

Effects of Water on Concrete Balconies

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Balconies can be a promotional highlight of a residential building, giving the unit owners the opportunity to step outside and enjoy the view. While sipping evening coffee and reading a good book, most people will notice the cool breeze long before thinking about their balcony's stability. However, structural durability should be a forethought because balconies are more vulnerable to deterioration than any other building element. Balconies can be a nightmare if water penetrates the concrete base and compromises its structural integrity. For this reason, water-retaining carpets are strongly discouraged and waterproofing paints/sealants are recommended for new and existing decks.



Impermeable paints or sealants are required to prevent concrete corrosion. However, when constructed, the vast majority of balconies are left without any waterproofing protection. Water is destructive because when combined with concrete and steel, an electrochemical reaction results in oxidation. The by-products of oxidation take up more space than the base metal and cause the concrete to spall away from its reinforcing steel. Simply put, when balconies are not waterproofed, water can seep into the porous concrete and rust the structural steel reinforcement within it. Rusted, steel expands which then causes the concrete to crumble and fall.



Deterioration rates vary due to the specific circumstances of the building. One of the most damaging factors leading to the rusting of reinforcing steel is outdoor carpeting. Like a sponge, carpets absorb moisture and remain damp for long periods of time. Carpets keep the balcony in a state of perpetual wetness, speeding up the deterioration process. Shallow concrete over reinforcing steel, water infiltration in railing embedments and insufficient drainage also accelerate the corrosion process. In winter months, the water that has seeped into the concrete freezes and expands then melts and returns to its normal mass. During these freeze/thaw cycles, the potential increases for the reinforcement to corrode and concrete to crack and spall. Once the decay begins, small cracks can worsen and lead to an accelerated attack of the balcony's structural integrity.



To prevent water damage, the surface of outdoor balconies must be protected. Latex-based paints provide water-resistance for concrete with moderate wear. More durable alkyd, epoxy or polyurethane based paints are designed to rainproof balconies that are subject to heavy foot traffic and patio furniture. Painting also allows for caulking, sealing and patching of any cracks or worn sections to further prevent possible moisture and ice damage. Take it a step further with surface sealers that penetrate the concrete surface and fill cracks to provide even more protection from water damage.



Whichever waterproofing finish you choose, it will be a vast improvement over any moisture trapping carpet sold as an outdoor product. Each layer of protection will help prevent further moisture absorption, enhancing the longevity of the concrete balcony and the property value of the unit. By decreasing the amount of water reaching the concrete embedded steel, community associations can prevent the most common types of deterioration so that homeowners enjoying the open-air can continue drinking their coffee and reading a book without a thought about the steel reinforced concrete beneath their feet.