

STATE OF NORTH CAROLINA REGULATIONS FOR
MANUFACTURED HOMES 2004 EDITION
EGRESS REQUIREMENTS – DECKS & RAMPS

3.11 EGRESS REQUIREMENTS

3.11.1 Egress – General Requirements: Federal regulations require that each manufactured home have a minimum of two exterior egress doors that are located remotely from each other. Where any means of egress from a manufactured home, including sliding glass doors, is not substantially level with grade, such differences in elevation shall be negotiated by stairs or ramps, which are constructed in accordance with **Sections 3.11.2** and **3.11.3**. Landings shall comply with **Section 3.11.4**. Egress stairs, ramps and landings shall be provided and installed by the selling party unless specifically contracted otherwise by the homeowner.

3.11.2 Exterior Steps and Stairways

3.11.2.1 General – All stairs and landings constructed in accordance with this Code shall be entirely self-supporting unless designed and approved by a registered Engineer of Architect. Adequate bracing of stairway and landing structures shall be provided as required for lateral stability.

3.11.2.2 Footings for Stairway and Landing Structures – All support posts for exterior stairway and landing structures shall rest on a minimum 8" x 16" x 4" thick concrete masonry or 8" x 16" x 6" thick poured in place concrete footing. The bottom of such footings shall be below the frost line (6" in Buncombe County).

EXCEPTION: Stair or landing structures designed specifically to be set directly on the ground do not require footings as described above.

3.11.2.3 Width – Stairways shall not be less than 36 inches in clear width. The minimum width at and below the handrail height shall not be less than 32 inches where a handrail is installed on one side and 28 inches where handrails are provided on both sides.

3.11.2.4 Treads and risers – The maximum riser height shall be 8-1/4 inches and the minimum tread depth shall be 9 inches, exclusive of nosing. The riser height shall be measured vertically between leading edges of the adjacent treads. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The walking surface of treads and landings of a stairway shall be sloped no steeper than one unit vertical in 48 units horizontal (2% slope). The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch. The height from the top of a landing (when a landing is present) to the door threshold shall not exceed 8-1/4". Where the bottom riser of an exterior stair adjoins an exterior walk, porch, driveway, patio, garage floor, or finish grade, the height of the riser may be less than the height of the adjacent riser. See Figure 3.11.

3.11.2.5 Profile – The radius of curvature at the leading edge of the tread shall be no greater than 9/16 inch. A nosing not less than 3/4 inch but not more than 1-1/4 inches shall be provided on stairways with solid risers. Beveling of nosing shall not exceed 1/2 inch. Risers shall be vertical or sloped from the underside of the leading edge of the tread above at angle not more than 30 degrees from the vertical.

EXCEPTION: A nosing is not required where the tread depth is a minimum of 11 inches.

3.11.2.6 Handrails – Handrails having minimum and maximum heights of 30 inches and 38 inches, respectively, measured vertically.

3.11.2.7 Handrail grip size – The handgrip portion of the handrails shall not be more than 3-1/2 inches in cross-sectional dimension, or the shape shall provide an equivalent gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corners.

3.11.2.8 Guardrails – Porches, balconies or raised floor surfaces located more than 30 inches above the floor or grade below shall have guardrails not less than 36 inches in height.

3.11.2.9 Guardrail and handrail opening limitations – Guardrails and handrails as required on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures which do not allow passage of an object 6 inches or more in diameter. Horizontal spacing between the vertical members in required guardrails shall be a maximum of 4 inches at the nearest point between members. See Figure 3.11. EXCEPTION: The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway may be of such a size that a sphere 6 inches cannot pass through.

3.11.2.10 Structural Requirements – Guardrails and handrails shall be capable of withstanding a single concentrated load of 200lbs applied at any point along the top. Materials for stairs and landings constructed of wood shall be No.2 or better treated Southern Pine or equivalent. The minimum thickness of stair treads and decking for landings shall be as follows:

Support Spacing	Tread or Decking (nominal thickness)
12" o.c.	1" S4S
16" o.c.	1" T&G
24" o.c.	1-1/4" S4S
32" o.c.	2"S4S

As an alternate, an engineered design certified by a Registered Engineer or Architect may be provided. In this design the stair tread or floor deck shall be capable of supporting either a uniformly distributed live load of 40 psf or a 300lb concentrated load acting over an area of 4 square inches, whichever produces the greater stresses. Maximum allowable deflection under these loads shall be L/240. Notched stair stringers shall have a minimum effective depth at each notch of not less than 3 1/2 inches unless an alternate design certified by a Registered Engineer or Architect is provided.

3.11.3 Ramps –Ramps shall be at least three feet (3') wide. Ramps shall have a maximum slope of one unit vertical in eight units horizontal. Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal. A minimum 3ft x 3ft landing shall be provided: 1) at the top and bottom of ramps, 2) where doors open onto ramps, and 3) where ramps change direction.

3.11.4 Landings – A minimum 3'x 3' landing shall be required at the top of all exterior stairs where any door (not screen or storm door) swings outward over the stairs. Landings, which are thirty-six (36) square feet or less in area may be constructed according to the provisions of this Code. All such landings whether at the top or bottom of the stairs, which are greater than thirty-six (36) square feet in area are considered to be "decks" and shall be constructed in accordance with the North Carolina Residential Code (current edition).

3.11.5 Fasteners – Fasteners used in the construction of stairs, handrails, guardrails, ramps and landings shall be hot-dipped, zinc coated galvanized or stainless steel.

3.11.6 Auxiliary Structures – All auxiliary structures (such as porches, decks, awning, cabanas, etc.) not provided or approved by the home manufacturer, shall be entirely self-supporting unless designed and

approved by a Registered Engineer or Architect. All such structures shall be constructed in accordance with the North Carolina Residential Code (current edition).

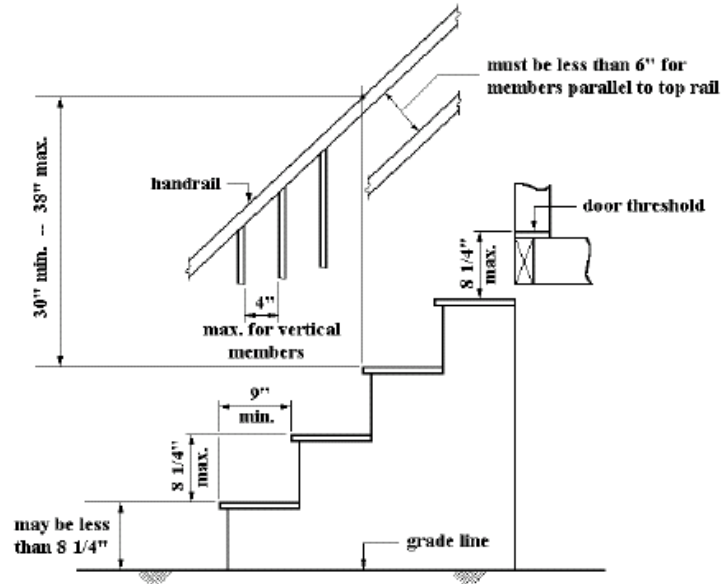


FIGURE 3.11
Stair and Rail Geometry