



ROBO-DROP
Yes, you live in a world with demolition robots. We're talking heavy machines, like tanks, that can move through buildings on tracks and even climb stairs. They can reach about 20 feet in the air with giant chisel arms, crushers, shears and other destroying implements. It's no "Terminator" scenario — these robots are typically remote-controlled by people. Husqvarna and Brokk, both Swedish conglomerates, manufacture such robots, which could run you in the neighborhood of \$200,000 apiece. Or companies can rent one for just a couple thousand for a week, for example.

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LET'S WRECK'N'ROLL

How to dismantle a building? So many ways, apparently.

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There's more than one way to demolish a building — and most no longer involve a wrecking ball, no matter what Miley Cyrus might tell us. Yes, we know all about cranes and bulldozers. We've seen excavators, which are trucks with long, hydraulic arms usually wielding a bucket with teeth or a hammer or claw or giant drill on the end. But we wanted to take a look at some lesser-known demolition methods playing out around us. Of course, robots are involved.



Building implosion

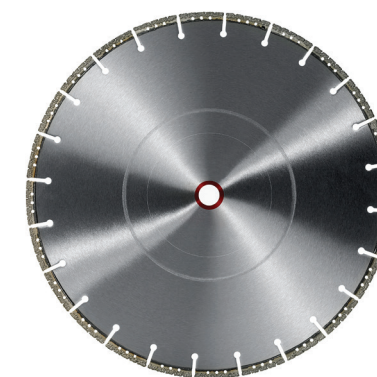
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TIME TO IMplode

Implosion techniques are used in less than 1 percent of all demolition work, per the D.C.-based National Demolition Association. It's not just a case of well-placed dynamite or cartoon boxes of Acme TNT — there's a lot of preparation involved. Construction companies first examine a building's blueprints to pinpoint its main support structures. Then, workers tour the building, often a few times, to take notes and see details in person, sometime 3D-scanning areas. Next,

a team takes out those support columns with sledgehammers or steel-cutters, readying it for collapse. Eventually, blaster crews place explosives in strategic positions to implode the whole structure as neatly as possible. A successful implosion is when the building collapses inward, into its own footprint, leaving other nearby structures unharmed. If there are no nearby structures, then blasters will work to knock the building over on its side, like felling a tree.

DIAMONDS ARE A CONTRACTOR'S BEST FRIEND



Diamond-cutting has nothing to do with jewelry. This method, using drills and saws (pictured) embedded with diamond grains, lends an extra measure of control to the destruction. It's especially useful when cutting up or breaking down concrete, stone or brick. Diamond tools use the world's hardest substance as an abrasive, cutting faster and cleaner than anything else. When you want to destroy stuff, but want to be really precise, you might end up using diamond-cutting tools.



Thermal lance

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PLAYING WITH FIRE AND WATER

Those two primal elements offer still more ways to dismantle a building. In one method, jets of high-pressure water are used to cut through and tear down a structure. Sometimes, other abrasive substances are

added to the water, to help it cut through denser materials. Another method uses something called a thermal lance — basically a big steel pipe with a metal-melting torch on one end.

UNDER PRESSURE



Pressure bursting quietly breaks up concrete.

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This sounds like it would be loud, but pressure bursting is one of the quietest methods of breaking up concrete. This can be done using either chemicals, by injecting them into bored holes, or by mechanical tools that apply hydraulic pressure. Either way, the result is less of an explosion and more of a slow buildup of cracks until the concrete fractures into smaller pieces. It results in a lot less dust than an implosion, for example. Mechanical bursting is also one of the most effective demolition techniques to be used underwater.

RAZE STUDIES

DEMOLITION MAN



Wootton

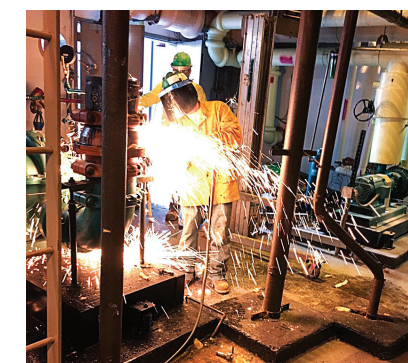
Tom Wootton is managing partner of Gaithersburg-based Selective Demolition LLC, which helps government, commercial, institutional and industrial clients with their demolition jobs. Wootton talked to us about three different types of local demolition projects his company has undertaken in the past year. And all three help lead to one big takeaway: If you tear it down, you need a plan to clean it up.

► **Client:** James G. Davis Construction Corp.

► **Location:** Stafford Place, 4121 Wilson Blvd., Arlington

► **Time frame:** Nov. 2017 to Feb. 2018

► **Wootton's take:** "It was a 12-floor complete interior demolition, with some exterior façade demolition as well. For the interior, we had to demolish all architectural finishes, the mechanical penthouse and stair openings. Outside, we performed a partial façade demolition, as the new design called for a completely new façade and entrance. We extensively used our Brokk, which is an electrically powered, remote-controlled concrete breaker. The Brokk allows us to demolish concrete in areas that are otherwise out of reach or unsafe to access. We used the Brokk to break the concrete on the façade of Stafford Place, where our employees were able to operate the machine out of harm's way — without the danger of falling or having debris fall on them. We also used our walk-behind concrete saws, mini-excavators and skid-steers. All debris was removed out of the building via material hoist or elevators. This project had a 75 percent waste diversion plan."



► **Client:** Harvey-Cleary Builders

► **Location:** 2033 K St. NW, Washington

► **Time frame:** March 2018 to present

► **Wootton's take:** "The exterior aspects included window replacement, parapet, balcony, roof structure and precast demo. The interior was a partial demolition of certain floors and lobbies within the building. Here, we used our Brokk on the balconies, which would otherwise be unsafe for our employees to access for demolition. Our wall saw is an electrically powered and remote-controlled concrete saw. This allows us to control speed, depth and accuracy of the cut. Because the track is bolted to the slab, it's a perfect cut and can be used on concrete slab or concrete wall. We also used a walk-behind saw. All material was removed through the building via elevator. The majority of window, structural balcony and roof work was performed at night."

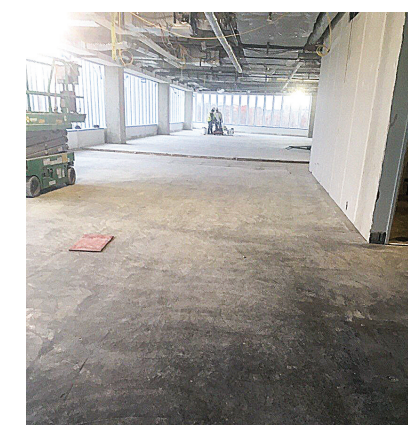


► **Client:** Hitt Contracting Inc.

► **Location:** Floors 5-11, 7950 Jones Branch Drive, McLean

► **Time frame:** Oct. 2018 to Feb. 2019

► **Wootton's take:** "This interior job consisted of demolition and removal of all existing finishes, with an aggressive schedule of finishing each floor in three weeks, using only elevators for debris removal. This demolition job required extremely strict time management and a large amount of manpower to meet the schedule and utilize the elevators to remove all debris through the building."



PHOTOS COURTESY SELECTIVE DEMOLITION