

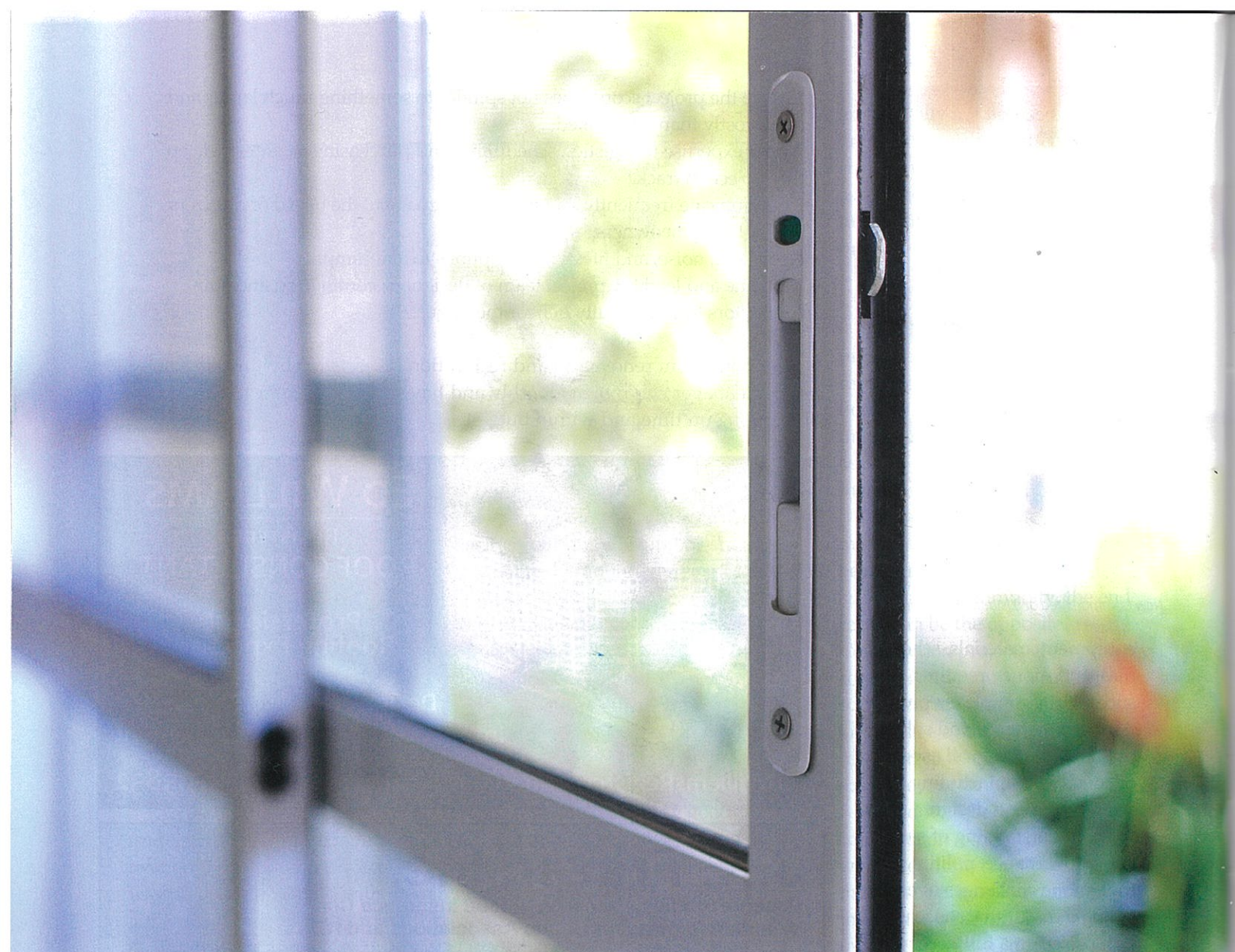


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Balcony Problems with Added Sliding Glass Doors

BY DONALD
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We are frequently asked to investigate water intrusion problems at sliding glass doors (SGDs) installed at balcony edges. The purpose is to determine the source of the water intrusion and make recommendations on how to stop the problem.

Most balconies in south Florida were originally exterior areas with railings and screens at the balcony edge. In the southern climates, outdoor screened-in porches are more popular than in northern climates. When northerners relocate to south Florida, many want to close in their balconies to increase the amount of interior living space. Many unit owners will add SGD's at the balcony edges just inside of the railing and screen framing, and unfortunately, many associations will look the other way.

Frequently, these locations need concrete repairs at the balcony slab edges. During concrete repair projects, many balconies will need these added SGD's removed and then reinstalled after concrete repairs. Unfortunately, most associations end up paying the costs for this extra work.

After reinstallation of these SGD's, most unit owners will report that before the recent concrete repair project there were no leaks at the SGD's.

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Now, the SGD's have started to leak, and the unit owners expect the associations to fix the leaks. Then, the association wants the concrete repair contractor to fix the leaks.

The following are typical leak locations:

1. **Water at SGD bottom track**—The owner reports water in the track at the east SGD panel when rain comes from the south. She stated this has been happening since the SGD's were reinstalled after the concrete repair project, and the contractor has been on site a few times to seal cracks and replace caulking.
2. **Ceiling leaks**—The owner reports that water currently drips out of a SGD top track fastener and at a nearby ceiling crack during rain events. The owner reported that the contractor previously sealed some slab cracks at the unit above. It was also reported that about a month ago, the contractor sealed some cracks inside and outside of the SGD but a water test failed.
3. **Ceiling leaks**—The owner reports leaks from ceiling cracks at the edges. The unit above has tile on the entire balcony and had previously removed the SGD at one of the original building inner wall locations.

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Photos courtesy of Chalaire & Associates—Inner SDG Removed

OBSERVATIONS

1. There is caulking installed at the exterior side of all of the SGD framing between the aluminum and concrete surfaces.
2. There were a few concrete or stucco cracks at the slab edges. Some were not sealed.
3. Caulking and the condition of the slab edges could not be fully evaluated because the SGDs were installed directly against the original construction railing and screen enclosures.
4. At one unit, the SGDs at the edge have two fixed panels and one movable panel at the middle. When the center movable panel is in the closed position, the empty side of the track is toward the interior at the left panel, and the empty side of the track is toward the exterior at the center and right panels. The bottom track also was filled with debris.
5. At another unit, the slab edge had several shrinkage cracks that have already been sealed with gravity feed epoxy, on both inside and exterior sides of the SGD.
6. At another unit, there were visible shrinkage cracks at the ceiling. They have been painted. There are visible previous crack repairs at the edge.

EXPLANATIONS

1. At one unit, the water in the track is coming from water that easily lands in the middle and right panel tracks, which are toward the exterior, exposed to the rain. The track is one continuous piece of metal, and the water can easily move in either direction along the track. The movable SGD panels are not normally sealed where they meet. The water drainage in the track can also be impaired where debris or caulking is covering the drainage weep holes in the track. The caulking condition is difficult to evaluate at SGDs that are added at exterior edges of balconies directly against the original construction screen enclosures.
2. At another unit, when the contractor sealed the shrinkage cracks after the project, the cracks did not get sealed under the SGD or screen enclosure tracks. The water at the SGD top track screw and ceiling crack is from water coming through slab cracks from above.



Debris

3. At another unit, the water is coming through the shrinkage cracks from rainwater that hits the slab edge at the unit above. It is coming through cracks or under the tracks and traveling through the cracks.
4. During concrete repairs, SGDs are removed and then reinstalled. SGDs were never designed to be removed and reinstalled. During removals, they can be damaged. During reinstallation, some contractors will try to do partial repairs. During removals of older SGDs, the panels can literally fall apart due to the interior hidden corrosion damage.
5. Sometimes slab shrinkage cracks appear and are sealed prior to the SGDs being reinstalled. Sometimes they

Unpainted Crack Repairs



appear after the SGDs are reinstalled, especially when the contractor attempts to get the accessories in as soon as possible. Shrinkage cracks can still appear long after a project is over.

6. SGD design always provides for some amount of water in the bottom track. When rain water hits SGDs, the water runs down the glass and collects in the bottom track. The bottom tracks are usually set on a slope towards the exterior side and have weep holes drilled into the tracks for drainage. The design is so that water is drained and does not accumulate in the track. The bottom tracks also have a high riser toward the interior side to prevent water from going over and into interior areas during high winds.
7. All moving panels of SGDs, new or old, are never completely watertight and cannot be made watertight. They will always pass wind-driven rainwater because the movable panel seals can never stop water 100 percent.

8. SGD framing is not watertight. SGD bottom and top tracks, where they butt up against the sidetracks, are not internally sealed. They rely on exterior applied caulking in the corners to resist water intrusion. SGD bottom and top tracks are not internally sealed to the floor or ceiling slabs. SGDs rely on visible exterior applied caulking at all metal to concrete surfaces and all fasteners to resist water intrusion. Any rain water passing from missing or cracked caulking or non-sealed fastener holes can accumulate and travel behind tracks and will easily find any concrete cracks in the slab.
9. If there are no slab cracks, any water passing through SGDs will only cause water to be seen on the same floor. Water passing through SGDs can only be stopped by exterior caulking.
10. If there are no slab cracks, any concrete exposed to rainwater will accumulate and pass water very slowly. Concrete surfaces exposed to rainwater should be waterproofed. Unfortunately, the waterproofing only works if the entire area, slab and edge, is waterproofed. Partial waterproofing of slab areas is not usually performed or effective. Waterproofing is not structural and is not required by building codes for exterior areas.

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Balcony Floor Tile

11. Water passing through slab cracks will cause water to be seen on floors below, so concrete with shrinkage cracks exposed to rainwater will rapidly pass water to floors below. These cracks can easily be sealed with gravity-feed or injected epoxy. However, there is no hope if floor tile was installed above the cracks. Floor tile on balconies—well, that would be another article.
12. If shrinkage cracks occurred after the SGDs were reinstalled and the bottom tracks are covering a crack, the crack is likely to pass any water that is under the bottom track, whether the water got there from caulking problems, fastener holes, corrosion, or other reasons. Installing gravity-feed epoxy from each side of the track will not seal the crack under the track.
13. Pressure-injection of an epoxy or hydro-active grout into the concrete crack from each side of the SGD track will seal the crack. Pressure injection of hydro-active grout will usually seal hidden or non-accessible cracks.
14. A significant contributing problem is SGDs being installed at balcony edges in direct rainwater locations. Movable SGDs are normally installed set back from exterior areas. The main purpose of a SGD, or any door, is to allow a person to walk out of the door, most typically to a covered area, balcony, patio, walkway, etc. They usually have significant roof overhangs or are at the main building walls at balconies. They heavily rely on not being exposed to direct rainwater to resist water intrusion. The building's original design did not include SGDs installed at balcony edges or locations where they are exposed a few inches away from direct rainwater. The building's original design included balconies as exterior areas exposed to rainwater. Adding SGDs at balcony edges does not automatically convert these exterior wet area balconies to interior areas. One of the requirements of interior areas is that it is properly roofed. The units above these enclosed balconies were never required to be properly roofed or sealed. Many of the units above these units were open with only railings and screen enclosures. SGDs at balcony edges were never part of the original design, so why should associations be responsible for them?

15. The removal of bottom tracks to expose and seal slab cracks is not recommended. This would require removing screen enclosures and door panels, again. Going to this extent to seal cracks in areas that are intended to be wet areas, for configurations that were not part of original construction, will likely cause additional damages to fragile, older doors or windows. Doors, windows, and screen enclosures are intended to be permanent and only installed one time.

RECOMMENDATIONS

1. At one unit, recommendations included cleaning and checking for weep holes to ensure the bottom track is shedding water as quickly as possible. If they are blocked or caulking is found to be blocking the weep holes, rework as required. Water in tracks is normal.
2. At the other locations, the contractor was asked to seal the hidden slab cracks by pressure epoxy injection or hydro-active grout at each side of the SGD bottom tracks. This may require removal of some railing and/or screen framing.
3. As expected, cleaning and re-caulking the exterior side of SGD framing always helps. ■

Slab Edge

