Administrative Requirements & Professional Involvement
From a Building Code Perspective

Presented By:
Nabil Habashy, Architect AAA, LEED® AP, SCO
Building Technical Advisor

We will talk about:

- Administration
  - Chief Building Administrator
  - Information Required for Permits & Inspections
  - Occupancy Permits
  - Prohibitions
  - Notifications
  - Building Failure

- Professional Involvement
Administrative Requirements

Administration (2.2.1.)

Chief Building Administrator “Provincial Administrator” can issue the following (2.2.1.2/3/4):
• Province wide Variances “approximately equivalent or exceeds code”
• Province wide Interpretations
• BF Relaxation “unnecessary or unpractical”

Remember: there are no relaxations in the building code except for accessibility in some conditions

Administrative Requirements

Information required (2.2.2.1.):
• Sufficient information
• Drawings to scale
  • Plans
  • Rooms usage/walls/openings
  • Sections
  • Fixed equipment
  • Dimensions
• Any changes during construction
• Specifications
Administrative Requirements

Information required (2.2.2.2/3/5/6/7.):
• Site Plans
• Site Grading
• Dimensional Tolerance 2% (SCO decision/ life safety)
• Fabrication and Erection of Steel (CWB for fabricators and erectors)
• Aquatic Facilities (designs need to be reviewed by AHJ)
• Water Theme Park (discharge design reviewed by AHJ)

Administrative Requirements

Fire protection (2.2.3.)
• Sufficient Information
• Sprinklers Plans
• Fire Alarm Plans

Structure & Foundation (2.2.4.)
• Guards/Components designed by another designer.
• Structural Calculations
• Foundation Type
Administrative Requirements

Environmental separation (2.2.5.)
- Building Assemblies
- Specifications

HVAC (2.2.6.)
- Sufficient Drawings and Specifications

Administrative Requirements

Electrical (2.2.7.)
- Appliances, System, Equipment’s
- Specifications

Energy (2.2.8.)
- Calculation Reports
- Sufficient Drawings and Specifications
Administrative Requirements

Plumbing/Health (2.2.9.)
- Commercial Kitchen (Health)
- Aquatic Facilities (registered professional)
- Private Swimming Pool

Permits (2.2.10.)
Neither the issuance of a permit nor inspections made by the authority having jurisdiction shall in any way relieve the owner of a building from full responsibility for carrying out the construction or having the construction carried out in accordance with the requirements of the Safety Codes Act and regulations.

Administrative Requirements

Occupancy (2.2.11.)
- Permits
- Occupancy Before Completion
- Tents & Air supported Structures (occupancy permit before occupancy)
- Dairy Manufacturing Plants (2.2.11.)
  - AHJ final inspections
  - Alberta Agriculture permission.
- Medical Gas Piping
  - Certified Report (inspection & testing) from a testing organization for CSA Z7396.1 compliance
  - AHJ acceptance
Administrative Requirements

Prohibitions (2.2.12.)
- Unsafe Conditions
- Misleading Information
- Change in the Scope of Work

Notification (2.2.13.)
- Owners
  - Before Starting Work/when Completed/Inspections
  - Change of Ownership/VOC
  - Asbestos Management
  - Change in Professional Involvement (owner and professional)

Orders and appeals (2.2.17.)

Safety During Construction (2.2.14.)
Unsafe Condition (2.2.15.)
Building Failure (2.2.16.)
- Failure versus Collapse
  - Failure (AHJ) may go to the CBA as well
  - Collapse (AHJ & CBA)

Orders and Appeals (2.2.17.)
Administrative Requirements

Professional Design & Review (2.4.)
• Professional Involvement

Registered architectural professional and registered engineering professional seals and stamps are not required on plans or specifications for a building:

e.g.
3 storeys or less in building height, classified as a business and personal services occupancy, mercantile occupancy or industrial occupancy that,
i) if 1 storey in building height, has a building area of 500 m² or less,

Remember: it’s building area and not floor area!

Registered architectural professional and registered engineering professional seals and stamps are required for each unit (see sentence 5)
Administrative Requirements

Professional Design & Review (2.4.)

• Professional Involvement

Registered architectural professional and registered engineering professional seals and stamps are not required on plans or specifications for a building:

5) For buildings other than those described in Sentences (3) and (4), the building plans and specifications must be imprinted with seals and stamps of both
   a) a registered architectural professional in the case of architectural design, and
   b) one or more registered engineering professionals qualified to engage in
       the appropriate combination of those branches of engineering that are
       applicable to building design and construction in the case of engineering design.

e.g.

b) classified as a residential occupancy that is
   i) a single family dwelling, or
   ii) a multiple family dwelling that contains 4 dwelling units or less,
Administrative Requirements

Professional Design & Review (2.4.)

• Professional Involvement

Registered architectural professional and registered engineering professional seals and stamps are required (sentence 5)

<table>
<thead>
<tr>
<th>Number of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;C&quot; 1</td>
</tr>
<tr>
<td>&quot;C&quot; 2</td>
</tr>
<tr>
<td>&quot;C&quot; 3</td>
</tr>
<tr>
<td>&quot;C&quot; 4</td>
</tr>
<tr>
<td>&quot;C&quot; 5</td>
</tr>
</tbody>
</table>

Administrative Requirements

Professional Design & Review (2.4.)

• Professional Involvement

Plans and Specifications must be imprinted with the seals or stamps of either a registered architectural professional or one or more registered engineering professionals

FOR

• 5 – 20 Single dwelling units in a single site
• Industrial occupancy with Occupant load: 28m²/person
• Major occupancy classified as industrial with Occupant load 28m²/person/other occupancies doesn’t exceed 400 m²

May Contradicts Architects/Engineers Act?
Administrative Requirements

Professional Design & Review (2.4.)

- Professional Involvements
  - Structural Design (preserved wood foundation)
  - Fire Suppression (design/field review/witness testing)
  - Fire Alarm (design/field review/verification)

- Schedules requirements
  - C1 goes to the AHJ
  - C2 goes to coordinating professional/AHJ

Off-site review (CSA A277) (2.4.5.)

Thank You
Nabil Habashy

Safety Services
Safetyservices.gov.ab.ca
Planned updates for Building, Fire, Energy Efficiency and Elevating Devices Codes

The next editions of the Alberta building, fire and energy codes currently based on the 2010 editions of the National Building Code and National Fire Code, and the 2011 National Energy Code for Buildings (NECB) are planned to be updated to the 2015 national code editions including the 2017 interim changes to the NECB. Municipal Affairs is working collaboratively with Alberta’s Safety Codes Council including the elevating, building and fire sub-councils and the National Research Council to review the code content and complete the publications. Further details on dates, training, costs and other related matters will be made available throughout the year as the codes are developed and made ready for updating.

Also planned for updating are the elevating devices codes to the currently published 2013 edition.

While the NECB 2011 edition is currently the required standard in Alberta until updated by the NECB 2015 edition, there is now an added incentive for making the NECB 2015 (including the 2017 interim changes) the new required standard. The NECB in electronic form is now free of charge from the National Research Council and Natural Resources Canada at www.nrc-cnrc.gc.ca/eng/publications/codes_centre/2017_national_energy_code_buildings.html

For a single user, online access subscription for one year allows users to view the publications online from any computer connected to the Internet. It is available free of charge. For a concurrent user, online access subscription (Email: CONSTPubSales-Ventes@nrc-cnrc.gc.ca for access) allows a number of users on the same network to access Code documents simultaneously, available only to organizations. It is available free of charge.

The NECB that includes the 2017 national interim updates is an important step toward Canada’s goal for new buildings, as presented in the Pan-Canadian Framework, of achieving ‘Net Zero Energy Ready (NZER)’ buildings by 2030. The NECB 2017 supports this goal by reducing the overall thermal transmittance of roofs, fenestration and doors; reducing losses through thermal bridging in building assemblies; and, reducing the allowable percentage of skylight area. This new edition also introduces more stringent requirements for energy recovery systems and interior and exterior lighting requirements. It requires temperature controls in individual guest rooms in hotels and motels and demand control ventilation systems in commercial kitchens. In Part 4, it clarifies the lighting trade-off path requirements and in Part 8, it makes performance compliance requirements consistent with prescriptive requirements.

If you have any questions please contact James Orr, Director, Standards Development, at james.orr@gov.ab.ca or 1-866-421-6929.

March 8, 2018

For further information contact Municipal Affairs, Community and Technical Support Branch at safety.services@gov.ab.ca or toll-free at 1-866-421-6929.
 Significant Technical Changes

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Technical Advisor, AAA,

Discussion overview

- Introduction (Type of changes, Editorial changes, loops)
- Changes in the NBC 2015 AB – Part 9 Housing and small buildings
  - Examples of Alberta Specifics for part 9
  - Stairs (spiral, mixed threads, ornamental guards)
  - Lateral loads (seismic)
  - Low permeance materials
  - Low-exposure doors – main entrance door
  - Snow loads
  - Corridor maximum length
  - 9.36. energy efficiency
  - Protection near cooktops – microwave
  - Airborne sound transmission
  - Roofing, damp proofing and waterproofing – standards
  - Exterior insulation and finish systems (EIFS)
  - New Residential Fire Warning Systems (ULC-S 540)

- Changes in the NBC 2015 AB – Part 3
  - Examples of Alberta Specifics for part 3
  - Minimum Fire Rating of Cables in Air Plenums
  - Penetration by Electrical and Non-Electrical Outlet Boxes
  - Self-Service Storage Buildings
  - Protection of Foamed Plastics
  - Combustible Components for Exterior Walls
  - Installation of Smoke Dampers
  - Leakage-rated door assembly
  - Mezzanines and Openings through Floor Assemblies
  - Dance hall/Bar main entrance capacity,
  - Handrails for Aisles with Steps
  - Emergency crossover access to floor areas
  - Distance between exterior discharges of exits
  - Ornamental guards/guards height/ open risers
  - Accessibility

N.B.: Municipal Affairs
Discussion overview

- Changes in the NBC 2015 – Part 5
  - Curtain Walls, Window Walls, Storefronts and Glazed Architectural Structures
  - Exterior Insulation and Finishing System (EIFS)
  - Wind Uplift Resistance of Membrane Roofing Assemblies
  - Vegetated Roofing Systems
  - Sound Transmission
- Changes in the NBC 2015 – Part 6
  - Drain Pans
  - Separation Distances of Exhausters and Outdoor Air Intakes
- Changes in the NFC 2015
  - Self-Service Storage Buildings
  - Other Changes
- Changes in NPC 2015
  - Water-use Efficiency: Supply Fittings and Shower Heads
  - Water-use Efficiency: Plumbing Fixtures
- Changes in NECB 2015
  - No more detailed trade off
  - New thermal requirements for semi-heated buildings
  - A performance level for air barrier assemblies of opaque building assemblies
  - Updated max (LPD)
  - Updated piping and duct insulation requirements
  - Heat Rejection
  - New prescriptive requirements for gas-fired outdoor packaged units
  - Updated performance requirements in the mechanical and service water tables
  - Reduced hot water discharge rate for showers and lavatories 6.2.6.
  - Demand control ventilation
- Changes in NECB 2017
  - Efficiency improvement %
  - Building Envelope
  - Lighting
  - HVAC
- NBC 2020 proposed changes

Types of changes in Building Codes:

- Modification; Change/Update/Relocation/Relaxation
- Addition; New requirements
- Deletion; Replace/Delete

**Note:**
This presentation is preliminary.
Alberta specifics are not included unless stated.
Some of the following may not be adopted.
**Editorial Changes**

- **Appendix / Notes/Attributes - After Each Part**
- **All parts except 9 & Appendix C & D/ Volume 1**
- **Part 9 / Volume 2**

**Reorganization of Section 3.8 / Regrouped into 3 Subsections: Scope, Application & Design**

**Reorganization of Part 6 / Grouped by major mechanical elements (Sections instead of Subsections / General provision at the front followed by System Specific**

**Relocation of Fire & Sound Resistance Tables / End of Part 9**

**Part 6**
- Section 6.1. General
- Section 6.2. Planning
- Section 6.3. Ventilation Systems
- Section 6.4. Heating Systems
- Section 6.5. Thermal Insulation Systems
- Section 6.6. Refrigeration and Cooling Systems
- Section 6.7. Piping Systems
- Section 6.8. Equipment Access
- Section 6.9. Fire Safety Systems
Challenges/Changes/loops

Some of the Challenges when adopting Alberta Specific Building code:

- Cross reference conflicts as a result of renumbering/deletion/addition.
- Avoiding loops.

E.g. Conflicts between Alberta specifics and NBC requirements.

Residential Occupancies - Sprinkler system:

1) Except as permitted in Sentences (2), (3) and (5) to (7), and Sentence 3.2.4.2.(4), a fire alarm system shall be installed in buildings in which an automatic sprinkler system is installed.

4) Except as permitted by Sentences (5) to (7) and Sentence 3.2.4.2.(4), a fire alarm system shall be installed in a building that is not sprinklered throughout and that contains a residential occupancy with sleeping accommodation for more than 10 persons.

A fire alarm system is not required in a hotel or motel 3 storeys or less in building height provided each suite has direct access to an exterior exit facility leading to ground level.

Changes in the NBC 2015 AB – Part 9 Housing and small buildings
Alberta Specific – Part 9

Example of Alberta specifics that might be retained/added:

- Secondary Suites (Area: no maximum or percentage limit)
- Non-openable/Openable window between attached garage and dwelling
- Rooms containing welding (3.3.1.25.)
- HIRF
- Respond time for Fire department (capable of beginning suppression).
- Deletion of 9.10.21. (camps) refer to Part 10
- Anchorage of building 2 (2x4) sill plates, blocking @1.2 m O.C.
- Insulation values for energy exempted, heated detached garage, etc.
- Chimney and Gas vents Insulation & shield clearance
- Pine Shakes CSA 0118.3
- Gypsum board ASTM C 840 standard in addition to CSA A82.31M
- Ventilation rough-in (fan) for future development
- Keeping HRAI Digest as good practice

Stairs-Run width

9.8.4.2. Dimensions for Rectangular Treads (Private stairs)

<table>
<thead>
<tr>
<th></th>
<th>NBC 2010/ABC 2014</th>
<th>NBC 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN (Min.)</td>
<td>210 mm (8 1/4 in.)</td>
<td>255 mm (10 in.)</td>
</tr>
<tr>
<td>RISE (Max.)</td>
<td>200 mm (7 7/8 in.)</td>
<td>200 mm (7 7/8 in.)</td>
</tr>
</tbody>
</table>

RUN 210

RUN 255
Stairs-Spiral stairs
9.8.4.7. Spiral Stairs

- Detailed and Clarified (New to NBC)
- Not limited to dwelling unit anymore.
- Now! Permitted use as a the only means of egress when:
  - Serves not more than 3 persons.
  - Not serve as an exit.

One bedroom = 2 persons, so the spiral stairs could serve a master-bedroom with an En-suite and a small study / reading room.

Stairs-Mixed Treads
9.8.4.5. Uniformity of Runs in Flights with Mixed Treads within Dwelling Units

- ABC 2014 did not allow mixed treads between floor levels
- Now! flexibility to mix in dwelling units
- Both tapered and rectangular
- In both directions

Changes indicate that stairs should not travel from larger treads(run) to narrower ones, in the descending motion, as this could lead to misstep and falls in stairs

Result: More design options available.
**Stairs-Ornamental guards**

9.8.8.6. Design of Guards to Not Facilitate Climbing

- **Part 9**: Permitted when protecting a level not more than (4.2 m) above adjacent level, if more design as per 9.8.8.6.(140-900mm)
- Opening through guards shall still be of a size that prevents the passage of a spherical object having a diameter of **100 mm** or 3 7/8 inch or less.

**Stairs-clarifications**

9.8.7.5. Ergonomic Design

- **Clearance and Design.**
  1) The clearance between a handrail and the surface behind it shall be not less than
     a) **50 mm**, or
     b) where said surface is rough or abrasive, **60 mm**.
  2) All handrails shall be constructed so as to be continually graspable along their entire length with no obstruction on or above them to break a handhold.
     (See Note A-9.8.7.5.(2).)

Notes A-9.8.7.5.(2) Handrail Sections:
The graspable portion of a handrail should allow a person to comfortably and firmly grasp hold by allowing their fingers and thumb to curl under part or all of the handrail.
Deleted appendix note that illustrate Handrail Sections.
**Structural design—Lateral loads (Seismic)**


High and Extreme (doesn’t apply to moderate or low forces)

Enhanced lateral resistance

- Thicker sheathing
- Perpendicular blocking between wall studs
- Nailing of splices in wall top plates
- Anchor bolts
- Reduced spacing

Seismic and Snow Loads have increased

Low:
- Sa≤ 0.7, HWP< 0.8
High:
- Sa> 0.7, HWP<1.2
HWP - Pincher Creek: 0.96
Extreme:
- Sa> 1.8, HWP>1.2

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**Low permeance materials**

9.25.5. Properties and Position of Materials in the Building Envelope

**Requirements ABC 2014**

- Water vapour permeance
  - < 60 ng/(Pa•s•m²)
- Air leakage characteristics
  - < 0.1 L/(s•m²) @ 75 Pa

**Requirements**

Compliance with Article/Table 9.25.5.2.

(Position of Materials in the Building Envelope)
Low permeance materials

9.25.5. Properties and Position of Materials in the Building Envelope

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Water Vapour Permeance (ng/(Pa•s•m²))</th>
<th>Air Leakage Characteristic (L/(s•m²) @ 75 Pa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded EPS polystyrene Type II</td>
<td>30</td>
<td>0.1</td>
</tr>
<tr>
<td>Extruded XPS polystyrene Type I</td>
<td>60</td>
<td>0.1</td>
</tr>
<tr>
<td>Polyurethane spray foam–low density</td>
<td>300</td>
<td>0.1</td>
</tr>
<tr>
<td>Polyurethane spray foam–medium density</td>
<td>300</td>
<td>0.1</td>
</tr>
<tr>
<td>Foil-faced polyisocyanurate/XPS polystyrene Type I</td>
<td>0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Table 9.25.5.2

Revised Exempt.

With water vapour permeance of 30 – 60 ng
Minimum R4 insulation value
In locations with HDD ≤ 6000
Main entrance doors

Performance of Doors: Limited Water Ingress Control
A-9.7.4.2.(1) Standards Referenced for Windows, Doors and Skylights.

- Added Note (Appendix note) to clarify the requirements.
- Exterior doors must control air infiltration and precipitation ingress and conform to the Harmonized NAHS Standard and the Canadian Supplement.
- This change clarifies the requirements for main entrance doors that are protected from precipitation (i.e. located inside buildings), and clarifies the requirements for air infiltration and resistance to forced entry.
- Side-hinged doors protected from precipitation can comply with a referenced standard when tested with no pressure difference across the door. These are identified with a “Limited Water” (LW) rating on the label.

Snow loads

Appendix C - Climatic and Seismic Information for Building Design in Canada

- Snow load values remained unchanged in most locations (shown in grey),
- Decreased in 39 locations (in green), and
- Increased in 72 locations (in red).
Corridor length

9.9.7.3. Dead-End Corridors

1) Except for a dead-end corridor that is entirely within a suite and except as permitted in Sentence 9.9.9.2.(1), a dead-end corridor is permitted provided it is not more than 6 m long.

Previously Alberta specific 3 m long.

Harmonizing with NBC 2015

Section 9.36. Energy Efficiency

9.36.2.2. Determination of Thermal Characteristics of Materials, Components and Assemblies

4) The effective thermal resistance of opaque building assemblies shall be determined from:
   a) calculations conforming to Article 9.36.2.4., or
   b) laboratory tests performed in accordance with ASTM C 1363, “Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus,” using an indoor air temperature of 21±1°C and an outdoor air temperature of –18±1°C (–35±1°C).

5) The thermal characteristics of log walls shall be determined by calculation in accordance with Section 305 of ICC 400, “Design and Construction of Log Structures.”

Existed in 2010 – carried over in NBC 2015
May not be adopted in Alberta.
Section 9.36. Energy Efficiency

9.36.2.9. Airtightness

1) The leakage of air into and out of conditioned spaces shall be controlled by constructing
   a) 9.36.2.9. (2-6) / 9.36.2.10. / 9.25.3. OR
   b) 9.36.2.9. (2-6) / Tested assembly to ULC-S742 / 9.25.3. OR
   c) 9.36.2.9. (2-6) / Tested assembly to ASTM E 2357 / 9.25.3.

NEW (conditions for using option c)
   i) the building will not be subjected to sustained wind loads calculated based on a 1-in-50 hourly
      wind pressure that exceed 0.65 kPa, and
   ii) the air barrier assembly is installed on the warm side of the thermal insulation of the opaque
      building assembly.

To Prevent: Physical degradation / Structure movement.

Edmonton 0.45 / Calgary 0.48 / Red Deer 0.40 / Lethbridge 0.66 / GB 0.43 / Fort McMurray 0.35
Rocky Mountain 0.36 / Fort MacLeod 0.68 / HR 0.65 / Pincher Creek 0.96 / Turner Valley 0.65 /
Taber 0.63 / Cardston 0.72 /

Section 9.36. Energy Efficiency

9.36.2.1. Scope and Application

8) The requirements of this Subsection also apply to components of a building
   envelope assembly that separate a heated or unheated attached garage from
   unconditioned space or the exterior air, where the attached garage serves
   a) not more than one dwelling unit, or
   b) a house with a secondary suite.

Move this requirements to 9.25.

Keep 9.35.4.1 (Interior Finish)

The correct intent for insulation is to limit the probability of:
Deterioration, which could lead to compromised integrity of
assemblies acting as environmental separators.
Microwave ovens and range hoods

A-9.10.22. Clearances from Gas, Propane and Electric Cooktops

- This change clarifies that clearances specified in Article 9.10.22.2. do not apply to microwave ovens and range hood.
- (CEC c22.2 #150) This standard includes tests to confirm that the appliance will not present a hazard when installed according to the manufacturer’s instructions.
- Asbestos is not permitted for Protection anymore.

Airborne sound transmission—Direct vs. flanking

9.11.1.2. Determination of Sound Transmission Ratings

- Flanking transmission
  - The sound passes around, over the top or under the primary partition (wall, roof, floor) separating two spaces.
  - Bothersome in multi-family residential buildings.

- Dwelling units
  - 47 ATSC or
  - 50 STC + prescriptive requirements for adjoining construction.
  - ASTC can be calculated through Part 5 (simple/detailed method (NRC Guide)) and soundPATHS – A web application.

- Dwelling unit and refuse/elevator
  - 55 STC
Roofing, waterproofing and dampproofing

Section 9.13. Dampproofing, Waterproofing and Soil Gas Control

- **CGSB material standards**
  - Deleted outdated standards
  - Replaced with ASTM where acceptable
  - Kept CGSB standards where no replacements are available
- **CGSB installation standards**
  - Delete and replace with prescriptive requirements.

9.13.2.3. Standards for Application

1) The method of application of all bituminous dampproofing materials shall conform to:
   a) CAN/CGSB-37.3-M, “Application of Emulsified Asphalts for Dampproofing or Waterproofing.”
   b) CGSB 37-GP-12Ma, “Application of Unfilled Cutback Asphalt for Dampproofing.”
   c) CAN/CGSB-37.22-M, “Application of Unfilled, Cutback Tar Foundation Coating for Dampproofing.”

Exterior Insulation and Finish Systems (EIFS)

9.27.13. Exterior Insulation Finish Systems

- **Reference to ULC standards**
- **Limitations - Geometrically Defined Drainage Cavity**
  - 10 mm geometrically defined drainage cavity width
  - Minimum 13% open
New Residential Fire Warning Systems (ULC-S 540)
9.10.19.8. Residential Fire Warning Systems

- An additional acceptable solution is added to address the use and installation of residential fire warning systems.
- **Smoke detectors** in lieu of Smoke alarm
  - Audible signals/interconnected
  - Same Power supply requirements.
  - Equipped with silencing device
- Previously has to form part of fire alarm system.
- In dwelling units and Part 3-Small care occupancies

Changes in the NBC 2015 AB – Part 3
Alberta Specific – Part 3

Example of Alberta specifics that might be retained/added:
- Remove all conflicts that claims exemptions for un-sprinklered residential occupancy.
- Firewall Offsets.
- 11 meters maximum residential occupancy floor except for 3.2.2.50.
- Deleting of occupancy classification (3.2.2.) for un-sprinklered residential occupancy.
- Respond time for Fire department (capable of beginning suppression).
- HIRF
- Visual signals requirements.
- Fire separation storage room less than 1m² / Room with welding operation
- Roof access (Hatch, Stairs)
- Water Supply calculations (instead of NBC adequate water supply)
- Hose Connection 65mm instead of 64 mm
- Sprinklers head installation above NFPA 13R requirements (attic, balconies, etc.)
- FD connection/Principal Entrance (3 and 15 meters)
- No access to exit through kitchen service room (Assembly occupancies)

Fire Protection: Minimum Fire Rating of Cables in Air Plenums

3.1.4. Combustible Construction

- Change in the minimum rating
- Optic fibre cables and electric cables with combustible insulation in air plenums (for voice, sound and data) in Combustible construction used to be FT4 now FT6
- Now consistent with optical fiber cables and electrical wires and cables in noncombustible construction
Penetration by Electrical and Non-Electrical Outlet Boxes

3.1.9.4. Penetration by Outlet Boxes

- **General Rule**: Fire Stop/FT rating same as Fire separation (combustible/non-combustible).

- **Non-combustible outlet boxes (no fire stop required)**:
  - Single maximum opening 0.016 m² (24.8 inch²) &
  - Maximum aggregate area of 0.065 m² (100 inch²) /for every 9.3 m² (100 SF) &
  - Annular space membrane /outlet not more than 3mm
  - Exemption not applied for Firewalls & Horizontal Fire separation

- **Opposite direction outlet boxes**:
  - Separated horizontally not less than 600 mm or
  - Fire block.

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Self-Service Storage Buildings

Section 3.9. Self-service Storage Buildings

- **New Section**
  - Not more than one storey
  - External access only.
  - No basement or mezzanine
  - No other major occupancy.

Example of the requirements:

6) The floor area of self-service storage buildings shall be
   a) subdivided into compartments not more than 500 m² in area by a fire separation having a fire-resistance rating not less than 1 h, or
   b) sprinklered.

3) Subsection 3.2.3. need not apply ……., where the distance between these buildings is at least 6 m.
Protection of Foamed Plastics

3.1.4.2.(2) / 3.1.5.7. / 3.1.5.12. / 3.1.5.14. / 3.1.5.15.

- Several clarifications.
- **Combustible construction**
  - Walk-in cooler or freezer (Factory) — Foam
- **Non-combustible Construction**
  - Factory-Assembled Panels *(moved / detailed)*
  - New Article: Foamed Plastic Insulation *(split)*
- Use of Specific *wording*; combustible insulation versus foam plastic insulation

Combustible Components for Exterior Walls

3.1.5.5. Combustible Cladding on Exterior Walls
3.1.5.6. Combustible Components in Exterior Walls

- For non-combustible construction:
- Now *two articles* *(to clarify requirements)*
- **Combustible cladding / used to be within combustible components (ABC2014)*
Installation of Smoke Dampers

3.1.8.7. Location of Fire Dampers and Smoke Dampers
3.1.8.9. Smoke Dampers Waived
3.1.8.11. Installation of Smoke Dampers

- **New article**, previously only addresses Fire dampers only
- **To Prevent** smoke spreading into egress paths
- **In specific locations** (e.g. Public corridor)
- **Waived in other locations** (e.g. commercial kitchen)
- **Combination** of fire/smoke is also permitted

Installation of Closures

3.1.8.5. Installation of Closures

- Installation of a **leakage-rated door assembly** is now required:
  - Protection on floor area with **Barrier free path of travel divide into 2 zones** (compartments) 3.3.1.7.(1)(b),
  - **B2 /B3 divided compartments** -1000 m² -3.3.3.5.(2/4)
  - **Public corridors serving dwelling units in storeys that are not sprinklered**, B1/B2/B3 Horizontal exit (compartment) in firewalls 3.3.3.5.(3).
Installation of Closures

3.1.8.5. Installation of Closures

- Leakage-rated door need not be installed where a dwelling unit served by a public corridor has
  - a) a second and separate means of egress, or
  - b) an open-air balcony.
- Installation: NFPA 105, “Smoke Door Assemblies and Other Opening Protectives.”
- Tested to: ANSI/UL-1784, “Air Leakage Tests of Door Assemblies and Other Opening Protectives.”
- Doors tested in accordance with UL 1784 are eligible to bear a mark that reads “Smoke and Draft Control Door” or the letter “S”

Hold-Open Devices (3.1.8.13.) & Integrated Fire Protection and Life Safety Systems (3.2.9.1.)

- The provisions were clarified to facilitate understanding and application of hold-open devices on closures in fire separations,
- New article(3.2.9.1.)- Used to be commissioning (3.2.4.6)
  Where fire protection and life safety systems and systems with fire protection and life safety functions are integrated with each other, they shall be tested as a whole in accordance with CAN/ULC-S1001, “Integrated Systems Testing of Fire Protection and Life Safety Systems,” to verify that they have been properly integrated & same for:
Mezzanines and Openings through Floor Assemblies – **Minor change**

### 3.2.8.2. Exceptions to Special Protection

- 6) An interconnected floor space need not conform to the requirements of Articles 3.2.8.3. to 3.2.8.9. provided:
  - a) the interconnected floor space consists of the first storey and the storey next above or below it, but not both,
  - b) the openings through the floor are used only for stairways, escalators or moving walks or the interconnected floor space is sprinklered throughout (see Appendix A),
  - b) it is sprinklered throughout or, where the building area is not more than one half of the area permitted by Subsection 3.2.2., the openings through the floor are used only for stairways, escalators or moving walks (see Note A-3.2.8.2.(6)(b)), and
  - c) the interconnected floor space contains only Group A, Division 1, 2 or 3, Group D, Group E, or Group F, Division 2 or 3 major occupancies (see Appendix A), and
  - d) the building area is not more than one half of the area permitted by Subsection 3.2.2.

---

Mezzanines and Openings through Floor Assemblies—**Major change**

### 3.2.8.3. Construction Requirements

#### 3.2.8.1. Application

1) …….the portions of a floor area or a mezzanine that do not terminate at an exterior wall, a firewall or a vertical shaft shall:

- a) terminate at a vertical fire separation …….., or
- b) be protected in conformance with the requirements of Articles 3.2.8.3. to 3.2.8.8.

#### 3.2.8.3.(deleted)

1) A building constructed in conformance with Articles 3.2.8.4. to 3.2.8.9. shall be of noncombustible construction, except that heavy timber construction is permitted if Subsection 4.2.3. permits the building to be constructed of combustible construction.

- The limitation for noncombustible construction in the presence of interconnected floor space is removed.
Exit Width of Principal Entrances

3.4.2.6. Principal Entrances

- In a building that is **not sprinklered** ... the **principal entrance** serving a **Dance hall/Bar** ... with an occupant load **more than 250** ... shall provide at least one half of the required exit width.

- The **principal entrance** must account for at least one half of the required occupant load even if the building has more than 2 entrances (exits).

---

Handrails for Aisles with Steps - **New**

3.3.2. Assembly Occupancy

3.3.2.10. Handrails in Aisles with Steps

**Assembly Occupancy**

1) Handrails shall be provided in aisles with steps in conformance with Table 3.3.2.10

Handrails are required in assembly occupancies in locations where aisles incorporate steps.
Emergency crossover access to floor areas

3.4.6.18. Emergency Crossover Access to Floor Areas

ABC 2014

3.4.6.18. Emergency Access to Floor Areas

- Reworded
- Updated and clarified
- Electromagnetic locks permitted

Distance between exterior discharges of exits - *New*

3.4.2.3. Distance between Exits

4) The distance between 2 exterior discharges of exit stairs serving the same floor area shall be

a) not less than 9 m, or

b) not less than 6 m, where

   i) the building is sprinklered throughout, and

   ii) the 2 exterior discharges are located within 15 m of a street.
Stairs—Ornamental guards

3.3.1.18.(4) Guards

- Part 3: Permitted when protecting a level not more than one storey or a level less than (4.2 m) above adjacent level, if more design as per 9.8.8.6.(140-900mm)

- Opening through guards shall still be of a size that prevents the passage of a spherical object having a diameter of 100 mm or 3 7/8 inch or less.

Stairs, Handrails and Guards

3.4.6.5. Handrails
3.4.6.6. Guards
3.4.6.8. Treads and Risers

- "graspable portion" for non-circular cross section handrails is now deleted—for clarity.

- non-circular cross-section with a graspable portion perimeter not less. . .

- The height of guards serving a flight of exit stairs in Part 3 and Part 9 is harmonized — 1070 mm (Previously 920 mm Part 3 and 1070 mm Part 9)

- The use of open risers in public stairs is prohibited, permitted in dwelling units and industrial occupancies.
Accessibility
Section 3.8. Accessibility

3.8.1. Scope
2) Buildings and facilities required to be barrier-free in accordance with Subsection 3.8.2. shall be designed in accordance with Subsection 3.8.3.

3.8.3. Design Standards
1) Buildings or parts thereof and facilities that are required to be barrier-free shall be designed in accordance with
a) this Subsection, or
b) the provisions of CSA B651, “Accessible Design for the Built Environment,” listed in Table 3.8.3.1., in their entirety.

May not be adopted/ less restrictive than Alberta Municipal Affairs

Accessibility
Section 3.8.3.11. Accessibility

1) Water-closet stalls and enclosures required by Sentence 3.8.2.8.(5) shall
e) be equipped with an L-shaped grab bar that
   i) is mounted on the side wall closest to the water closet,
   ii) has horizontal and vertical components not less than 760 mm long mounted with the horizontal component 750 mm to 850 mm above the floor and the vertical component 150 mm in front of the water closet
Accessibility

Section 3.8.5. Medical Office Accessibility

3.8.5.1. Medical Offices

3.8.5.2. General Accessibly for Exam Rooms

1) Medical examination rooms shall
a) be designed to allow a person using a wheelchair to turn in an open space that has a diameter of not less than 1500 mm,

3.8.5.3. Accessibility for Physical Exam Rooms

1) At least 1 accessible physical examination room for every 5 examination rooms or part thereof for….

ABC 2014 Division B Appendix A:
The intent of this subsection is met when the examination …….is adaptable and accessible.

Changes in the NBC 2015—Part 5
Curtain Walls, Window Walls, Storefronts and Glazed Architectural Structures

5.9.3. Other Fenestration Assemblies

5.9.3.2. Structural and Environmental Loads
5.9.3.3. Heat Transfer
5.9.3.4. Air Leakage
5.9.3.5. Water Penetration

- Minimum performance requirements
- Laboratory and in-situ testing procedures
- Notes to Part 5

Exterior Insulation and Finishing System (EIFS)

5.9.4. Exterior Insulation Finish Systems

- New subsection
- Notes to Part 5 addresses EIFS and provides guidance on EIFS design and construction
Wind Uplift Resistance of Membrane Roofing Assemblies

5.2.2.2. Determination of Wind Load

- Existing article in ABC 2014:
- New standard CAN/CSA-A123.21 “Wind uplift resistance of membrane roofing”
- Dynamic nature of roof membranes.
- Applies only to membrane roofing systems whose components’ resistance to wind uplift is achieved by fasteners or adhesives
- It does not apply to roofing systems that use ballasts, such as gravel or pavers, to secure the membrane against wind uplift.

Vegetated Roofing Systems

5.6.1.2. Installation of Protective Materials

- Material that provides protection from precipitation need to be tested “for resistance to root and rhizome penetration
- New standard ANSI/GRHC/SPRI VR-1
Sound Transmission
Section 5.8. Sound Transmission

- The Apparent Sound Transmission Class (ASTC) is introduced to take into account flanking sound transmission in addition to the direct sound transmission.

- Calculations of ASTC
  - Measurement to ASTM
  - Calculations
    - Detailed
    - Simplified

- Dwelling compliance
  - ASTC 47
  - or 50 STC (Tables 9.10.3.1.A/B) + Construction requirements of 9.11.1.4
  - Dwelling/elevator shaft or refuse 55 STC
Drain Pans

6.3.2.2. Drain Pans

- **Drain pans beneath (for condensation)**
  - Dehumidifying cooling coil assemblies
  - Condensate-producing heat exchangers
- **Standard (design):**
  - Section 5.11, Drain Pans, of ANSI/ASHRAE 62.1,
- **Outlet** that is piped to the outside of the airstream in a location where condensate can be eliminated, and
- **Water drains freely from the pan.**

---

ANSI/ASHRAE 62.1(07)

5.13.1 Drain Pan Slop: Pans intended to collect and drain liquid water shall be sloped at least 0.25 in. per foot (10 mm per meter) from the horizontal toward the drain outlet so that water drains freely from the pan whether the fan is on or off.

5.13.2 Drain Outlet: The drain pan outlet shall be located at the lowest point of the drain pan and shall be of sufficient diameter to preclude drain pan overflow under any normally expected operating condition.

5.13.3 Drain Seal: For configurations that result in negative static pressure at the drain pan relative to the drain outlet (such as a draw-through unit), the drain line shall include a P-trap or other sealing device designed to maintain a seal against ingestion of ambient air while allowing complete drainage of the drain pan under any normally expected operating condition, whether the fan is on or off.

5.13.4 Pan Size: The drain pan length shall be based on the leading face or edge of the water-producing device or assembly and extended downstream from the leading face or edge a distance of either:

a. one half of the installed vertical dimension of the water-producing device or assembly, or
b. as necessary to limit water droplet carryover beyond the drain pan to 600 ml per h (1 fl oz per h) or less area per hour under peak sensible and peak dew point design conditions, consisting of both load and unit fan velocity.

---

Changes in the NBC 2015—Part 6
Separation Distances of Exhausts and Outdoor Air Intakes

6.3.2.9. Supply, Return, Intake and Exhaust Air Openings

New Table

Table 6.3.2.9:
Minimum Distances of Air Intakes from Sources of Contaminants
Forming Part of Sentence 6.3.2.9(2)

<table>
<thead>
<tr>
<th>Source of Contaminants</th>
<th>Minimum Distance of Outdoor Air Intake, m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garage entry of a garage for 5 or more motor vehicles, automobile loading area and drive-in queue</td>
<td>4.5</td>
</tr>
<tr>
<td>Truck loading area or dock, and bus parking</td>
<td>7.6</td>
</tr>
<tr>
<td>Driveway, street, and parking space</td>
<td>1.5</td>
</tr>
<tr>
<td>Thoroughfare, arterial road, freeway, and highway</td>
<td>7.6</td>
</tr>
<tr>
<td>Garbage storage/pick-up areas and dumpsters</td>
<td>4.5</td>
</tr>
<tr>
<td>Discharge from evaporative cooling tower, evaporative fluid cooler and evaporative condenser</td>
<td>7.6</td>
</tr>
<tr>
<td>Sanitary vent</td>
<td>3.0</td>
</tr>
<tr>
<td>Kitchen cooking exhaust</td>
<td>3.0</td>
</tr>
<tr>
<td>Vent for combustion products</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Changes in the NFC 2015
4.2.12. Self-Service Storage Buildings

The scope of Section 3.9. of NBC 2015

- **4.2.12.2. Maximum Quantities**
  - Max. 50 L of flammable liquids and combustible liquids, max. 30 L shall be Class I liquids stored in individual self-service storage units

- **4.2.12.3. Dispensing and Handling**
  - Not permitted

Other Changes

- **Dangerous Goods Classification**/Harmonizes with GHS-WHIMIS
- **Storage Tanks**: Storage Tank Repair and Refurbishment/New standard.
- **Hot Works**: Location of Operations/Low & high tech. inspection
- **Dangerous Goods**: Laboratories
  - Placard Use/Clarification
  - Interlocking of the Enclosure Exhaust Ventilation System with the Fire Alarm System
  - Dangerous Goods Maximum Quantities/Stored and in use operation
  - Containers/For storage to conform to 4.2.3.
Changes in the NPC 2015

Water-use Efficiency: Supply Fittings and Shower Heads

2.2.10.6. Supply and Waste Fittings

2) Except for lavatories in health care facilities, emergency eye washes, and emergency showers, supply fittings and individual shower heads shall have an integral means of limiting the maximum water flow rate to that specified in Table 2.2.10.6.
Water-use Efficiency: Plumbing Fixtures

2.6.1.6. Flushing Devices

3) Except as provided in Sentence (4), water closets and urinals shall have an integral means of limiting the maximum amount of water used in each flush cycle to that specified in Table 2.6.1.6.

Sentence (4) – Residential Retrofit.
No more detailed trade off

Section 3.3. Trade-off Path

- 3.3.4. Detailed-Trade-off-Path
- Modelling the building envelope is **not** an option for compliance in the prescriptive path.
- **Now**, the only option is the Simple Trade-off Path

New thermal requirements for semi-heated buildings

1.2.1.2. Defined Terms

2) For the purposes of this Code, a semi-heated building is considered to be a building with a design set-point temperature of less than 15°C.

Requirements are all around e.g.

2) …..the overall thermal transmittance of above-ground opaque building assemblies in semi-heated buildings, as defined in Sentence 1.2.1.2.(2), shall be not more than that shown in Table 3.2.2. …..assembly, for the applicable heating-degree-day category taken at 15°C.

Remember:
Trade off does not apply to **additions** or to semi-heated buildings, as defined in Sentence 1.2.1.2.(2).
A performance level for air barrier assemblies

3.2.4.2. Opaque Building Assemblies

**NECB 2011:** an air barrier assembly is required, no prescriptive or measurement method.

**NECB 2015:**

Air barrier assemblies conform to CAN/ULC-S742, “Air Barrier Assemblies – Specification,” and an air leakage rate no greater than 0.2 L/(s·m²) at a pressure differential of 75 Pa.  **OR**

Air barrier assemblies tested in accordance with ASTM E 2357, “Determining Air Leakage of Air Barrier Assemblies,” to meet the air leakage requirement stated in Sentence above, provided the 1-in-50 hourly wind pressures do not exceed 0.65 kPa, and the air barrier installed on the warm side of the thermal insulation.

---

**Updated max (LPD)**

4.2.1.5. Calculation of Interior Lighting Power Allowance Using the Building Area Method

<table>
<thead>
<tr>
<th>Building Type</th>
<th>NECB 2015</th>
<th>NECB 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotel</td>
<td>9.4</td>
<td>10.8</td>
</tr>
<tr>
<td>Hospital</td>
<td>11.3</td>
<td>13.0</td>
</tr>
<tr>
<td>Warehouse</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Library</td>
<td>12.8</td>
<td>12.7</td>
</tr>
</tbody>
</table>

Harmonizing with ASHRAE 90.1-2013
Updated piping and duct insulation requirements

5.2.5.3. Piping Insulation

HVAC piping that conveys fluids with design operating temperatures greater than 14°C 16°C and less than 41°C need not comply with Table 5.2.5.3., if it is located within a conditioned space.

“meaning no insulation is required around piping”

The insulation thickness used to determine compliance with Table 5.2.5.3. shall be the thickness of the insulation after installation.

Heat Rejection

5.2.12.2. Heat Rejection Equipment

New article (*performance requirements for standalone heat rejection equipment)

Cooling towers, Fluid coolers and Condensers, Categories:

• “Direct-contact”
• “Indirect-contact”
• “Air-cooled”

* Maximum allowed total motor power demand.
**New** prescriptive requirements for gas-fired outdoor packaged units (such as rooftop units)

<table>
<thead>
<tr>
<th>Component or Equipment</th>
<th>Cooling or Heating Capacity, kW (Btu/h)</th>
<th>Standard</th>
<th>Minimum Performance (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas-fired outdoor packaged units</td>
<td>&gt; 65.9 kW (225 000) and &lt; 2 930 kW (10 000 000)</td>
<td>CAN/CSA-P.8(8)</td>
<td>Et ≥ 80%</td>
</tr>
</tbody>
</table>

**Updated performance requirements in the mechanical and service water tables**

5.2.12.1. Unitary and Packaged HVAC Equipment

6.2.2.1. Equipment Efficiency

Mainly to align with the federal Equipment Efficiency Regulations.

*e.g.*

**Added** electric instantaneous - Et ≥ 98%

**Added** gas instantaneous - EF ≥ 0.8
**Reduced hot water discharge rate for showers and lavatories**

*6.2.6. Hot Service Water*

**6.2.6.1. Showers**
1) Except for emergency eye washes and emergency showers, individual shower heads shall have an integral means of limiting the maximum water flow rate to \(9.5\) \(L/min\) when tested in accordance with ASME A112.18.1/CSA B125.1, “Plumbing Supply Fittings.”

**6.2.6.2. Lavatories**
1) Except for lavatories in health care facilities and emergency eye washes, lavatories shall have an integral means of limiting the maximum water flow rate to \(8.3\) \(L/min\) for private use and \(1.9\) \(L/min\) for public use, when tested in accordance with ASME A112.18.1/CSA B125.1, “Plumbing Supply Fittings.”

Aligned with NPC 2015—as previously indicated.

---

**Demand control ventilation**

*5.2.3.4. Demand Control Ventilation Systems*

Enclosed semi-heated spaces or conditioned spaces where fuel-powered vehicles or mobile fuel-powered equipment or appliances are intermittently used shall be provided with sensors and demand control ventilation systems capable of limiting the expected air contaminants to acceptable levels by

a) Staging On-Off/ dedicated ventilation fans, or

b) Modulating the outdoor airflow rates- Variable speed.

- Indoor storage garage
- Ice Rink-ice surfacing
- Warehouse-forklift
Significant Changes in the NECB 2017

Energy Efficiency Improvements

Modeling for the changes in the NECB 2017 indicated a potential energy improvement of 10.3 to 14.4% over NECB 2011.

Important step towards Canada's goal for new buildings as presented in the Pan Canadian framework on clean growth and climate change.
Part 3 Building Envelope

What's new?

News standards and options for Thermal characteristic of building assemblies calculation
  e.g. BC Hydro, Building Envelope Thermal Bridging Guide.
Using Building Envelope Thermal Analysis (BETA)
  e.g. ASHRAE RP-1365, Thermal Performance of building envelope details for mid- and High rise.
e.g. ISO 14683 Thermal Bridging in building Construction.
The option to use two- or three-dimensional thermal modeling.
**What's new?**

**Lowered U value for Roofs (increased R values); for all Zones**

*E.g. Zone 7A*

<table>
<thead>
<tr>
<th></th>
<th>NECB 2011</th>
<th>NECB 2015</th>
<th>NECB 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls</td>
<td>0.21</td>
<td>0.21</td>
<td>0.21</td>
</tr>
<tr>
<td>Roofs</td>
<td>0.162</td>
<td>0.162</td>
<td>0.138</td>
</tr>
<tr>
<td></td>
<td><strong>RSI 6.17 (R35)</strong></td>
<td><strong>RSI 7.24 (R41)</strong></td>
<td></td>
</tr>
<tr>
<td>Floors</td>
<td>0.162</td>
<td>0.162</td>
<td>0.162</td>
</tr>
</tbody>
</table>

**What's new?**

**Lowered U value for Fenestration and Doors; (increased R values) for all Zones**

<table>
<thead>
<tr>
<th></th>
<th>NECB 2011</th>
<th>NECB 2015</th>
<th>NECB 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>2.2</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>(RSI 0.45 – R 2.56)</td>
<td>(RSI 0.52 – R 2.95)</td>
<td></td>
</tr>
<tr>
<td>Doors</td>
<td>2.2</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>(RSI 0.45 – R 2.56)</td>
<td>(RSI 0.52 – R 2.95)</td>
<td></td>
</tr>
</tbody>
</table>

**No change for Below ground assemblies.**
Part 4 Lighting

What's new?

**Decreased LPD**

For both Building area and Space by space method

<table>
<thead>
<tr>
<th>Building Type</th>
<th>NECB 2017</th>
<th>NECB 2015</th>
<th>NECB 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotel</td>
<td>8.1</td>
<td>9.4</td>
<td>10.8</td>
</tr>
<tr>
<td>Hospital</td>
<td>11.3</td>
<td>11.3</td>
<td>13.0</td>
</tr>
<tr>
<td>Warehouse</td>
<td>5.2</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Library</td>
<td>8.4</td>
<td>12.8</td>
<td>12.7</td>
</tr>
</tbody>
</table>

**Added exemption** for washrooms (max 2W) night lighting in commercial temporary lodging, rooms and suites need to shut off within 20 minutes of the space being unoccupied.
What's new?

Reduced Base Site Allowance for Exterior Lighting

<table>
<thead>
<tr>
<th>Zone</th>
<th>NECB 2017</th>
<th>NECB 2015</th>
<th>NECB 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>900 W</td>
<td>1300</td>
<td>1300</td>
</tr>
<tr>
<td>3</td>
<td>500 W</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>2</td>
<td>400 W</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>1</td>
<td>350 W</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

Reduced LPD / LP allowance for Specific and General exterior applications

<table>
<thead>
<tr>
<th>Application</th>
<th>NECB 2017</th>
<th>NECB 2015</th>
<th>NECB 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Through (DT)</td>
<td>200 W/DT</td>
<td>400 W/DT</td>
<td>400 W/DT</td>
</tr>
<tr>
<td>ATM machines</td>
<td>135 W + 45 for additional</td>
<td>270 + 90W for additional</td>
<td>270 + 90W for additional</td>
</tr>
</tbody>
</table>

Part 5 HVAC
What's new?

Demand Control Ventilation Systems

NEW! Commercial Kitchen where exhaust fan air flow rate design exceeds or meets certain values shall be equipped with demand control ventilation systems.

Why?

Energy Burden

To reduce the design exhaust and make up air flow rates at least 50% in response to appliance operation.

Temperature Control in guest rooms and suites in commercial temporary lodging.

Shall be controlled so its is automatically adjusted to a set back temperature within 15 minutes of the space being unoccupied.

What's new?

Energy Recovery Systems:

- Change name from Heat Recovery ventilation to Energy recovery systems
- Clarified (e.g. if exhaust design exceeds or meets certain values, it shall be equipped with energy recovery system.
- Tables for continuous and non-continuous ventilation.
- Ventilation systems that operates less than 8000 hours per year are considered non-continuously operating.
NBC 2020?

Some proposed changes:

- Encapsulated Mass Timber Construction (EMTC)
- Group C (12 storey combustible construction)
- Group D (12 storey combustible construction)
- New Occupancy: Group G (Agriculture) 4 divisions:
  - G1 High-hazard agricultural occupancies
  - G2 Agricultural occupancies not elsewhere classified in Group G
  - G3 Greenhouse agricultural occupancies
  - G4 Agricultural occupancies with no human occupancy
- Guards exempted in repair garages floor pits

Thank you

Questions
E-mail: Safety.services@gov.ab.ca
Phone: 1.866.421.6929

Prepared and Presented By:
Nabil Habashy, Architect AAA, LEED@AP, BSCO.
Technical Advisor, AMA.
Walk Out Basement Drainage

Question:
Walk out basement designs (best practices?)

Background Information
ABC 2014
Section 9.14. Drainage

9.14.2.1. Foundation Wall Drainage
1) Unless it can be shown to be unnecessary, the bottom of every exterior foundation wall shall be drained by drainage tile or pipe laid around the exterior of the foundation in conformance with Subsection 9.14.3. or by a layer of gravel or crushed rock in conformance with Subsection 9.14.4.

9.14.3. Drainage Tile and Pipe
9.14.3.3. Installation
1) Drain tile or pipe shall be laid on undisturbed or well-compacted soil so that the top of the tile or pipe is below the bottom of the floor slab or the ground cover of the crawl space.

9.14.4.2. Installation
1) Granular material described in Article 9.14.4.1. shall be laid on undisturbed or compacted soil to a minimum depth of not less than 125 mm beneath the footing of the building and extend not less than 300 mm beyond the outside edge of the footings.

9.14.5.1. Drainage Disposal
1) Foundation drains shall drain to a sewer, drainage ditch or dry well.
Thermal Barrier and SPF

Question:
Where exterior walls above a ceiling space are spray-foamed, is a thermal barrier required?

In a Part 3 building of combustible construction, spray-foamed exterior walls above a ceiling space are not required to be protected by a thermal barrier.

In a Part 3 building of noncombustible construction, the requirements for protection of foamed plastic insulation are more stringent. The spray-foamed exterior walls above a ceiling space would be required to be protected by a thermal barrier.

Similar to the Part 3 requirements for protection of foamed-plastic insulation in a combustible building, the spray-foamed exterior walls above a ceiling space in a Part 9 building are not required to be protected by a thermal barrier.

Thermal barrier means a membrane used to protect a foamed plastic or other combustible material from the effects of heat and flame for a specified period of time.

Background Information:

Alberta Building Code 2014
3.1.4.2.(1) Protection of Foamed Plastics
Foamed plastics that form part of a wall or ceiling assembly in a building of combustible construction shall be protected from adjacent spaces in the building, other than adjacent concealed spaces within attic or roof spaces, crawl spaces, and wall assemblies,
   a) by one of the interior finishes described in Subsections 9.29.4. to 9.29.9.,
   b) provided the building does not contain a Group B or Group C major occupancy, by sheet metal
      i) mechanically fastened to the supporting assembly independent of the insulation,
      ii) not less than 0.38 mm thick, and
      iii) with a melting point not below 650°C, or
   c) by any thermal barrier that meets the requirements of Sentence 3.1.5.12.(2) (see Appendix A).

3.1.5.12.(2) Combustible Insulation and its Protection
Foamed plastic insulation having a flame-spread rating not more than 25 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of noncombustible construction provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of
   a) not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation,
   b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
   c) masonry,
d) concrete, or
e) any thermal barrier that meets the requirements of classification B when tested in conformance with CAN/ULC-S124, “Test for the Evaluation of Protective Coverings for Foamed Plastic” (see Appendix A).

Background Information:


This Article requires that elements made of foamed plastic be protected. Foamed plastics, because of their good insulating properties and low density, are not able to absorb heat from fire as quickly as other common building materials. Therefore, fires in rooms lined with such materials have a more rapid build-up of temperature, leading to an earlier flashover than in rooms lined with conventional finishes. This reduces the time available for escape. (Flashover is the point at which the air temperature in the room becomes high enough to ignite most exposed combustible materials, causing the room to be enveloped in flame.)

*Plenum* means a chamber forming part of an air duct system.

**ABC 2014 : Plenums**

3.1.9.6.(1) A ceiling assembly used as a *plenum* shall conform to Article 3.6.4.3.

**ABC 2014 : Coverings, Linings, Adhesives and Insulation**

3.6.5.4.(6) *Foamed plastic* insulation is permitted to be installed in a ceiling space that is used as a return air *plenum* provided the *foamed plastic* insulation is protected from exposure to the *plenum* in accordance with Article 3.1.5.12.

Background Information:

Tests conducted by CAN/ULC S124 are done with a protective cover and foamed plastic insulation interface. The wall assemblies that contain SPF need a thermal barrier at the face of the wall.

If the ceiling below the ceiling space exterior walls does not have a FRR or equivalence of a thermal barrier, then the SPF exposed exterior walls above the ceiling should be protected by a thermal barrier.
**Occupancy Classification A2 vs E**

**Question:** Fire department Classification for these types of occupancies will always be as an A2 within their Code, however ABC allows the AHJ to determine classification by:
- Number of seats
- If the customer is being served an order or not (waiter/waitress)

Is there a benchmark for determining as of when an A2 can be considered an E classification?

**Background Information:**

**Alberta Fire Code 2014**

*Major occupancy* means the principal occupancy for which a building or part thereof is used or intended to be used, and shall be deemed to include the subsidiary occupancies that are an integral part of the principal occupancy. The major occupancy classifications used in this Code are as follows:
- A1 – Assembly occupancies intended for the production and viewing of the performing arts
- A2 – Assembly occupancies not elsewhere classified in Group A
- A3 – Assembly occupancies of the arena type
- A4 – Assembly occupancies in which the occupants are gathered in the open air

**Alberta Building Code 2014**

*Major occupancy* means the principal occupancy for which a building or part thereof is used or intended to be used, and shall be deemed to include the subsidiary occupancies that are an integral part of the principal occupancy. The major occupancy classifications used in this Code are as follows:
- A1 – Assembly occupancies intended for the production and viewing of the performing arts
- A2 – Assembly occupancies not elsewhere classified in Group A
- A3 – Assembly occupancies of the arena type
- A4 – Assembly occupancies in which the occupants are gathered in the open air
- E – Mercantile occupancies

**Assembly occupancy** means the occupancy or the use of a building, or part thereof, by a gathering of persons for civic, political, travel, religious, social, educational, recreational or like purposes, or for the consumption of food or drink.

**Mercantile occupancy** means the occupancy or use of a building or part thereof for the displaying or selling of retail goods, wares or merchandise.

Assigning an assembly occupancy a designation other than Group A2 will be the final decision on the discretion of AHJ.

Each design needs to be considered individually. In the event that there is discrepancy or a possibility of classifying either way, the AHJ should consult with the Fire SCO.
Kitchens can range from a small space in a house or apartment to large food preparation areas in hotels, convention centres and facilities preparing meals for airlines.

Figure A-2-2-1 illustrates the challenge facing a designer and a safety codes officer.

![Figure A-2-2-1](image)

**Figure A-2-2-1**  Food preparation space in a takeout/delivery-style restaurant

In this figure the left-hand portion predominates, showing a kitchen in which food is prepared for delivery and takeout. The small portion on the right-hand side is for customers to pick up food and might include a few tables and chairs for customers waiting for their order to be completed.

Although there is a sign in front with the word “Restaurant,” it is clear that it is not intended to function as a conventional restaurant with tables and chairs and staff to wait at them. In situations of this type it is necessary to consider the potential for fires and the capabilities and number of occupants. Since the ABC 2014 does not specify what occupancy classification this space should be, different safety codes officers might classify this as an assembly occupancy, a mercantile occupancy or even a medium-hazard industrial occupancy. In circumstances like this, you must use your best judgement to determine the major occupancy.
Question:
When is commissioning typically being asked for in buildings where there are multiple tenants; completion of base building, tenant fit-ups, both?

Commissioning of life safety and fire protections systems is a necessity in order to ensure the proper operation and inter-relationship between the systems. Exactly when commissioning of life safety and fire protection systems is to take place may differ on a case-by-case basis. For instance, when a strip mall is constructed, the first permit application will likely be a base building application – the permit is likely only for the construction of the building’s shell, fire alarm system, sprinkler system, fire separations and perhaps a washroom in each suite. In order for the commissioning to take place, all life safety and fire protections systems must be installed and functioning as per their Code-compliant design. It is likely that only once a suite is at the tenant fit-up stage that all required life safety and fire protection systems are installed, as many tenant/owner leases stipulate that the tenant is responsible for things such as emergency lighting, completing ventilation, fire dampers in service rooms, emergency power, door hold-open devices, additional exit signage, etc.

If at the completion of the base building a suite possessed all the life safety and fire protection systems that are required for that suite – and the proposed tenant fit-up renovations will not have a negative affect on these systems – then the commissioning required by Articles 3.2.4.6. and 9.10.1.2. could be completed upon the completion of the base building. If the tenant fit-up renovations will include the construction/installation of any life safety and/or fire protection system required by Code for that suite, then any commissioning completed prior to the completion of the tenant fit-up completion is invalid for that suite/building.

An SCO must remember that life safety and fire protection systems such as fire alarm systems, sprinkler systems, standpipe systems, etc., apply to the entire building and not just the specific suite he or she is inspecting; therefore, when systems like these are altered due to tenant fit-up renovations, the system must be reviewed in a scope relevant to its presence in the entire building, not just that suite.

Standata:
Trade-off compliance for NECB 2011/2017

Question?
What are the limitations?

- Doesn't apply to additions.
- Doesn't apply to semi heated buildings.
- Vertical to vertical and horizontal to horizontal.
- Cables, pipes, etc. can't increase the overall thermal transmittance.

The sum of the areas of all above-ground assemblies in the proposed building shall be equal to the sum of the areas of the corresponding above-ground assemblies in the reference building.

\[ \sum_{i=1}^{n} U_{ip} A_{ip} \leq \sum_{i=1}^{n} U_{ir} A_{ir} \]

What are the Common issues?

- Assemblies in trade-off don't match assemblies on the drawings.
- Un-realistic assemblies (3 5/8'' with R20)
- Associated RSI-values not accurate.
- Inaccurate FDWR
- Using trade-off for additions.

FDWR = \( \frac{(2000-0.2*HDD)}{3000} \)
\( = \frac{(2000-0.2*5120)}{3000} \)
\( = 32.5\% \)

<table>
<thead>
<tr>
<th>WALL ASSEMBLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>THICKNESS (mm)</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>3 5/8” STEEL STUDS AT 16” O.C. WITH BATT INSULATION (R20) TO FILL VOID</td>
</tr>
</tbody>
</table>
Renovation in large existing buildings

Question?
How should a plan review be handled when the proposed work is to construct an addition onto an existing Group D building and convert the building to an assembly occupancy?

There is always a challenge to determine the extent to which building codes apply in regulating proposed construction to existing buildings. Article 1.1.1.2. of Division A does not provide concrete instructions on how to determine what is required to be upgraded / changed when an occupancy or use is changed.

The decision lies with AHJ to determine what is necessary & required to meet the building codes intent. User’s guide & guidelines for existing building published by NBC are good references for AHJs to refer in such situations.

Building codes provisions are developed primarily for new construction, they may require modification to reflect the cost / benefit equations that apply to existing construction. In many cases, a selective compliance permitted by AHJ of meeting a building code requirement does not necessarily mean a reduction in life safety.

Three major objectives:

1. Protection of the lives of occupants in the event of fire
2. Structural Sufficiency
3. Health of building occupants (target areas: ventilation, sanitation, control of contaminants such as radon)

If safe evacuation can be achieved by design alternatives not specifically described in the building codes, it can be assumed that first objective is met.
<table>
<thead>
<tr>
<th>Building Code Requirement</th>
<th>#1</th>
<th># 2</th>
<th># 3</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Alarm System</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Assuming occupants are ambulatory and no fire department assistance is required for evacuation. If the occupant load is marginally greater than the triggering occupant load (say 10%) then need for new system may be ignored by AHJ.</td>
</tr>
<tr>
<td>Sprinkler System</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>May be installed if required to ensure safe evacuation e.g., if the travel time to evacuate seems more than normal, fire resistant rating of assembly not meeting requirements, more travel distance to exit.</td>
</tr>
<tr>
<td>Travel Distance</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Travel distance is relatively unimportant as long as the egress path remains tenable. This requirement may be ignored by AHJ if building is sprinklered &amp; egress route can be kept smoke free for the period of estimated evacuation time.</td>
</tr>
<tr>
<td>Alternative Exit Route</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>When the travel distance is very small this requirement may be ignored by AHJ for practical design purpose, this is an assumed small additional risk when a building is sprinklered.</td>
</tr>
</tbody>
</table>