

NRC-CNRC

From *Discovery*
to *Innovation...*

2010 NATIONAL MODEL CONSTRUCTION CODES

Stairs, Ramps, Handrails and Guards

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National Research
Council Canada

Conseil national
de recherches Canada

Canada



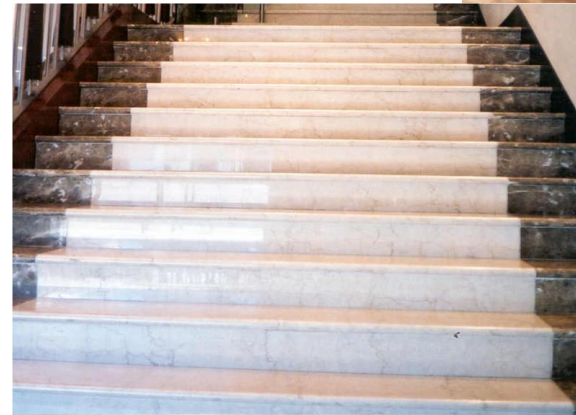
Introduction

- 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



Overview

- Technical changes for stairs, ramps, handrails and guards address:
 - Harmonization between Part 3 and Part 9
 - Clarification of terminology
 - Introduction of design criteria



Headroom Clearance Versus Clear Height – Parts 3 and 9

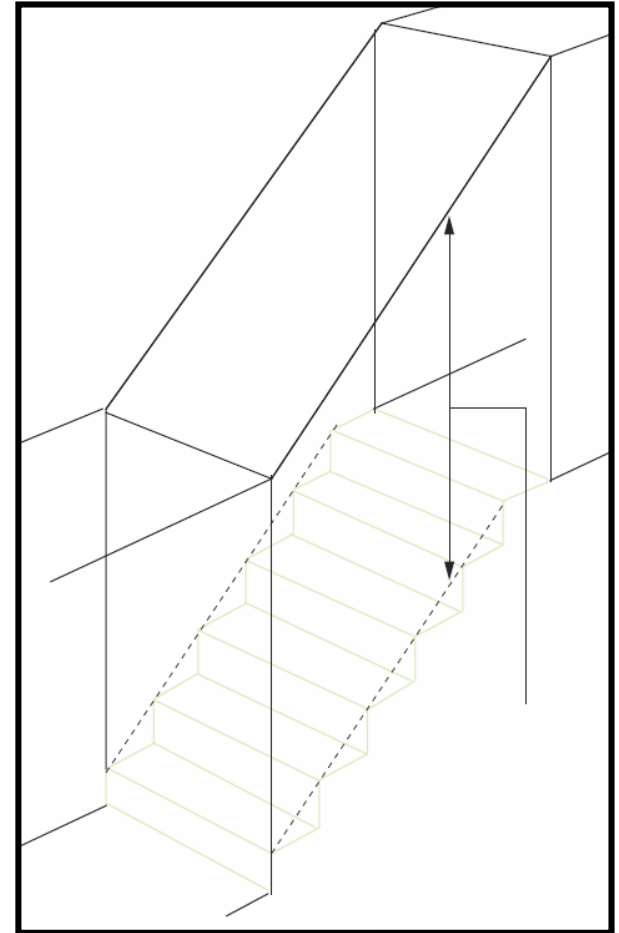


2005 NBC

- Part 9 refers to “clear height”
- Part 3 refers to “headroom”

2010 NBC

- Use the term “clear height” in both Part 3 and Part 9

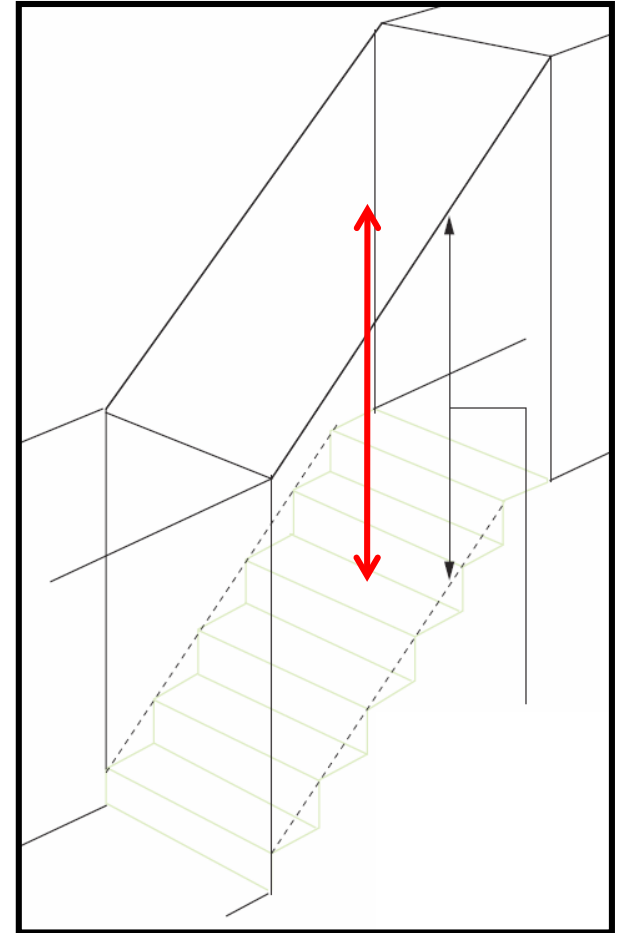


Measurement of Clear Height over Stairs – Parts 3 and 9



2005 NBC

- Part 9 refers to a vertical line drawn through the leading edges of the treads

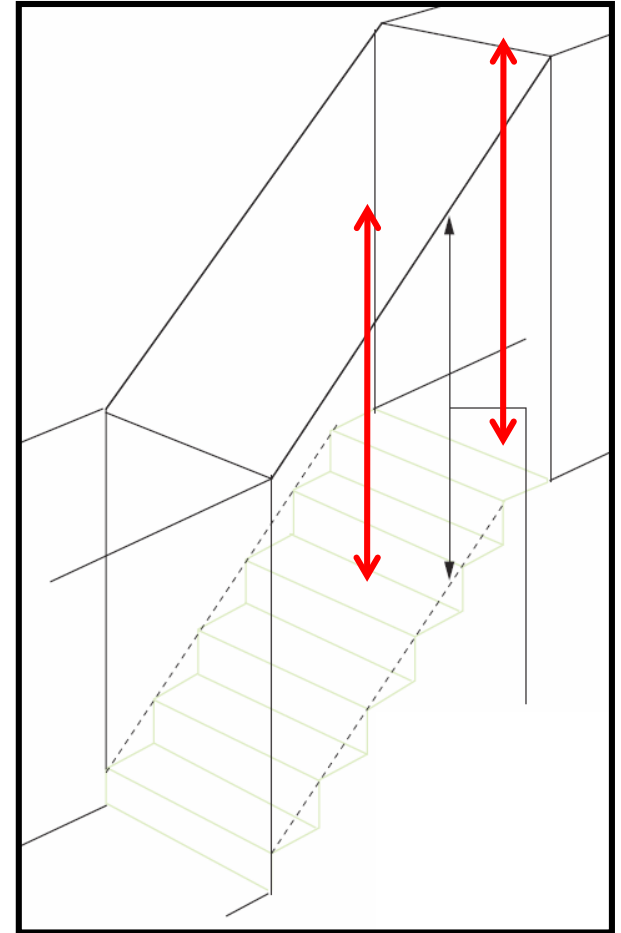


Measurement of Clear Height over Stairs – Parts 3 and 9



2005 NBC

- Part 9 refers to a vertical line drawn through the leading edges of the treads
- Part 3 measures vertically from any landing or from the nosing of any stair tread

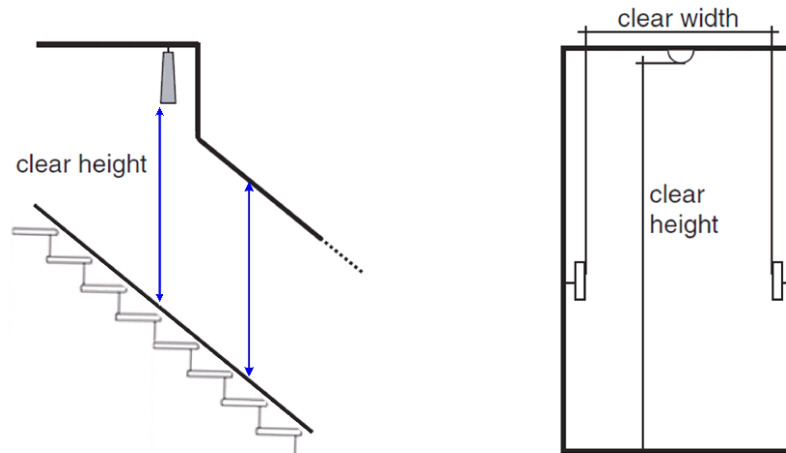


Measurement of Clear Height over Stairs – Parts 3 and 9



2010 NBC

- The clear height over stairs measured vertically, over the clear width of the stair, from a straight line tangent to the tread and landing nosings to the lowest point above



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Minimum Clear Height over Stairs, Ramps and Landings – Part 3



2005 NBC

- ≥ 2100 mm headroom clearance

2010 NBC

- ≥ 2050 mm clear height

Minimum Clear Height over Stairs, Ramps and Landings – Part 9



2005 NBC

- \geq 1950 mm within dwelling units
- \geq 2050 mm not within dwelling units

2010 NBC

- \geq 1950 mm serving a single dwelling unit
- \geq 2050 mm not serving a single dwelling unit

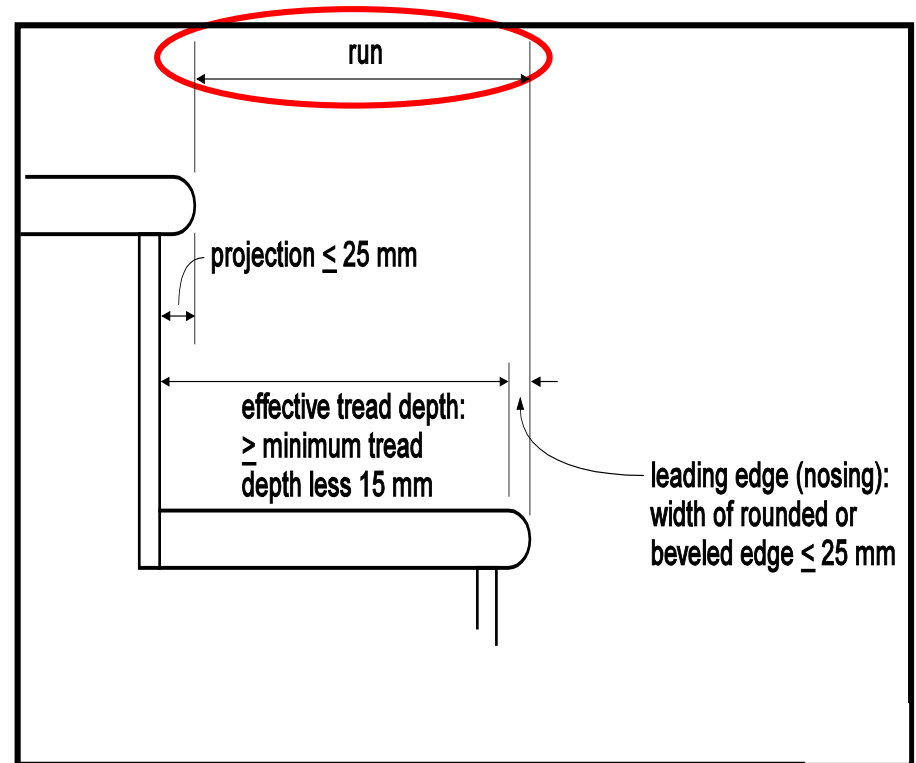
Interior and exterior

Measurement of Risers and Runs – Parts 3 and 9



2005 NBC

- Figure in Appendix A suggests measurement of run from nosing to nosing

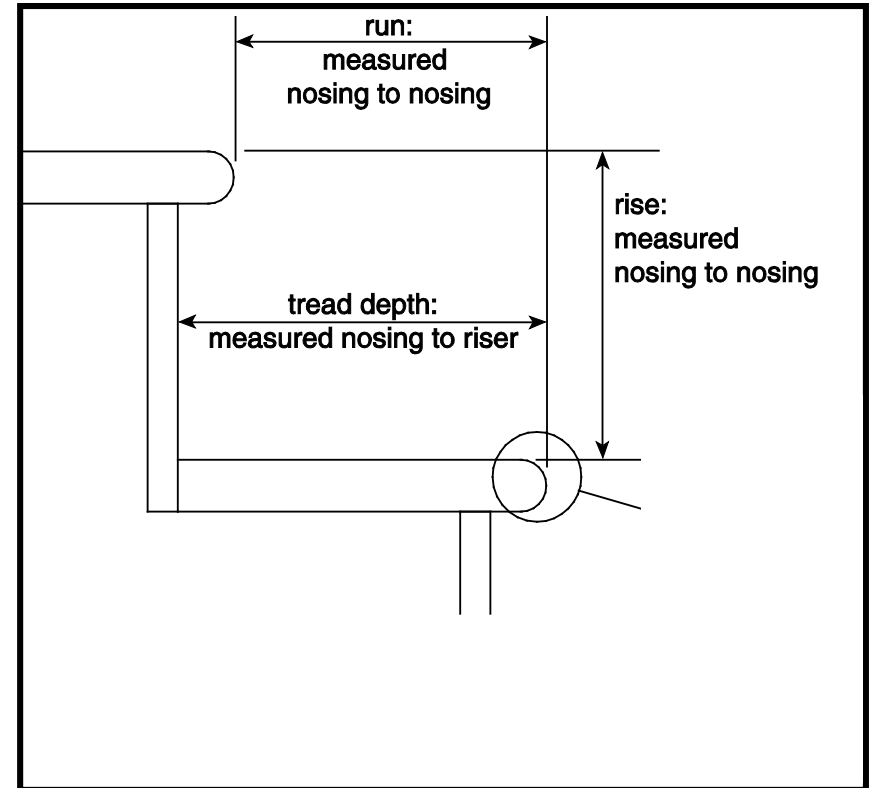


Measurement of Risers and Runs – Parts 3 and 9



2010 NBC

- Appendix Note revised
- Riser measured as a vertical nosing-to-nosing distance
- Run measured as a horizontal nosing-to-nosing distance



Minimum Dimensions of Risers and Runs – Part 9



2005 NBC

	All Steps		Rectangular Treads	
	Rise		Run	
Stair Type	Max.	Min.	Max.	Min.
Service	No limit	125	355	No limit
Private	200	125	355	210
Public	200	125	355	230

Minimum Dimensions of Risers and Runs – Part 9



2010 NBC	All Steps		Rectangular Treads	
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No Change



Minimum Dimensions of Risers and Runs – Part 9



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Stair Type	Max.	Min.	Max.	Min.
Service	No limit	125	355	No limit
Private	200	125	355	210
Public	200 180	125	355 No limit	230 280

No Change



Uniformity and Tolerances – Parts 3 and 9



2005 NBC

- Part 9: Prescriptive
 - 6 mm maximum tolerances for risers and treads
 - Between adjacent treads
 - Between tallest and shortest risers
 - Between deepest and shallowest treads

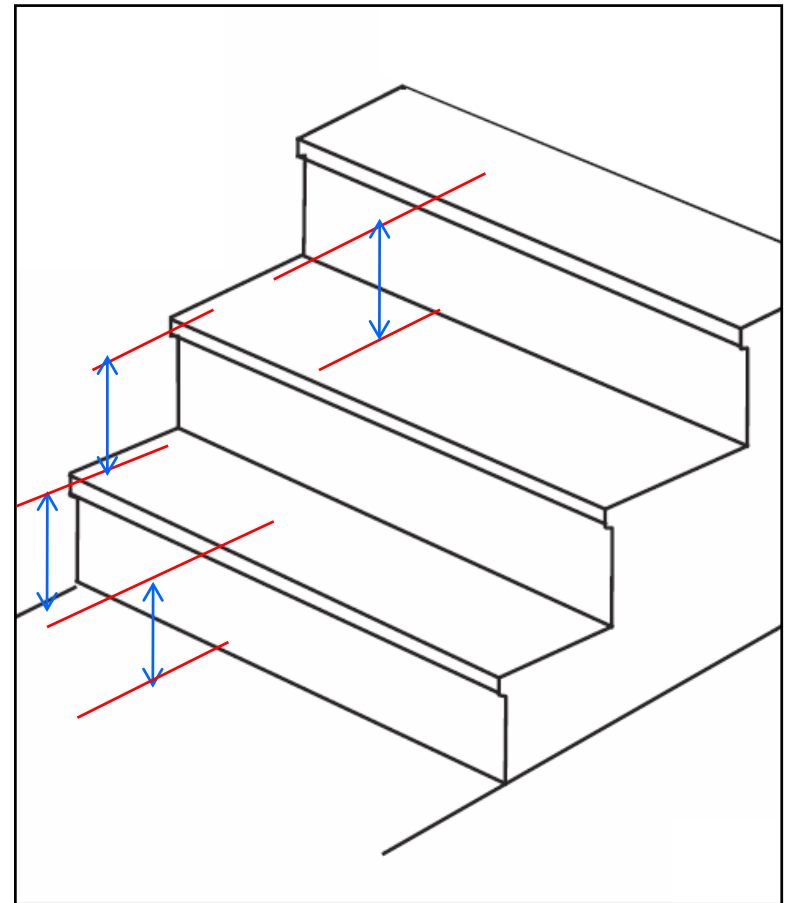
- Part 3: Performance criteria
 - “...shall have uniform run and rise in any one flight”
 - “...shall not alter significantly in run and rise in successive flights”

Uniformity and Tolerances – Parts 3 and 9



2010 NBC

- Stairs shall have:
 - Uniform height in any one flight
 - Tolerances of 5 mm between adjacent treads or landings
 - 10 mm between the tallest and shortest risers in a flight
- Fire escapes exempt from requirements

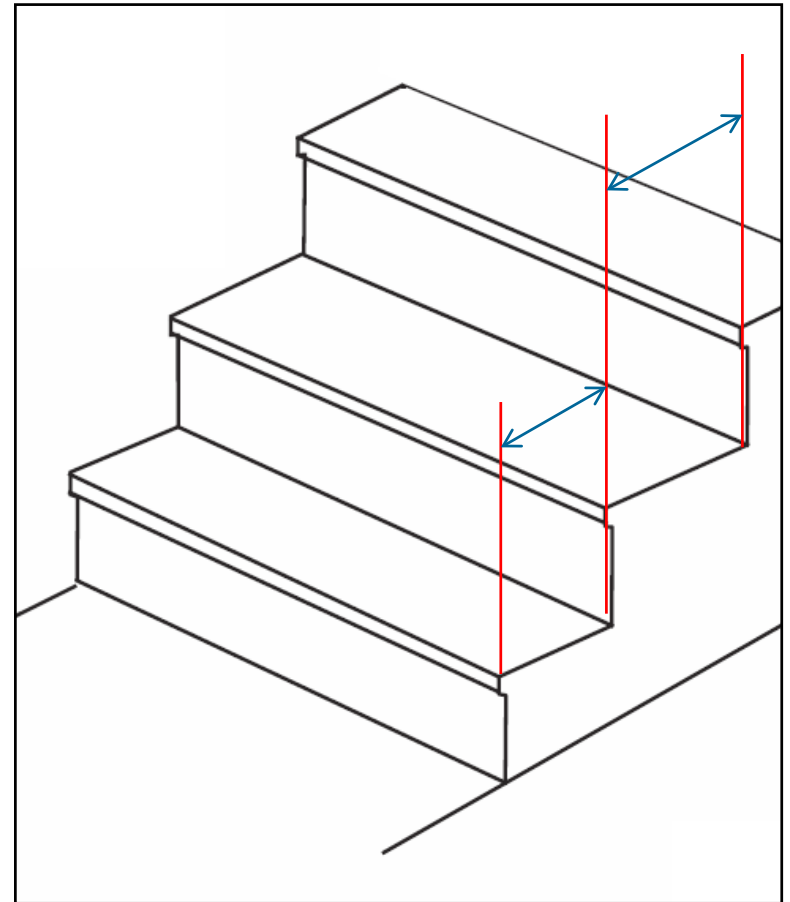


Uniformity and Tolerances – Parts 3 and 9



2010 NBC

- Stairs shall have:
 - Uniform run in any one flight
 - Tolerances of 5 mm between adjacent treads or landings
 - 10 mm between the deepest and shallowest treads in a flight





Ramp Width – Part 9

2005 NBC

- Width of public ramps ≥ 900 mm
- Width of private ramps ≥ 860 mm

2010 NBC

- Clear width of exit ramps and public ramps ≥ 870 mm

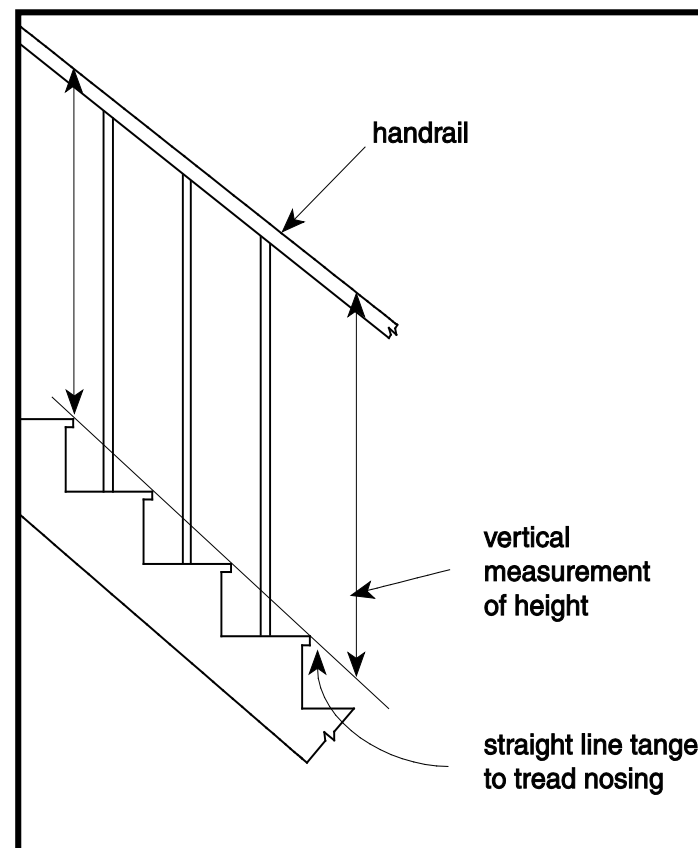


Measurement of Handrail Height – Parts 3 and 9



2010 NBC

- On stairs and ramps measured from top of handrail:
 - Straight line tangent to tread nosings
 - Surface of ramp, floor, or landing





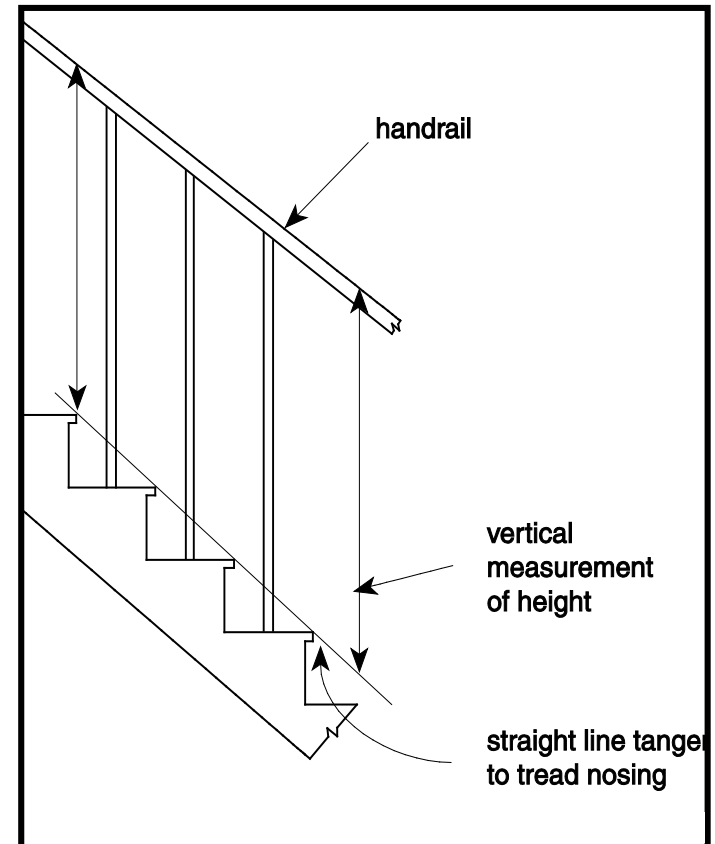
Minimum Height of Handrails – Part 9

2005 NBC

- Min. 800 mm
- Max. 965 mm

2010 NBC

- Min. 865 mm
- Max. 965 mm





Intermediate Handrail on Wide Stairs and Ramps – Part 9



2005 NBC (Part 9)

- No requirement

2010 NBC (Part 3 and 9)

- Stairs or ramps \geq than 2200 mm
 - Intermediate handrail such as no position is more than 825 mm from a handrail



Landings in Garages – Dwelling Units

2005 NBC

- Landings are required at the top of stairs in attached garages of dwelling units regardless of number of risers

2010 NBC - New sentence

- Requirements that apply to stairs, ramps handrails and guards within dwelling units also apply to stairs, ramps handrails and guards in garages



Ramps and Landings

– Part 3 Dwelling Units



2005 NBC

- Interior ramps and landings must comply with Part 3 requirements for public ramps
- Exterior stairs, ramps, landings, handrails must comply with Part 3 requirements for public stairs, ramps, handrails and guards

Ramps and Landings

– Part 3 Dwelling Units



2010 NBC

- Interior ramps and landings
- Exterior stairs, ramps, landings and handrails

To meet similar design requirements of Part 9





Landings – Part 3

2010 NBC

- Landings required:
 - Top and bottom interior and exterior stairs
 - Top and bottom of ramp

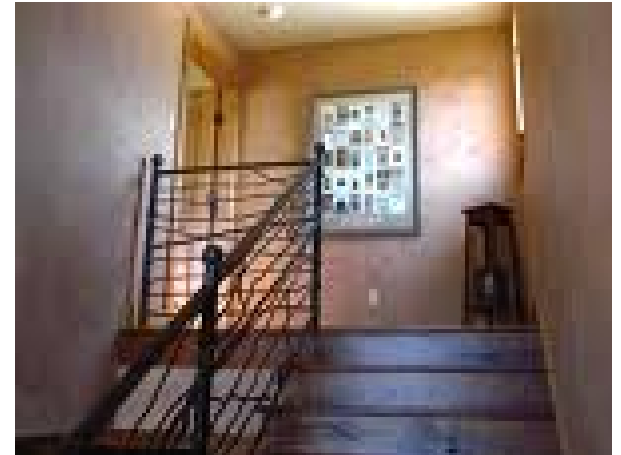




Landings – Part 3

2010 NBC

- Landings also required where:
 - Door opens onto ramp
 - Ramp opens onto stair
 - Stair opens onto ramp





Slope for Treads and Landings – Parts 3 and 9



2005 NBC

- Part 9: Cross-slope of treads shall not exceed 1 in 100
- Part 3: No requirement

2010 NBC

- Slope on treads and landings shall not exceed 1 in 50



Protection of Openable Windows – Parts 3



- Suites of residential occupancy (Part 3) protection at window required by:
 - Guard at a height of 1070 mm OR
 - Mechanism controlling window opening to 100 mm

- Exception
 - Opening located higher than 1070 mm OR
 - Bottom edge of openable portion of window is < 1800 mm above surface on other side





Climbable Guards

2010 NBC

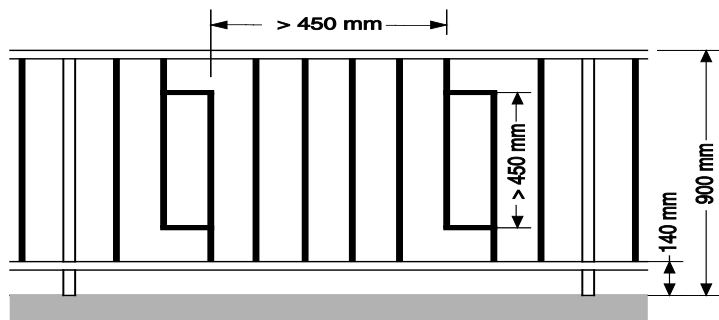
- Editorial changes
 - Clarify intent of provision
 - New Appendix Note with illustrations



Climbable Guards

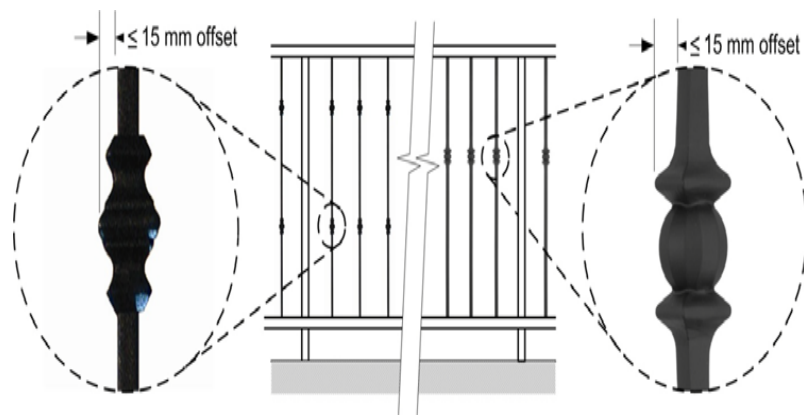


Protrusions in Guards

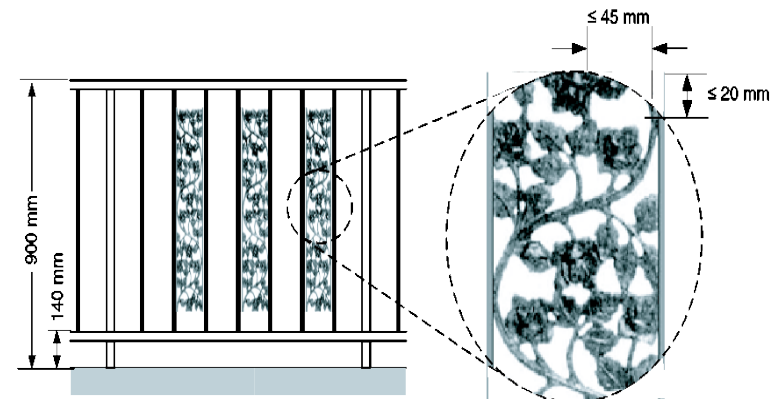


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Horizontal and vertical clearances

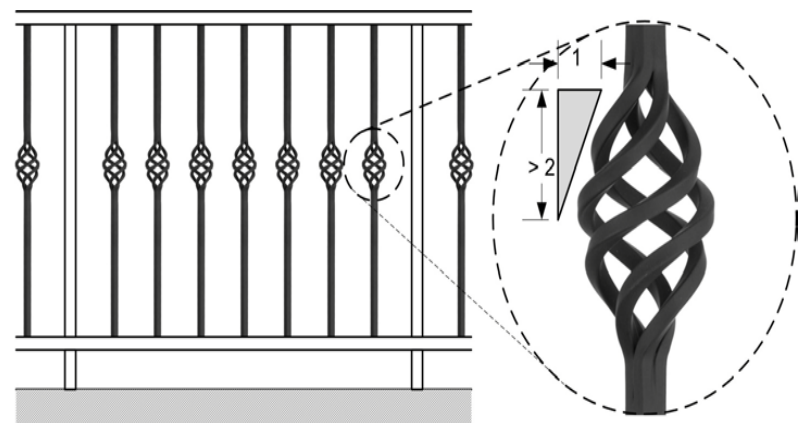


15 mm horizontal offset



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Space not more than 45 mm X 20 mm



Slope greater than 2 in 1



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Questions?

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

Thank you!