

CTBUH Journal

International Journal on Tall Buildings and Urban Habitat

Tall buildings: design, construction, and operation | 2020 Issue II

Case Study: Trinity, Paris

Preparing High-Rises for Drones

Tall + Urban Innovation 2020: Trends

Chicago Code Changes: Structural Engineering Impacts

Double-Skin Façades for the Mediterranean Climate



Hopefully many of you are well-aware of the CTBUH Awards program. I find it particularly gratifying to see reflected in the program some of the innovations that were trailblazing 10 years ago, and thus recognized with the 10 Year Award today, manifesting so thoroughly through the projects we are honoring throughout the 2020 program. I would like to think that, through initiatives like our awards program and publications, CTBUH has played a small part in "mainstreaming" ideas like double-skin façades and material-saving/solar-screening exoskeletons on tall buildings.

It is also a major ambition of CTBUH to not only illustrate best practices and mark the progress of the world's skylines, but also to provide thought leadership for an industry that is only getting more multi-disciplinary and integrated with global, society-shaping forces. That's why I am so thrilled with the agenda that is forming for the 2020 Conference in Singapore and Kuala Lumpur, *Humanizing High Density: People, Nature & the Urban Realm*. We have had more than 300 abstracts submitted, but more importantly, the quality and relevance to the themes—some of which are relatively new to our universe—is of the highest level I have seen in my time here. Of course, that means our

task in the CTBUH offices is that much more difficult—narrowing down which of all these great abstracts ultimately become the presentations you will see in October. By the time you receive this issue, those agonizing decisions will largely have been made. Your decision about attendance has more time, but only just a little—regular rate registration ends on 1 May, so delay no further and go to registration.ctbuhconference.com today!

I would also like to take a moment to remind you of another important role CTBUH plays in this community—that of a funder of research. We are again pleased to announce that we are accepting applications for the 2020 International Research Seed Funding and Student Research Competition. Both of these competitions will net \$20,000 in funding and be recognized at the 2020 Conference. These represent excellent opportunities for talented researchers to obtain further funding, and for students to create an engaging output that will advance the cause of sustainable vertical urbanism. Apply before 18 April at ctbuh.org/research.

Lastly, I want to recognize some of the people who have been making, and will continue to make CTBUH a great organization. It is my pleasure to announce that Shonn Mills, Global Director, High-Rise for Ramboll Group, is a new CTBUH Trustee. You can learn more

about Mr. Mills in Meet the CTBUH (see page 56), that is, if you are not already aware of his boundless energy and devotion to CTBUH! In addition to great project presentations, the following people are being recognized in this year's Awards Program:

Lynn S. Beedle Lifetime Achievement Award: Moshe Safdie, *Principal, Safdie Architects*

Fazlur I. Khan Lifetime Achievement Award: Wuren Wang, *Vice Chairman, General Manager, CITIC Heye Investments. Co., Ltd.*

2020 CTBUH Fellows:
 Prof. Guo-Qiong Li, *Professor, Structural Engineering, Tongji University*
 James Parakh, *Urban Design Manager, City of Toronto Planning Division*
 Javier Quintana de Una, *Principal, IDOM UK*
 Irene Wai, *General Manager, Kai Shing Management Services*
 Carol Willis, *Founder, Director and Curator, The Skyscraper Museum*

Please join me in congratulating all of them.

Antony Wood, CTBUH Chief Executive Officer

Recent New Organizational Members

We would like to welcome the following new organizational members who joined between 7 January–5 March 2020

Contributor



Cove Property Group, New York



Doka GmbH, City



CSSC Complex Property, Shanghai



Steinberg Hart, Los Angeles

Participant



Bespoke Design Group, Hong Kong



GenX Design & Technology Consulting, New York



Nagasaka Corporation, Tokyo



Reiser + Umemoto RUR Architecture New York



Maike Centre, Xi'an



CIMET Arquitectos, Mexico City



MZA Architecture, Bellevue

Supporting Contributors are those who contribute \$10,000; Patrons: \$6,000; Donors: \$3,000; Contributors: \$1,500; Participants: \$750; Institute/Association: \$500.

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 façades 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.

