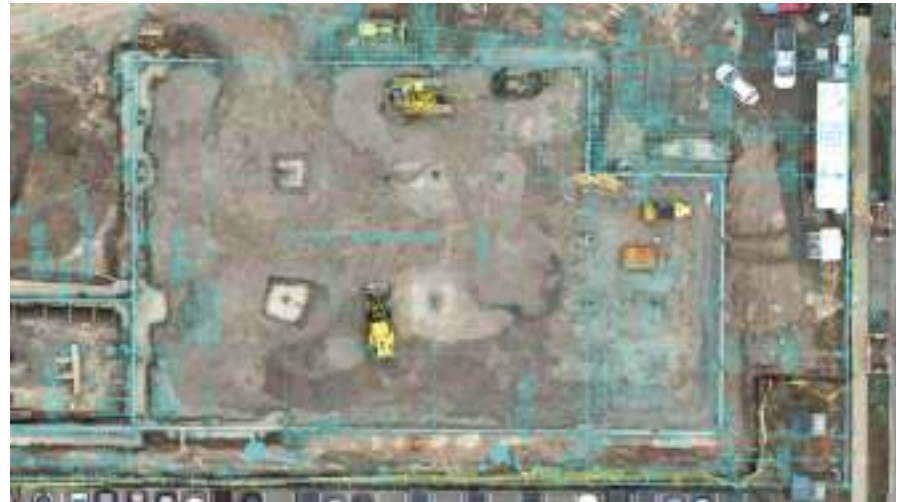


# Drones prove their worth in construction projects

The high-accuracy maps produced from the drone data can be overlaid with a wide variety of PDF files, including site plans



An aerial drone picture at a construction site is overlaid with information (Images supplied by Adam Caldwell)

BY JOHN MINER, *Ontario Farmer*

Stratford - After about five minutes of flying his first drone, Adam Caldwell came to the realization he needed to start doing something with it.

For Caldwell, that turned out to be using drones as a tool in the construction industry.

Active in the drone industry since 2017, he is now the lead drone pilot in the virtual design and construction division of Maple Reinders, a national general contractor headquartered in Mississauga that has completed more than 2,800 projects.

In a presentation to the Canadian Farm Builders Association conference in Stratford, Caldwell described how drones are being used for high-accuracy mapping of construction sites.

"Having that accurate, detailed record from the very beginning before boots are on the site is proving to be important all the way through every stage of construction," Caldwell said.

Besides a drone, the equipment needed for high-accuracy mapping includes a GPS unit and physical markers on the ground. The drone knows the exact location and elevation of those ground control points and can provide data within two-centimetre accuracy.

One use of the mapping is tracking construction progress.

On a set schedule, Caldwell's teams will return to a site and capture a 360-degree view of the site that can be shared with clients, consultants and stakeholders.

The high-accuracy maps produced from the drone data can be overlaid with a wide variety of PDF files, including site plans and where underground utilities are to be installed.

"This has been used many times to catch issues, missing components, and things that are not allowed or inappropriately installed. It's a visual tool, but it also can enable you to catch issues."

Construction moves fast and in a day things can be exposed, installed, and buried. Having a competent drone operator on project teams makes it possible to track and document construction as it happens, something that is proving more and more valuable, Caldwell said.

The data from drones can also be used to calculate stockpiles of materials on a site, allowing teams to monitor what has gone out, what has come in, and what has been moved around.

Drones are also used to extract elevation data on a construction project, determining whether the

correct slope has been used on a roof or sidewalk installation.

Before working with drones, Caldwell spent years inspecting roofs across Canada for a building envelope manufacturer, looking for leaks, saturation of materials and heat loss. It was all done by hand, working with ladders and a camera.

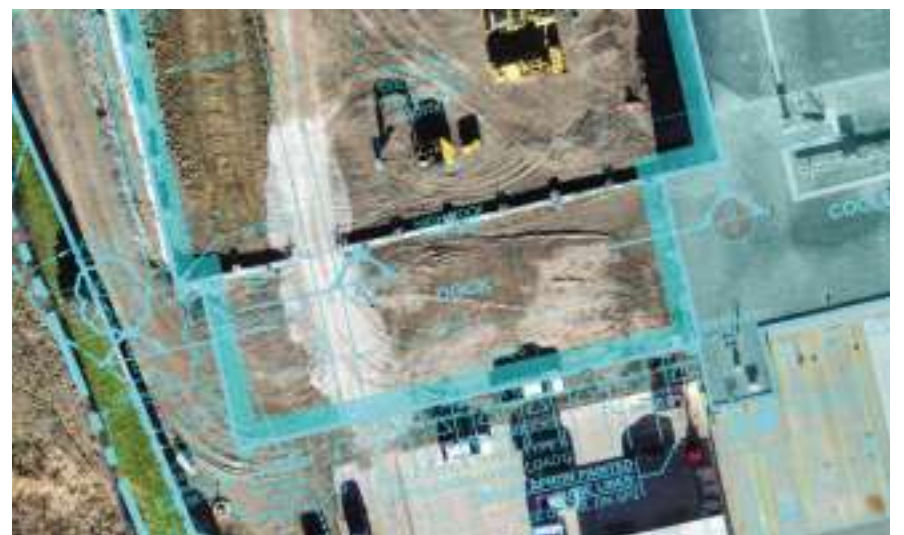
"Late at night, alone in rural Quebec, you knew nobody is there to get you if you fall."

It occurred to him it would be easier and safer with a drone. Over time the price of the technology came down, making it feasible to use drones for such inspections.

The drone inspections also make it possible to detect flaws and remediate the problem before a contractor leaves the site, he said.



**Adam Caldwell:**  
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