CANADIAN FIRE SAFETY ASSOCIATION

CFSA NEWS

Fire Safety is Everybody's Business

FALL 2017

Perimeter Fire Barrier Systems

CFSA
CANADIAN FIRE SAFETY ASSOCIATION
NEWS
Fire Safety is Everybody's Business
FALL 2017

Inside This Issue

Editor: Lesley-Anne Coleman
The CFSA News Magazine is published 4 times per year: Winter, Spring, Summer and Fall.

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The CFSA has decided to make advertising in the CFSA Newsletter a definite advantage for members.

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We welcome your comments, suggestions and articles. To submit information, please contact us at MaryLou@associationconcepts.ca attention of The Editor.

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President's Message

The CFSA has finished its 2016/2017 season with another great Annual Education Seminar in April. The seminar was entitled "Application Performance Compliance". There was a great variety of speakers which prompted many discussions on a number of different topics. A special thank you goes out to the City of Toronto's Deputy Fire Chief Jim Jessop for a fantastic and informative presentation.

Thank you again for allowing me the privilege to continue in the role of President for another year. I greatly appreciate the opportunity to participate with such a great group of individuals as our board members. They are truly a dedicated and passionate group.

With regards to CAN/ULC-S561 covered in the Spring Edition of the CFSA news, we have come a long way in the development of early warning fire protection systems and devices. We have also worked hard in getting those advanced warnings to the fire departments in the fastest most efficient way possible. However if these monitoring systems are not installed correctly then all of our efforts in making these great strides have been done for nothing. The signals and reliability will continue to go untrusted and challenged. We need to continue the promotion of certification and confirmation that signals are transmitted and received correctly. There should be no alternative to being subjected to random inspections and tests to confirm transmission success.

Let us know if you have any ideas or topics that you would find interesting. Our mission is to "To disseminate fire and life safety information and create a fire safe environment in Canada". The conversations need to continue to make the mission work.

Your continued attendance, support and feedback assist greatly in the growth of the Association. And finally, a special thank you to our scholarship committee and those providing the scholarships - your support does not go unnoticed or unappreciated.

Thank you.

David Morris
CFSA – President 2017

CANADIAN FIRE SAFETY ASSOCIATION
ASSOCIATION CANADIENNE DE SÉCURITÉ INCENDIE

What is The CFSA?

The Canadian Fire Safety Association is a non-proit organization established in 1971, to promote fire safety through the use of seminars, safety training courses, information newsletters, scholarships, and regular meetings.

Our Mission Statement

"To disseminate fire and life safety information and promote a fire safe environment in Canada."

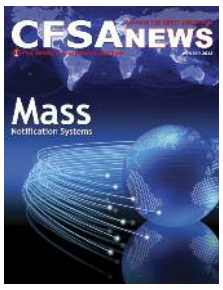
www.canadianfiresafety.com

CFSA CANADIAN FIRE SAFETY ASSOCIATION NEWS

The Canadian Fire Safety Association (CFSA) produces a quarterly News magazine which is distributed electronically to all members and is available for download from the CFSA website.

The CFSA News provides articles on industry related information, updates on codes & standards and overviews of various CFSA educational seminars provided throughout the year. In addition, Corporate Members and their selected representatives are recognized.

Click on a cover below to view that issue online ...



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JUNE TECH SESSION

Commissioning A Complex Building

ULC had the pleasure of hosting the CFSA technical session at ULC's Toronto office. It was a full house with 47 people in attendance.

Megan Nicoletti, Senior Consultant for Jensen Hughes, gave a generic presentation around the current (and proposed) editions of provincial and federal building and fire codes. The codes now mandate that life safety systems be commissioned as a whole. Additionally, the 2015 National Building Code of Canada references the new CAN/ULC S1001 requirements for "Integrated Systems Testing of Fire Protection & Life Safety Systems". While drawing on personal experience from working group developments and international commissioning projects, the presentation provided fundamental knowledge on life safety commissioning and integrated testing.

It was a great opportunity to meet and connect with a number of our Canadian engineers and local Authorities Having Jurisdiction during the two hour presentation.

ULC is a Corporate member of CFSA and our relationship will continue to grow and strengthen as we both continue to focus on keeping people safe. We have an Underwriters Laboratories of Canada Award for the top year two student and top year one student Award which are presented at the annual meeting in April. ◆

Upcoming Events

Trade Shows:

WinDoor 2017 | Fenestration Canada
November 28-30, 2017
The International Centre, Hall 1,
Mississauga, ON
(Free parking at the venue)

2018 International Builders' Show
January 9 – January 11, 2018
Orange County Convention Center (OCCC)
9800 International Drive
Orlando, FL 32819

CFSA Annual Education Forum
Thursday, April 5, 2018
Paramount Conference Centre
Woodbridge, ON

FDIC International
April 23 - 28, 2018
Indianapolis, IN
Indiana Convention Center & Lucas Oil Stadium

ISC West – International Security Conference West
April 11 -13, 2018
Sands Expo Center
201 East Sands Avenue
Las Vegas, NV 89109

International Security Conference West SandsExpo & Venetian
April 11 -13, 2018

IRE – International Roofing Expo
February 6 -8, 2018
Ernest N. Morial Convention Center
New Orleans, Louisiana

ASIS – American Society for Industrial Security
September 24 - 27
Convention Center, Las Vegas, NV

More information regarding events and registration can be found by visiting:

http://canadianfiresafety.com

Wake-Up Call

Why the Grenfell tower fire will ultimately have a positive impact on fire safety

By Casey Grant. Published on September 1, 2017

The Grenfell Tower fire disaster in London, which is believed to have killed at least 80 people in June, is an alarm that should be heard throughout the world. The fire began in a fourth-floor apartment and spread to the outside of the structure, igniting combustible materials in the exterior wall assemblies that covered the building. Flames raced up the side of the 24-story building, engulfing it before many residents had time to escape.

For years, many countries have largely ignored or misunderstood the inherent danger of the type of combustible exterior wall assemblies used in Grenfell and likely thousands of other high-rise buildings across the globe. Grenfell is a crucial and tragic wake-up call, one I believe will be a milestone in the historical fire record that will ultimately serve as a catalyst for sweeping positive change. It's a crucial moment, since the number of high-rise buildings continues to increase dramatically as the world undergoes the largest wave of urban growth in history.

But addressing this issue will not be easy. The most immediate task is to take stock of buildings potentially at risk–some regions have thousands of high-rise buildings. How many use these kinds of combustible wall assemblies? How dangerous are they?

To assist, NFPA has launched a project to develop a tool that will help building owners and code enforcers evaluate the fire risk of these exterior wall systems used on high-rise buildings in their jurisdiction, based on variables such as materials, configurations, building fire protection systems, exposures, etc. With the tool, officials and owners can begin to prioritize buildings of greatest concern for remediation. NFPA has already assembled a global engineering team that will develop the tool and an advisory panel of global stakeholders and key experts to oversee it. The project is expected to be completed by the end of this year.

We can also draw from important work that has already been done. A 2014 report by the Fire Protection Research Foundation, *"Fire Hazards of Exterior Wall Assemblies Containing Combustible Components,"* compiled the technical information needed to start addressing this problem. The report includes information on past exterior fire spread events; approval and regulatory requirements around the world; relevant test methods; listing criteria; fire scenarios; and possible future testing approaches. The report also looked at the effectiveness of *NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components,* used throughout North America and other parts of the world (though not the United Kingdom). It found that NFPA 285 has been effective at minimizing exterior floor-to-floor fire spread in real-world applications. Greater awareness, coupled with research, is needed to ensure this and other test methods remain as efficient as possible, while maintaining their effectiveness.

Obviously, there is still much work to do and the charge before us is daunting. Unfortunately, there are no simple universal mitigation measures to effectively make this category of high-rise buildings safe. Replacing exterior walls that contain combustible components is not always the best solution, and when it is, it will likely take years to fully implement.

Those who work closely in the world of model codes are familiar with the continual struggle to represent the will of society on complex technical issues, often against the backdrop of limited resources. In this case, society has finally wakened to the dangers of combustible exterior wall assemblies in high-rise buildings, and the resulting loss of life is unacceptable. Working together, we can respond to and answer this alarm. ◆

Perimeter Fire Barrier Systems

Taking a team approach to fire-safe construction

by Tony Crimi, P.Eng., MASc.

All images courtesy NAIMA members

BUILDING OWNERS AND OCCUPANTS OFTEN TAKE FIRE SAFETY FOR GRANTED. THEY ASSUME THAT BUILDINGS ARE CONSTRUCTED WITH FIRE SAFETY IN MIND AND SIGNIFICANT ATTENTION HAS BEEN PAID TO BUILDING CODES. NEVERTHELESS, THERE EXISTS ONE PARTICULARLY CRITICAL JUNCTURE FREQUENTLY OVERLOOKED IN FIRE-SAFE DESIGN—THE VOID SPACE BETWEEN AN EXTERIOR CURTAIN WALL AND THE EDGE OF THE FLOOR. THIS AREA CAN BE ADDRESSED BY PERIMETER FIRE BARRIER SYSTEMS.

Unlike some fire safety elements addressed primarily through design and specification decisions, perimeter fire barrier systems require careful attention to design, specification, and installation to work properly. Consequently, they demand close collaboration by the architect, specifier, and general contractor to ensure each link in the chain is appropriately addressed.

This article provides a background on the importance of perimeter fire barrier systems, as well as actionable guidance for architects, specifiers, and general contractors to ensure they deliver the level of fire safety their customers have come to expect.

Overview of fire and life safety

According to National Fire Protection Association (NFPA) statistics, there is one structure fire in the United States every 63 seconds. From 2009 to 2013, U.S. fire departments responded to an estimated average of 14,500 reported structure fires in high-rise buildings annually.[1]

During this same time period, high-rise building fires caused an annual average of 40 civilian deaths

and 520 injuries, along with $154 million in direct property damage (*i.e.* not including reputation damage or litigation costs). Five property types account for three-quarters of high-rise fires:

- apartments or other multifamily housing;
- hotels;
- dormitories;
- facilities offering care for the sick; and
- office buildings.

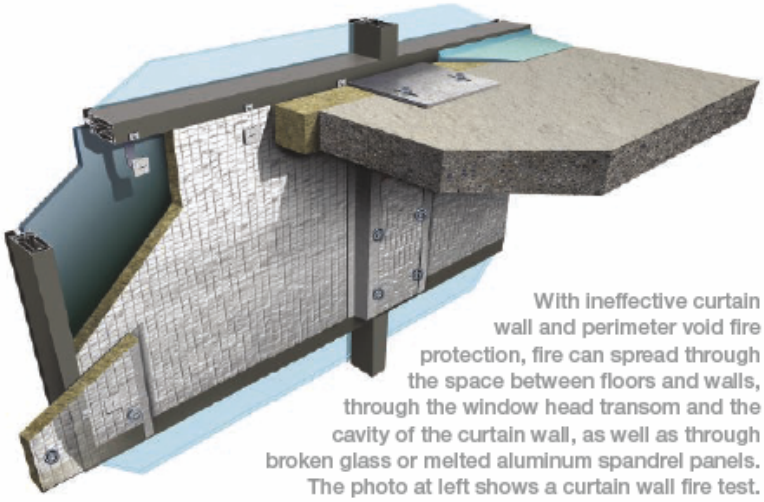
In the early 1970s, the construction industry began to recognize fires in buildings with curtain wall construction were reaching through windows and traveling from floor to floor. Major fires in the United States and Mexico prompted suppliers, code officials, and model code groups to seek passive systems that could contain a fire at the building's perimeter. Various insulating materials were developed in an attempt to solve this challenge.

The intersection of the exterior wall and the floor assembly provides a number of different paths that may allow a fire to spread. Each of these paths is addressed by different test standards. The *International Building Code* (*IBC*) and NFPA codes establish different requirements for each potential path and addresses the means to protect the paths or to prevent the spread of fire based on each separate one.

As with all joint firestops, the intent is to confine a fire to the room of origin and prevent propagation through the floor, ceiling, or walls. With ineffective curtain wall and perimeter void fire protection, fire can spread through the space between floors and walls, through the window head transom and the cavity of the curtain wall, or through broken glass or melted aluminum spandrel panels.

Conceptually, the easiest way to look at the three paths for the fire to spread to adjacent floor levels at the exterior wall is:

- through the void spaces created between the edge of the floor and an exterior curtain wall—these are protected by perimeter fire barrier systems per ASTM E2307, *Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-scale, Multi-story Test Apparatus*, and ASTM E2393, *Standard Practice for Onsite Inspection of Installed Fire-resistive Joint Systems and Perimeter Fire Barriers*;
- via the voids or cavities within the exterior curtain wall, with fire spreading by a path within the concealed space of the exterior wall, or along the outer surface of the exterior wall—these are protected by assemblies compliant with NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-loadbearing Wall Assemblies Containing Combustible Components*; and
- by leapfrogging (*i.e.* spreading to the exterior and then impinging on an opening in an upper level)—this mechanism is currently addressed prescriptively, using spandrel panels or sprinkler protection, with a new ASTM test method still under development.



With ineffective curtain wall and perimeter void fire protection, fire can spread through the space between floors and walls, through the window head transom and the cavity of the curtain wall, as well as through broken glass or melted aluminum spandrel panels. The photo at left shows a curtain wall fire test.

The perimeter fire barrier system is a unique building construction detail installed to protect against the passage of fire, hot gases, and toxic smoke through the voids between the floor slab edge and a nonrated exterior wall (usually a curtain wall). Perimeter fire barrier systems are used to resist interior propagation of fire through the gap between floor and exterior wall for a period equal to the floor's fire-resistance rating. Additionally, a building's perimeter fire barrier system should accommodate various movements, such as those induced by thermal differentials, seismicity, and wind loads.

History of perimeter containment failures

There have been multiple cases showing what kind of damage can be done when fires move through improperly protected concealed spaces. In 1988, the 62-story Los Angeles tower, First Interstate Bank building, caught fire on its 12th floor. The fire spread to the 16th floor on the building after the combustibles in work stations ignited and rapidly grew. The exterior glass panels began to break, providing both additional oxygen and an alternate path for the fire to travel.

Flames spread through the gap in the joint between the floor/ceiling slab and the curtain wall. The fire vented through broken windows, first preheating combustibles on floors above before eventually igniting their contents. The building was being retrofitted with sprinklers at the time, but the system was not operational, so the fire was free to spread and grow. The fire was finally contained by firefighters after 3.5 hours.

In 1988, the 62-story First Interstate Bank Building (Los Angeles) caught fire on the 12th floor, quickly spreading to other levels after combustibles in workstations ignited. The exterior glass panels broke, providing additional oxygen, and an alternate path for the fire to travel. Flames spread through the gap in the joint between the floor/ceiling slab and the curtain wall. (The building was being retrofitted with sprinklers at the time, but the system was not operational.)

On February 12, 2005, a fire started on the 21st floor of the Windsor Tower or Torre Windsor (officially known as Edificio Windsor) in Madrid, Spain. The building was a 32-story concrete building with a reinforced concrete central core. It was not sprinklered, and had been undergoing progressive refurbishment over a three-year period. The fire burned for 20 hours, spreading to all levels above the second floor.

At the time of construction, the Spanish building code did not require perimeter firestopping or perimeter columns and internal steel beams to be fire-protected. As a result, the original existing steelwork was left unprotected and the gap between the original cladding and floor slabs was not firestopped. In fact, these weak links in the fire protection of the building were being rectified in the refurbishment project at the time of the fire. Since the building adopted the 'open-plan' floor concept, effectively, the fire compartmentation could only be floor-by-floor (about 40 x 25 m [131 x 82 ft]). However, the lack of perimeter fire barriers in floor openings and between the original cladding and the floor slabs led to a failure of the vertical compartmentation, and the complete collapse of the building.

The challenges

A curtain-wall-clad building is a multistory structure having exterior walls not part of the loadbearing structure. As floor slabs are supported by interior beams and columns, there is a perimeter void or gap, typically ranging from 25 to 200 mm (1 to 8 in.), between each floor slab and the exterior curtain wall. Outside walls may be constructed using one of several materials, including glazing, light-gage metals, and gypsum wallboard.

WHY MINERAL WOOL?

Due to the challenging nature of perimeter fire containment, mineral wool is suited to provide the necessary fire safety performance in fires. This form of manufactured vitreous fiber was initially developed in the mid-1800s by melting slag and spinning it into insulation for use in homes and industry. The term 'mineral wool' actually encompasses two products—rock wool and slag wool—that employ different raw materials in their manufacture. Rock wool is made from natural rocks like basalt or diabase, while slag wool is made primarily from iron ore blast furnace slag.

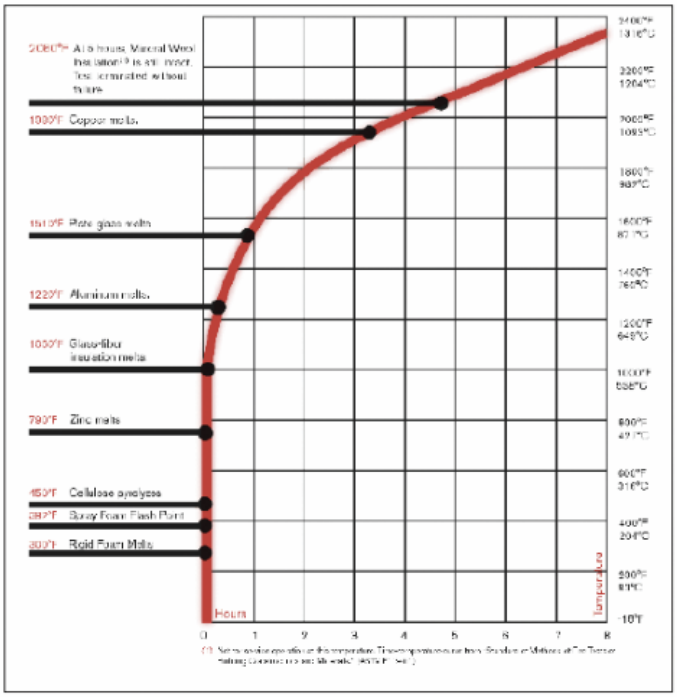
Production begins when natural rock or iron ore blast furnace slag is melted in a cupola furnace or pot. Once melted, this hot, viscous material is poured in a narrow stream onto one or more rapidly spinning wheels, which cast off droplets of molten material and creates fibers. As the material fiberizes, its surface may be coated with a binder material and/or de-dusting agent (*e.g.* mineral oil). The fiber then is collected and formed into batts or blankets for use as insulation, or baled for use in other products, such as acoustical ceiling tile, spray-applied fireproofing, and acoustical materials. Key points in the manufacturing process include:

- the cupola furnace, where the raw materials are melted;
- the blow chamber, where air (and in some cases, a binder), is sprayed over the fibers;
- a curing oven, used only in bonded-product manufacturing to bond the fiber with the binder material; and
- a cooling area.

Products made from rock and slag wool are extremely useful. They are noncombustible and do not support the growth of mildew and mold when tested in accordance with ASTM C665, *Standard Specification for Mineral-fiber Blanket Thermal Insulation for Light-frame Construction and Manufactured Housing*. Rock and slag wool fibers also are dimensionally stable and have high tensile strength. In addition to providing insulation, they absorb sound and, with a vapor retarder, help control condensation.

The physical and chemical properties of rock and slag wool are major factors in their utility. As the fibers are noncombustible and have melting temperatures in excess of 1090 C (2000 F), they are used to prevent the spread of fire. As a primary constituent of ceiling tiles and sprayed fireproofing, rock and slag wool provide fire protection as well as sound control and attenuation. The excellent thermal resistance of these wools is also a major factor in their use as commercial insulation, pipe and process insulation, insulation for ships, domestic cooking appliances, and a wide variety of other applications. **CS**

When there is ineffective curtain wall and perimeter void protection, a fire can spread through the space between floors and walls, and the window head transom and the cavity of the curtain wall, as well as through broken glass or around melted aluminum spandrel panels.



Mineral wool, with its high melting temperature, noncombustibility, and ability to retain strength and integrity under fire conditions, is suited to protecting openings between fire rated floors and rated, or nonrated, exterior wall assemblies.

The performance of a curtain wall during a building fire, or fire test, depends on the assembly being installed, but nonrated wall system performance significantly varies. Perimeter voids are generally hidden from view after construction. Once installed, these construction gaps are rarely inspected or re-evaluated unless renovations are made. They must be sealed to prevent spread of flames, smoke, and toxic gases in the event of a fire.

As mentioned, the intent with joint and perimeter firestopping is to confine a fire in the room of origin, preventing its propagation through the floor, ceiling, or walls. Mineral wool, with its high melting temperature, noncombustibility, and ability to retain its strength and integrity under fire conditions, is suited to protecting openings between fire-rated floors and rated or nonrated exterior wall assemblies. (For more, see "Why Mineral Wool?," page 56.)

Some insulation materials, such as foamed plastics, melt or burn at levels far below the potential temperature of a structure fire. Flames inside a building can melt aluminum and copper, and cause steel studs and panels to buckle. The loss of these structural elements allows fire to escape quickly up the outside walls. Properly installed perimeter fire barrier systems, using mineral wool insulation, have demonstrated their ability to remain in place longer, and can prevent the passage of flame and hot gases between adjacent stories of a building.

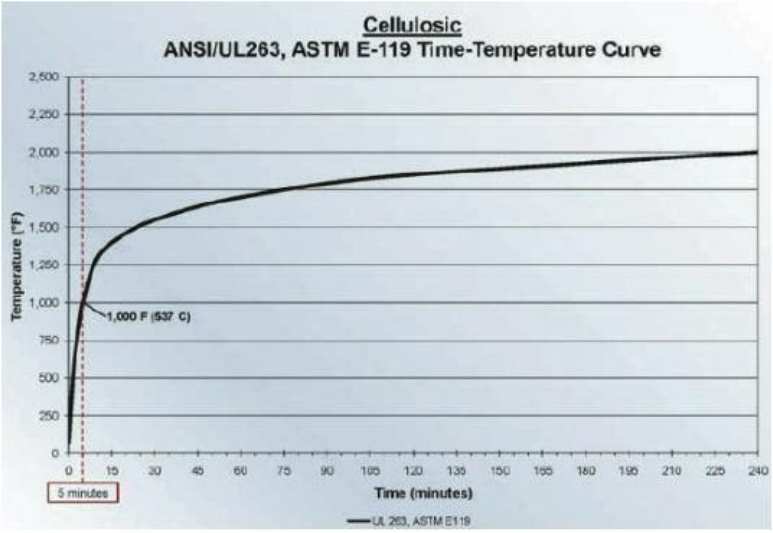
Real fire experience has shown when there is ineffective curtain wall and perimeter void protection, a fire can spread through the space between floors and walls, and the window head transom and the cavity of the curtain wall, as well as through broken glass or around melted aluminum spandrel panels.

As a result, work began on the development of materials and systems to prevent fires from spreading through unprotected joints around the perimeter of floors. Part of the subsequent success of high-rise buildings is due to their perimeter fire containment systems. At every location where two components (*e.g.* steel beams or floor slabs) are located, mineral wool installed as a part of perimeter fire barrier systems is the key contributor that provides the critical fire containment.

Evolution of ASTM E2307

Curtain wall design became common in commercial construction over the past 40 years, but there were no consensus fire test standards or testing procedures for fire protection of exterior curtain walls and floor-to-wall perimeter voids until 2004. The legacy model codes included only cursory mention of this building issue, so architects, designers, contractors, and code officials often adopted untested and uncertain solutions. Later, more effective products were developed and tested for curtain wall fire protection in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*. However, because that standard does not specifically address these unique construction joints, codes only partially addressed the fire risk.

In 2004, ASTM E2307 was developed. Evaluating the interface between a fire-resistance-rated horizontal assembly and an exterior curtain wall, this test method is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions. However, it does not by itself incorporate all factors required for the fire-hazard or fire-risk assessment of the materials, products, or assemblies under actual fire conditions, using a test structure called the Intermediate-scale, Multi-story Test Apparatus (ISMA).



ASTM E119 fire exposure temperatures are based on a cellulosic time–temperature curve developed in the early 1900s.

The ISMA test simulates fire exposure in a high-rise structure where, as the fire intensifies and positive pressure builds, a fire-induced window break occurs, allowing oxygen to feed the flames. The method is meant to simulate a fire in a post-flashover condition in a compartment venting to the exterior.

The provisions of ASTM E2307 are intended to restrict the interior vertical passage of flame and hot gases from one floor to another at the location where the floor intersects the exterior wall assembly. Its use is mandated by U.S. building codes, thereby requiring the protection of openings between a floor and an exterior wall assembly to provide the same fire performance as that required for the floor.

U.S. building codes

Since their 2006 editions, both *IBC* and NFPA 5000, *Building Construction and Safety Code*, have referenced ASTM E2307 as a means of providing perimeter fire barrier joint protection installed in the space between an exterior wall assembly and a floor assembly. The 2015 *IBC* Section 715.4 requires where fire-resistance-rated floor or floor/ceiling assemblies are installed, voids that are created at the intersection of the exterior curtain wall assemblies and the floor assemblies be sealed with an approved system to prevent the interior spread of fire. It further requires those systems be tested in accordance with ASTM E2307 to provide an F rating for a period not less than the fire-resistance rating of the floor assembly.

A notable exception to the *IBC* requirement for ASTM E2307 is for glass curtain wall assemblies, when the vision glass extends to the finished floor level (*i.e.* full-height glass). In those cases, *IBC* alternatively permits the perimeter void to be protected with an approved material capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E119 time-temperature fire conditions for the same duration as the fire-resistance rating of the floor assembly.

Where the joint between walls involves a non-fire-resistance-rated floor and an exterior curtain wall, there is no reason to try to maintain a fire-resistance rating with a rated joint system. However, spread of smoke is a concern, and, therefore, the code calls for a tight joint to protect the rapid spread of smoke from a floor of fire origin to other floors of the building. Consequently, *IBC* and NFPA 5000 still require where a fire-resistance-rated floor intersects with a nonrated spandrel wall, the void space must be protected by an approved joint system.

Five keys to effective perimeter fire barriers

Joint systems and perimeter fire barrier systems are important elements for designers, specifiers, installers, and inspectors. These five key elements provide a simple process for a team to follow to ensure a perimeter fire barrier system is properly designed and installed.

1. Know what your local code requires.
Perhaps obvious, but this is a critical first step occasionally overlooked.

2. Specify to meet code requirements.
Once you understand the code, you can select the right products and systems. This begins by understanding the nuances of the ratings reported on labels and the manufacturer's literature.

3. Avoid improper substitutions.
This starts with the specification, but often comes down to the general contractor ensuring there are no inappropriate substitutions on the jobsite that run contrary to the spec and, ultimately, code. For example, spray or board foam cannot be used in place of mineral wool in a perimeter fire barrier system.

4. Install it right.
It is important to understand a building's perimeter containment system is not a single material, but rather, comprises the exterior curtain wall and the glazing, which is designed to impede the vertical spread of fire to higher floors from the room of origin in high-rise buildings. The void created between a floor and

a curtain wall can range anywhere between 25 and 305 mm (1 and 12 in.) or more, which clearly requires sealing to prevent the spread of flames and products of combustion between adjacent stories.

The width of the joint, which has maximum allowable dimensions specified in the perimeter fire barrier system listings, is the distance between the edge of the framing nearest the floor and the adjacent floor edge. The void space or cavity between framing members is not considered joint space.

5. Verify the installation was done right.
Quality assurance is critical—so much so, recent editions of codes make special inspection a requirement, as discussed later in this article.

The term 'perimeter fire barrier system' refers to the assembly of materials preventing the passage of flame and hot gases at the void space between the interior surface of the wall assembly and the adjacent edge of the floor. For the purposes of ASTM E2307, the interior face is at the interior surface of the wall's framework. Tested and listed perimeter fire barrier systems do not include the interior finished wall (*e.g.* knee wall) details. This makes the systems applicable to any and all finished wall configurations. The existence of the interior wall, even if made of fire-resistant materials (*e.g.* fire-resistance-rated gypsum board), does not eliminate the need to have an appropriately tested material or system to protect the curtain wall from interior fire spread at the perimeter gap—unless that interior wall detail has been specifically tested and shown to meet the requirements of this code section.

Five rules of perimeter fire barriers

There are five basic design principles for installation of successful perimeter fire containment.

1. Install a reinforcement member or a stiffener at the safe-off area behind the spandrel insulation.
This practice prevents bowing otherwise caused by the compression-fit of the insulation.

2. Use mechanical attachments for the mineral wool spandrel insulation—adhesives and friction-fit applications do not work.
The adhesive service temperature ranges from −34 to 120 C (−30 to 250 F). Fire exposure temperatures based on ASTM E119 very quickly exceed the adhesive service temperatures, resulting in failure of the adhesive-applied attachment to hold the spandrel insulation in place.

In 2005, a fire started on the 21st floor of Torre Windsor in Madrid. The 32-story concrete building, with a reinforced concrete central core, was not sprinklered, and had been undergoing progressive refurbishment over a three-year period. At the time, the Spanish building code did not require perimeter firestopping or perimeter columns and internal steel beams to be fire-protected.

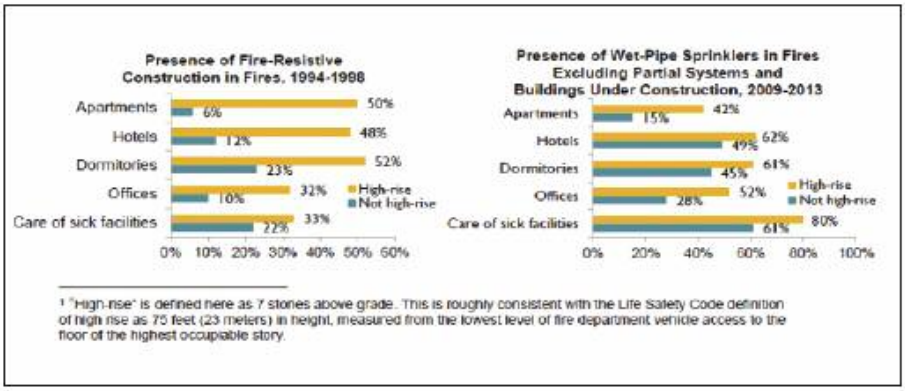
3. Protect the mullions by using mineral wool mullion covers.
Aluminum begins to melt at 660 C (1220 F). Without the mullion protection on the fire exposure side, the aluminum mullions and transoms soften and melt. The mechanical attachments holding the mineral wool spandrel insulation will no longer be in place, allowing the spandrel and insulation to fall out. This can result in a breach of flame and hot gases to the floor above.

4. Ensure the insulation is compression-fit (typically 25 percent, but varies by system) between the slab edge and the inside face of the spandrel insulation.
This compression-fitting of the insulation creates a seal that maintains its integrity preventing flame and hot gases from breaching through to the floor above.

5. Apply an approved smoke sealant material to the top of the insulation to provide a smoke barrier to the system.
The smoke seal is commonly spray-applied to the top of the insulation (non-fire-exposure side) forming a smoke barrier with a typical leakage rating (*i.e.* L rating) of 0. In addition, a 25-mm (1-in.) over-spray—as specified—onto the floor slab and spandrel insulation creates a continuous bond that adds to holding the perimeter insulation material in place during the fire and building movement.

Field inspection and enforcement

While proper design and testing of perimeter fire barrier joints is critical, poor installation and maintenance can lead to unacceptable real-world



The fire death rate per 1000 fires and the average loss per fire are generally lower in high-rise buildings than in other buildings of the same property use. The former are more likely than shorter buildings to have fire-resistive construction and wet-pipe sprinklers that help prevent fire spread. This data comes from "High-rise Building Fires Report," a November 2016 National Fire Protection Association (NFPA) report by M. Ahrens.

performance in fires. To help alleviate this, ASTM E2393 was first published in 2004. This practice covers the procedures to inspect fire-resistive joint and perimeter fire barrier systems, including methods for field verification and inspection. This standard practice provides methods by which qualified inspectors verify required fire-resistive joint systems on a project have been installed in accordance with the inspection documents.

Adoption and use of ASTM E2393 has been growing across the United States in recent years. In fact, since the publication of the 2012 *IBC*, "special inspection" is required for perimeter fire barrier systems installed in high-rise buildings, or in buildings assigned to Risk Category III or IV. Special inspection includes monitoring of materials, installation, fabrication, erection, and placement of components and connections that both require special expertise and are critical to the integrity of the building structure. Special inspections are supplemental to the typical municipal inspections required by the building department specified in *IBC*. Special inspectors monitor the materials as well as the workmanship critical to the structural and fire-resistive integrity of a given building, and bring technical expertise to the job that is not typically available in local government.

IBC clearly identifies situations in which the employment of special inspectors or special inspection agencies is mandatory. In those cases, the use of special inspectors and special inspection agencies is not discretionary.

Conclusion

The importance of balanced fire protection cannot be sufficiently stressed. The fire death rate per 1000 fires and average loss per fire are generally lower in high-rise buildings than in other buildings of the same property use. This is because high-rises are more likely to have fire-resistive construction and wet pipe sprinklers.

Perimeter fire barrier systems are an important part of effective fire-resistance-rated and smoke-resistant fire barrier systems, which require close collaboration by the architect, specifier, and general contractor to ensure each link in the chain is addressed appropriately. In this article, an expert from the fiberglass/rock wool/slag wool insulation world provides a background on perimeter fire barrier systems, their importance, and ways to ensure they deliver the level of fire safety required by the code.

ADDITIONAL **INFORMATION**

Author

Tony Crimi, P.Eng., MASc., is a registered professional engineer and founder of A.C. Consulting Solutions Inc., specializing in building- and fire-related codes, standards, and product development activities in the United States, Canada, and Europe. Working with manufacturers and industry associations, he advocates for approval and safe use of materials and products, and for their code recognition. Crimi has more than three decades of experience in the area of codes, standards, testing, and conformity assessment. He is an active participant in International Code Council (ICC), National Fire Protection Association (NFPA), ASTM, UL, and ISO, and is the immediate past-chair of the *National Building Code of Canada (NBC)* Standing Committee on Fire Protection. Crimi can be reached at tcrimi@sympatico.ca.

Abstract

A particularly critical juncture that can be overlooked in fire safe design is the void space between an exterior curtain wall and the edge of the floor. This area is addressed by perimeter

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08 44 00–Curtain Wall and Glazed Assemblies

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Life safety
Mineral wool
NFPA
Perimeter fire barrier systems

compartmentation systems. They have been developed for fire and life safety protection at the important curtain wall gap.

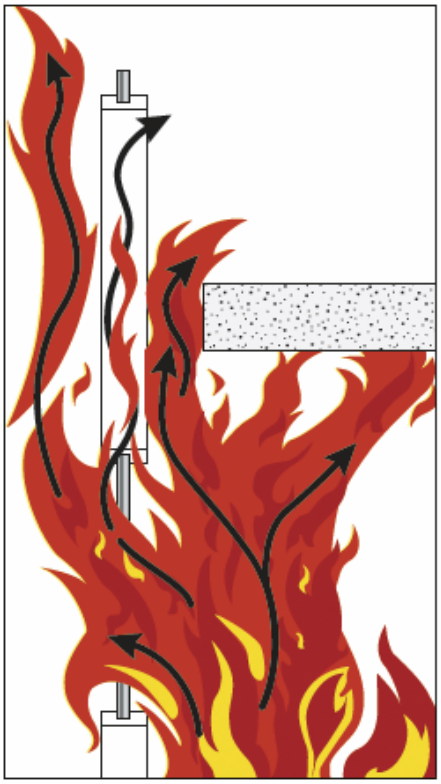
Neglecting the curtain wall/floor void means compromising the safety of people in the building. When floors are required by codes to have a fire-resistance rating, this comes with a financial cost. Improper installation or design of perimeter joint protection not only compromises fire safety, but also negates some of the building fire protection performance for which owners are paying.

Mineral wool is suited to provide the necessary fire safety performance. Its high melting temperature, coupled with dimensional stability and high tensile strength, provides the resistance needed for these critical applications. Perimeter fire barrier systems provide designs capable of maintaining continuity of the fire-resistance-rated floor to the exterior edge of the building for both rated and nonrated exterior walls. This provides vertical compartmentation for the potentially large gap areas at the edge of floor slabs, to prevent fire from spreading vertically.

Ultimately, proper execution of perimeter fire barrier systems requires collaboration between architects, specifiers, general contractors, installers, and inspectors. They need to design it according to code, specify it correctly, critically evaluate substitutions, and then install it properly. **CS**

Notes

[1] This comes from the NFPA's November 2016 publication, "High-rise Building Fires Report," by M. Ahrens. Visit www.nfpa.org/news-and-research/fire-statistics-and-reports/fire-statistics/fires-by-property-type/high-rise-building-fires.



An illustration of the various paths a spreading fire can take.

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NOTE: This ASTM E2307 Standard is being integrated into CAN/ULC-S115 right now for these applications. The ULC Standard revisions are currently out for Ballot.

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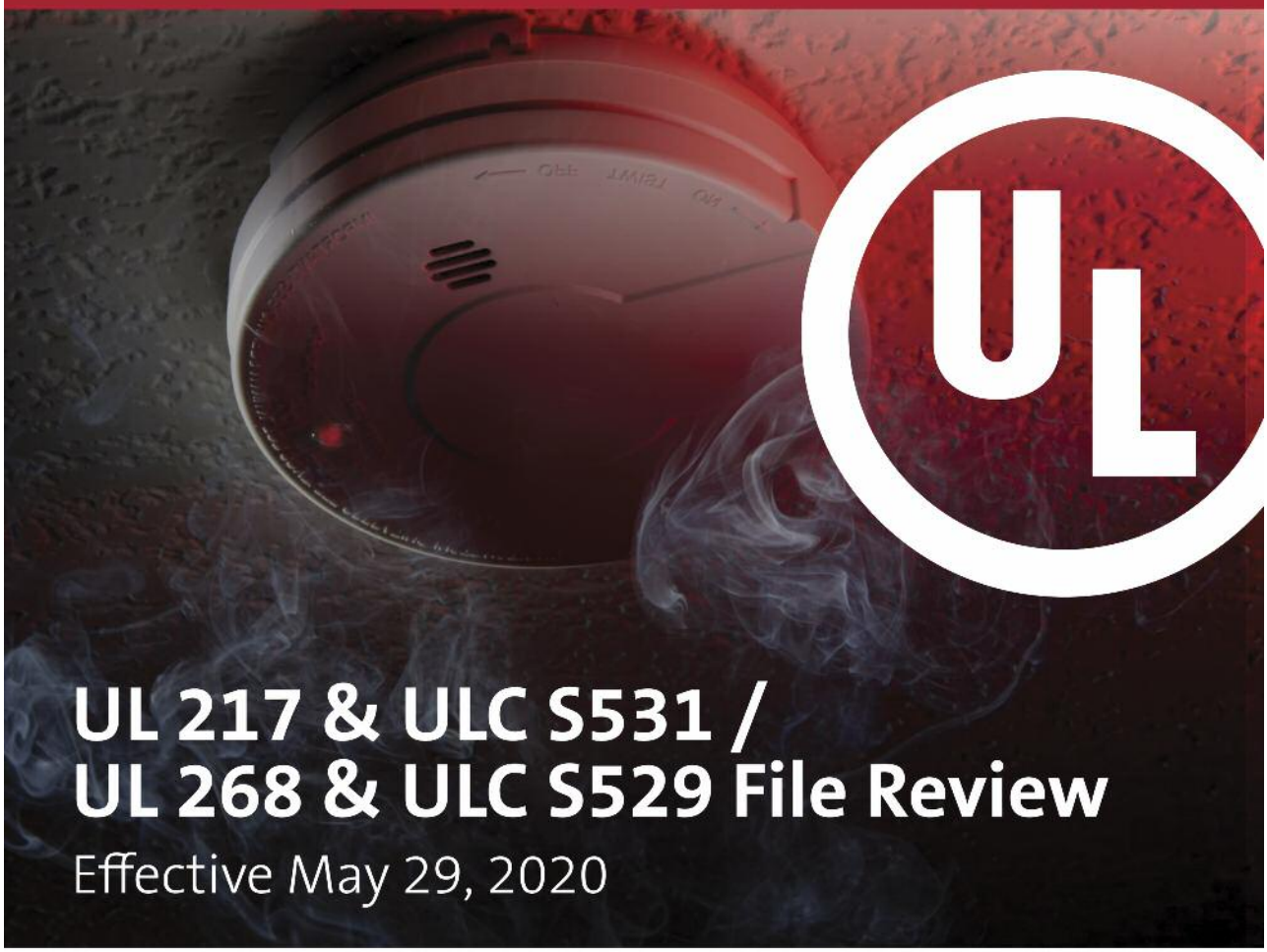

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Sprinkler and Fire Protection Installer Trade: Further Clarifications

Fire Marshal's Communiqué - July 25, 2017

The present communiqué supplements Fire Marshal's Communiqué 2017-03, Sprinkler and Fire Proection Installer rade: Clarifications, issued on February 8, 2017. Its purpose is to provide clarifications to the fie service onhow new compulsory qualification requirements for the sprinkler and fire protection installer trade, which became a "comulsory trade1" on February 2, 2017, apply to sections 6.4, 6.5 and 6.6 of Division B of the Fire Code (Ontario Regulation 213/07, as amended).

The Ontario College of Trades (College), in conjunction with the Office of the Fire Marshal and Emergency Management (OFMEM) and the Sprinkler and Fire Protection Installer Trade Board (SFPI TB), has reviewed the work elements specified in sections 6.4, 6.5 and 6.6 of Division B of the Fire Code to determine which ones fall within the scope of practice for the trade of sprinkler and fire protection installer, as set out in subsection 41. (1) of Ontario Regulation 275/11, Scope of Practice - Trades in the Construction Sector. The parties (i.e. the College, SFPI TB and OFMEM) have agreed on the following:

- All inspections, checks and tests scheduled at intervals of six (6) months or longer as required under sections 6.4, 6.5 and 6.6 of Division B of the Fire Code fall within the scope of practice for the sprinkler and fire protection installer trade outlined in section 41 of Ontario Regulation 275/11;

- All inspections, checks and tests prescribed in sections 6.4, 6.5 and 6.6 of Division B of the Fire Code that are undertaken as a result of alterations, repairs or restoration of a fire suppression system that is out of service fall within the scope of practice for the sprinkler and fire protection installer trade outlined in section 41 of Ontario Regulation 275/11;

- Persons that undertake the work specified above shall comply with section 4, part II of the *Ontario College of Trades and Apprenticeship Act, 2009* (OCTAA), which stipulates the following: "No person shall employ or otherwise engage an individual to perform work or engage in a practice that constitutes engaging in the practice of a compulsory trade unless the individual holds a certificate of qualification in that trade that is not suspended or unless the individual is an apprentice in that trade and is working pursuant to a registered training agreement that is not suspended."

In addition to the work elements mentioned above, the parties have identified an additional group of work elements in sections 6.4, 6.5 and 6.6 of the Fire Code that are critical to ensuring that fire suppression systems operate as intended and that fire protection water supplies are available during a fire. The extent to which these work elements must be carried out by qualified trade members is outlined in the attached table.

Notwithstanding the requirement for work specified above and in the attached table to be undertaken by qualified trade members, it should be noted that some exemptions may exist for employees of industrial plants who work on in-house fire protection systems. Any questions regarding these exemptions should be directed to the College.

All inspections, checks and tests mentioned in sections 6.4, 6.5 and 6.6 of Division B of the Fire Code that are not required to be carried out by a qualified trade member as described in the attached table may be carried out by the owner (as defined in the Ontario Fire Code) or a delegate. It is recommended that this work be carried out by competent persons knowledgeable about the fire protection system.

The College, the SFPI TB, and the OFMEM continue their discussions and anticipate providing additional clarifications regarding the application of the sprinkler and fire protection installer compulsory qualification requirements, including clarifications about qualification requirements for persons undertaking work elements outlined in section 6.8 of Division B of the Fire Code.

Questions regarding matters explained above should be directed to the College; staff members can be reached by telephone at (647) 847-3000 or 1-855-299-0028 (toll free), or by using the e-mail form on the College's Web site.

[1] A compulsory trade, as defined by the Ontario College of Trades, is a trade in which registration as an apprentice or journeyperson candidate, or certification as a journeyperson, is mandatory.

continued…

Sprinkler and Fire Protection Installer Trade

Select Work Elements in Sections 6.4, 6.5, and 6.6 of Division B of the Fire Code	*Application of Sprinkler and Fire Protection Installer Trade Qualification Requirements*
6.5.4.3. The priming water for dry-pipe systems shall be inspected at least every three months to ensure that the proper level above the dry-pipe valve is maintained.	**COMPULSORY**[2] To complete the work specified in 6.5.4.3 correctly, in accordance with the Ontario Fire Code, the system is manipulated and could consequently be impaired. It is therefore a compulsory work element to be completed by a **qualified member**[1].
6.5.5.2. (1) Except as provided in Article 6.5.5.7., the alarm on all sprinkler systems shall be tested monthly by flowing water through the test connection located at the sprinkler valve.	Work prescribed in Sentence 6.5.5.2. (1) of Division B of the Ontario Fire Code may be carried out by the owner or his/her delegate. **COMPULSORY**[2] Twice annually (every 6 months), the work specified in Sentence 6.5.5.2. (1) shall be completed by a **qualified member**[1]. Additionally, when work prescribed in Sentence 6.5.5.2. (1) takes place immediately following an impairment, alteration or repair to the fire suppression system, the person completing the work shall be a **qualified member**[1].
6.5.5.7. (1) If electrical supervision is provided for a sprinkler system, it shall be tested by operating the supervisory signal devices in conformance with Sentences (2) and (3).	Work prescribed in Sentence 6.5.5.7. (1) of Division B of the Ontario Fire Code may be carried out by the owner or his/her delegate. **COMPULSORY**[2] Twice annually (every 6 months), the work specified in Sentence 6.5.5.7. (1) shall be completed by a **qualified member**[1]. Additionally, when work prescribed in Sentence 6.5.5.7. (1) takes place immediately following an impairment, alteration or repair to the fire suppression system, the person completing the work shall be a **qualified member**[1].
6.5.5.7. (2) Transmitters and water-flow-actuated devices shall be tested every two months.	Work prescribed in Sentence 6.5.5.7. (2) of Division B of the Ontario Fire Code may be carried out by the owner or his/her delegate. **COMPULSORY**[2] Twice annually (every 6 months), the work specified in Sentence 6.5.5.7. (2) shall be completed by a **qualified member**[1]. Additionally, when work prescribed in Sentence 6.5.5.7. (2) takes place immediately following an impairment, alteration or repair to the fire suppression system, the person completing the work shall be a **qualified member**[1].

[1] For the purposes of this document, **"qualified member"** is defined as a person who is a member in good standing of the Ontario College of Trades or an apprentice working in the trade of sprinkler and fire protection installer pursuant to a registered training agreement that is not suspended.
[2] For the purposes of this document, use of the term "COMPULSORY" signifies that the work described must be done by a **"qualified member"**.

continued…

Select Work Elements in Sections 6.4, 6.5, and 6.6 of Division B of the Fire Code	*Application of Sprinkler and Fire Protection Installer Trade Qualification Requirements*
6.6.3.3. (1) Fire pumps shall be operated at least once per week at rated speed.	Work prescribed in Sentence 6.6.3.3. (1) of Division B of the Ontario Fire Code may be carried out by the owner or his/her delegate. **COMPULSORY**[2] Twice annually (every 6 months), the work specified in Sentence 6.6.3.3. (1) shall be completed by a **qualified member**[1]. Additionally, when work prescribed in Sentence 6.6.3.3. (1) takes place immediately following an impairment, alteration or repair to the fire pump assembly components or suppression system, the person completing the work shall be a **qualified member**[1].
6.6.3.3. (2) The fire pump discharge pressure, suction pressure, lubricating oil level, operative condition of relief valves, priming water level and general operating conditions shall be inspected during the weekly operation of fire pumps.	Work prescribed in Sentence 6.6.3.3. (2) of Division B of the Ontario Fire Code may be carried out by the owner or his/her delegate. **COMPULSORY**[2] Twice annually (every 6 months), the work specified in Sentence 6.6.3.3. (2) shall be completed by a **qualified member**[1]. Additionally, when work prescribed in Sentence 6.6.3.3. (2) takes place immediately following an impairment, alteration or repair to the fire pump assembly components or fire suppression system, the person completing the work shall be a **qualified member**[1].
6.6.3.4. (1) Internal combustion engine fire pumps shall be operated once a week for a sufficient time to bring the engine up to normal operating temperature.	Work prescribed in Sentence 6.6.3.4. (1) of Division B of the Ontario Fire Code may be carried out by the owner or his/her delegate. **COMPULSORY**[2] Twice annually (every 6 months), the work specified in Sentence 6.6.3.4. (1) shall be completed by a **qualified member**[1]. Additionally, when work prescribed in Sentence 6.6.3.4. (1) takes place immediately following an impairment, alteration or repair to the fire pump assembly components or fire suppression system, the person completing the work shall be a **qualified member**.
6.6.3.6. In buildings containing a hotel, the intervals referred to in Articles 6.6.3.3. and 6.6.3.4. are permitted to be once per month.	Work prescribed in Article 6.6.3.3. and Article 6.6.3.4., when undertaken in buildings containing a hotel in accordance with Article 6.6.3.6. of Division B of the Ontario Fire Code, may be carried out by the owner or his/her delegate. **COMPULSORY**[2] Twice annually (every 6 months), the work specified in Article 6.6.3.3. and Article 6.6.3.4., when undertaken in buildings containing a hotel, shall be completed by a **qualified member**[1]. Additionally, when work prescribed in Article 6.6.3.3. and Article 6.6.3.4. undertaken in buildings containing a hotel takes place immediately following an impairment, alteration or repair to the fire pump assembly components or fire suppression system, the person completing the work shall be a **qualified member**[1].

[1] For the purposes of this document, **"qualified member"** is defined as a person who is a member in good standing of the Ontario College of Trades or an apprentice working in the trade of sprinkler and fire protection installer pursuant to a registered training agreement that is not suspended.

[2] For the purposes of this document, use of the term "COMPULSORY" signifies that the work described must be done by a **"qualified member"**.

continued…

Select Work Elements in Sections 6.4, 6.5, and 6.6 of Division B of the Fire Code	*Application of Sprinkler and Fire Protection Installer Trade Qualification Requirements*
6.6.5.1. Hydrants shall be inspected annually and after each use in accordance with Articles 6.6.5.2. to 6.6.5.5. 6.6.5.6. Hydrant water flow shall be inspected annually in accordance with Article 6.6.5.7.	**Municipally owned hydrants:** Hydrant inspections required by Subsection 6.6.5. may be carried out by municipal employees or their delegates. Hydrant flow tests required by Article 6.6.5.6. may be carried out by municipal employees or their delegates. **COMPULSORY**[2] **Privately owned hydrants:** Hydrant inspections required by Subsection 6.6.5. shall be carried out by a **qualified member**[1]. Hydrant flow tests required by Article 6.6.5.6. shall be carried out by a **qualified member**[1].

[1] For the purposes of this document, **"qualified member"** is defined as a person who is a member in good standing of the Ontario College of Trades or an apprentice working in the trade of sprinkler and fire protection installer pursuant to a registered training agreement that is not suspended.
[2] For the purposes of this document, use of the term "COMPULSORY" signifies that the work described must be done by a **"qualified member"**.

Accommodating Mental Illness at Work

By Carola Mittag, Workplace Safety Group

Work is important to our well-being. In addition to the income it brings, it can be a big part of our identity, how we understand our skills, and a way to contribute; however, a mental illness can have a big impact on the way we work.

As part of a sound health and safety culture, we have to understand that mental illness is a condition that must be recognized and accommodated, much like any other illness or condition. Those suffering from mental illness deserve the right to be productive, income-earning employees.

Perhaps the illness is work-related because of stress factors and demands of a particular job. For people experiencing a mental illness, a good work/life balance is critical. The relationship between stress and mental illness is

Supporting your employees' mental health can improve productivity, cut down on absences, and increase worker retention.

continued…

Accommodating Mental Health at Work Cont'd

complex, but certainly stress can worsen mental illness for some people.

Employees with a mental illness, have the right to ask for certain accommodations that will allow them to continue to work. They are under no obligation to disclose their mental illness to the employer; however, are likely be asked to show documentation from a doctor that outlines the accommodations they may require.

Here are just a few suggestions to improve their work situation if they are experiencing mental illness:

- If they are returning to work after a leave related to mental illness, as an employer, consider negotiating a graduated returnto- work with your employee. This may mean their returning only three days a week, or for shorter workdays.
- Discuss with your employee what workplace situations cause stress, and how they can be addressed.
- Certain medications may make it difficult for them to be at work first thing in the morning. Suggest to your employee flexible work times that allow them to be at their most productive.
- Written instructions and directions from their supervisor may be requested and provided, if they find it difficult to retain spoken information.

Everyone is touched by mental illness. It may be yourself, a family member, a friend or a co-worker. Mental illnesses can take many forms, just like physical illnesses. Mental illnesses are still feared and misunderstood by many, but the fear will disappear as people learn more about them.

As a responsible employer, you provide a physically safe environment for your workers. But what about their psychological health and safety? Are you doing enough to help your staff be their best selves at work?

Supporting your employees' mental health can improve productivity, cut down on absences, and increase worker retention. ◆

Carola Mittag is CEO of Workplace Safety Group, experts in workplace health and safety. Workplace Safety Group has designed training programs specifically for the housing sector, and developed an auditing tool to ensure that housing administrations meet all legal health and safety compliance requirements.
Email: carola@workplacesafetygroup.com

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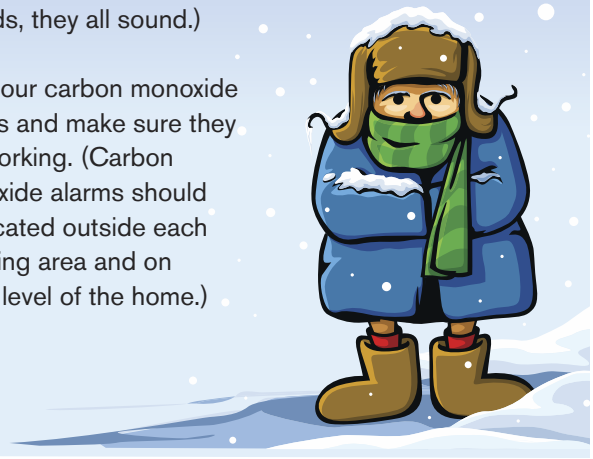
WINTER SAFETY CHECKLIST - Preparing for the Winter Freeze

TO DO:

- Check that the furnace has been inspected and serviced by a qualified professional during the last 12 months. (A furnace should be serviced at least once a year.)
- Check that the chimneys and vents have been cleaned and inspected by a qualified professional. (Not cleaning your chimney is the leading cause of chimney fires from built up creosote. This service needs to be done at least once a year.)
- Be sure that the wood for your fireplace or wood stove is dry, seasoned wood.
- Be sure that the fireplace screen is metal or heat-tempered glass, and is in good condition and secure in its position in front of the fireplace.
- Be sure that you have a covered metal container ready to use to dispose cooled ashes. (The ash container should be kept at least 10 feet from the home and any nearby buildings.)
- Teach children to stay at least 3 feet away from the fireplace, wood/pellet stove, oil stove or other space heaters.
- Be sure that portable space heaters have an automatic shut-off.
- Check that the portable space heaters will be plugged directly into an outlet (not an extension cord) and placed at least three feet from anything that can burn; like bedding, paper, walls, and even people. (Place notes throughout your home to remind you to turn off portable heaters when you leave a room or go to bed.)
- Test your smoke alarms and make sure they are working. (You need smoke alarms on every level of the home, inside each sleeping room and outside each separate sleeping area. For the best protection, the smoke alarms should be interconnected so when one sounds, they all sound.)
- Test your carbon monoxide alarms and make sure they are working. (Carbon monoxide alarms should be located outside each sleeping area and on every level of the home.)



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Building Standards Department
John Wright
Tony Boyko
Chris Bird
Tim Moore
Markham, ON
(905) 477-7000
(905) 475-4719

City of Toronto,
City Hall, East Tower
John Humphries
Toronto, ON
(416) 392-2690

City of Vaughan
Dean Brown
Michaela Tataru
Vaughan, ON
(905) 832-8510

Durabond Products
Guido Rapone
Toronto ON
(416) 759-4474

Durham College, Fire and Life Safety
Technician Program
Randy Panesar
Oshawa, ON

Electrical Safety Authority
Scott Saint
Mississauga, ON
(905) 712-5363

FCS Fire Consulting Services
Michele Farley
Trisha Ashworth
Max Goss
Innisfil, ON
(800) 281-8863

Fire Detection Devices Limited
David Duggan
Patricia Duggan
Gordon Duggan
Markham, ON
(905) 479-7116

Fire Monitoring of Canada Inc.
Jim Asselstine
Kevin Allison
St. Catharines, ON
(800) 263-2534

Firetronics 2000
David Morris
Peter Teolis
Markham, ON
905-470-7723

Greater Toronto Airports Authority
Dwayne MacIntosh
Toronto, ON
(416) 776-5170

Harding Fire Protection
Jennifer Gourley
Toronto, ON
(416) 292-0599

Independent Plumbing & Heating
Contractors Association
Mauro Angeloni
Toronto, ON
(416) 248-6213

Jensen Hughes Consulting
Anthony Rago
Toronto ON
(647) 557-3671

LRI Engineering Inc.
Fred Leber
Eric Esselink
Michael Devine
Toronto ON
(416) 515-9331

Morrison Hershfield Limited
Judy Jeske
Daniel Dixon
Markham, ON

Nadine International Inc.
Ajwad Gebara
Mississauga, ON
(905) 602-1850

National Research Council
Andre Laroche
Ottawa ON
(613) 993-9586

Oakville Fire Department
Gary Laframboise
Max Bertling
Jonathan O'Neil
Oakville ON
(905) 815-2008

Office of The Fire Marshal & Emergency
Management
Jim Kay
Mary Prencipe
Ryan Betts
Toronto ON
(416) 391-1100

OFS Fire Prevention
Jeff Ough
Ed Herron
Barrie, ON
(705) 728-5289

continued…

Corporate Members

PLC Fire Safety Solutions
Ghaith Qamheiah
Anh Trinh
Mohamed Mushantat
Larry Keeping
Mississauga, ON
(905) 949-2755

Pro-Firestop
John Sharpe
Jeffrey Zamora
Toronto, ON
(416) 293-0993

Secur Fire Protection
Catherine Chandler
John Lemay
Bernard Seguin
Ottawa ON
(613) 744-0722

Seneca College, School of Fire Protection Engineering Techology
Derek Gruchy
Scott Pugsley
Toronto ON
(416) 491-5050

Siemens Canada Limited
Jeffrey Tondang
Oakville ON
(905) 465-7208
Manuel Lopes
Jason Baycroft
Mississauga, ON

TOA Canada Corporation
Rico Lucia
Mississauga, ON
(800) 263-7639

Toronto Fire Services
James Stoops
Lesley-Anne Coleman
Toronto, ON
(416) 338-9102

Toronto Transit Commission
Cory Grant
Ryan Duggan
Mark Biamonte
Toronto, ON
(416) 393-4229

Town of Richmond Hill
Mike Janotta
Richmond Hill, ON
(905) 771-8800

Underwriters Laboratories of Canada
Kevin Wu
Sandy Leva
Toronto ON
(416) 288-2269

University Health Network
John Chartrand
Toronto, ON
(416) 340-4800

University of Guelph, Campus Community Police and Fire Prevention
Patrick Martin
Karen MacDonald
Scott Hamilton
Guelph, ON
(519) 824-4120

Vaughan Fire & Rescue Services
Doug Best
Vaughan, ON
(905) 832-8585

Vipond Inc.
Bruce Tait
Mississauga, ON
(905) 564-7060

New Members

Individual
Steve Clemens
Frank Donati
Matteo Gilfillan
Ramy Salama
Christian Stievenart
Amal Tamim
Nathaniel A. Watson
Beth Weckman

Members in the News

During their Annual Provincial Honours and Awards Gala, the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) presented **Scott Pugsley**, Professor within the School of Fire Protection at Seneca College, with their **Outstanding Educator Award**.

The award is granted to an individual who has made a significant contribution to the training and education of engineering/ applied science technicians and technologists. It recognizes a sustained record of excellence over many years, and not for one specific year or singular accomplishment. Mr. Pugsley was nominated for this award by his students, alumni, and faculty from Seneca College. Visit SenecaCollege.ca/Fire

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Dr. Kerry Kwan B.Sc, B.Ed, M.Ed, Ph.D joined the School of Fire Protection at Seneca College in the role of Professor. She will be teaching mathematics and chemistry within the 2-year Technician and 3-year Technologist programs. Kerry has been working for Seneca as a partial load teacher and has also worked at a variety of other educational institutions. Dr. Kwan will also continue her research and development of master learning in mathematics for the Fire Protection, Civil Engineering and Environmental Technology programs.

For more information please contact Scott Pugsley, School of Fire Protection at Seneca College. 1750 Finch Ave East, Toronto. Ontario M2J 2X5 or Scott.Pugsley@SenecaCollege.ca

CFSA

Membership Application Form

Why Corporate Membership?

Corporate Membership is cost effective because it allows any number of individuals from your organization to participate in the many functions provided by CFSA throughout the year. Any number of persons can attend our monthly dinner meetings/ technical sessions or our annual conference at the preferred member's rate. Your advertisement in the CFSA journal is circulated to CFSA's membership of over 250 professionals in the Fire Safety Industry.

Corporate
Includes 3 individual memberships; Company recognition in each of the four issues of the CFSA journal.

Corporate Plus
Includes 6 individual memberships; Company recognition and a 1/2 page advertisement in each of the four issues of the CFSA journal.

Individual Member:
Includes four issues of the CFSA journal and discounted rates at Association functions.

Student Member:
Includes four issues of the CFSA journal and discounted rates at Association functions.

Associate Member:
For individuals and companies located beyond a radius of 150 km from the Greater Toronto Area. Includes four issues of the CFSA journal and discounted rates at Association functions.

Provincial/Territorial Chapter:
For groups of members within a province or territory. Includes 4 individual memberships; member rate for all staff at dinner meetings, technical seminars and Annual Education Forum; Recognition in each of the four issues of the CFSA journal. Contributes articles in CFSA journal.

canadianfiresafety.com

CFSA Application for Membership

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Company/Affiliation _____

Title _____

Address _____

City _____

Prov. _____ Postal Code _____

Business Phone _____

Business Fax _____

e-mail _____

Web site _____

Please indicate how you first heard about CFSA

_____

Please indicate in the appropriate box the category that best describes your vocation:

- ○ Architect
- ○ Building Official
- ○ Insurance Industry
- ○ Fire Protection Manufacturer/Supplier
- ○ Building Owner/Developer/Manager
- ○ Engineer
- ○ Fire Official
- ○ Fire Consultant
- ○ Other (please specify) _____

	Rate	+13%HST	Total Rate
○ Corporate Plus (C3)	$ 790.00	$ 102.70	$892.70
○ Corporate	$ 406.00	$52.78	$458.78
○ Individual	$ 82.00	$10.66	$92.66
○ Student	$ 25.00	$3.25	$28.25
○ Retired	$ 25.00	$3.25	$28.25
○ Associate	$ 56.00	$7.28	$63.28
○ Chapter	$ 180.00	$23.40	$203.40

Method of Payment:

☐ Cheque Enclosed $ _____

☐ VISA ☐ MasterCard ☐ American Express

Account # _____

Expiry Date _____

Signature _____

Please make cheques payable to:

Canadian Fire Safety Association
2800 - 14th Avenue Suite 210. Markham, ON L3R 0E4
Telephone (416) 492-9417 Fax (416) 491-1670

FIRE SAFETY IN HIGH-RISE BUILDINGS

FIRE SAFETY *BEGINS WITH YOU!*

Learn what to do if a fire happens in your building!

Know the fire safety features in your building and the emergency procedures outlined in the building's fire safety plan!

Know the locations of all available exit stairs from your floor in case the nearest one is blocked by fire or smoke!

IF THERE IS A FIRE IN YOUR UNIT:

- Tell everyone in the unit to leave. **Close all doors behind you.**
- Pull the fire alarm on your floor and yell **"FIRE"**.
- Leave the building using the nearest stairway.
- Call **9-1-1** when you are safe.
- Meet the firefighters and tell them where the fire is.

TO STAY OR GO?

Most of the time, the best thing to do in a fire is leave the building as soon as possible. But in some cases you may not be able to leave and you may have to stay in your apartment. **WHETHER YOU DECIDE TO STAY OR GO, YOU MUST ACT QUICKLY AND PROTECT YOURSELF FROM THE SMOKE.**

IF YOU DECIDE TO LEAVE THE BUILDING, WHEN YOU HEAR THE FIRE ALARM:

- Feel the door to your unit before opening it. If it is hot, use another way out. If it is cool, leave the building immediately, using the closest stairway. **Close all doors behind you.**
- **DO NOT** use the elevator.
- If you encounter smoke in the stairway, use another stairway.
- If this is not an option, return to your unit, or seek shelter in another unit.
- If an announcement is made throughout the building, listen carefully and follow the directions.
- Call **9-1-1** and let them know where you are.

IF YOU CAN'T GET OUT OF YOUR UNIT OR YOU DECIDE TO STAY IN YOUR UNIT:

- Stay in your apartment until you are rescued or until you are told to leave. *This may take a long time.*
- **DO NOT** try to leave your apartment a long time after the alarm has sounded. The longer you wait, the more risk there is that heavy smoke will have spread into stairways and corridors. Your chances of survival are less.
- Keep smoke from entering your apartment. Use duct tape to seal cracks around the door and place wet towels at the bottom. Seal vents or air ducts the same way.

IF SMOKE ENTERS YOUR APARTMENT:

- Call **9-1-1** and tell them where you are and then move to the balcony. **Close the doors behind you.**
- If you don't have a balcony, go to the most smoke-free room, close the door and seal it with tape and towels. If necessary, open the window for fresh air. Show emergency personnel where you are by hanging a sheet from the window or balcony.
- Keep low to the floor where the air is cleaner.
- Listen for instructions from authorities.

FOR MORE INFORMATION CONTACT YOUR LOCAL FIRE DEPARTMENT OR VISIT ONTARIO.CA/FIREMARSHAL

Office of the Fire Marshal and Emergency Management
ontario.ca/firemarshal