

**Senior Citizen's Lodge
Fire Safety Upgrading**

PURPOSE:

To provide guidance for improved fire protection and life safety in existing Alberta Senior Citizen's Lodges.

ISSUE:

Senior Citizen's Lodges (Lodges) constructed in Alberta prior to the adoption of the 1997 Alberta Building Code (ABC) may have been constructed when fire suppression sprinklers were not a code requirement for these Group C residential occupancies. Lodges constructed after the adoption of the ABC 1997 were required to install sprinklers in occupied spaces and interim amendments to the ABC in 2009 expanded sprinkler systems to attics and other occupied spaces.

BACKGROUND:

A tragic fire resulting in the death of 32 residents in the 23 January 2014 Residence du Havre fire in L'Isle-Verte, Quebec highlighted the need for continuing and expanded efforts to improve fire protection in senior's facilities. Alberta Senior's ministry has committed funds to upgrade fire and life safety in government owned/operated Senior's facilities and is encouraging private owners/operators to upgrade their facilities.

Alberta Seniors will use these guidelines to assess their Lodges for retrofit, involving a range of options from complete retrofit to the current code requirements, partial retrofit including sprinkler systems for occupied spaces based on the 1997 ABC, or new construction under the current codes where retrofit is no longer possible or cost effective.

The Government of Alberta has the authority to mandate changes such as building upgrades to Lodges under its care and control. This Approved Guideline provides the Government of Alberta with an acceptable safety standard that takes into consideration the complexity of the fire protection, fire notification and other life safety systems.

Privately owned Lodges are not required to implement this Approved Guideline at this time, but private owners are strongly recommended to consider the Approved Guideline as part of any retrofit plan. By applying this Approved Guideline, existing Lodges can have a significantly enhanced level of fire protection and fire notification at a reasonable cost. Complying with the Approved Guideline will also reduce the design water flow requirements such that upgrading of the building water supply to the building will either be less likely or less costly.

The Approved Guideline standard is in line with current upgrading requirements for similar facilities in other Canadian jurisdictions including Quebec, Manitoba, Ontario, Newfoundland and Labrador, PEI and BC.

GUIDELINE APPLICATION:

Under Section 2.1. of Division C of the Alberta Fire Code (AFC), where the AFC requires compliance with the ABC, compliance is satisfied if the building was constructed or systems installed in conformance with the codes in force at the time of construction; where the building meets the requirements of an approved guideline; or where the building is constructed in a manner that provides a level of life safety acceptable to the authority having jurisdiction (AHJ).

A retrofit of this scope requires a building permit issued by the AHJ. A permit for construction would ordinarily require the construction to meet the requirements of the **current** ABC in force. This Approved Guideline provides authority for the construction to meet the conditions of the Approved Guideline. A building permit is still required to allow for construction to proceed.

The 2014 AFC in Division C sub clause 2.1.1.1.(2)(b)(i) provides authority for buildings of a specified *occupancy* to comply with the requirements of an *approved* guideline:

Division C 2.1.1.1.(2)

Where a provision of this Code requires compliance with one or more requirements of the Alberta Building Code, the provision is deemed to be satisfied if

- b) the *building* or fire protection measure does not conform to Clause (a) but
- i) meets the requirements of an *approved* guideline issued for a specific *occupancy*,

Division A 1.4.1.2. Defined Terms

- 1) The words and terms in italics in this Code shall have the following meanings:

Approved means acceptable to the Chief Fire Administrator.

For the purposes of this guideline the following abbreviations have been utilised:

ABC – Alberta Building Code	AFC – Alberta Fire Code
AHJ – Authority having Jurisdiction	NFPA – National Fire Protection Association
ULC – Underwriter’s Laboratories of Canada	FM – Factory Mutual Global

Design, Code and Construction Requirements:

All work will be conducted under permits in conformance with the Safety Codes Act. This will include the ABC 2014, except as noted in this guideline, and all other applicable regulations, codes and standards adopted under that Act.

CONDITIONS:

The following specific exceptions and requirements will apply to Senior’s Lodge upgrading projects:

- The requirements of Sentence 3.2.5.13.(10) Division B of the ABC 2014 regarding the sprinklering of additional spaces including attics and other unoccupied spaces will not apply to these existing Senior’s Lodges being upgraded. All rooms and spaces including bathrooms and closets will be sprinklered on the floor level below the attic.
- Attached exterior overhangs above smoking areas require sprinkler protection or the cladding of walls and eaves in non-combustible material.
- All unoccupied spaces not required to be sprinklered under NFPA 13R and exempted as above shall, if not already provided, have fire detection (smoke or heat, spot or linear as appropriate) installed as per CAN/ULC S524-06 “Installation of Fire Alarm Systems”.

- While this, and the required flow and tamper monitoring of the sprinkler system devices, will be an addition to existing fire alarm systems which will require full verification as per CAN/ULC S537-13 as per the ABC 14 this safety upgrading will not, unless the existing fire alarm system cannot handle the additional devices, be the trigger to require a fire alarm system upgrade.
- Fire alarm monitoring will be required to be upgraded to the requirements of CAN/ULC S561-03.
- Senior's Lodges of more than four storeys in height are required to be sprinklered to the requirements of NFPA 13-2013 "Installation of Sprinkler Systems" and fall outside the scope of this *approved* guideline.
- Buildings for Senior's Independent Living, including apartment and condominium buildings are outside the scope of this *approved* guideline.
- Continuing Care Facilities are outside the scope of this *approved* guideline.

APPLICATION:

This *approved* guideline is acceptable throughout the Province of Alberta and is endorsed by the Chief Fire Administrator and Chief Building Administrator for the Province of Alberta. The Building Technical Council and the Fire Technical Council of the Safety Codes Council have also endorsed this *approved* guideline.

[Original Signed]
Trevor Brice, Chief Fire Administrator

[Original Signed]
James Orr, Chief Building Administrator

Appendix – Sprinkler Design and Installation Specifications

1. General

- 1.1. The work to be done under this section shall include the furnishing of all labour, materials, tools and equipment required to complete the installation.
- 1.2. Examine the site conditions and other work upon which this Section depends.
- 1.3. Equipment and accessories shall be ULC or FM listed for fire protection service.
- 1.4. Fire protection systems as shown and as described shall be supplied and installed by a fully qualified and recognized firm regularly engaged in and having an established reputation for this type of work.
- 1.5. Systems shall be designed and installed in accordance with ABC 2014 and the referenced edition of NFPA 13 and 13R, subject to the exceptions noted in the preamble to this specification, plus any applicable requirements of the local authorities having jurisdiction and as specified herein.
- 1.6. System to provide coverage for occupied spaces in the entire building as per the preamble.
- 1.7. Obtain building permits from the AHJ.
- 1.8. Perform tests and provide certification and verification to the AHJ as required by the ABC.
- 1.9. Perform hydraulic flow tests at adjacent fire hydrants prior to final system design.
- 1.10. Materials, equipment, valve and devices supplied and installed under this Section shall be listed and approved for use in a Sprinkler System.
- 1.11. Co-ordination of trades on site within this contract and co-operation with other trades involved with the project.

2. Submittals for Review

- 2.1. Provide data on sprinklers, valves, and specialties, including manufacturer's catalogue information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- 2.2. Provide jockey and any fire pump manufacturers literature including general assembly, pump curves showing performance characteristics with pump and system, operating point indicated, NPSH curve, controls, wiring diagrams, and service connections.
- 2.3. Submit preliminary layout of finished ceiling areas indicating only sprinkler locations coordinated with ceiling installation.
- 2.4. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components and accessories. Indicate system controls.
- 2.5. Submit shop drawings, product data, and hydraulic calculations to the authority having jurisdiction for approval. Submit AHJ approval to the coordinating professional and owner.
- 2.6. Submit two (2) samples of each style of sprinkler specified.
- 2.7. Manufacturer's installation instructions: Indicate support, connection requirements, and isolation for servicing.

3. Submittals for Project Closeout

- 3.1. Test certificates.
- 3.2. Provide certificate of compliance from AHJ indicating approval of field acceptance tests and verification on Schedule C2 as per ABC.
- 3.3. System flow, tamper, switches tested with the fire alarm company and fire alarm signal receiving centre.
- 3.4. System flow test.
- 3.5. Valve tags, label, ID and flow markings have been installed as per specification.
- 3.6. As-built drawings.
- 3.7. Operation and Maintenance Data: Include components of system, servicing requirements, record drawings, inspection data, replacement part numbers and availability, and location.
- 3.8. Warranty certificate.

4. Valves:

- 4.1. Waterflow Switches: The waterflow alarm switches are to be Potter Model WFS-5 complete with Model TSK tamper switch kit or equal. NOTE: co-ordinate with the Electrical Contractor to insure that all flow, pressure, low pressure and tamper switches are compatible with the building fire alarm systems prior to installation.
- 4.2. Butterfly Valves: Butterfly valves (2") diameter and larger shall be Victaulic, or Gruvlok or equal and rated for 300 psi to be ULC/FM, cast iron body, stainless steel shaft, EPDM seat. NOTE: Factory supplied supervisory switch is to be provided with two sets of contacts.
- 4.3. Check Valves: Check valves to be Victaulic, or Gruvlok, or equal ULC/FM with cast iron body and stainless steel seat and Buna 'O' rings.

5. Sprinkler Heads

- 5.1. Sprinkler heads for 13R systems are to be residential quick response horizontal sidewall type unless otherwise indicated.
- 5.2. Heads in storage rooms to be complete with protective guard.
- 5.3. Heads and escutcheon plates to be either chrome plated or white as approved by Owner.
- 5.4. Sprinklers located close to heat producing equipment or other similar sources of heat, heads shall be high temperature type.
- 5.5. Refer also to drawings for type.

6. Fire Department Pumper Connection

- 6.1. Fire department pumper connection (FDC) to be as per NFPA 13 or 13R as applicable bronze body with caps, chains and brass escutcheon plate. Exposed parts to be polished and chrome plated brass. FDC wall plate to be embossed indicating that it supplies the sprinkler system.
- 6.2. FDC connection threads shall comply with the requirements of the AFC. Where the fire department utilises "Storz" type hose to connect to the FDC a "Storz" type connector, of a size and type acceptable to the fire department shall be utilised.
- 6.3 With written agreement of the fire department and the building AHJ the hydrant(s) required by the ABC within 45m of the principal entrance or FDC may be located up to 90m from the primary entrance or FDC. By similar agreement the FDC may be located at a location other than as specified by the ABC.
- 6.4 Written acceptance of both FDC and fire hydrant locations shall be obtained from the fire department prior to building permit issuance and installation.

7. Pipe and Fittings

- 7.1. Pipe and fittings shall be either CPVC approved for use in a sprinkler system or black steel schedule 40 ASTM A53 steel pipe suitable for either welding or threading approved for use in a sprinkler system.
- 7.2. Grooved Pipe and fittings may be black steel schedule 10 ASTM A53 steel pipe or thicker wall suitable for grooved ends.
- 7.3. For 2" diameter and smaller, pipe and fittings shall be screwed standard, standard black iron fittings.
- 7.4. For 2½" diameter and larger pipe use standard cast iron flanged, forged steel welded flanges or Victaulic/Gruvlok fittings or equal.
- 7.5. One-piece reducing fitting shall be used wherever a change is made in the size of the pipe. Hexagon or face bushings are not permitted in reducing the size of openings in fittings.
- 7.6. Grooved products including couplings, fittings, and valves shall be by one manufacturer.

8. Hangers

8.1. Piping to be properly supported in accordance with currently referenced or inferred standards of NFPA, in addition to the use of riser clamps on the top and underside of the sprinkler riser at every floor level.

9. Test Drains

9.1. At each sprinkler zone station, supply and install an alarm test module, discharge to be piped to common drains.

10. Spare Sprinklers and Cabinets

10.1. Provide enameled steel, wall mounted cabinets with hinged front panels, containing special sprinklers, wrenches and a stock of spare sprinkler heads. An equal stock of at least six of each type of sprinkler head used in the building shall be included. Cabinets shall be mounted on the wall at the main sprinkler riser.

11. Valve Tags

11.1. All valves shall be provided with a brass identification tag, approximately 1¼” in dia. with numbers embossed on it. Attach the tag to valve with a brass chain.
 11.2. Prepare a directory of all valves installed, giving their numbers, purpose of each valve, normal operating position and location. Two (2) copies of the directory are to be left with the completed project and one copy is to be included with each maintenance manual.
 11.3. When any operated valves, floor control, drains, etc., are located above the ceilings or where their location is not evident, a red vinyl sign of adequate size with white letters and an arrow indicating the location of the valve will be provided. The signs will be attached to the building surfaces as directed by the Engineer.
 11.4. All piping to be provided with directional arrows and labels to indicate their purposes (fire, drain, etc.). They are to be installed at approx. 30 ft intervals on runs and at all changes in direction.

12. Drains

12.1. Supply and install drain piping as required, from sectional valves, zone valves and system risers. It is the intent to drain the majority of the water via common drains to the outside. In addition, auxiliary drains shall be provided and piped and drained to suitable locations. Piping must be provided with proper drain connections in compliance with NFPA standards.
 12.2. Drains located above ceilings or where their location is not evident, a red vinyl sign of adequate size with white letters and arrow indicating location will be provided.

13. General Installation

13.1. Install equipment to manufacturer instructions.
 13.2. Locate fire department connection in a location accepted in writing by the local fire department. Provide sufficient clearance from walls, obstructions, or adjacent siamese connectors to allow full swing of fire department wrench handle. Fire department connection shall be within 45 m of an appropriate fire hydrant as per the ABC unless specific written permission to vary this up to a total distance of 90 m is provided by each of the building AHJ and the fire department.
 13.3. Place and coordinate pipe runs with other trades to minimize obstruction to other work.
 13.4. The piping shall be installed to be coordinated architecturally with the beams, ducts, lights and walls to the owner’s approval. Work to conceal sprinkler piping, other than as specifically required by the ABC, is outside the scope of this project.
 13.5. Coordinate sprinkler layout with reflected ceiling plan.
 13.6. Apply masking tape or paper cover to ensure concealed sprinklers, cover plates, and sprinkler escutcheons do not receive field paint finish. Remove after painting.

- 13.7. Flush entire piping system of foreign matter.
- 13.8. Install guards on sprinklers where indicated and in storage rooms.
- 13.9. Hydrostatically test entire system.
- 13.10. Require test be physically witnessed by AHJ and Engineer on site.
- 13.11. Electrical wiring and all interconnection of system flow, tamper and other devices with the fire alarm system will be completed by the electrical contractor. This contractor is responsible to provide information, schematics and data supplied to him by the manufacturer to insure a complete and proper installation. Co-ordinate with the Electrical Contractor to insure that all flow, pressure, low pressure and tamper switches are compatible with the building fire alarm systems prior to installation.
- 13.12. Ensure required devices are installed and connected as required to fire alarm system.
- 13.13 Fire Sprinkler and Fire Alarm systems will be verified and commissioned together as per the requirements of the ABC and CAN/ULC S537-13. The engineering professional responsible for both the fire alarm and sprinkler systems shall be on site conducting this coordinated verification of both systems.