems including but not limited to sprinkler systems, fire hose standpipe systems, and fire pumps (including the controller and back-up emergency generators) should remain operational.
2. Consideration must always be given to maintaining portions of the sprinkler system within the work zone. When sprinklers are removed from service, temporary smoke detection shall be installed. The temporary smoke detectors should be programmed into the fire alarm panel and should remain in service until sprinkler protection is resumed. The temporary smoke detectors in and adjacent to the work zone should be bagged during construction to help reduce false alarms and keep dust from entering the devices. The bags must be removed at the end of each work day.
3. If it is determined that there is no practical way to maintain fire protection systems during any portion of the project, a fire watch will need to be established. The fire watch and the impacts to the fire protection systems must be detailed in the Plan.
4. All new system installations should comply with applicable standards as listed in the IFC, IBC and/or NFPA.

III. Other Responsibilities

1. The General Contractor must establish a designee or Program Superintendent to implement and supervise the following:
 - a. Verify that the fire alarm and fire protection systems are arranged and operational as discussed in the Plan.
 - b. Verify that the installation of any new equipment, suspended ceilings, walls, cabinets, shelving, signs/displays or other items do not interfere or obstruct any sprinkler heads (existing or new), any fire alarm initiating and/or notification devices, hose cabinets, fire extinguishers, fire alarm control panels, annunciators, or EXIT signs until relocation or new components are provided.

- c. Coordinate with the Project Manager all scheduled or emergency outages to the fire alarm and fire protection systems.
- d. Manage procedures established in the Plan for the control of the following precautions against fire:
- 1) The University's Hot Work Permit System must be followed for all cutting, welding or other forms of hot work. Hot Work Permits can be obtained from the Project Manager or EH&S.
 - 2) Smoking is prohibited in all University buildings and signs shall be posted.
 - 3) Open burning is prohibited unless a Permit is obtained from the City.
 - 4) Materials susceptible to spontaneous ignition such as oily rags should be stored in a listed/approved disposal container.
 - 5) The storage, use and handling of flammable and combustible liquids should be in accordance with IFC Section 1405 and applicable sections of Chapter 34.
 - 6) The storage, use and handling of flammable gas should be in accordance with Chapter 35 of the IFC.
 - 7) Combustible debris should not accumulate within buildings. Combustible debris, rubbish and waste material should be removed from buildings at the end of each work shift, and should be properly disposed.
 - 8) Temporary wiring for electrical power and lighting installations used in connection with the construction, alteration or demolition of buildings, structures, equipment or similar activities should comply with NFPA 70.
 - 9) The use, type and arrangement of temporary heating equipment should be in accordance with Section 1403 of the IFC.
 - 10) Internal combustion powered construction equipment must not be refueled while in operation and should be located so that exhaust does not discharge against combustible material. Such exhaust must be piped outside of the building, must be directed away from and located at a 10ft minimum from air intakes and operable windows. All fuel should be stored in an approved area outside the building. A Permit must be obtained from the City.
 - 11) For roofing operations, use of heat producing systems or other ignition sources should be in accordance with IFC Section 1417 and Chapter 26.
 - 12) The contractor should provide and maintain fire extinguishers which have current service inspection tags. There should be at least one approved portable fire extinguisher in the work site in accordance with IFC Section 906, and at each stairway on all floor levels where combustible materials have accumulated and in every storage and construction shed. Additional portable fire extinguishers should be provided where special hazards exist including, but not limited to, the storage and use of flammable or combustible liquids.

2. The Project Manager should initiate University outage notification procedures, and coordinate activities with the contractors and designated Facilities Trades staff responsible for the fire protection and fire alarm systems.
3. For all areas under renovation, the University's "Fire Alarm and Fire Protection Outage Procedures" must be reference in the Plan and implemented at all times.
4. The Plan must address impairment procedures with a focus on reducing accidental fire alarm activation associated with demolition, renovation and new construction to include bagging all smoke detectors both inside and adjacent to the work zone; properly planning for the removal or addition of fire alarm initiating and detection devices and fire protection components; and precautions to eliminate damage to existing sprinkler heads and piping.
5. Pitt EH&S must be notified in advance of all planned or emergency impairments/outages, so that these activities are documented with the University's property insurance carrier.

IV. Fire Department Access

1. Exterior access for Fire Department apparatus and vehicles must be maintained for the duration of the project. Any alterations to Fire Department access must be incorporated in the Plan.
2. All fire hydrants and all building Fire Department connections must remain accessible. Any alterations or restrictions in access to hydrants or Fire Department connections must be incorporated in the Plan.
3. An unobstructed path from the exterior through the interior of the building to the work zone must be maintained for fire fighter access. Provisions may be necessary for any areas where secured access is required. If applicable, this must be addressed in the Plan.

V. Means of Egress

1. Whenever practical, at least two means of egress should be maintained from the work zone.
2. For the occupied areas of the building, the minimum number of required egress paths must be maintained and kept free of any obstructions.
3. Directional signs or revisions to existing EXIT signage may be needed to direct occupants around the work zone to the new or existing egress path. Alterations to directional signage and egress paths for building occupants must be addressed in the Plan. Existing Evacuation Maps may need to be altered to reflect these changes in projects of longer duration.

VI. Fire Protection System Testing

1. Fire protection and fire alarm system testing subsequent to any modifications and prior to acceptance shall be performed in accordance with applicable NFPA standards. The tests should be documented using appropriate acceptance forms, as completed by the installing contractor and witnessed by both University and AHJ personnel.
2. Pitt EH&S should be notified when acceptance testing will be performed by the AHJ (or FM Global). Pitt EH&S must be provided with copies of all test forms and all test reports.

3. Applicable trades staff should be involved with any outages associated with the acceptance testing and should also be present to witness the testing, especially when it involves specialized fire protection systems, components or devices.

VII. New Building Construction or Demolition

The following items also require AHJ approval and should be included in the project's Fire Prevention Plan:

1. The type and arrangement of any required standpipe systems.
2. Provision of a temporary or permanent water supply.
3. Protection of pedestrians.
4. Protection of adjoining property.
5. Temporary use or closing of public streets.