

Balcony Drainage

Typically, architects determine the drainage requirements, and indirectly the slope, of balconies. Obviously, their primary concern is to keep water from draining toward the living area. The slope of the deck is dependent on the architect's choice for the depth of the stepdown and the engineer's recommendation for minimum slab thickness at the balcony perimeter. The minimum recommended balcony width is 5 ft (1.5 m), with most residential balconies 5 to 7 ft (1.5 to 2 m) wide. A 1/2 to 1 in. (13 to 25 mm) stepdown in the balcony deck at the door is typically specified, with the deck sloping away from the door.

Because of the engineer's requirements for minimum slab thickness and the architect's choice of balcony width, balcony drainage slopes are almost always too mild to drain properly. With the added possible negative effects of construction tolerances for form setting and concrete finishing, it's highly likely that water will drain toward the living area even if the slab doesn't deflect. When the slab does deflect, drainage toward the living area is almost certain.

For the interior balcony in Fig. 1, slab deflection inside the building rotates the slab about the exterior edge of the balcony, causing a slope change and drainage in the wrong direction. Most multistory residential structures are built using flat plate or flat slab construction. For this type of construction, the slab edge rotation will almost always cause the balcony surface to slope in the wrong direction.

For a balcony on the end of a cantilever, the deflection of the interior span is typically enough to rotate the cantilever up and cause any water that collects to run back into the living area.

Architects should ask the structural engineer to review the drainage requirements with respect to the structure's initial and final deflected shape. For more information, see "Understanding Balcony Drainage," by Bruce A. Suprenant, in *Concrete International*, V. 26, No. 1, Jan. 2004, pp. 84-87.

ASCC concrete contractors will work with architects and engineers in addressing these issues. However, the concrete contractor is not responsible for inadequate drainage due to the structure's deflection. If you have any questions, contact your ASCC concrete contractor or the ASCC Technical Hotline at (800) 331-0668.

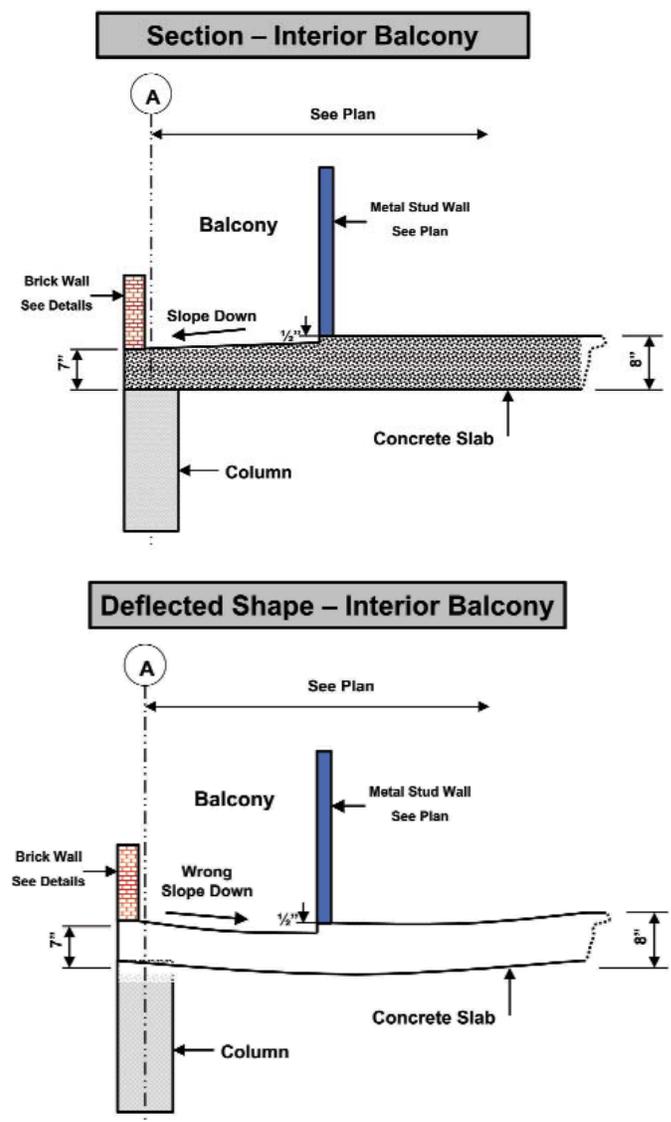


Fig. 1: Balcony drainage is related to deflection of concrete slabs