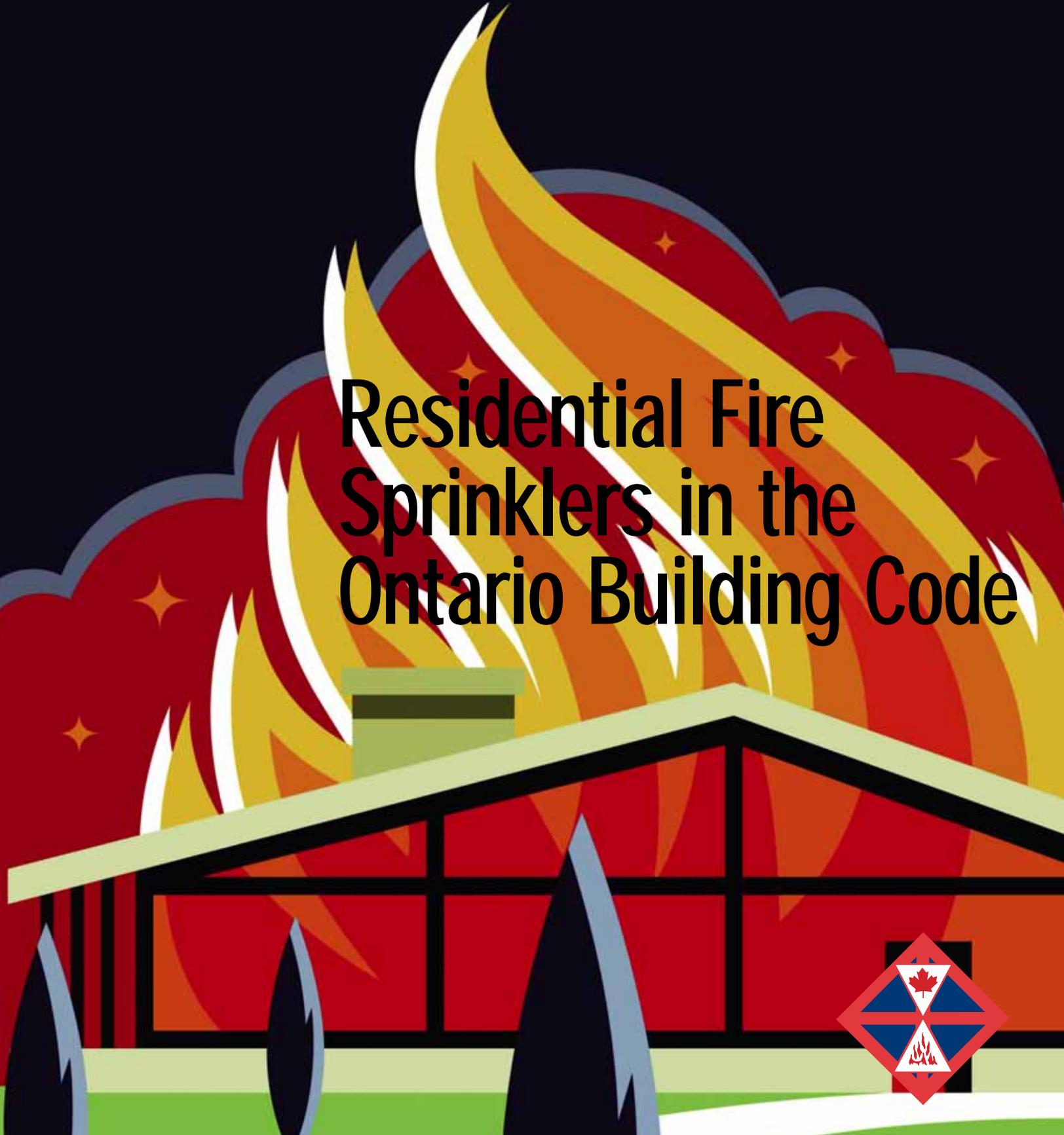


CFSA news

CANADIAN FIRE SAFETY ASSOCIATION

Fire Safety is Everybody's Business

WINTER 2008



Residential Fire Sprinklers in the Ontario Building Code



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Editor: Matteo Gilfillan

The CFSA News Magazine is published 4 times per year – Summer, Fall, Winter, Spring

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Closing dates

for submissions are as follows:
Issue #1 – May 20 Issue #3 – Nov. 19
Issue #2 – Aug. 19 Issue #4 – Feb. 17

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Please send them to the attention of:

The Editor
Canadian Fire Safety Association
2175 Sheppard Ave., E., Suite 310
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Leo Grellette

President's message

I would like to take a moment to thank you, the membership, for your endorsement of myself for the position of President of the Canadian Fire Safety Association. I would be remiss if I did not take time to extend my most sincere appreciation to Janet O'Carroll who as President over the past two years, and now as past President, has put forth an extreme effort in supporting and moving forward your association.

I look forward to serving you the membership over the next two years. As with most associations no one person can meet the day-to-day challenges placed on the association. I am grateful that I move into my term with the added support of Vice Presidents Randy de Launay from Human Resources Development Canada and Susan Clarke from the Office of the Fire Marshall.

A great supporting cast made up of Allison McLean (Nadine International), Matteo Gilfillan (Randal Brown & Associates Ltd.), Gary Robitaille (Leber-Rubes Inc.), Anthony Van Odyk (Seneca College of Applied Arts and Technology), Rocky Mino (Markham Fire & Emergency Services), Jason Trabucco (Toronto Transit Commission), Sandy Leva (Underwriters Laboratories of Canada), Cengiz Kahramanoglu (Ministry of Municipal Affairs and Housing) and Frank Lamie (City of Toronto Fire Services) complement the efforts of the association and in fact are a strong component of the driving force of the association.

However it is with both sadness and appreciation that I announce that Rich Morris, an original founding member of the CFSA, will no longer be on the Board of Directors of the CFSA; sadness at the loss to the Board but with the deepest appreciation for all the years of dedicated service to this association. Rich has been both a mentor and a pillar of strength and knowledge for many of those who have served on the Board of Directors over the years. I personally owe Rich a debt of gratitude for his support of myself during our years together on the Board. Although supposedly gone from the Board, Rich has (as is his manner) agreed to continue to be a valuable resource for myself and others on the Board. I did promise not to call his cell during his days on the golf course. Good luck Rich and many heartfelt thanks from us all.

As well, after many years of dedicated service to both the members and Board of Directors of the Canadian Fire Safety Association, Alan Kennedy has decided that it is time for him to pursue many of the other things that life has to offer with retirement and golf being but two.

Alan has served the association in many capacities and has also guided the direction of the Association in his capacity as President. Although Alan has taken this opportunity to enjoy himself he still remains a valuable asset to the Association as do all the Past Presidents.

I would like to thank Alan personally for his guidance and mentoring during our time together on the Board.

I would also like to thank Matt Osburn and Chantelle Cosgrove for their contributions to the Canadian Fire Safety Association. If not for the sacrifices of dedicated volunteers to the Board of Directors the Association would be unable to continue to offer the technical insight, awareness and training that enhances our base knowledge and importance of fire safety first.

As we move forward, the Board is reserving time to evaluate its purpose, its mission and means to continue to provide those technical training opportunities you the members have come to expect. We are reviewing our core objectives and our administrative function in an effort to be more streamlined, efficient and effective.

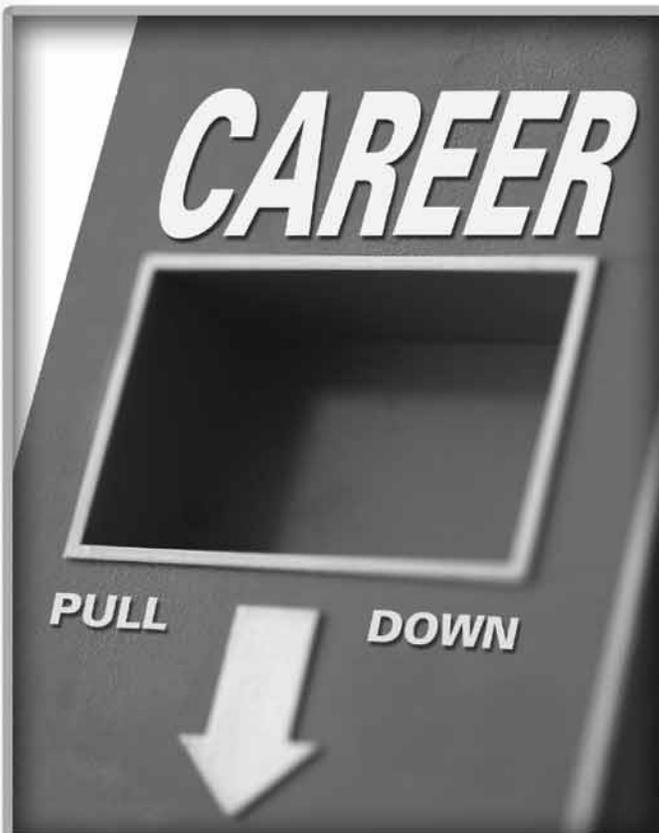
In looking ahead we continue to appreciate your support as well as the support of our corporate members and sponsors. We will continue to support the efforts of individuals and other associations and manufacturers in their efforts to both advance and enhance fire safety in Canada.

Yours very truly,

A handwritten signature in black ink, appearing to read 'Leo Grellette', with a stylized flourish at the end.

Leo Grellette
CFSA President

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Matteo Gilfillan

Editor's note

The theme of this edition of the *CFSA News* is (you guessed it!) residential sprinklers. As you may be aware, the 2006 Ontario Building Code was amended on June 18, 2008 (O.Reg. 205/08) to include for the requirement to sprinkler residential buildings higher than 3 storeys. This edition of the *CFSA News* features some very informative articles by the Ministry of Municipal Affairs and Housing that provide details on the requirements for sprinklers in residential buildings.

This edition of the *CFSA News* also features a summary of the CFSA's Annual Education Forum (AEF) which was held on April 17 and 18, 2008, at the Delta Markham Hotel in Markham, Ontario. The year's theme at the AEF was "***Above & Beyond the Codes – Life Safety and Fire Risk Management Strategies***".

I personally found the day to be quite informative and the presentations to be topical. I would like to extend thanks to all of our presenters, who made the AEF the success that it was. In addition, thank you to:

- The Greater Toronto Airport Authority (GTAA) for providing a tour of the GTAA Fire and Emergency Services Training Institute,
- The Toronto Transit Commission (TTC) for providing tours of the TTC Command Bus,
- The Markham Fire and Emergency Services for hosting a fire extinguisher training session, and
- The participants of this year's Trade Show.

Also included in this edition of the *CFSA News* are articles on an update to the Building Code examinations, the ULC new Qualified Firestop Contractor program, and many more.

The *CFSA News* journal committee is looking for articles and topics for articles from our membership. If you are interested in providing an article or would like to see a specific topic discussed in the *CFSA News*, please contact me.

A handwritten signature in black ink, appearing to read 'Matteo Gilfillan'.

Matteo Gilfillan, C.E.T., CFPS

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Residential Fire Sprinklers

This article was obtained from the Ontario Building Code website (www.mah.gov.on.ca)



The *Building Code Act, 1992* is the legislative framework governing the construction, renovation and change of use of buildings. The Building Code is a regulation authorized by the Act, and sets out detailed administrative and technical requirements.

The Province is amending the Building Code to enhance fire safety for Ontarians and to further harmonize Ontario's Building Code with the model National Building Code.

New Requirements

The Building Code changes require fire sprinklers in multiple-unit residential buildings higher than three storeys. The changes come into effect on April 1, 2010.

The new requirements apply to new construction, additions to existing buildings, floors of existing buildings that undergo a change of major occupancy, and floor areas that undergo extensive ("gut") renovation. Sprinkler requirements apply throughout the building, including residential suites, service areas and common areas, such as corridors.

The new requirements also cover the residential portions of mixed-use buildings higher than three storeys.

The new requirements do not apply to smaller residential buildings, including houses, or to the renovation of portions of floors. Certain forms of four-storey stacked townhouses having specific fire safety features, such as independent exits, are also exempt.

The Building Code does not mandate

the retrofit of existing buildings where no construction is proposed.

The changes replace some Building Code requirements that acted as alternatives to sprinklering. However, the Code amendments also specify that unsprinklered buildings undergoing renovation will still have to meet current Ontario-specific requirements, unless the renovated area is sprinklered.

The changes also increase the maximum size of live-work units from 150m² to 200m².

The Ministry of Municipal Affairs and Housing intends to work with the building sector to review potential Building Code changes that could increase design flexibility and reduce costs, while maintaining high standards of safety.

Ontario's Building Code

Ontario's Building Code is a regulation under the *Building Code Act, 1992*. It sets technical and administrative requirements that govern the construction, renovation and change of use of buildings. Fire safety is an objective of the Building Code. ■



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The Building Code and Residential Fire Sprinklers: Questions and Answers

This article was obtained from the Ontario Building Code website (www.obc.mah.gov.on.ca)

Q1: What changes are being made to the Building Code?

The new requirements will mandate fire sprinklers in multiple-unit residential buildings over three storeys in height. In addition, the amendment generally replaces some Building Code requirements that acted as alternatives to sprinklering.

Q2: When will the regulation come into effect?

The new requirements apply to construction under building permits applied for on or after April 1, 2010.

Q3: Why is the province mandating fire sprinklers for large multiple-unit residential buildings over three storeys in height? Aren't such buildings already safe?

Public safety is a high priority for the province. Requiring larger multi-residential buildings to be sprinklered will make safe buildings even safer, and will bring Ontario's requirements generally into line with the model National Building Code of Canada and the codes in force in other Canadian jurisdictions.

Q4: What types of buildings are affected by this change?

The new sprinkler requirements apply to multi-unit residential buildings over three storeys in height. They apply to new construction, building additions, floors of existing buildings that undergo a change of major occupancy to residential, and floor areas that undergo substantial ("gut") renovation.

However, the new requirements do not apply to smaller residential buildings, in-

cluding houses, or to the renovation of portions of floors. Certain forms of four-storey stacked townhouses are also exempt where they include specific fire safety features such as independent exits and continuous fire separations between units.

Q5: Will a 3-storey townhouse built under Part 9 have to comply with the new mandatory fire sprinkler regulations?

The changes affecting sprinklers in O. Reg. 205/08 do not apply to buildings subject to Part 9 of Division B of the Building Code. Therefore, a 3-storey townhouse built under Part 9 will not be required to comply with the new mandatory fire sprinkler regulation.

Q6: What additional steps are being taken to harmonize Ontario's Building Code with the model National Building Code?

The Code amendment generally replace certain Ontario-specific Building Code provisions that currently act as alternatives to sprinklering including provisions related to smoke control, heat detection, exiting and areas of refuge in high buildings.

The Code amendment also modifies a limitation on the materials that may be used to construct firewalls in high buildings. Non-masonry construction is permitted, but only where the buildings on both sides of the firewall are sprinklered.

Q7: Are there any other Building Code changes included in this amendment?

The Code has also been amended to clarify that unsprinklered buildings undergoing renovation will still have to meet current Ontario-specific, compensating requirements, unless the floor areas undergoing renovation are sprinklered. The compensating requirements will be included in future amendments to Supplementary Standard SB4 under the Building Code.

The amendment also includes an increase in the maximum size of "live-work" units from 150m² to 200m².

Q8: How does the new requirement affect renovations?

As well as governing new construction, the sprinkler requirements apply to building additions, floors of existing buildings that undergo a change of major occupancy to residential, and floor areas that undergo substantial ("gut") renovation.

The Code amendment also specifies that unsprinklered buildings undergoing renovation will still have to meet current Ontario-specific, compensating requirements, unless the floor areas undergoing renovation are sprinklered. These requirements will be included in future amendments to Supplementary Standard SB4 made under the Building Code.

Q9: How does the new requirement affect combustible cladding requirements currently in the Code?

The Ministry continues to study the issue of combustible cladding on high buildings and Code changes have not been made at this time.

continued from page 9

Q10: How were the new regulations developed?

In February 2008, the Ministry of Municipal Affairs and Housing released a Building Code consultation paper that included proposed Code amendments to residential fire sprinklers regulation. The government considered submissions from stakeholders and the public, and recommendations from its Technical Advisory Committee, in approving Ontario Regulation 205/08.

Q11: What is the Ministry doing to respond to other potential Code changes raised during the public consultation?

In response to a recommendation from the Technical Advisory Committee, the Ministry of Municipal Affairs and Housing intends to work with the

building sector to clarify and review potential Building Code changes identified through the public consultation that could increase design flexibility and reduce costs.

Q12: What is the status of the proposed Code changes concerning on-site sewage maintenance inspections and "area bed" technology?

The February 2008 consultation paper also included proposed Code changes related to maintenance inspections for existing on-site sewage systems and on-site sewage "area bed" technology.

The Ministry is reviewing the public comments received during the public consultation on these topics.

Q13: How will the regulation be implemented and enforced?

Following the implementation date of April 1, 2010, the requirements for fire sprinklers will be enforced by municipal building officials. In particular, the proposed fire sprinkler requirements will be enforced through building permit reviews and construction inspections under the *Building Code Act, 1992*.

Q14: How can I get further information on the Building Code changes?

You can obtain further information on the Building Code changes by visiting the Building Code website at www.ontario.ca/buildingcode or by contacting the Building and Development Branch at: (416) 585-6666 or codeinfo@mah.gov.on.ca ■



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Education That Works

Myths And Facts About Automatic Home Fire Sprinklers

*This article was obtained from the City of Toronto website
(www.toronto.ca/fire/prevention/sprinklers.htm)*

Automatic sprinklers systems have enjoyed an enviable record of protecting life and property for over 100 years. Statistics demonstrate that there has never been a multiple loss of life in a fully sprinklered building where the system operated as designed. Sprinklers are a cost-effective technology that provides for a high level of life safety. Residential fire sprinkler technology is proving both reliable and effective. Property losses are 85% less in residences with fire sprinklers compared to those without. As positive as this information is however, there are still common misunderstandings about the operation and effectiveness of home fire sprinkler systems. The following are some of the more common myths:

Myth 1: "Water damage from a sprinkler system will be more extensive than fire damage"

Fact: Water damage from a home sprinkler system will be much less severe than the damage caused by water from fire-fighting hose lines or smoke and fire damage if the fire goes unabated. Quick response sprinklers release approximately 30-90 litres (8-24 gallons) of water per minute compared to 190-473 litres (50-125 gallons) per minute released by a fire hose.

Myth 2: "When a fire activates one sprinkler head, all sprinkler heads will activate"

Fact: Residential sprinklers respond independently to a rated temperature

setting of approximately 74 degrees Celsius (165 degrees Fahrenheit). Usually, only one sprinkler is activated to extinguish or limit the fire to its room of origin.

Myth 3: "Sprinklers might activate by accident"

Fact: The odds of accidental discharge due to a manufacturing defect are 1 in 16 million per year.

Myth 4: "A sprinkler system might freeze in winter and cause water damage"

Fact: Much like your plumbing system, your sprinkler system piping is installed on inside walls adjacent to the ceiling framing and then insulated to entrap the available heat lost from the living area below.

Myth 5: "A smoke alarm on its own offers adequate protection"

Fact: Smoke alarms will save lives by providing a much-needed early warning system. However, smoke alarms do nothing to extinguish a growing fire. Too often, battery operated smoke alarms fail to function because of dead or missing batteries. In order for smoke alarms to be effective in saving lives, they must be working and they must be maintained on a regular basis.

Myth 6: "I can't afford a sprinkler system"

Fact: This is generally a statement of pri-



ority. We rarely hesitate when buying a more comfortable couch, plusher carpet, the latest stereo equipment or an upgraded computer. A sprinkler system can be installed in a new home for as little as \$1.50 per square foot which, in many cases, would represent less than 2% of the total construction cost. System installation in existing homes is simple but more expensive. Since your family, irreplaceable possessions and home are a precious part of your life, you can't afford not to have a sprinkler system.

Myth 7: "Sprinkler Systems are unattractive"

Fact: Fire damage is unattractive. Quick response residential sprinkler systems are designed to save your life by providing attractive ceiling and side mount sprinkler heads that blend unobtrusively into your room décor. Sprinklers, cover plates, and escutcheons can be custom painted by the manufacturer to match any décor. ■

CFSA Annual Education Forum Summary

The Canadian Fire Safety Association's (CFSA) Annual Education Forum (AEF) was held on April 17 and 18, 2008, at the Delta Markham Hotel in Markham, Ontario. This year's theme at the AEF was *"Above & Beyond the Codes – Life Safety and Fire Risk Management Strategies"*.

The following is a brief summary of the presentations and events that took place at the 2008 AEF.

2007 Fire Code: Objective-Based Format and Technical Changes – An Overview

Speaker: Bruce Weaver, Program Specialist, Office of the Fire Marshal (OFM)

This presentation provided an overview of the new Objective-Based Ontario Fire Code (OFC) from the perspective of the Office of the Fire Marshal (Mr. Weaver).

Emergency Preparedness for Public Transportation

Speaker: Nigel Fontaine, TTC Emergency Planner

This presentation outlined the general methodology used by the Toronto Transit Commission in regards to preparing for emergencies (both large scale and small), with specific focus on the importance of partnership building (i.e., maintaining communication with parallel organizations and different levels of government), and the necessity of ensuring that interruptions to the TTC's operations are mitigated during emergency scenarios.

Limiting the Potential for Fire and its Effects; Limiting Business Interruption

Speaker: Michael Smith, President, ReadySmith

This presentation discussed the need for company readiness programs and the po-

tential threats to consider in regards to business continuity. Focus was provided on the affects of business interruption and effective methods for mitigating disruption during fire emergencies.

What Are the Legislative Responsibilities of a Building Owner/Operator to Comply with the Ontario Building Code and the Ontario Fire Code?

Speaker: Andrew Wong, Executive Officer, City of Vaughan Fire & Rescue Services

This presentation discussed such items as the definition of an "owner" and the responsibilities of an owner with respect to complying with the Ontario Fire Code. Mr. Wong also touched on accountability from the authority perspective and common issues that may result in lack of compliance with the OFC.

Managing the Risk of Fire and its Effects Through Design, Plan Review, Inspections and Fire Safety Plans

Speakers:

Chandra G. Suchak, Parkin Architects Ltd.

Kevin Kelly, Office of the Fire Marshal

Brian Maltby, Division Chief, Brampton Fire & Emergency Services

This presentation was a panel discussion of the positive effects on fire prevention through a team approach at the design stage of a complex project. The presentation, which was conducted by members of the design team and participants in the

review/permit process of the William Osler Health Centre (WOHC), Brampton Civic Hospital project, highlighted the teamwork concepts that were employed on the WOHC project.

2007 Fire Code: Objective-Based Format – Case Study Workshop

Speaker: Susan Clarke, Fire Protection Eng., Office of the Fire Marshal

This presentation discussed the new objective-based 2007 Ontario Fire Code and the available option of providing alternate solutions to the prescriptive Code by achieving the *intent* of the OFC. Ms. Clarke spoke on the new format and structure of the OFC and carried out a sample case study as an example on how to utilize the new 2007 OFC when preparing an Alternative Solution.

Security Systems and Fire Safety – Are They Exclusive?

Speakers:

Randal Brown, P.Eng., Randal Brown & Associates Ltd.

Barry Weaymouth, Security Consultant, Weaymouth & Associates

Bryan Scott, Sr. Manager of Security Infrastructure, Operations & Maintenance, GTAA

This presentation addressed the prevalent issues associated with the integration of security and life safety systems from a Code perspective, and the importance of successfully merging these two systems in the design of a project.

Greater Toronto Airport Authority Fire & Emergency Services Training Institute

The Greater Toronto Airport Authority provided a guided tour of their innovative Fire and Emergency Services Training Institute. Their state of the art training centre obtained a LEED Silver rating through sustainable features such as the use of a solar wall, in-slab air distribution system, green roof, waterless urinals, etc. The centre includes the indoor training centre comprised of four training classrooms (with one equipped for incident command) and a tiered level theatre; and outdoor training structures including a confined spaces building, rescue tower, burn building, aircraft training mock-ups, auto extrication area and a hazardous materials training area.

Toronto Transit Commission Fire Command Bus Tour

Following the Student Awards Presentation and Lunch, the Toronto Transit Commission (TTC) conducted tours of their Command Bus for the AEF partic-

ipants. TTC's Command Bus is used as an emergency response centre in emergency scenarios requiring on-site coordination.

Markham Fire & Emergency Services Portable Fire Extinguisher Training Session

Also following the Student Awards Presentation and Lunch, the Markham Fire and Emergency Services conducted a live-fire portable extinguisher training session for the AGM participants.

The participants were given a brief lesson on the proper method of operating a fire extinguisher (i.e., PA-S-S methodology) and then, participants were provided the opportunity to operate a charged portable fire extinguisher on a controlled fire.

Trade Show

Throughout the two-day AEF event, the following companies operated trade show booths which provided information on their respective company's prod-

ucts and/or services:

- A/D Fire Protection Systems,
- Assa Abloy,
- Dryerfighters,
- Morrison Hershfield,
- System Sensor Canada,
- Tyco Thermal Control,
- Vipond.

The CFSA would like to extend thanks to all of the presenters, who took the time out of their already hectic schedules to be a part of the AEF and who made the event the success that it was. In addition, thank you to:

- the Greater Toronto Airport Authority (GTAA) for providing a tour of the GTAA Fire and Emergency Services Training Institute,
- the Toronto Transit Commission (TTC) for providing tours of the TTC Command Bus,
- the Markham Fire and Emergency Services for hosting a fire extinguisher training session, and
- the participants of this year's Trade Show. ■

Province takes action to increase fire safety

Response to high-intensity residential fires report provides comprehensive solutions

Edmonton... The Alberta government is taking decisive action to reduce the effects of high-intensity residential fires. Government has accepted most of the recommendations received from the High-Intensity Residential Fires Working Group, created by the province to study the fires and bring forward solutions.

"We have analyzed the report carefully, and we are now taking action to reduce the occurrence and severity of residential fires," said Ray Danyluk, Minister of Municipal Affairs. "I want to thank the members of the working group for delivering a report that will undoubtedly enhance public safety in our province. I also want to thank all our partners who provided their analysis and expertise to help us address this important safety issue."

Minister Danyluk said the top priorities in government's response are to save lives and property. "Homes are safe, and these changes make them safer. When there's a fire, these changes buy time - for people to get out of their homes, and for firefighters to respond," he said.

Of the 22 recommendations made by the working group, the province has accepted 18. The government will take immediate action to:

- Increase public education efforts to give Albertans information to prevent fires;
- Improve the fire code to help prevent arson and to promote construction site safety;
- Improve the building code so homes built 1.2 metres from the property line are safer from high-intensity fires through measures such as requiring fire-resistant gypsum wallboard under vinyl siding;
- Improve requirements for new multi-family buildings that would already require sprinkler systems, by requiring additional sprinklers for balconies, attics and crawl spaces; and
- Make new homes with attached garages safer by requiring fire detectors and gypsum wallboard in the garages.

Two recommendations were referred for further study and two were rejected. The first rejected item proposed supporting the creation of a new federal office for a national fire advisor and the second recommended amending legislation to mandate specific municipal planning procedures. The overall objectives of these two recom-

mendations will instead be supported through existing channels.

Recent large-scale residential fires in Alberta, including the 2007 fire in Edmonton's MacEwan neighbourhood, involved fire spreading to adjacent buildings. The working group was established to review the facts surrounding high-intensity residential fires and make recommendations to reduce their occurrence and severity. The working group included representatives from the Alberta government; municipal emergency services, including the Edmonton and Calgary fire departments; the Safety Codes Council; and municipal safety codes officers.

Following the working group's report, several affected organizations were asked to analyze the recommendations and provide information on the effects of the proposed changes. These groups included representatives from the fire service, municipal governments, home builders, land developers and safety codes administrators.

The working group's full report is available on the Municipal Affairs website at www.municipalaffairs.alberta.ca. ■

Propane Safety

This article was prepared by Mr. Matteo Gilfillan, C.E.T., CFPS, Assistant Project Manager at Randal Brown & Associates Ltd.

Early Sunday morning on August 10, 2008, a propane explosion occurred at the Sunrise Propane Industrial Gases facility in Downsview, Ontario, requiring the evacuation of local residents and prompting an investigation of incident cause by the Office of the Fire Marshal (OFM).

This terrifying incident has led to questions and concerns from the public regarding the personal use and storage of propane. Propane is most commonly used as fuel for barbecuing, but is also used for such activities as heating single family homes and fueling household appliances (e.g., air conditioners, dryers, etc.) and home standby generators [3].

This article provides some clarification on propane fuel and attempts to address some of the more common safety requirements for the use and storage of consumer propane tanks.

What Is Propane?

Propane (C_3H_8), also commonly referred to as liquefied petroleum gas (LP Gas or LPG), is a highly flammable gas and is a by-product of natural gas processing and crude oil refining. In its natural state (at ambient temperature and pressure) propane is a gas. However, for the purposes of transportation and storage, propane gas is cooled and pressurized in a special storage container to approximately eight times the atmospheric pressure [2], or twice the pressure in a normal truck tire, effectively compressing the gas to the point in which the majority of the gas changes state to a liquid (approximately 20% remains in a gaseous state). To put things in perspective, a single unit of propane in a liquid form has the same energy content as 270 units of propane in a gaseous form [1].

While propane is transported / stored in liquid form, it is used in its gaseous state. This is achieved by releasing the upper layer of gaseous propane from the container via a valve while simultaneously vaporizing some of the liquid state propane to counterbalance the loss of pressurization in the storage cylinder.

Here are some other interesting facts about propane [1].

- Propane is an odourless gas. In order to assist in detecting leaks, an odourant is added to the gas.
- Propane gas is 1.5 times heavier than air, causing it to settle in low areas.
- Approximately 23.5 cubic feet of air is required to burn one cubic foot of propane.
- Complete combustion of propane produces clean water vapour and carbon dioxide.

Storage Containers

As previously stated, propane is stored under pressure. This requires that the storage container be very strong and durable and to be designed with safety features.

There are different propane storage containers for different applications. For instance, storage tanks (above and below ground) are commonly used in industrial applications where propane fuel is required in large volumes. For consumer applications, portable storage cylinders are preferred [4].

Consumer-grade propane cylinders are typically constructed of steel or aluminum and are outfitted with a single valve that integrates the various required parts (i.e., fixed liquid level gauge, service valve (handwheel), fill valve, and relief valve). A steel collar is provided around the valve and connec-

tions to protect the valve from mechanical damage. The base of the cylinder is provided with a foot ring that keeps the container upright, level, and elevated off the ground.

All propane storage containers (tanks and cylinders) are equipped with pressure relief valves. These valves automatically relieve excess pressure in a container by releasing some propane gas to the atmosphere [4]. Excess pressure occurs due to an increase in heat in the area of the container which results in an increase in pressure in the container.

Propane Hazards

When discussing propane hazards (especially liquefied propane gas or LPG), two of the more common concerns are “combustion explosions” and “boiling liquid – expanding vapour explosions”, or BLEVEs.

As propane is heavier than air, if a leak in a propane container occurs, the gas will sink and pool into any confined area. A “combustion explosion”, in relation to propane, is when the gas leaking from a propane cylinder in a confined or enclosed area mixes with the air until the flammable limit of propane gas is reached, at which point the fuel-air mixture is ignitable. When this ignitable mixture reaches an ignition source (e.g., open flame of a barbecue, pilot light, match, electrical spark, etc.), the mixture will burn rapidly, causing an increase in pressure in the space. Assuming the space is not designed to withstand the increase in pressure, a combustion explosion will occur.

A BLEVE is a result of failure of the liquefied gas container. When a container is weakened (due to heat exposure or mechanical damage), it can no longer hold



the pressure for which it was designed, eventually resulting in a crack or fissure in the container, thus introducing normal atmospheric pressure to the liquefied gas which causes it to flash to vapour. The vaporizing liquid will increase the pressure in the container until the container explodes. In addition to flying container fragments,

the introduction of an ignition source to the vaporized propane gas will also result in a flash fire (fireball).

The difference between combustion explosions and BLEVEs is that BLEVEs do not require an ignition source. In fact, combustion does not have to occur in

order for a BLEVE to occur. For example, BLEVEs can take place with containers of non-flammable liquefied gases under pressure, such as liquid nitrogen or liquid helium; if the container were to be mechanically damaged, the same characteristics associated with BLEVEs (i.e., violent boiling and resulting overpressure in the container) would occur. That said, it is highly likely that a flammable vapour released into the atmosphere from the ruptured container would ignite after the BLEVE occurs [7].

These hazards are obviously more of a concern for large refineries and petrochemical plants that maintain very large containers; however, combustion explosions and BLEVEs can occur with any propane cylinder.

Due to the inherent danger associated with propane, the storage, transportation, and use of propane is strongly regulated in Canada by the Canadian Standards Association (CSA) and the Technical

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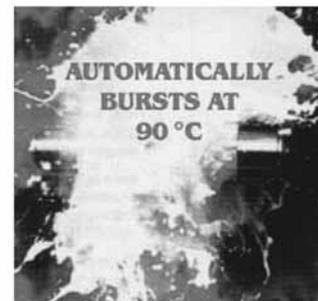
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Standards and Safety Authority (TSSA). However, as the Sunrise explosion shows, even with safety regulatory bodies in place, accidents can happen.

Safety Tips

To do your part, apply the following safety rules when handling consumer-grade propane cylinders [3, 6]:

- Ensure that the cylinder is secure prior to its use,
- Store propane cylinders outdoors. Do not place a propane cylinder indoors, in a confined area, or in a closed vehicle (leave the windows open),
- If the cylinder requires repainting, do not use dark or flat colours, but rather use light-reflecting colours

that do not absorb heat,

- Close the cylinder valve when not in use and before connecting or disconnecting the cylinder,
- It is recommended that a propane cylinder be discarded after five (5) years.

The cause of the Sunrise Propane Industrial Gases facility explosion is still under investigation; however, it is suspected by the TSSA that the explosion may have been a result of a truck-to-truck transfer of propane (an action that is prohibited in Ontario) [5].

References

[1] Propane Gas Association of Canada (www.propanegas.ca/PGAC/PGAC_Propane%20Properties.asp)

[2] **Q&A: Propane Safety**
(www.cbc.ca/canada/story/2008/08/11/f-propane-qa.html)

[3] **Ontario Propane Association**
(www.propane.ca/CleanTruth/default.asp)

[4] **Propane 101**
(www.propane101.com/index.htm)

[5] **CP24**
(www.cp24.com/servlet/an/local/CTVNews/20080822/080822_sunrisepropanecause/20080822/?hub=CP24Home)

[6] **Facts for Propane Safety**
(www.anvilmag.com/farrier/propsafe.htm)

[7] **BLEVE**
(en.wikipedia.org/wiki/BLEVE) ■

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CFSA Policy Statement

The Federal Government has introduced new privacy legislation effective January 1, 2004. CFSA respects your privacy and has included their privacy statement on the CFSA website at www.canadianfiresafety.com for your review.

CFSA does not share your information with any other organization. Paying your membership renewal with CFSA indicates that you wish to continue receiving Association information.

Bill 72

Bill 72 2008 - An Act to amend the Building Code Act, with respect to fire sprinkler systems in new residential buildings.

Bill 72, the Municipal Residential Sprinkler Act, 2008 received Second Reading on May 29, 2008, in the Legislature.

The Bill amends the Building Code Act, 1992, the City of Toronto Act, 2006 and the Municipal Act, 2001 to authorize municipalities to pass by-laws requiring the installation of fire sprinkler systems in new residential buildings.

Some key points of the Bill include: The Chief Building Official shall refuse to issue a building permit if a proposed building does not comply with such a by-law.

The by-laws, which may be passed with respect to residential buildings for which building permit applications are made on or after September 1, 2009, will prevail over any Act or regulation.

Sprinkler systems that are required to be installed by the by-laws must comply with standards specified in the building code.

Bill 72 is intended to compliment the recent Ontario Building Code amendment (O.Reg. 205/08) by focusing on low-rise and single family dwellings in addition to residential buildings greater than 3 storeys in building height. ■

CFSA Scholarship Awards

The CFSA has and will continue to support the top students in the field of fire protection who show leadership, motivation, technical skills, and overall academic proficiency. In order to create a fire safe environment for Canada in the future, we must encourage those students to one day become leaders in their field.

CFSA Peter Stainsby Award (\$1000.00)
Daniel D. Dixon



Presented by the CFSA to the TOP GRADUATE of a three-year Fire Protection Technology course, who has excelled with outstanding leadership, motivation, and technical skills and an overall academic proficiency.

CFSA Fire Safety Award (\$850.00)
Bahareh Taghvaei



Presented by the CFSA and funded by Leber/Rubes Inc., Randal Brown & Associates Ltd., and Nadine International Inc. to the TOP STUDENT having completed year 2 of a 3 year Fire Protection Technology course with outstanding leadership, motivation, and technical skills and an overall academic proficiency.

Randal Brown & Associates Ltd. Award (\$850.00)
Heather J. Austin



Presented to the TOP year 2 student of a 3 year Fire Protection Technology course with exceptional overall skills in Codes/Standards Technology and an academic proficiency of 3.25/4.00.

Nadine International Inc. Award (\$850.00)
Neil P. Cory



Presented to the TOP year 2 student of a 3 year Fire Protection Technology course with exceptional overall skills in Fire Suppression Technology and an academic proficiency of 3.25/4.00.

**Leber/Rubes Inc. Award
(\$850.00)
Eric Sadler**



Presented to the TOP year 2 student of a 3 year Fire Protection Technology course with exceptional overall skills in Fire Alarm Technology and an academic proficiency of 3.25/4.00.

**Underwriters' Laboratories of
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Presented to the TOP year 2 student of a 3 year Fire Protection Technology course with exceptional academic skills in Codes and Standards and an academic proficiency of 3.25/4.00.

**Underwriters' Laboratories of
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Kyle Wilhelm**



Presented to the TOP first year student of a 3 year Fire Protection Technology course with exceptional academic skills in all subjects and an academic proficiency of 3.25/4.00.

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The Canadian Fire Safety Association would like to thank all of our corporate and individual members who made donations to the scholarship fund this year. Your generous donations help the CFSA to support and encourage students in the fire protection industry.

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New Qualified Firestop Contractor Program for Canada

This article was prepared by Mr. Kevin Wu, Marketing Manager for Underwriters Laboratories of Canada.

Underwriters' Laboratories of Canada (ULC) has launched a new Qualified Firestop Contractor Program for Canadian contractors, an expansion of the Underwriters Laboratories Qualified Firestop Contractor Program introduced in December 6, 2006.

This program allows firestop contractors to differentiate themselves in the marketplace through third-party assessment. The program also provides architects, building owners, material manufacturers and regulatory authorities with a means to identify contractors that have been evaluated by an independent, third-party organization.

ULC has been certifying firestop systems for many years. ULC's Firestop Systems and Components Directory is used by many designers and specifiers to select these materials and systems for construction designs. The Qualified Firestop Contractor Program marks the first time ULC has launched a program that assesses contractor firms installing fire resistance materials and systems. The program was created in response to industry requests for third-party, independent evaluation of their knowledge and use of best practices to differentiate them from other contractors and to increase confidence of architects and regulatory authorities.

How the Program Works

The new Qualified Firestop Contractor Program applies to those contractor firms installing firestop systems. Firestopping involves providing a measure of fire containment to walls and floors featuring joints, gaps or penetrations made during construction. Firestop systems are single materials or a combination of materials used to create a firestop assembly capable of limiting the spread of heat, fire, gases or smoke through an opening in a wall or floor. Specialty firestop contrac-

tors must choose and install firestop systems to meet architectural, code and customer requirements.

Two critical requirements of the Qualified Firestop Contractor Program are that installation companies have:

An established management system specifically focused on the selection and installation of firestops and meets the program requirements as determined by ULC;

A designated responsible individual (DRI) who meets the program requirements and is responsible for that installation company's management system, staff training and continuing education.

To earn qualified contractor status, a designated responsible individual must pass a three-hour written exam, and a contractor must pass a ULC-administered audit of its management system, both at a con-

tractor's facility and as it's applied on the job site. Once a contractor meets the requirements, ULC will issue a certificate effective for one year. A qualified contractor's company would then be listed in ULC's Internet directory.

Once a contractor meets all requirements it will be able to promote itself as a ULC Qualified Firestop Contractor. This will allow a contractor to demonstrate to its customers that its knowledge and management systems focused specifically on the selection and installation of firestops which have been assessed by a leading, independent fire safety organization.

For more information about the new Qualified Firestop Contractor Program, please visit the ULC Web site at www.ulc.ca/contractor or contact Kevin Wu at (416) 757-5250 ext. 61269 or at Kevin.Wu@ca.ul.com. ■

Face off - Tunnel Fire Detection Systems

National Research Council Report No. NRCC-50558 dated July 1, 2008 can be obtained from their website at irc.nrc-cnrc.gc.ca/pubs/fulltext/nrcc50558/

In support of the Fire Protection Research Foundation's international research project to ascertain the performance of tunnel evacuation and firefighting procedures, the National Research Council of Canada (NRC) investigated the laboratory performance of detection systems under minimal and longitudinal airflow conditions and conducted tests in the

Carré-Viger Tunnel in Montréal. Related testing was done in the Lincoln Tunnel in New York City. The project studied nine fire detection systems installed in the laboratory tunnel facility and in the two tunnels for detection system response time, ability to locate and monitor a fire, and the effect of the tunnel environment. ■

Background – Building Code Examination Update

This article was obtained from the Ontario Building Code website (www.obc.mah.gov.on.ca)

The Building Code examination program was first introduced in 2003 as part of a package of changes to the building regulatory system. The Building Code Statute Law Amendments Act, 2002 (former Bill 124) amended the Building Code Act, 1992 and the Building Code to establish qualification and registration requirements for building practitioners. Building practitioners affected by these requirements include building officials, certain classes of designers, staff from Registered Code Agencies (RCAs), and on-site sewage installers. The successful completion of the examination program is one of these qualification requirements. Building Code qualification and the examination program help ensure that the building regulation system is efficient and effective.

Prior to November 17, 2008, the examination program was based on the 1997 Building Code as amended by O. Reg 305/03. The examination program has since been updated to reflect the changes introduced in the 2006 Building Code. In 2006, the Province introduced a new Building Code written in an objective-based format. The 2006 Code also included over 700 technical changes from the previous Code. The examination program has been amended to reflect the 2006 Building Code (O. Reg 350/06), as amended by O. Reg. 205/08.

The Ministry of Municipal Affairs and Housing sought the input of building practitioners as part of the process of updating the examinations. In the Spring of 2008, peer-based panels met and provided the Ministry with advice on adjusting the examination syllabi to address the new Code's objective-based structure and technical changes. Building practitioners had the opportunity to provide further input when the draft syllabi were posted on the Building Code website for industry review in Fall 2008. The input received through the peer-

based panels and the industry review of the examination syllabi played an important role in updating the examination program.

This examination program update will affect only new practitioners and those wishing to expand their area of practice. Qualified building practitioners will not be required to re-qualify until after the release of the next version of the Building Code, expected in 2011. As previously committed, the Ministry will consult with building sector stakeholders on the details of re-qualification as part of a broader consultation on the content of the next edition of the Code.

New practitioners and those wishing to expand their area of practice will have a choice between the 2003 and the 2006 examinations until May 31, 2009. From June 1, 2009 onwards, practitioners qualifying for the first time or who wish to qualify in a new category must pass the 2006 examinations. This transition period is necessary to allow practitioners who have prepared for the 2003 examinations to write those examinations.

BUILDING CODE EXAMINATION UPDATE Q & A

Q1. What is the Building Code?

The Building Code is a regulation under the Building Code Act, 1992. It sets out technical and administrative requirements for the construction, renovation and change of use of buildings.

Among other things, the Building Code regulates fire safety, structural requirements, energy efficiency, resource conservation, mechanical systems including plumbing, accessibility and sewage systems. The Building Code Act, 1992 and the Building Code also includes qualification and registration requirements for building practitioners.

Q2. What are the qualification requirements of the Code?

The Building Code Act, 1992 and the Building Code establish qualification and registration requirements for building practitioners. These practitioners include building officials, certain classes of designers, staff from Registered Code Agencies (RCAs) and on site sewage installers.

Each type of building practitioner has their own set of qualification requirements. Generally, these requirements include:

- Successful completion of the Ministry of Municipal Affairs and Housing Examination Program;
- Filing qualification information with the Director of the Building and Development Branch;
- Payment of applicable fees; and
- Maintaining Building Code knowledge.

Registered designers and registered code agencies also must meet insurance requirements.

Q3. What are the Ministry of Municipal Affairs and Housing's examination requirements? What are "examination syllabi"?

Persons seeking qualification must successfully complete an examination program consisting of administrative (legal) examination and technical examinations relevant to their area(s) of practice. The syllabi provide examination candidates with the topics that are covered in each examination, and are based on the scope of the qualification categories set out in Division C of the Code.

You can find more detailed information about the current Examination Program on the Building Code website www.ontario.ca/

continues on page 22

Building Code Examination Update, cont'd

buildingcode. Both the Questions and Answers section and the Qualification and Registration tab have information related to Building Code qualification, examination and training.

Q4. Why have the examination syllabi and exams been updated?

In 2006, the Province introduced a new Building Code written in an objective-based format, and that contained over 700 technical changes from the previous Code. The examination syllabi have been amended to reflect the restructuring of the Code as well as to address new, revised, and removed technical provisions. The input received through the industry review of the examination syllabi, held in Fall 2008, played an important role in finalizing the syllabi.

Q5. Why are the 2006 examination syllabi more detailed than the previous syllabi?

The 2006 examination syllabi include more detail in order to give examination candidates a clearer understanding of the areas of Building Code knowledge that will be covered in each examination.

Q6. Will I have to take the new examinations?

It depends. Practitioners qualified under the 2003 examinations (based on the 1997 Building Code) will not be required to re-qualify.

New practitioners or those intending to expand their scope of practice are required to

take the Building Code examinations. From November 17, 2008 until May 31, 2009 those wishing to write examinations will have a choice between the 2003 (based on the 1997 Building Code) and the 2006 examinations. From June 1, 2009 onwards only the 2006 Building Code examinations will be offered.

Q7. How do I apply for the examinations?

New practitioners or those intending to expand their scope of practice can apply for the new examinations by fax to 416-585-7531 or mailed to:

Registration Section
Building and Development Branch
Ministry of Municipal Affairs and Housing
777 Bay Street, 2nd Floor
Toronto, ON M5G 2E5
On-line applications are now available.

More information about applying for examinations and qualification can be found in the Qualification and Registration section of Ontario's Building Code website: www.ontario.ca/buildingcode

Q8. Why is there a transition period?

A transition period will be provided in which practitioners taking the examinations will have a choice between taking the 2003 (based on the 1997 Building Code) or the updated 2006 exams. This transition period will run until May 31, 2009. At that time, practitioners qualifying for the first time or who wish to qualify in a new category must pass the 2006 examinations.

This transition period is necessary to allow practitioners who have prepared for the old examinations to write those examinations.

Q9. Will existing practitioners be required to re-qualify?

Qualified building practitioners will not be required to re-qualify until after the release of the next version of the Building Code, expected in 2011.

As previously committed, the Ministry will consult with building sector stakeholders on the details of re-qualification as part of a broader consultation on the content of the next edition of the Code.

Q10. Are all the overview courses updated and available?

As of November 14, 2008, thirteen of the fifteen overview courses have been updated. The Complex Buildings and House overview courses are expected to be available in late December 2008.

Q11. Will the criteria for Advanced Standing be changed?

No. Where required, the criteria will be maintained and streamlined to reflect available technical training courses. Some of the courses used in applications for advanced standing have been updated. Until May 31, 2009, building practitioners will have the option of taking the 2006 courses or those courses which they are replacing. After June 1, 2009, receiving Advanced Standing will be dependent on the successful completion of 2006 Building Code training courses, where applicable. ■

CFSA SCHEDULED EVENTS**MARCH****MARCH 4**

CFSA Technical Session - Installation of Firestop Systems – Presented by Matthew Heaps, Sr. Fire Protection Specialist; Hilti (Canada) Corporation

APRIL**APRIL 8**

CFSA Technical Session - Installation of Firestop Systems – Present
CFSA TECHNICAL SESSION – An Alternative Method of Fire Rating Kitchen Exhaust and Ventilation Ductwork – Presented by Mike McClure, ThermoFire Systems Inc.

APRIL**APRIL 17**

Ontario Association of Fire Chiefs
CFSA ANNUAL EDUCATION FORUM – “Fire Safety Isn't Just A Checklist” or “Getting The Bigger Picture”

OTHER EVENTS**MAY****May 31-June 4, 2009**

Conference and Fire Service Expo
Nanaimo, BC

OTHER EVENTS**JUNE****June 8-11, 2009**

McCormick Place Convention Centre
Chicago, IL

June 12-17, 2009

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