



## Manitoba Retrofit of Vulnerable Occupancies

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## Presentation Content

- Canadian Fire History in Vulnerable Occupancies
- Characteristics of Legacy vs Modern Home Fires
- Manitoba Building/Fire Code Amendments for Fire Sprinklers in Residential Care Facilities

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## Fires in Canadian Care Facilities & Retirement Homes



- 1969 –Notre Dame-du-Lac, QC  
*54 Killed*
- 1976 -Goulds, NL  
*22 Killed*



- 1980 -Mississauga, ON  
*21 Killed*
- 1995 -Mississauga, ON  
*8 Killed*

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## Fires in Canadian Care Facilities & Retirement Homes



- 2009 -Orillia, ON  
*4 Killed*
- 2011 -Timmins, ON  
*1 Killed*

- 2012 -Edmonton, AB  
*1 Killed*
- 2012 -Langley, BC  
*1 Killed*



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## Fires in Canadian Care Facilities & Retirement Homes



- 2012 -Hawksbury, ON  
*2 Killed*
- 2013 -L'Isle-Verte, QC  
*32 Killed*



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## Canada and Population Change

By 2063 the total amount of seniors per capita will make up 25% of the population from 15% currently. Where are the Canadian vulnerable going to live when existing facilities are at capacity with no future facilities planned.



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### Council of Canadian Fire Marshals & Fire Commissioners 2002 Annual Report Losses

10 Year Average  
59,936 Fires per year  
23,312 occurred in a residence  
(39% of total)  
Direct Dollar Loss per year  
\$1,240,177,165

Source: <http://www.ccfmfc.ca/stats.html>




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### Council of Canadian Fire Marshals & Fire Commissioners 2002 Annual Report Losses

Source: <http://www.ccfmfc.ca/stats.html>

10 Year Average  
374 Fatalities per year  
279 Fatalities in a Residential Occupancy  
(76% of total)  
3,072 injuries per year  
1,991 injuries in a Residential Occupancy  
(68% of total)




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### Healthcare Costs of Burn Patients From Homes Without Fire Sprinklers

17 Year Provincial Burn Center (1995-2012)  
Average Cost Per Patient= \$84,678  
Total Cost in Canada= \$96,448,194  
All Resources Totaled in Canada=  
\$3,605,775,200

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4286513/> American Burn Association




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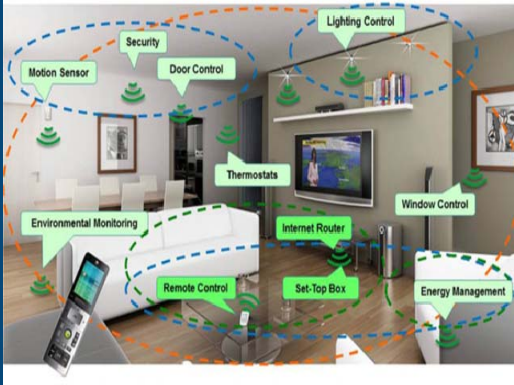
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## Fire Characteristics has Changed



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## Fire Sprinkler Systems



- Reduce the risk of fire related fire deaths and injuries by over 80% compared to buildings without fire sprinklers.
- Reduce damage to property by 68% lower compared to buildings without fire sprinklers.
- Fire sprinklers operate 91% of the time in fire sprinklered buildings. The main factors involved for fire sprinklers not activating are building owners not maintaining their fire sprinkler systems, and the fire was put out prior to fire sprinkler activation.

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## Fire Sprinkler Systems Cost



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## What NFPA Standard do I Use? New Residential Care Facilities

No. Storey	Sleeping Provided for	NFPA Standard
Not more than 2 Suites	Up to 4 persons	13 D
Up to and Including 4 Storeys	Up to 10 persons	13 R
All Storeys	11 or more persons	13

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## What NFPA Standard do I Use? Existing Residential Care Facilities

No. Storey	Sleeping Provided for	NFPA Standard
Not more than 2 Suites	Up to 4 persons	13 D*
Up to and Including 3 Storeys	5 to 25 persons	13 R
All Storeys	26 or more persons	13

\* A sprinkler system is deemed necessary by the Licensing Authority after conducted a risk assessment.

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## Fundamental differences (Water supply Demand)



Depending on the design method

- The design area shall be that area that includes the four adjacent sprinklers that produce the greatest hydraulic demand + 100 gpm required hose stream x duration 30 min



Minimum number of sprinklers to calculate = 4

- Designer must ensure that the largest floor area = the largest demand
- Four sprinklers spaced 12' x 12' may not be as demanding as two spaced 20' x 20'
- Inside and outside dwelling unit considerations must be carefully reviewed.
- Section 7.1, 7.2 and 7.3



Minimum number of sprinklers to calculate = 2

- Same as above

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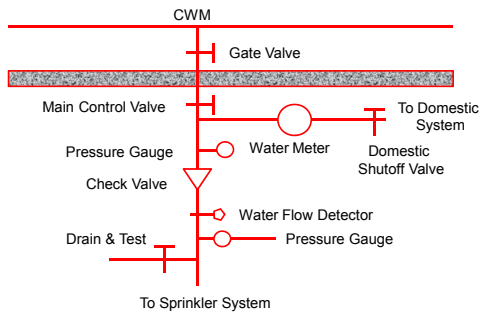
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## Water Supply Configuration Example




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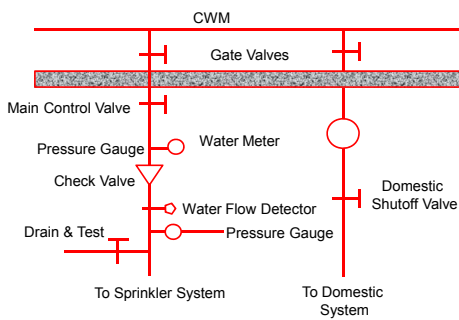
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## Water Supply Configuration Example




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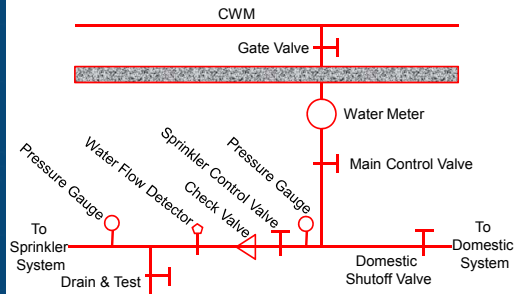
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## Water Supply Configuration Example




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## Stand Alone Water Supply Configuration Example




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## NFPA 13R Vs NFPA 13D Differences

NFPA Standard	NFPA 13R	NFPA 13D
<b>Purpose of Standard</b>	To provide a sprinkler system that aids in the detection and control of residential fires and thus provides improved protection against injury, life loss, and property damage.	To provide a sprinkler system that aids in the detection and control of residential fires and thus provides improved protection against injury and life loss.
<b>Water Supply</b>	30 Minutes	30 Minutes
<b>Component Listing Requirements</b>	Required for all except, Hangers, Rod, & Pipe identified in standard	Required for all except, Tanks, Expansion Tanks, Fire Pumps, Hangers, Water flow Detection Devices, and Water flow Valves shall not be required to be listed
<b>Pipe &amp; Fittings</b>	Common Requirements	Common Requirements; Multipurpose Systems permits the use of 1/2" pipe for certain (Network Systems such as PEX)
<b>Underground Piping</b>	Not within scope, assumed to conform to local plumbing codes	Not within scope, assumed to conform to local plumbing codes
<b>Fire Sprinklers</b>	Residential or Quick Response	Residential
<b>Fire Department Connection</b>	Single 1 1/2" or 2 1/2" Connection; accessible by a fire department that exceeds 2000 ft <sup>2</sup> (186m <sup>2</sup> ) or are more than a single story.	Not Required
<b>Alarm Detection</b>	Required (if building alarm is installed, water flow alarm must be connected)	Not Required if Smoke Detectors are installed

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### Obstructions to Residential Sprinklers




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### Obstructions to Residential Sprinklers




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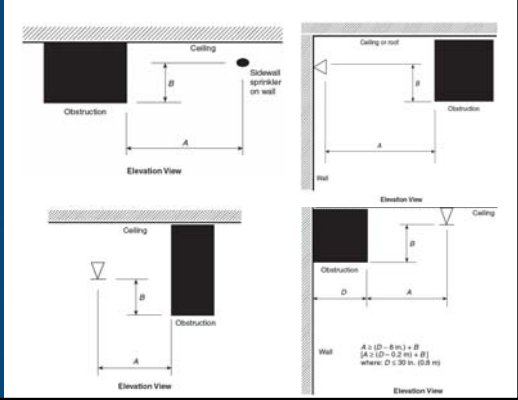
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### Obstructions to Residential Sprinklers




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### Fire Sprinkler Antifreeze Systems

- New Systems (NFPA 13D Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes)
  - 48% glycerine
  - 38% propylene glycol
  - Allowed in specific areas of the dwelling unit, but only where the AHJ approves
  - Documentation will need to be provided to the AHJ to justify the use of the antifreeze.
- Existing Systems (systems installed before September 30, 2012)
  - 50% glycerine
  - 40% propylene glycolMust use premixed solution  
Listed products when they become available

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### Fire Sprinkler Antifreeze Systems



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### Fire Sprinkler Systems Retrofit Video



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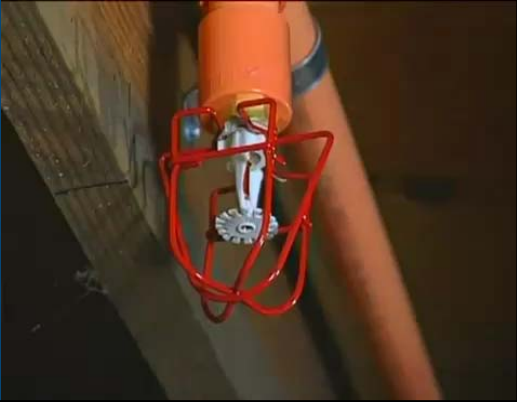
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## Fire Sprinkler Systems Retrofit Video



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## CASA Fire Sprinkler Seminars

### 2016 Available On-Site Fire Sprinkler Education Seminars Available

- Acceptance Testing & Hydraulics Plan Reviewers (1-Day)
- Hydraulics for Fire Protection (1-Day)
- Inspection & Testing for the Sprinkler Industry (3-Day)
- NFPA 13, 13 R/D, & 14 2013 Edition Update (1-Day)
- NFPA 13 & 13 R/D Residential Overview (1-Day)
- Protection of Storage (2-Day)
- Pumps for Fire Protection (1-Day)
- Seismic Protection of Sprinkler Systems (1-Day)
- Sprinkler System Installation Requirements (1-Day)
- Sprinkler System Plan Review (2-Day)
- Standpipe Systems for Fire Protection (1-Day)
- Understanding, Applying, & Enforcing NFPA 25 (1-Day)

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## CASA Fire Sprinkler Seminars

- CASA Presents: Canadian to Canadian
  - Sprinkler System Installation Requirements
  - Pumps for Fire Protection
  - Understanding Applying and Enforcing NFPA 25
- CASA Educates: The Spiral of Learning
  - Opportunity to train all
  - teaching about the importance of the fire sprinkler
  - industry beginning with the novice learners to the advanced
- CASA Speaks:
  - We must remind ourselves that education is key and are industry must find ways to get people interested in learning fire sprinklers.

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