

May 4, 2015

Preliminary Overview of Alberta Building Code Changes

CHBA – Alberta has reviewed available information and compiled a list of anticipated changes that may be of interest to residential construction. This is a **PRELIMINARY SUMMARY ONLY**. It will be updated with code references when it can be compared to the actual code documents. The summary will be posted on the [CHBA – Albert website](#) along with articles, tools etc. Some of the items noted here have been compiled into [online presentations](#) available on the National Research Council website.

Note: These items will be reviewed in more detail at information session on the codes in each local CHBA in late May and June. Please contact your local CHBA for more information.

If you have items you would like to see expanded upon in the update session or in an article, please contact:

Joan Maisonneuve

Manager, Policy & Industry Issues

Canadian Home Builders' Association - Alberta

328, 9707 - 110 Street

Edmonton, AB T5K 2L9

Toll free: 1-800-661-3348

Phone: 780-424-5890 Ext 226

Email: joan.maisonneuve@chbaalberta.ca

Fire Protection: Single Family Dwellings - Part 9

- ***Smoke Detectors in Residential Homes:*** Must be installed in each bedroom and in corridors outside the bedrooms and they must be interconnected.
 - ***Split-level Homes:*** The smoke detector is required on upper level of each floor if interconnected. The placement of the detector is based on the highest of the two levels within that floor space, taking into consideration the smoke alarm's area of coverage.
 - ***Detector Sounds:*** In residential occupancies, smoke detectors require a temporal pattern (three short beeps, a 1.5 second pause and then 3 more beeps) or a voice relay.
 - ***Silencing Switch:*** The circuitry of smoke alarms requires a manually operated silencing switch to allow silencing in the event of a nuisance alarm.
 - ***Battery Back-up:*** All smoke alarms in homes need a battery back-up for 7 days operation with 4 minutes of an alarm. A typical detector with 9 volt battery back-up will meet this.
- ***Penetrations through Fire Separations:*** Definitions for "fire stops" and "fire blocks" have been added, as were several changes addressing penetrations through fire separations. Requirements involving attics that don't have sprinklers were clarified.

- **Fire Resistance Ratings:** Additional Assemblies added to Tables A-9.10.3.1.A. and A-9.10.3.1.B

Carbon Monoxide Detectors Residential Homes - Part 9

- New locations

Penetrations Through Fire Separations - Part 3 and Part 9

- Definitions for “fire stops” and “fire blocks” have been added, as were several changes addressing penetrations through fire separations. Requirements involving attics that don’t have sprinklers were clarified.

Soil Gas Control and Radon - NBC Part 5, Part 6 and Part 9

The new Health Canada guideline of 200 Bq/m³ for indoor radon concentration has been referenced in the Appendix. Parts 5 and 6 now require that engineers and designers consider radon protection in their designs. Air barrier requirements were moved from 9.13 and placed with other air barrier requirements in 9.25. These prescriptive requirements were added:

- Polyethylene soil gas barrier is required under slab;
- Slab perimeter must be sealed to wall;
- All penetrations through the slab must be sealed;
- Sump pit cover to be airtight;
- Granular fill required under the slab;
- A rough-in for radon extraction to either performance or prescriptive requirements must be installed.

Lateral Load Resistance and New Wind Data - Part 9 and Appendix C, Table C-2

- **Risk Values:** Three risk levels (low-to-moderate, high, and extreme) for exposure to wind and seismic forces are now utilized, using environmental load data in the 2010 NBC Appendix C. For areas where the risk is low-to-moderate, no new requirements have been added. In a limited number of regions of extreme risk, engineering design according to NBC Part 4 is required. Areas in southern Alberta are affected by the new wind load values.
- **Wind Load:** Additional bracing and new fastening requirements for roofs and walls will be required to resist lateral loads for wind in some areas in southern Alberta. There are additional requirements for attaching roof sheathing to framing and roof framing to walls. These may include constructing walls using braced wall panels in braced wall bands that are continuous horizontally and vertically throughout the building and extend from the top of the supporting foundation, slab or sub-floor, to the roof framing above.

Wind Load Design - Part 4

- Buildings with very long periods of vibration, one of the most important factors determining how a structure will respond to external forces, must now be designed by experimental methods; dynamic calculations are no longer acceptable.

Secondary Suites in Houses - Part 9

- **Defined Term:** The term “secondary suite” is now a defined term,

- **Clarity on Application:** The word “house” has been inserted into many requirements that previously only applied to dwelling units.
- **Egress:** Protection of means of egress for the suite on the exterior
- **Town Houses:** Information on where they are permitted in townhouses
- Relocation of requirements
- **Party Walls on Property Line between Houses with Secondary Suites:** Currently, a party wall does not have to be a firewall, provided it is constructed as a fire separation (1 h FRR) where the party wall separates:
 - two dwelling units with no dwelling unit above another,
 - a dwelling unit and one house with a Secondary Suite and their common spaces, or
 - Two houses with secondary suites and their common spaces

However in the new code, in buildings with more than 2 houses, party walls shall be constructed as a fire wall to create separate buildings, each having not more than two adjacent houses with a secondary suite.

Garages Floors - Part 9

- The addition of curbs as an option to sloping of garage floors. Inconsistencies were resolved in the requirement that garage floors be sloped to the exterior to limit heavier-than-air gas inflow into habitable spaces below the garage floor level.

Attic Access - Part 9

- Decrease in minimum dimensions for attic access hatches

Spatial Separation - Part 3 and Part 9

Many of these changes were introduced as an amendment to the 2005 Alberta building code in March of 2009. Some small changes were made in the 2014 version of the Alberta Building Code.

- Windows in side yard for fire protection
- Scope of 9.10.15. changes so some items moved into 9.10.14

Stairs, Ramps, Handrails and Guards – Part 3 and Part 9

- **Landings in Garages:** A garage serving a dwelling is part of dwelling so dwelling stair requirements apply. A landing is not required where there are 3 risers or less and where the doors open away from the stairs.
- **Climbability of Guards :** The new wording makes it clear that any one of the four design options provided are independently acceptable as deemed-to-comply solutions to the stated performance requirement. The four acceptable solutions are illustrated in an Appendix Note.
- **Headroom:** Introduced a less restrictive head room requirement for within secondary suites of only approx. 6' under beams and ducting. (Normal headroom requirement is 6'4 ¾") Article 9.8.2.2.(4)
- **Rise/run Tolerances:** Tolerance used to be 6mm for rise/run variances in both adjacent and within any single flight of stairs. This has been changed to now be 5 mm for adjacent runs/rises and 10mm within the whole flight.

- **Cross Slope:** Allowable cross slope for stairs changed to now be 1 in 50 from the previous 1 in 100. Code article 9.8.4.4.
- **Handrails:** New requirement that states only a single handrail is now required for stairs within dwelling units of all widths. In the 2006 code, a second rail was required over 43 5/16. Code Article 9.8.7.1.
- **Height of Handrails:** The minimum height of handrails has been raised to 865 mm (34") from the previous 800 mm (31.5") Code Article 9.8.7.4.

Windows, Doors and Skylights - Parts 3, 5 and Part 9

- **New Harmonized Standard:** A new, harmonized North American standard for windows, doors and skylights is now referenced in the NBC. This resulted in a substantial reorganization of Sections 9.6. and 9.7. The A, B, and C rating system used by until now is being replaced with actual design load and pressure ratings. In addition, performance grades for windows, doors, and skylights will need to be selected according to the CSA's Canadian Supplement (CSA A440,S1), Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, Fenestration products must now be appropriate for the conditions and geographic location in which they are installed.
- **Guards at Windows:** A guard or a mechanism that prevents a window from opening more than 100 mm is now required, particularly when they occur over another suite or dwelling. Code article 9.8.8.1
- **Window Wells:** Need 760 mm clear in front of windows in window well
- **Minimizing condensation:** A new table relates design temperature to minimum U-value for windows to minimize surface condensation and ensure comfortable conditions for occupants in the summer and winter. At 2.5% January design temperatures between -15 and -30 windows must have a maximum U-value of 2.0 and minimum condensation resistance of 68 in "normal" conditions. Code Reference 9.7.3;
- **Screens** not required.
- **Wording Change:** code now used the term "sealant" instead of "caulking"

Exit Signs - Part 3 and Part 9

- Exit Signs will change from a sign with the word "exit" in red to green pictograms of a running man which conform to ISO standards. These are a universal sign, language independent, and internationally recognized.

Definition of Range and Mechanically Vented - Part 9

- Definition of range replaced with cooktop
- Definition of mechanically vented revised

Low Permeance Materials in the Building Envelope - Part 9

- A simplified approach to requiring the correct position and properties for low air and vapour permeance materials in building envelopes was introduced
- Closed-cell foam plastic is allowed to be used as a full-height air and vapour barrier next to basement walls.

Finger-Jointed Lumber, I-Joists and Fasteners for Fire Rated Assemblies - Part 9

- Finger-jointed structural lumber permitted in fire resistant assemblies if heat resistant adhesive is used.
- I-joists require a phenolic-based adhesive if required to have a fire-resistance rating.
- Fasteners in fire-rated assemblies must be nails or screws, adhesive is not permitted.

Hydronic Heating Installation Standards - Part 9

- **New CSA Standard:** The new CSA Installation Standard which controls items such as pipe spacing and underfloor insulation for non-engineered in-floor heating systems is now referenced in the code. CHBA has argued unsuccessfully that a clause prohibiting the use of water heaters strictly for space heating should be removed from the standard.

HVAC and Plumbing Affecting Part 9 - Part 6 and Part 7

There are changes in Part 6 and Part 7 that affect Part 9

- **Ventilation, Part 6:** New requirements relating to acceptable building air ventilation have been added. They specify maximum levels of particulate matter, ground-level ozone and carbon monoxide in air for building ventilation purposes as well as minimum separation distances of exhausts and outdoor air intakes.
- **Window requirements:** Part 7
- **Room Heights:** The height of rooms shall be sufficient so that the ceiling fixtures do not obstruct movement or activities below the fixture.
- **Sealant Standards:** Outdated standards for sealants were replaced with current ASTM standards that address relevant product categories and contain equivalent or similar performance criteria. Significant Technical Changes in the 2010 Codes From NRC Report to TRC Jan 2011

Fire Protection and Occupant Safety - Part 3

New requirements and clarifications were introduced for smoke alarm placement, commissioning of life safety and fire safety systems, and when fire alarm components must be installed. Some changes that relate to testing and monitoring are found in the fire code, but requirements for when and how to install them are contained in the building code.

- **Sprinkler Relaxation:** Prior to the 2014 ABC, anywhere a sprinkler system is installed a fire alarm system must be installed. The change in this code is that a fire alarm system will not be required if the sprinkler is installed to NFPA 13 D “Sprinkler Systems for 1-2 Family Dwelling Units and Manufactured Homes” and the building has fewer than 9 heads. The systems will still need some monitoring for flow and shut off and smoke alarms will still be required.
- **Connected Buildings:** When 2 buildings are connected by a walkway, each requires its own fire alarms system; (NBC and NFC)
- **Commissioning:** Commissioning of integrated life safety systems must be performed as a whole; For example fire alarms or smoke alarms connected to sprinklers, standpipes,

smoke control, ventilation, pressurization, door hold open devices, elevator recalls, fire shutters etc.

- **Sprinklers in shafts:** Clarification that fire detectors are required in shafts where sprinklers are not installed
- **Residential Suites and Care Facilities (B3):** The new code allows residential suites to be equipped with smoke detectors instead of smoke alarms. They need to have independently sounding audible signal, they must conform to CAN/ULC S524, be connected to a fire alarm panel and be inspected and function as if they were a smoke alarm. It should be noted that the requirement for a fire alarm system with smoke detectors has not been waived for the remainder of the building, i.e. general area corridors, common spaces, etc. (Part 3 and part 9)

Care Occupancies - Part 3, NFC Part 2

There are new definitions for all of the B occupancies. A new occupancy classification for residential care facilities has been created (Group B3 occupancy). The new Group B3 residential care occupancy provides design relaxations compared to the current Group B2 care occupancy, yet maintains a more rigorous set of fire and life safety requirements than a Group C residential occupancy. New construction, sprinkler, emergency power and fire alarm requirements were added.

- **Sprinkler Requirements: (Alberta Fire Code)** The type of sprinkler system required (i.e. NFPA 13, 13R, 13D) depends on the number of occupants, the size of the building and/or number of storeys.
- **Construction:** It is permissible to construct with combustible construction up to three storeys in building height; Corridor widths have been relaxed.
- **Stairways:** Reductions in stairway, corridor, ramp and door widths;
- **Fire Detection:** A relaxation in fire detector and alarm requirements
- **Locking Devices** on doors in care and treatment occupancies

Six Storey Wood - AFC, ABC

To address emergency responder concerns, provisions to allow greater access for firefighting have been proposed, such as requiring that a minimum of 25% of the building perimeter be directly accessible by fire responders. Other requirements would include mandatory sprinklers (conforming to NFPA-13) throughout the building; a fire-resistance rating of not less than one hour for floor and roof assemblies as well as mezzanines; and non-combustible cladding on roofs that are inaccessible to fire hoses. The building could also only be occupied once fire safety features were fully enabled. Further proposed changes dealing with structural and earthquake design, such as changes to seismic force resisting systems, are also being developed.

Combustible Penetrations and Plenum Cables - Parts 3 and 9

- **New definitions** for fire stop and fire block
- **Penetrations:** All penetrations of a fire separation must be fire stopped. This can apply to wall membranes, conduits and ducts.

- **Sprinkler Exception:** There is an exception for sprinkler heads that penetrate a rated ceiling and use a metal plate (escutcheon cup). The fire stop material could interfere with the proper operation of the sprinkler.
- **Fire Stopping Relaxation:** Fire stopping is not required around fire dampers penetrating a fire separation where installation listing specifies a clearance for operational reasons.
- **Pipe Size through Fire Separation:** Any size combustible pipe is permitted to penetrate a fire separation (up from 30 mm max).
- **Drain Piping:** The restriction on drain piping penetrating a horizontal fire separation was eliminated. This applies mainly to toilets.
- **Cables with Combustible Jackets:** The word “grouped” was clarified for cables with combustible jacketing;
- **Relaxation for cables:** Single conductor metal sheathed cables are permitted to penetrate a fire separation as long as they are not grouped and spaced at least 300mm apart.

FT-6 Cabling Located in Plenum Spaces - Parts 3 and 9

- **Plenum Cables and Raceways:** The rating was changed from FT-1 to Ft-4 for plenum cables and raceways in plenum spaces in buildings of combustible construction. The rating was changed from FT-4 to FT-6 for non-combustible construction. There are exceptions for signals for fire alarms, security, radio or television and for drop-down cables when the length is not greater than 9 metres.

Protection of Electrical Conductors - Part 3 and 9

There are new requirements for protection of electrical conductors serving life safety and fire protection systems.

- **High-rise Buildings:** Within buildings considered high-rise, this protection applies to conductors serving fire alarms, emergency lighting, fire pumps, elevators, smoke control and central control centres.
- **Other Buildings:** In all other buildings, this protection applies to mechanical systems in areas of refuge, contained use areas and fire pumps.
- **Means of Protection:** Protection against fire can be provided by means of rated cable or cable located in a service space.
- **Fire Resistance of the Service Space:** The space requires a fire resistance rating of 1 to 2 hours and must be a dedicated space for electrical equipment and conductors. No other combustible materials are permitted in that area.
- **Protection for Emergency Power:** Protection for emergency power is required from the emergency power source to the distribution panel. Where the distribution panel serves multiple units on the same storey, protection between the panel and the individuals units is not required.

Relocation of Technical Requirements

To draw a clear line between the roles of the NBC and the NFC, building design requirements presently in the NFC were moved to the NBC (except for spill control measures). Appropriate cross-referencing between the two codes was added.