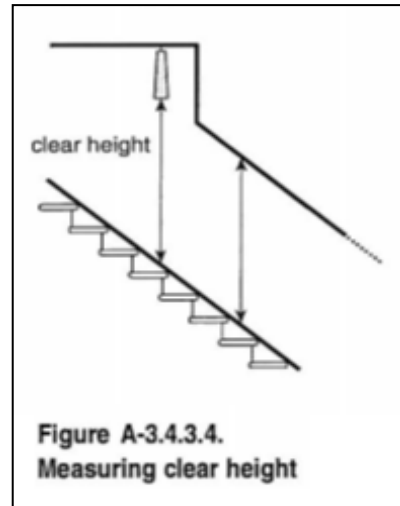
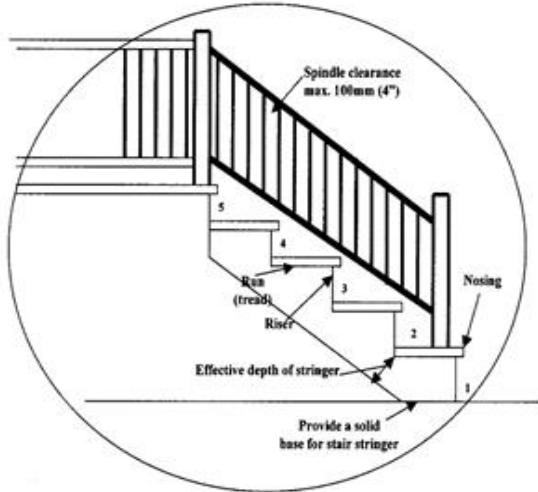


Stairs, Guards and Handrails (Residential)



Stairs Serving a One or Two Family Dwelling (NBC 2010 - Section 9.8)

- Stairs must be at least 860 mm (34") wide (NBC 9.8.2.1.(2)).
- Clear height over stairs must be at least 1950 mm (6.5') (NBC 9.8.2.2.(3)). Refer to NBC Figure A-3.4.3.4. above.)
- 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 - 200 mm (5" - 7-7/8") and treads must have a uniform run between 210 - 355 mm (8" - 14"), with a tread depth between 235 - 355 mm (9-1/4" - 14") (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 (1/4" - 1/2") from the front of the nosing (measured horizontally), or extending 3 mm (1/8") if a resilient material is used (NBC 9.8.4.6.)

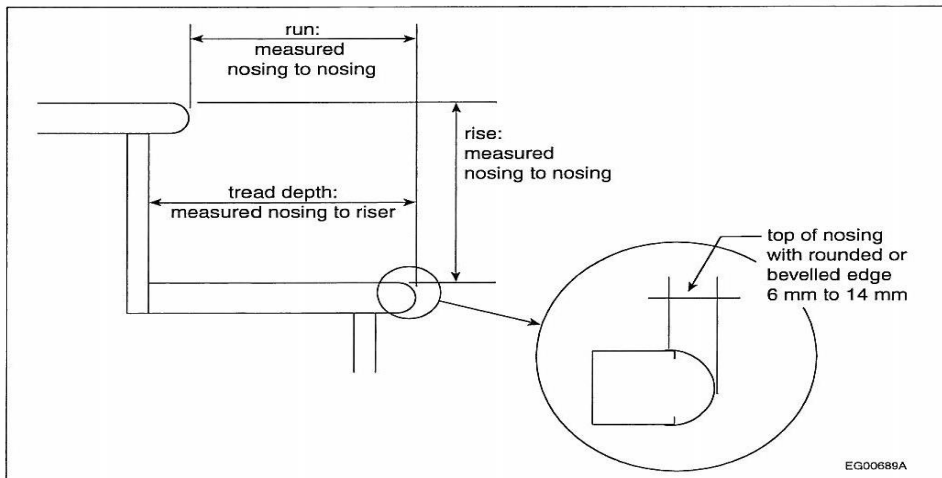


Figure A-9.8.4.-B
Elements of steps and their measurement

- Interior stairs with 3 or more risers (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 900 mm (36") o.c. (NBC 9.8.9.4.(1d)).
- Wooden stair treads must be at least 25 mm (1") actual thickness. If open risers are used and the distance between the stringers exceeds 750 mm (29.5"), then the stair treads must be at least 38 mm (1.5") actual thickness (NBC 9.8.9.5.)

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Guards (NBC 9.8.8.)

- Guards 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 at least 900 mm (36") high are required: a) around openings in floors at the tops of stairs and interior balconies (NBC 9.8.8.3.(2)), b) around landings, porches, and exterior decks that are between 600 mm - 1800 mm (2' - 6') above the adjacent floor/ground level (NBC 9.8.8.3.(3)), c) on open sides of interior stairs when there are 3 or more risers (NBC 9.8.8.1.(3)), and d) on open sides of exterior stairs when the walking surface is elevated more than 600 mm (24") above ground level (NBC 9.8.8.1.(1)).
- Guards at least 1070 mm (42") high are required around exterior decks, porches, landings and balconies that have a surface more than 1800 mm (6') above the adjacent floor/ground surface (NBC 9.8.8.3.(1)).
- 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.)

- Interior stairs with 3 or more risers require at least one handrail (NBC 9.8.7.1.(3)).
- Exterior stairs with 4 or more risers require at least one handrail (NBC 9.8.7.1.(4)).
- One required handrail must be continuous throughout the length of the stair, except where interrupted by doorways, landings, or newel posts at changes in direction (refer to NBC Figure A-9.8.7.2. below for examples.)

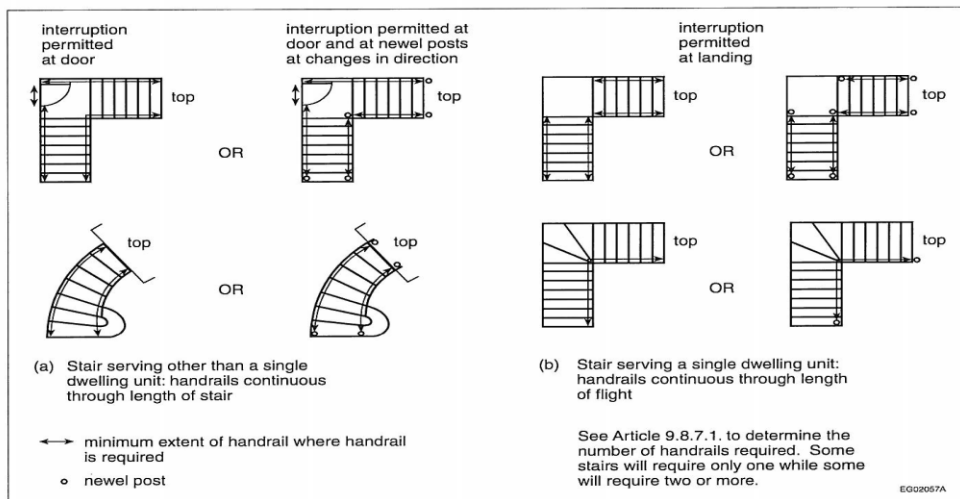


Figure A-9.8.7.2.
Continuity of handrails at the top and bottom of stairs and flights

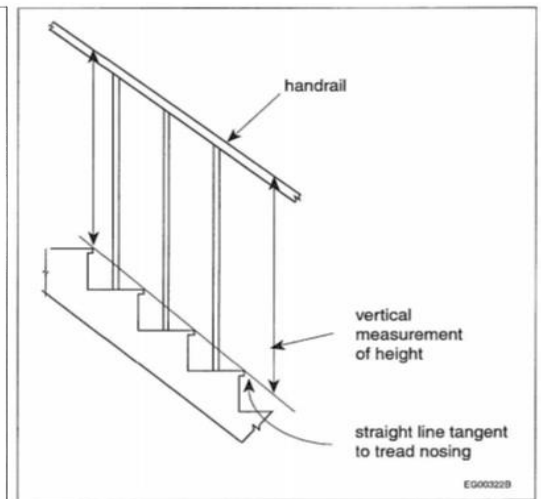


Figure A-9.8.7.4.
Measuring handrail height

- 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.)
- Handrail attachment points are to be spaced not more than 1.2 metres (48") apart into solid wood (NBC 9.8.7.7.(2)) and must be able to withstand a concentrated load of at least 0.9 kN (203 pound-force) (NBC 9.8.7.7.(1)).

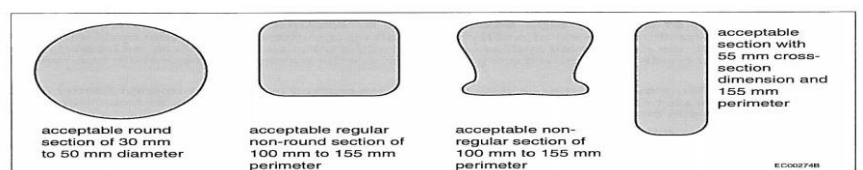


Figure A-9.8.7.5.(2)
Handrail sections