

Red Strikethrough = deleted text

Blue underline = New text

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Review this document in conjunction with the National Building Code – 2023 Alberta Edition

PART 9 – CODE UPDATE INFORMATION		
NBC(AE) 2019	NBC(AE) 2023	Comments
<p><b>9.3.1.1. General</b></p> <p><b>4)</b> For flat insulating concrete form walls not exceeding 2 storeys in building height and having a maximum floor to floor height of 3 m, in buildings of light-frame construction containing only a single dwelling unit, the concrete and reinforcing shall comply with Part 4 or</p> <ul style="list-style-type: none"> <li>a) the concrete shall conform to CSA A23.1, “Concrete Materials and Methods of Concrete Construction,” with a maximum aggregate size of 19 mm, and</li> <li>b) the reinforcing shall <ul style="list-style-type: none"> <li>i) conform to CSA G30.18, “Carbon Steel Bars for Concrete Reinforcement,”</li> <li>ii) have a minimum specified yield strength of 400 MPa, and</li> <li>iii) be lapped a minimum of 450 mm for 10M bars and 650 mm for 15M bars (see also Articles 9.15.4.5. and 9.20.17.2. to 9.20.17.4.).</li> </ul> </li> </ul>	<p><b>9.3.1.1. General</b></p> <p><b>4)</b> For flat insulating concrete form walls not exceeding 2 storeys in building height and having a maximum floor to floor height of 3 m, in buildings of light-frame construction <del>containing only a single dwelling unit</del>, the concrete and reinforcing shall comply with Part 4 or</p> <ul style="list-style-type: none"> <li>a) the concrete shall conform to CSA A23.1, “Concrete <del>M</del>materials and <del>M</del>methods of <del>C</del>concrete <del>C</del>construction,” with a maximum aggregate size of 19 mm, and</li> <li>b) the reinforcing shall <ul style="list-style-type: none"> <li>i) conform to CSA G30.18, “Carbon <del>S</del>steel <del>B</del>bars for <del>C</del>concrete <del>R</del>reinforcement,”</li> <li>ii) have a minimum specified yield strength of 400 MPa, and</li> <li>iii) be lapped a minimum of 450 mm for 10M bars and 650 mm for 15M bars (see also Articles 9.15.4.5. and 9.20.17.2. to 9.20.17.4.).</li> </ul> </li> </ul>	Deleted “containing only a single dwelling unit.”
<p><b>9.4.2.1. Application</b></p> <p><b>1)</b> This Subsection applies to light-frame constructions whose wall, floor and roof planes are generally comprised of frames of small repetitive structural members, and where</p> <ul style="list-style-type: none"> <li>a) the roof and wall planes are clad, sheathed or braced on at least one side,</li> <li>b) the small repetitive structural members are spaced not more than 600 mm o.c.,</li> <li>c) the clear span of any structural member does not exceed 12.2 m,</li> <li>d) the maximum deflection of the structural roof members conforms to Article 9.4.3.1.,</li> <li>e) the maximum total roof area, notwithstanding any separation of adjoining <i>buildings</i> by <i>firewalls</i>, is 4 550 m<sup>2</sup>, and</li> <li>f) for flat roofs, there are no significant obstructions on the roof, such as parapet walls, spaced closer than the distance calculated by</li> </ul> $D_o = 10(H_o - 0.8S_s/\gamma)$ <p>where</p> <ul style="list-style-type: none"> <li>D<sub>o</sub> = minimum distance between obstructions, m,</li> <li>H<sub>o</sub> = height of the obstruction above the roof, m,</li> <li>S<sub>s</sub> = ground snow load, kPa, and</li> <li>γ = specific weight of snow, kN/m<sup>3</sup>.</li> </ul> <p>(See Note A-9.4.2.1.(1).)</p>	<p><b>9.4.2.1. Application</b> (See Note <a href="#">A-9.4.2.1. and 9.4.2.2.</a>)</p> <p><b>1)</b> This Subsection applies to light-frame constructions whose wall, floor and roof planes are generally comprised of frames of small repetitive structural members, and where</p> <ul style="list-style-type: none"> <li>a) the roof and wall planes are clad, sheathed or braced on at least one side,</li> <li>b) the small repetitive structural members are spaced not more than 600 mm o.c.,</li> <li>c) the clear span of any structural member does not exceed 12.2 m,</li> <li>d) the maximum deflection of the structural roof members conforms to Article 9.4.3.1.,</li> <li>e) the maximum total roof area, notwithstanding any separation of adjoining <i>buildings</i> by <i>firewalls</i>, is 4 550 m<sup>2</sup>, and</li> <li>f) for flat roofs, there are no significant obstructions on the roof, such as parapet walls, spaced closer than the distance calculated by</li> </ul> $D_o = 10(H_o - 0.8S_s/\gamma)$ <p>where</p> <ul style="list-style-type: none"> <li>D<sub>o</sub> = minimum distance between obstructions, m,</li> <li>H<sub>o</sub> = height of the obstruction above the roof, m,</li> <li>S<sub>s</sub> = ground snow load, kPa, and</li> <li>γ = specific weight of snow, <u>taken as 4.0 kN/m<sup>3</sup> or 0.43S<sub>s</sub> + 2.2 kN/m<sup>3</sup>, whichever is lesser.</u></li> </ul> <p>(See Note A-9.4.2.1.(1).)</p>	Added criteria for the variable ‘y.’
<p><b>9.4.2.2. Specified Snow Loads</b> (See Note A-9.4.2.2.)</p> <p><b>1)</b> Except as provided in Sentences (2) and (3), specified snow loads shall be not less than those calculated using the following formula:</p>	<p><b>9.4.2.2. Specified Snow Loads</b> (See Note A-<a href="#">9.4.2.1. and 9.4.2.2.</a>)</p> <p><b>1)</b> Except as provided in Sentences (2) <del>and to (3)</del> <u>(34)</u>, specified snow loads shall be not less than those calculated using the following formula:</p> <p><b>4)</b> <u>Where the height of a roof step at the intersection of an upper level roof and a lower level roof is greater than 2 m, and the upper level roof has a slope less than 1 in 6 and an area greater than 600 m<sup>2</sup>, the specified snow load on the lower level roof shall be</u></p> <ul style="list-style-type: none"> <li>a) <u>for distances from the roof step that are less than or equal to the drift length, x<sub>d</sub>, calculated in accordance with Sentence (5), not less than 1.5 times the specified snow load, S, calculated using the formula in Sentence (1) with C<sub>b</sub> equal to 0.55, and</u></li> <li>b) <u>for distances from the roof step that are greater than the drift length, x<sub>d</sub>, calculated in</u></li> </ul>	Inserted Sentences (4) and (5).

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	<p><a href="#">accordance with Sentence (5), as specified in Sentence (1).</a></p> <p><b>5) For the purposes of Sentence (4), the drift length, <math>x_d</math>, in m, shall be calculated as follows:</b></p> $x_d = 5 \left( h - \frac{0.55S_s}{\gamma} \right)$ <p><b>where</b></p> <p><b><math>h</math></b> = height of the roof step, in m, and</p> <p><b><math>\gamma</math></b> = specific weight of snow as specified in Clause 9.4.2.1.(1)(f).</p>	
<p><b>9.6.1.2. Material Standards for Glass</b></p> <p><b>1) Glass shall conform to</b></p> <ul style="list-style-type: none"> <li>a) CAN/CGSB-12.1-M, “Tempered or Laminated Safety Glass,”</li> <li>b) CAN/CGSB-12.2-M, “Flat, Clear Sheet Glass,”</li> <li>c) CAN/CGSB-12.3-M, “Flat, Clear Float Glass,”</li> <li>d) CAN/CGSB-12.4-M, “Heat Absorbing Glass,”</li> <li>e) CAN/CGSB-12.8, “Insulating Glass Units,”</li> <li>f) CAN/CGSB-12.10-M, “Glass, Light and Heat Reflecting,”</li> <li>g) CAN/CGSB-12.11-M, “Wired Safety Glass,” or</li> <li>h) ASTM E 2190, “Insulating Glass Unit Performance and Evaluation.”</li> </ul>	<p><b>9.6.1.2. Material Standards for Glass</b></p> <p><b>1) Glass shall conform to</b></p> <ul style="list-style-type: none"> <li>a) CAN/CGSB-12.1-M, “Tempered or Laminated Safety Glass,”</li> <li>b) CAN/CGSB-12.2-M, “Flat, Clear Sheet Glass,”</li> <li>c) CAN/CGSB-12.3-M, “Flat, Clear Float Glass,”</li> <li>d) CAN/CGSB-12.4-M, “Heat Absorbing Glass,”</li> <li>e) CAN/CGSB-12.8, “Insulating glass units,”</li> <li>f) <a href="#">CAN/CGSB-12.9, “Spandrel glass,”</a></li> <li>fg) CAN/CGSB-12.10-M, “Glass, Light and Heat Reflecting,”</li> <li>gh) CAN/CGSB-12.11-M, “Wired Safety Glass,” or</li> <li>hi) ASTM E 2190, “Insulating Glass Unit Performance and Evaluation.”</li> </ul>	<p>Inserted new Clause (f) to include standard CAN/CGSB-12.9, “Spandrel glass.”</p>
<p><b>9.6.1.4. Types of Glass and Protection of Glass</b></p> <p><b>6) Glass other than laminated or tempered safety glass shall not be used for a shower or bathtub enclosure.</b></p>	<p><b>9.6.1.4. Types of <del>Glass</del> <a href="#">Glazing</a> and Protection of <del>Glass</del> <a href="#">Glazing</a></b></p> <p><b>6) <del>Glass other than laminated or tempered safety glass shall not be</del> <a href="#">Glazing</a> used for a shower or bathtub enclosure <a href="#">shall conform to Class A of CAN/CGSB-12.1, “Safety Glazing.”</a></b></p>	<p>A specific type of glazing has been specified for use for shower and bathtub enclosures.</p>
<p><b>9.7.6.1. Installation of Windows, Doors and Skylights</b></p> <p><b>1) The installation of windows, doors and skylights shall conform to CAN/CSA-A440.4, “Window, Door, and Skylight Installation,” except that</b></p> <ul style="list-style-type: none"> <li>a) shims used to support windows, doors and skylights are permitted to be made of treated plywood, and</li> <li>b) protection from precipitation for walls incorporating windows or doors and for roofs incorporating skylights, and the interfaces of these walls with windows or doors and of roofs with skylights, shall conform to Section 9.27.</li> </ul> <p><b>3) Windows, doors and skylights shall be sealed to air barriers and vapour barriers.</b></p>	<p><b>9.7.6.1. Installation of Windows, Doors and Skylights</b></p> <p><b>1) The installation of windows, doors and skylights shall conform to <del>CAN/CSA-A440.4, “Window, Door, and Skylight Installation,”</del> <a href="#">CAN/CSA-A440.4, “Window, <del>D</del>door, and <del>S</del>skylight <del>i</del>nstallation,”</a> except that</b></p> <ul style="list-style-type: none"> <li>a) shims used to support windows, doors and skylights are permitted to be made of treated plywood, and</li> <li>b) protection from precipitation for walls incorporating windows or doors and for roofs incorporating skylights, and the interfaces of these walls with windows or doors and of roofs with skylights, shall <a href="#">also</a> conform to Section 9.27.</li> </ul> <p><b>3) Windows, doors and skylights shall be sealed to air <del>barriers and vapour</del> barriers.</b></p>	<p>“Barriers and vapour” deleted.</p>
<p><b>9.8.1.1. General</b></p> <p><b>1) This Section applies to the design and construction of interior and exterior stairs, steps, ramps, handrails and <i>guards</i>.</b></p>	<p><b>9.8.1.1. General</b></p> <p><b>1) This Section applies to the design and construction of interior and exterior stairs, steps, <del>ramps</del> <a href="#">ramps</a>, handrails and <i>guards</i>.</b></p>	<p>“Ramp” is now a defined term. This change has been made throughout part 9 but has not been shown in this document.</p>
N/A	<p><b>9.8.4.9. Open Risers</b></p> <p><b>1) <a href="#">Except as provided in Sentence (2), stairs shall have no open risers.</a></b></p> <p><b>2) Open risers are permitted in</b></p> <ul style="list-style-type: none"> <li>a) <a href="#">interior and exterior stairs that serve a single <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</a></li> <li>b) <a href="#">fire escape stairs,</a></li> <li>c) <a href="#">stairs that are principally used for maintenance,</a></li> <li>d) <a href="#">stairs that serve <i>service rooms</i>, and</a></li> </ul>	<p>Inserted new Article on open risers.</p>

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	<a href="#">e) stairs that serve industrial occupancies other than storage garages.</a>	
<p><b>9.8.8.1. Required Guards</b> (See Note A-9.8.8.1.)</p> <p>1) Except as provided in Sentence (2), every surface to which access is provided, including but not limited to <i>flights</i> of steps and ramps, exterior landings, porches, balconies, <i>mezzanines</i>, galleries and raised <i>walkways</i>, shall be protected by a <i>guard</i> on each side that is not protected by a wall for the length where</p> <ol style="list-style-type: none"> <li>there is a difference in elevation of more than 600 mm between the walking surface and the adjacent surface, or</li> <li>the adjacent surface within 1.2 m of the walking surface has a slope of more than 1 in 2.</li> </ol> <p>4) Except as provided in Sentence (5), openable windows in <i>buildings of residential occupancy</i> shall be protected by</p> <ol style="list-style-type: none"> <li>a <i>guard</i>, or</li> <li>a mechanism capable of controlling the free swinging or sliding of the openable part of the window so as to limit any clear unobstructed opening to not more than 100 mm measured either vertically or horizontally where the other dimension is greater than 380 mm.</li> </ol> <p>5) Windows need not be protected in accordance with Sentence (4), where</p> <ol style="list-style-type: none"> <li>the window serves a <i>dwelling unit</i> that is not located above another <i>suite</i>,</li> <li>the window serves a house with a <i>secondary suite</i>,</li> <li>the only opening greater than 100 mm by 380 mm is a horizontal opening at the top of the window,</li> <li>the window sill is located more than 450 mm above the finished floor on one side of the window, or</li> <li>the window is located in a room or space with the finished floor described in Clause (d) located less than 1 800 mm above the floor or ground on the other side of the window.</li> </ol> <p>(See Note A-9.8.8.1.(4).)</p>	<p><b>9.8.8.1. Required Guards</b> (See Note A-9.8.8.1.)</p> <p>1) Except as provided in Sentence (2) <a href="#">and except at the leading edge at the top of a flight</a>, every surface to which access is provided, including but not limited to <i>flights</i> of steps and <i>ramps</i>, exterior landings, porches, balconies, <i>mezzanines</i>, galleries and raised <i>walkways</i>, shall be protected by a <i>guard</i> on each side that is not protected by a wall for the length where <del>a) there is a the</del> difference in elevation <del>of is</del> more than 600 mm between the walking surface and the adjacent surface, <del>or b) the adjacent surface</del> within 1.2 m <del>of the walking surface has a slope of more than 1 in 2.</del></p> <p>4) Except as provided in Sentence (5), openable windows in <i>buildings of residential occupancy</i> shall be protected by</p> <ol style="list-style-type: none"> <li>a <i>guard</i>, or</li> <li>a mechanism <del>capable of controlling that can only be released with the use of tools or special knowledge to control</del> the free swinging or sliding <del>operation</del> of the openable part of the window so as to limit any clear unobstructed opening to not more than 100 mm measured either vertically or horizontally <del>where the other dimension is greater than 380 mm.</del></li> </ol> <p>5) Windows need not be protected in accordance with Sentence (4), where <a href="#">the bottom edge of the openable portion of the window is located</a></p> <ol style="list-style-type: none"> <li><del>the window serves a dwelling unit that is not located above another suite,</del></li> <li><del>the window serves a house with a secondary suite,</del></li> <li><del>the only opening greater than 100 mm by 380 mm is a horizontal opening at the top of the window,</del></li> <li><del>a) the window sill is located</del> more than <del>450</del> <a href="#">900</a> mm above the finished floor <del>on one side of the window,</del> or</li> <li><del>b) the window is located in a room or space with the finished floor described in Clause (d) located</del> less than 1 800 mm above the floor or ground on the other side of the window.</li> </ol> <p>(See Note A-9.8.8.1.(4).)</p>	
<p><b>9.8.8.2. Loads on Guards</b> (See Note A-9.8.8.2.)</p> <p>1) Except as provided in Sentences (2) and (4), <i>guards</i> shall be designed to resist the specified loads prescribed in Table 9.8.8.2.</p>	<p><b>9.8.8.2. Loads on Guards</b> (See Note A-9.8.8.2.)</p> <p>1) Except as provided in Sentences (2), <a href="#">(3)</a> and <del>(4)</del> <a href="#">5</a>, <i>guards</i> shall be designed to resist the specified loads prescribed in Table 9.8.8.2.</p> <p><a href="#">2) The size of the opening between any two adjacent vertical elements within a guard shall not exceed the limits required by Sentence 9.8.8.5.(1) when each of these elements is subjected to a specified live load of 0.1 kN applied in opposite directions in the in-plane direction of the guard so as to produce the most critical effect.</a></p>	Inserted new Sentence (2).
<p><b>9.8.8.3. Height of Guards</b> (See Note A-9.8.8.3.)</p> <p>1) Except as provided in Sentences (2) to (4), all <i>guards</i> shall be not less than 1 070mm high.</p>	<p><b>9.8.8.3. Height of Guards</b> (See Note A-9.8.8.3.)</p> <p>1) Except as provided in Sentences (2) <del>to and</del> <a href="#">(4)</a> <a href="#">3</a>, all <i>guards</i> shall be not less than 1 070mm high.</p> <p><del>4) Guards for flights of steps, except in required exit stairs, shall be not less than 900 mm high.</del></p>	Deleted Sentence (4).
<p><b>9.8.8.5. Openings in Guards</b> N/A</p>	<p><b>9.8.8.5. Openings in Guards</b></p> <p><a href="#">2) Except for guards that serve industrial occupancies, the triangular openings formed by stair risers, stair treads and the bottom element of a required guard shall be of a size that prevents the passage of</a></p>	Inserted new sentence (2).

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	<a href="#">a 150 mm diam sphere.</a>																																											
<b>9.8.9.5. Treads</b>  <b>1)</b> Stair treads of lumber, plywood or O-2 grade OSB within <i>dwelling units</i> shall be not less than 25 mm actual thickness, except that if open risers are used and the distance between stringers exceeds 750 mm, the treads shall be not less than 38 mm actual thickness.	<b>9.8.9.5. Treads</b>  <b>1)</b> Stair treads of lumber, plywood or <del>O-2 grade</del> OSB within <i>dwelling units</i> shall be not less than 25 mm actual thickness, except that <del>if</del> open risers are <del>used</del> <a href="#">permitted</a> and the distance between stringers exceeds 750 mm, the treads shall be not less than 38 mm actual thickness.	“O-2 grade” deleted.																																										
<b>9.9.6.4. Door Action</b>  <b>5)</b> <i>Exit</i> doors need not conform to Sentences (1) or (2), where <ul style="list-style-type: none"> <li>a) the doors serve accessory <i>buildings</i> where life safety is not adversely affected,</li> <li>b) the doors serve <i>storage garages</i> or other accessory <i>buildings</i> serving not more than one <i>dwelling unit</i>, or</li> <li>c) the doors               <ul style="list-style-type: none"> <li>i) serve storage <i>suites</i> of not more than 20 m<sup>2</sup> in gross area that are in warehousing <i>buildings</i> of not more than one <i>storey</i>, and</li> <li>ii) open directly to the exterior at ground level.</li> </ul> </li> </ul>	<b>9.9.6.4. Door Action</b>  <b>5)</b> <i>Exit</i> doors need not conform to <del>Sentences</del> <a href="#">Sentence</a> (1) or (2), where <ul style="list-style-type: none"> <li>a) the doors serve accessory <i>buildings</i> where life safety is not adversely affected,</li> <li>b) the doors serve <i>storage garages</i> or other accessory <i>buildings</i> serving not more than one <i>dwelling unit</i>, or</li> <li>c) the doors               <ul style="list-style-type: none"> <li>i) serve storage <i>suites</i> of not more than <del>20-28</del> m<sup>2</sup> in gross area that are in warehousing <i>buildings</i> of not more than one <i>storey</i>, and</li> <li>ii) open directly to the exterior at ground level.</li> </ul> </li> </ul>	Area limit increased to 28 m <sup>2</sup> .																																										
<b>9.9.6.7. Door Latching, Locking and Opening Mechanisms</b>  <b>3)</b> Door release hardware on doors in a <i>means of egress</i> shall be installed not more than 1 200 mm above the finished floor.	<b>9.9.6.7. Door Latching, Locking and Opening Mechanisms</b>  <b>3)</b> Door release hardware on doors in a <i>means of egress</i> shall be installed <del>not more than 1 200</del> <a href="#">900 mm</a> to <a href="#">1 100</a> mm above the finished floor.																																											
<b>9.10.2.1. Occupancy Classification</b>  <p style="text-align: center;"><b>Table 9.10.2.1.</b> <b>Occupancy Classifications</b> Forming Part of Sentence 9.10.2.1.(1)</p> <table border="1"> <thead> <tr> <th>Group</th> <th>Division</th> <th>Description of <i>Major Occupancies</i><sup>(1)</sup></th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>C</td> <td>-</td> <td><i>Residential occupancies</i></td> </tr> <tr> <td>D</td> <td>-</td> <td><i>Business and personal services occupancies</i></td> </tr> <tr> <td>E</td> <td>-</td> <td><i>Mercantile occupancies</i></td> </tr> <tr> <td>F</td> <td>2</td> <td><i>Medium-hazard industrial occupancies</i></td> </tr> <tr> <td>F</td> <td>3</td> <td><i>Low-hazard industrial occupancies</i> (Does not include <i>storage garages</i> serving individual <i>dwelling units</i>)</td> </tr> </tbody> </table> <p><b>Notes to Table 9.10.2.1.:</b> (1) See Note A-3.1.2.1.(1).</p>	Group	Division	Description of <i>Major Occupancies</i> <sup>(1)</sup>				C	-	<i>Residential occupancies</i>	D	-	<i>Business and personal services occupancies</i>	E	-	<i>Mercantile occupancies</i>	F	2	<i>Medium-hazard industrial occupancies</i>	F	3	<i>Low-hazard industrial occupancies</i> (Does not include <i>storage garages</i> serving individual <i>dwelling units</i> )	<b>9.10.2.1. Occupancy Classification</b>  <p style="text-align: center;"><b>Table 9.10.2.1.</b> <b>Occupancy Classifications</b> Forming Part of Sentence 9.10.2.1.(1)</p> <table border="1"> <thead> <tr> <th>Group</th> <th>Division</th> <th>Description of <i>Major Occupancies</i><sup>(1)</sup></th> </tr> </thead> <tbody> <tr> <td><a href="#">B</a></td> <td><a href="#">4</a></td> <td><a href="#">Home-type care occupancies</a></td> </tr> <tr> <td>C</td> <td>-</td> <td><i>Residential occupancies</i></td> </tr> <tr> <td>D</td> <td>-</td> <td><i>Business and personal services occupancies</i></td> </tr> <tr> <td>E</td> <td>-</td> <td><i>Mercantile occupancies</i></td> </tr> <tr> <td>F</td> <td>2</td> <td><i>Medium-hazard industrial occupancies</i></td> </tr> <tr> <td>F</td> <td>3</td> <td><i>Low-hazard industrial occupancies</i> (Does not include <i>storage garages</i> serving individual <i>dwelling units</i>)</td> </tr> </tbody> </table> <p><b>Notes to Table 9.10.2.1.:</b> (1) See Note A-3.1.2.1.(1).</p>	Group	Division	Description of <i>Major Occupancies</i> <sup>(1)</sup>	<a href="#">B</a>	<a href="#">4</a>	<a href="#">Home-type care occupancies</a>	C	-	<i>Residential occupancies</i>	D	-	<i>Business and personal services occupancies</i>	E	-	<i>Mercantile occupancies</i>	F	2	<i>Medium-hazard industrial occupancies</i>	F	3	<i>Low-hazard industrial occupancies</i> (Does not include <i>storage garages</i> serving individual <i>dwelling units</i> )	Include new major occupancy, home-type care occupancy, in Table.
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E	-	<i>Mercantile occupancies</i>																																										
F	2	<i>Medium-hazard industrial occupancies</i>																																										
F	3	<i>Low-hazard industrial occupancies</i> (Does not include <i>storage garages</i> serving individual <i>dwelling units</i> )																																										
<b>9.10.2.2. Custodial and Convalescent Homes</b>  <b>1)</b> Children's custodial homes and convalescent homes for ambulatory occupants living as a single housekeeping unit in a <i>dwelling unit</i> with sleeping accommodation for not more than 10 persons are permitted to be classified as <i>residential occupancies</i> (Group C).	<b>9.10.2.2. <del>Custodial and Convalescent Homes</del> Home-Type Care Occupancies</b> <a href="#">(See Note A-9.10.2.2.)</a>  <b>1)</b> Children's custodial homes and convalescent homes for ambulatory occupants living as a single housekeeping unit in a <i>dwelling unit</i> with sleeping accommodation for not more than 10 persons are permitted to be classified as <i>residential occupancies</i> (Group C).  <b>2) <a href="#">Home-type care occupancies with sleeping accommodation for not more than 10 persons shall</a></b> <ul style="list-style-type: none"> <li><a href="#">a) comply with the applicable requirements of Part 9 relating to detached houses (see Note A-9.10.2.2.(2)(a)), and</a></li> <li><a href="#">b) except as provided in Sentences (3) and (4), be</a> <ul style="list-style-type: none"> <li><a href="#">i) sprinklered in conformance with NFPA 13D, “Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,” and</a></li> </ul> </li> </ul>	Insert new sentences (2) to (5) with new requirements for new major occupancy, home-type care occupancy.																																										

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	<p>ii) <u>provided with a minimum 30-minute water supply for the sprinkler system.</u></p> <p><b>3) A sprinkler system need not be provided in accordance with Sentence (2) where the <i>building</i></b></p> <p>a) <u>is 1 storey in <i>building height</i>, without a <i>basement</i> or <i>mezzanine</i>,</u></p> <p>b) <u>has sleeping accommodation for not more than 4 residents receiving <i>care</i> on a <i>floor area</i> served by 2 <i>barrier-free means of egress</i> leading to an <i>exit</i> at ground level that is not more than 30 m from any point in the <i>floor area</i>,</u></p> <p>c) <u>in lieu of having <i>smoke alarms</i> installed as required in Subsection 9.10.19., has a residential fire warning system installed in conformance with CAN/ULC-S540, “Standard for Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance,”</u></p> <p>i) <u>with <i>smoke detectors</i> in each sleeping room, in the kitchen, and in common spaces such as <i>activity rooms, corridors and hallways</i>,</u></p> <p>ii) <u>with <i>heat detectors</i> in each attached <i>storage garage, service room, laundry room and storage room</i>,</u></p> <p>iii) <u>capable of sounding audible signals in accordance with Articles 9.10.19.2. and 9.10.19.5. at a frequency not higher than 520 Hz,</u></p> <p>iv) <u>powered in accordance with Article 9.10.19.4.,</u></p> <p>v) <u>equipped with a silencing device in accordance with Article 9.10.19.6.,</u></p> <p>vi) <u>equipped with an annunciator panel with separate zone indication of the actuation of the alarm-initiating devices, and</u></p> <p>vii) <u>designed to notify the fire department in conformance with Sentence 3.2.4.7.(4) that an <i>alarm signal</i> has been initiated,</u></p> <p>d) <u>has emergency lighting in the common <i>means of egress</i> that complies with Sentences 9.9.12.3.(2) to (7), and</u></p> <p>e) <u>complies with Section 3.8.</u></p> <p><b>4) A sprinkler system need not be provided in accordance with Sentence (2) where</b></p> <p>a) <u>the <i>building</i> is not more than 2 storeys in <i>building height</i>,</u></p> <p>b) <u>the <i>building</i> has sleeping accommodation for not more than 4 residents receiving <i>care</i> only on the <i>first storey</i>,</u></p> <p>c) <u>the <i>first storey</i> is served by 2 <i>barrier-free means of egress</i> leading to an <i>exit</i> at ground level that is not more than 30 m from any point in the <i>first storey</i>,</u></p> <p>d) <u>in lieu of having <i>smoke alarms</i> installed as required in Subsection 9.10.19., the <i>building</i> has a residential fire warning system installed in conformance with CAN/ULC-S540, “Standard for Residential Fire and Life Safety Warning Systems: Installation, Inspection, Testing and Maintenance,”</u></p> <p>i) <u>with <i>smoke detectors</i> in each sleeping room, in the kitchen, and in common spaces such as <i>activity rooms, corridors and hallways</i>,</u></p> <p>ii) <u>with <i>heat detectors</i> in each attached <i>storage garage, service room, laundry room and storage room</i>,</u></p> <p>iii) <u>capable of sounding audible signals in accordance with Articles 9.10.19.2. and 9.10.19.5. at a frequency not higher than 520 Hz,</u></p> <p>iv) <u>powered in accordance with Article 9.10.19.4.,</u></p> <p>v) <u>equipped with a silencing device in accordance with Article 9.10.19.6.,</u></p> <p>vi) <u>equipped with an annunciator panel with separate zone indication of the actuation of the alarm-initiating devices, and</u></p> <p>vii) <u>designed to notify the fire department in conformance with Sentence 3.2.4.7.(4) that an <i>alarm signal</i> has been initiated,</u></p> <p>e) <u>all floors of the <i>building</i> have emergency lighting in the common <i>means of egress</i> that complies with Sentences 9.9.12.3.(2) to (7),</u></p> <p>f) <u>the <i>basement</i> is separated from the remainder of the <i>building</i> by a door that complies with Sentence 9.10.9.3.(2) and by a continuous smoke-tight barrier consisting of not less than 12.7 mm thick gypsum board installed on</u></p> <p>i) <u>both sides of the walls, and</u></p> <p>ii) <u>the underside of the floor-ceiling framing,</u></p>	

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	<p><a href="#">g) an air-handling system designed to shut down upon a signal from the residential fire warning system serves the <i>basement</i> and other <i>storeys</i>, and</a></p> <p><a href="#">h) the <i>first storey</i> complies with Section 3.8.</a></p> <p><a href="#">5) <i>Home-type care occupancies</i> with sleeping accommodation for more than 10 persons shall comply with the applicable requirements of Part 3 relating to <i>care occupancies</i>.</a></p>																																													
<p><b>9.10.5.1. Permitted Openings in Wall and Ceiling Membranes</b></p> <p>2) A wall or ceiling membrane forming part of an assembly required to have a <i>fire-resistance rating</i> is permitted to be pierced by openings for electrical and similar service outlet boxes provided such outlet boxes are tightly fitted.</p> <p>3) Where boxes referred to in Sentence (2) are located on both sides of walls required to provide a <i>fire-resistance rating</i>, they shall be offset where necessary to maintain the integrity of the <i>fire separation</i>.</p>	<p><b>9.10.5.1. Permitted Openings in Wall and Ceiling Membranes</b></p> <p>2) A wall or ceiling membrane forming part of an assembly required to have a <i>fire-resistance rating</i> is permitted to be pierced by openings for electrical and similar service outlet boxes, provided such outlet boxes <del>are tightly fitted.</del></p> <p><del>3) Where boxes referred to in Sentence (2) are located on both sides of walls required to provide a <i>fire-resistance rating</i>, they shall be offset where necessary to maintain the integrity of the <i>fire separation</i></del> <a href="#">and the penetrations conform to Article 9.10.9.8.</a></p>	Delete sentence (3) and instead reference new Article 9.10.9.8. which contains requirements for penetrations by outlet boxes and service equipment.																																												
<p><b>9.10.8.1. Fire-Resistance Ratings for Floors and Roofs</b></p> <p align="center"><b>Table 9.10.8.1.</b> <b>Fire-Resistance Ratings for Structural Members and Assemblies</b> Forming Part of Sentence 9.10.8.1.(1)</p> <table border="1"> <thead> <tr> <th rowspan="2">Major Occupancy</th> <th rowspan="2">Maximum Building Height, storeys</th> <th colspan="3">Minimum Fire-Resistance Rating by Building Element, min</th> </tr> <tr> <th>Floors Except Floors over Crawl Spaces</th> <th>Mezzanine Floors</th> <th>Roofs</th> </tr> </thead> <tbody> <tr> <td>Residential (Group C)</td> <td>3</td> <td>45</td> <td>45</td> <td>—</td> </tr> <tr> <td rowspan="2">All other occupancies</td> <td>2</td> <td>45</td> <td>—</td> <td>—</td> </tr> <tr> <td>3</td> <td>45</td> <td>45</td> <td>45</td> </tr> </tbody> </table>	Major Occupancy	Maximum Building Height, storeys	Minimum Fire-Resistance Rating by Building Element, min			Floors Except Floors over Crawl Spaces	Mezzanine Floors	Roofs	Residential (Group C)	3	45	45	—	All other occupancies	2	45	—	—	3	45	45	45	<p><b>9.10.8.1. Fire-Resistance Ratings for Floors and Roofs</b></p> <p align="center"><b>Table 9.10.8.1.</b> <b>Fire-Resistance Ratings for <del>Structural Members</del>Floors and <del>Assemblies</del>Roofs</b> Forming Part of Sentence 9.10.8.1.(1)</p> <table border="1"> <thead> <tr> <th rowspan="2">Major Occupancy</th> <th rowspan="2">Maximum Building Height, storeys</th> <th colspan="3">Minimum Fire-Resistance Rating by Building Element, min</th> </tr> <tr> <th>Floors Except Floors over Crawl Spaces</th> <th>Mezzanine Floors</th> <th>Roofs</th> </tr> </thead> <tbody> <tr> <td>Residential (Group C)</td> <td>3</td> <td>45</td> <td>45</td> <td>—</td> </tr> <tr> <td rowspan="2">All other occupancies</td> <td>2</td> <td>45</td> <td>—</td> <td>—</td> </tr> <tr> <td>3</td> <td>45</td> <td>45</td> <td>45</td> </tr> </tbody> </table>	Major Occupancy	Maximum Building Height, storeys	Minimum Fire-Resistance Rating by Building Element, min			Floors Except Floors over Crawl Spaces	Mezzanine Floors	Roofs	Residential (Group C)	3	45	45	—	All other occupancies	2	45	—	—	3	45	45	45	
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<p><b>9.10.9.2. Continuous Barrier</b></p> <p>2) Except as permitted in Article 9.10.9.3., a wall or floor assembly required to be a smoke-tight barrier shall be constructed as a continuous barrier against the spread of smoke.</p> <p>3) The continuity of a <i>fire separation</i> or smoke-tight barrier shall be maintained where it abuts another <i>fire separation</i> or smoke-tight barrier, a floor, a ceiling, a roof, or an exterior wall assembly. (See Notes A-9.10.9.2.(3) and A-3.1.8.3.(4).)</p> <p>4) All gypsum board joints in the assemblies described in Sentences (1) and (2) shall conform to CSA A82.31-M, "Gypsum Board Application," and penetrations in these assemblies shall be sealed using flexible sealant or tape to maintain the integrity of the smoke-tight barrier over the entire surface.</p>	<p><b>9.10.9.2. Continuous Barrier</b></p> <p>2) Except as permitted in Article 9.10.9.3., a wall or floor assembly required to be a smoke-tight barrier shall be constructed as a continuous barrier against the spread of smoke. <a href="#">(See Note A-9.10.9.2.(2) and (3).)</a></p> <p>3) <del>The Except as provided in Sentence (6), the</del> continuity of a <i>fire separation</i> <del>or smoke-tight barrier shall be maintained</del> where it abuts another <i>fire separation</i> or smoke-tight barrier, a floor, a ceiling, <del>or</del> a roof, <del>or an exterior wall assembly shall be maintained by a firestop that, when subjected to the fire test method in CAN/ULC-S115, "Standard Method of Fire Tests of Firestop Systems," has an FT rating not less than the fire-resistance rating for the abutting fire separation. (See Notes A-9.10.9.2.(3) and A-3.1.8.3.(4).)</del> <a href="#">(See Note A-9.10.9.2.(2) and (3).)</a> <a href="#">(See also Note A-3.1.8.3.(2).)</a></p> <p>4) <a href="#">Except as provided in Sentence (6), joints located in a horizontal plane between a floor and an exterior wall shall be sealed by a firestop that, when subjected to the fire test method in ASTM E2307, "Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-storey Test Apparatus," has an F rating not less than the fire-resistance rating for the horizontal fire separation.</a></p> <p>45) <del>All Except as provided in Sentence (6), all</del> gypsum board joints in the assemblies described in Sentences (1) and (2) shall conform to CSA A82.31-M, "Gypsum Board Application," <del>and penetrations in these assemblies shall be sealed using flexible sealant or tape</del> to maintain the integrity of the smoke-</p>	Insert new sentences (4) and (6).																																												

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	<p>tight barrier over the entire surface.</p> <p><a href="#">6) Joints between ceilings and walls, between floors and walls, and between walls at corners need not comply with Sentences (3) to (5) where such joints consist of gypsum board that is attached to framing members and arranged so as to restrict the passage of flame and smoke through the joints. (See Note A-3.1.8.3.(5).)</a></p>	
<p><b>9.10.9.3. Openings to be Protected with Closures</b></p> <p>1) Except as permitted in Articles 9.10.9.5., 9.10.9.6. and 9.10.9.7., openings in required <i>fire separations</i> shall be protected with <i>closures</i> conforming to Subsection 9.10.13.</p>	<p><b>9.10.9.3. Openings to be Protected with Closures</b></p> <p>1) Except as permitted in Articles 9.10.9.5., <del>9.10.9.6. and 9.10.9.7.,</del> <a href="#">to 9.10.9.8.</a>, openings in required <i>fire separations</i> shall be protected with <i>closures</i> conforming to Subsection 9.10.13.</p>	New Article 9.10.9.8. included in the exceptions.
<p><b>9.10.9.6. Penetration of Fire Separations</b> (See Note A-3.1.9.)</p> <p>1) Piping, tubing, ducts, <i>chimneys</i>, wiring, conduit, electrical outlet boxes and other similar service equipment that penetrate a required <i>fire separation</i> shall be tightly fitted or fire stopped to maintain the integrity of the separation. (See Note A-9.10.9.6.(1).)</p> <p>2) Penetrations of a <i>firewall</i> shall be sealed at the penetration by a <i>fire stop</i> that, when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,” has an FT rating not less than the <i>fire-resistance rating</i> for the <i>fire separation</i>.</p> <p>3) Except as provided in Sentences (4) to (12) and Article 9.10.9.7., pipes, ducts, electrical boxes, totally enclosed raceways or other similar service equipment that partly or wholly penetrate an assembly required to have a <i>fire-resistance rating</i> shall be <i>noncombustible</i> unless the assembly has been tested incorporating such equipment. (See Note A-3.1.9.2.(1).)</p> <p>4) Electrical wires or similar wiring enclosed in <i>noncombustible</i> totally enclosed raceways are permitted to partly or wholly penetrate an assembly required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3).</p> <p>5) Single conductor metal-sheathed cables with <i>combustible</i> jacketting that are more than 25 mm in overall diameter are permitted to penetrate a <i>fire separation</i> required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the cables are not grouped and are spaced a minimum of 300 mm apart.</p> <p>6) Electrical wires or cables, single or grouped, with <i>combustible</i> insulation or jacketting that is not totally enclosed in raceways of <i>noncombustible</i> material, are permitted to partly or wholly penetrate an assembly required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the overall diameter of the wiring is not more than 25 mm.</p> <p>7) <i>Combustible</i> totally enclosed raceways which are embedded in a concrete floor slab are permitted in an assembly required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3), where the concrete provides not less than 50 mm of cover</p>	<p><b>9.10.9.6. <del>Penetration</del>General Requirements for Penetrations of Fire Separations</b> (See Note A-3.1.9.)</p> <p>1) <del>Piping, tubing, ducts, chimneys, wiring, conduit, electrical outlet boxes and other similar service equipment that penetrate a required</del><a href="#">Except as required by Sentence (2) and Articles 9.10.9.7. and 9.10.9.8. and as permitted by Article 9.10.9.9., penetrations of a required fire separation or a membrane forming part of an assembly required to be a fire separation shall be tightly fitted or fire stopped</a></p> <p><a href="#">a) sealed by a firestop that, when subjected to the fire test method in CAN/ULC-S115, “Standard Method of Fire Tests of Firestop Systems,” has an F rating not less than the required fire-resistance rating for the fire separation.</a></p> <p><a href="#">b) tightly fitted or cast in place, provided the penetrating item is made of steel, ferrous, copper, concrete or masonry, or</a></p> <p><a href="#">c) sealed</a> to maintain the integrity of the <i>fire separation</i>.</p> <p>(See Note A-9.10.9.6.(1).)</p> <p>2) Penetrations of a <i>firewall</i> shall be sealed at the penetration by a <del>fire stop</del><a href="#">firestop</a> that, when subjected to the fire test method in CAN/ULC-S115, “<a href="#">Standard Method of</a> Fire Tests of Firestop Systems,” has an FT rating not less than the <i>fire-resistance rating</i> for the <i>fire separation</i>.</p> <p><del>3) Except as provided in Sentences (4) to (12) and Article 9.10.9.7., pipes, ducts, electrical boxes, totally enclosed raceways or other similar service equipment that partly or wholly penetrate an assembly required to have a fire-resistance rating shall be noncombustible unless the assembly has been tested incorporating such equipment. (See Note A-3.1.9.2.(1).)</del></p> <p><del>4) Electrical wires or similar wiring enclosed in noncombustible totally enclosed raceways are permitted to partly or wholly penetrate an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required in Sentence (3).</del></p> <p><del>5) Single conductor metal-sheathed cables with combustible jacketting that are more than 25 mm in overall diameter are permitted to penetrate a fire separation required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the cables are not grouped and are spaced a minimum of 300 mm apart.</del></p> <p><del>6) Electrical wires or cables, single or grouped, with combustible insulation or jacketting that is not totally enclosed in raceways of noncombustible material, are permitted to partly or wholly penetrate an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the overall diameter of the wiring is not more than 25 mm.</del></p> <p><del>7) Combustible totally enclosed raceways which are embedded in a concrete floor slab are permitted in an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required in Sentence (3), where the concrete provides not less than 50 mm of cover</del></p>	<p>Note: Sentences (7) to (13) have been incorporated, with revisions, into other Sentences within Subsection 9.10.9.</p> <p>(7) see 9.10.9.9.(1)</p> <p>(8) see 9.10.9.8.(3)</p> <p>(9) see 9.10.9.7.(5)</p> <p>(10) see 9.10.9.9.(3)</p> <p>(11) see 9.10.9.9.(4)</p> <p>(12) see 9.10.9.7.(1)</p> <p>(13) see 9.10.9.9.(5)</p>

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<p>between the raceway and the bottom of the slab.</p> <p><b>8) Combustible</b> outlet boxes are permitted in an assembly required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the opening through the membrane into the box does not exceed 160 cm<sup>2</sup>.</p> <p><b>9) Combustible</b> water distribution piping is permitted to partly or wholly penetrate a <i>fire separation</i> that is required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the piping is protected with a <i>fire stop</i> in conformance with Sentence 3.1.9.5.(4).</p> <p><b>10) Combustible</b> sprinkler piping is permitted to penetrate a <i>fire separation</i> provided the <i>fire compartments</i> on each side of the <i>fire separation</i> are <i>sprinklered</i>.</p> <p><b>11)</b> Sprinklers are permitted to penetrate a <i>fire separation</i> or a membrane forming part of an assembly required to have a <i>fire-resistance rating</i> without having to meet the <i>fire stop</i> requirements of Sentence (1), provided the annular space created by the penetration of a fire sprinkler is covered by a metal escutcheon plate in accordance with NFPA 13, “Installation of Sprinkler Systems.”</p> <p><b>12) Combustible</b> piping for central vacuum systems is permitted to penetrate a <i>fire separation</i> provided the installation conforms to the requirements that apply to <i>combustible</i> drain, waste and vent piping specified in Sentences 9.10.9.7.(2) to (6).</p> <p><b>13) Fire dampers</b> are permitted to penetrate a <i>fire separation</i> or a membrane forming part of an assembly required to have a <i>fire-resistance rating</i> without having to meet the <i>fire stop</i> requirements of Sentence (1), provided the <i>fire damper</i> is</p> <ol style="list-style-type: none"> <li>installed in conformance with NFPA 80, “Fire Doors and Other Opening Protectives,” or</li> <li>specifically designed with a <i>fire stop</i>.</li> </ol>	<p><del>between the raceway and the bottom of the slab.</del></p> <p><del><b>8) Combustible</b> outlet boxes are permitted in an assembly required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the opening through the membrane into the box does not exceed 160 cm<sup>2</sup>.</del></p> <p><del><b>9) Combustible</b> water distribution piping is permitted to partly or wholly penetrate a <i>fire separation</i> that is required to have a <i>fire-resistance rating</i> without being incorporated in the assembly at the time of testing as required in Sentence (3), provided the piping is protected with a <i>fire stop</i> in conformance with Sentence 3.1.9.5.(4).</del></p> <p><del><b>10) Combustible</b> sprinkler piping is permitted to penetrate a <i>fire separation</i> provided the <i>fire compartments</i> on each side of the <i>fire separation</i> are <i>sprinklered</i>.</del></p> <p><del><b>11)</b> Sprinklers are permitted to penetrate a <i>fire separation</i> or a membrane forming part of an assembly required to have a <i>fire-resistance rating</i> without having to meet the <i>fire stop</i> requirements of Sentence (1), provided the annular space created by the penetration of a fire sprinkler is covered by a metal escutcheon plate in accordance with NFPA 13, “Installation of Sprinkler Systems.”</del></p> <p><del><b>12) Combustible</b> piping for central vacuum systems is permitted to penetrate a <i>fire separation</i> provided the installation conforms to the requirements that apply to <i>combustible</i> drain, waste and vent piping specified in Sentences 9.10.9.7.(2) to (6).</del></p> <p><del><b>13) Fire dampers</b> are permitted to penetrate a <i>fire separation</i> or a membrane forming part of an assembly required to have a <i>fire-resistance rating</i> without having to meet the <i>fire stop</i> requirements of Sentence (1), provided the <i>fire damper</i> is</del></p> <ol style="list-style-type: none"> <li><del>installed in conformance with NFPA 80, “Fire Doors and Other Opening Protectives,” or</del></li> <li><del>specifically designed with a <i>fire stop</i>.</del></li> </ol>	
<p><b>9.10.9.7. Combustible Drain, Waste and Vent Piping</b> (See Note A-3.1.9.)</p> <p><b>1)</b> Except as permitted in Sentences (2) to (6), <i>combustible</i> piping shall not be used in any part of a drain, waste and vent piping system where any part of that system partly or wholly penetrates a <i>fire separation</i> required to have a <i>fire-resistance rating</i> or penetrates a membrane that contributes to the required <i>fire-resistance rating</i> of an assembly.</p> <p><b>2) Combustible</b> drain, waste and vent piping not located in a vertical shaft is permitted to penetrate a <i>fire separation</i> required to have a <i>fire-resistance rating</i> or a membrane that forms part of an assembly required to have a <i>fire-resistance rating</i> provided the piping is sealed at the penetration by a <i>fire stop</i> that has an F rating not less than the <i>fire-resistance rating</i> required for the <i>fire separation</i>.</p> <p><b>3)</b> The rating referred to in Sentence (2) shall be based on CAN/ULC-S115, “Fire Tests of Firestop Systems,” with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side.</p> <p><b>4) Combustible</b> drain piping is permitted to penetrate a horizontal <i>fire separation</i> or a membrane that contributes to the required <i>fire-resistance rating</i> of a horizontal <i>fire separation</i>, provided it leads directly from a <i>noncombustible</i> watercloset through a concrete floor slab.</p>	<p><del><b>9.10.9.7. Combustible Drain, Waste and Vent Piping Piping Penetrations</b></del> (See Note A-3.1.9.)</p> <p><del><b>1)</b> Except as permitted in Sentences (2) to (6), <i>combustible</i> piping shall not be used in any part of a drain, waste and vent piping system where any part of that system partly or wholly penetrates a <i>fire separation</i> required to have a <i>fire-resistance rating</i> or penetrates a membrane that contributes to the required <i>fire-resistance rating</i> of an assembly.</del></p> <p><del><b>2) Combustible</b> Except as provided in Sentences (2) and (5), piping for drain, waste, and vent piping and central vacuum systems that is not located in a vertical shaft is permitted to penetrate a <i>fire separation</i> required to have a <i>fire-resistance rating</i> or a membrane that forms part of an assembly required to have a <i>fire-resistance rating</i>, provided the penetration is protected in accordance with Clause 9.10.9.6.(1)(a) or (b). piping is sealed at the penetration by a <i>fire stop</i> that has an F rating not less than the <i>fire-resistance rating</i> required for the <i>fire separation</i>.</del></p> <p><del><b>3)</b> The rating referred to in Sentence (2) shall be based on CAN/ULC-S115, “Fire Tests of Firestop Systems,” with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side.</del></p> <p><del><b>4) Combustible</b> drain piping is permitted to penetrate a horizontal <i>fire separation</i> or a membrane that contributes to the required <i>fire-resistance rating</i> of a horizontal <i>fire separation</i>, provided it leads directly from a <i>noncombustible</i> watercloset through a concrete floor slab. Drain piping leading directly from a water closet through a concrete floor slab is permitted to penetrate a horizontal <i>fire separation</i> or a membrane that contributes to the required <i>fire-resistance rating</i> of a horizontal <i>fire separation</i>, provided</del></p> <ol style="list-style-type: none"> <li><del>the piping is <i>noncombustible</i> and the penetration is protected in accordance with Sentence</del></li> </ol>	<p>Delete Sentence (1).</p> <p>Note: The requirements in Sentence (3) have been incorporated with revisions into Sentence 9.10.9.6.(1).</p> <p>Insert new sentence (5).</p>

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<p>5) <i>Combustible</i> drain, waste and vent piping is permitted on one side of a vertical <i>fire separation</i> provided it is not located in a vertical shaft.</p> <p>6) In <i>buildings</i> containing 2 <i>dwelling units</i> only, <i>combustible</i> drain, waste and vent piping is permitted on one side of a horizontal <i>fire separation</i>.</p>	<p><u>9.10.9.6.(1), or</u>  <u>b) the piping is <i>combustible</i> and the penetration is sealed by a <i>firestop</i> conforming to Clause 9.10.9.6.(1)(a).</u></p> <p><del>53</del> <i>Combustible</i> drain, waste and vent piping is permitted on one side of a vertical <i>fire separation</i>, provided it is not located in a vertical shaft.</p> <p><del>64</del> In <i>buildings</i> containing <del>2</del><u>two</u> <i>dwelling units</i> only, <i>combustible</i> drain, waste and vent piping is permitted on one side of a horizontal <i>fire separation</i>.</p> <p><u>5) Water distribution piping is permitted to partly or wholly penetrate a <i>fire separation</i> required to have a <i>fire-resistance rating</i>, provided</u>  <u>a) the piping is <i>noncombustible</i> and the penetration is protected in accordance with Sentence 9.10.9.6.(1), or</u>  <u>b) the piping is <i>combustible</i> and is not located in a vertical shaft, and the penetration is sealed by a <i>firestop</i> conforming to Clause 9.10.9.6.(1)(a).</u></p>	
N/A	<p><u><b>9.10.9.8. Penetrations by Outlet Boxes or Service Equipment in Concealed Spaces</b></u></p> <p><u>1) Except as provided in Sentences (2) to (5), outlet boxes are permitted to penetrate the membrane of an assembly required to have a <i>fire-resistance rating</i>, provided they are sealed at the penetration by a <i>firestop</i> that, when subjected to the fire test method in CAN/ULC-S115, “Standard Method of Fire Tests of Firestop Systems,” has an FT rating not less than the <i>fire-resistance rating</i> of the <i>fire separation</i>. (See Note A-9.10.9.8.(1).)</u></p> <p><u>2) Except as provided in Sentence 9.10.9.6.(2), <i>noncombustible</i> outlet boxes that penetrate a <i>fire separation</i> or a membrane forming part of an assembly required to have a <i>fire-resistance rating</i> need not conform to Sentence (1), provided</u>  <u>a) they do not exceed</u>  <u>i) 0.016 m<sup>2</sup> in area, and</u>  <u>ii) an aggregate area of 0.065 m<sup>2</sup> in any 9.3 m<sup>2</sup> of surface area, and</u>  <u>b) the annular space between the membrane and the <i>noncombustible</i> outlet boxes does not exceed 3 mm.</u></p> <p><u>3) Except as provided in Sentence 9.10.9.6.(2), <i>combustible</i> outlet boxes that penetrate a <i>fire separation</i> or a membrane forming part of an assembly required to have a <i>fire-resistance rating</i> need not conform to Sentence (1), provided</u>  <u>a) the outlet boxes are</u>  <u>i) separated from the remainder of the space within the assembly by an enclosure of not more than 0.3 m<sup>2</sup> in area made of <i>fire block</i> material conforming to Article 9.10.16.3. (see Note A-9.10.9.8.(3)(a)(i)), or</u>  <u>ii) located in a space within the assembly that is filled with preformed fibre insulation processed from rock or slag conforming to CAN/ULC-S702.1, “Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification,” and having a mass per unit area of not less than 1.22 kg/m<sup>2</sup> of wall surface such that the exposed sides and back of the outlet box are encapsulated by the <i>noncombustible</i> insulation, and</u>  <u>b) the outlet boxes do not exceed an aggregate area of 0.016m<sup>2</sup> in any individual enclosure as described in Subclause (a)(i) or any individual insulated space as described in Subclause (a)(ii).</u></p> <p><u>4) <i>Noncombustible</i> outlet boxes conforming to Sentence (2) are permitted to be located on opposite sides of a vertical <i>fire separation</i> having a <i>fire-resistance rating</i> and need not conform to Sentence (1), provided they are</u>  <u>a) separated from each other by a horizontal distance of not less than 600 mm,</u>  <u>b) separated from each other and the remainder of the wall space by an enclosure conforming to Subclause (3)(a)(i), or</u></p>	Insert new Article. Subsequent articles renumbered accordingly.

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	<p><u>c) located in an insulated wall space in accordance with Subclause (3)(a)(ii).</u></p> <p><u>5) Combustible outlet boxes conforming to Sentence (3) are permitted to be located on opposite sides of a vertical fire separation having a fire-resistance rating and need not conform to Sentence (1).</u></p> <p><u>6) Service equipment is permitted to penetrate a horizontal fire separation conforming to Sentence 9.10.9.12.(2), provided the penetration is sealed by</u></p> <p><u>a) a firestop that, when subjected to the fire test method in CAN/ULC-S115, “Standard Method of Fire Tests of Firestop Systems,” has an FT rating not less than the required fire-resistance rating for the fire separation,</u></p> <p><u>b) a firestop conforming to Clause 9.10.9.6.(1)(a), where the service equipment is located entirely within the cavity of a wall assembly above and below the horizontal fire separation having a required fire-resistance rating, or</u></p> <p><u>c) a firestop conforming to Clause 9.10.9.6.(1)(a), where the penetration is</u></p> <p><u>i) contained within the concealed space of a floor or ceiling assembly having a fire-resistance rating,</u></p> <p><u>ii) located above a ceiling membrane providing a horizontal fire separation, or</u></p> <p><u>iii) contained within a horizontal service space conforming to Sentence 9.10.9.12.(2) that is directly above or below a floor or ceiling.</u></p>	
N/A	<p><b>9.10.9.9. Penetrations by Raceways, Sprinklers and Fire Dampers</b></p> <p><u>1) Combustible totally enclosed raceways that are embedded in a concrete floor slab are permitted in an assembly required to have a fire-resistance rating, provided the concrete cover between the raceway and the bottom of the slab is not less than 50 mm.</u></p> <p><u>2) Totally enclosed raceways are permitted to penetrate a fire separation, provided they are sealed at the penetration by a firestop conforming to Clause 9.10.9.6.(1)(a).</u></p> <p><u>3) Sprinkler piping is permitted to penetrate a fire separation, provided the fire compartments on each side of the fire separation are sprinklered.</u></p> <p><u>4) Sprinklers are permitted to penetrate a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating without having to meet the firestop requirements of Article 9.10.9.6. and Clause 9.10.9.8.(6)(a), provided the annular space created by the penetration of a fire sprinkler is covered by a metal escutcheon plate in accordance with NFPA 13, “Standard for the Installation of Sprinkler Systems.”</u></p> <p><u>5) Fire dampers are permitted to penetrate a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating without having to meet the firestop requirements of Sentence 9.10.9.6.(1), provided the fire damper is</u></p> <p><u>a) installed in conformance with NFPA 80, “Standard for Fire Doors and Other Opening Protectives,”</u></p> <p><u>b) specifically designed with a firestop, or</u></p> <p><u>c) provided in conformance with Sentence 9.10.5.1.(3).</u></p> <p><u>(See also Note A-3.1.9.2.(1).)</u></p>	Insert new Article. Subsequent articles renumbered accordingly.
<p><b>9.10.9.15. Separation of Public Corridors</b></p> <p><b>1)</b> Except as provided in Sentences (2), (3) and (4), public corridors shall be separated from the remainder of the building by a fire separation having not less than a 45 min fire-resistance rating.</p>	<p><del>9.10.9.15-9.10.9.17.</del> <b>9.10.9.17. Separation of Public Corridors</b></p> <p><b>1)</b> Except as otherwise required by this Part and as provided in Sentences (2), <del>(3) and (4)</del> to (5), public corridors shall be separated from the remainder of the building by a fire separation having not less than a 45 min fire-resistance rating.</p> <p><b>5)</b> No fire separation is required in a sprinklered floor area between a public corridor and a space containing plumbing fixtures required by Article 3.7.2.2. and Section 9.31., provided</p>	Insert new Sentence (5).

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	<p><a href="#">a) the space and the public corridor are separated from the remainder of the storey by a fire separation having a fire-resistance rating not less than that required between the public corridor and the remainder of the storey, and</a></p> <p><a href="#">b) the plumbing fixtures are not located within a dwelling unit or suite.</a></p>	
<p><b>9.10.10.6. Storage Rooms</b></p> <p>1) Rooms for the temporary storage of combustible refuse in all occupancies or for public storage in residential occupancies shall be separated from the remainder of the building by a fire separation having not less than a 1 h fire-resistance rating, except that a 45 min fire separation is permitted where the fire-resistance rating of the floor assembly is not required to exceed 45 min, or where such rooms are sprinklered.</p>	<p><b>9.10.10.6. Storage Rooms</b></p> <p>1) Rooms for the temporary storage of combustible refuse <a href="#">and materials for recycling</a> in all occupancies or for public storage in residential occupancies shall be separated from the remainder of the building by a fire separation having not less than a 1 h fire-resistance rating, except that a <del>45-min fire separation is permitted where the</del> <a href="#">with a fire-resistance rating of not less than 45 min is permitted where</a></p> <p><a href="#">a) the fire-resistance rating</a> of the floor assembly is not required to exceed 45 min, or <del>where such rooms are</del></p> <p><a href="#">b) the room is sprinklered.</a></p>	
<p><b>9.10.12.5. Protection of Balconies</b> (See Note A-9.10.12.5.)</p> <p>2) The protection required by Sentences (3) and (4) shall be provided by cladding that conforms to</p> <p>a) Subsection 9.27.11.,</p> <p>b) Section 9.28., or</p> <p>c) one of the methods described in Clause 3.2.3.7.(4)(c) or (d).</p> <p>3) Balcony walls shall be protected by one of the methods mentioned in Sentence (2) from the floor level of the balcony to the underside of the balcony or roof assembly above for</p> <p>a) the full width and depth of the balcony, and</p> <p>b) 1.2 m on either side of the balcony.</p> <p>4) Ceiling and roof assemblies above balconies mentioned in Sentence (3) shall be protected by one of the methods mentioned in Sentence (2).</p>	<p><b>9.10.12.5. Protection of Balconies</b> (See Note A-9.10.12.5.)</p> <p><del>2) The protection required by Sentences (3) and (4) shall be provided by cladding that conforms to</del></p> <p><del>a) Subsection 9.27.11.,</del></p> <p><del>b) Section 9.28., or</del></p> <p><del>c) one of the methods described in Clause 3.2.3.7.(4)(c) or (d).</del></p> <p><del>3) Balcony walls shall be protected by one of the methods mentioned in Sentence (2) from the floor level of the balcony to the underside of the balcony or roof assembly above for</del></p> <p>a) the full width and depth of the balcony, and</p> <p>b) 1.2 m on either side of the balcony.</p> <p><del>4) Ceiling and roof assemblies above balconies mentioned in Sentence (3) shall be protected by one of the methods mentioned in Sentence (2).</del></p> <p><del>4) The protection required by Sentences (2) and (3) shall be provided by cladding that conforms to</del></p> <p><del>a) Subsection 9.27.11.,</del></p> <p><del>b) Section 9.28., or</del></p> <p><del>c) one of the methods described in Clause 3.2.3.7.(4)(c) or (d).</del></p>	Insert new sentence (4).
<p><b>9.10.13.13. Fire Dampers</b></p> <p>1) Except as permitted by Sentences (2) to (5) and Sentence 9.10.5.1.(4), a duct that penetrates an assembly required to be a fire separation with a fire-resistance rating shall be equipped with a fire damper in conformance with Articles 3.1.8.4. and 3.1.8.10.</p>	<p><b>9.10.13.13. Fire Dampers</b></p> <p>1) Except as permitted by Sentences (2) to (5), <del>and Sentence 9.10.5.1.(4)</del> <a href="#">9.10.5.1.(3) and 9.10.9.9.(5)</a>, a duct that penetrates an assembly required to be a fire separation with a fire-resistance rating shall be equipped with a fire damper in conformance with Articles 3.1.8.4. and 3.1.8.10.</p>	
<p><b>9.10.14.1. Application</b></p>	<p><b>9.10.14.1. Application</b></p> <p><del>2) This Subsection does not apply to detached carports conforming to Section 9.35. that serve not more than one dwelling unit or a house with a secondary suite.</del></p>	Insert new sentence (2).
<p><b>9.10.14.4. Openings in Exposing Building Face</b></p> <p>6) The maximum aggregate area of unprotected openings shall be not more than twice the area determined according to Sentence (1), where the unprotected openings are glazed with</p> <p>a) wired glass in steel frames, as described in Article 9.10.13.5., or</p> <p>b) glass blocks, as described in Article 9.10.13.7.</p> <p>7) Where the building is sprinklered, the maximum aggregate area of unprotected openings shall be not</p>	<p><b>9.10.14.4. Openings in Exposing Building Face</b></p> <p>6) The maximum aggregate area of unprotected openings <del>shall be permitted to be not more than up to</del> twice the area determined according to Sentence (1), where the unprotected openings are glazed with</p> <p>a) wired glass in steel frames, as described in Article 9.10.13.5., or</p> <p>b) glass blocks, as described in Article 9.10.13.7.</p> <p>7) Where the building is sprinklered, the maximum aggregate area of unprotected openings <del>shall be</del></p>	

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<p>more than twice the area determined according to Sentence (1), provided all rooms, including closets and bathrooms, that are adjacent to the <i>exposing building face</i> and that have <i>unprotected openings</i> are <i>sprinklered</i>, notwithstanding any exemptions in the sprinkler standards referenced in Article 3.2.5.12.</p> <p><b>11)</b> The limits on the area of glazed openings stated in Sentence (10) need not apply to the <i>exposing building face</i> of a detached garage or accessory <i>building</i> facing a <i>dwelling unit</i>, where</p> <ol style="list-style-type: none"> <li>the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i>, and</li> <li>the <i>dwelling unit</i> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol>	<p><u>permitted to be not more than up to</u> twice the area determined according to Sentence (1), provided all rooms, including closets and bathrooms, that are adjacent to the <i>exposing building face</i> and that have <i>unprotected openings</i> are <i>sprinklered</i>, notwithstanding any exemptions in the sprinkler standards referenced in Article 3.2.5.12.</p> <p><b>11)</b> The limits on the area of glazed openings stated in Sentence (10) need not apply to the <i>exposing building face</i> of a detached garage or accessory <i>building</i> facing a <i>dwelling unit</i> <u>or a house with a secondary suite</u>, where</p> <ol style="list-style-type: none"> <li>the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i> <u>or house with a secondary suite</u>, and</li> <li>the <i>dwelling unit</i> <u>or house with a secondary suite</u> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol>	
<p><b>9.10.14.5. Construction of Exposing Building Face and Walls above Exposing Building Face</b></p> <p><b>4)</b> Except as provided in Sentence (5), where a garage or accessory <i>building</i> serves one <i>dwelling unit</i> only and is detached from any <i>building</i>, the <i>exposing building face</i></p> <ol style="list-style-type: none"> <li>need not conform to the minimum required <i>fire-resistance rating</i> stated in Table 9.10.14.5.-A, where the <i>limiting distance</i> is 0.6 m or more,</li> <li>shall have a <i>fire-resistance rating</i> of not less than 45 min, where the <i>limiting distance</i> is less than 0.6 m, and</li> <li>need not conform to the type of cladding required by Table 9.10.14.5.-A, regardless of the <i>limiting distance</i>.</li> </ol> <p><b>5)</b> The requirements regarding <i>fire-resistance rating</i>, type of construction and type of cladding need not apply to the <i>exposing building face</i> of a detached garage or accessory <i>building</i> facing a <i>dwelling unit</i>, where</p> <ol style="list-style-type: none"> <li>the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i>, and</li> <li>the <i>dwelling unit</i> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> <p><b>7)</b> Except as provided in Sentences (9) to (12), Sentence (6) shall not apply to</p> <ol style="list-style-type: none"> <li><i>buildings</i> containing 1 or 2 <i>dwelling units</i> only, and</li> <li>detached garages or accessory <i>buildings</i>, where <ol style="list-style-type: none"> <li>the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i>, and</li> <li>the <i>dwelling unit</i> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> </li> </ol> <p>(See Note A-9.10.14.5.(7).)</p> <p><b>11)</b> The face of a roof soffit is permitted to project to the property line, where it faces a <i>street</i>, lane or public thoroughfare. (See Note A-9.10.14.5.(11) and 9.10.15.5.(10).)</p> <p><b>12)</b> Where roof soffits project to less than 1.2 m from the property line, the centre line of a lane or public thoroughfare, or an imaginary line between two <i>buildings</i> or <i>fire compartments</i> on the same property, they shall</p> <ol style="list-style-type: none"> <li>have no openings, and</li> <li>be protected by</li> </ol>	<p><b>9.10.14.5. Construction of Exposing Building Face and Walls above Exposing Building Face</b></p> <p><b>4)</b> Except as provided in Sentence (5), where a garage or accessory <i>building</i> serves one <i>dwelling unit</i> only and is detached from any <i>building</i>, the <i>exposing building face</i></p> <ol style="list-style-type: none"> <li>need not conform to the minimum required <i>fire-resistance rating</i> stated in Table 9.10.14.5.-A, where the <i>limiting distance</i> is 0.6 m or more,</li> <li>shall have a <i>fire-resistance rating</i> of not less than 45 min, where the <i>limiting distance</i> is less than 0.6 m, and</li> <li>need not conform to the type of cladding <u>and type of construction</u> required by Table 9.10.14.5.-A, regardless of the <i>limiting distance</i>.</li> </ol> <p><b>5)</b> The requirements regarding <i>fire-resistance rating</i>, type of construction and type of cladding need not apply to the <i>exposing building face</i> of a detached garage or accessory <i>building</i> facing a <i>dwelling unit</i> <u>or a house with a secondary suite</u>, where</p> <ol style="list-style-type: none"> <li>the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i> <u>or house with a secondary suite</u>, and</li> <li>the <i>dwelling unit</i> <u>or house with a secondary suite</u> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> <p><b>7)</b> Except as provided in Sentences (9) to (12), Sentence (6) shall not apply to</p> <ol style="list-style-type: none"> <li><i>buildings</i> containing <u>1-one</u> or <u>2-two</u> <i>dwelling units</i> only, and</li> <li>detached garages or accessory <i>buildings</i>, where <ol style="list-style-type: none"> <li>the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i> <u>or house with a secondary suite</u>, and</li> <li>the <i>dwelling unit</i> <u>or house with a secondary suite</u> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> </li> </ol> <p>(See Note A-9.10.14.5.(7).)</p> <p><b>11)</b> The face of a roof soffit is permitted to project to the property line, where it faces a <del>street, lane or public thoroughfare</del> <u>public way</u>. (See Note A-9.10.14.5.(11) and 9.10.15.5.(10).)</p> <p><b>12)</b> Where roof soffits project to less than 1.2 m from the property line, the centre line of a <del>lane or public thoroughfare</del> <u>public way</u>, or an imaginary line between two <i>buildings</i> or <i>fire compartments</i> on the same property, they shall</p> <ol style="list-style-type: none"> <li>have no openings, and</li> <li>be protected by</li> </ol>	

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<ul style="list-style-type: none"> <li>i) not less than 0.38 mm thick sheet steel,</li> <li>ii) unvented aluminum conforming to CAN/CGSB-93.2-M, “Prefinished Aluminum Siding, Soffits, and Fascia, for Residential Use,”</li> <li>iii) not less than 12.7 mm thick gypsum soffit board or gypsum ceiling board installed according to CSA A82.31-M, “Gypsum Board Application,”</li> <li>iv) not less than 11 mm thick plywood,</li> <li>v) not less than 12.5 mm thick OSB or waferboard, or</li> <li>vi) not less than 11 mm thick lumber.</li> </ul> (See Note A-3.2.3.6.(2).)	<ul style="list-style-type: none"> <li>i) not less than 0.38 mm thick sheet steel,</li> <li>ii) unvented aluminum conforming to CAN/CGSB-93.2-M, “Prefinished Aluminum Siding, Soffits, and Fascia, for Residential Use,”</li> <li>iii) not less than 12.7 mm thick gypsum soffit board or gypsum ceiling board installed according to CSA A82.31-M, “Gypsum Board Application,”</li> <li>iv) not less than 11 mm thick plywood,</li> <li>v) not less than 12.5 mm thick OSB or waferboard, or</li> <li>vi) not less than 11 mm thick lumber.</li> </ul> (See Note A-3.2.3.6.(2).)	
<b>9.10.15.2. Area and Location of Exposing Building Face</b>  <b>1)</b> The area of an <i>exposing building face</i> shall be <ul style="list-style-type: none"> <li>a) taken as the exterior wall area facing in one direction on any side of a <i>building</i>, and</li> <li>b) calculated as               <ul style="list-style-type: none"> <li>i) the total area measured from the finished ground level to the uppermost ceiling,</li> <li>ii) the area for each <i>fire compartment</i>, where a <i>building</i> is divided into <i>fire compartments</i> by <i>fire separations</i> with <i>fire-resistance ratings</i> not less than 45 min, or</li> <li>iii) except as provided in Sentence (2), where Table 9.10.15.4. is used to determine the maximum aggregate area of glazed openings, the area of any number of individual vertical portions of the wall measured from the finished ground level to the uppermost ceiling. (See Note A-9.10.15.4.(2).)</li> </ul> </li> </ul>	<b>9.10.15.2. Area and Location of Exposing Building Face</b>  <b>1)</b> The area of an <i>exposing building face</i> shall be <ul style="list-style-type: none"> <li>a) taken as the exterior wall area facing in one direction on any side of a <i>building</i>, and</li> <li>b) calculated as               <ul style="list-style-type: none"> <li>i) the total area measured from the finished ground level to the uppermost ceiling,</li> <li>ii) the area for each <i>fire compartment</i>, where a <i>building</i> is divided into <i>fire compartments</i> by <i>fire separations</i> with <i>fire-resistance ratings</i> not less than 45 min, or</li> <li>iii) except as provided in Sentence (2), where Table 9.10.15.4. is used to determine the maximum aggregate area of glazed openings, the area of any number of individual <del>vertical</del> portions of the <del>wall measured from the finished ground level to the uppermost ceiling</del><i>exposing building face</i>. (See Note A-9.10.15.4.(2).)</li> </ul> </li> </ul>	
<b>9.10.15.4. Glazed Openings in Exposing Building Face</b>  <b>1)</b> Except as provided in Sentence (6), the maximum aggregate area of glazed openings in an <i>exposing building face</i> shall <ul style="list-style-type: none"> <li>a) conform to Table 9.10.15.4.,</li> <li>b) conform to Subsection 3.2.3., or</li> <li>c) where the <i>limiting distance</i> is not less than 1.2 m, be equal to or less than the <i>limiting distance</i> squared.</li> </ul> <b>2)</b> Where the limits on the area of glazed openings are determined for individual portions of the exterior wall, as described in Subclause 9.10.15.2.(1)(b)(iii), the maximum aggregate area of glazed openings for any portion shall conform to the values in the row of Table 9.10.15.4. corresponding to the maximum total area of <i>exposing building face</i> (see column 1 of the Table) that is equal to the sum of all portions of the <i>exposing building face</i> . (See Note A-9.10.15.4.(2).)	<b>9.10.15.4. Glazed Openings in Exposing Building Face</b>  <b>1)</b> Except as provided in <del>Sentence</del> <u>Sentences</u> (6) <u>and (7)</u> , the maximum aggregate area of glazed openings in an <i>exposing building face</i> shall <ul style="list-style-type: none"> <li>a) conform to Table 9.10.15.4.,</li> <li>b) conform to Subsection 3.2.3., or</li> <li>c) where the <i>limiting distance</i> is not less than 1.2 m, be equal to or less than the <i>limiting distance</i> squared.</li> </ul> <b>2)</b> Where the limits on the area of glazed openings are determined for individual portions of the <del>exterior wall</del> <u><i>exposing building face</i></u> , as described in Subclause 9.10.15.2.(1)(b)(iii), the maximum aggregate area of glazed openings for any portion shall <del>conform to be determined using</del> the values in <del>the row of</del> Table 9.10.15.4. corresponding to <ul style="list-style-type: none"> <li>a) the maximum total area of <i>exposing building face</i> <del>(see column 1 of the Table) that, which</del> is equal to the sum of all portions of the <i>exposing building face</i>, <u>and</u></li> <li>b) <u>the limiting distance of each portion.</u></li> </ul> (See Note A-9.10.15.4.(2).)	Insert new Sentence (7).
<b>6)</b> The limits on the area of glazed openings shall not apply to the <i>exposing building face</i> of a <i>dwelling unit</i> facing a detached garage or accessory <i>building</i> , where <ul style="list-style-type: none"> <li>a) the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>b) the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i>, and</li> <li>c) the <i>dwelling unit</i> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ul>	<b>6)</b> The limits on the area of glazed openings shall not apply to the <i>exposing building face</i> of a <i>dwelling unit</i> <u>or a house with a <i>secondary suite</i></u> facing a detached garage or accessory <i>building</i> , where <ul style="list-style-type: none"> <li>a) the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>b) the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i> <u>or house with a <i>secondary suite</i></u>, and</li> <li>c) the <i>dwelling unit</i> <u>or house with a <i>secondary suite</i></u> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ul> <b>7)</b> <u>The maximum aggregate area of glazed openings in an <i>exposing building face</i> is permitted to be up to twice the area determined in accordance with Sentence (1), where</u> <ul style="list-style-type: none"> <li>a) <u>the glazed openings consist of glass blocks, as described in Article 9.10.13.7., or</u></li> <li>b) <u>the <i>building</i> is sprinklered, provided all rooms, including closets, bathrooms and attached garages, that are adjacent to the <i>exposing building face</i> and that have glazed openings are</u></li> </ul>	

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	<a href="#">sprinklered, notwithstanding any exemptions in the sprinkler standards referenced in Article 3.2.5.12.</a>	
<p><b>Table 9.10.15.4.</b>  <b>Maximum Area of Glazed Openings in Exterior Walls of Houses</b>  Forming Part of Sentences 9.10.15.4.(1) and (2)</p>	<p><b>Table 9.10.15.4.</b>  <b>Maximum Area of Glazed Openings in Exterior Walls of Houses</b>  Forming Part of <a href="#">Subclause 9.10.15.2.(1)(b)(iii)</a> and Sentences 9.10.15.4.(1) and (2)</p>	
<p><b>9.10.15.5. Construction of Exposing Building Face of Houses</b></p> <p><b>4)</b> The requirements regarding <i>fire-resistance rating</i> and type of cladding-sheathing assembly shall not apply to the <i>exposing building face</i> or projections from an <i>exposing building face</i> of a <i>dwelling unit</i> facing a detached garage or accessory <i>building</i>, or a garage or accessory <i>building</i> facing a <i>dwelling unit</i>, where</p> <ol style="list-style-type: none"> <li>a) the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>b) the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i>, and</li> <li>c) the <i>dwelling unit</i> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> <p><b>6)</b> Except as provided in Sentences (8) to (11), Sentence (5) shall not apply to</p> <ol style="list-style-type: none"> <li>a) <i>buildings</i> containing 1 or 2 <i>dwelling units</i> only, and</li> <li>b) detached garages or accessory <i>buildings</i>, where <ol style="list-style-type: none"> <li>i) the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>ii) the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i>, and</li> <li>iii) the <i>dwelling unit</i> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> </li> </ol> <p>(See Note A-9.10.14.5.(7).)</p> <p><b>10)</b> The face of a roof soffit is permitted to project to the property line, where it faces a <i>street</i>, lane or public thoroughfare. (See Note A-9.10.14.5.(11) and 9.10.15.5.(10).)</p> <p><b>11)</b> Where roof soffits project to less than 1.2 m from the property line, the centre line of a lane or public thoroughfare, or an imaginary line between two <i>buildings</i> or <i>fire compartments</i> on the same property, they shall</p> <ol style="list-style-type: none"> <li>a) have no openings, and</li> <li>b) be protected by <ol style="list-style-type: none"> <li>i) not less than 0.38 mm thick sheet steel,</li> <li>ii) unvented aluminum conforming to CAN/CGSB-93.2-M, “Prefinished Aluminum Siding, Soffits, and Fascia, for Residential Use,”</li> <li>iii) not less than 12.7 mm thick gypsum soffit board or gypsum ceiling board installed according to CSA A82.31-M, “Gypsum Board Application,”</li> <li>iv) not less than 11 mm thick plywood,</li> <li>v) not less than 12.5 mm thick OSB or waferboard, or</li> <li>vi) not less than 11 mm thick lumber.</li> </ol> </li> </ol> <p>(See Note A-3.2.3.6.(2).)</p>	<p><b>9.10.15.5. Construction of Exposing Building Face of Houses</b></p> <p><b>4)</b> The requirements regarding <i>fire-resistance rating</i> and type of cladding-sheathing assembly shall not apply to the <i>exposing building face</i> or projections from an <i>exposing building face</i> of a <i>dwelling unit</i> <a href="#">or a house with a secondary suite</a> facing a detached garage or accessory <i>building</i>, or a garage or accessory <i>building</i> facing a <i>dwelling unit</i> <a href="#">or a house with a secondary suite</a>, where</p> <ol style="list-style-type: none"> <li>a) the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>b) the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i> <a href="#">or house with a secondary suite</a>, and</li> <li>c) the <i>dwelling unit</i> <a href="#">or house with a secondary suite</a> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> <p><b>6)</b> Except as provided in Sentences (8) to (11), Sentence (5) shall not apply to</p> <ol style="list-style-type: none"> <li>a) <i>buildings</i> containing <del>1-one</del> or <del>2-two</del> <i>dwelling units</i> only, and</li> <li>b) detached garages or accessory <i>buildings</i>, where <ol style="list-style-type: none"> <li>i) the detached garage or accessory <i>building</i> serves only one <i>dwelling unit</i> or a house with a <i>secondary suite</i>,</li> <li>ii) the detached garage or accessory <i>building</i> is located on the same property as that <i>dwelling unit</i> <a href="#">or house with a secondary suite</a>, and</li> <li>iii) the <i>dwelling unit</i> <a href="#">or house with a secondary suite</a> served by the detached garage or accessory <i>building</i> is the only <i>major occupancy</i> on the property.</li> </ol> </li> </ol> <p>(See Note A-9.10.14.5.(7).)</p> <p><b>10)</b> The face of a roof soffit is permitted to project to the property line, where it faces a <del>street, lane or public thoroughfare</del> <a href="#">public way</a>. (See Note A-9.10.14.5.(11) and 9.10.15.5.(10).)</p> <p><b>11)</b> Where roof soffits project to less than 1.2 m from the property line, the centre line of a <del>lane or public thoroughfare</del> <a href="#">public way</a>, or an imaginary line between two <i>buildings</i> or <i>fire compartments</i> on the same property, they shall</p> <ol style="list-style-type: none"> <li>a) have no openings, and</li> <li>b) be protected by <ol style="list-style-type: none"> <li>i) not less than 0.38 mm thick sheet steel,</li> <li>ii) unvented aluminum conforming to CAN/CGSB-93.2-M, “Prefinished Aluminum Siding, Soffits, and Fascia, for Residential Use,”</li> <li>iii) not less than 12.7 mm thick gypsum soffit board or gypsum ceiling board installed according to CSA A82.31-M, “Gypsum Board Application,”</li> <li>iv) not less than 11 mm thick plywood,</li> <li>v) not less than 12.5 mm thick OSB or waferboard, or</li> <li>vi) not less than 11 mm thick lumber.</li> </ol> </li> </ol> <p>(See Note A-3.2.3.6.(2).)</p>	
<p><b>9.10.16.4. Penetration of Fire Blocks</b></p> <p><b>1)</b> Where <i>fire blocks</i> are pierced by pipes, ducts or other elements, the effectiveness of the <i>fire blocks</i> shall be maintained around such elements.</p>	<p><b>9.10.16.4. Penetration of Fire Blocks</b></p> <p><b>1)</b> Where <i>fire blocks</i> are pierced by pipes, ducts or other elements, the effectiveness of the <i>fire blocks</i> shall be maintained around such elements. <a href="#">(See also Note A-3.1.11.7.(7).)</a></p>	Add reference to Note A-3.1.11.7.(7).
<p><b>9.10.19.4. Power Supply</b></p>	<p><b>9.10.19.4. Power Supply</b></p>	Requirements now specify a specific sound pressure level.

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<p><b>3) Suites of residential occupancy</b> are permitted to be equipped with <i>smoke detectors</i> in lieu of <i>smoke alarms</i>, provided the <i>smoke detectors</i></p> <ol style="list-style-type: none"> <li>are capable of independently sounding audible signals within the individual <i>suites</i>,</li> <li>except as permitted in Sentence (4), are installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems,” and</li> <li>form part of the fire alarm system.</li> </ol> <p>(See Note A-3.2.4.20.(8).)</p>	<p><b>3) Suites of residential occupancy</b> are permitted to be equipped with <i>smoke detectors</i> in lieu of <i>smoke alarms</i>, provided the <i>smoke detectors</i></p> <ol style="list-style-type: none"> <li>are capable of independently sounding audible signals <a href="#">with a sound pressure level between 75 dBA and 110 dBA</a> within the individual <i>suites</i> <a href="#">(see also Note A-3.2.4.18.(4))</a>,</li> <li>except as permitted in Sentence (4), are installed in conformance with CAN/ULC-S524, “<a href="#">Standard for</a> Installation of Fire Alarm Systems,” and</li> <li>form part of the fire alarm system.</li> </ol> <p>(See Note A-3.2.4.20.(810).)</p>	
<p><b>9.10.19.5. Interconnection of Smoke Alarms</b></p> <p><b>1)</b> Where more than one <i>smoke alarm</i> is required in a <i>dwelling unit</i>, the <i>smoke alarms</i> shall be interconnected so that the activation of one alarm will cause all alarms within the <i>dwelling unit</i> to sound.</p> <p><b>2)</b> <i>Smoke alarms</i> in a house with a <i>secondary suite</i> shall be interconnected so that the activation of any one <i>smoke alarm</i> causes all <i>smoke alarms</i> within the house with a <i>secondary suite</i> to sound. (See Note A-9.10.19.5.(2).)</p>	<p><b>9.10.19.5. Interconnection of Smoke Alarms</b></p> <p><b>1)</b> Where more than one <i>smoke alarm</i> is required in a <i>dwelling unit</i>, the <i>smoke alarms</i> shall be interconnected so that the activation of <a href="#">any</a> one alarm <del>will cause</del> <a href="#">causes</a> all alarms within the <i>dwelling unit</i> to sound.</p> <p><b>2)</b> <i>Smoke alarms</i> in a house with a <i>secondary suite</i> shall be <del>interconnected-wirelessly</del> <a href="#">interconnected or interconnected by hard-wiring</a> so that the activation of any one <i>smoke alarm</i> causes all <i>smoke alarms</i> within the house with a <i>secondary suite</i> to sound. (See Note A-9.10.19.5.(2).)</p>	Alberta requirements are now harmonized with NBC2020.
<p><b>9.10.22.3. Protection around Cooktops</b></p> <p><b>1)</b> Except as provided in Sentences (2) and (3), <i>combustible</i> wall framing, finishes or cabinets within 450 mm of the area where the <i>cooktop</i> is to be located shall be protected above the level of the heating elements or burners by material providing fire resistance at least equivalent to that provided by a 9.5 mm thickness of gypsum board.</p>	<p><b>9.10.22.3. Protection around Cooktops</b></p> <p><b>1)</b> Except as provided in Sentences (2) and (3), <i>combustible</i> wall framing, finishes or cabinets within 450 mm of the area where the <i>cooktop</i> is to be located shall be protected above the level of the heating elements or burners by</p> <ol style="list-style-type: none"> <li><a href="#">gypsum board not less than 9.5 mm thick, or</a></li> <li><a href="#">any</a> material providing a <i>fire -resistance-at least equivalent to that provided by a 9.5 mm thickness of gypsum board <a href="#">rating of not less than 10 min and a flame-spread rating of not more than 25.</a></i></li> </ol>	Provided a specific flame-spread rating for materials other than gypsum board.
<p><b>9.15.1.1. General</b> (See Notes A-9.15.1.1. and A-9.4.4.6. and 9.15.1.1.)</p> <p><b>1)</b> Except as provided in Articles 9.15.1.2. and 9.15.1.3., this Section applies to</p> <ol style="list-style-type: none"> <li>concrete or unit masonry <i>foundation</i> walls and concrete footings not subject to surcharge <ol style="list-style-type: none"> <li>on stable <i>soils</i> with an allowable bearing pressure of 75 kPa or greater, and</li> <li>for <i>buildings</i> of wood-frame or masonry construction,</li> </ol> </li> <li>wood-frame <i>foundation</i> walls and wood or concrete footings not subject to surcharge <ol style="list-style-type: none"> <li>on stable <i>soils</i> with an allowable bearing pressure of 75 kPa or greater, and</li> <li>for <i>buildings</i> of wood-frame construction, and</li> </ol> </li> <li>flat insulating concrete form <i>foundation</i> walls and concrete footings not subject to surcharge (see Note A-9.15.1.1.(1)(c) and 9.20.1.1.(1)(b)) <ol style="list-style-type: none"> <li>on stable <i>soils</i> with an allowable bearing pressure of 75 kPa or greater, and</li> <li>for <i>buildings</i> of light-frame or flat insulating concrete form construction that are not more than 2 <i>storeys</i> in <i>building height</i>, with a maximum floor -to -floor height of 3 m, and containing only a single <i>dwelling unit</i>.</li> </ol> </li> </ol>	<p><b>9.15.1.1. General</b> (See Notes A-9.15.1.1. and A-9.4.4.6. and 9.15.1.1.)</p> <p><b>1)</b> Except as provided in Articles 9.15.1.2. and 9.15.1.3., this Section applies to</p> <ol style="list-style-type: none"> <li>concrete or unit masonry <i>foundation</i> walls and concrete footings not subject to surcharge <ol style="list-style-type: none"> <li>on stable <i>soils</i> with an allowable bearing pressure of 75 kPa or greater, and</li> <li>for <i>buildings</i> of wood-frame or masonry construction,</li> </ol> </li> <li>wood-frame <i>foundation</i> walls and wood or concrete footings not subject to surcharge <ol style="list-style-type: none"> <li>on stable <i>soils</i> with an allowable bearing pressure of 75 kPa or greater, and</li> <li>for <i>buildings</i> of wood-frame construction, and</li> </ol> </li> <li>flat insulating concrete form <i>foundation</i> walls and concrete footings not subject to surcharge (see Note A-9.15.1.1.(1)(c) and 9.20.1.1.(1)(b)) <ol style="list-style-type: none"> <li>on stable <i>soils</i> with an allowable bearing pressure of 75 kPa or greater, and</li> <li>for <i>buildings</i> of light-frame or flat insulating concrete form construction that are not more than 2 <i>storeys</i> in <i>building height</i>, with a maximum floor -to -floor height of 3 m, <del>and containing only a single dwelling unit.</del></li> </ol> </li> </ol>	Deleted “and containing only a single dwelling unit.”
<p><b>9.15.3.4. Basic Footing Widths and Areas</b></p> <p><b>2)</b> Where the supported joist span exceeds 4.9 m in <i>buildings</i> with light wood-frame walls, floors and roofs, footing widths shall be determined according to</p> <ol style="list-style-type: none"> <li>Section 4.2., or</li> <li>the following formula</li> </ol> $W = w \cdot \lceil \sum sjs / (\text{storeys} \cdot 4.9) \rceil$	<p><b>9.15.3.4. Basic Footing Widths and Areas</b></p> <p><b>2)</b> Where the supported joist span exceeds 4.9 m in <i>buildings</i> with light wood-frame walls, floors and roofs, <a href="#">strip</a> footing widths shall be determined according to</p> <ol style="list-style-type: none"> <li>Section 4.2., or</li> <li>the following formula</li> </ol> $W = w \cdot \lceil \lceil \sum sjs \rceil / ((\text{storeys} \cdot 4.9)) \rceil$	Clarification of footing as “strip” footing.  Added wording to definition of $\sum sjs$ .

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<p>where                      W = minimum footing width,                      w = minimum width of footings supporting joists not exceeding 4.9 m, as defined by Table 9.15.3.4.,  <math>\Sigma</math> sjs = sum of the supported joist spans on each storey whose load is transferred to the footing, and</p> <p>storeys = number of storeys supported by the footing.                      (See Note A-9.15.3.4.(2).)</p>	<p>where                      W = minimum footing width,                      W = minimum width of footings supporting joists not exceeding 4.9 m, as defined by Table 9.15.3.4.,  <math>\Sigma</math> sjs = sum of the supported joist spans on each storey <u>bearing on an exterior wall whose load is transferred to the footing, or sum of half of the supported joist spans on each storey bearing on both sides of an interior wall</u> whose load is transferred to the footing, and</p> <p>Storeys = number of storeys supported by the footing.                      (See Note A-9.15.3.4.(2).)</p>																																																																																																																													
<p><b>9.15.4.1. Permanent Form Material</b></p> <p>1) Insulating concrete form units shall be manufactured of polystyrene conforming to the performance requirements of CAN/ULC-S701.1, “Thermal Insulation, Polystyrene Boards,” for Type 2, 3 or 4 polystyrene.”</p>	<p><b>9.15.4.1. <del>Permanent Form Material</del> Flat Wall Insulating Concrete Form Units</b></p> <p>1) <u>Flat wall</u> insulating concrete form units shall <del>be manufactured of polystyrene conforming to the performance requirements of</del> <u>conform to</u> CAN/ULC-S701.1717.1, “<del>Thermal Insulation, Polystyrene Boards,”</del> <u>Standard for Flat Wall Insulating Concrete Form (ICF) Units – Material Properties.</u>”</p>	<p>“Flat wall” added before “insulating concrete form units” and change to reference standard.</p>																																																																																																																												
<p><b>9.15.4.2. Foundation Wall Thickness and Required Lateral Support</b></p> <p>1) Except as required in Sentence (2), the thickness of <i>foundation</i> walls made of unreinforced concrete block or solid concrete and subject to lateral earth pressure shall conform to Table 9.15.4.2.-A for walls not exceeding 3.0 m in unsupported height.</p> <p>2) The thickness of concrete in flat insulating concrete form <i>foundation</i> walls shall be not less than the greater of</p> <ol style="list-style-type: none"> <li>140 mm, or</li> <li>the thickness of the concrete in the wall above.</li> </ol> <p>3) <i>Foundation</i> walls made of flat insulating concrete form units shall be laterally supported at the top and at the bottom.</p> <p style="text-align: center;"><b>Table 9.15.4.2.-A</b>  <b>Thickness of Solid Concrete and Unreinforced Concrete Block Foundation Walls</b>                      Forming Part of Sentence 9.15.4.2.(1)</p> <table border="1" data-bbox="102 1338 1165 1872"> <thead> <tr> <th rowspan="3">Type of <i>Foundation</i> Wall</th> <th rowspan="3">Minimum Wall Thickness, mm</th> <th colspan="4">Maximum Height of Finished Ground Above <i>Basement</i> Floor or Crawl Space Ground Cover, m</th> </tr> <tr> <th rowspan="2">Height of <i>Foundation</i> Wall Laterally Unsupported at the Top<sup>(1)(2)</sup></th> <th colspan="3">Height of <i>Foundation</i> Wall Laterally Supported at the Top<sup>(1)(2)</sup></th> </tr> <tr> <th>≤ 3.0 m</th> <th>≤ 2.5 m</th> <th>&gt; 2.5 m and ≤ 2.75 m</th> <th>&gt; 2.75 m and ≤ 3.0 m</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Solid concrete, 15 MPa min. strength</td> <td>150</td> <td>0.8</td> <td>1.5</td> <td>1.5</td> <td>1.4</td> </tr> <tr> <td>200</td> <td>1.2</td> <td>2.15</td> <td>2.15</td> <td>2.1</td> </tr> <tr> <td>250</td> <td>1.4</td> <td>2.3</td> <td>2.6</td> <td>2.5</td> </tr> <tr> <td>300</td> <td>1.5</td> <td>2.3</td> <td>2.6</td> <td>2.85</td> </tr> <tr> <td rowspan="4">Solid concrete, 20 MPa min. strength</td> <td>150</td> <td>0.8</td> <td>1.8</td> <td>1.6</td> <td>1.6</td> </tr> <tr> <td>200</td> <td>1.2</td> <td>2.3</td> <td>2.3</td> <td>2.2</td> </tr> <tr> <td>250</td> <td>1.4</td> <td>2.3</td> <td>2.6</td> <td>2.85</td> </tr> <tr> <td>300</td> <td>1.5</td> <td>2.3</td> <td>2.6</td> <td>2.85</td> </tr> <tr> <td>Unreinforced</td> <td>140</td> <td>0.6</td> <td>0.8</td> <td>—</td> <td>—</td> </tr> </tbody> </table>	Type of <i>Foundation</i> Wall	Minimum Wall Thickness, mm	Maximum Height of Finished Ground Above <i>Basement</i> Floor or Crawl Space Ground Cover, m				Height of <i>Foundation</i> Wall Laterally Unsupported at the Top <sup>(1)(2)</sup>	Height of <i>Foundation</i> Wall Laterally Supported at the Top <sup>(1)(2)</sup>			≤ 3.0 m	≤ 2.5 m	> 2.5 m and ≤ 2.75 m	> 2.75 m and ≤ 3.0 m	Solid concrete, 15 MPa min. strength	150	0.8	1.5	1.5	1.4	200	1.2	2.15	2.15	2.1	250	1.4	2.3	2.6	2.5	300	1.5	2.3	2.6	2.85	Solid concrete, 20 MPa min. strength	150	0.8	1.8	1.6	1.6	200	1.2	2.3	2.3	2.2	250	1.4	2.3	2.6	2.85	300	1.5	2.3	2.6	2.85	Unreinforced	140	0.6	0.8	—	—	<p><b>9.15.4.2. Foundation Wall Thickness and Required Lateral Support</b></p> <p>1) Except as required in Sentence (2), the thickness of <i>foundation</i> walls made of unreinforced concrete block, <u>concrete core in flat wall insulating concrete forms</u> or solid concrete and subject to lateral earth pressure shall conform to Table 9.15.4.2.-A for walls not exceeding 3.0 m in unsupported height.</p> <p>2) The <del>thickness of</del> concrete <u>core</u> in flat insulating concrete form <i>foundation</i> walls shall be not less than the greater of</p> <ol style="list-style-type: none"> <li><del>140</del> <u>150</u> mm, or</li> <li>the thickness of the concrete in the wall above.</li> </ol> <p><del>3) <i>Foundation</i> walls made of flat insulating concrete form units shall be laterally supported at the top and at the bottom.</del></p> <p style="text-align: center;"><b>Table 9.15.4.2.-A</b>  <b>Thickness of Solid Concrete, <u>Concrete Core in Flat Wall Insulating Concrete Form</u> and Unreinforced Concrete Block Foundation Walls</b>                      Forming Part of Sentence 9.15.4.2.(1)</p> <table border="1" data-bbox="1199 1338 2262 1872"> <thead> <tr> <th rowspan="3">Type of <i>Foundation</i> Wall</th> <th rowspan="3">Minimum <del>Wall</del> Thickness of <u>Concrete or Concrete Block</u>, mm</th> <th colspan="4">Maximum Height of Finished Ground Above <i>Basement</i> Floor or Crawl Space Ground Cover, m</th> </tr> <tr> <th rowspan="2">Height of <i>Foundation</i> Wall Laterally Unsupported at the Top<sup>(1)(2)</sup></th> <th colspan="3">Height of <i>Foundation</i> Wall Laterally Supported at the Top<sup>(1)(2)</sup></th> </tr> <tr> <th>≤ 3.0 m</th> <th>≤ 2.5 m</th> <th>&gt; 2.5 m and ≤ 2.75 m</th> <th>&gt; 2.75 m and ≤ 3.0 m</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Solid concrete <u>and concrete core in flat wall insulating concrete forms</u>,<sup>(3)</sup> 15 MPa min. strength</td> <td>150</td> <td>0.8</td> <td>1.5</td> <td>1.5</td> <td>1.4</td> </tr> <tr> <td>200</td> <td>1.2</td> <td>2.15</td> <td>2.15</td> <td>2.1</td> </tr> <tr> <td>250</td> <td>1.4</td> <td>2.3</td> <td>2.6</td> <td>2.5</td> </tr> <tr> <td>300</td> <td>1.5</td> <td>2.3</td> <td>2.6</td> <td>2.85</td> </tr> <tr> <td rowspan="4">Solid concrete <u>and concrete core in flat wall insulating concrete forms</u>,<sup>(3)</sup> 20 MPa min. strength</td> <td>150</td> <td>0.8</td> <td>1.8</td> <td>1.6</td> <td>1.6</td> </tr> <tr> <td>200</td> <td>1.2</td> <td>2.3</td> <td>2.3</td> <td>2.2</td> </tr> <tr> <td>250</td> <td>1.4</td> <td>2.3</td> <td>2.6</td> <td>2.85</td> </tr> <tr> <td>300</td> <td>1.5</td> <td>2.3</td> <td>2.6</td> <td>2.85</td> </tr> <tr> <td>Unreinforced concrete</td> <td>140</td> <td>0.6</td> <td>0.8</td> <td>—</td> <td>—</td> </tr> </tbody> </table>	Type of <i>Foundation</i> Wall	Minimum <del>Wall</del> Thickness of <u>Concrete or Concrete Block</u> , mm	Maximum Height of Finished Ground Above <i>Basement</i> Floor or Crawl Space Ground Cover, m				Height of <i>Foundation</i> Wall Laterally Unsupported at the Top <sup>(1)(2)</sup>	Height of <i>Foundation</i> Wall Laterally Supported at the Top <sup>(1)(2)</sup>			≤ 3.0 m	≤ 2.5 m	> 2.5 m and ≤ 2.75 m	> 2.75 m and ≤ 3.0 m	Solid concrete <u>and concrete core in flat wall insulating concrete forms</u> , <sup>(3)</sup> 15 MPa min. strength	150	0.8	1.5	1.5	1.4	200	1.2	2.15	2.15	2.1	250	1.4	2.3	2.6	2.5	300	1.5	2.3	2.6	2.85	Solid concrete <u>and concrete core in flat wall insulating concrete forms</u> , <sup>(3)</sup> 20 MPa min. strength	150	0.8	1.8	1.6	1.6	200	1.2	2.3	2.3	2.2	250	1.4	2.3	2.6	2.85	300	1.5	2.3	2.6	2.85	Unreinforced concrete	140	0.6	0.8	—	—	<p>Insertion of “concrete core in flat wall insulating concrete forms.”</p> <p>Change from 140 to 150 mm in Clause (2)(a).</p> <p>Deletion of Sentence (3).</p> <p>Added text to row/column categories in Table 9.15.4.2.-A.</p>
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concrete block	190	0.9	1.2	(3)	(3)	block	190	0.9	1.2	(24)	(24)																																							
	240	1.2	1.8	(3)	(3)		240	1.2	1.8	(24)	(24)																																							
	290	1.4	2.2	—	—		290	1.4	2.2	—	—																																							
<b>Notes to Table 9.15.4.2.-A:</b> (1) See Article 9.15.4.3. (2) See Article 9.15.4.6. (3) See Table 9.15.4.2.-B.						<b>Notes to Table 9.15.4.2.-A:</b> (1) See Article 9.15.4.3. (2) See Article 9.15.4.6. (3) <a href="#">See Note A-Table 9.15.4.2.-A.</a> (34) See Table 9.15.4.2.-B.																																												
<b>9.15.4.3. Foundation Walls Considered to be Laterally Supported at the Top</b>  1) Sentences (2) to (4) pertain to lateral support for walls described in Sentence 9.15.4.2.(1).  2) <i>Foundation</i> walls shall be considered to be laterally supported at the top if a) such walls support a <i>solid masonry</i> superstructure, b) the floor joists are embedded in the top of the <i>foundation</i> walls, or c) the floor system is anchored to the top of the <i>foundation</i> walls with anchor bolts, in which case the joists may run either parallel or perpendicular to the <i>foundation</i> walls.						<b>9.15.4.3. Foundation Walls Considered to be Laterally Supported at the Top</b>  1) Sentences (2) to (4) pertain to lateral support for walls described in Sentence 9.15.4.2.(1).  2) <i>Foundation</i> walls shall be considered to be laterally supported at the top if a) such walls support a <i>solid masonry</i> superstructure <a href="#">or flat insulating concrete form wall</a> , b) the floor joists are embedded in the top of the <i>foundation</i> walls, <del>or</del> c) the floor system is anchored to the top of the <i>foundation</i> walls with anchor bolts, in which case the joists may run either parallel or perpendicular to the <i>foundation</i> walls, <a href="#">or</a> d) <a href="#">they extend from the footing to no more than 300 mm above the finished ground level and are backfilled on both sides such that the difference in elevation between the finished ground levels on either side of the wall is no more than 150 mm.</a>						Insertion of “or flat insulating concrete form wall.”  Addition of new Clause (2)(d).																																						
<b>9.15.4.4. Foundation Walls Considered to be Laterally Supported at the Bottom</b>  1) Flat insulating concrete form <i>foundation</i> walls shall be considered to be laterally supported at the bottom where the <i>foundation</i> wall a) supports backfill not more than 1.2 m in height, b) is supported at the footing by a shear key and at the top by the ground floor framing, or c) is doweled to the footing with not less than 15M bars spaced not more than 1.2 m o.c.						<b>9.15.4.4. Foundation Walls Considered to be Laterally Supported at the Bottom</b>  1) Flat insulating concrete form <i>foundation</i> walls shall be considered to be laterally supported at the bottom where the <i>foundation</i> wall a) supports backfill not more than 1.2 m in height, b) is supported at the footing by a shear key and at the top by the ground floor framing, or c) is doweled to the footing with not less than i) 15M bars spaced not more than 1.2 m o.c., <a href="#">or</a> ii) <a href="#">10M bars spaced not more than 600 mm</a> o.c.						Added option of 10M bars in Clause (c).																																						
<b>9.15.4.5. Reinforcement for Flat Insulating Concrete Form Foundation Walls</b>  2) Vertical reinforcement in flat insulating concrete form <i>foundation</i> walls shall be a) provided in accordance with i) Table 9.15.4.5.-A for 140 mm walls, ii) Table 9.15.4.5.-B for 190 mm walls, and iii) Table 9.15.4.5.-C for 240 mm walls, b) located in the inside half of the wall section with a minimum cover of 30 mm from the inside face of the concrete wall, and c) where interrupted by wall openings, placed not more than 600 mm from each side of the openings.  <p align="center"><b>Table 9.15.4.5.-A</b>  <b>Vertical Reinforcement for 140 mm Flat Insulating Concrete Form Foundation Walls</b>                      Forming Part of Sentence 9.15.4.5.(2)</p> <table border="1"> <thead> <tr> <th rowspan="2">Max. Height of Finished Ground Above Finished <i>Basement</i> Floor, m</th> <th colspan="3">Minimum Vertical Reinforcement</th> </tr> <tr> <th colspan="3">Maximum Unsupported <i>Basement</i> Wall Height</th> </tr> </thead> <tbody> <tr> <td></td> <td>2.44 m</td> <td>2.75 m</td> <td>3.0 m</td> </tr> <tr> <td>1.35</td> <td>10M at 400 mm o.c.</td> <td>10M at 400 mm o.c.</td> <td>10M at 400 mm o.c.</td> </tr> <tr> <td>1.6</td> <td>10M at 400 mm o.c.</td> <td>10M at 380 mm o.c.</td> <td>10M at 380 mm o.c.</td> </tr> </tbody> </table>						Max. Height of Finished Ground Above Finished <i>Basement</i> Floor, m	Minimum Vertical Reinforcement			Maximum Unsupported <i>Basement</i> Wall Height				2.44 m	2.75 m	3.0 m	1.35	10M at 400 mm o.c.	10M at 400 mm o.c.	10M at 400 mm o.c.	1.6	10M at 400 mm o.c.	10M at 380 mm o.c.	10M at 380 mm o.c.	<b>9.15.4.5. Reinforcement for Flat Insulating Concrete Form Foundation Walls</b>  2) Vertical reinforcement in flat insulating concrete form <i>foundation</i> walls shall be a) provided in accordance with i) Table 9.15.4.5.-A for <del>140</del> <a href="#">150</a> mm walls, ii) Table 9.15.4.5.-B for 190 mm walls, and iii) Table 9.15.4.5.-C for 240 mm walls, b) located in the inside half of the wall section with a minimum cover of 30 mm from the inside face of the concrete wall, and c) where interrupted by wall openings, placed not more than 600 mm from each side of the openings.  <p align="center"><b>Table 9.15.4.5.-A</b>  <b>Vertical Reinforcement for <del>140</del> <a href="#">150</a> mm Flat Insulating Concrete Form Foundation Walls</b>                      Forming Part of Sentence 9.15.4.5.(2)</p> <table border="1"> <thead> <tr> <th rowspan="2">Max. Height of Finished Ground Above Finished <i>Basement</i> Floor, m</th> <th colspan="3">Minimum Vertical Reinforcement</th> </tr> <tr> <th colspan="3">Maximum Unsupported <i>Basement</i> Wall Height</th> </tr> </thead> <tbody> <tr> <td></td> <td>2.44 m</td> <td>2.75 m</td> <td>3.0 m</td> </tr> <tr> <td>1.35</td> <td>10M at 400 mm o.c.</td> <td>10M at 400 mm o.c.</td> <td>10M at 400 mm o.c.</td> </tr> <tr> <td>1.6</td> <td>10M at 400 mm o.c.</td> <td>10M at 380 mm o.c.</td> <td>10M at 380 mm o.c.</td> </tr> </tbody> </table>						Max. Height of Finished Ground Above Finished <i>Basement</i> Floor, m	Minimum Vertical Reinforcement			Maximum Unsupported <i>Basement</i> Wall Height				2.44 m	2.75 m	3.0 m	1.35	10M at 400 mm o.c.	10M at 400 mm o.c.	10M at 400 mm o.c.	1.6	10M at 400 mm o.c.	10M at 380 mm o.c.	10M at 380 mm o.c.	Change from 140 mm to 150 mm walls.
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2.2	10M at 250 mm o.c.	10M at 250 mm o.c.	10M at 250 mm o.c.	2.2	10M at 250 mm o.c.	10M at 250 mm o.c.	10M at 250 mm o.c.				
2.35	n/a	10M at 250 mm o.c.	10M at 250 mm o.c.	2.35	n/a	10M at 250 mm o.c.	10M at 250 mm o.c.				
2.6	n/a	10M at 250 mm o.c.	10M at 250 mm o.c.	2.6	n/a	10M at 250 mm o.c.	10M at 250 mm o.c.				
3	n/a	n/a	15M at 250 mm o.c.	3	n/a	n/a	15M at 250 mm o.c.				
<b>9.18.1.3. Heated and Unheated Crawl Spaces</b>				<b>9.18.1.3. Heated and Unheated Crawl Spaces</b>				Insertion of new Clause (a). Harmonizes with NBC.			
<p>1) Crawl spaces shall be considered to be heated where the space</p> <p>a) contains heating ducts that are not sealed and insulated to minimize heatloss to the space, or</p> <p>b) is not separated from heated space in accordance with Section 9.25.</p>				<p>1) Crawl spaces shall be considered to be heated where the space</p> <p><u>a) is used as a hot air plenum,</u></p> <p><del>ab)</del> contains heating ducts that are not sealed and insulated to minimize heat loss to the space, or</p> <p><del>bc)</del> is not separated from heated space in accordance with Section 9.25.</p>							
<b>9.20.1.1. General</b>				<b>9.20.1.1. General</b>				Deletion of “and containing only a single dwelling unit,” and “response” from “seismic spectral response acceleration.”			
<p>1) Except as provided in Article 9.20.1.2., this Section applies to</p> <p>a) unreinforced masonry and masonry veneer walls not in contact with the ground, where</p> <p>i) the height of the walls constructed on the <i>foundation</i> walls does not exceed 11 m, and</p> <p>ii) the roof or floor assembly above the <i>first storey</i> is not of concrete construction, and</p> <p>b) flat insulating concrete form walls not in contact with the ground that (see Note A-9.15.1.1.(1)(c) and 9.20.1.1.(1)(b))</p> <p>i) have a maximum floor-to-floor height of 3 m,</p> <p>ii) are erected in <i>buildings</i> not more than 2 <i>storeys</i> in <i>building height</i> and containing only a single <i>dwelling unit</i>, and</p> <p>iii) are erected in locations where the seismic spectral response acceleration, <math>S_a(0.2)</math>, is not greater than 0.4 (see Note A-9.20.1.2.).</p>				<p>1) Except as provided in Article 9.20.1.2., this Section applies to</p> <p>a) unreinforced masonry and masonry veneer walls not in contact with the ground, where</p> <p>i) the height of the walls constructed on the <i>foundation</i> walls does not exceed 11 m, and</p> <p>ii) the roof or floor assembly above the <i>first storey</i> is not of concrete construction, and</p> <p>b) flat insulating concrete form walls not in contact with the ground that (see Note A-9.15.1.1.(1)(c) and 9.20.1.1.(1)(b))</p> <p>i) have a maximum floor-to-floor height of 3 m,</p> <p>ii) are erected in <i>buildings</i> not more than 2 <i>storeys</i> in <i>building height</i> <del>and containing only a single dwelling unit</del>, and</p> <p>iii) are erected in locations where the seismic spectral <del>response</del> acceleration, <math>S_a(0.2)</math>, is not greater than 0.4 (see Note A-9.20.1.2.).</p>							
<b>9.20.9.5. Ties for Masonry Veneer</b>				<b>9.20.9.5. Ties for Masonry Veneer</b>				New Clauses (e) and (f) added to Sentence (1).			
<p>1) Masonry veneer 75 mm or more in thickness and resting on a bearing support shall be tied to masonry backing or to wood framing members with straps that are</p> <p>a) corrosion-resistant,</p> <p>b) not less than 0.76 mm thick,</p> <p>c) not less than 22 mm wide,</p> <p>d) shaped to provide a key with the mortar, and</p> <p>e) spaced in accordance with Table 9.20.9.5.</p> <p>2) Straps described in Sentence (1) that are fastened to wood framing members shall be</p> <p>a) bent at a right angle within 6 mm from the fastener, and</p> <p>b) fastened with corrosion-resistant 3.18 mm diam screws or spiral nails having a wood penetration of not less than 63 mm.</p>				<p>1) Masonry veneer 75 mm or more in thickness and resting on a bearing support shall be tied to masonry backing or to wood framing members with straps that are</p> <p>a) corrosion-resistant,</p> <p>b) not less than 0.76 mm thick,</p> <p>c) not less than 22 mm wide,</p> <p>d) shaped to provide a key with the mortar,</p> <p><u>e) pre-bent during manufacture to a right angle within 6 mm of the fastener hole,</u></p> <p><u>f) fastened with</u></p> <p><u>i) corrosion-resistant wood screws conforming to Sentence 9.23.3.1.(3) that have a minimum diameter of 4.16 mm (No. 8) and a wood penetration of not less than 38 mm, or</u></p> <p><u>ii) corrosion-resistant common spiral nails conforming to Sentence 9.23.3.1.(1) that are not less than 76 mm long and have a wood penetration of not less than 63 mm, and</u></p> <p><del>eg)</del> spaced in accordance with Table 9.20.9.5.</p> <p><del>2) Straps described in Sentence (1) that are fastened to wood framing members shall be</del></p> <p><del>a) bent at a right angle within 6 mm from the fastener, and</del></p> <p><del>b) fastened with corrosion-resistant 3.18 mm diam screws or spiral nails having a wood penetration of not less than 63 mm.</del> <u>Where hot-dipped, zinc-coated straps are used to meet the requirements of Sentence (1), they shall be pre-bent and pre-drilled or pre-punched prior to hot-dip, zinc-coated galvanizing.</u></p>				Sentence (2) revised.			
<b>9.20.16.1. Corrosion Resistance of Connectors</b>				<b>16.1. Corrosion Resistance of Connectors</b>				Change in table from 305 to 460 g/m <sup>2</sup> .			
<p style="text-align: center;"><b>Table 9.20.16.1.</b> <b>Minimum Requirements for Galvanizing</b></p>				<p style="text-align: center;"><b>Table 9.20.16.1.</b> <b>Minimum Requirements for Galvanizing</b></p>				Change in table note from 3.18 to 0.76 mm.			

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Forming Part of Sentence 9.20.16.1.(1)			Forming Part of Sentence 9.20.16.1.(1)																																
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<p><b>Notes to Table 9.20.16.1.:</b></p> <p>(1) ASTM A 123/A 123M does not apply to metal less than 3.18 mm thick. Galvanizing coatings may be interpolated for thicknesses between 3.18 mm and 0.76 mm.</p>			<p><b>Notes to Table 9.20.16.1.:</b></p> <p>(1) ASTM A 123/A 123M does not apply to metal less than <del>3.18</del> 0.76 mm thick. Galvanizing coatings may be interpolated for thicknesses between 3.18 mm and 0.76 mm.</p>																																
N/A			<p><b>9.23.2.4. Connections to Preservative-Treated Wood</b></p> <p><b>1) Except as provided in Sentence (3), connectors in contact with preservative-treated wood shall be made of</b></p> <p>a) hot-dipped, zinc-coated galvanized steel with a coating weight not less than Z550 conforming to ASTM A653/A653M, "Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process,"</p> <p>b) a material that provides an equivalent level of corrosion protection to that provided by the material described in Clause (a), or</p> <p>c) stainless steel.</p> <p><b>2) Fasteners used to attach the connectors referred to in Sentence (1) shall be made of</b></p> <p>a) galvanized steel coated with zinc in accordance with ASTM A153/A153M, "Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware," or</p> <p>b) a material that provides an equivalent level of performance and is compatible with the connector.</p> <p><b>3) Connectors and fasteners that are in contact with wood that has been treated with a disodium octaborate tetrahydrate (SBX (DOT)) or zinc borate preservative and is installed in a dry interior environment are permitted to be made of uncoated carbon steel. (See Note A-9.23.2.4.(3).)</b></p>			New Article 9.23.2.4. for Connections to Preservative-Treated Wood.																													
<p><b>9.23.3.4. Nailing of Framing</b></p> <p align="center"><b>Table 9.23.3.4.</b> <b>Nailing for Framing</b> Forming Part of Sentence 9.23.3.4.(1)</p> <table border="1"> <thead> <tr> <th align="center">Construction Detail</th> <th align="center">Minimum Length of Nails, mm</th> <th align="center">Minimum Number or Maximum Spacing of Nails</th> </tr> </thead> <tbody> <tr> <td>38 mm edge laid plank to each other</td> <td align="center">76</td> <td align="center">450 mm o.c.</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><b>Notes to Table 9.23.3.4.:</b></p> <p>(1) See Article 9.23.11.4. for requirements on the nailing of top plates in <i>braced wall bands</i>.</p> <p>(2) See Sentence 9.23.3.4.(2).</p> <p>(3) See Sentence 9.23.3.4.(3).</p>			Construction Detail	Minimum Length of Nails, mm	Minimum Number or Maximum Spacing of Nails	38 mm edge laid plank to each other	76	450 mm o.c.				<p><b>9.23.3.4. Nailing of Framing</b></p> <p align="center"><b>Table 9.23.3.4.</b> <b>Nailing for Framing</b> Forming Part of <del>Sentence</del> Sentences 9.23.3.4.(1) and 9.23.14.4.(2)</p> <table border="1"> <thead> <tr> <th align="center">Construction Detail</th> <th align="center">Minimum Length of Nails, mm</th> <th align="center">Minimum Number or Maximum Spacing of Nails</th> </tr> </thead> <tbody> <tr> <td>38 mm edge laid plank to each other</td> <td align="center">76</td> <td align="center">450 mm o.c.</td> </tr> <tr> <td>End-joist or end-rafter to built-up wall stud<sup>(4)</sup></td> <td align="center">76</td> <td align="center">5 or 8<sup>(5)</sup></td> </tr> </tbody> </table> <p><b>Notes to Table 9.23.3.4.:</b></p> <p>(1) See Article 9.23.11.4. for requirements on the nailing of top plates in <i>braced wall bands</i>.</p> <p>(2) See Sentence 9.23.3.4.(2).</p> <p>(3) See Sentence 9.23.3.4.(3).</p> <p>(4) See Sentence 9.23.13.5.(3).</p> <p>(5) Where heavyweight construction is used in the roof of the space, at least 8 nails are required (see Note A-9.23.13.2.(1)(a)(i)).</p>			Construction Detail	Minimum Length of Nails, mm	Minimum Number or Maximum Spacing of Nails	38 mm edge laid plank to each other	76	450 mm o.c.	End-joist or end-rafter to built-up wall stud <sup>(4)</sup>	76	5 or 8 <sup>(5)</sup>	<p>Row added to bottom of Table 9.23.3.4.</p> <p>Notes added to Table 9.23.3.4.</p>											
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<p><b>9.23.6.1. Anchorage of Building Frames</b></p> <p>1) Except as required by Sentence 9.23.6.3.(1), <i>building</i> frames shall be anchored to the <i>foundation</i> unless a structural analysis of wind and earthquake pressures shows anchorage is not required.</p>				<p><b>9.23.6.1. Anchorage of Building Frames</b></p> <p>1) Except as required by Sentence 9.23.6.3.(1), <i>building</i> frames shall be anchored to the <i>foundation</i> unless a structural analysis <del>of that considers</del> wind and earthquake <u>loads and lateral earth</u> pressures shows <u>that</u> anchorage is not required.</p>				Sentence revised.																																							
<p><b>9.23.13.5. Braced Wall Panels in Braced Wall Bands</b></p> <p>3) Portions of the perimeter of a single open or enclosed space need not comply with Sentence (1), where</p> <p>a) the roof of the space projects not more than</p> <p>i) 3.5 m from the face of the framing of the nearest parallel <i>braced wall band</i>, and</p> <p>ii) half the perpendicular plan dimension,</p> <p>b) that portion of the perimeter structure does not support a floor, and</p> <p>c) the roof of the space is</p> <p>i) integral with the roof of the rest of the <i>building</i> with framing members not more than 400 mm o.c., or</p> <p>ii) constructed with roof framing not more than 400 mm o.c. fastened to the wall framing (see Table 9.23.3.4. and Article 9.23.9.1. for balloon framing).</p> <p>(See Note A-9.23.13.5.(3).)</p>				<p><b>9.23.13.5. Braced Wall Panels in Braced Wall Bands</b></p> <p>3) Portions of the perimeter of a single open or enclosed space need not comply with Sentence (1), where</p> <p>a) the roof of the space projects not more than</p> <p>i) 3.5 m from the face of the framing of the nearest parallel <i>braced wall band</i>, and</p> <p>ii) <del>half</del> the perpendicular plan dimension,</p> <p>b) that portion of the perimeter structure does not support a floor, <del>and</del></p> <p>c) the roof of the space is</p> <p>i) integral with the roof of the rest of the <i>building</i> with framing members not more than 400 mm o.c. <u>where roof sheathing edges are not supported on blocking and not more than 600 mm o.c. where roof sheathing edges are supported on blocking securely fastened between framing members</u>, or</p> <p>ii) constructed with roof framing not more than 400 mm o.c. <u>where roof sheathing edges are not supported on blocking and not more than 600 mm o.c. where roof sheathing edges are supported on blocking securely fastened between framing members, and</u> fastened to the wall framing (see Table 9.23.3.4. and Article 9.23.9.1. for balloon framing), <u>and</u></p> <p><u>d) the end-joists or end-rafters for the roof of the space are fastened to a 3-ply, 38 mm x 140 mm built-up column or a 5-ply, 38 mm x 89 mm built-up column that is integral with the wall framing.</u></p> <p>(See Note A-9.23.13.5.(3).)</p>				<p>Deletion of “half” from Subclause (3)(a)(ii).</p> <p>Revisions to Clause (3)(c).</p> <p>Addition of new Clause (3)(d).</p>																																							
<p><b>9.23.14.8. Ridge Support</b></p> <p>6) Ceiling joists referred to in Sentence (5) shall be fastened together with at least one more nail per joist splice than required for the rafter to joist connection shown in Table 9.23.14.8.</p> <p>7) Members referred to in Sentence (6) are permitted to be fastened together either directly or through a gusset plate.</p> <p align="center"><b>Table 9.23.14.8.</b> <b>Rafter-to-Joist Nailing (Unsupported Ridge)</b> Forming Part of Sentences 9.23.14.8.(5) and (6)</p> <table border="1"> <tr> <td rowspan="4">Roof Slope</td> <td rowspan="4">Rafter Spacing, mm</td> <td colspan="4">Minimum Number of Nails not less than 76 mm Long</td> </tr> <tr> <td colspan="2">Rafter Tied to every Joist</td> <td colspan="2">Rafter Tied to Joist every 1.2 m</td> </tr> <tr> <td>Building Width up to 8 m</td> <td>Building Width up to 9.8 m</td> <td>Building Width up to 8 m</td> <td>Building Width up to 9.8 m</td> </tr> <tr> <td>Roof Snow Load, kPa</td> <td>Roof Snow Load, kPa</td> <td>Roof Snow Load, kPa</td> <td>Roof Snow Load, kPa</td> </tr> </table>				Roof Slope	Rafter Spacing, mm	Minimum Number of Nails not less than 76 mm Long				Rafter Tied to every Joist		Rafter Tied to Joist every 1.2 m		Building Width up to 8 m	Building Width up to 9.8 m	Building Width up to 8 m	Building Width up to 9.8 m	Roof Snow Load, kPa	<p><b>9.23.14.8. Ridge Support</b></p> <p><u>6) Except as permitted in Sentence (7), ceiling joists referred to in Sentence (5) shall be tied to the base of every rafter.</u></p> <p><u>7) Where ceiling joists referred to in Sentence (5) are raised above the base of the rafters, the connections between the rafters and the ceiling joists shall be designed in accordance with Clause 9.4.1.1.(1)(b) or (c).</u></p> <p><del>6) 8) Ceiling joists referred to in Sentence (5) that are spliced to make a continuous joist shall be fastened together at each splice with at least one more nail per joist splice than required for the rafter-to-joist connection shown in Table 9.23.14.8.</del></p> <p><del>7) 9) Members referred to in Sentence Sentences (6) and (8) are permitted to be fastened together either directly or through a gusset plate.</del></p> <p align="center"><b>Table 9.23.14.8.</b> <b>Rafter-to-Joist Nailing (Unsupported Ridge)</b> Forming Part of Sentences 9.23.14.8.(5) and (<del>6</del>8)</p> <table border="1"> <tr> <td rowspan="4">Roof Slope</td> <td rowspan="4">Rafter Spacing, mm</td> <td colspan="4">Minimum Number of Nails <del>Not Less Than</del> 76 mm Long <u>and 3.66 mm in Diameter<sup>(1)(2)(3)(4)</sup></u></td> </tr> <tr> <td colspan="2"><del>Rafter Tied to every Joist</del></td> <td colspan="2"><del>Rafter Tied to Joist every 1.2 m</del></td> </tr> <tr> <td>Building Width up to <del>8 m</del> <u>8-4 m</u></td> <td>Building Width up to <del>9.8 m</del> <u>9-8-6 m</u></td> <td>Building Width up to 8 m</td> <td>Building Width up to <del>9.8-10 m</del> <u>9-8-10 m</u></td> </tr> <tr> <td><u>Specified</u> Roof Snow Load, kPa</td> </tr> </table>				Roof Slope	Rafter Spacing, mm	Minimum Number of Nails <del>Not Less Than</del> 76 mm Long <u>and 3.66 mm in Diameter<sup>(1)(2)(3)(4)</sup></u>				<del>Rafter Tied to every Joist</del>		<del>Rafter Tied to Joist every 1.2 m</del>		Building Width up to <del>8 m</del> <u>8-4 m</u>	Building Width up to <del>9.8 m</del> <u>9-8-6 m</u>	Building Width up to 8 m	Building Width up to <del>9.8-10 m</del> <u>9-8-10 m</u>	<u>Specified</u> Roof Snow Load, kPa	<p>New Sentences (6) and (7) added.</p> <p>Sentence (8) – previously Sentence (6) – revised.</p> <p>Sentence (9) – previously Sentence (7) – with revised cross-references.</p> <p>Table 9.23.14.8. revised.</p> <p>Notes added to Table 9.23.14.8.</p>									
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		1.0 or less	1.5	2.0 or more	1.0 or less	1.5	2.0 or more	1.0 or less	1.5	2.0 or more	1.0 or less	1.5	2.0 or more			1.0 or less	1.5	2.0 or more	1.0 or less	1.5	2.0 or more	1.0 or less	1.5	2.0 or more				
1 in 3	400	4	5	6	5	7	8	11	—	—	—	—	—	1 in 3	300	3	4	5	5	6	7	6	8	10	7	10	(5)	
	600	6	8	9	8	—	—	11	—	—	—	—	—		400	4	5	6	7	8	10	11	—	—	—	—	(5)	
															600	6	8	9	8	—	—	—	—	—	—	—	(5)	
1 in 2.4	400	4	4	5	5	6	7	7	10	—	9	—	—	1 in 2.4	300	3	3	4	4	5	6	5	6	8	6	8	10	
	600	5	7	8	7	9	11	7	10	—	—	—	—		400	4	4	5	5	6	7	8	7	10	8	10	(5)	
															600	5	7	8	7	9	11	7	10	—	—	—	(5)	
1 in 2	400	4	4	4	4	4	5	6	8	9	8	—	—	1 in 2	300	2	3	4	3	4	5	4	5	7	5	7	8	
	600	4	5	6	5	7	8	6	8	9	8	—	—		400	4	4	4	4	4	5	6	8	9	8	—	(5)	
															600	4	5	6	7	8	10	6	8	9	8	—	(5)	
1 in 1.71	400	4	4	4	4	4	4	5	7	8	7	9	11	1 in 1.71	300	2	3	3	3	4	4	4	5	6	4	6	7	
	600	4	4	5	5	6	7	5	7	8	7	9	11		400	4	4	4	4	4	4	5	6	8	7	9	11	
															600	4	4	5	5	6	7	5	7	8	7	9	11	
1 in 1.33	400	4	4	4	4	4	4	4	5	6	5	6	7	1 in 1.33	300	2	2	3	2	3	4	3	4	5	4	5	6	
	600	4	4	4	4	4	5	4	5	6	5	6	7		400	4	4	4	4	4	4	5	6	5	6	7	7	
															600	4	4	4	4	4	4	5	6	5	6	7	(5)	
1 in 1	400	4	4	4	4	4	4	4	4	4	4	4	5	1 in 1	300	2	2	2	2	2	3	2	3	4	3	4	4	
	600	4	4	4	4	4	4	4	4	4	4	4	5		400	4	4	4	4	4	4	4	4	4	4	4	5	
															600	4	4	4	4	4	4	4	4	4	4	4	5	

Notes to Table 9.23.14.8.:

- (1) Nails with a diameter less than 3.66 mm are permitted to be used, provided the minimum number of nails stated in the Table is modified as follows:
  - For a nail diameter greater than or equal to 2.86 mm and less than 3.25 mm, add 3 nails to the minimum number of nails, up to a maximum of 10 nails.
  - For a nail diameter greater than or equal to 3.25 mm and less than 3.66 mm, add 2 nails to the minimum number of nails, up to a maximum of 10 nails.
 Where more than 10 nails are required, the connections between the rafters and the ceiling joists shall be designed in accordance with Clause 9.4.1.1.(1)(b) or (c).
- (2) The minimum number of nails stated in the Table is applicable to Spruce-Pine-Fir, Douglas Fir-Larch and Hem-Fir members. For Northern Species members, add 2 nails to the minimum number of nails, up to a maximum of 10 nails. Where more than 10 nails are required, the connections between the rafters and the ceiling joists shall be designed in accordance with Clause 9.4.1.1.(1)(b) or (c).
- (3) To accommodate nail spacing, not less than 38 mm x 140 mm joists shall be used where 6 or more nails are required, and not less than 38 mm x 184 mm joists shall be used where 8 or more nails are required.
- (4) The minimum number of nails in the Table is applicable for a maximum roof dead load of 0.5 kPa.
- (5) The connections between the rafters and the ceiling joists shall be designed in accordance with Clause 9.4.1.1.(1)(b) or (c).

<p><b>9.23.14.11. Roof Trusses</b></p> <p>1) Roof trusses which are not designed in accordance with Part 4 shall</p> <p>a) be capable of supporting a total ceiling load (dead load plus live load) of 0.35 kPa plus two and two-thirds times the specified live roof load for 24 h, and</p> <p>b) not exceed the deflections shown in Table 9.23.14.11. when loaded with the ceiling load plus</p>	<p><b>9.23.14.11. Roof Trusses</b></p> <p>1) <del>Roof trusses which are not designed in accordance with Part 4 shall</del></p> <p><del>a) be capable of supporting a total ceiling load (dead load plus live load) of 0.35 kPa plus two and two-thirds times the specified live roof load for 24 h, and</del></p> <p><del>b) not exceed the deflections shown in Table 9.23.14.11. when loaded with the ceiling load plus</del></p>	<p>Sentence (1) fully revised, along with deletion of Table 9.23.14.11.</p> <p>New Sentence (3) added.</p> <p>Prior Sentences (3) to (6) deleted.</p>
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<p>one and one-third times the specified roof snow load for 1 h.</p> <p style="text-align: center;"><b>Table 9.23.14.11.</b> <b>Maximum Roof Truss Deflections</b> Forming Part of Sentence 9.23.14.11.(1)</p> <table border="1" data-bbox="105 439 1165 600"> <thead> <tr> <th>Truss Span</th> <th>Type of Ceiling</th> <th>Maximum Deflection</th> </tr> </thead> <tbody> <tr> <td rowspan="2">4.3 m or less</td> <td>Plaster or gypsum board</td> <td>1/360 of the span</td> </tr> <tr> <td>Other than plaster or gypsum board</td> <td>1/180 of the span</td> </tr> <tr> <td rowspan="2">Over 4.3 m</td> <td>Plaster or gypsum board</td> <td>1/360 of the span</td> </tr> <tr> <td>Other than plaster or gypsum board</td> <td>1/240 of the span</td> </tr> </tbody> </table> <p>2) The joint connections used in trusses described in Sentence (1) shall be designed in conformance with the requirements in Subsection 4.3.1. (See Note A-9.23.14.11.(2).)</p> <p>3) Where the length of compression web members in roof trusses described in Sentence (1) exceeds 1.83 m, such web members shall be provided with continuous bracing to prevent buckling.</p> <p>4) Bracing required in Sentence (3) shall consist of not less than 19 mm by 89 mm lumber nailed at right angles to the web members near their centres with at least two 63 mm nails for each member.</p> <p>5) Where the ability of a truss design to satisfy the requirements of Sentence (1) is demonstrated by testing, it shall consist of a full scale load test carried out in conformance with CSA S307-M, "Load Test Procedure for Wood Roof Trusses for Houses and Small Buildings."</p> <p>6) Where the ability of a truss design to satisfy the requirements of Sentence (1) is demonstrated by analysis, it shall be carried out in accordance with good engineering practice such as that described in TPIC 2014, "Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses (Limit States Design)."</p>	Truss Span	Type of Ceiling	Maximum Deflection	4.3 m or less	Plaster or gypsum board	1/360 of the span	Other than plaster or gypsum board	1/180 of the span	Over 4.3 m	Plaster or gypsum board	1/360 of the span	Other than plaster or gypsum board	1/240 of the span	<p><del>one and one-third times the specified roof snow load for 1 h.</del> <a href="#">Wood roof trusses shall be designed in accordance with good engineering practice such as that described in TPIC 2019, "Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses."</a></p> <p style="text-align: center;"><del>Table 9.23.14.11.</del> <del>Maximum Roof Truss Deflections</del> <del>Forming Part of Sentence 9.23.14.11.(1)</del></p> <table border="1" data-bbox="1199 439 2259 600"> <thead> <tr> <th>Truss Span</th> <th>Type of Ceiling</th> <th>Maximum Deflection</th> </tr> </thead> <tbody> <tr> <td rowspan="2">4.3 m or less</td> <td>Plaster or gypsum board</td> <td>1/360 of the span</td> </tr> <tr> <td>Other than plaster or gypsum board</td> <td>1/180 of the span</td> </tr> <tr> <td rowspan="2">Over 4.3 m</td> <td>Plaster or gypsum board</td> <td>1/360 of the span</td> </tr> <tr> <td>Other than plaster or gypsum board</td> <td>1/240 of the span</td> </tr> </tbody> </table> <p>2) The joint connections used in trusses described in Sentence (1) shall be designed in conformance with the requirements in Subsection 4.3.1. (See Note A-9.23.14.11.(2).)</p> <p><a href="#">3) All member bracing shall be installed as per the truss design drawings, and continuous lateral bracing shall be adequately anchored to the roof and ceiling diaphragms at intervals no greater than 6.10 m o.c.</a></p> <p><del>3) Where the length of compression web members in roof trusses described in Sentence (1) exceeds 1.83 m, such web members shall be provided with continuous bracing to prevent buckling.</del></p> <p><del>4) Bracing required in Sentence (3) shall consist of not less than 19 mm by 89 mm lumber nailed at right angles to the web members near their centres with at least two 63 mm nails for each member.</del></p> <p><del>5) Where the ability of a truss design to satisfy the requirements of Sentence (1) is demonstrated by testing, it shall consist of a full scale load test carried out in conformance with CSA S307-M, "Load Test Procedure for Wood Roof Trusses for Houses and Small Buildings."</del></p> <p><del>6) Where the ability of a truss design to satisfy the requirements of Sentence (1) is demonstrated by analysis, it shall be carried out in accordance with good engineering practice such as that described in TPIC 2014, "Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses (Limit States Design)."</del></p>	Truss Span	Type of Ceiling	Maximum Deflection	4.3 m or less	Plaster or gypsum board	1/360 of the span	Other than plaster or gypsum board	1/180 of the span	Over 4.3 m	Plaster or gypsum board	1/360 of the span	Other than plaster or gypsum board	1/240 of the span	
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<p><b>9.25.2.1. Thermal Insulation Requirements</b></p> <p>1) Except as permitted by Sentence (2) and required by Sentence (3), thermal insulation conforming with Table 9.25.2.1. shall be provided for attached garages and heated detached garages serving a <i>building of residential occupancy</i>.</p> <p style="text-align: center;"><b>Table 9.25.2.1.</b> <b>Thermal Insulation Requirements</b> Forming Part of Sentence 9.25.2.1.(1)</p> <table border="1" data-bbox="105 1782 1165 1874"> <thead> <tr> <th>Assembly in Which Insulation Is Placed</th> <th>Location of Assembly</th> <th>Minimum Thermal Resistance, RSI</th> </tr> </thead> <tbody> <tr> <td>Wall assembly</td> <td>Separating attached garage from exterior or</td> <td>2.1</td> </tr> </tbody> </table>	Assembly in Which Insulation Is Placed	Location of Assembly	Minimum Thermal Resistance, RSI	Wall assembly	Separating attached garage from exterior or	2.1	<p><del>9.25.2.1. Thermal Insulation Requirements</del> <a href="#">Required Insulation</a></p> <p><a href="#">1) All walls, ceilings and floors separating heated space from unheated space, the exterior air or the exterior soil shall be provided with sufficient thermal insulation to prevent moisture condensation on their room side during the winter and to ensure comfortable conditions for the occupants. (See Note A-9.1.1.1.(1).)</a></p> <p><del>1) Except as permitted by Sentence (2) and required by Sentence (3), thermal insulation conforming with Table 9.25.2.1. shall be provided for attached garages and heated detached garages serving a building of residential occupancy. (See Note A-9.25.2.1.(2).)</del></p> <p style="text-align: center;"><del>Table 9.25.2.1.</del> <del>Thermal Insulation Requirements</del> Forming Part of Sentence 9.25.2.1.(<del>1</del>2)</p> <table border="1" data-bbox="1199 1782 2259 1874"> <thead> <tr> <th>Assembly in Which Insulation Is Placed</th> <th>Location of Assembly</th> <th>Minimum Thermal Resistance, RSI</th> </tr> </thead> <tbody> <tr> <td>Wall assembly</td> <td>Separating attached garage from exterior or</td> <td>2.1</td> </tr> </tbody> </table>	Assembly in Which Insulation Is Placed	Location of Assembly	Minimum Thermal Resistance, RSI	Wall assembly	Separating attached garage from exterior or	2.1	<p>New Sentence (1) added.</p> <p>New row added to Table 9.25.2.1. for cathedral ceiling/flat roof assembly.</p> <p>Editorial revisions to remaining Sentences.</p>														
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	unconditioned space Separating heated detached garage from exterior or unconditioned space	2.1		unconditioned space Separating heated detached garage from exterior or unconditioned space	2.1	
Roof-ceiling assembly	Separating attached garage from exterior or unconditioned space	6.0	<del>Roof-ceiling</del> <u>Ceiling-below-attic</u> assembly	Separating attached garage from exterior or unconditioned space	6.0	
	Separating heated detached garage from exterior or unconditioned space	6.0		Separating heated detached garage from exterior or unconditioned space	6.0	
			<u>Cathedral ceiling or flat roof assembly</u>	<u>Separating attached garage from Cathedral ceiling or flat roof exterior or unconditioned space</u>	<u>4.67</u>	
				<u>Separating heated detached garage from exterior or unconditioned space</u>	<u>4.67</u>	
<p><b>2)</b> Concrete walls in unheated attached garages need not comply with Sentence (1).</p> <p><b>3)</b> Where batt/loose-fill insulation is used in a wall assembly, not less than full-cavity insulation shall be provided.</p>			<p><b>23)</b> Concrete walls in unheated attached garages need not comply with Sentence (<del>1</del>2).</p> <p><b>34)</b> Where batt/<del>or</del> loose-fill insulation is used in a wall assembly, <del>not less than full-cavity</del> <u>the</u> insulation shall <del>be provided</del> <u>fill the cavity</u>.</p>			
<p><b>9.25.2.3. Installation of Thermal Insulation</b></p> <p><b>4)</b> Insulation on the interior of <i>foundation</i> walls enclosing a crawl space shall be applied so that there is not less than 50 mm clearance above the crawl space floor, if the insulation is of a type that may be damaged by water.</p>			<p><b>9.25.2.3. Installation of Thermal Insulation</b></p> <p><b>4)</b> Insulation <del>on</del> <u>shall be installed over</u> the <del>interior</del> <u>full height</u> of <i>foundation</i> walls enclosing a <del>crawl space shall be applied so that there is not less than 50 mm clearance above the crawl space floor, if the insulation is of a type that may be damaged by water</del> <u>basement or heated crawl space. (See also Note A-9.36.2.5.(5).)</u></p>			Sentence revised.
<p><b>9.25.4.2. Vapour Barrier Materials</b></p> <p><b>1)</b> <i>Vapour barriers</i> shall have a permeance not greater than 60 ng/(Pa·s·m<sup>2</sup>) measured in accordance with ASTM E 96/E 96M, “Water Vapor Transmission of Materials,” using the desiccant method (dry cup).</p> <p><b>2)</b> Where the intended use of the interior space will result in high moisture generation, the assembly shall be designed according to Part 5. (See Note A-9.25.4.2.(2).)</p> <p><b>3)</b> Where polyethylene is installed to serve only as the <i>vapour barrier</i>, it shall comply with Clause 4.4, Thermal Stability, and Clause 5.7, Oxidative Induction Time, of CAN/CGSB-51.34-M, “Vapour Barrier, Polyethylene Sheet for Use in Building Construction.”</p> <p><b>4)</b> Membrane-type <i>vapour barriers</i> other than polyethylene shall conform to the requirements of CAN/CGSB-51.33-M, “Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.”</p> <p><b>5)</b> Where a coating is applied to gypsum board to function as the <i>vapour barrier</i>, the permeance of the coating shall be determined in accordance with CAN/CGSB-1.501-M, “Method for Permeance of Coated</p>			<p><b>9.25.4.2. Vapour Barrier Materials</b></p> <p><b>1)</b> <del>Vapour</del> <u>Except as provided in Sentence (2), vapour</u> barriers shall have a permeance not greater than 60 ng/(Pa·<del>s</del>·m<sup>2</sup>) measured in accordance with ASTM E 96/E 96M, “<u>Standard Test Methods for</u> Water Vapor Transmission of Materials,” using the desiccant method (dry cup).</p> <p><b>2)</b> <u>Thermally insulated foundation wall assemblies are permitted to be constructed with variable-permeance vapour barriers having a permeance not greater than 60 ng/(Pa·s·m<sup>2</sup>) using the desiccant method (dry cup) and greater than 300 ng/(Pa·s·m<sup>2</sup>) using the water method (wet cup) measured in accordance with ASTM E96/E96M, “Standard Test Methods for Water Vapor Transmission of Materials.” (See Note A-9.25.4.2.(2).)</u></p> <p><b>23)</b> Where the intended use of the interior space will result in high moisture generation, the assembly shall be designed according to Part 5. (See Note A-9.25.4.2.(<del>2</del>3).)</p> <p><b>34)</b> Where polyethylene is installed to serve only as the <i>vapour barrier</i>, it shall comply with Clause 4.4, Thermal Stability, and Clause 5.7, Oxidative Induction Time, of CAN/CGSB-51.34-M, “Vapour Barrier, Polyethylene Sheet for Use in Building Construction.”</p> <p><b>45)</b> Membrane-type <i>vapour barriers</i> other than polyethylene shall conform to the requirements of CAN/CGSB-51.33-M, “Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.”</p> <p><b>6)</b> <u>Membrane-type vapour barriers other than polyethylene that are susceptible to deterioration under prolonged exposure to direct ultraviolet radiation shall</u></p> <p style="margin-left: 20px;"><u>a) be covered, or</u></p> <p style="margin-left: 20px;"><u>b) only be installed in locations that are not exposed to direct ultraviolet radiation after the completion of construction.</u></p> <p><u>(See Note A-9.25.4.2.(6).)</u></p> <p><b>57)</b> Where a coating is applied to gypsum board to function as the <i>vapour barrier</i>, the permeance of the coating shall be determined in accordance with CAN/CGSB-1.501-M, “Method for Permeance of</p>			<p>Cross-reference added to new Sentence (2) in Sentence (1).</p> <p>New Sentence (2) added.</p> <p>New Sentence (6) added.</p>

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Wallboard.”		Coated Wallboard.”		
6) Where foamed plastic insulation functions as the <i>vapour barrier</i> , it shall be sufficiently thick so as to meet the requirement of Sentence (1).		6) Where foamed plastic insulation functions as the <i>vapour barrier</i> , it shall be sufficiently thick so as to meet the requirement of Sentence (1).		
<b>9.26.1.3. Alternative Installation Methods</b>		<b>9.26.1.3. Alternative Installation Methods</b>		Sentence revised.
1) Methods described in CAN3-A123.51-M, “Asphalt Shingle Application on Roof Slopes 1:3 and Steeper,” or in CAN3-A123.52-M, “Asphalt Shingle Application on Roof Slopes 1:6 to Less Than 1:3,” are permitted to be used for asphalt shingle applications not described in this Section.		1) Methods described in <del>CAN3-<u>CSA</u> A123.51-M</del> , “Asphalt <del>Shingle Application on Roof Slopes 1:3 and Steeper</del> <u>shingle application on roof slopes 1:6 and steeper</u> ,” or in <del>CAN3-A123.52-M</del> , “Asphalt <del>Shingle Application on Roof Slopes 1:6 to Less Than 1:3</del> ,” are permitted to be used for <u>the installation of</u> asphalt <del>shingle applications not shingles in lieu of the methods</del> described in this Section.		
<b>9.26.2.1. Material Standards</b>		<b>9.26.2.1. Material Standards</b>		Revisions to reference standards in Table.
<b>Table 9.26.2.1.-B Roofing Materials</b> Forming Part of Sentence 9.26.2.1.(2)		<b>Table 9.26.2.1.-B Roofing Materials</b> Forming Part of Sentence 9.26.2.1.(2)		
Types of Roof Covering	Standards	Types of Roof Covering	Standards	
Built-up roofing (BUR)	ASTM D 3019, “Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, Asbestos-Fibered, and Non-Asbestos-Fibered” <sup>(1)</sup>	Built-up roofing (BUR)	ASTM D 3019/ <del>D3019M</del> , “ <u>Standard Specification for</u> Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, <del>Asbestos-Fibered</del> , and <del>Non-Asbestos-Fibered</del> ” <sup>(1)</sup>	
	ASTM D 4479/D 4479M, “Asphalt Roof Coatings – Asbestos-Free”		ASTM D 4479/D 4479M, “ <u>Standard Specification for</u> Asphalt Roof Coatings –Asbestos-Free”	
	CGSB 37-GP-56M, “Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing”		CGSB 37-GP-56M, “Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing”	
	CAN/CGSB-37.50-M, “Hot-Applied, Rubberized Asphalt for Roofing and Waterproofing”		CAN/CGSB-37.50-M, “Hot-Applied, Rubberized Asphalt for Roofing and Waterproofing”	
	CAN/CSA-A123.2, “Asphalt-Coated Roofing Sheets”		CAN/CSA-A123.2, “Asphalt-Coated Roofing Sheets”	
	CSA A123.3, “Asphalt Saturated Organic Roofing Felt”		CSA A123.3, “Asphalt Saturated Organic Roofing Felt”	
CAN/CSA-A123.4, “Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems”	CAN/CSA-A123.4, “Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems”			
CSA A123.17, “Asphalt Glass Felt Used in Roofing and Waterproofing”	CSA A123.17, “Asphalt Glass Felt Used in Roofing and Waterproofing”	CSA A123.23, “ <u>Product specification for polymer-modified bitumen sheet, prefabricated and reinforced</u> ”		
Single-ply membranes	CAN/CGSB-37.54, “Polyvinyl Chloride Roofing and Waterproofing Membrane”	Single-ply membranes	CAN/CGSB-37.54, “Polyvinyl Chloride Roofing and Waterproofing Membrane”	
	CAN/CGSB-37.58-M, “Membrane, Elastomeric, Cold-Applied Liquid, for Non-Exposed Use in Roofing and Waterproofing”		CAN/CGSB-37.58-M, “Membrane, Elastomeric, Cold-Applied Liquid, for Non-Exposed Use in Roofing and Waterproofing”	
	ASTM D 4637/D 4637M, “EPDM Sheet Used In Single-Ply Roof Membrane”		ASTM D 4637/D 4637M, “ <u>Standard Specification for</u> EPDM Sheet Used In Single-Ply Roof Membrane”	
	ASTM D 4811/D 4811M, “Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing”		ASTM D 4811/D 4811M, “ <u>Standard Specification for</u> Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing”	
	ASTM D 6878/D 6878M, “Thermoplastic Polyolefin Based Sheet Roofing”		ASTM D 6878/D 6878M, “ <u>Standard Specification for</u> Thermoplastic Polyolefin Based Sheet Roofing”	
Shingles, shakes, tiles, panels	CSA A123.1/A123.5, “Asphalt Shingles Made From Organic Felt and Surfaced with Mineral Granules/Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules”	Shingles, shakes, tiles, panels	CSA <del>A123.1/A123.5</del> , “Asphalt <del>Shingles Made From Organic Felt shingles made from glass felt</del> and <del>Surfaced with Mineral Granules/Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules</del> <u>mineral granules</u> ”	
	CAN/CSA-A220 Series, “Concrete Roof Tiles”		CAN/CSA-A220 Series, “Concrete Roof Tiles”	
	CSA O118.1, “Western Red Cedar Shakes and Shingles”		CSA O118.1, “Western Red Cedar Shakes and Shingles”	
	CSA O118.2, “Eastern White Cedar Shingles”		CSA O118.2, “Eastern White Cedar Shingles”	
CSA O118.3, “Northern Pine Tapersawn Shakes”	CSA <del>O118.3</del> , “ <del>Northern Pine Tapersawn Shakes</del> ”			
Eave protection	CSA A123.22, “Self-Adhering Polymer Modified Bituminous Sheet	Eave protection	<u>CAN/CSA-A123.16, “Asphalt-coated glass-base sheets”</u> CSA A123.22, “Self-Adhering Polymer Modified Bituminous Sheet	

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Flashing	Materials Used as Steep Roofing Underlayment for Ice Dam Protection” ASTM D 4811/D 4811M, “Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing”	Flashing Materials Used as Steep Roofing Underlayment for Ice Dam Protection” ASTM D 4811/D 4811M, “ <a href="#">Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing</a> ”	
<b>Notes to Table 9.26.2.1.-B:</b> (1) For the purpose of this Subsection, ASTM D 3019 shall only apply to the non-fibered and non-asbestos-fibered types (I and III) of asphalt roll roofing.		<b>Notes to Table 9.26.2.1.-B:</b> (1) For the purpose of this Subsection, ASTM D 3019/ <a href="#">D3019M</a> shall only apply to the non-fibered and non-asbestos-fibered types (I and III) of asphalt roll roofing.	
<b>9.27.1.1. General</b>  <b>1)</b> Where lumber, wood shingles, shakes, fibre-cement shingles, planks and sheets, plywood, OSB, waferboard, hardboard, vinyl, aluminum or steel, including trim and soffits, are installed as cladding on wood-frame walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.27.2. to 9.27.12., or b) Part 5.  <b>2)</b> Where stucco is installed as cladding on wood-frame or masonry walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.27.2. to 9.27.5., and Section 9.28., or b) Part 5.  <b>3)</b> Where masonry serves as cladding on wood-frame or masonry walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.27.2. to 9.27.4., and Section 9.20., or b) Part 5.  <b>4)</b> Where asphalt shingles are installed as cladding on wood-frame walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.26.7. and 9.27.2. to 9.27.4., or b) Part 5.  <b>5)</b> Where an exterior insulation finish system is installed as cladding on wood-frame, masonry, cold-formed steel stud or cast-in-place concrete walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.25.5., 9.27.2. to 9.27.4., and 9.27.13., or b) Part 5. (See Note A-9.27.1.1.(5).)		<b>9.27.1.1. General</b>  <b>1)</b> Where lumber, wood shingles, shakes, fibre-cement shingles, planks and sheets, plywood, OSB, waferboard, hardboard, vinyl, <a href="#">insulated vinyl, polypropylene,</a> aluminum or steel, including trim and soffits, are installed as cladding on wood-frame <a href="#">walls or above-ground flat insulating concrete form</a> walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.27.2. to <del>9.27.12.</del> <a href="#">9.27.13.</a> , or b) Part 5.  <b>2)</b> Where stucco is installed as cladding on wood-frame <a href="#">walls, above-ground flat insulating concrete form walls</a> or masonry walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.27.2. to 9.27.5., and Section 9.28., or b) Part 5.  <b>3)</b> Where masonry serves as cladding on wood-frame <a href="#">walls, above-ground flat insulating concrete form walls</a> or masonry walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.27.2. to 9.27.4., and Section 9.20., <a href="#">except for masonry veneer, which shall be attached to above-ground flat insulating concrete form walls in accordance with Sentence 9.27.5.4.(2),</a> or b) Part 5.  <b>4)</b> Where asphalt shingles are installed as cladding on wood-frame walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.26.7. and 9.27.2. to 9.27.4., or b) Part 5.  <b>5)</b> Where an exterior insulation finish system is installed as cladding on wood-frame, masonry, cold-formed steel stud, <a href="#">above-ground flat insulating concrete form</a> or cast-in-place concrete walls exposed to precipitation, the cladding assembly shall comply with a) Subsections 9.25.5., 9.27.2. to 9.27.4., and <del>9.27.13.</del> <a href="#">9.27.14.</a> , or b) Part 5. (See Note A-9.27.1.1.(5).)	
<b>9.27.2.2. Minimum Protection from Precipitation Ingress</b> (See Note A-9.27.2.2.)  <b>1)</b> Except as provided in Sentence (2), a cladding assembly is deemed to have a capillary break between the cladding and the backing assembly, where a) there is a drained and vented air space not less than 10 mm deep behind the cladding, over the full height and width of the wall (see also Article 9.27.5.3.), b) an open drainage material, not less than 10 mm thick and with a cross-sectional area that is not less than 80% open, is installed between the cladding and the backing, over the full height and width of the wall, c) the cladding is loosely fastened to the backing and behind each cladding component there is a clear air space that is i) continuous for the full width of the component, ii) not less than 10 mm deep at the bottom of the component, and		<b>9.27.2.2. Minimum Protection from Precipitation Ingress</b> (See Note A-9.27.2.2.)  <b>1)</b> Except as provided in Sentence (2), a cladding assembly is deemed to have a capillary break between the cladding and the backing assembly, where a) there is a drained and vented air space not less than <del>10</del> <a href="#">9.5</a> mm deep behind the cladding, over the full height and width of the wall (see also Article 9.27.5.3.), b) an open drainage material, not less than 10 mm thick and with a cross-sectional area that is not less than 80% open, is installed between the cladding and the backing, over the full height and width of the wall, c) the cladding is loosely fastened to the backing and behind each cladding component there is a clear air space that is i) continuous for the full width of the component, ii) not less than 10 mm deep at the bottom of the component, and	
		Revisions to Sentences (1) to (5).	
		Change from 10 to 9.5 mm.	

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<p>iii) not less than 6 mm deep over not less than 90 mm for every 230 mm of exposed height of the component,</p> <p>d) the wall is a masonry <i>cavity wall</i> or the cladding is masonry veneer constructed according to Section 9.20., or</p> <p>e) the cladding conforms to Subsection 9.27.13.</p>	<p>iii) not less than 6 mm deep over not less than 90 mm for every 230 mm of exposed height of the component,</p> <p>d) the wall is a masonry <i>cavity wall</i> or the cladding is masonry veneer constructed according to Section 9.20., or</p> <p>e) the cladding conforms to Subsection <del>9.27.13</del> <a href="#">9.27.14</a>.</p>																																																									
<p><b>9.27.5.1. Attachment</b></p> <p>1) Except as permitted by Sentences (2) to (4), cladding shall be fastened to the framing members or furring members, or to blocking between the framing members.</p> <p>2) Vertical lumber and stucco lath or reinforcing are permitted to be attached to sheathing only where the sheathing consists of not less than</p> <p>a) 14.3 mm lumber,</p> <p>b) 12.5 mm plywood, or</p> <p>c) 12.5 mm OSB or waferboard.</p>	<p><b>9.27.5.1. Attachment</b></p> <p>1) Except as permitted by Sentences (2) to (45), cladding shall be fastened to the framing members or furring members, or to blocking between the framing members.</p> <p>2) Vertical lumber <del>and</del> stucco lath or reinforcing, <a href="#">vertically applied vinyl siding</a>, <a href="#">vertically applied insulated vinyl siding</a>, and <a href="#">polypropylene siding</a> are permitted to be attached to sheathing only where the sheathing consists of not less than</p> <p>a) 14.3 mm lumber,</p> <p>b) 12.5 mm plywood <a href="#">or waferboard</a>, or</p> <p>c) <del>12.5</del> <a href="#">11</a> mm OSB <del>or waferboard</del>.</p> <p><a href="#">5) Cladding, trim and furring members are permitted to be attached to the web fastening strips of flat wall insulating concrete form units using screws in accordance with Sentence 9.27.5.4.(2).</a></p>	<p>Added wording to Sentence (2) along with new Clause (2)(c) for OSB.</p> <p>Newly added Sentence (5).</p>																																																								
<p><b>9.27.5.4. Size and Spacing of Fasteners</b></p> <p>1) Nail or staple size and spacing for the attachment of cladding and trim shall conform to Table 9.27.5.4.</p> <p align="center"><b>Table 9.27.5.4. Attachment of Cladding</b> Forming Part of Sentence 9.27.5.4.(1)</p> <table border="1"> <thead> <tr> <th>Type of Cladding</th> <th>Minimum Nail or Staple Length, mm</th> <th>Minimum Number of Nails or Staples</th> <th>Maximum Nail or Staple Spacing, mm o.c.</th> </tr> </thead> <tbody> <tr> <td>Wood shingles up to 200 mm in width</td> <td align="center">32</td> <td align="center">2</td> <td align="center">—</td> </tr> <tr> <td>over 200 mm in width</td> <td align="center">32</td> <td align="center">3</td> <td align="center">—</td> </tr> <tr> <td>Panel or sheet type cladding up to 7 mm thick</td> <td align="center">38</td> <td align="center">—</td> <td align="center">150 (along edges)</td> </tr> <tr> <td>more than 7 mm thick</td> <td align="center">51</td> <td align="center">—</td> <td align="center">300 (along intermediate supports)</td> </tr> </tbody> </table>	Type of Cladding	Minimum Nail or Staple Length, mm	Minimum Number of Nails or Staples	Maximum Nail or Staple Spacing, mm o.c.	Wood shingles up to 200 mm in width	32	2	—	over 200 mm in width	32	3	—	Panel or sheet type cladding up to 7 mm thick	38	—	150 (along edges)	more than 7 mm thick	51	—	300 (along intermediate supports)	<p><b>9.27.5.4. Size and Spacing of Fasteners</b></p> <p>1) Nail or staple size and spacing for the attachment of cladding and trim <a href="#">to wood framing, furring members or blocking</a> shall conform to Table 9.27.5.4.</p> <p align="center"><b>Table 9.27.5.4.-A Attachment of Cladding to Wood Framing, Furring Members or Blocking</b> Forming Part of Sentence 9.27.5.4.(1)</p> <table border="1"> <thead> <tr> <th>Type of Cladding</th> <th>Minimum Nail or Staple Length, mm<sup>(1)</sup></th> <th>Minimum Number of Nails or Staples</th> <th>Maximum Nail or Staple Spacing, mm o.c.</th> </tr> </thead> <tbody> <tr> <td>Wood shingles up to 200 mm in width</td> <td align="center">32</td> <td align="center">2</td> <td align="center">—</td> </tr> <tr> <td>over 200 mm in width</td> <td align="center">32</td> <td align="center">3</td> <td align="center">—</td> </tr> <tr> <td><a href="#">Vinyl and insulated vinyl siding</a></td> <td></td> <td></td> <td></td> </tr> <tr> <td><a href="#">horizontally applied</a></td> <td align="center"><a href="#">38</a></td> <td align="center">—</td> <td align="center"><a href="#">400<sup>(2)</sup></a></td> </tr> <tr> <td><a href="#">vertically applied</a></td> <td align="center"><a href="#">38</a></td> <td align="center">—</td> <td align="center"><a href="#">300</a></td> </tr> <tr> <td><a href="#">Polypropylene siding</a></td> <td align="center"><a href="#">38</a></td> <td align="center">—</td> <td align="center"><a href="#">400<sup>(2)</sup></a></td> </tr> <tr> <td>Panel or sheet type cladding up to 7 mm thick</td> <td align="center">38</td> <td align="center">—</td> <td align="center">150 (along edges)</td> </tr> <tr> <td><del>more than</del> <a href="#">over</a> 7 mm thick</td> <td align="center">51</td> <td align="center">—</td> <td align="center">300 (along intermediate supports)</td> </tr> </tbody> </table> <p><b>Notes to Table 9.27.5.4.-A:</b></p> <p><a href="#">(1) The minimum fastener length need not exceed the minimum fastener penetration depth required by Article 9.27.5.7.</a></p> <p><a href="#">(2) The maximum spacing of 400 mm o.c. applies to nails and staples used to attach horizontally applied vinyl, insulated vinyl and polypropylene siding, unless a greater spacing is permitted in an evaluation report prepared by an accredited certification organization.</a></p> <p><a href="#">2) Screw size and spacing for the attachment of cladding, trim and furring members to the web</a></p>	Type of Cladding	Minimum Nail or Staple Length, mm <sup>(1)</sup>	Minimum Number of Nails or Staples	Maximum Nail or Staple Spacing, mm o.c.	Wood shingles up to 200 mm in width	32	2	—	over 200 mm in width	32	3	—	<a href="#">Vinyl and insulated vinyl siding</a>				<a href="#">horizontally applied</a>	<a href="#">38</a>	—	<a href="#">400<sup>(2)</sup></a>	<a href="#">vertically applied</a>	<a href="#">38</a>	—	<a href="#">300</a>	<a href="#">Polypropylene siding</a>	<a href="#">38</a>	—	<a href="#">400<sup>(2)</sup></a>	Panel or sheet type cladding up to 7 mm thick	38	—	150 (along edges)	<del>more than</del> <a href="#">over</a> 7 mm thick	51	—	300 (along intermediate supports)	<p>Revisions to Sentence (1) and Table 9.27.5.4. (now 9.27.5.4.-A) along with new notes for Table.</p> <p>New Sentence (2) and new Table 9.27.5.4.-B.</p>
Type of Cladding	Minimum Nail or Staple Length, mm	Minimum Number of Nails or Staples	Maximum Nail or Staple Spacing, mm o.c.																																																							
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	<p><a href="#">fastening strips of flat wall insulating concrete form (ICF) units shall conform to Table 9.27.5.4.-B where the 1-in-50 hourly wind pressure (HWP) is less than or equal to 0.60 kPa. (See Note A-9.27.5.4.(2).)</a></p> <p align="center"><b>Table 9.27.5.4.-B</b> <b>Attachment of Cladding to Flat Wall ICF Units where the 1-in-50 HWP ≤ 0.60 kPa</b> Forming Part of Sentence 9.27.5.4.(2)</p> <table border="1" data-bbox="1199 374 2268 911"> <thead> <tr> <th>Type of Cladding<sup>(4)</sup></th> <th>Minimum Screw Length</th> <th>Minimum Screw Diameter, mm</th> <th>Maximum Horizontal Spacing of Screws, mm o.c.<sup>(2)</sup></th> </tr> </thead> <tbody> <tr> <td><a href="#">Wood trim</a></td> <td align="center"><sup>(3)</sup></td> <td align="center">3.5</td> <td>400 or 450 (screwed to web fastening strip)</td> </tr> <tr> <td><a href="#">Lumber siding or horizontal siding made from sheet material</a></td> <td align="center"><sup>(3)</sup></td> <td align="center">4.2</td> <td>400 or 450 (screwed to web fastening strip)</td> </tr> <tr> <td><a href="#">Metal cladding</a></td> <td align="center"><sup>(3)</sup></td> <td align="center">4.2</td> <td>400 or 450 (screwed to web fastening strip)</td> </tr> <tr> <td><a href="#">Vinyl cladding</a></td> <td align="center"><sup>(3)</sup></td> <td align="center">3.5</td> <td>400 or 450 (screwed to web fastening strip)</td> </tr> <tr> <td><a href="#">Masonry veneer<sup>(4)</sup></a></td> <td align="center"><sup>(3)</sup></td> <td align="center">4.2</td> <td>400 or 450 (masonry tie screwed to web fastening strip)</td> </tr> <tr> <td><a href="#">Panel- or sheet-type cladding up to 7 mm thick</a></td> <td align="center"><sup>(3)</sup></td> <td align="center">3.5</td> <td>150 or 200 (along edges)</td> </tr> <tr> <td><a href="#">over 7 mm thick</a></td> <td align="center"><sup>(3)</sup></td> <td align="center">4.2</td> <td>300 or 400 (along intermediate supports)</td> </tr> </tbody> </table> <p><b>Notes to Table 9.27.5.4.-B:</b></p> <p><a href="#">(1) Wood shakes and wood shingles are permitted to be attached to horizontal wood furring members in accordance with Table 9.27.5.4.-A. The wood furring members shall be attached to the web fastening strips of flat wall ICF units with screws not less than 4.2 mm in diameter spaced horizontally not more than 400 or 450 mm o.c. (two horizontal spacing options are given to accommodate the 150 and 200 mm o.c. horizontal spacing options for web fastening strips).</a></p> <p><a href="#">(2) Two horizontal spacing options are given to accommodate the 150 mm o.c. and 200 mm o.c. horizontal spacing options for web fastening strips. The maximum vertical spacing of screws or masonry ties, as applicable, shall be 400 mm.</a></p> <p><a href="#">(3) Screws must be long enough to penetrate through the web fastening strips by a minimum of 6 mm.</a></p> <p><a href="#">(4) See also Subsection 9.20.5. for requirements on the support of masonry veneer.</a></p>	Type of Cladding <sup>(4)</sup>	Minimum Screw Length	Minimum Screw Diameter, mm	Maximum Horizontal Spacing of Screws, mm o.c. <sup>(2)</sup>	<a href="#">Wood trim</a>	<sup>(3)</sup>	3.5	400 or 450 (screwed to web fastening strip)	<a href="#">Lumber siding or horizontal siding made from sheet material</a>	<sup>(3)</sup>	4.2	400 or 450 (screwed to web fastening strip)	<a href="#">Metal cladding</a>	<sup>(3)</sup>	4.2	400 or 450 (screwed to web fastening strip)	<a href="#">Vinyl cladding</a>	<sup>(3)</sup>	3.5	400 or 450 (screwed to web fastening strip)	<a href="#">Masonry veneer<sup>(4)</sup></a>	<sup>(3)</sup>	4.2	400 or 450 (masonry tie screwed to web fastening strip)	<a href="#">Panel- or sheet-type cladding up to 7 mm thick</a>	<sup>(3)</sup>	3.5	150 or 200 (along edges)	<a href="#">over 7 mm thick</a>	<sup>(3)</sup>	4.2	300 or 400 (along intermediate supports)	
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<p><b>9.27.5.6. Expansion and Contraction</b></p> <p><b>1)</b> Fasteners for metal or vinyl cladding shall be positioned to permit expansion and contraction of the cladding.</p>	<p><b>9.27.5.6. Expansion and Contraction</b></p> <p><b>1)</b> Fasteners for metal <del>or vinyl</del> cladding shall be positioned to permit expansion and contraction of the cladding.</p> <p><b>2)</b> <a href="#">Fasteners for vinyl siding, insulated vinyl siding and polypropylene siding shall be installed in the centre of the slots of the nail hem.</a></p>	<p>Revision to Sentence (1).</p> <p>Newly added Sentence (2).</p>																																
<p><b>9.27.5.7. Penetration of Fasteners</b></p> <p><b>1)</b> Fasteners for shakes and shingles shall penetrate through the nail-holding base or not less than 19 mm into the framing.</p>	<p><b>9.27.5.7. Penetration of Fasteners</b> <a href="#">(See Note A-9.27.5.7.)</a></p> <p><b>1)</b> Fasteners for shakes and shingles shall penetrate through the nail-holding base or not less than 19 mm into the framing.</p> <p><b>2)</b> <a href="#">Fasteners for vinyl cladding, insulated vinyl cladding and polypropylene cladding shall penetrate through the nail-holding base or not less than 32 mm into the framing.</a></p>	<p>Newly added Sentence (2), with cross-reference update in what is now Sentence (3).</p>																																

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<p><b>2)</b> Fasteners for cladding other than that described in Sentence (1) shall penetrate through the nail-holding base or not less than 25 mm into the framing.</p>	<p><b>23)</b> Fasteners for cladding other than that described in <del>Sentence</del><a href="#">Sentences</a> (1) and (2) shall penetrate through the nail-holding base or not less than 25 mm into the framing.</p>																							
<p><b>9.27.7.1. Materials</b></p> <p><b>1)</b> Shingles and shakes shall conform to</p> <ul style="list-style-type: none"> <li>a) CSA O118.1, “Western Red Cedar Shakes and Shingles,”</li> <li>b) CSA O118.2, “Eastern White Cedar Shingles,” or</li> <li>c) CSA O118.3, “Northern Pine Tapersawn Shakes.”</li> </ul>	<p><b>9.27.7.1. Materials</b></p> <p><b>1)</b> Shingles and shakes shall conform to</p> <ul style="list-style-type: none"> <li>a) CSA O118.1, “Western Red Cedar Shakes and Shingles,” <a href="#">or</a></li> <li>b) CSA O118.2, “Eastern White Cedar Shingles,” <del>or</del></li> <li>c) <del>CSA O118.3, “Northern Pine Tapersawn Shakes.”</del></li> </ul>	Clause (c) deleted.																						
<p><b>9.27.8.2. Thickness</b></p> <p style="text-align: center;"><b>Table 9.27.8.2.</b> <b>Minimum Plywood Cladding Thickness</b> Forming Part of Sentence 9.27.8.2.(2)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Spacing of Supports, mm</th> <th colspan="2">Minimum Thickness, mm</th> </tr> <tr> <th>Face Grain Parallel to Supports</th> <th>Face Grain Right Angles to Supports</th> </tr> </thead> <tbody> <tr> <td>400</td> <td>8</td> <td>6</td> </tr> <tr> <td>600</td> <td>11</td> <td>8</td> </tr> </tbody> </table>	Spacing of Supports, mm	Minimum Thickness, mm		Face Grain Parallel to Supports	Face Grain Right Angles to Supports	400	8	6	600	11	8	<p><b>9.27.8.2. Thickness</b></p> <p style="text-align: center;"><b>Table 9.27.8.2.</b> <b>Minimum Plywood Cladding Thickness</b> Forming Part of <del>Sentence</del><a href="#">Sentences</a> 9.27.8.2.(2) and <a href="#">9.27.10.2.(2)</a></p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Spacing of Supports, mm</th> <th colspan="2">Minimum Thickness, mm</th> </tr> <tr> <th>Face Grain Parallel to Supports</th> <th>Face Grain Right Angles to Supports</th> </tr> </thead> <tbody> <tr> <td>400</td> <td>8</td> <td>6</td> </tr> <tr> <td>600</td> <td>11</td> <td>8</td> </tr> </tbody> </table>	Spacing of Supports, mm	Minimum Thickness, mm		Face Grain Parallel to Supports	Face Grain Right Angles to Supports	400	8	6	600	11	8	Cross-reference added to Table title.
Spacing of Supports, mm		Minimum Thickness, mm																						
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<p><b>9.27.9.1. Material Standards</b></p> <p><b>1)</b> Factory-finished hardboard cladding shall conform to CAN/CGSB-11.5-M, “Hardboard, Precoated, Factory Finished, for Exterior Cladding.”</p> <p><b>2)</b> Hardboard cladding that is not factory finished shall conform to Types 1, 2 or 5 in CAN/CGSB-11.3-M, “Hardboard.”</p>	<p><b>9.27.9.1. Material Standards</b></p> <p><b>1)</b> <del>Factory-finished hardboard</del><a href="#">Hardboard</a> cladding shall conform to <a href="#">ANSI A135.6, “Engineered Wood Siding.”</a> <del>CAN/CGSB-11.5-M, “Hardboard, Precoated, Factory Finished, for Exterior Cladding.”</del></p> <p><del><b>2)</b> Hardboard cladding that is not factory finished shall conform to Types 1, 2 or 5 in CAN/CGSB-11.3-M, “Hardboard.”</del></p>	<p>Sentence (1) revised.</p> <p>Sentence (2) deleted.</p>																						
<p><b>9.27.9.2. Thickness</b></p> <p><b>1)</b> Type 1 or 2 hardboard cladding shall be not less than</p> <ul style="list-style-type: none"> <li>a) 6 mm thick when applied over sheathing that provides continuous support, and</li> <li>b) 7.5 mm thick when applied over furring or framing members not more than 400 mm o.c.</li> </ul> <p><b>2)</b> Type 5 hardboard cladding shall be not less than 9 mm thick when applied over sheathing that provides continuous support or over furring or framing members spaced not more than 400 mm o.c.</p> <p><b>3)</b> Where hardboard cladding is grooved, the grooves shall not extend more than 1.5 mm into the minimum required thickness. (See Note A-9.27.9.2.(3).)</p>	<p><b>9.27.9.2. Thickness</b></p> <p><b>1)</b> <del>Type 1 or 2 hardboard</del><a href="#">Hardboard</a> cladding shall be not less than</p> <ul style="list-style-type: none"> <li>a) <del>6-9.5</del> mm thick when applied over sheathing that provides continuous support, <del>and</del></li> <li>b) <del>7.5 mm thick when applied or</del> over furring or framing members not more than 400 mm o.c., <del>or</del></li> <li>b) <del>2)</del><a href="#">Type 5 hardboard cladding shall be not less than 9-11.1</a> mm thick when applied over <del>sheathing that provides continuous support or over</del> furring or framing members <del>spaced</del> not more than <del>400-600</del> mm o.c.</li> </ul> <p><b>32)</b> Where hardboard cladding is grooved, the grooves shall not extend more than 1.5 mm into the minimum required thickness. (See Note A-9.27.9.2.(<del>3</del>2).)</p>	<p>Sentence (1) revised, and previous Sentence (2) revised and incorporated into Sentence (1).</p> <p>Sentence (3) is now Sentence (2).</p>																						
<p><b>9.27.11.1. Material Standards</b></p> <p><b>1)</b> Horizontal and vertical strip steel siding, including flashing and trim accessories, shall conform to CAN/CGSB-93.4, “Galvanized Steel and Aluminum-Zinc Alloy Coated Steel Siding, Soffits and Fascia, Prefinished, Residential.”</p> <p><b>2)</b> Steel sheet cladding shall have a minimum thickness of 0.3 mm and conform to CAN/CGSB-93.3-M, “Prefinished Galvanized and Aluminum-Zinc Alloy Steel Sheet for Residential Use.”</p>	<p><b>9.27.11.1. Material Standards</b></p> <p><b>1)</b> <del>Horizontal</del><a href="#">Steel sheet cladding, including horizontal</a> and vertical strip steel siding, <del>including</del> flashing and trim accessories, shall <del>conform to CAN/CGSB-93.4, “Galvanized Steel and Aluminum-Zinc Alloy Coated Steel Siding, Soffits and Fascia, Prefinished, Residential.”</del></p> <ul style="list-style-type: none"> <li>a) <del>2)</del><a href="#">Steel sheet cladding shall</a> have a minimum thickness of <del>0.3-0.33</del> mm, and</li> <li>b) conform to <a href="#">CSSBI 23M, “Standard for Residential Steel Cladding.”</a> <del>CAN/CGSB-93.3-M, “Prefinished Galvanized and Aluminum-Zinc Alloy Steel Sheet for Residential Use.”</del></li> </ul> <p><a href="#">(See Note A-9.27.11.1.(1).)</a></p>	Sentence (1) revised, and previous Sentence (2) revised and incorporated into Sentence (1).																						
<p><b>9.27.12. Vinyl Siding</b></p>	<p><b>9.27.12. Vinyl Siding, <a href="#">Insulated Vinyl Siding and Vinyl Soffits</a></b></p>																							
<p><b>9.27.12.1. Material Standard</b></p>	<p><b>9.27.12.1. Material <del>Standard</del> <a href="#">Standards</a></b></p>	Sentence (1) revised.																						

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<p>1) Vinyl siding, including flashing and trim accessories, shall conform to CAN/CGSB-41.24, “Rigid Vinyl Siding, Soffits and Fascia.”</p>	<p>1) Vinyl siding, <del>including flashing and trim accessories</del>, shall conform to <del>CAN/CGSB-41.24, “Rigid Vinyl Siding, Soffits and Fascia.”</del> <a href="#">ASTM D3679, “Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Siding.”</a></p> <p>2) Insulated vinyl siding shall conform to <a href="#">ASTM D7793, “Standard Specification for Insulated Vinyl Siding.”</a></p> <p>3) Rigid vinyl soffits shall conform to <a href="#">ASTM D4477, “Standard Specification for Rigid (Unplasticized) Poly(Vinyl Chloride) (PVC) Soffit.”</a></p> <p>4) Where vinyl siding, insulated vinyl siding or rigid vinyl soffits are required to have a <i>flame-spread rating</i>, the rating shall be determined in accordance with <a href="#">CAN/ULC-S102.2, “Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.”</a></p>	<p>Newly added Sentences (2) to (4).</p>
<p><b>9.27.12.2. Attachment</b></p> <p>1) The attachment of vinyl siding shall conform to the requirements in Subsection 9.27.5. for metal siding.</p>	<p><b>9.27.12.2. Attachment</b></p> <p>1) The attachment of vinyl siding <a href="#">and insulated vinyl siding</a> shall conform to the requirements in Subsection 9.27.5. <del>for metal siding.</del></p>	<p>Revision to Sentence.</p>
N/A	<p><b>9.27.13. Polypropylene Siding</b></p>	<p>Inserted new Subsection.</p>
N/A	<p><b>9.27.13.1. Material Standard</b></p> <p>1) Polypropylene siding shall conform to <a href="#">ASTM D7254, “Standard Specification for Polypropylene (PP) Siding.”</a></p> <p>2) Where polypropylene siding is required to have a <i>flame-spread rating</i>, the rating shall be determined in accordance with <a href="#">CAN/ULC-S102.2, “Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.”</a></p>	<p>Inserted new Article.</p>
N/A	<p><b>9.27.13.2. Attachment</b></p> <p>1) <a href="#">The attachment of polypropylene siding shall conform to the requirements in Subsection 9.27.5.</a></p>	<p>Inserted new Article.</p>
<p><b>9.29.5.1. Application</b></p> <p>1) The requirements for application of gypsum board in this Subsection apply to the single layer application of gypsum board to wood furring or framing using nails or screws.</p> <p>2) Gypsum board applications not described in this Subsection shall conform to</p> <ol style="list-style-type: none"> <li>ASTM C 840, “Application and Finishing of Gypsum Board,” or</li> <li>CSA A82.31-M, “Gypsum Board Application.”</li> </ol>	<p><b>9.29.5.1. Application</b></p> <p>1) The requirements for application of gypsum board in this Subsection apply to the single layer application of gypsum board to wood furring or framing using nails or screws.</p> <p>2) <a href="#">Except as provided in Sentence (3),</a> Gypsum board applications not described in this Subsection shall conform to <del>a) ASTM C 840, “Application and Finishing of Gypsum Board,” or b) CSA A82.31-M,</del> “Gypsum Board Application.”</p> <p>3) <a href="#">The application of gypsum board to flat insulating concrete form (ICF) walls shall conform to ASTM C840, “Standard Specification for Application and Finishing of Gypsum Board.” (See Note A-9.29.5.1.(3).)</a></p>	<p>Sentence (2) revised.</p> <p>New Sentence (3).</p>
<p><b>9.31.5.3. Discharge of Sewage</b></p> <p>2) Where a public sewage system is not available, the <i>building sewer</i> shall discharge into a <i>private sewage disposal system</i>.</p>	<p><b>9.31.5.3. Discharge of Sewage</b></p> <p>2) Where a public sewage system is not available, the <i>building sewer</i> shall discharge into a <del>private sewage disposal system</del> <a href="#">private sewage disposal system</a>.</p>	<p>“Private sewage disposal system” is no longer a defined term. Per sentence 1.2.1.1.(1) of Division B, use the definition in the Safety Codes Act.</p>
<p><b>9.32.1.3. Venting of Laundry-Drying Equipment</b></p>	<p><b>9.32.1.3. Venting of Laundry-Drying Equipment</b></p>	<p>Delete “and incorporate one central lint trap.”</p>

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<p><b>3)</b> Where collective venting of multiple installations of laundry-drying equipment is used, the ventilation system shall</p> <ul style="list-style-type: none"> <li>a) be connected to a common <i>exhaust duct</i> that is vented by one central exhaust fan and incorporates one central lint trap,</li> <li>b) include an interlock to activate the central exhaust fan when laundry-drying equipment is in use, and</li> <li>c) where required by Article 9.32.3.8., be provided with make-up air.</li> </ul>	<p><b>3)</b> Where collective venting of multiple installations of laundry-drying equipment is used, the ventilation system shall</p> <ul style="list-style-type: none"> <li>a) be connected to a common <i>exhaust duct</i> that is vented by one central exhaust fan <del>and incorporates one central lint trap,</del></li> <li>b) include an interlock to activate the central exhaust fan when laundry-drying equipment is in use, and</li> <li>c) where required by Article 9.32.3.8., be provided with make-up air.</li> </ul>															
<p><b>9.32.3.11. Ducts</b></p> <p><b>8)</b> Joints in all ventilation system ducting shall be sealed with mastic, metal foil duct tape or the manufacturers' specified sealants.</p>	<p><b>9.32.3.11. Ducts</b></p> <p><b>8)</b> Joints in all ventilation system ducting shall be sealed with</p> <ul style="list-style-type: none"> <li>a) mastic,</li> <li>b) metal foil duct tape,</li> <li>c) <del>or</del> the manufacturers' specified sealants., <u>or</u></li> <li>d) <u>one of the materials listed in Clause 9.36.3.2.(3)(a).</u></li> </ul>	Reformatted and added "one of the materials listed in Clause 9.36.3.2.(3)(a)."														
<p><b>9.32.3.13. Outdoor Intake and Exhaust Openings</b></p> <p><b>3)</b> The distance separating air intakes from <i>building</i> envelope penetrations that are potential sources of contaminants, such as <i>gas vents</i> or oil fill pipes, shall be not less than 900 mm.</p>	<p><b>9.32.3.13. Outdoor Intake and Exhaust Openings</b></p> <p><b>3)</b> The distance separating air intakes <del>from building envelope penetrations</del> <u>for mechanical ventilation from exhaust outlets</u> that are potential sources of contaminants, such as <i>gas vents</i> or oil fill pipes, shall be not less than <u>1 800</u> mm.</p> <p><b>4)</b> <u>Except as provided in Sentences (5) and (6), exhaust outlets that discharge air containing moisture, such as bathroom ventilation and clothes dryer exhaust outlets, shall be located at least 1 800 mm from air intakes and vented soffits.</u></p> <p><b>5)</b> <u>Where an exhaust outlet referred to in Sentence (4) is located within a soffit, the soffit shall either be unvented, or if vented, the full depth of the soffit shall be blocked for a distance of 1 800 mm on each side of the exhaust outlet.</u></p> <p><b>6)</b> <u>Where an exhaust outlet referred to in Sentence (4) is located in a side wall less than 1 800 mm from a soffit, a section of the soffit above the exhaust outlet shall be unvented, or if vented, the full depth of the soffit shall be blocked in accordance with the widths stipulated in Table 9.32.3.13.-A, centred over the location of the outlet.</u></p> <p align="center"><b>Table 9.32.3.13.-A Widths of Unvented or Blocked Soffits Where Exhaust Outlets Are Less Than 1 800 mm from a Soffit</b> Forming Part of Sentence 9.32.3.13.(6)</p> <table border="1"> <thead> <tr> <th align="center">Distance Between Exhaust Outlet and Soffit, mm</th> <th align="center">Total Width of Unvented or Blocked Soffit Centred Over Location of Exhaust Outlet, mm</th> </tr> </thead> <tbody> <tr> <td align="center"><u>1 to 300</u></td> <td align="center"><u>3 600</u></td> </tr> <tr> <td align="center"><u>301 to 600</u></td> <td align="center"><u>3 400</u></td> </tr> <tr> <td align="center"><u>601 to 900</u></td> <td align="center"><u>3 100</u></td> </tr> <tr> <td align="center"><u>901 to 1 200</u></td> <td align="center"><u>2 700</u></td> </tr> <tr> <td align="center"><u>1 201 to 1 500</u></td> <td align="center"><u>2 000</u></td> </tr> <tr> <td align="center"><u>1 501 to 1 799</u></td> <td align="center"><u>1 000</u></td> </tr> </tbody> </table>	Distance Between Exhaust Outlet and Soffit, mm	Total Width of Unvented or Blocked Soffit Centred Over Location of Exhaust Outlet, mm	<u>1 to 300</u>	<u>3 600</u>	<u>301 to 600</u>	<u>3 400</u>	<u>601 to 900</u>	<u>3 100</u>	<u>901 to 1 200</u>	<u>2 700</u>	<u>1 201 to 1 500</u>	<u>2 000</u>	<u>1 501 to 1 799</u>	<u>1 000</u>	<p>Rewording of Sentence (3).</p> <p>Inserted three new sentences which includes a Table.</p>
Distance Between Exhaust Outlet and Soffit, mm	Total Width of Unvented or Blocked Soffit Centred Over Location of Exhaust Outlet, mm															
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<u>1 201 to 1 500</u>	<u>2 000</u>															
<u>1 501 to 1 799</u>	<u>1 000</u>															
<p><b>9.33.6.4. Coverings, Linings, Adhesives and Insulation</b></p> <p><b>4)</b> <i>Combustible</i> coverings and linings described in Sentences (2), (3) and (6) shall not flame, glow, smoulder or smoke when tested in accordance with the method of test in ASTM C 411, "Hot-Surface Performance of High-Temperature Thermal Insulation," at the maximum temperature to which the</p>	<p><b>9.33.6.4. Coverings, Linings, Adhesives and Insulation</b></p> <p><b>4)</b> <i>Combustible</i> coverings <del>and</del> linings <u>and foamed plastic insulation</u> described in Sentences (2), (3) and (6) shall not flame, glow, smoulder or smoke when tested in accordance with the method of test in ASTM C 411, "<u>Standard Specification for</u> Hot-Surface Performance of High-Temperature Thermal</p>	<p>Added "and foamed plastic insulation" and deleted "the coverings and linings."</p> <p>Deleted "or for insulating an air duct."</p>														

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coverings and linings are to be exposed in service.  5) Except as provided in Sentences (6) and (7), foamed plastic insulation shall not be used as part of an air duct or for insulating an air duct.	Insulation,” at the maximum temperature to which <del>the coverings and linings they</del> are to be exposed in service.  5) Except as provided in Sentences (6) and (7), foamed plastic insulation shall not be used as part of an air duct <del>or for insulating an air duct.</del>	
9.36.1.2. Definitions N/A	9.36.1.2. Definitions  5) <a href="#">For the purpose of this Section, the term “annual energy consumption” shall mean the annual sum of service water heating and space-conditioning energy consumption of the proposed house design, calculated in accordance with Article 9.36.5.4. or 9.36.7.3., as applicable. (See Note A-9.36.1.2.(5) and (6).)</a>  6) <a href="#">For the purpose of this Section, the term “house energy target” shall mean the annual energy consumption of the reference house, calculated in accordance with Article 9.36.5.4. or 9.36.7.3., as applicable. (See Note A-9.36.1.2.(5) and (6).)</a>  7) <a href="#">For the purpose of this Section, the term “principal ventilation rate” shall mean the normal operating exhaust capacity of the principal ventilation fan as required by Article 9.32.3.3.</a>  8) <a href="#">For the purpose of this Section, the term “volume of conditioned space” shall refer to the volume measured at the interior surfaces of exterior walls, ceilings and floors of a building.</a>	Sentences (5) to (7) are sentences 9.36.5.2.(2) to (4) relocated here.  Inserted new sentence (8).
9.36.1.3. Compliance and Application  1) Except as provided in Sentences (2) to (5), <i>buildings</i> shall comply with a) the prescriptive or trade-off requirements in Subsections 9.36.2. to 9.36.4., b) the performance requirements in Subsection 9.36.5., or c) the NECB.  2) Subsections 9.36.2. to 9.36.4. apply to a) <i>buildings</i> of residential occupancy to which Part 9 applies, b) <i>buildings</i> containing <i>business and personal services, mercantile or low-hazard industrial occupancies</i> to which Part 9 applies whose combined total <i>floor area</i> does not exceed 300 m <sup>2</sup> , excluding parking garages that serve <i>residential occupancies</i> , and c) <i>buildings</i> containing a mix of the <i>residential</i> and <i>non-residential occupancies</i> described in Clauses (a) and (b).  3) Subsection 9.36.5. applies only to a) houses with or without a <i>secondary suite</i> , and b) <i>buildings</i> containing only <i>dwelling units</i> and common spaces whose total <i>floor area</i> does not exceed 20% of the total <i>floor area</i> of the <i>building</i> . (See Note A-9.36.1.3.(3).)	9.36.1.3. Compliance and Application  1) Except as provided in Sentences ( <del>23</del> ) to ( <del>57</del> ), <i>buildings</i> shall comply with a) the prescriptive or trade-off requirements in Subsections 9.36.2. to 9.36.4., b) the performance requirements in Subsection 9.36.5., or c) the NECB.  <a href="#">2) Compliance with Subsections 9.36.7. or 9.36.8. is deemed to meet the requirements of Clauses (1)(a) or (b). (See Note A-9.36.1.3.(2).)</a>  <del>23</del> Subsections 9.36.2. to 9.36.4. apply to a) <i>buildings</i> of residential occupancy to which Part 9 applies, b) <i>buildings</i> containing <i>business and personal services, mercantile or low-hazard industrial occupancies</i> to which Part 9 applies whose combined total <i>floor area</i> does not exceed 300 m <sup>2</sup> , excluding parking garages that serve <i>residential occupancies</i> , and c) <i>buildings</i> containing a mix of the <i>residential</i> and <i>non-residential occupancies</i> described in Clauses (a) and (b).  <del>34</del> <del>Subsection-Subsections</del> 9.36.5. <del>applies and</del> 9.36.7. <del>apply</del> only to a) houses with or without a <i>secondary suite</i> , and b) <i>buildings</i> containing only <i>dwelling units</i> and common spaces whose total <i>floor area</i> does not exceed 20% of the total <i>floor area</i> of the <i>building</i> . (See Note A-9.36.1.3.( <del>34</del> ).)  <a href="#">5) Subsection 9.36.8. applies only to buildings of residential occupancy to which Part 9 applies.</a>	Inserted new sentences and updated references.
9.36.2.4. Calculation of Effective Thermal Resistance of Assemblies  1) In calculating the effective thermal resistance of assemblies for the purpose of comparison with the requirements of Articles 9.36.2.6. and 9.36.2.8., the thermal bridging effect of closely spaced, repetitive structural members, such as studs and joists, and of ancillary members, such as lintels, sills and plates, shall be accounted for. (See Note A-9.36.2.4.(1).)	9.36.2.4. Calculation of Effective Thermal Resistance of Assemblies  1) In calculating the <b>effective</b> thermal resistance of assemblies for the purpose of comparison with the requirements of Articles 9.36.2.6. and 9.36.2.8., the thermal bridging effect of closely spaced, repetitive structural members, such as studs and joists, and of ancillary members, such as lintels, sills and plates, shall be accounted for. (See Note A-9.36.2.4.(1).)	

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<p><b>9.36.2.5. Continuity of Insulation</b></p> <p>6) Where mechanical, plumbing or electrical system components, such as pipes, ducts, conduits, cabinets, chases, panels or recessed heaters, are placed within and parallel to a wall assembly required to be insulated, the effective thermal resistance of that wall at the projected area of the system component shall be not less than that required by Tables 9.36.2.6.-A, 9.36.2.6.-B, 9.36.2.8.-A and 9.36.2.8.-B (See Note A-9.36.2.5.(6).)</p>	<p><b>9.36.2.5. Continuity of Insulation</b></p> <p>6) <del>Where</del> <u>Except as provided in Sentence (7) and Article 9.36.2.11., where</u> mechanical, plumbing or electrical system components, such as pipes, ducts, conduits, cabinets, chases, panels or recessed heaters, are placed within and parallel to a wall assembly required to be insulated, the effective thermal resistance of that wall at the projected area of the system component shall be not less than that required by Tables 9.36.2.6.-A, 9.36.2.6.-B, 9.36.2.8.-A and 9.36.2.8.-B (See Note A-9.36.2.5.(6).)</p> <p><u>7) The effective thermal resistance of a wall at the projected areas of plumbing and electrical system components, such as plumbing vent pipes, conduits, and electrical outlet and switch boxes, need not comply with Sentence (6), provided</u></p> <p><u>a) the effective thermal resistance at the projected area of the system component is not less than 60% of that required in Articles 9.36.2.6. and 9.36.2.8., and</u></p> <p><u>b) the insulation is continuous on the cold side behind the system component.</u></p>	<p>New exceptions added to Sentence (6).</p> <p>Inserted new sentence.</p>																																																																																																														
<p><b>9.36.2.7. Thermal Characteristics of Fenestration, Doors and Skylights</b></p> <p align="center"><b>Table 9.36.2.7.-A</b> Required Thermal Characteristics of Fenestration and Doors Forming Part of Sentence 9.36.2.7.(1)</p> <table border="1"> <thead> <tr> <th rowspan="2">Components</th> <th rowspan="2">Thermal Characteristics<sup>(1)</sup></th> <th colspan="6">Heating Degree-Days of <i>Building</i> Location,<sup>(2)</sup> in Celsius Degree-Days</th> </tr> <tr> <th>Zone 4 &lt; 3000</th> <th>Zone 5 3000 to 3999</th> <th>Zone 6 4000 to 4999</th> <th>Zone 7A 5000 to 5999</th> <th>Zone 7B 6000 to 6999</th> <th>Zone 8 ≥ 7000</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Fenestration<sup>(3)</sup> and doors</td> <td>Max. U-value, W/(m<sup>2</sup>·K)</td> <td>1.80</td> <td>1.80</td> <td>1.60</td> <td>1.60</td> <td>1.40</td> <td>1.40</td> </tr> <tr> <td>Min. Energy Rating</td> <td>21</td> <td>21</td> <td>25</td> <td>25</td> <td>29</td> <td>29</td> </tr> </tbody> </table> <p align="center"><b>Table 9.36.2.7.-B</b> Overall Thermal Transmittance of Skylights Forming Part of Sentence 9.36.2.7.(2)</p> <table border="1"> <thead> <tr> <th rowspan="3">Component</th> <th colspan="6">Heating Degree-Days of <i>Building</i> Location,<sup>(1)</sup> in Celsius Degree-Days</th> </tr> <tr> <th>Zone 4 &lt; 3000</th> <th>Zone 5 3000 to 3999</th> <th>Zone 6 4000 to 4999</th> <th>Zone 7A 5000 to 5999</th> <th>Zone 7B 6000 to 6999</th> <th>Zone 8 ≥ 7000</th> </tr> <tr> <th colspan="6">Maximum Overall Thermal Transmittance, W/(m<sup>2</sup>·K)</th> </tr> </thead> <tbody> <tr> <td>Skylights</td> <td>2.90</td> <td>2.90</td> <td>2.70</td> <td>2.70</td> <td>2.40</td> <td>2.40</td> </tr> </tbody> </table>	Components	Thermal Characteristics <sup>(1)</sup>	Heating Degree-Days of <i>Building</i> Location, <sup>(2)</sup> in Celsius Degree-Days						Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	Fenestration <sup>(3)</sup> and doors	Max. U-value, W/(m <sup>2</sup> ·K)	1.80	1.80	1.60	1.60	1.40	1.40	Min. Energy Rating	21	21	25	25	29	29	Component	Heating Degree-Days of <i>Building</i> Location, <sup>(1)</sup> in Celsius Degree-Days						Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	Maximum Overall Thermal Transmittance, W/(m <sup>2</sup> ·K)						Skylights	2.90	2.90	2.70	2.70	2.40	2.40	<p><b>9.36.2.7. Thermal Characteristics of Fenestration, Doors and Skylights</b></p> <p align="center"><b>Table 9.36.2.7.-A</b> Required Thermal Characteristics of Fenestration and Doors Forming Part of Sentence 9.36.2.7.(1)</p> <table border="1"> <thead> <tr> <th rowspan="2">Components</th> <th rowspan="2">Thermal Characteristics<sup>(1)</sup></th> <th colspan="6">Heating Degree-Days of <i>Building</i> Location,<sup>(2)</sup> in Celsius Degree-Days</th> </tr> <tr> <th>Zone 4 &lt; 3000</th> <th>Zone 5 3000 to 3999</th> <th>Zone 6 4000 to 4999</th> <th>Zone 7A 5000 to 5999</th> <th>Zone 7B 6000 to 6999</th> <th>Zone 8 ≥ 7000</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Fenestration<sup>(3)</sup> and doors</td> <td>Max. U-value, W/(m<sup>2</sup>·K)</td> <td><del>1.80</del><u>1.84</u></td> <td><del>1.80</del><u>1.84</u></td> <td><del>1.60</del><u>1.61</u></td> <td><del>1.60</del><u>1.61</u></td> <td><del>1.40</del><u>1.44</u></td> <td><del>1.40</del><u>1.44</u></td> </tr> <tr> <td>Min. 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U-value, W/(m <sup>2</sup> ·K)	<del>1.80</del> <u>1.84</u>	<del>1.80</del> <u>1.84</u>	<del>1.60</del> <u>1.61</u>	<del>1.60</del> <u>1.61</u>	<del>1.40</del> <u>1.44</u>	<del>1.40</del> <u>1.44</u>	Min. Energy Rating	21	21	25	25	29	29	Component	Heating Degree-Days of <i>Building</i> Location, <sup>(1)</sup> in Celsius Degree-Days						Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	Maximum Overall Thermal Transmittance, W/(m <sup>2</sup> ·K)						Skylights	<del>2.90</del> <u>2.92</u>	<del>2.90</del> <u>2.92</u>	<del>2.70</del> <u>2.75</u>	<del>2.70</del> <u>2.75</u>	<del>2.40</del> <u>2.41</u>	<del>2.40</del> <u>2.41</u>	<p>U-values changed.</p>
Components			Thermal Characteristics <sup>(1)</sup>	Heating Degree-Days of <i>Building</i> Location, <sup>(2)</sup> in Celsius Degree-Days																																																																																																												
	Zone 4 < 3000	Zone 5 3000 to 3999		Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000																																																																																																									
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<p><b>9.36.2.10. Construction of Air Barrier Details</b> N/A</p>	<p><b>9.36.2.10. Construction of Air Barrier Details</b></p> <p><u>7) Except as provided in Sentence 9.36.8.8.(1), buildings to which this Subsection applies shall be constructed airtight in accordance with Sentences (8) to (18).</u></p>	<p>Inserted new sentence.</p>																																																																																																														
<p><b>9.36.2.11. Trade-off Options for Above-ground Building Envelope Components and Assemblies</b></p> <p>5) The effective thermal resistance of windows shall be determined using one of the following equations, as applicable:</p> <p>a) RSI = 1/U, where the U-value is known, or</p> <p>b) RSI = 20/(57-ER), where the energy rating is known.</p>	<p><b>9.36.2.11. Trade-off Options for Above-ground Building Envelope Components and Assemblies</b></p> <p>5) The effective thermal resistance of windows shall be determined <del>using one of the following equations, as applicable: a) as</del> RSI = 1/U, <del>where the U-value is known, or b) RSI = 20/(57-ER), where the energy rating is known.</del></p>																																																																																																															
<p><b>9.36.3.10. Equipment Efficiency</b></p>	<p><b>9.36.3.10. Equipment Efficiency</b></p>	<p>Modifications to the Table and its notes.</p>																																																																																																														

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<b>Table 9.36.3.10.</b> <b>HVAC Equipment Performance Requirements</b> Forming Part of Sentences 9.36.3.9.(2) and 9.36.3.10.(1)				<b>Table 9.36.3.10.</b> <b>HVAC Equipment Performance Requirements</b> Forming Part of Sentences 9.36.3.9.(2) and 9.36.3.10.(1)				
Component or Equipment	Heating or Cooling Capacity, kW	Standard	Minimum Performance <sup>(1)</sup>	Component or Type of Equipment	Heating or Cooling Capacity, kW	Performance Testing Standard	Minimum Performance <sup>(1)</sup>	
<b>Air-Cooled Unitary Air Conditioners and Heat Pumps – Electrically Operated</b>				<b>Air-Cooled Unitary Air Conditioners and Heat Pumps – Electrically Operated</b>				
Split system	≤ 19	CSA C656	SEER = 14.5 EER = 11.5 HSPF = 7.1 (region 5 in standard)	Split system	≤ < 19	CSA C656  <a href="#">DOE 10 CFR, Part 430, Subpart B, Appendix M1</a>	SEER = 14.5 EER = 11.5 HSPF <u>V</u> = 7.1 ( <del>region 5 in standard</del> )  <a href="#">SEER2 = 14.3</a> <a href="#">HSPF2 V = 6.0</a>	
Single-package system	≤ 19	CSA C656 (including General Instruction No. 2)	SEER = 14 EER = 11 HSPF = 7.0 (region 5 in standard)	Single-package system	≤ < 19	CSA C656 ( <del>including General Instruction No. 2</del> )  <a href="#">DOE 10 CFR, Part 430, Subpart B, Appendix M1</a>	SEER = 14 EER = 11 HSPF <u>V</u> = 7.0 ( <del>region 5 in standard</del> )  <a href="#">SEER2 = 13.4</a> <a href="#">HSPF2 V = 5.4</a>	
All systems	> 19	CAN/CSA-C746	See Level 2 in standard	All systems	> 19	<del>CAN/CSA-C746</del>	<del>See Level 2 in standard</del>	
				Heat pumps, split and single-package	≥ 19	<a href="#">See Tables 5.2.12.1.-A to -P of Division B of the NECB</a>		
				Air conditioners, all electrical phases, split and single-package	≥ 19	<a href="#">See Tables 5.2.12.1.-A to -P of Division B of the NECB</a>		
<b>Water-Cooled Unitary Air Conditioners and Heat Pumps – Electrically Operated</b>				<b>Water-Cooled Unitary Air Conditioners and Heat Pumps – Electrically Operated</b>				
Water-cooled air conditioners – all types	< 19	ANSI/AHRI 210/240 or CTI STD-201RS	COP = 3.54, ICOP = 3.60	Water-cooled air conditioners – all types	< 19	ANSI/AHRI 210/240 <del>or CTI STD-201RS</del>	COP = 3.54, ICOP = 3.60	
					≥ 19	<a href="#">See Tables 5.2.12.1.-A to -P of Division B of the NECB</a>		
<b>Room Air Conditioners and Room Air Conditioner Heat Pumps</b>				<b>Room Air Conditioners and Room Air Conditioner Heat Pumps</b>				
Room air conditioners with reverse cycle with louvered sides without louvered sides	< 10.55	ANSI/AHAM RAC-1	EER = 8.5 EER = 8.0	Room air conditioners with reverse cycle with louvered sides without louvered sides	< 10.55	ANSI/AHAM RAC-1	EER = 8.5 EER = 8.0	
Room air conditioners without reverse cycle and with louvered sides	< 1.8 ≥ 1.8 and < 2.3 ≥ 2.3 and < 4.1 ≥ 4.1 and < 5.9 ≥ 5.9	CSA C368.1	EER = 10.7 EER = 10.7 EER = 10.8 EER = 10.7 EER = 9.4	Room air conditioners <del>louvered</del> , without reverse cycle <del>and with louvered sides</del>	< <del>1.8</del> <u>2.3</u> ≥ <del>1.8</del> <u>and &lt; 2.3</u> ≥ 2.3 and < 4.1 ≥ 4.1 and < 5.9 ≥ 5.9 <u>and &lt; 8.2</u>	CSA C368.1	<del>CEER = 10.7</del> <u>CEER = 10.7</u> <del>EER = 10.7</del> <del>CEER = 10.8</del> <u>CEER = 10.9</u> <del>CEER = 10.7</del> <del>CEER = 9.4</del> <u>CEER = 9.4</u>	

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Room air conditioner heat pumps with louvered sides	< 5.9 ≥ 5.9		EER = 9.9 EER = 9.5	<del>Room air conditioner heat pumps with louvered sides</del>	≥ 8.2 and < 10.6 < 5.9 ≥ 5.9		CEER ≥ 9.0 <del>EER = 9.9</del> <del>EER = 9.5</del>	
Room air conditioners without louvered sides and without reverse cycle	< 1.8 ≥ 1.8 and < 2.3 ≥ 2.3 and < 4.1 ≥ 4.1 and < 5.9 ≥ 5.9		EER = 9.9 EER = 9.9 EER = 9.4 EER = 9.4 EER = 9.4	<del>Room air conditioners without Non-louvered sides and without reverse cycle</del>	< 1.8 ≥ 1.8 and < 2.3 ≥ 2.3 and < 4.1 ≥ 4.1 and < 5.9 ≥ 5.9 and < 10.6		CEER = ≥ 9.9 CEER = ≥ 9.9 CEER = ≥ 9.4 CEER = ≥ 9.4 CEER = ≥ 9.4	
Room air conditioner heat pumps without louvered sides	< 4.1 ≥ 4.1		EER = 9.2 EER = 8.8	<del>Room air conditioner heat pumps without Non-louvered sides with reverse cycle</del>	< 5.9 ≥ 5.9 and < 10.6 < 4.1 ≥ 4.1 and < 10.6		CEER ≥ 9.8 CEER ≥ 9.3 <del>CEER = ≥ 9.2</del> CEER = ≥ 8.8	
Room air conditioner, casement only	All capacities		EER = 9.5	Room air conditioner, casement only	All capacities		CEER = ≥ 9.5	
Room air conditioner, casement slider	All capacities		EER = 9.5	Room air conditioner, casement slider	All capacities		CEER = ≥ 9.5 CEER = ≥ 9.5-10.4	
<b>Boilers</b>				<b>Boilers</b>				
Electric boilers	≤ 88	—	Must be equipped with automatic water temperature control <sup>(2)</sup>	Electric boilers	≤ 88	—	Must be equipped with automatic water temperature control <sup>(2)</sup>	
Gas-fired boilers <sup>(3)</sup>	≤ 88 > 88 and ≤ 117.23	CAN/CSA-P.2 AHRI BTS	AFUE ≥ 90% E <sub>t</sub> ≥ 83%	Gas-fired boilers <sup>(3)</sup>	≤ 88 ≥ 88 and ≤ 117.23	CAN/CSA-P.2 ANSI/AHRI-BTS 1500 or DOE 10 CFR, Part 431, Subpart E, Appendix A	AFUE ≥ 90% E <sub>t</sub> ≥ 83%	
Oil-fired boilers	≤ 88	CSA B212 or ANSI/ASHRAE 103	AFUE ≥ 85%	Oil-fired boilers	≤ 88 ≥ 88 and ≤ 733	CAN/CSA-P.2-B212 or ANSI/ASHRAE 103 ANSI/AHRI 1500 or DOE 10 CFR, Part 431, Subpart E, Appendix A	AFUE ≥ 85% E <sub>t</sub> ≥ 83%	
<b>Warm-Air Furnaces, Combination Warm-Air Furnace/Air-conditioning Units, Duct Furnaces and Unit Heaters</b>				<b>Warm-Air Furnaces, Combination Warm-Air Furnace/Air-conditioning Units, Duct Furnaces and Unit Heaters</b>				
Gas-fired warm-air furnaces <sup>(3)</sup>	≤ 65.9 > 65.9 and ≤ 117.23	CAN/CSA-P.2 CAN/CSA-P.8	AFUE ≥ 92% E <sub>t</sub> ≥ 78.5%	Gas-fired warm-air furnaces <sup>(3)</sup>	≤ 65.966 using single-phase electric current ≤ 66, through-the-wall furnace ≤ 66 using three-phase electric current > 65.9 and ≤ 117.23	CAN/CSA-P.2 CAN/CSA-P.8 ANSI Z21.47/CSA 2.3	AFUE ≥ 92% and must be equipped with a high-efficiency constant torque or constant airflow fan motor E <sub>t</sub> ≥ 78.5% AFUE ≥ 90% AFUE ≥ 78% or E <sub>t</sub> ≥ 80% E <sub>t</sub> ≥ 78.5-80%	
Oil-fired warm-air furnaces	≤ 66	CSA B212	AFUE ≥ 85%	Commercial gas-fired outdoor packaged furnaces (rooftop units) <sup>(3)</sup>	> 66 and ≤ 117.23	CAN/CSA-P.8	E <sub>t</sub> ≥ 80%	
Oil-fired duct furnaces	—	UL 731	E <sub>c</sub> ≥ 80%	Oil-fired warm-air furnaces	≤ 66	CAN/CSA-B212-P.2	AFUE ≥ 85%	
				Oil-fired duct furnaces	—	UL-731 CSA B140.4	E <sub>c</sub> ≥ 80% E <sub>t</sub> ≥ 81%	

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<i>and unit heaters</i>				<i>and unit heaters</i>				
Combined space- and water-heating systems (combos)	≤ 87.9 if boiler-based ≤ 73.2 if based on service water heater	CAN/CSA-P.9 <sup>(4)</sup>	TPF = 0.65	Combined space- and water-heating systems (combos)	≤ 87.9 if boiler-based ≤ 73.2 if based on service water heater	CAN/CSA-P.9 <sup>(4)</sup>	TPF = <del>0.65</del> 0.80	
Integrated mechanical systems	—	CSA P.10	OTPF = 0.78	Integrated mechanical systems	<del>All capacities</del>	CSA P.10	OTPF = <del>0.78</del> 0.85	
				<a href="#">Electric furnaces</a>	≤ 66	<a href="#">No energy performance test required</a>	<a href="#">Must be equipped with a high-efficiency constant torque or constant airflow fan motor</a>	
<b>Other</b>				<b>Other</b>				
Gas-fired fireplaces and stoves <sup>(3)</sup>	—	—	<sup>(5)</sup>	Gas-fired fireplaces and stoves <sup>(3)</sup>	—	<del>CAN/CSA-P.4.1</del>	<del>(5)</del> FE ≥ 50%, see Sentence (2) <a href="#">See Sentence (2)</a>	
Solid-fuel-burning space-heating equipment	—	EPA 40 CFR, Part 60, Subpart AAA or CSA B415.1 <sup>(6)</sup>	See standard <sup>(7)</sup>	Solid-fuel-burning space-heating equipment <sup>(7)</sup>	<del>&lt; 500 kW output capacity</del>	EPA 40 CFR, Part 60, Subpart AAA <a href="#">and Subpart QQQQ</a> , <del>or</del> CSA B415.1 <sup>(6)</sup> , <a href="#">or EN 303-5</a>	<del>See standard<sup>(7)</sup></del>	
Dehumidifiers	≤ 87.5 L/day	CAN/CSA-C749	See standard <sup>(7)</sup>	Dehumidifiers	≤ 16.6 L/day > 21.3 and ≤ 25.5 L/day > 25.5 and ≤ 35.5 L/day > 35.5 and ≤ 87.5 L/day ≤ 87.5 L/day	CAN/CSA-C749	EF ≥ 1.35 EF ≥ 1.50 EF ≥ 1.60 EF ≥ 1.70 <del>See standard<sup>(7)</sup></del> EF ≥ 2.50	
				<a href="#">Unitary electric resistance space heaters<sup>(9)</sup></a>	<a href="#">All capacities</a>	<a href="#">No energy performance test required</a>	—	

Notes to Table 9.36.3.10.:

(1) The symbols and abbreviations that appear in this column have the following meanings:  
 AFUE = annual fuel utilization efficiency  
 COP = coefficient of performance, in W/W (COP<sub>c</sub> = in cooling mode and COP<sub>h</sub> = in heating mode)  
 E<sub>c</sub> = combustion efficiency, in %  
 EER = energy efficiency ratio, in (Btu/h)/W (no metric equivalent)  
 E<sub>t</sub> = thermal efficiency  
 FE = fireplace efficiency  
 HSPF = heating season performance factor, in watt-hours  
 ICOP = integrated coefficient of performance, in W/W  
 OTPF = overall thermal performance factor  
 SEER = seasonal energy efficiency ratio, in (Btu/h)/W (no metric equivalent)

Notes to Table 9.36.3.10.:

(1) The symbols and abbreviations that appear in this column have the following meanings:  
 AFUE = annual fuel utilization efficiency  
[CEER = combined energy-efficiency ratio, in \(Btu/h\)/W](#)  
~~COP = coefficient of performance, in W/W (COP<sub>c</sub> = in cooling mode and COP<sub>h</sub> = in heating mode)~~  
[COP<sub>c</sub> = coefficient of performance in cooling mode, in W/W](#)  
[COP<sub>h</sub> = coefficient of performance in heating mode, in W/W](#)  
~~E<sub>c</sub> = combustion efficiency, in %~~  
 EER = energy -efficiency ratio, in (Btu/h)/W (no metric equivalent)  
[EF = energy factor, in %/h](#)  
 E<sub>t</sub> = thermal efficiency  
 FE = fireplace efficiency  
 HSPF ~~V~~ = heating ~~season~~[seasonal](#) performance factor [for region V \(see map in CSA C656\)](#), in ~~watt-hours~~ [\(Btu/h\)/W](#)  
[HSPF2 V = heating seasonal performance factor 2 for region V \(see map in DOE 10 CFR, Part 430, Subpart B\), in \(Btu/h\)/W](#)  
 ICOP = integrated coefficient of performance, in W/W  
 OTPF = overall thermal performance factor  
 SEER = seasonal energy -efficiency ratio, in (Btu/h)/W (no metric equivalent)

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<p>TPF = thermal performance factor</p> <p>(2) No standard addresses the performance efficiency of electric <i>boilers</i>; however, their efficiency typically approaches 100%.</p> <p>(3) Includes propane.</p> <p>(4) See the exception stated in Sentence (3).</p> <p>(5) See Sentence (2).</p> <p>(6) CSA B415.1 does not apply to <i>stoves</i> with an oven whose volume is greater than 0.028 m<sup>3</sup> and automatically fuelled <i>appliances</i>.</p> <p>(7) Minimum performance values are omitted from the Table in cases where the referenced standard itself contains such requirements.</p>	<p><u>SEER2 = seasonal energy-efficiency ratio 2, in (Btu/h)/W</u></p> <p>TPF = thermal performance factor</p> <p>(2) <del>No standard addresses the performance efficiency of electric <i>boilers</i>; however, their efficiency typically approaches 100%</del>An automatic water temperature control device adjusts the temperature of the water in the <i>boiler</i> so that the heat supplied corresponds more closely to the heat demanded under varying outdoor temperatures.</p> <p>(3) Includes propane.</p> <p>(4) See <del>the exception stated in</del> Sentence (3).</p> <p>(5) <del>See Sentence (2).</del>Decorative gas-fired fireplaces and <i>stoves</i> are vented decorative gas <i>appliances</i> that are marked as such on their rating plate and that comply with ANSI Z21.50/CSA 2.22, “Vented Decorative Gas Appliances.”</p> <p><u>(6) Decorative gas-fired fireplaces and <i>stoves</i> shall not be used to satisfy heating requirements or as part of the heating system required y Section 9.33.</u></p> <p><del>(6) CSA B415.1 does not apply to</del> <u>Does not include</u> <i>stoves</i> with an oven whose volume is greater than 0.028 m<sup>3</sup> and automatically fuelled <i>appliances</i>.</p> <p><del>(7)</del> Minimum performance values are omitted from the Table in cases where the referenced standard itself contains such requirements. <u>Equipment tested to the referenced standards provides an acceptable level of energy performance.</u></p> <p><u>(9) See Sentence 9.36.3.6.(3).</u></p>																																																																																					
<p><b>9.36.4.2. Equipment Efficiency</b></p> <p style="text-align: center;"><b>Table 9.36.4.2.</b> <b>Service Water Heating Equipment Performance Standards</b> Forming Part of Sentences 9.36.4.2.(1) and (2)</p> <table border="1" data-bbox="102 995 1168 1880"> <thead> <tr> <th>Component</th> <th>Input<sup>(1)</sup></th> <th>Standard</th> <th>Performance Requirement<sup>(2)</sup></th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;"><b>Storage-Type Service Water Heaters</b></td> </tr> <tr> <td rowspan="3">Electric</td> <td>≤ 12 kW (50 L to 270 L capacity)</td> <td rowspan="2">CAN/CSA-C191</td> <td>SL ≤ 35 + 0.20V (top inlet)</td> </tr> <tr> <td></td> <td>SL ≤ 40 + 0.20V (bottom inlet)</td> </tr> <tr> <td>≤ 12 kW (&gt; 270 L and ≤ 454 L capacity)</td> <td></td> <td>SL ≤ (0.472V) – 38.5 (top inlet)</td> </tr> <tr> <td></td> <td></td> <td></td> <td>SL ≤ (0.472V) – 33.5 (bottom inlet)</td> </tr> <tr> <td></td> <td>&gt;12 kW (&gt; 75 L capacity)</td> <td>ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G</td> <td>S = 0.30 + 27/V<sub>m</sub></td> </tr> <tr> <td>Heat pump water heaters</td> <td>≤ 24 A and ≤ 250 V</td> <td>CAN/CSA-C745</td> <td>EF ≥ 2.0</td> </tr> <tr> <td rowspan="4">Gas-fired<sup>(3)</sup></td> <td rowspan="4">&lt; 22 kW</td> <td rowspan="4">CAN/CSA-P.3</td> <td>EF ≥ 0.67 – 0.0005V</td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> </tbody> </table>	Component	Input <sup>(1)</sup>	Standard	Performance Requirement <sup>(2)</sup>	<b>Storage-Type Service Water Heaters</b>				Electric	≤ 12 kW (50 L to 270 L capacity)	CAN/CSA-C191	SL ≤ 35 + 0.20V (top inlet)		SL ≤ 40 + 0.20V (bottom inlet)	≤ 12 kW (> 270 L and ≤ 454 L capacity)		SL ≤ (0.472V) – 38.5 (top inlet)				SL ≤ (0.472V) – 33.5 (bottom inlet)		>12 kW (> 75 L capacity)	ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G	S = 0.30 + 27/V <sub>m</sub>	Heat pump water heaters	≤ 24 A and ≤ 250 V	CAN/CSA-C745	EF ≥ 2.0	Gas-fired <sup>(3)</sup>	< 22 kW	CAN/CSA-P.3	EF ≥ 0.67 – 0.0005V				<p><b>9.36.4.2. Equipment Efficiency</b></p> <p style="text-align: center;"><b>Table 9.36.4.2.</b> <b>Service Water Heating Equipment Performance <del>Standards</del> Requirements</b> Forming Part of Sentences 9.36.4.2.(1) and (2)</p> <table border="1" data-bbox="1199 995 2265 1880"> <thead> <tr> <th><del>Component</del>Type of Equipment</th> <th>Input<sup>(1)</sup></th> <th><del>Performance Testing</del> Standard</th> <th>Performance Requirement<sup>(2)</sup></th> </tr> </thead> <tbody> <tr> <td colspan="4" style="text-align: center;"><b>Storage-Type Service Water Heaters</b></td> </tr> <tr> <td rowspan="3">Electric</td> <td>≤ 12 kW (V<sub>r</sub> &gt; 50 L <del>to</del> but ≤ 270 L <del>capacity</del>)</td> <td rowspan="2">CAN/CSA-C191</td> <td>SL ≤ 35 + (0.20 V<sub>r</sub>) (top inlet)</td> </tr> <tr> <td></td> <td>SL ≤ 40 + (0.20 V<sub>r</sub>) (bottom inlet)</td> </tr> <tr> <td>≤ 12 kW (V<sub>r</sub> &gt; 270 L and but ≤ 454 L <del>capacity</del>)</td> <td></td> <td>SL ≤ (0.472 V<sub>r</sub>) – 38.5 (top inlet)</td> </tr> <tr> <td></td> <td></td> <td></td> <td>SL ≤ (0.472 V<sub>r</sub>) – 33.5 (bottom inlet)</td> </tr> <tr> <td></td> <td>&gt;12 kW (<del>&gt; 75 L capacity</del>)</td> <td>ANSI Z21.10.3/CSA 4.3 and/or DOE 10 CFR, Part 431, Subpart G, Appendix B</td> <td>S = SL ≤ 0.30 + 27/V<sub>m</sub> (102.2 V<sub>s</sub>)</td> </tr> <tr> <td>Heat pump water heaters</td> <td>≤ 24 A and ≤ 250 V</td> <td>CAN/CSA-C745</td> <td>EF ≥ <del>2.0</del> 2.1</td> </tr> <tr> <td rowspan="4">Gas-fired<sup>(3)</sup></td> <td rowspan="4">≤ 22 kW and first-hour rating &lt; 68 L</td> <td rowspan="4">CAN/CSA-P.3</td> <td>EF ≥ 0.67 – 0.0005V <del>UEF ≥ 0.3456 – (0.00053 V<sub>s</sub>)<sup>(4)</sup></del></td> </tr> <tr> <td>UEF ≥ 0.5982 – (0.00050 V<sub>s</sub>)<sup>(4)</sup></td> </tr> <tr> <td>UEF ≥ 0.6483 – (0.00045 V<sub>s</sub>)<sup>(4)</sup></td> </tr> <tr> <td>UEF ≥ 0.6920 – (0.00034 V<sub>s</sub>)<sup>(4)</sup></td> </tr> <tr> <td></td> <td>≤ 22 kW and first-hour rating ≥ 68 L but &lt; 193 L</td> <td></td> <td></td> </tr> <tr> <td></td> <td>≤ 22 kW and first-hour rating ≥ 193 L but &lt; 284 L</td> <td></td> <td></td> </tr> <tr> <td></td> <td>≤ 22 kW and first-hour rating ≥ 284 L</td> <td></td> <td></td> </tr> </tbody> </table>	<del>Component</del> Type of Equipment	Input <sup>(1)</sup>	<del>Performance Testing</del> Standard	Performance Requirement <sup>(2)</sup>	<b>Storage-Type Service Water Heaters</b>				Electric	≤ 12 kW (V <sub>r</sub> > 50 L <del>to</del> but ≤ 270 L <del>capacity</del> )	CAN/CSA-C191	SL ≤ 35 + (0.20 V <sub>r</sub> ) (top inlet)		SL ≤ 40 + (0.20 V <sub>r</sub> ) (bottom inlet)	≤ 12 kW (V <sub>r</sub> > 270 L and but ≤ 454 L <del>capacity</del> )		SL ≤ (0.472 V <sub>r</sub> ) – 38.5 (top inlet)				SL ≤ (0.472 V <sub>r</sub> ) – 33.5 (bottom inlet)		>12 kW ( <del>&gt; 75 L capacity</del> )	ANSI Z21.10.3/CSA 4.3 and/or DOE 10 CFR, Part 431, Subpart G, Appendix B	S = SL ≤ 0.30 + 27/V <sub>m</sub> (102.2 V <sub>s</sub> )	Heat pump water heaters	≤ 24 A and ≤ 250 V	CAN/CSA-C745	EF ≥ <del>2.0</del> 2.1	Gas-fired <sup>(3)</sup>	≤ 22 kW and first-hour rating < 68 L	CAN/CSA-P.3	EF ≥ 0.67 – 0.0005V <del>UEF ≥ 0.3456 – (0.00053 V<sub>s</sub>)<sup>(4)</sup></del>	UEF ≥ 0.5982 – (0.00050 V <sub>s</sub> ) <sup>(4)</sup>	UEF ≥ 0.6483 – (0.00045 V <sub>s</sub> ) <sup>(4)</sup>	UEF ≥ 0.6920 – (0.00034 V <sub>s</sub> ) <sup>(4)</sup>		≤ 22 kW and first-hour rating ≥ 68 L but < 193 L				≤ 22 kW and first-hour rating ≥ 193 L but < 284 L				≤ 22 kW and first-hour rating ≥ 284 L			<p>Modifications to the Table and its notes.</p>
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	≥ 22 kW	ANSI Z21.10.3/CSA 4.3	$E_t \geq 80\%$ and standby loss $\leq$ rated input <sup>(4)</sup> /800 + 16.57·v(V)	> 22 kW but $\leq$ 30.5 kW and $V_r \leq 454$ L		$UEF \geq 0.8107 - (0.00021 V_s)^{(4)}$		
Oil-fired	≤ 30.5 kW	CAN/CSA-B211	EF ≥ 0.59 – 0.0005V	≥ 22 kW	ANSI Z21.10.3/CSA 4.3/DOE 10 CFR, Part 431, Subpart G, Appendix A	$E_t \geq 80\%$ and standby loss $\leq$ rated input <sup>(4)</sup> /800 + 16.57·v(V) $SL \leq 0.84 [(1.25 Q) + (16.57 vV_r)]$		
				≤ 30.5 kW and first-hour rating < 68 L	CAN/CSA-B211 for EF or CAN/CSA-P.3 for UEF	EF ≥ 0.590.68 – (0.0005V <sub>r</sub> ) or UEF ≥ 0.2509 – (0.00032 V <sub>s</sub> )		
				≤ 30.5 kW and first-hour rating ≥ 68 L but < 193 L		EF ≥ 0.68 – (0.0005 V <sub>r</sub> ) or UEF ≥ 0.5330 – (0.00042 V <sub>s</sub> )		
				≤ 30.5 kW and first-hour rating ≥ 193 L but < 284 L		EF ≥ 0.68 – (0.0005 V <sub>r</sub> ) or UEF ≥ 0.6078 – (0.00042 V <sub>s</sub> )		
				≤ 30.5 kW and first-hour rating ≥ 284 L		EF ≥ 0.68 – (0.0005 V <sub>r</sub> ) or UEF ≥ 0.6815 – (0.00037 V <sub>s</sub> )		
				> 30.5 kW but ≤ 40.99 kW and $V_r \leq 454$ L		UEF ≥ 0.6740 – (0.00035 V <sub>s</sub> )		
	> 30.5 kW	ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G	$E_t \geq 78\%$ and standby loss $\leq$ rated input <sup>(4)</sup> /800 + 16.57·v(V)	> 30.5 40.99 kW		ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G, Appendix A	$E_t \geq 78\%$ and standby loss $\leq$ rated input <sup>(4)</sup> /800 + 16.57·v(V) $SL \leq (1.25 Q) + (16.57 vV_r)$	
<b>Tankless Service Water Heaters</b>				<b>Tankless Service Water Heaters</b>				
Gas-fired	≤ 73.2 kW	CAN/CSA-P.7	EF ≥ 0.8	≤ 73.2 kW < 58.56 kW, $V_r \leq 7.6$ L and max. flow rate < 6.4 L/min	CAN/CSA-P.73	UEF ≥ 0.86		
	> 73.2 kW	ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G	$E_t \geq 80\%$	< 58.56 kW, $V_r \leq 7.6$ L and max. flow rate ≥ 6.4 L/min		UEF ≥ 0.87		
Oil-fired	≤ 61.5 kW <sup>(5)</sup>	DOE 10 CFR, Part 430, Subpart B, Appendix E	EF ≥ 0.59 – 0.0019V <sub>m</sub>	> 73.2 kW ≥ 58.56 kW, $V_r \leq 37.85$ L and input rate to $V_r$ ratio ≥ 309 W/L	ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G, Appendix C	$E_t \geq 80\%$		
	Other	ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G	$E_t \geq 80\%$	≤ 61.5 kW <sup>(5)</sup>	DOE 10 CFR, Part 430, Subpart B, Appendix E	EF ≥ 0.59 – 0.0019V <sub>m</sub> (0.0005 V <sub>r</sub> )		
Electric	—	—	<sup>(6)</sup>	Other	ANSI Z21.10.3/CSA 4.3 and DOE 10 CFR, Part 431, Subpart G	$E_t \geq 80\%$		
Combined space- and water-heating systems (combos)	≤ 87.9 kW if boiler-based	CAN/CSA-P.9	TPF = 0.80	—	—	<sup>(6)</sup>		
	≤ 73.2 kW if based on service water heater			≤ 87.9 kW if boiler-based	CAN/CSA-P.9	TPF = 0.650.80		
Integrated mechanical systems	—	CSA P.10	OTPF = 0.78	≤ 73.2 kW if based on service water heater	CSA P.10	OTPF = 0.780.85		
<b>Pool Heaters</b>				<b>Pool Heaters</b>				
Gas-fired <sup>(3)</sup>	< 117.2 kW	ANSI Z21.56/CSA 4.7 or CSA P.6	$E_t \geq 82\%$	—	—	<sup>(6)</sup>		
Oil-fired	—	CSA B140.12	$E_t \geq 75\%$	< 117.2 kW	ANSI Z21.56/CSA 4.7 or CSA P.6	$E_t \geq 82\%$		
				—	CSA B140.12	$E_t \geq 75\%$		

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<p><b>Notes to Table 9.36.4.2.:</b></p> <p>(1) 1 kW = 3412 Btu/h</p> <p>(2) The symbols and abbreviations used in this column have the following meanings:  EF = energy factor, in %/h  E<sub>t</sub> = thermal efficiency with 38.9°C water temperature difference  OTPF = overall thermal performance factor  S = standby loss, in %/h (percentage heat content of stored water per hour)</p> <p>SL = standby loss, in W  TPF = thermal performance factor</p> <p>V = storage volume, in L, as specified by the manufacturer  V<sub>m</sub> = measured storage volume, in US gallons</p> <p>(3) Includes propane.</p> <p>(4) Rated input is measured in watts.</p> <p>(5) Consistent with the U.S. Congress “National Appliance Energy Conservation Act of 1987.”</p> <p>(6) No standard addresses the performance efficiency of electric tankless <i>service water heaters</i>; however, their efficiency typically approaches 100%.</p>	<p><b>Notes to Table 9.36.4.2.:</b></p> <p>(1) 1 kW = 3412 Btu/h</p> <p>(2) The symbols and abbreviations used in this column have the following meanings:  EF = energy factor, <del>in %/h</del>  E<sub>t</sub> = thermal efficiency with a 38.9°C (70°F) water temperature difference  OTPF = overall thermal performance factor  <del>S = standby loss, in %/h (percentage heat content of stored water per hour)</del>  <u>Q = nameplate input rate, in kW</u>  SL = standby loss, in W  TPF = thermal performance factor  <u>UEF = uniform energy factor</u>  <del>V = storage volume, in L, as specified by the manufacturer</del>  <del>V<sub>m</sub> = measured storage volume, in US gallons</del>  <u>V<sub>r</sub> = rated nominal storage volume, in L</u>  <u>V<sub>s</sub> = measured storage volume, in L</u></p> <p>(3) Includes propane.</p> <p>(4) <del>Rated input is measured in watts.</del> <u>Industry and regulators are transitioning from using EF to UEF as the metric to evaluate service water heater performance. While this Code sets out performance requirements for gas-fired storage-type service water heaters within the scope of CAN/CSA-P.3 in terms of UEF, the “Energy Efficiency Regulations” set out performance standards for such service water heaters in terms of both EF and UEF.</u></p> <p>(5) Consistent with the U.S. Congress “National Appliance Energy Conservation Act of 1987.”</p> <p>(6) No standard addresses the performance efficiency of electric tankless <i>service water heaters</i>; however, their efficiency typically approaches 100%.</p>	
<p><b>9.36.5.2. Definitions</b></p> <p><b>2)</b> For the purpose of this Subsection, the term “annual energy consumption” shall mean the annual sum of service water heating and space-conditioning energy consumption of the proposed house design, as calculated in accordance with this Subsection.</p> <p><b>3)</b> For the purpose of this Subsection, the term “house energy target” shall mean the annual energy consumption of the reference house, as calculated in accordance with this Subsection.</p> <p><b>4)</b> For the purpose of this Subsection, the term “principal ventilation rate” shall mean the normal operating exhaust capacity of the principal ventilation fan as required by Article 9.32.3.3.</p>	<p><b>9.36.5.2. Definitions</b></p> <p><del><b>2)</b> For the purpose of this Subsection, the term “annual energy consumption” shall mean the annual sum of service water heating and space-conditioning energy consumption of the proposed house design, as calculated in accordance with this Subsection.</del></p> <p><del><b>3)</b> For the purpose of this Subsection, the term “house energy target” shall mean the annual energy consumption of the reference house, as calculated in accordance with this Subsection.</del></p> <p><del><b>4)</b> For the purpose of this Subsection, the term “principal ventilation rate” shall mean the normal operating exhaust capacity of the principal ventilation fan as required by Article 9.32.3.3.</del></p> <p><b>2)</b> <u>For the purpose of this Subsection, the term “proposed house” shall mean a modeled replica of the actual house under consideration, in which some elements covered in Subsections 9.36.2. to 9.36.4. are specific to the actual house, while other elements not covered in those Subsections, but that are necessary for the calculation of the annual energy consumption, are assigned default values.</u></p>	Deleted sentences (2) to (4) and added new sentence (2).
<p><b>9.36.5.3. Compliance</b></p> <p><b>1)</b> The performance compliance calculations shall determine</p> <ol style="list-style-type: none"> <li>the annual energy consumption of the proposed house, and</li> <li>the house energy target of a reference house.</li> </ol>	<p><b>9.36.5.3. Compliance</b></p> <p><b>1)</b> The performance compliance calculations shall determine <del>a)</del> the annual energy consumption of the proposed house, <del>and b)</del> the house energy target of a reference house <u>in accordance with</u></p> <ol style="list-style-type: none"> <li><u>this Subsection, or</u></li> <li><u>the EnerGuide Rating System, version 15, and Sentence (2).</u></li> </ol> <p><u>(See Note A-9.36.5.3.(1).)</u></p>	New content added to existing sentence.
<p><b>9.36.5.4. Calculation Methods</b></p> <p><b>4)</b> The energy model calculations shall account for the loads due to heat gains from occupants, lighting</p>	<p><b>9.36.5.4. Calculation Methods</b></p> <p><b>4)</b> The energy model calculations shall account for the loads due to heat gains from occupants, lighting</p>	Reworded Sentence (4). Updated values in Table.

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<p>and miscellaneous equipment using the default schedule provided in Table 9.36.5.4. for every day of the year and such loads shall be</p> <p>a) multiplied by the following adjustment factors, as applicable:</p> <p>i) 1 for a house with or without a <i>secondary suite</i>,</p> <p>ii) 0.625 for each <i>suite</i> in a residential <i>building</i> containing 2 <i>suites</i>,</p> <p>iii) 0.606 for each <i>suite</i> in a residential <i>building</i> containing 3 <i>suites</i>, or</p> <p>iv) 0.598 for each <i>suite</i> in a residential <i>building</i> containing more than 3 <i>suites</i>, and</p> <p>b) increased for each hour by 3.58 W per square metre of <i>floor area</i> in common spaces, if applicable.</p> <p style="text-align: center;"><b>Table 9.36.5.4.</b> <b>Default Schedule for Internal Heat Gain Loads<sup>(1)</sup></b> Forming Part of Sentence 9.36.5.4.(4)</p> <table border="1" data-bbox="102 620 1177 973"> <thead> <tr> <th colspan="12">Average Load, in W, Before Noon</th> </tr> <tr> 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it does not account for heat gains from exterior lighting and from lighting of unconditioned spaces.</p> <p>5) The energy model calculations shall account for the following space-heating temperature set-points:</p> <p>a) 21°C in all living spaces above the <i>basement</i>,</p> <p>b) 19°C in <i>basements</i> and common spaces, and</p> <p>c) 15°C in crawl spaces intended to be <i>conditioned spaces</i>.</p> <p>10) The energy model calculations shall account for the effect of airtightness in accordance with Sentence 9.36.5.10.(10) or (11), as applicable.</p>	Average Load, in W, Before Noon												12 a.m.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	786	552	549	523	521	547	634	726	847	880	906	986	Average Load, in W, After Noon												12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	992	934	898	911	924	1 089	1 410	1 588	1 568	1 483	1 194	952	<p>and miscellaneous equipment, <del>using the default schedule provided in Table 9.36.5.4. for every day of the year and such loads shall be</del> <u>which shall be fixed for every day of the year, by</u></p> <p>a) <del>multiplied by the following adjustment factors, as applicable: the schedule provided in Table 9.36.5.4., and</del></p> <p>i) <del>1 for a house with or without a secondary suite,</del></p> <p>ii) <del>0.625 for each suite in a residential building containing 2 suites,</del></p> <p>iii) <del>0.606 for each suite in a residential building containing 3 suites, or</del></p> <p>iv) <del>0.598 for each suite in a residential building containing more than 3 suites and</del></p> <p>b) <del>increased</del> <u>increasing the loads</u> for each hour by 3.58 W per square metre of <i>floor area</i> in common spaces, if applicable.</p> <p style="text-align: center;"><b>Table 9.36.5.4.</b> <b>Default Schedule for Internal Heat Gain Loads<sup>(1)</sup></b> Forming Part of Sentence 9.36.5.4.(4)</p> <p style="text-align: center;"><u>Houses without a 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<p><b>9.36.5.8. Service Water Heating System Calculations</b></p> <p>5) The energy model calculations shall use a service water delivery temperature of 55°C. (See Note A-9.36.5.8.(5).)</p>	<p><b>9.36.5.8. Service Water Heating System Calculations</b></p> <p>5) <del>The</del> <u>Except as provided in Sentence (8), the</u> energy model calculations shall use a service water delivery temperature of 55°C. (See Note A-9.36.5.8.(5).)</p>	<p>Values in Sentence (6) changed.</p> <p>Values in Table updated.</p>																																																																																																																																																																																																																																																

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<p><b>6)</b> The energy model calculations shall take into account the service water heating use schedule presented in Table 9.36.5.8. using a load of</p> <ul style="list-style-type: none"> <li>a) 225 L/ day for houses with or without a <i>secondary suite</i>, or</li> <li>b) 140 L/day per <i>dwelling unit</i> for other types of residential <i>buildings</i>.</li> </ul> <p style="text-align: center;"><b>Table 9.36.5.8.</b> <b>Default Schedule of Service Water Heating Use</b> Forming Part of Sentence 9.36.5.8.(6)</p> <table border="1" data-bbox="105 499 1174 1070"> <thead> <tr> <th>Type of Small Residential <i>Building</i></th> <th colspan="12">Distribution of Hourly Draws on Service Water Heating, L/h</th> </tr> <tr> <td rowspan="3">Houses with or without a <i>secondary suite</i> (225 L/day/house)</td> <td>12 a.m.</td><td>1 a.m.</td><td>2 a.m.</td><td>3 a.m.</td><td>4 a.m.</td><td>5 a.m.</td><td>6 a.m.</td><td>7 a.m.</td><td>8 a.m.</td><td>9 a.m.</td><td>10 a.m.</td><td>11 a.m.</td> 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<tr> <td></td> <td>4.7</td><td>1.6</td><td>3.1</td><td>7.8</td><td>14</td><td>9.3</td><td>9.3</td><td>3.1</td><td>1.6</td><td>0</td><td>0</td><td>0</td> </tr> </thead></table>	Type of Small Residential <i>Building</i>	Distribution of Hourly Draws on Service Water Heating, L/h												Houses with or without a <i>secondary suite</i> (225 L/day/house)	12 a.m.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	0	0	0	0	0	0	0	5	20	30	55	27.5	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	<i>Dwelling units</i> in other types of residential <i>buildings</i> (140 L/day/ <i>dwelling unit</i> )	12 a.m.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	0	0	0	0	0	0	0	3.1	12.4	18.7	34.2	17.1	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.		4.7	1.6	3.1	7.8	14	9.3	9.3	3.1	1.6	0	0	0	<p><b>6)</b> <del>The</del> <u>For hot service water usage other than for showering, the</u> energy model calculations shall take into account the service water heating use schedule presented in Table 9.36.5.8. using a load of</p> <ul style="list-style-type: none"> <li>a) <del>225</del><u>97</u> L/ day for houses <del>with or</del> without a <i>secondary suite</i>, or</li> <li>b) <del>140</del><u>65</u> L/day <del>per for each</del> <i>dwelling unit</i> <del>for other types of in</del> residential <i>buildings</i> <u>with two or more <i>dwelling units</i></u>.</li> </ul> <p style="text-align: center;"><b>Table 9.36.5.8.</b> <b>Default Schedule of Service Water Heating Use</b> Forming Part of Sentence 9.36.5.8.(6)</p> <table border="1" data-bbox="1202 499 2271 1070"> <thead> <tr> <th>Type of Small Residential <i>Building</i></th> <th colspan="12">Distribution of Hourly Draws on Service Water Heating, L/h</th> </tr> <tr> <td rowspan="3">Houses <del>with or</del> without a <i>secondary suite</i> (<del>225</del><u>97</u> L/day/house)</td> <td>12 a.m.</td><td>1 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7 a.m. for 15 mins for houses without a <i>secondary suite</i>, or</u></li> <li>b) <u>at 7 a.m. for 10 mins for each <i>dwelling unit</i> in residential <i>buildings</i> with two or more <i>dwelling units</i>.</u></li> </ul> <p><b>8)</b> <u>The energy model shall set the service water delivery temperature for showering to 41°C at the shower head, with a flow rate of 7.6 L/min.</u></p>	Type of Small Residential <i>Building</i>	Distribution of Hourly Draws on Service Water Heating, L/h												Houses <del>with or</del> without a <i>secondary suite</i> ( <del>225</del> <u>97</u> L/day/house)	12 a.m.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	0	0	0	0	0	0	0	<del>5</del> <u>5-2.2</u>	<del>20</del> <u>20</u>	<del>30</del> <u>30</u>	<del>55</del> <u>55</u>	<del>27.5</del> <u>27.5</u>	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	<del><i>Dwelling units</i></del> <u>Each <i>dwelling unit</i> in other types of residential buildings with two or more <i>dwelling units</i> (<del>140-65</del> L/day/<i>dwelling unit</i>)</u>	12 a.m.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	0	0	0	0	0	0	0	<del>3.1</del> <u>3.1</u>	<del>12.4</del> <u>12.4</u>	<del>18.7</del> <u>18.7</u>	<del>34.2</del> <u>34.2</u>	<del>17.1</del> <u>17.1</u>	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.		<del>4.7</del> <u>4.7</u>	<del>1.6</del> <u>1.6</u>	<del>3.1</del> <u>3.1</u>	<del>7.8</del> <u>7.8</u>	<del>14</del> <u>14</u>	<del>9.3</del> <u>9.3</u>	<del>9.3</del> <u>9.3</u>	<del>3.1</del> <u>3.1</u>	<del>1.6</del> <u>1.6</u>	0	0	0	<p>Two new sentences added.</p>
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<p><b>9.36.5.10. Modeling Building Envelope of Proposed House</b></p> <p><b>9)</b> The airtightness value used in the energy model calculations for the proposed house shall be</p> <ul style="list-style-type: none"> <li>a) 3.2 air changes per hour at 50 Pa pressure differential, where the construction complies with Section 9.25.,</li> <li>b) 2.5 air changes per hour at 50 Pa pressure differential, where it can be shown that the <i>air barrier system</i> is constructed in accordance with Subsection 9.25.3. and Articles 9.36.2.9. and 9.36.2.10., or</li> <li>c) where airtightness is tested in accordance with Sentence (11), <ul style="list-style-type: none"> <li>i) the number of air changes per hour at 50 Pa pressure differential, and</li> <li>ii) the equivalent leakage area (see Note A-9.36.5.10.(9)(c)(ii)).</li> </ul> </li> </ul> <p><b>10)</b> A design airtightness shall be assigned for use in the energy model calculations until the actual airtightness has been measured in accordance with Sentence (11).</p>	<p><b>9.36.5.10. Modeling Building Envelope of Proposed House</b></p> <p><b>9)</b> The airtightness <del>value</del> used in the energy model calculations for the proposed house shall be</p> <ul style="list-style-type: none"> <li>a) <del>3.2 air changes per hour at 50 Pa pressure differential, where the construction complies with Section 9.25.,</del></li> <li><del>b)</del> <u>2.5 air changes per hour at 50 Pa pressure differential with a pressure exponent of 0.67,</u> where it can be shown that the <i>air barrier system</i> is constructed in accordance with Subsection 9.25.3. and Articles 9.36.2.9. and 9.36.2.10., or</li> <li><del>c)</del> <u>where the airtightness is tested-determined</u> in accordance with Sentence <u>9.36.6.3.(111), expressed as</u> <ul style="list-style-type: none"> <li>i) the number of air changes per hour at 50 Pa pressure differential <u>with a pressure exponent determined through a multi-point test,</u> and</li> <li>ii) the equivalent leakage area <del>(see Note A-9.36.5.10.(9)(c)(ii)).10)</del></li> </ul> </li> </ul> <p><b>10)</b> <del>A</del> <u>For compliance with Clause (9)(b),</u> a design airtightness <u>value</u> shall be assigned for use in the energy model <del>calculations</del> until the actual airtightness has been measured <del>in accordance with Sentence (11).</del></p>	<p>Revisions to Sentence (9).</p> <p>Sentences 11, 12, and 13 deleted.</p>																																																																																																																																																																																																								

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<p><b>11)</b> Where measured airtightness is used in the energy model calculations, it shall be determined in accordance with CAN/CGSB-149.10-M, “Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method,”</p> <p>a) as written, or</p> <p>b) excluding Clause 6.1.6, which allows intentional openings for mechanical equipment to be left unsealed.</p> <p>(See Note A-9.36.5.10.(11).)</p> <p><b>12)</b> Where airtightness is determined in accordance with Sentence (11) using air changes per hour, the result obtained at an air pressure differential of 50 Pa shall be used in the energy model calculations.</p> <p><b>13)</b> Where airtightness is determined in accordance with Clause (11)(b), its rate shall be adjusted in the energy model calculations to account for air leakage through mechanical equipment.</p>	<p><del>11) Where measured airtightness is used in the energy model calculations, it shall be determined in accordance with CAN/CGSB-149.10-M, “Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method,”</del></p> <p><del>a) as written, or</del></p> <p><del>b) excluding Clause 6.1.6, which allows intentional openings for mechanical equipment to be left unsealed.</del></p> <p><del>(See Note A-9.36.5.10.(11).)</del></p> <p><del>12) Where airtightness is determined in accordance with Sentence (11) using air changes per hour, the result obtained at an air pressure differential of 50 Pa shall be used in the energy model calculations.</del></p> <p><del>13) Where airtightness is determined in accordance with Clause (11)(b), its rate shall be adjusted in the energy model calculations to account for air leakage through mechanical equipment.</del></p>	
<p><b>9.36.5.12. Modeling Service Water Heating System of Proposed House</b></p> <p><b>2)</b> The energy model calculations may include</p> <p>a) piping losses, and</p> <p>b) drain-water heat recovery, provided the calculation of the heat recovered is based on the efficiency of the drain-water heat-recovery unit specified for the proposed house and the energy savings are determined using a drain-water</p> <p>i) inlet temperature to the recovery system of 36°C,</p> <p>ii) flow rate of 9.5 L/min, and</p> <p>iii) flow that is available for recovery 15 min/day for a house and 10 min/day per suite for a multi-unit residential building with more than 2 suites.</p>	<p><b>9.36.5.12. Modeling Service Water Heating System of Proposed House</b></p> <p><b>2)</b> The energy model calculations may include</p> <p>a) piping losses, and</p> <p>b) drain-water heat recovery, provided</p> <p>i) the calculation of the heat recovered is based on the <u>efficiency performance</u> of the drain-water heat-recovery unit specified <del>for the proposed house and the energy savings are, as determined in accordance with CSA B55.1, “Test method for measuring efficiency and pressure loss of drain water heat recovery units,”</del> using a drain-water <del>i) inlet temperature to the recovery system of 36°C,</del> <del>ii) flow rate of 9.5 L/min,</del> and</p> <p>iii) <u>flow that is available for recovery 15 min/day for a house and 10 min/day per suite for a multi-unit residential building with more than 2 suites where there are one or two above-ground showers, all of them are served by the drain-water heat-recovery unit, and where there are more than two above-ground showers, at least two of them are served by the drain-water heat-recovery unit.</u></p>	Criteria within requirements changed.
<p><b>9.36.5.14. Modeling Building Envelope of Reference House</b></p> <p><b>2)</b> The energy model calculations for the reference house shall use the following set values:</p> <p>a) 0.060 MJ/m<sup>2</sup>·°C for thermal mass,</p> <p>b) a solar absorptance of 0.4 for the exterior walls, roofs and exposed floors,</p> <p>c) 0.26 for the solar heat gain coefficient of fenestration, and</p> <p>d) 2.5 air changes per hour at 50 Pa pressure differential for airtightness.</p>	<p><b>9.36.5.14. Modeling Building Envelope of Reference House</b></p> <p><b>2)</b> The energy model calculations for the reference house shall use the following <del>set</del> values:</p> <p>a) 0.060 MJ/(m<sup>2</sup>·<del>°C</del>) for thermal mass,</p> <p>b) a solar absorptance of 0.4 for the exterior walls, roofs and exposed floors,</p> <p>c) 0.26 for the solar heat gain coefficient of fenestration, <del>and</del></p> <p>d) <u>an airtightness of</u></p> <p>i) <u>3.0 air changes per hour at 50 Pa pressure differential for attached zones, where the airtightness used for the proposed house is determined in accordance with Sentence 9.36.6.3.(1) using the unguarded method, and</u></p> <p>ii) <u>2.5 air changes per hour at 50 Pa pressure differential for airtightness otherwise, and</u></p> <p>e) <u>the pressure exponent used for the proposed house where this value is less than 0.67, otherwise, 0.67.</u></p>	
N/A	<b>9.36.6. Airtightness of Building Envelope</b>	Inserted new Subsection.
N/A	<b>9.36.6.1. Scope and Application</b>	Inserted new Article.
	<p><b>1) This Subsection is concerned with</b></p> <p>a) <u>determining the airtightness of buildings and dwelling units and parts thereof</u></p> <p>i) <u>for use in the energy model calculations described in Subsection 9.36.5., or</u></p> <p>ii) <u>for use in determining the Airtightness Level for the purposes of Clause (b), and</u></p> <p>b) <u>determining the Airtightness Level for a building or dwelling unit to demonstrate compliance with Article 9.36.8.8.</u></p>	

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N/A	<p><b>9.36.6.2. Definitions</b></p> <p><b>1)</b> For the purposes of this Subsection, the following terms shall have the meanings stated herein:</p> <p>a) “zone” means a <i>conditioned space</i> or part thereof having a sufficiently large opening onto the location where the airtightness testing equipment is installed to provide enough airflow such that the entire zone is at the same pressure (see Note A-9.36.6.2.(1)(a)),</p> <p>b) “attached zone” means a zone whose boundary area is fully or partially in contact with an adjacent zone or zones (see Note A-9.36.6.2.(1)(b)),</p> <p>c) “ACH50” refers to the air changes per hour at a reference pressure of 50 Pa,</p> <p>d) “NLA10” refers to the normalized leakage area at a reference pressure of 10 Pa, and</p> <p>e) “NLR50” refers to the normalized leakage rate at a reference pressure of 50 Pa.</p>	Inserted new Article.																			
N/A	<p><b>9.36.6.3. Determination of Airtightness</b></p> <p><b>1)</b> Where airtightness is to be used as input to the energy model calculations, it shall be determined through a multi-point depressurization test carried out in accordance with CAN/CGSB-149.10, “Determination of the airtightness of building envelopes by the fan depressurization method,” using the following parameters described therein:</p> <p>a) as-operated, and</p> <p>b) guarded or unguarded.</p> <p><b>2)</b> Except as provided in Sentence (3), where airtightness is to be used to demonstrate compliance with an Airtightness Level listed in Table 9.36.6.4.-A or 9.36.6.4.-B, it shall be determined through a single-point, two-point or multi-point depressurization test carried out in accordance with CAN/CGSB-149.10, “Determination of the airtightness of building envelopes by the fan depressurization method,” using the following parameters described therein:</p> <p>a) as-operated, and</p> <p>b) guarded or unguarded, as applicable.</p> <p><b>3)</b> Determining NLA10 using a single-point test is not permitted.</p>	Inserted new Article.																			
N/A	<p><b>9.36.6.4. Determination of Airtightness Level</b></p> <p><b>1)</b> Compliance with an Airtightness Level listed in Table 9.36.6.4.-A or 9.36.6.4.-B shall be determined in accordance with this Article using the value of ACH50, NLA10, or NLR50 determined in accordance with Sentence 9.36.6.3.(2).</p> <p><b>2)</b> For the purposes of Sentences (3) and (4), the Airtightness Level for <i>buildings or dwelling units</i> containing more than one zone shall be the lowest Airtightness Level achieved for the zones therein. (See Note A-9.36.6.4.(2).)</p> <p><b>3)</b> Except as provided in Sentence (4), the Airtightness Level for single zones and attached zones shall be determined by complying with one of the corresponding airtightness values stipulated in Table 9.36.6.4.-A.</p> <p style="text-align: center;"><b>Table 9.36.6.4.-A</b> <b>Airtightness Levels for Single Zones and Attached Zones Determined Using the Guarded Method</b> Forming Part of Sentences 9.36.6.3.(2), 9.36.6.4.(1) and (3), and 9.36.8.8.(1)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Airtightness Levels</th> <th colspan="3">Airtightness Metrics</th> </tr> <tr> <th>ACH<sub>50</sub></th> <th>NLA<sub>10</sub>, cm<sup>2</sup>/m<sup>2</sup></th> <th>NLR<sub>50</sub>, L/s×m<sup>2</sup></th> </tr> <tr> <th colspan="4" style="text-align: center;">Maximum Airtightness Values</th> </tr> </thead> <tbody> <tr> <td>AL-1A</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">1.20</td> <td style="text-align: center;">0.89</td> </tr> <tr> <td>AL-2A</td> <td style="text-align: center;">2.0</td> <td style="text-align: center;">0.96</td> <td style="text-align: center;">0.71</td> </tr> </tbody> </table>	Airtightness Levels	Airtightness Metrics			ACH <sub>50</sub>	NLA <sub>10</sub> , cm <sup>2</sup> /m <sup>2</sup>	NLR <sub>50</sub> , L/s×m <sup>2</sup>	Maximum Airtightness Values				AL-1A	2.5	1.20	0.89	AL-2A	2.0	0.96	0.71	Inserted new Article.
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N/A	<a href="#">9.36.7. Tiered Energy Performance Compliance: Performance Path</a>				Inserted new Subsection.																																														
N/A	<p><a href="#">9.36.7.1. Scope and Application</a></p> <p>1) This Subsection is concerned with determining compliance with one of the energy performance tiers through modeling of the energy performance of components, systems and assemblies that are installed in <i>buildings</i> and houses with or without a <i>secondary suite</i> described in Sentence 9.36.1.3.(4).</p> <p>2) For the purpose of this Subsection, the term “house” shall mean all houses, with or without a <i>secondary suite</i>, that</p> <ul style="list-style-type: none"> <li>a) have HVAC systems that serve only the house, only the <i>secondary suite</i>, or both the house and the <i>secondary suite</i>,</li> <li>b) have service water heating systems that serve only the house, only the <i>secondary suite</i>, or both the house and the <i>secondary suite</i>, and</li> <li>c) do not share common spaces intended for occupancy with other <i>dwelling units</i> or houses, except for a <i>secondary suite</i>.</li> </ul>				Inserted new Article.																																														
N/A	<p><a href="#">9.36.7.2. Compliance</a></p> <p>1) The energy performance of <i>buildings</i> and houses, when calculated in accordance with Article 9.36.7.3., shall conform to the target energy performance based on the total volume of <i>conditioned space</i> within the <i>building</i> or house for the energy performance metrics indicated in Table 9.36.7.2. such that</p> <ul style="list-style-type: none"> <li>a) the target “percent heat loss reduction” is met or exceeded, and</li> <li>b) one of the following conditions is satisfied (see Note A-9.36.7.2.(1)(b)): <ul style="list-style-type: none"> <li>i) the target “percent improvement” is met or exceeded, or</li> <li>ii) the target “percent house energy target” is not exceeded.</li> </ul> </li> </ul> <p style="text-align: center;"><b>Table 9.36.7.2.</b> <b>Energy Performance Tiers for Buildings and House</b> Forming Part of Sentence 9.36.7.2.(1)</p> <table border="1"> <thead> <tr> <th><a href="#">Total Volume of</a></th> <th><a href="#">Target Energy Performance</a></th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>				<a href="#">Total Volume of</a>	<a href="#">Target Energy Performance</a>			Inserted new Article.																																										
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	<p><a href="#">the proposed house by the house energy target of the reference house.</a></p> <p><a href="#">9) The airtightness value used in the energy model for the proposed house shall be</a></p> <p><a href="#">a) the airtightness value set out in Clause 9.36.5.10.(9)(a), or</a></p> <p><a href="#">b) where an airtightness test is to be conducted, a design airtightness, until the airtightness has been measured in accordance with Sentence 9.36.6.3.(1) and the appropriate airtightness value set out in Sentence 9.36.5.10.(9) can be selected.</a></p> <p><a href="#">(See Note A-9.36.7.3.(9).)</a></p>													
N/A	<a href="#">9.36.8. Tiered Energy Performance Compliance: Prescriptive Path</a>	Inserted new Subsection.												
N/A	<p><a href="#">9.36.8.1. Scope</a></p> <p><a href="#">1) This Subsection is concerned with the energy performance improvement of the <i>building</i> through the implementation of energy conservation measures.</a></p>	Inserted new Article.												
N/A	<p><a href="#">9.36.8.2. Compliance</a></p> <p><a href="#">1) Compliance with this Subsection shall be achieved by</a></p> <p><a href="#">a) designing and constructing <i>buildings</i> to which this Subsection applies in accordance with one or more of the energy conservation measures prescribed in Articles 9.36.8.4. to 9.36.8.10. to accumulate the minimum sum of energy conservation points required to attain Energy Performance Tier 2, 3, 4 or 5 as specified in Table 9.36.8.2., and</a></p> <p><a href="#">b) complying with Subsections 9.36.2. to 9.36.4., except where these requirements are specifically permitted by this Subsection to be waived (see Note A-9.36.8.2.(1)(b)).</a></p> <p style="text-align: center;"><a href="#">Table 9.36.8.2.</a> <a href="#">Energy Performance Tiers</a> <a href="#">Forming Part of Clause 9.36.8.2.(1)(a)</a></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><a href="#">Energy Performance Tier</a></th> <th><a href="#">MinimumSumofEnergy Conservation Points</a></th> </tr> </thead> <tbody> <tr> <td><a href="#">1</a></td> <td><a href="#">(1)</a></td> </tr> <tr> <td><a href="#">2</a></td> <td><a href="#">10</a></td> </tr> <tr> <td><a href="#">3</a></td> <td><a href="#">Reserved</a></td> </tr> <tr> <td><a href="#">4</a></td> <td><a href="#">Reserved</a></td> </tr> <tr> <td><a href="#">5</a></td> <td><a href="#">Reserved</a></td> </tr> </tbody> </table> <p><a href="#">Notes to Table 9.36.8.2.:</a></p> <p><a href="#">(1) Tier 1 represents compliance with the baseline energy efficiency requirements stated in Subsections 9.36.2. to 9.36.4.; therefore, this Tier has no energy conservation points associated with it.</a></p>	<a href="#">Energy Performance Tier</a>	<a href="#">MinimumSumofEnergy Conservation Points</a>	<a href="#">1</a>	<a href="#">(1)</a>	<a href="#">2</a>	<a href="#">10</a>	<a href="#">3</a>	<a href="#">Reserved</a>	<a href="#">4</a>	<a href="#">Reserved</a>	<a href="#">5</a>	<a href="#">Reserved</a>	Inserted new Article.
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<a href="#">4</a>	<a href="#">Reserved</a>													
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N/A	<p><a href="#">9.36.8.3. Definitions</a></p> <p><a href="#">1) Reserved</a></p>	Inserted new Article.												
N/A	<p><a href="#">9.36.8.4. Building Envelope – General</a></p> <p><a href="#">1) The <i>building</i> envelope shall be designed and constructed in accordance with Articles 9.36.2.1. to 9.36.2.5. and this Subsection.</a></p>	Inserted new Article.												
N/A	<p><a href="#">9.36.8.5. Energy Conservation Measures for Above-Ground Opaque Building Assemblies</a></p> <p><a href="#">1) Except as permitted by Articles 9.36.2.5. and 9.36.2.11., and Sentence 9.36.2.6.(3), the effective</a></p>	Inserted new Article.												

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thermal resistance of above-ground opaque *building* assemblies or portions thereof shall be not less than that shown for the applicable heating degree-days of the *building* location in Table 9.36.2.6.-B.

2) Above-ground walls that comply with one of the energy conservation measures prescribed in Table 9.36.8.5. shall be credited with the corresponding energy conservation points stipulated therein.

3) The effective thermal resistance of *rim joists* shall be not less than that of the above-ground walls.

4) Where the top of a section of *foundation* wall is on average greater than or equal to 600 mm above the adjoining ground level, the effective thermal resistance of the above-ground portion of that section of wall shall be not less than that of the above-ground walls.

5) Except for tubular daylighting devices, the effective thermal resistance of skylight shafts shall be not less than that of the above-ground walls.

6) Except as provided in Sentence (7), where above-ground walls are constructed using two or more wall assemblies with different calculated effective thermal resistance values, the above-ground wall assembly with the lowest effective thermal resistance value shall be used to determine the applicable energy conservation points from Table 9.36.8.5.

7) The effective thermal resistance of one or more of the above-ground wall assemblies referred to in Sentence (6) is permitted to be less than that required to meet an energy conservation measure target listed in Table 9.36.8.5. for the wall or walls to be credited with the energy conservation points listed for that target, provided

a) the effective thermal resistance of one or more of the other above-ground wall assemblies is increased to more than the energy conservation measure target listed in Table 9.36.8.5. to account for the wall assemblies that do not meet the target, and

b) the sum of the results of each individual above-ground wall assembly area divided by its respective effective thermal resistance is less than or equal to the total area of all above-ground wall assemblies divided by the effective thermal resistance target listed in Table 9.36.8.5. that is to be credited.

(See also Note A-9.36.2.11.(2).)

**Table 9.36.8.5.**  
**Energy Conservation Measures and Points for Above-Ground Walls<sup>(1)</sup>**  
 Forming Part of Sentences 9.36.8.5.(2), (6) and (7)

Energy Conservation Measures for Above-Ground Walls – Minimum Effective RSI Values, (m <sup>2</sup> ×K)/W	Heating Degree-Days of <i>Building</i> Location, in Celsius Degree-Days					
	Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000
	<b>Energy Conservation Points</b>					
<u>2.97</u>	<u>2.0</u>	<u>=</u>	<u>=</u>	<u>=</u>	<u>=</u>	<u>=</u>
<u>3.08</u>	<u>3.2</u>	<u>1.4</u>	<u>1.6</u>	<u>2.1</u>	<u>=</u>	<u>=</u>
<u>3.69</u>	<u>7.4</u>	<u>5.4</u>	<u>6.2</u>	<u>6.7</u>	<u>5.4</u>	<u>5.2</u>
<u>3.85</u>	<u>8.2</u>	<u>6.0</u>	<u>6.9</u>	<u>7.4</u>	<u>6.2</u>	<u>6.0</u>
<u>3.96</u>	<u>8.9</u>	<u>6.8</u>	<u>7.7</u>	<u>8.2</u>	<u>7.0</u>	<u>6.8</u>
<u>4.29</u>	<u>10.2</u>	<u>8.1</u>	<u>9.2</u>	<u>9.7</u>	<u>8.6</u>	<u>8.4</u>
<u>4.40</u>	<u>10.8</u>	<u>8.7</u>	<u>9.9</u>	<u>10.3</u>	<u>9.3</u>	<u>9.1</u>
<u>4.57</u>	<u>11.4</u>	<u>9.3</u>	<u>10.6</u>	<u>11.1</u>	<u>10.1</u>	<u>9.9</u>
<u>4.73</u>	<u>11.9</u>	<u>9.7</u>	<u>11.1</u>	<u>11.5</u>	<u>10.6</u>	<u>10.4</u>
<u>4.84</u>	<u>12.3</u>	<u>10.2</u>	<u>11.6</u>	<u>12.1</u>	<u>11.2</u>	<u>10.9</u>
<u>5.01</u>	<u>12.9</u>	<u>10.7</u>	<u>12.2</u>	<u>12.7</u>	<u>11.8</u>	<u>11.6</u>
<u>5.45</u>	<u>14.0</u>	<u>11.9</u>	<u>13.6</u>	<u>14.0</u>	<u>13.3</u>	<u>13.1</u>

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	<p><b>Notes to Table 9.36.8.5.:</b>                      (1) See also Subsection 9.25.5.</p>																																									
N/A	<p><b>9.36.8.6. Energy Conservation Measures for Fenestration and Doors</b></p> <p><b>1)</b> Except as provided in Sentences (2) to (4), fenestration and doors that comply with one of the energy conservation measures prescribed in Table 9.36.8.6. shall be credited with the corresponding energy conservation points stipulated therein, provided all fenestration and doors comply with that energy conservation measure.</p> <p><b>2)</b> Where the individual doors or windows have more than one overall thermal transmittance value (U-value), an average U-value is permitted to be used to determine the applicable energy conservation points from Table 9.36.8.6., provided the requirements of Sentence (3) are met.</p> <p><b>3)</b> The U-value of one or more doors or fenestration is permitted to be greater than that required in Table 9.36.8.6., provided</p> <ul style="list-style-type: none"> <li>a) the traded doors and fenestration are located in the same orientation,</li> <li>b) the U-value of one or more of the other doors and fenestration is decreased to less than the energy conservation measure target in Table 9.36.8.6. to account for the doors and windows that do not meet the target, and</li> <li>c) the sum of each individual door or fenestration area multiplied by its respective U-value is less than or equal to the total area of all fenestration and doors multiplied by the U-value target in Table 9.36.8.6. that is to be credited.</li> </ul> <p>(See also Note A-9.36.2.11.(3).)</p> <p><b>4)</b> Where the fenestration and doors make up not more than 17% of the total above-ground wall area, including openings, in a given orientation, the fenestration and doors in that orientation need not comply with Sentence (1) and are not subject to the provisions of Sentences (2) and (3), provided they meet or exceed the minimum Energy Rating stated in Table 9.36.8.6. that is to be credited. (See Note A-9.36.8.6.(4).)</p> <p style="text-align: center;"><b>Table 9.36.8.6.</b>  <b>Energy Conservation Measures and Points for Fenestration and Doors</b>                      Forming Part of Article 9.36.8.6.</p> <table border="1" data-bbox="1215 1245 2265 1534"> <thead> <tr> <th colspan="2" data-bbox="1215 1245 1554 1306">Energy Conservation Measures for Fenestration and Doors<sup>(1)</sup></th> <th colspan="6" data-bbox="1554 1245 2265 1306">Heating Degree-Days of <i>Building Location</i>, in Celsius Degree-Days</th> </tr> <tr> <th data-bbox="1215 1306 1392 1427">Maximum U-values, W/(m<sup>2</sup>×K)</th> <th data-bbox="1392 1306 1554 1427">Minimum Energy Ratings<sup>(2)</sup></th> <th data-bbox="1554 1306 1672 1407">Zone 4 &lt; 3000</th> <th data-bbox="1672 1306 1790 1407">Zone 5 3000 to 3999</th> <th data-bbox="1790 1306 1908 1407">Zone 6 4000 to 4999</th> <th data-bbox="1908 1306 2026 1407">Zone 7A 5000 to 5999</th> <th data-bbox="2026 1306 2144 1407">Zone 7B 6000 to 6999</th> <th data-bbox="2144 1306 2265 1407">Zone 8 ≥ 7000</th> </tr> </thead> <tbody> <tr> <td data-bbox="1215 1427 1392 1467">1.61</td> <td data-bbox="1392 1427 1554 1467">25</td> <td data-bbox="1554 1427 1672 1467">1.9</td> <td data-bbox="1672 1427 1790 1467">1.8</td> <td data-bbox="1790 1427 1908 1467">=</td> <td data-bbox="1908 1427 2026 1467">=</td> <td data-bbox="2026 1427 2144 1467">=</td> <td data-bbox="2144 1427 2265 1467">=</td> </tr> <tr> <td data-bbox="1215 1467 1392 1507">1.44</td> <td data-bbox="1392 1467 1554 1507">29</td> <td data-bbox="1554 1467 1672 1507">3.8</td> <td data-bbox="1672 1467 1790 1507">3.6</td> <td data-bbox="1790 1467 1908 1507">1.6</td> <td data-bbox="1908 1467 2026 1507">1.8</td> <td data-bbox="2026 1467 2144 1507">=</td> <td data-bbox="2144 1467 2265 1507">=</td> </tr> <tr> <td data-bbox="1215 1507 1392 1534">1.22</td> <td data-bbox="1392 1507 1554 1534">34</td> <td data-bbox="1554 1507 1672 1534">6.9</td> <td data-bbox="1672 1507 1790 1534">7.0</td> <td data-bbox="1790 1507 1908 1534">4.6</td> <td data-bbox="1908 1507 2026 1534">5.5</td> <td data-bbox="2026 1507 2144 1534">3.2</td> <td data-bbox="2144 1507 2265 1534">3.4</td> </tr> </tbody> </table> <p><b>Notes to Table 9.36.8.6.:</b>                      (1) Except skylights and glass block assemblies.                      (2) See Sentence (4). Energy Ratings shall be determined in accordance with CSA A440.2, "Fenestration energy performance."</p>	Energy Conservation Measures for Fenestration and Doors <sup>(1)</sup>		Heating Degree-Days of <i>Building Location</i> , in Celsius Degree-Days						Maximum U-values, W/(m <sup>2</sup> ×K)	Minimum Energy Ratings <sup>(2)</sup>	Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	1.61	25	1.9	1.8	=	=	=	=	1.44	29	3.8	3.6	1.6	1.8	=	=	1.22	34	6.9	7.0	4.6	5.5	3.2	3.4	Inserted new Article.
Energy Conservation Measures for Fenestration and Doors <sup>(1)</sup>		Heating Degree-Days of <i>Building Location</i> , in Celsius Degree-Days																																								
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1.22	34	6.9	7.0	4.6	5.5	3.2	3.4																																			
N/A	<p><b>9.36.8.7. Energy Conservation Measures for Opaque Building Assemblies Below-Grade or in Contact with the Ground</b></p> <p><b>1)</b> Opaque <i>building</i> assemblies below-grade or in contact with the ground shall be designed and constructed in accordance with Sentences 9.36.2.8.(2) to (10) and this Article.</p>	Inserted new Article.																																								

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	<p><b>2)</b> Except as permitted by Article 9.36.2.5., the effective thermal resistance of <i>foundation</i> walls shall be not less than that shown for the applicable heating degree-days of the <i>building</i> location in Table 9.36.2.8.-B.</p> <p><b>3)</b> <i>Foundation</i> walls that comply with one of the energy conservation measures prescribed in Table 9.36.8.7. shall be credited with the corresponding energy conservation points stipulated therein.</p> <p><b>4)</b> Where <i>foundation</i> walls are constructed with more than one effective thermal resistance (RSI) value, the lowest effective RSI value of any of these walls shall be used to determine the applicable energy conservation points from Table 9.36.8.7.</p> <p align="center"><b>Table 9.36.8.7.</b> <b>Energy Conservation Measures and Points for Opaque Building Assemblies Below-Grade or In Contact with Ground</b> Forming Part of Sentences 9.36.8.7.(3) and (4)</p> <table border="1"> <thead> <tr> <th rowspan="3">Energy Conservation Measures for <i>Foundation</i> Walls – Minimum Effective RSI Values, (m<sup>2</sup>×K)/W</th> <th colspan="6">Heating Degree-Days of <i>Building</i> Location, in Celsius Degree-Days</th> </tr> <tr> <th>Zone 4 &lt; 3000</th> <th>Zone 5 3000 to 3999</th> <th>Zone 6 4000 to 4999</th> <th>Zone 7A 5000 to 5999</th> <th>Zone 7B 6000 to 6999</th> <th>Zone 8 ≥ 7000</th> </tr> <tr> <th colspan="6">Energy Conservation Points</th> </tr> </thead> <tbody> <tr> <td>2.98</td> <td>1.7</td> <td>=</td> <td>=</td> <td>=</td> <td>=</td> <td>=</td> </tr> <tr> <td>3.09</td> <td>1.8</td> <td>0.2</td> <td>0.2</td> <td>0.2</td> <td>0.2</td> <td>=</td> </tr> <tr> <td>3.46</td> <td>2.2</td> <td>0.6</td> <td>0.8</td> <td>0.6</td> <td>0.7</td> <td></td> </tr> <tr> <td>3.90</td> <td>2.6</td> <td>1.2</td> <td>1.4</td> <td>1.1</td> <td>1.3</td> <td></td> </tr> </tbody> </table>	Energy Conservation Measures for <i>Foundation</i> Walls – Minimum Effective RSI Values, (m <sup>2</sup> ×K)/W	Heating Degree-Days of <i>Building</i> Location, in Celsius Degree-Days						Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	Energy Conservation Points						2.98	1.7	=	=	=	=	=	3.09	1.8	0.2	0.2	0.2	0.2	=	3.46	2.2	0.6	0.8	0.6	0.7		3.90	2.6	1.2	1.4	1.1	1.3																							
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N/A	<p><b>9.36.8.8. Energy Conservation Measures Relating to Airtightness</b></p> <p><b>1)</b> <i>Buildings</i> to which this Subsection applies shall be designed and constructed in accordance with</p> <p>a) Articles 9.36.2.9. and 9.36.2.10., or</p> <p>b) Article 9.36.2.9. and Sentences 9.36.2.10.(1) to (7) and shall, where airtightness testing is carried out in accordance with Subsection 9.36.6., comply with an Airtightness Level listed in Table 9.36.6.4.-A or 9.36.6.4.-B.</p> <p><b>2)</b> <i>Buildings</i> that comply with an Airtightness Level determined in accordance with Clause (1)(b) shall be credited with the corresponding energy conservation points stipulated in Table 9.36.8.8.</p> <p align="center"><b>Table 9.36.8.8.</b> <b>Energy Conservation Measures and Points for Airtightness</b> Forming Part of Sentence 9.36.8.8.(2)</p> <table border="1"> <thead> <tr> <th rowspan="3">Energy Conservation Measures for Airtightness – Airtightness Levels<sup>(1)</sup></th> <th colspan="6">Heating Degree-Days of <i>Building</i> Location, in Celsius Degree-Days</th> </tr> <tr> <th>Zone 4 &lt; 3000</th> <th>Zone 5 3000 to 3999</th> <th>Zone 6 4000 to 4999</th> <th>Zone 7A 5000 to 5999</th> <th>Zone 7B 6000 to 6999</th> <th>Zone 8 ≥ 7000</th> </tr> <tr> <th colspan="6">Energy Conservation Points</th> </tr> </thead> <tbody> <tr> <td colspan="7"><u>Airtightness Levels from Table 9.36.6.4.-A</u></td> </tr> <tr> <td>AL-1A</td> <td>=</td> <td>=</td> <td>=</td> <td>=</td> <td>=</td> <td>=</td> </tr> <tr> <td>AL-2A</td> <td>2.0</td> <td>3.4</td> <td>3.5</td> <td>4.6</td> <td>6.1</td> <td>6.1</td> </tr> <tr> <td>AL-3A</td> <td>4.0</td> <td>6.7</td> <td>7.0</td> <td>9.3</td> <td>12.1</td> <td>12.11</td> </tr> <tr> <td>AL-4A</td> <td>5.9</td> <td>10.1</td> <td>10.5</td> <td>13.9</td> <td>18.0</td> <td>18.0</td> </tr> <tr> <td>AL-5A</td> <td>7.6</td> <td>13.0</td> <td>13.4</td> <td>17.8</td> <td>22.7</td> <td>22.7</td> </tr> <tr> <td colspan="7"><u>Airtightness Levels from Table 9.36.6.4.-B</u></td> </tr> </tbody> </table>	Energy Conservation Measures for Airtightness – Airtightness Levels <sup>(1)</sup>	Heating Degree-Days of <i>Building</i> Location, in Celsius Degree-Days						Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	Energy Conservation Points						<u>Airtightness Levels from Table 9.36.6.4.-A</u>							AL-1A	=	=	=	=	=	=	AL-2A	2.0	3.4	3.5	4.6	6.1	6.1	AL-3A	4.0	6.7	7.0	9.3	12.1	12.11	AL-4A	5.9	10.1	10.5	13.9	18.0	18.0	AL-5A	7.6	13.0	13.4	17.8	22.7	22.7	<u>Airtightness Levels from Table 9.36.6.4.-B</u>							Inserted new Article.
Energy Conservation Measures for Airtightness – Airtightness Levels <sup>(1)</sup>	Heating Degree-Days of <i>Building</i> Location, in Celsius Degree-Days																																																																					
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	<p><b>Notes to Table 9.36.8.8.</b>                      (1) All dwelling units and common spaces in a building, or the whole building, must meet the Airtightness Level for which energy conservation points are being credited.</p>																																									
N/A	<p><b>9.36.8.9. Energy Conservation Measures for HVAC Systems</b></p> <p>1) HVAC systems, equipment and installations shall be designed and constructed in accordance with Articles 9.36.3.2. to 9.36.3.8. and this Article.</p> <p>2) Where HVAC systems, equipment or techniques other than those described in Articles 9.36.3.2. to 9.36.3.8. and this Article are used, the building shall be designed and constructed in accordance with the NECB.</p> <p>3) Ventilation systems serving buildings to which this Subsection applies shall be equipped with a heat-recovery ventilator conforming to Article 9.36.3.9.</p> <p>4) Heat-recovery ventilators that comply with one of the energy conservation measures prescribed in Table 9.36.8.9. shall be credited with the corresponding energy conservation points stipulated therein.</p> <p align="center"><b>Table 9.36.8.9.</b>  <b>Energy Conservation Measures and Points for Ventilation Systems</b>                      Forming Part of Sentence 9.36.8.9.(4)</p> <table border="1"> <thead> <tr> <th rowspan="2">Energy Conservation Measures for Ventilation Systems – Sensible Heat-Recovery Efficiency, SRE<sup>(1)</sup></th> <th colspan="6">Heating Degree-Days of Building Location, in Celsius Degree-Days</th> </tr> <tr> <th>Zone 4 &lt; 3000</th> <th>Zone 5 3000 to 3999</th> <th>Zone 6 4000 to 4999</th> <th>Zone 7A 5000 to 5999</th> <th>Zone 7B 6000 to 6999</th> <th>Zone 8 ≥ 7000</th> </tr> </thead> <tbody> <tr> <td>60% ≤ SRE &lt; 65%</td> <td align="center">0.7</td> <td align="center">0.7</td> <td align="center">0.7</td> <td align="center">0.6</td> <td align="center">0.8</td> <td align="center">0.4</td> </tr> <tr> <td>65% ≤ SRE &lt; 75%</td> <td align="center">2.1</td> <td align="center">2.1</td> <td align="center">2.2</td> <td align="center">1.7</td> <td align="center">2.3</td> <td align="center">1.2</td> </tr> <tr> <td>75% ≤ SRE &lt; 84%</td> <td align="center">3.4</td> <td align="center">3.2</td> <td align="center">3.5</td> <td align="center">2.7</td> <td align="center">3.7</td> <td align="center">1.8</td> </tr> </tbody> </table> <p><b>Notes to Table 9.36.8.9.:</b>                      (1) SRE = sensible recovery efficiency measured at an outside air test temperature of 0°C</p>							Energy Conservation Measures for Ventilation Systems – Sensible Heat-Recovery Efficiency, SRE <sup>(1)</sup>	Heating Degree-Days of Building Location, in Celsius Degree-Days						Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	60% ≤ SRE < 65%	0.7	0.7	0.7	0.6	0.8	0.4	65% ≤ SRE < 75%	2.1	2.1	2.2	1.7	2.3	1.2	75% ≤ SRE < 84%	3.4	3.2	3.5	2.7	3.7	1.8	Inserted new Article.
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N/A	<p><b>9.36.8.10. Energy Conservation Measures for Service Water Heating Equipment</b></p> <p>1) Service water heating equipment and components shall be designed and constructed in accordance with Subsection 9.36.4. and this Article.</p> <p>2) Where service water heating equipment or techniques other than those described in Subsection 9.36.4. and this Article are used, the building shall be designed and constructed in accordance with the NECB.</p> <p>3) Service water heating equipment that complies with one of the energy conservation measures prescribed in Table 9.36.8.10. shall be credited with the corresponding energy conservation points stipulated therein.</p>							Inserted new Article.																																		

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	<p align="center"><b>Table 9.36.8.10.</b> <b>Energy Conservation Measures and Points for Service Water Heating Equipment</b> Forming Part of Sentence 9.36.8.10.(3)</p> <table border="1"> <thead> <tr> <th rowspan="2">Type of Equipment</th> <th rowspan="2">Energy Conservation Measures for Service Water Heating Equipment – Energy Efficiency, EF or UEF<sup>(1)(2)</sup></th> <th rowspan="2">Performance Testing Standard</th> <th colspan="6">Heating Degree-Days of Building Location, in Celsius Degree-Days</th> </tr> <tr> <th>Zone 4 &lt; 3000</th> <th>Zone 5 3000 to 3999</th> <th>Zone 6 4000 to 4999</th> <th>Zone 7A 5000 to 5999</th> <th>Zone 7B 6000 to 6999</th> <th>Zone 8 ≥ 7000</th> </tr> </thead> <tbody> <tr> <td>Gas- or oil-fired tankless condensing water heater</td> <td>EF ≥ 0.95 or UEF ≥ 0.92</td> <td rowspan="5">CAN/CSA-P.3</td> <td>8.9</td> <td>5.4</td> <td>4.9</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> </tr> <tr> <td>Gas- or oil-fired residential storage-type service water heater</td> <td>EF ≥ 0.80 or UEF ≥ 0.83</td> <td>8.9</td> <td>5.4</td> <td>4.9</td> <td>3.1</td> <td>3.1</td> <td>3.1</td> </tr> <tr> <td>Gas- or oil-fired residential-duty commercial storage-type service water heater</td> <td>UEF ≥ 0.79</td> <td>4.6</td> <td>2.7</td> <td>2.4</td> <td>1.5</td> <td>1.5</td> <td>1.5</td> </tr> <tr> <td></td> <td>UEF ≥ 0.85</td> <td>6.0</td> <td>3.6</td> <td>3.2</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> </tr> <tr> <td>Heat pump water heater</td> <td>EF ≥ 2.35</td> <td>CAN/CSA-C745</td> <td>6.4</td> <td>3.9</td> <td>3.8</td> <td>3.0</td> <td>3.0</td> <td>3.0</td> </tr> </tbody> </table> <p><b>Notes to Table 9.36.8.10.:</b>                      (1) EF = energy factor                      UEF = uniform energy factor                      (2) Applies to storage-type service water heaters that heat potable water, including storage-type service water heaters used to generate heat in combined space- and water-heating systems.</p>	Type of Equipment	Energy Conservation Measures for Service Water Heating Equipment – Energy Efficiency, EF or UEF <sup>(1)(2)</sup>	Performance Testing Standard	Heating Degree-Days of Building Location, in Celsius Degree-Days						Zone 4 < 3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥ 7000	Gas- or oil-fired tankless condensing water heater	EF ≥ 0.95 or UEF ≥ 0.92	CAN/CSA-P.3	8.9	5.4	4.9	3.1	3.1	3.1	Gas- or oil-fired residential storage-type service water heater	EF ≥ 0.80 or UEF ≥ 0.83	8.9	5.4	4.9	3.1	3.1	3.1	Gas- or oil-fired residential-duty commercial storage-type service water heater	UEF ≥ 0.79	4.6	2.7	2.4	1.5	1.5	1.5		UEF ≥ 0.85	6.0	3.6	3.2	2.0	2.0	2.0	Heat pump water heater	EF ≥ 2.35	CAN/CSA-C745	6.4	3.9	3.8	3.0	3.0	3.0	
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N/A	<p><b>9.36.8.11. Energy Conservation Points for Building Volume</b></p> <p>1) Buildings to which this Subsection applies that contain more than one dwelling unit, each of which contains not more than 230 m<sup>3</sup> of conditioned space measured at the interior surfaces of the walls, ceilings and floors enclosing the suite, are permitted to be credited with ten energy conservation points.</p> <p>2) Buildings to which this Subsection applies that contain not more than 390 m<sup>3</sup> of conditioned space, measured at the interior surfaces of exterior walls, ceilings and floors, are permitted to be credited with energy conservation points determined in accordance with Table 9.36.8.11.</p> <p align="center"><b>Table 9.36.8.11.</b> <b>Energy Conservation Points for Building Volume</b> Forming Part of Sentence 9.36.8.11.(2)</p> <table border="1"> <thead> <tr> <th>Building Volume (V), m<sup>3</sup></th> <th>Energy Conservation Points</th> </tr> </thead> <tbody> <tr> <td>380 &lt; V ≤ 390</td> <td>1</td> </tr> <tr> <td>370 &lt; V ≤ 380</td> <td>2</td> </tr> <tr> <td>360 &lt; V ≤ 370</td> <td>3</td> </tr> <tr> <td>350 &lt; V ≤ 360</td> <td>4</td> </tr> <tr> <td>340 &lt; V ≤ 350</td> <td>5</td> </tr> <tr> <td>330 &lt; V ≤ 340</td> <td>6</td> </tr> <tr> <td>320 &lt; V ≤ 330</td> <td>7</td> </tr> </tbody> </table>	Building Volume (V), m <sup>3</sup>	Energy Conservation Points	380 < V ≤ 390	1	370 < V ≤ 380	2	360 < V ≤ 370	3	350 < V ≤ 360	4	340 < V ≤ 350	5	330 < V ≤ 340	6	320 < V ≤ 330	7	Inserted new Article.																																									
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<b>9.37.1.1. Design Standards</b>  <b>1)</b> Full log, interlocking, scribe-fit construction shall be designed on the basis of <ul style="list-style-type: none"> <li>a) structural analysis,</li> <li>b) accepted tests, or</li> <li>c) standards such as               <ul style="list-style-type: none"> <li>i) ILBA 2000, “Log Building Standards for Residential, Handcrafted, Interlocking, Scribe-fit Construction,” and</li> <li>ii) ILBA 2005, “Log Span Tables for Floor Joists, Beams, and Roof Support Systems.”</li> </ul> </li> </ul>	<b>9.37.1.1. Design Standards</b>  <b>1)</b> Full log, interlocking, scribe-fit construction shall be designed on the basis of <ul style="list-style-type: none"> <li>a) structural analysis,</li> <li>b) accepted tests, or</li> <li>c) standards such as <del>i) ILBA 2000</del> <a href="#">2020</a>, “<del>Log Building Standards</del> <a href="#">Effective Practices &amp; Methods</a> for <del>Residential, Handcrafted, Interlocking, Scribe-fit</del> <a href="#">Log Home</a> Construction,” and <del>ii) ILBA 2005,</del> “<del>Log Span Tables for Floor Joists, Beams, and Roof Support Systems.</del>”</li> </ul>	Updates to referenced standards.	