

**NC Department of Insurance  
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**Stair risers abutting cross-sloped paved surfaces**

**Code:** 2018 North Carolina Residential Code  
**Section:** R311.7.5.1<sup>i</sup>

**Date:** August 17, 2023

**Question:**

Does NCRC R311.7.5.1 allow for a cross-slope at the bottom riser?

See Figure 1 and Figure 2 for an illustration of the scenario.

**Answer:**

Yes.

The 2018 NCRC section R311.7.5.1 addresses the subject of cross-slope as it affects the bottom stair riser height. A cross-slope is allowed provided the bottom riser does not exceed the height of the other risers in the flight of stairs. Please note that the slope is also limited by R311.7.6<sup>ii</sup>, and R311.7.7<sup>iii</sup>.

A slope may also be a compound slope, i.e. both a cross-slope and a slope in the direction of travel. See Figure 3 for illustration of a cross-slope. For simplicity, the slope in the direction of travel is not shown.

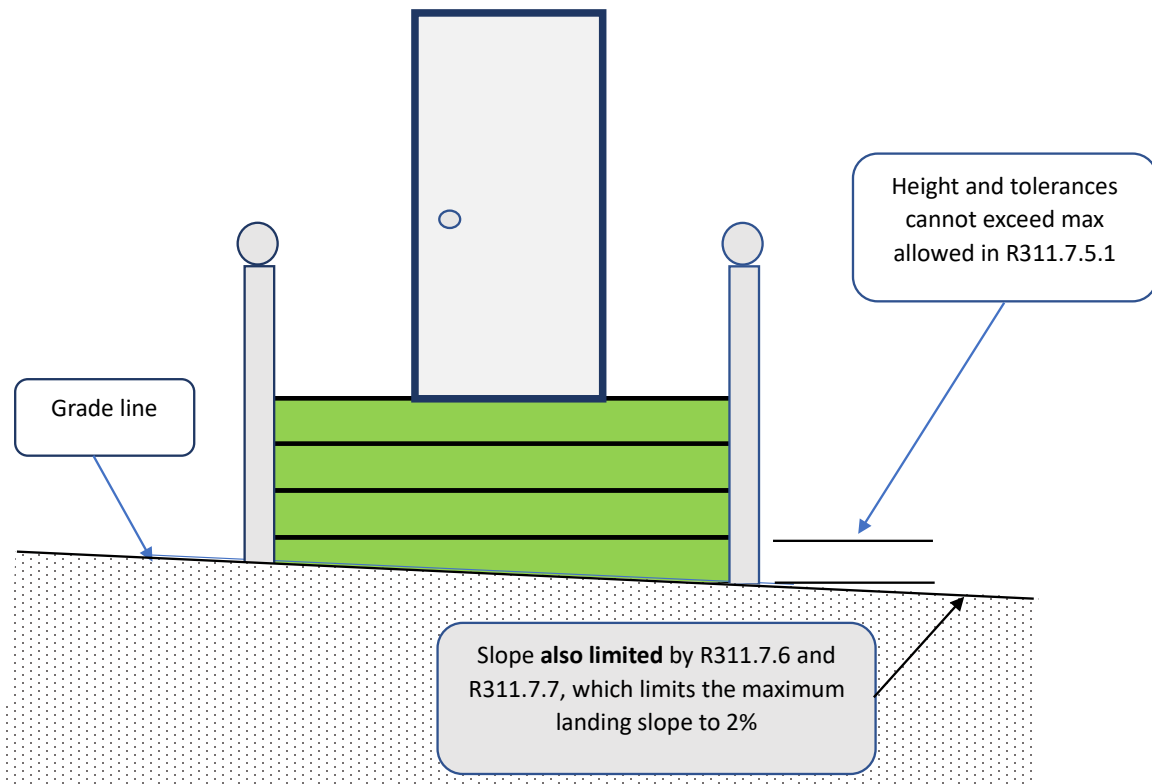
**Figure 1: Driveway/Patio with cross-slope**



Figure 2: Stairs abutting cross-sloped paved patio or driveway – Close-up View



Figure 3: Cross-slope schematic, N.T.S.



**Keywords:**

Adjoining patio, sloped driveway

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<sup>i</sup>**R311.7.5 Stair treads and risers.** Stair treads and risers shall meet the requirements of this section. For the purposes of this section, dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.

**R311.7.5.1 Risers.** The riser height shall be not more than  $8\frac{1}{4}$  inches. The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than  $\frac{3}{8}$  inch (9.5 mm). The top and bottom riser of interior stairs shall not exceed the smallest riser within that stair run by more than  $\frac{3}{4}$  inch (19 mm). The height of the top and bottom riser of the interior stairs shall be measured from the permanent finished surface (carpet excluded). 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 risers.

<sup>ii</sup>**R311.7.6 Landings for stairways.** There shall be a floor or landing at the top and bottom of each stairway. A flight of stairs shall not have a vertical rise larger than 12 feet 3 inches (3734 mm) between floor levels or landings. The width of each landing shall not be less than the width of the stairway served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel.

<sup>iii</sup>**R311.7.7 Stairway walking surface.** The walking surface of treads and landings of stairways shall be sloped not steeper than one unit vertical in 48 inches horizontal (2-percent slope).