

Buckets & Ropes & Drones

Oh My!

It happens every five years, like clockwork. Expensive clockwork. Co-op and condo boards in buildings with six or more stories are required, under Local Law 11, to arrange for a hands-on facade inspection by an architect, engineer, or other qualified inspector. Now, some

boards are discovering alternatives to the conventional scaffold drop, where the inspector rides a motorized scaffold down a representative section of each exterior wall. These alternatives are so cost-effective that in some cases it's possible to drop the scaffold – as in, not use a scaffold at all.

How? Primarily two ways: using bucket trucks, also known as “boom trucks” or “boom lifts,” and commonly used by firefighters; or having your wall inspector rappel on ropes from the roof to the ground. Both methods satisfy the city's requirement for a “physical examination,” according to architects, engineers, and building managers experienced with Local Law 11, now formally known as the Facade Inspection and Safety Program, or FISP.

“Depending on the building's construction and configuration, the

engineer or architect can conduct hands-on facade inspections by boom lift or industrial rope access,” says architect Stephen Varone, president of RAND Engineering & Architecture. When operating a motorized scaffold is not feasible – in buildings with sloped roofs, closely spaced terraces, or angled facades, for instance – Varone says that boom lifts and rope access may be the preferred options.

Such alternative tools and techniques may not work for every building. A clump of trees may prevent a boom truck from getting its bucket close enough to a particular wall, for example. But many co-op and condo boards are finding that the alternatives might be cheaper than scaffold drops, while allowing the inspector to cover more of the facade in the same amount of time, providing a larger and more accurate sample.

New
Ways to
Inspect
Facades

BY FRANK LOVECE

SPIDER-WOMAN:
RAND project architect
Sara Tsiropinas performs
a facade inspection by
industrial rope access
at a 33-story building in
downtown Manhattan.





Obstacles and Advantages

“Usually when we survey a building, we’re using myriad techniques to map what’s happening on the facade,” explains architect Scott Kamen, a principal at Kamen Tall Architects. This starts with a ground inspection, generally using binoculars, to determine the most likely places a building has been damaged by wind, sun, or abuse from a neighboring smokestack.

Once that representative sample is chosen, the inspector does a close-up, hands-on examination. While this can be done using an exterior fire escape, those are rare on buildings of over six stories. “The traditional method,” Kamen says, “is a suspended scaffold, usually 20 feet wide.” If you’re lucky, the scaffold can simply be hung from hooks on the parapet, which is relatively inexpensive. If this is not possible, then it needs to be mounted with a system of outriggers and counter-weights that workers have to haul into your building, up to the roof – and deeper into your bank account.

“A scaffold drop has been the traditional way,” agrees Eric Vonderhyde, a principal at Bertolini Architectural Works. “But you’re constrained to its area and it’s hard [for the inspector] to look beyond it. With a bucket truck, you can move that thing around quite a bit – 40, 50 feet left or right, because the arm telescopes.”

Scaffold drops aren’t cheap. Aside from the cost of the inspector, a single drop can average from \$3,500 to \$7,000 to install, operate, and dismantle. At least one scaffold drop is

OLD VS. NEW:
a traditional suspended scaffold (above) and a bucket truck (right).



required for each wall, whether it faces a street or a courtyard.

Vonderhyde estimates that bucket trucks start at \$7,500 for a smaller building and can be \$15,000 (including the cost of an operator) for one that can go 180 feet up. But because you can cover the same area as you could with three scaffold drops – and some buildings have three or four exposed facades, each requiring a drop – the price is about the same.

“At 90 percent of my buildings, it’s a boom truck,” says Vito Mangini, director of management at Tudor Realty Services. One reason the trucks are popular with boards, he says, is there’s no need to bring scaffolding equipment into the building. “You pull the truck up, have couple of flag men on the street, and there’s an engineer and an operator in the bucket,” he says. Philliss Nappi, a building manager with AKAM Associates, adds, “Any time you don’t have to bother one of your unit-owners or shareholders, it’s a good thing. You can avoid going into residents’ apartments or out on their balconies.”

And since equipment does not have to be installed on the building, there

is no downtime, says Vonderhyde. A scaffold normally takes a day for installation, a day for inspection, and a third day to break down and remove it. “It can turn into four, five, six days depending on the weather, scheduling, stuff like that,” he says.

In terms of permits, a contractor doing a scaffold drop must obtain a Department of Buildings (DOB) CD5 permit, a complicated process, while a contractor using a bucket truck simply needs a \$50 Department of Transportation permit.

Boom trucks have limitations aside from the aforementioned trees. “There are a lot of narrow streets where you can’t fit a boom truck,” says Vonderhyde. Other problem areas are the backs of buildings or courtyards with no street access.

When a facade is inspected by rope access, the DOB requires two individuals per job, both trained and certified either by the Pennsylvania-based Society of Professional Rope Access Technicians (SPRAT) or England’s Industrial Rope Access Trade Association (IRATA). They also must be New York City-certified licensed riggers, either a special



**GOES WHEREVER
A SPIDER CAN:**
inspecting a facade
by rope (left) and with
a drone (below).



SHUTTERSTOCK/PHOELIXDE

rigger or the more advanced master rigger. “The master rigger is the person setting all this up,” says Kamen. “The master rigger can close the sidewalk if deemed necessary. The master rigger is the one who ties off the rope and makes sure it’s safe. And, boy, does New York City need more master riggers. There just aren’t enough of them to go around.”

Kamen pegs the cost of rappelling at roughly one-quarter of the cost of scaffolding. “It might be \$5,000 for an entire day,” he says, “but a SPRAT inspector can perform many, many more drops.” While each is narrower than the 15- to 20-foot width of standard scaffolds, the larger number of rope drops covers more area for the same price.

Day of the Drones

Then there are video drones, which are supplementing – and might wind up supplanting – binocular views. They’re of particular use, says Vonderhyde, on buildings that are ornate, with hard-to-reach, hard-to-see areas.

A drone inspection, like binocular views, can be used to pinpoint problems, although arranging one might involve jumping through more hoops than your board wants.

According to Jim Peters of the Federal Aviation Administration (FAA), “With the exception of lower Manhattan, the northern edge of the Bronx, and the western half

of Brooklyn, most of these boroughs are within the LaGuardia or John F. Kennedy airports’ Class B airspace. There is also a sliver of Staten Island on the northwest side that is in Class B airspace of Newark airport. Anyone flying an unmanned aircraft system or drone in these areas must have clearance from the appropriate FAA facility, such as the airport’s control tower, prior to flying in the area, and they must notify any airports that are within five miles.” Boards that hire engineers who use drones for inspection purposes should ensure that the drone operator has received a waiver allowing him or her to fly in controlled airspace. This process can take up to 90 days.

“However,” says Peters, “even in the excluded areas, other airspace operating rules may apply,” such as a New York City regulation that “prohibits aircraft from taking off and landing in the five boroughs, except at public and private airports, heliports, seaplane bases, and in emergencies.”

Drones also do not fulfill the “hands-on” requirement of the DOB, which means that any defects that are found via drone must be physically examined to identify the type and extent of the damage.

In addition to using drone video to pick a representative sample of a facade, an engineer or architect can use those images to help prepare

highly accurate bid specifications for any repair work that may be needed.

And on the horizon? “It’s still cost-prohibitive, but we’re looking at laser scanning,” says Vonderhyde. “That generates a very accurate 3-D image of buildings, depending on the equipment, down to 1/64th of an inch. You can actively monitor cracks and defects by going back and scanning every so often.” The scan is accurate enough to recognize if a crack grows half an inch.

“We’ve used it on very ornate buildings – we’ve mapped where all the stones are, the terra-cotta units, joints,” adds Vonderhyde, who notes that it is not practical yet for most buildings because a scanner costs \$75,000 to \$100,000, and the images it takes aren’t 3-D. Rendering it in 3-D requires a trained user to translate that information into a drawing, which can cost around \$15,000. “We’re a decade away from this being used more often,” says Vonderhyde.

In the meantime, notes RAND’s Varone, quicker mobilization, easier set-up, and fewer equipment requirements mean that boom lift and rope-access inspections can sometimes be more efficient and less expensive than inspections from scaffolds. In the end, scaffolds still have their place. But thanks to affordable alternatives, that place doesn’t have to be your building. ■