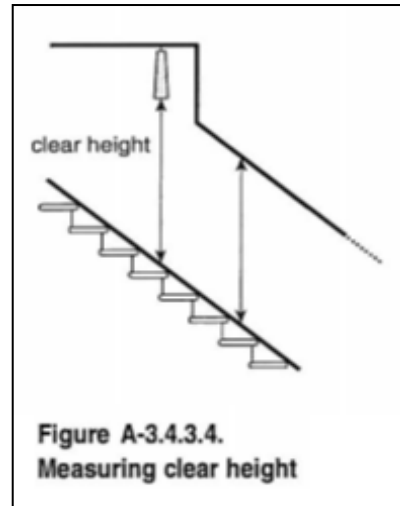
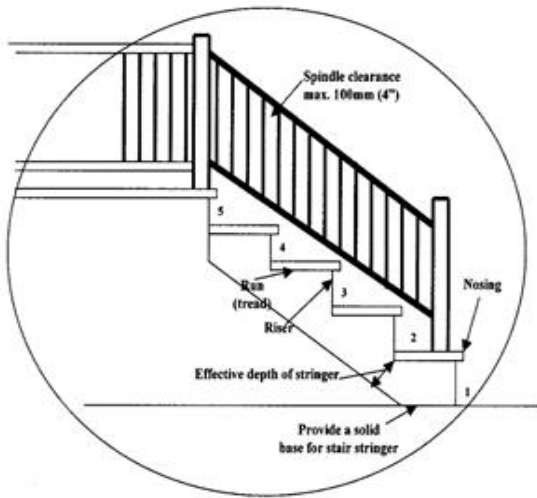
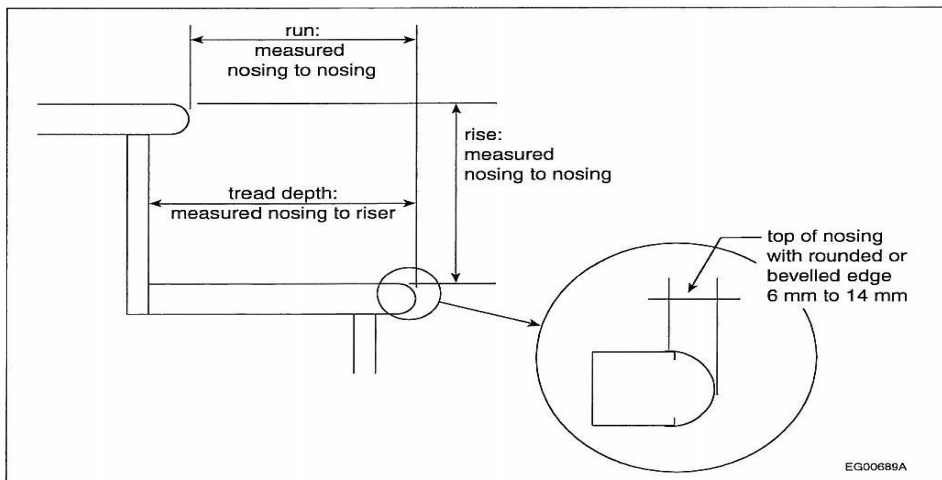


Stairs, Guards and Handrails (NBC 2010 - Part 9)



Stairs (NBC Section 9.8)

- Stairs must be at least 900 mm (36") wide (NBC 9.8.2.1.)
- Clear height over stairs must be at least 2050 mm (80") (NBC 9.8.2.2.(2). Refer to NBC Figure A-3.4.3.4. above.)
- At least 3 risers must be provided in interior flights of stairs (NBC 9.8.3.2.)
- The vertical height of any flight of stairs must not exceed 3.7 metres (12') (NBC 9.8.3.3.)
- Risers must be of uniform height between 125 - 180 mm (5" - 7") and treads must have a uniform run at least 280 mm (11"), with a tread depth at least 280 mm (11") (NBC 9.8.4.1. & 9.8.4.2.)
- Where winders are incorporated into a stair, each set must not turn through more than 90° and must conform to NBC 9.8.4.5. requirements.
- The top of tread nosings must have a rounded or bevelled edge extending between 6 mm - 14 mm (¼" - ½") from the front of the nosing (measured horizontally), or extending 3 mm (⅛") if a resilient material is used (NBC 9.8.4.6.)



**Figure A-9.8.4.-B
Elements of steps and their measurement**

- Interior stairs (NBC 9.8.8.1.(3), and exterior stairs where there is a difference in elevation of more than 600 mm (24") between the walking surface and adjacent surface (NBC 9.8.8.1.(1a), must be protected on both sides by a wall or a guard that is at least 900 mm (36") above the step nosing (NBC 9.8.8.3.(4).
- Exterior wood steps must not be in direct contact with the ground unless treated with a wood preservative (NBC 9.8.9.3.)
- Wooden stair stringers must have a minimum effective depth of 90 mm (3.5") and an overall depth of at least 235 mm (9.25"), be supported and secured top and bottom, and be not less than 25 mm (1") actual thickness if *supported* along their length and 38 mm (1.5") actual thickness if *unsupported* along their length (NBC 9.8.9.4.)
- Wooden stair stringers must be spaced not more than 600 mm (24") o.c. (NBC 9.8.9.4.(1d).

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Guards (NBC 9.8.8.)

- Guards at least 1070 mm (42") high (NBC 9.8.8.3.(1)) are required if there is a difference in elevation of more than 600 mm (24") between the walking surface and the adjacent floor/ground surface (NBC 9.8.8.1.(1a)).
- Guards are also required if the adjacent surface within 1.2 m (4') of the walking surface has a slope greater than 1 in 2 (meaning a ratio of 1' out and 2' down) (NBC 9.8.8.1.(1b)).
- Guards no less than 900 mm (36") high are required for flights of steps, except in required exit stairs (NBC 9.8.8.3.(4)).
- Height of guards for flights of steps must be measured vertically from the top of the guard to a line drawn through the leading edge of the treads served by the guard (NBC 9.8.8.3.(5)).
- Guards must be designed to resist specified loads, as prescribed in NBC Table 9.8.8.2.
- Guard members (i.e. vertical spindles or safety glass inserts) must be spaced to have no opening that would permit the passage of a 100 mm (4") sphere (NBC 9.8.8.5.)
- Guard members must be designed so that no member, attachment or opening facilitates climbing (NBC 9.8.8.6.)
- Permanent installed bench seating must meet the guard requirements, as per NBC 9.8.8.
- Glass in guards must be CAN/CGSB approved tempered, laminated, or wired safety glass (NBC 9.8.8.7.)

Handrails (NBC 9.8.7.)

- All straight stairs less than 1100 mm (43") wide require at least one handrail. Curved stairs, or stairs equal or greater than 1100 mm in width, required handrails on both sides (NBC 9.8.7.1.(1)).
- Handrails serving ramps are required on both sides (NBC 9.8.7.1.(1)).
- One required handrail must be continuous throughout the length of the stair, including landings, except where interrupted by doorways or newel posts at changes in direction (refer to NBC Figure A-9.8.7.2. below for examples.)

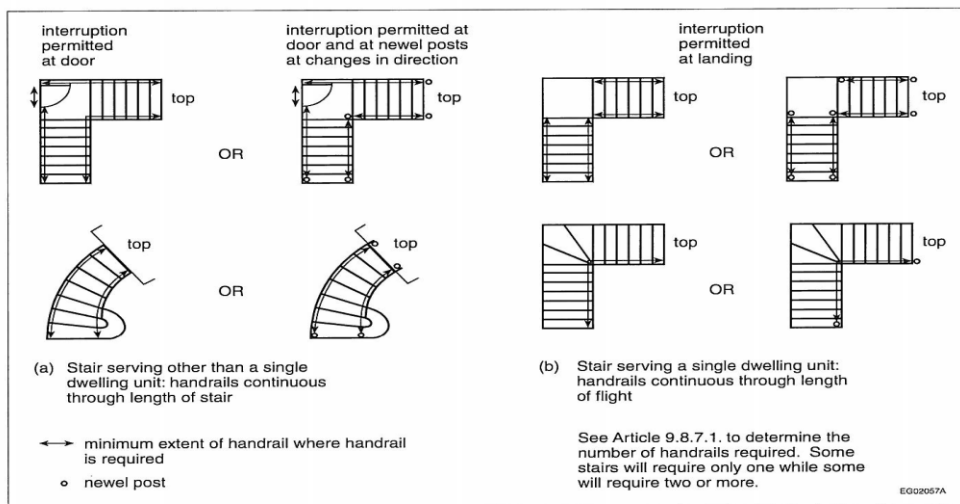


Figure A-9.8.7.2.
Continuity of handrails at the top and bottom of stairs and flights

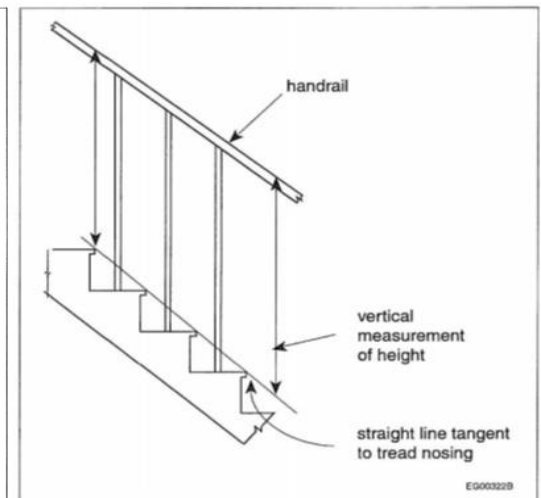


Figure A-9.8.7.4.
Measuring handrail height

- One handrail must extend horizontally at least 300 mm (12") beyond the top and bottom of each stair flight (NBC 9.8.7.3.)
- Handrails must be positioned between 865 - 965 mm (34" - 38") above the stair nosing (NBC 9.8.7.4.(2)). Refer to NBC Figure A-9.8.7.4. above for measuring handrail height.)
- Handrails must be continually "graspable" along their entire length with no obstruction on or above them to break a handhold, except where the handrail is interrupted by newels at changes in direction (refer to NBC Figure A-9.8.7.5.(2) below for examples of graspable designs.)
- Handrails must be designed and attached in such a manner as to resist a concentrated load at any point of not less than 0.9 kN (203 pound-force) and a uniformly distributed load of 0.7 kN/m (516.3 lb/ft) (NBC 9.8.7.7.(1)).

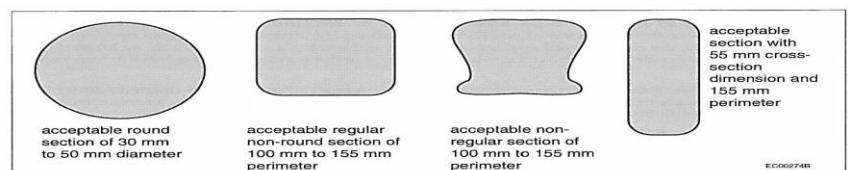


Figure A-9.8.7.5.(2)
Handrail sections

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