

NRC-CNRC

From **Discovery**
to **Innovation...**

2010 NATIONAL MODEL CONSTRUCTION CODES

Other Part 9 Changes

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National Research
Council Canada

Conseil national
de recherches Canada

Canada



Introduction

- Presentation is part of a series on the 2010 National Model Construction Codes
- Model codes developed by Canadian Commission on Building and Fire Codes
- These codes must be adopted by provincial/territorial authorities to become law



Changes to Part 9

- Live Loads due to Use and Occupancy
- Sound and Fire Resistance Ratings
- Dampproofing
- Foundation Walls
- Low Permeance Materials
- Heating and Ventilation
- Definition of Range
- Spans for Steel Beam
- Referenced Standards
- Minor Tasks
- Climatic Data



Live Loads – Use & Occupancy

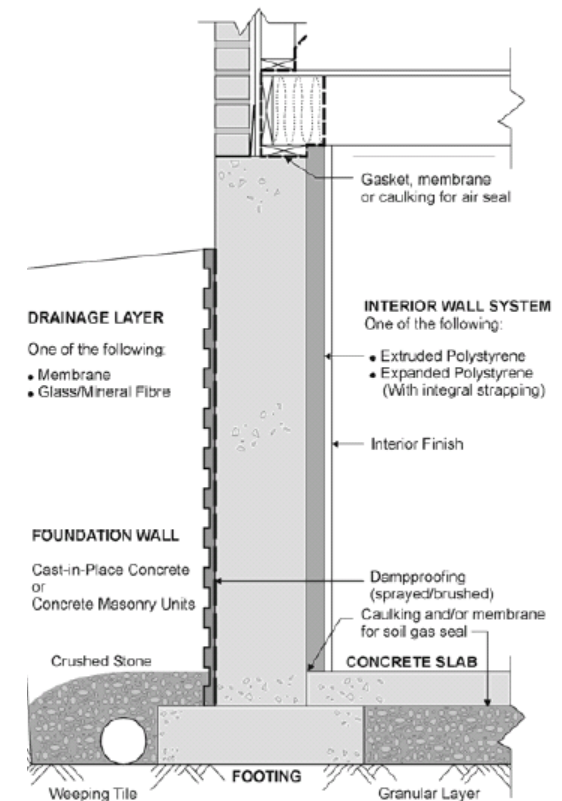
- Rationale
 - Consistency with Part 4
 - Clarification
- Changes
 - Guards for floors and ramps in garages
 - Vehicle guardrails shall be designed for concentrated horizontal load of 22 kN applied outward at any point 500 mm above floor surface
 - Specified loads for guards
 - Clarified that loads to be applied at minimum required height and not top of guard



Dampproofing



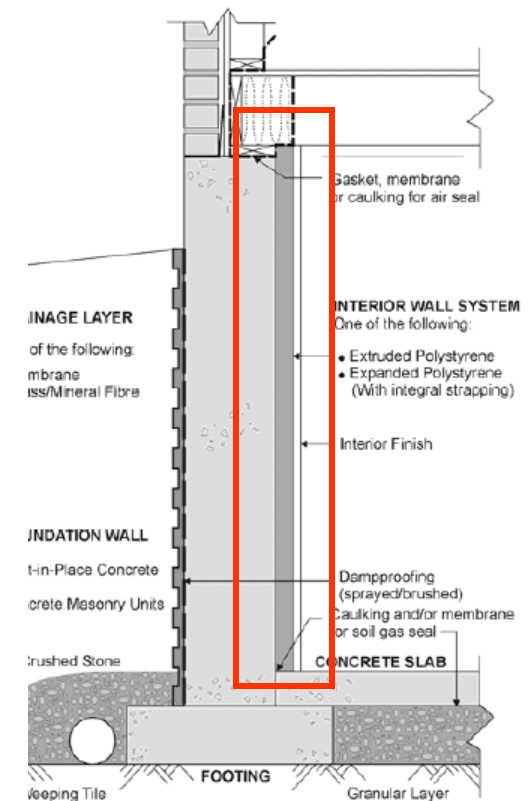
- Rationale
 - New products that fulfill multiple functions
 - Correct referencing of acceptable solution
- Changes
 - Title now
“Moisture Protection for Interior Finishes”
 - Additional acceptable solution for moisture protection of interior finishes
 - Deleted incorrect exemption
 - Moved gravel requirements directly into this section



Dampproofing



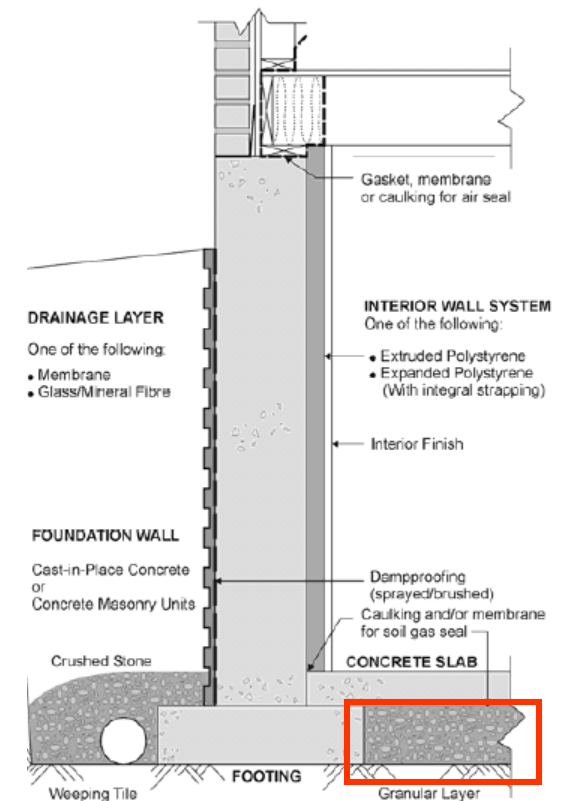
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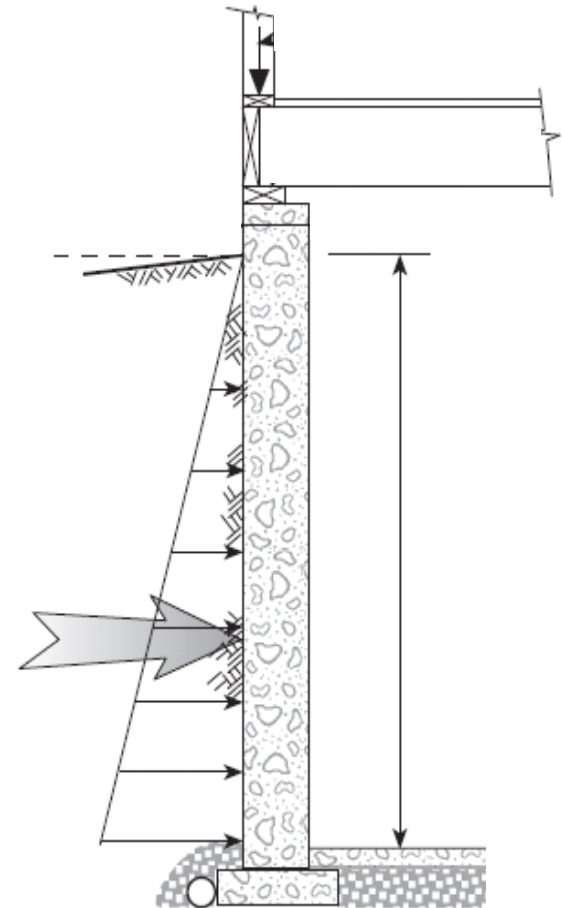
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Foundation Walls

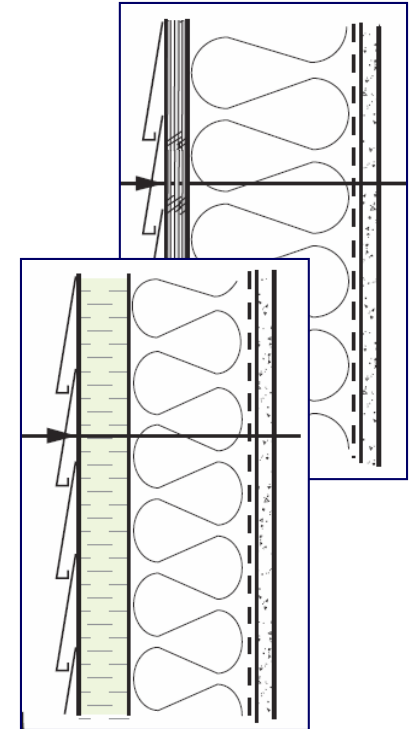
- Rationale
 - Delete unlikely scenarios (laterally unsupported)
 - Address market demand for higher basements
- Changes
 - Increased height of foundation walls
 - Maximum wall height of 3 m
 - For solid concrete walls
 - For reinforced concrete block walls
 - Updated sizes and spacing of required re-bar





Low Permeance Materials

- Rationale
 - Review application limits (35% & 60% interior RH)
 - Energy retrofits often use exterior low-permeance insulation
 - Clarify most misunderstood Section in Part 9
- Changes
 - Clarified code structure
 - Introduced concept of “normal conditions” instead of 35%-60% interior RH
 - Addressed foamed plastics as vapour barrier





Low Permeance Materials

- Scope and application (unchanged)
 - Heat, air and water vapour transfer and condensation control
 - All walls, ceilings and floors separating conditioned space from unconditioned space, exterior air or ground
- New structure
 - Scope and application 9.25.1.
 - Thermal insulation 9.25.2.
 - An air barrier 9.25.3.
 - A vapour barrier 9.25.4.
 - Low permeance materials 9.25.5.



Low Permeance Materials

- ~~Mild climate locations up to 60% RH~~ ~~Part 9~~
- ~~Cold climate locations up to 35% RH~~ ~~Part 9~~
- “Normal conditions”
 - Part 9 construction for vapour barrier and low permeance materials applies under normal conditions
 - Examples: typical residential occupancies, and business and personal services occupancies (including typical bathrooms and showers, etc.)
 - Part 5 design of building envelope assemblies applies to high-moisture conditions
 - Examples: swimming pools, greenhouses, laundromats, and any continuous operation of hot tubs and saunas



Low Permeance Materials

- “Normal conditions”
 - Vapour barriers
 - Insulated wall, floor and ceiling assemblies
 - Under normal conditions
 - Exceptions:
 - Intended use includes high moisture generation \Rightarrow Part 5
 - ~~– During heating season~~
 - ~~• Mild climate locations with interior relative humidity over 60%~~
 - ~~• Cold climate locations with interior relative humidity over 35%~~
- \Rightarrow Part 5



Low Permeance Materials

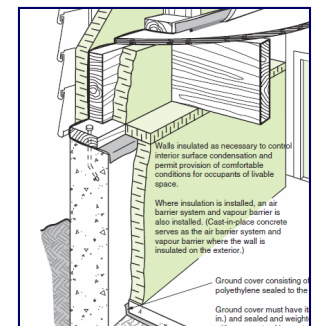
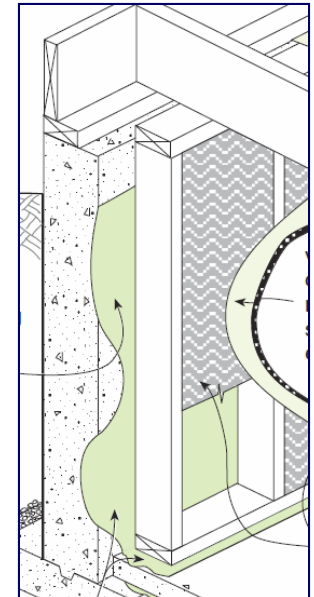
- “Normal conditions”
 - 9.25.5. Low Permeance Materials
 - Location of materials installed
 - Properties of materials installed
 - Under normal conditions
 - Exceptions:
 - Insulation and sealing of ducts (9.32. / 9.33.)
 - Intended use includes high moisture generation \Rightarrow Part 5
 - ~~– During heating season~~
 - ~~• Mild climate locations with interior relative humidity over 60%~~
 - ~~• Cold climate locations with interior relative humidity over 35%~~
- \Rightarrow Part 5

Low Permeance Materials



- Installation of vapour barriers
 - Products installed to function as the vapour barrier shall protect the warm side of wall, ceiling and floor assemblies
 - Where the vapour barrier and insulation are **different products**, the vapour barrier shall be installed sufficiently close to the **warm side of the insulation** ...
 - Where the vapour barrier and insulation are **the same product**, the product shall be installed sufficiently close to the **warm side of the assembly**...

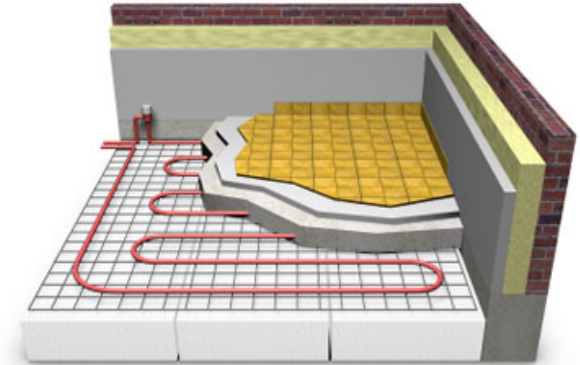
... to prevent condensation at design conditions





Heating & Ventilation

- Hydronic heating
 - Reference CSA B214 Installation Standard
 - Reference Canadian Hydronics Council Handbook
- Definition of “mechanically vented”
 - Included induced-draft appliances and power-vented appliances
 - Clarified what is exempt from make-up air requirements

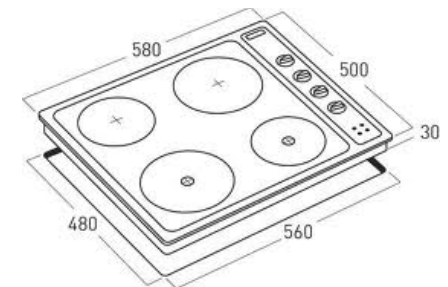
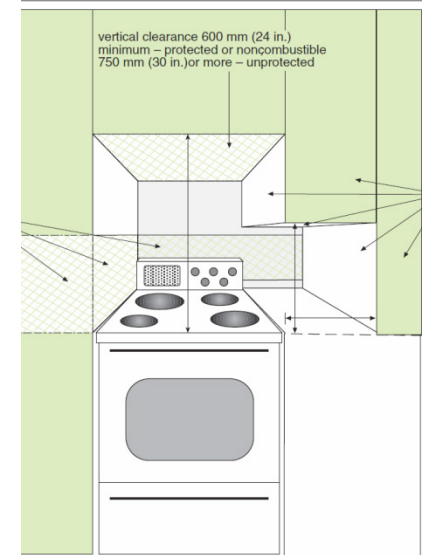




Range vs. Cooktop



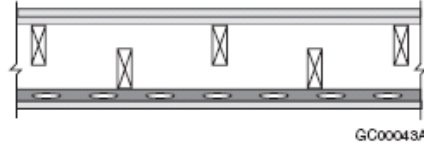
- Rationale
 - Definition of range did not address cooktops
 - Requirements applied equally to cooktops
- Changes
 - Changed definition to describe “cooktop”
 - Replaced instances of “range” with
 - “cooktop”, or
 - “cooktop and oven”
 - Changes apply mainly to protection of combustible materials around cooking appliances





Fire and Sound Resistance Ratings

- Rationale
 - Limiting application of Tables
 - New research data
- Changes
 - Additional ratings and assemblies for Tables A-9.10.3.1.A. and B.
 - Added footnotes to Table A-9.10.3.1.A. and B.
 - Limit application of ratings to wood I-joists made with phenolic adhesives (Table A-9.10.3.1.B.)
 - Allow finger-jointed studs (HRA stamped) (Table A-9.10.3.1.A.)
- Impact
 - Applies to rated assemblies in Part 9 Buildings

Fire-Resistance Rating ⁽¹⁾		Typical Sound Transmission Class ^{(1) (2) (3)}
Loadbearing	Non-Loadbearing	
		
45 min	1 h	56



Climatic Data

- Localities in Appendix C
 - Shift locations for climatic data
 - Add weather data closer to populated areas
 - No major impact expected
- Seismic values in Appendix C
 - New equation changes seismic values
 - Changes apply to spectral acceleration at 0.2 sec
 - Values changed in Eastern Canada (ON, QC ... NL)
 - No impact on Western Canada
 - No impact on lateral loads criteria (see other presentation)

Seismic Data ⁽¹⁾				
$S_a(0.2)$	$S_a(0.5)$	$S_a(1.0)$	$S_a(2.0)$	PGA
0.28	0.17	0.11	0.063	0.14
0.92	0.62	0.31	0.17	0.14
0.67	0.50	0.20		
0.75				



Referenced Standards Update

- Normal process for currently referenced standards
 - All editions published by September 30, 2009
 - Update standards once per code cycle
- Proposed change process
 - Concrete [CSA A23.1](#) (~~A438~~)
new CSA O80
 - Termite and Decay Protection
 - Steel Framing Standard [AISI/COFS](#) (~~CGSB~~)
 - Steel Screws Standard [ASTM C 954](#)
 - Sealant Standards [ASTM](#) (~~CGSB~~)
 - ~~– Asbestos Siding Standards~~ ~~Various CGSB~~



Spans for Steel Beams

- Expanded assumptions in Appendix Note
 - Spans reflect
 - balance of engineering and
 - acceptable proven performance
 - List factors and assumptions
 - Span calculation applies a revised live load reduction factor to account for lower probability of a full live load in Part 9 buildings



Other Changes

- Width of doorways in bathrooms
 - Improve clarity of requirement and where it applies
- Lintels or arches
 - Now reflects metric equivalents of standard imperial sizes (i.e. 89 mm and not 90 mm)
- Openings in insulating concrete form walls
 - Consistency of requirements



Other Changes

- Starter strips
 - Allow pre-fabricated starter strips
- Exhaust only ventilation systems
 - Deleted ineffective method (drawing all air from bedrooms)
- Location of CO alarms
 - General requirement – follow manufacturers instructions
 - For wood stoves only – manufacturers' instructions or at ceiling
- Ducts for cooking
 - More generic terminology – change from “range-top fan” to “cooking exhaust fan” to cover common appliance types



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Questions?

Send them to us at codes@nrc-cnrc.gc.ca

Thank you!