



Fire is often cited as the most dangerous hazard on both construction and demolition sites. The ravages of fire can be devastating and can include personal injury to workers and the public, severely damaged equipment, destroyed property, and the loss of irreplaceable heritage buildings.

A fire incident can also result in a partial or total interruption of the services you provide leaving your constituents — and, often, the community at large — in dire straits. Depending on the extent of the damage, this disruption could last weeks, months or more.

Simply put, for a fire to start and spread it needs an ignition source and fuel. Both are readily available on construction and demolition sites. As work progresses, there is always an accumulation of combustible material including lumber scraps,

packing materials, and oil soaked rags. If these are not properly disposed of and are left to pile up, they can be easily ignited by something as simple as a spark from a piece of machinery or a discarded cigarette.

Understanding the hazards and risks and establishing a Fire Safety Plan prior to the start of a project can dramatically reduce the possibility of a catastrophic fire-related loss. The following includes best practice procedures and protocols.

Fire Safety Plan

Having a comprehensive Fire Safety Plan in place demonstrates both owners' and contractors' commitment to operating a safe work site. The plan should detail steps that will be taken to reduce the risk of fire on a work site and include:

- measures to protect the safety of workers
- equipment and materials to be used at each stage
- timelines for implementation of fire protection systems and procedures
- weather related precautions — for example, the use of portable heaters during extreme winter conditions

Written emergency procedures should be posted prominently around the work site and indicate the location of fire protection equipment. This equipment

should always be easily accessible, not blocked by machinery or materials, and a person trained in its operation should be available at all times.

To ensure the site complies with the fire safety regulations, invite the local fire department to tour the site before work commences or as soon as possible after work has begun. Fire department personnel can be a valuable resource, directing you to any additional regulations or requirements that may have been overlooked.

The first step is to determine the provincial and municipal regulations that are applicable to your specific project and to include measures that will comply with them.

Fire Safety Plan Checklist

Assign a person — and a back-up — to :

- Sound the alarm
- Notify the fire department
- Meet with fire department personnel
- Post street address of the site prominently to expedite 911 call
- Develop procedures to follow when an alarm is sounded

- Train personnel on evacuation procedures
- Maintain a list of onsite personnel
- Identify a designated meeting place for all site personnel
- Inspect the site regularly to ensure exit routes are clearly identified and accessible
- Remove combustible materials at least once a day

Fire Extinguishers

- Verify that a sufficient number of appropriate fire extinguishers are onsite in clear locations, including close to hot work operations
- Position fire extinguishers at or near fuel operated equipment

- Train personnel in fire extinguisher operation
- Confirm all fire extinguishers are operational and have been serviced within the last year

Combustible Materials

- Maintain a clean site — remove waste material at least once a day

- Use non-combustible blankets, drapes or screens to protect surfaces that are ignitable and cannot be removed

Flammable Liquids

- Construct a separate, well ventilated and clearly marked storage area for flammable materials
- Lock the storage area
- Equip storage area with an appropriate fire extinguisher
- Maintain an up-to-date list of materials onsite
- Ensure the storage area is away from work areas and access routes

Portable Heaters

- Place portable heaters away from combustible materials in a well ventilated area
- Avoid using portable heaters that have an open flame or have a flammable fuel source
- Position out of high traffic areas
- Ensure that heaters are CSA (Canadian Standards Association) approved and listed by ULC (Underwriters Laboratories of Canada)

Site Security

When a building is undergoing construction or demolition, arson is a very real hazard. To mitigate this risk, many municipalities require fencing or barricades around work sites. Other security measures include good lighting which can be motion-activated, an

electronic security system and video surveillance. It may also be beneficial to hire a well-trained security service responsible for monitoring the site who can notify the fire department in case a fire is detected.

Site Security Checklist

Establish 24 hour security onsite :

- Locked gate
- Lighting
- Alarm system
- Video Surveillance
- Security team
- Maintain a list of contacts to call in case of an emergency after hours
- Provide building diagrams for emergency responders in case of an incident

Demolition

In a demolition project, all work must be in accordance with CSA Standard S350 — M1980 (R2003), Code of Practice for Safety in Demolition of Structures. The National Fire Code of Canada (NFC) provides minimum fire safety requirements for buildings,

structures and areas where hazardous materials are used. Both national and some provincial fire codes also require that fire safety be practiced during the demolition of building. Contact local authorities for more information.

National Fire Code of Canada

<https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-canada-publications/national-fire-code-canada-2015>

Demolition Checklist

- Remove all hazardous substances before work begins — such as asbestos, tanks, wells, piping systems, and flammable or explosive materials
- Shut off all building services — electricity, communications, etc.
- Maintain water supply in case of fire
- Cap gas and fuel lines
- Install temporary electrical supplies in compliance with local regulations

Hot Work Operations

“Hot work” is used to describe any work that produces an open flame, spark or other ignition source, including blowtorches, lead heaters, soldering, welding, lead or pipe work, grinding wheels and cutting discs, and use of gases or flammable liquids.

Hot work operations are among the most common causes of fire damage, and it is always best to find alternate procedures that do not involve heat. If this is not possible, it is important to take the proper precautions to manage the risks.

Before any work can begin, a hot work permit must be issued. The permit should include the type of work to be completed, location of the work, the time period for the work, completion date, a “final check” time, and a checklist of precautions.

Hot Work Checklist

- Implement a Hot Work Permit system
- Hire only qualified workers to perform hot work
- Equip the work site with fire extinguishers, and ensure workers are trained in their use and know where they are located
- Keep work area clear of flammable and combustible materials
- Remove all combustible materials from the work site at the end of each day
- Cover combustible building materials with a fire-resistant shielding if they cannot be removed
- Ensure the work area is well ventilated
- Wet down the area before work is completed, if possible
- Inspect the work site daily, to be done by a responsible official
- Maintain a fire watch during hot works and for a period of 60 minutes, 2 hours and 4 hours after work is complete
- Enforce no smoking on or near the work site
- Ensure the contractor has a certificate of insurance
- Inform the insurance provider of the work being done

The person who authorizes the work must be familiar with the hazards and understand the safeguards required when performing hot work. They must confirm that fire protection procedures and equipment are in place before work commences, ensure compliance with these measures, and be available to inspect the site on a daily basis. Since ignition can occur after work is completed, the procedures will need to include a fire watch, with an authorized person checking back one, two and four hours after the end of the work day.

Conclusion

Whether your project involves construction or demolition, the planning process should include fire safety procedures and protocols to be implemented before work begins — and at each stage of the job.

Prior to engaging a contractor or any related professional, it is also highly advisable to review their safety performance and determine whether they take a proactive approach to training their employees and fostering a “culture of safety.”

NFPA 241 : Standard for Safeguarding Construction, Alteration, and Demolition Operations can be viewed online at :

<http://www.nfpa.org/codes-andstandards/document-informationpages?mode=code&code=241>

The National Fire Protection Association (NFPA) is a global non-profit organization dedicated to “eliminating death, injury, property and economic loss due to fire, electrical and related hazards.”

NFPA produces a wide range of information and knowledge, as well as consensus codes and standards established by committee members from all over the world. Ecclesiastical is proud to be included among them.

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