ROADBuilder
WINTER 2015/16
The quarterly publication of Ontario Road Builders' Association

ORBA Members Lead the Change
As road builders embrace technology

By Holli Moncrieff

This is an extended version of the article featured in the 2015/2016 Winter issue of *Road Builder* magazine.

Technology is changing the way business is done, and nowhere is that more true than in the road-building industry.

Lauren Lake is the co-founder of Bridgit, a Canadian software company that offers mobile solutions for the construction industry. She says the industry-wide adoption of mobile devices has the potential to dramatically improve communication, while resolving issues in a timely manner.

"Mobile devices are finally starting to be widely used, both in the office and in the field," she says. "It opens up the possibility of having all these evolved solutions."

There is a caveat. In order for mobile devices to have the greatest positive impact on a company's business, everyone on the team has to use them.

"You can get this whole team approach when everybody has this added method of communication," says Lake. "You can't have just half the team getting information through their smart devices."

An example of one of the applications that can be used to improve communication is Bridgit's Punch List.

"Our Punch List software streamlines the process that happens at the close of any job. Resolving outstanding issues is known to be a headache in the construction industry," Lake says. "Now you can take a photo of the problem with your phone, and the tradesperson will get a notification right away. Previously, it could be days—if not weeks—before all the people got the information they needed."

Another technological advancement she believes will become more widely used in 2016 is drones.

Some of the tasks drones can be used for include aerial photographs, site investigations, and site analysis.

“People are using drones for all sorts of things—assessment of areas that are not easily accessible to humans, or where it’s not safe for people to assess,” says Lake. “Drones have a whole bunch of applications in our industry—they’re an efficient way to get more information than we’ve ever had before.”

Lake also sees the industry embracing the use of wearable devices, and expects that will become more prevalent in 2016.

“Wearable technology has become really popular over the last couple of years in the construction industry, but more and more industries have started using it as well,” she says. “If anyone needs wearable devices, it’s the construction industry.”

Industry professionals are already using smart glasses to take site photos. Through the use of models, a smart helmet can show the wearer exactly what a site is supposed to look like at completion.

“The smart helmet is a hard hat that has a screen that comes down in front of the eye shield, delivering a whole bunch of information,” says Lake. “Like other wearable devices, it allows for more hands-off use. There are lots of different possibilities there. It aligns so closely with what people need.”

When it comes to which technology is the most valuable, it really depends on the company. From drones to GPS-guided drills, here are some of the top picks for the technological advances that are destined to have the most impact on the industry.

Topcon Sokkia

Hardware and software innovations will continue to make data collection easier in 2016, predicts Paul Conrad of Topcon Sokkia.

“The construction industry is looking towards safer, faster and more efficient means to collect and archive spatial data,” he says. “In addition, software and workflows are making an impact. Building information modeling (BIM) is certainly a trendy buzzword and is slowly making inroads into the Canadian culture. BIM is more of a process than any specific piece of software or hardware.”

As for other trends, Conrad says drones, or unmanned aerial vehicles (UAVs), are having the biggest impact in the industry. Mobile scanners are also important, as they collect

terabytes of spatial data, and terrestrial scanners are becoming the standard in as-built monitoring projects.

Austin Powder
Austin Powder sees technology allowing for safer and more precise blasting during road and construction work. Society will no longer tolerate damaging vibrations and unsafe blasting (fly rock) as a cost of doing business, says Keith Taylor, General Manager for central Canada.

“We’re seeing a lot more drills that are GPS controlled and low-density explosives with electric detonators,” he says. “This allows a lot more accuracy in our drilling patterns and more grade control. We have better control of the blasts and better fragmentation.”

Electronic detonators allow for precise millisecond timing of blasts with no unintended overlaps of firing holes. Computer modeling of the blast allows for the accurate prediction and control of vibration. These detonators are used daily in quarry blasting, but due to cost, there is resistance in the road and construction industry.
Taylor says this technology is well worth the added expense.

“It’s more expensive, but it more than makes up for it in productivity and the amount of drilling you have to do. You have to think about the end-unit cost.”

BOMAG (Canada) Inc.
BOMAG developed the ECONOMIZER for plate compactors, but it has been expanded to most of the company’s tandem and single drum vibratory roller lines. This unique compaction technology automatically indicates the degree of compaction in real time.

“It can be used to improve compaction results on a wide variety of applications, from driveways and parking lots to country roads and highways,” says Dan Church, Sales Manager for BOMAG. “Contractors can use ECONOMIZER to do proof rolling and search for and address weak areas. It also helps avoid over compaction, fracturing of the aggregate, and costly removal and replacement of material.”

Since the operator can see immediately when compaction has been optimized, ECONOMIZER helps to avoid unnecessary passes, which result in wasted fuel and time.

Toromont CAT
Technology is also being used to improve industry safety. Toromont CAT is seeing a push towards using technology to fight operator fatigue.

“One product uses a vision system to track the operator’s eye movements to see if they are distracted or about to fall asleep. The alerts are sent back to a manager to review, including a video clip of the incident,” says Dan Martin, EM Solutions Supervisor. “The

system also lets you do an in-vehicle alert through an audio system, or send vibrations through the seat."

Another safety measure that's being included in excavators is integrated grade control.

"This results in big productivity gains, because you don't need to have a grade man hopping in and out of a hole," Martin explains. "This is starting to become a factory standard. The machine knows exactly where the bucket is and when it hits grade."

This technology can also be used to limit the excavator's movements around power lines or buried pipes. After a height or depth limit is set, the excavator won't allow the operator to extend the boom or bucket into a dangerous position.

Super Sucker

Super Sucker is a total solution provider, specializing in hydrovac excavation, coring, utility locating, daylighting, and backfill restoration. The company responds quickly to time-sensitive and emergency situations, getting on-site and excavating when their customers need it.

Bryce Jaspers, Business Development Manager for Ox Equipment, believes suction excavation will have a significant impact in 2016.

One suction excavation truck replaces the work that used to be done by many, simplifying the entire job. The process is up to 12 times faster, so overall costs are significantly reduced.

While the suction is powerful enough to pull up all debris in order to expose a targeted area, it's also gentle enough to prevent damage to utilities or cabling. This is especially important when the location of underground features is unknown. Worker injuries are reduced with less material handling and slip and fall hazards, and public safety is improved with more contained site areas, shorter project durations, and lower noise levels.

These technological advances will continue to improve efficiency and safety in the road-building industry, now and for many years to come.