

Are Drones Ready for Façade Inspections?

After a pedestrian was killed by a piece of falling debris from a 17-story building in New York City in December 2019, city government leaders called for mandatory drone inspections of building façades within 48 hours of a complaint being reported to the city's Department of Buildings. This comes despite a law that currently prohibits most use of drones over city streets. Some professionals question the viability of drones as an inspection tool. CTBUH asks two related professionals, "Are we ready for drone façade inspections?"

✓ YES

Scott Harrigan

Technical Director, AeroSpect Inc.

There are over one million drones in use today, and the safety record is by far the highest compared to any other category in aviation or construction. Ask any drone pilot about their insurance policy and they will explain just how inexpensive their aviation liability is: insuring my entire fleet for \$1 million in commercial injury liability costs just about \$3,000 per year. I pay just about the same to insure my one car. Consider also this Occupational Safety and Health Administration (OSHA) figure: In 2018, 33.5 percent of construction worker deaths were the result of falls from height—the largest of any single hazard category.

While drones cannot identify every possible façade failure scenario on their own, they are able to easily and quickly create a visual "map" of an entire façade. A façade that may take days to cover completely by physical inspection takes mere hours with a drone—and the speed and variety of airborne sensors (photo, infrared, LIDAR) grows every day. After the drone is deployed, a properly qualified façade inspector can then review the data collected, giving them a complete view of the façade, so they can determine the critical locations to prioritize in a hands-on inspection. This level of insight makes the inspector's job safer and more efficient. The drone cannot replace a qualified inspector—but a qualified inspector's resources are not infinite. Any technology that can guide their inspection makes them a better inspector.

While New York City's Local Law 11 Façade Inspection Program requires physical inspections every 60 feet (18.2 meters), this is an arbitrary, height-based requirement, and 100-percent compliance with this rule is no guarantee of finding all dangerous façade conditions. The inspection is also required once every five years. Where along this length should a qualified inspector start looking? Since drones are inexpensive to deploy, using them early, and more often than once every five years, allows building professionals to catch issues before they become dangerous situations.

✗ NO

Jarrett Huddleston

Principal, CANY

Setting aside potential issues of public safety relative to the use of drones in a high-density urban environment, associated liability, and the present lack of clarity concerning their regulation, it's clear that drones can significantly contribute to any façade investigation / inspection protocol.

That said, the limitations of drone access should be clearly understood. Even if they can be utilized safely and in compliance with local ordinances, there are critical aspects of any façade assessment that drones cannot satisfy. First and foremost, drones offer no ability for "hands-on inspection" as stipulated in the New York City Façade Inspection and Safety Program (1-RCNY 103-04) and the façade ordinances of other major cities. As any experienced Qualified Exterior Wall Inspector (QEWI) or

competent façade technician knows, many materials suffer fracture, spalling, or bond failure parallel to the plane of the wall, at present detectable only by hands-on means. Drones cannot be used to perform sounding of stone, concrete, terra-cotta or brick masonry. Drones provide little or no capacity to execute destructive and non-destructive testing, veneer wall-tie scanning, or investigative probes. If hazards are discovered, drones cannot be used to carry out removals or provide mitigation of unsafe conditions.

Industrial rope access (IRA) offers a safe, efficient and cost-effective means of thoroughly accessing and inspecting facades of almost any height or configuration. With New York's façade ordinance now requiring drops every 60 feet (18.2 meters) on any façade fronting a public way, IRA is ideal for performing essential hands-on inspection and sounding necessary to identify spalls and other material failure undetectable to the eye or through contemporary digital documentation. With proper rigging and protective measures, IRA also allows for testing, scanning, probes, and removals which are becoming increasingly important, given the aging of the built environment. While drones can offer a significant contribution to a façade inspection and safety program, current technology limits their usefulness in critical areas of assessment.

