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Cover photo: B.C. is upgrading 440 km of Highway 1 from Kamloops to the Alberta border. For the full story, turn to p. 18.
Federal carbon tax announced for 2018

The federal government recently announced that it is implementing a federal carbon tax starting at $10 per metric tonne of GHG emissions in 2018, which will increase by $10 per metric tonne every year until hitting the $50 per metric tonne mark in 2022.

The carbon tax will come into effect in any provinces that do not have a carbon tax in place by 2018. This currently includes Manitoba, New Brunswick, P.E.I., Newfoundland and Labrador, Nova Scotia and Saskatchewan – much to Premier Brad Wall’s dismay, I’m sure.

British Columbia has had a carbon tax in place since 2008 (currently at $30 per metric tonne of greenhouse gas emissions); while Alberta implemented its carbon tax in January 2017 ($20 per metric tonne of GHG emissions, with it increasing to $30 per metric tonne in 2018).

Ontario implemented a cap and trade system this year and performed its first cap and trade auction this past March. Quebec has a similar cap and trade system in place (Nova Scotia is currently considering this type of system but does not have a provincial system in place, as of yet).

To better understand the potential impact of the federal carbon tax plan, I touched base with tax expert Mitch LaBuick, partner, Indirect Tax at BDO Canada in Edmonton to learn more about how this new tax will affect businesses and individuals.

LaBuick has 25 years of experience working with indirect tax, including 10 years with the Canada Revenue Agency, and is an expert in carbon taxes and fuel taxes, among other tax-related issues. LaBuick says whether the federal government or a provincial government uses a straight carbon tax per tonne or a cap and trade system, one thing is abundantly clear: the cost of fossil fuels is going to go up for everyone.

He said that in 2018, a $10 per metric tonne of GHG dollar equivalent in a litre of gas would be 2.33 cents per litre, going up to 11.63 cents per litre at $50 per metric tonne. He added that diesel fuel will go up 2.74 cents at the $10 per metric tonne of GHG, increasing by 13.69 cents by 2022 at the $50 level; and that marketable natural gas (based on cubic metres) is expected to increase 1.96 cents per cubic metre at $10 per metric tonne, going up to 9.79 cents at $50 per metric tonne.

If you’re a fleet manager or owner in a road construction or aggregates production business, this probably isn’t the news you want to hear.

So how do individuals and businesses try and combat absorbing additional costs from their province’s carbon tax?

LaBuick says the answer is to take advantage of as many carbon tax-fuelled rebates as possible.

In Alberta, for example, the carbon tax is supposed to be revenue neutral, with every dollar re-invested to fund rebates for low-income individuals; as well as rebates for things like energy-efficient lighting, heat pumps and hot water systems to help businesses, hospitals and schools reduce their carbon footprints.

To offer our readers an opportunity to learn more about the impacts and opportunities around federal and provincial carbon taxes, Rock to Road has set up a special online Q&A with tax expert Mitch LaBuick on September 26.

To learn more about this unique opportunity to get all of your carbon-related questions answered, visit www.rocktoroad.com.

In the meantime, if you’d like to learn a little more about reducing your fleet’s idling times, turn to page 8 and see how a Kingston, Ont.-based contractor extinguished its fleet’s idling issues.
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**ISED names new president**

The Independent Equipment Dealers Association (IEDA) has named Kevin Fox of Barrie, Ont.-based Dewitt Equipment Co. its new president. The announcement was made during the association’s Annual Meeting and Vendor Expo held in Orlando, Fla. this past February.

IEDA also named four new board members at its meeting, which include Luke Brenner of Heavy Equipment Co. in Austin, Texas; Kenneth Tysinger with May Heavy Equipment in Lexington, N.C.; Chris Lohman with South Mountain Tractor in Tempe, Ariz.; and treasurer Kristin Waldie, BBA with CapStone Accounting in Minesing, Ont.

Members of the IEDA board of directors serve a maximum of two consecutive years and are responsible for establishing industry best practices and quality used equipment standards.

Outgoing board members include David Williams from International Construction Equipment; Tanna Trout and Rick Trout from Trout Machinery; Burt Cunningham from Global Tractor Co.; and Maurice Matson with Matson Machinery Company. During the annual meeting, all four retiring board members were presented with the IEDA Leadership Award, which is given to outgoing board members annually for their contribution to the organization.

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**Prince George hosts CNRE**

The 2017 edition of the Canada North Resources Expo took place in Prince George, B.C. this past May, drawing several thousand visitors to the CN Centre. The popular heavy equipment trade show featured the leading companies and products that are part of Northern Canada’s varied resources sectors – including forestry, heavy construction and major resources infrastructure.

The show covered four acres of indoor and outdoor exhibits and featured the Recruiting Here program for potential job seekers, designed to connect those looking for work with exhibiting companies who are currently hiring.

Other special features for the 2017 edition included an AiMHi Pancake Breakfast on the Friday morning of the show with all proceeds going to AiMHi, the Prince George Association for Community Living; and the 2017 Interior Safety Conference themed “Leading Safety – Building Strong Supervisors,” which included sessions on building strong teams and communicating with different generations.

The next edition of the show will take place in 2019.

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**John Deere to acquire Wirtgen Group**

John Deere announced that it plans to acquire the Wirtgen Group, a global leader in road construction equipment, for EUR 4.357 billion (approximately US$5.2 billion).

“The acquisition of the Wirtgen Group aligns with our long-term strategy to expand in both of John Deere’s global growth businesses of agriculture and construction,” said Samuel Allen, Deere & Company chairman and CEO. “Wirtgen’s superb reputation, strong customer relationships and demonstrated financial performance are attractive as we expand the reach of John Deere construction equipment to more customers, markets, and geographies.”

The Wirtgen Group has five brands across the road construction sector spanning milling, processing, mixing, paving, compaction and rehabilitation. These include Wirtgen (milling machines and concrete paving), Vögele (asphalt paving), Hamm (compactors), Kleeman (crushers) and Benninghoven (asphalt plants). John Deere intends to retain all of the brands of the Wirtgen Group, as well as the company’s existing manufacturing footprint, management, employees and distribution network.

The Wirtgen Group, based in Germany, has approximately 8,000 employees and sells products in more than 100 countries through a large network of 150 global authorized dealers. The company has more than 50 years of operating experience.

The transaction has been approved by Deere’s board of directors. The purchase is subject to regulatory approval in several jurisdictions as well as certain other customary closing conditions. The companies said they expect to close on the transaction in the first quarter of Deere’s 2018 fiscal year.
How the top 5 aggregate companies gather aerial intelligence

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Three years ago, Cruickshank Construction had a real problem with its idling time. In August 2014, the Kingston, Ont.-based company’s fleet was running upwards of 40 per cent idle time. Jason Makin, vice-president of materials and logistics with the firm knew this was not a sustainable practice, so he began researching ways to improve operator efficiencies.

Makin found a solution thanks to telematics reports he was receiving about his fleet from VisionLink data that was provided by Toromont CAT, which included the idling times of all of the company’s big iron.

“So we implemented a program to reduce idling time to 10 per cent,” explains Steve Cruickshank, CEO of Cruickshank Construction, adding that the program made sense both environmentally
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“In one-and-a-half years we changed a cultural behaviour.”

As the company rolled out the anti-idling initiative, Makin looked into identifying the reasons for the high idling times, which included constantly running equipment in the wintertime to keep the cabs heated, and running equipment all the time in the summertime to keep the cabs cool, as two of the main factors.

To try and reinforce the company’s new anti-idling program, Cruickshank regularly discussed the program in its internal communications.

“Some of the operators were hitting 10 per cent on a monthly basis, some of the guys were trying their hardest but couldn’t get there due to the nature of the work,” Makin says. “Everybody was trying, there was definitely effort. It was a topic of discussion in the management group—it always came up in discussion and received attention all the way to the operator level. We were identifying operators as the high idlers and the low idlers.”

To help boost interest in the program, Cruickshank turned the anti-idling initiative into a contest for the operators, which was a contributing factor to operators taking the initiative seriously. To keep the spirit of competition alive and well during the program, daily, weekly and monthly idling reports were released. Operators were awarded a “Top Operator” t-shirt for achieving a 10 per cent idle time on an equipment group for a month. At the end of the year, the company reviewed all of the operators’ idling times, identified those with the lowest idle times in each category, and awarded them $250 bonuses.

The initiative was a complete success and now the company looks forward to viewing its VisionLink reports from Toronto, which place the fleet’s idling times between eight and 10 per cent.

“In one-and-a-half years we changed a cultural behaviour,” Makin says.

By the time spring 2015 rolled around, Cruickshank Construction had met its goal of achieving a 10 per cent idling time overall. The company reduced its GHG emissions by 153 tons and enjoyed an annual fuel savings of approximately 57,000 litres.

In recognition of the company’s successful anti-idling initiative, the Ontario Road Builders’ Association (ORBA) awarded Cruickshank Construction with the 2016 ORBA Green Award for Outstanding Achievement for the company’s anti-idling initiative.
Johnny Hutchinson hasn’t lasted four decades in the industry by wasting money. That’s why Cheney Lime & Cement Company chose the T300™ when they needed a plant upgrade.

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Cost per ton and safety are king for aggregate producers.

If there’s any one thing the majority of crushing manufacturers can agree on, it’s that cost per ton is king when it comes to what their customers are looking for in their crushing fleets.

“Everything comes down to cost per ton and what can you do to reduce that for the customer,” explains Stephen Whyte, product manager of fast track and global track products for KPI-JCI and Astec Mobile Screens. “That’s not something new, I just think a lot of the information that helps them make their purchasing decisions is easier to get a hold of than it previously was.”

One of the ways producers are looking to increase their cost per ton as well as other operational efficiencies in their pits and quarries is through increased investment in automation.

“I think at the present when you start focusing in on key points of what dealers, distributors and end users are looking at – and big quarries and mining environments as well – it’s cost per ton and health and safety,” says Wayne van Antwerpen, crusher technology product manager for Terex Materials Processing Systems (Terex MPS), adding that automation will play a key role in the continued advancements of both. “Be it the static, portable or tracked, the biggest thing is automation… you’re going to see it more and more.”

“The trend over the last 10 years, at least, has been that most of the producers we come across are looking for more and more advancement in automation,” adds Mike Schultz, crushing product manager for Superior Industries. “They want the equipment to run independently and alert the end users of any harmful conditions, but otherwise, sit there and run and be automated.”

One factor increasing the demand for automated technologies is an aging workforce, particularly when it comes to maintenance personnel and operators.

“There’s a lot of experience that has retired in the last three to five years and we see that trend continuing, so we’re looking
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**JAW CRUSHERS**
Featuring the hydraulic gap-adjust jaw which senses an uncrushable object, releases 2mm at a time to prevent clogging. Jaw Range: 29 - 58 tons, producing from 300 - 450 tons per hour.
to design things in the equipment that will help with the training needs for new employees coming in,” says Matt Haven, president of Telsmith.

To assist new employees, Telsmith has focused on designing its latest crushers to be less maintenance intensive than they were in the past. The company also incorporated improved data collection into its control systems so maintenance and preventive maintenance is more predictable for staff, and to assist less experienced operators with meeting their targets.

“We built in self-diagnostics so if there is a problem it doesn’t take the electrical engineer to come out and troubleshoot,” Haven explains. “The operator is informed whether one of the sensors are closed or if there’s a cable that doesn’t appear to be communicating right. That’s helped them to make it very simple for the operations people to keep things operating. On the production side, we’ve tried to take the experience of an operator that’s been managing things for years and build that into the control scheme.

"Again, it doesn’t take a super-experienced operator to make sure everything is within specifications. So that intelligence built into the control system gives them some key performance indicators to measure whether everything is operating properly or not.”

**SAFETY TOP OF MIND**

Keeping employees safe is still very much a priority for crushing manufacturers.

Terex’s van Antwerpen says that safety is as top of mind for producers as cost per ton when it comes to what they’re looking for in their crushing equipment, and that increasing automation is a key part of the safety solution. "Folks should feel comfortable going in and working on the equipment," adds Schultz. “Obviously you’re always going to have your lockout and tag out procedures, but we try and design into our machines an ease of access... what we try and do is put ourselves in the spot of the guy holding the wrench or torch and provide them with the easiest access to the machine as possible.”

**HYBRID TECHNOLOGIES**

When it comes to introducing hybrid technologies into crushing equipment, this trend is expected to continue growing moving forward.

“I think you see that right throughout the industry,” says Whyte. “If you look at what John Deere, CAT, and Volvo are doing, it’s getting bigger and bigger all the time.”

Whyte says that one factor that is key to the successful introduction of hybrid technologies into the marketplace is reducing the number of new parts a crusher will have.

KPI-JCI recently introduced hybrid technologies into its GT440 horizontal shaft impact crusher and GT205 multi-frequency screen.

“We’re able to keep about 90 per cent of the machine the same as our diesel hydraulic machine, so our dealers are not stocking a lot of new spares,” Whyte says, adding that anyone who has invested in training on his company’s standard crusher can carry that knowledge over to their hybrid model. “Anyone who has had some training on the standard machine can operate this machine.”

Another key to selling hybrid technologies to new or exiting customer is being to show them what they can save on their bottom lines. “We’ve been developing a lot of ROIs to try and help customers make decisions,” Whyte says. “We can take it over 1,000 hours, or a couple of years, and give them a pretty good estimate on what they’re going to be saving.”

With the way technologies in the industry are constantly evolving, van Antwerpen says that no one manufacturer will always be leading the pack.

“I don’t think one individual OEM will lead all the time, I think they’ll leapfrog each other,” he says.

And with every new technology comes the challenges of proving its worth to an industry not always known for embracing change quickly.

“People are very cautious in our industry,” Haven says. “It always takes a little longer than you think it should, but once people see how it’s of benefit to them they get very excited quickly.”

**THE LATEST CRUSHERS FOR AGGREGATE OPERATIONS**

McCLOSKEY INTERNATIONAL

The new 154v3 Impact Crusher features an open chassis for ease-of-access; optional full length main conveyor or optional underpan under the crushing chamber conveyor; hydraulic adjustable magnet; and a new larger double deck prescreen for efficient fines removal. Main and side conveyors are now wider to accommodate a larger volume of prescreen discharge material, and to allow for better discharge from the crushing chamber. The 154v3 is designed for use in...
asphalt recycling, concrete recycling, rock crushing, construction and demolition.

www.mccloskeyinternational.com

POWERSCREEN

From the feeder right through to the product conveyor, Powerscreen’s Trakpactor 550 horizontal impact crusher has been designed to promote an easy and effective flow of material to minimize any potential material build-up and thereby ensure maximum uptime. The optional pre-screen unit has incorporated the same leading technology that has made the Powerscreen mobile screen range world-renowned. The 2.1-m pre-screen length and large open area allows the maximum amount of fines to be removed. Additional features such as the hydraulic inlet lid and the automatic adjustment system ensure ease of use for the operator, whilst the auto rotation system for blow bar changes also demonstrates the focus on machine safety. The Trakpactor 550 comes complete with the Pulse Intelligence system as standard. Powerscreen Pulse is a remote monitoring, fleet management system allowing crushing and screening equipment operators and owners to have access to key data. Analyzing this data can improve machine operation, increase uptime and allow in-depth reporting and fleet management.

www.powerscreen.com

ELRUS AGGREGATE SYSTEMS

The ELRUS 3054 Primary Jaw Plant’s chassis are constructed using heavy-duty WF iron that has been strapped and cambered for additional strength and support. Standard features include a removable feeder module consisting of hydraulic dumping grizzly, hopper and VGF that slide off in one or two pieces, onboard adjustable discharge conveyors, impact bed under jaw, 12 volt hydraulic levelling that enables fast set-up; and the company’s heavy duty tri-axe solid walking beam suspension for stability for moving the plant over rugged terrain.

www.elrus.com

TEREX MPS

Terex’s TC1150 cone is based on the 1000 and 1300 cones but with several improvements enhancing the performance and functionality. Key features include a nominal cone head diameter of 1,150mm, gross weight of 14 tons, 65mm standard long throw (300hp) and optional 50mm short throw (250hp). Large eccentric throw helps improve product shape and increases chamber throughput producing 220 to 260 tph at 25mm CSS (Max CSS 45mm). Other improvements include a newly designed upper frame accommodating all available concave liners; and a locking ring design eliminating the need to hammer in concave retaining wedges.
For the wedge ring and upper frame, the inner skirt has been better protected to accommodate for larger CSS increasing product size; and the stroke clearance has been increased, allowing larger maximum CSS and tramp clearance.

**TELSMITH**
The newest model in the line-up of T-Series crushers is the T500, which is designed to deliver maximum uptime availability while also minimizing maintenance costs. This 500-hp crusher contains a 356-mm (14”) maximum feed opening and is capable of processing between 285 and 775 tph. Features, such as anti-spin and fewer cylinders than competitive crushers provide the reliability customers depend upon to maximize their processing operations.

www.telsmith.com

**SUPERIOR INDUSTRIES**
Superior Industries new patent pending Valor Vertical Shaft Impactor (VSI) shapes aggregate, generates fines, and eliminates unsound material. Models are available up to 800 tph and maximum feed sizes up to 8”. The cartridge style, right angle pinion gearbox allows for a safe deck-mounted motor arrangement; and the hydraulically-powered lifting lid allows for safe and easy access to the crushing chamber.

Three different crushing chamber options are available, including rock on rock, rock on anvil, and shoe on anvil.

www.superior-ind.com

**KPI-JCI**
KPI-JCI and Astec Mobile Screens’ new hybrid technology was released on the GT440 horizontal shaft impact crusher. The new patent pending GT440 Hybrid features the company’s 42x40 horizontal shaft impact crusher, which can be offered in a 3 or 4-bar rotor configuration. The new hybrid technology allows the user to switch the unit to run completely from line power, or a generator, or diesel/hydraulic. With the new hybrid designs, 80 per cent of the units are the same as the standard diesel hydraulic units, limiting the new spare parts a dealer or customer must stock. The company's tracked impactors offer continuous crushing and tracking. The unit’s Overload Protection System allows end users the ability to maximize performance and production, by ensuring the unit is running at maximum capacity. The new hybrid technology is also available on the GT205 multi-frequency screen.

www.kpijci.com

**TESAB**
Tesab’s 700i Jaw Crusher is now easier to manoeuvre on site and transport due to its new weight (46,720 kg) and dimensions (11’ 4” x 10’ 9” x 54’ 9”) while still maintaining the original jaw crushing unit. It features Tesab’s new step deck vibrating feeders, allowing a higher throughput tonnage, improved material separation quality and the ability to handle dry, damp or wet material. The 700i can be fed by excavator as a standalone unit and also integrates into the Tesab range of secondary crushers and screeners. It offers a production rate of 350 tph; a maximum feed size of 700mm; and reduction ratio up to 4:1.

www.tesab.com

**KEESTRACK**
Keestrack’s H4 Cone Crusher is a light, compact plant that is fully automated to produce up to 250 tph at maximum feed sizes of 7 in. The plant can be equipped with a pre-screen with fines chute and with a three-deck secondary screen module with recycling conveyor for closed-circuit processing. A big feeder volume, large screening areas and high stockpile capacities allow very productive operations as an in-line or standalone unit. The H4 features a hybrid diesel-electric drive concept that guarantees economic fuel consumption, and the recently introduced full-hybrid version H4e even allows full electric operation through mains or an external gen set.

www.frontline-machinery.com
**SANDVIK**

Sandvik’s CS550 stationary cone crusher is a powerful secondary stage crusher for 700- to 750-tonne applications. Sandvik has completely eliminated plastic backing materials in the crushing chamber and improved the maintenance ergonomics. The standard automatic setting regulation system optimizes crusher operation for efficiency and adapts to variations in feed conditions by means of continuous liner wear measurement and compensation. The Hydroset system provides automatic hydraulically powered mainshaft positioning and overload protection to permit the passage of uncrushables.

www.sandvik.com

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**METSO**

Metso’s MX cone crusher features patented Multi-Action technology that allows for dynamic setting adjustment and wear compensation without having to stop the process. Both the piston and rotating bowl adjustments can be fully automated. End products can be measured even 10 times per second and viewed directly from the Metso IC crusher automation display. Producers can control and automate parameters such as cavity level, crusher speed, power, setting and piston pressure. It has a maximum power of 400 hp; maximum feed size of 10.5”; minimum setting of 5/16”; a 46.25” head diameter; and weighs 46,750 lb. The crusher has a maximum throughput of 430 to 600 metric tph; and sand production of 60 to 80 metric tph. www.metso.com
The section of Trans-Canada Highway that runs from Kamloops, B.C. to the Alberta border is an engineering marvel that winds its way around impressive mountains, across rivers and through many small communities, connecting British Columbia to the rest of the country.

However, for planners, contractors and engineers looking to upgrade the 440-kilometre thoroughfare to a modern, 100-kilometre-per-hour four-lane highway, it poses a real challenge.

There are steep grades, sharp curves around rock bluffs and narrow bridges...
to contend with. Blasting and scaling are difficult due to steep mountain slopes. The weather is ever changing and contractors and work crews must deal with re-routing traffic as they go about their work. And, oh yes, did I mention the ever-present threat of avalanches and landslides?

“The mountainous terrain has been a challenge for us, obviously, because there are a lot of waterways and bridges along the highway route,” says Murray Tekano, director of major capital projects for the British Columbia Ministry of Transportation and Infrastructure. “The majority of our projects have bridge components, so they’re challenging. When you’re developing projects and selecting a route you have to think about whether you should realign the highway or widen it where it exists. As you can imagine, the reasons are complex. In some cases, it is very technical because of conditions and the terrain.”

The highway is the primary east-west connection through B.C. and a vital route for travel, tourism and trade. It is being upgraded to four lanes so that traffic can move more safely and efficiently and commercial vehicles can transport their products to ports.

A LONG-TERM INVESTMENT
The B.C. government has been working on projects along the highway for a few decades now. In 2012, the province committed $650 million to projects along the highway and, subsequently, in its 10-year transportation plan in 2015, called B.C. on the Move, announced it would increase the total investment in the corridor to more than $1 billion with funding from the federal government.

Since 2001, a total of 12 projects have been completed along the corridor. They have included highway widening and other road improvements, construction of interchanges, and bridge replacements. There are seven projects under development and one under construction.

One of the projects completed was widening a 10.5-kilometre section of highway to four lanes at the Monte Creek interchange, about 30 kilometres east of Kamloops. The $68.9-million project was completed in two phases, with the final stretch of asphalt laid in 2016.

Another completed in 2016 was replacement of the Malakwa Bridge and four-laning of 2.7 kilometres of highway about 20 kilometres east of Sicamous.

One project now in the works is the replacement of the 58-year-old North Fork Bridge over the Perry River, between Revelstoke and Sicamous. It is the last remaining bridge along the highway with a metal truss overhead. The new bridge will have four lanes. A 3.5-kilometre-long section of highway is also being widened to four lanes and a paved centre median is being added for driver safety.

Greg Kyllo, MLA for Shuswap, says he’s pleased to see work ready to begin on the bridge. Construction is expected to start this fall and be completed in 2018.

“It’s great that we’ll have crews out this year already on this four-laning project for Highway 1 that will be especially beneficial to residents and the large number of tourists and commercial drivers travelling through the region,” he says.

Projects at Kicking Horse Canyon, which consist of improvements and widening to four lanes between Highway 95 at Golden and the western boundary of Yoho National Park, have posed particular challenges for engineers and contractors because of steep rock faces on one side and a drop-off to a CP Rail line and Kicking Horse River on the other. The 26-kilometre section of highway has not had major upgrading since it was built in the 1950s.

So far, 21 kilometres of the Kicking Horse Canyon project have been completed. The work has involved replacing two bridges, widening the existing highway and installing median barriers. Three phases of the project have been completed with one more phase to go.
Tekano, who is the official overseeing the four-laning project for the Transportation and Infrastructure Ministry, says the second phase of the Kicking Horse Canyon undertaking was especially difficult because it involved replacing the 405-metre-long by 90-metre-high Park Bridge and upgrading about 5.8 kilometres of highway approach.

About 2.5 million kilograms of structural steel, enough to manufacture more than 1,900 cars, and 1.5 million kilograms of rebar used in footings and piers were used to build the bridge along with 20,000 cubic metres of metal mesh over the slopes to reduce the chance of a slide.

During peak construction of phase two, there were 175 workers on site. More than 2.8 million cubic metres of earth was moved, enough to fill a bumper-to-bumper lineup of articulating off-road dump trucks stretching from Regina, Sask. to Vancouver. About 50 million kilograms of asphalt, enough to fill 500 railway cars, and 12,000 cubic metres of concrete, enough to provide basements and steps for 350 houses, was also used in phase two.

The final phase of the Kicking Horse Canyon project includes constructing about 4.5 kilometres of new highway and building retaining walls and rock catchment ditches through a very challenging section of the canyon. The final leg of the project is still in the design stage.

“Kicking Horse Canyon has probably posed the most challenging piece of technical engineering in Canada,” Tekano says. “The last four-and-a-half kilometres remains the most challenging pieces of Trans-Canada highway left to be replaced. It’s very steep terrain, with high rock cliffs and variable rock conditions and significant avalanche areas so all these have to be accommodated in the design and they also influence the actual construction.”

**IMPORTANCE OF HIGHWAY 1**

The highway project is not the biggest the B.C. government has on the go just now, but Tekano says it’s important because it’s vital to Alberta and the rest of Canada and the Transportation and Infrastructure Ministry wants to ensure that the roadway is safe, as the highway is used by thousands of drivers each day.

“Billions in goods are moved through the Trans-Canada Highway corridor annually and to our ports,” he says. “The Trans-Canada is a key link between the western provinces and our Pacific Gateway.”

Transportation and Infrastructure Minister Todd Stone says communities will be better connected and businesses will be better able to move their products with the highway upgrades.

“The Kamloops to Alberta border four-laning program is important to British Columbia because the Trans-Canada Highway is one of our most important trade and tourism routes – it’s our province’s vital economic link to the Alberta border and the rest of Canada,” Stone says. “This route sees up to 12,000 vehicles per day, 15 per cent of which are heavy trucks carrying between $24 billion and $32 billion per year in commercial goods. It also connects communities and provides access to many beautiful and diverse recreation areas.”

However, B.C. NDP leader John Horgan has complained that the Trans-Canada project is proceeding too slowly. He has been critical of B.C. Premier Christy Clark for failing to take action and suggests that, at the rate it is going, it will take 70 years to finish the project.

“Modernizing B.C.’s most important connection to the rest of Canada has not been a priority for the B.C. Liberals. I want get moving on this work, and we can’t afford to wait for Christy Clark. The safe, smooth movement of people and goods is vital to economic growth, new jobs and new opportunities for apprenticeships and careers in construction.”

Horgan says the pressing need to improve the Trans-Canada was made clear last fall when a rock slide that injured two workers resulted in the highway being closed in Yoho National Park.

“The highway was shut for three whole days and drivers were forced to make a 100-kilometre detour,” he notes. “Delays and accidents like this can be minimized if we do the work.”

However, Transportation and Infrastructure Minister Stone says the government is moving ahead by committing with the federal government more than $980 million since 2001.

“We recognize there’s still more to be done,” he says, “and remain committed to continuing advancing four-laning projects along the corridor to increase safety for those who live on or travel along the corridor, and will help ensure goods can get to market efficiently.”

Tekano says while there are challenges, the highway project is proceeding. He notes that the second phase of the Kicking Horse Canyon project, for example, a large project, came in 21 months ahead of schedule.

“It’s not unusual, he says, for projects along the route to be at different stages, with one being started while another is finishing. As a result, there is usually planning and engineering work underway for one project while another along the highway is being built.

“It’s very much a progressive program and while it’s been a major challenge the industry is rising to meet that.”

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CONEXPO-CON/AGG
spotlight: Part 2

Part 2 of our two-part series highlighting the latest technologies and equipment.

ADM
Asphalt Drum Mixers’ EX120 asphalt plant is a solution for producers who need a portable counterflow plant that can process high percentages of reclaimed asphalt pavement (RAP). The compact 120-tph EX Series plant features single-drum counterflow technology and meets all U.S. federal and state emission regulations. The plant is capable of processing as much as 50 per cent RAP. Counterflow technology with separate drying and mixing zones allows the EX120 to achieve maximum heat transfer and fuel efficiency. The system virtually eliminates unsafe carbon emissions and further reduces emissions by designing the counterflow system to reintroduce gases back to the drum’s combustion zone. The entire EX120 plant sits on one chassis for easy movement from site to site. One plant operator and one loader operator can control the EX120.

A full range of components are available to customize the plant.
www.admasphaltplants.com

JOHN DEERE
The John Deere wheel loader family recently introduced the 844K Series-III and 844K Series-III Aggregate Handler configuration, which is purpose built for two-pass loading with increased power, larger tilt cylinders, higher hydraulic pressure and increased counterweighing to handle bigger material-handling buckets (9.3 cubic yard/9.8 cubic yard), reduce fill time in processed aggregates and conserve fuel. The new wheel loaders offer a 13.5L John Deere PowerTech Final Tier 4 diesel engine that delivers 380 horsepower for the 844K-III and 401 horsepower for the Aggregate Handler configuration. The models are equipped with a standard five-speed
transmission with torque-converter lock-up in gears two through five. www.johndeere.com

PPI
PPI's aluminum idler roll offers a significant weight reduction compared with equivalent steel rolls. Incorporated with heavy wall tube and PPI's seal design, the aluminum roll eases maintenance while maintaining CEMA load ratings. Features include weight reduction of 40 to 50 per cent compared to equivalent steel rolls; 3/16" wall tubing extending roll life; meets CEMA D load ratings; uses PPI's standard triple labyrinth and shaft contact seal configuration; available as a retro roll and in 5" and 6" diameters. www.ppi-global.com

CDE GLOBAL
CDE Global's CF8000 is a continuously operating centrifuge with horizontal solid-wall bowl developed specifically for the requirements of dewatering industrial and municipal sewage sludge. It has a total power requirement of 217 hp and has a solids capacity of 27.5 tph. It has dimensions of 22.4' length x 5.5' width x 7.7' height and has a feed height of 2.9'. The unit can be transported by road on one flat trailer. www.cdeglobal.com

LUFF INDUSTRIES
Luff's High Moisture Seal (HMS) is designed for environments with high humidity or excessive moisture and areas with the potential for fine particle contamination. Luff has engineered and designed a polymer disc that seats inside the end cap, remaining stationary as the roller rotates around it. This disc offers two major benefits, it adds anti-lock technology to the roller, which reduces or eliminates rollers seizing due to excess debris or material spillage and acts as a deflection shield against direct moisture pressure. The HMS equipped rollers feature a grease packed cavity behind the shield that acts as a barrier for any moisture or contaminants that may get behind the disc. www.luffindustries.com

ROSTA
ROSTA's MBSL 70 Superior Lift Motorbase is designed for vertically driven slurry and de-watering pump drives. It uses ROSTA's rubber suspension technology providing exceptional belt life, optimum belt tensioning and energy savings. The unit can be bolted directly onto the pump's support base using the existing hanger rod hole location, or in some instances a further MBSL base spacer may be necessary, when over-length belts have been used by the end user. The motorbase range is offered in both IEC Frame: 150hp to 540hp and NEMA Frame: 90kW to 450kW. www.rosta.com

CAMSO
Camso's HXD Smooth tracks are a smooth treaded track for pavers engineered for durability on hard surface paving applications. They feature single-cure technology with a next-generation rubber compound that promotes even tread wearing for long, predictable life. It has an optimized multilayer internal construction for improved

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weight distribution with better lateral stiffness and a smooth type tread pattern with heavy-duty carcass for increased track life. www.camso.co

GENCOR
Gencor’s Hy-Way thermal fluid heaters are used in hundreds of industrial applications throughout the world; from asphalt to petrochemicals, food processing and textiles. Hy-Way’s twin-coil HYT heaters are designed for high-temperature industrial process applications. Designed with twin close-wound helical coils, the HYT heater provides greater thermal efficiency in a small compact package for limited space applications. In addition, the internal use of a ceramic fibre blanket, in place of cast refractory, greatly reduces weight and the expense of maintaining castable refractory. Its design protects it from the rigors of process industry applications. It is suitable for use with a wide range of fuels and thermal fluids. www.gencor.com

BREAKER TECHNOLOGY
Breaker Technology’s BXR Series large size breakers offer superior impact energy with high power-to-weight ratios. They are made for continuous duty in harsh conditions and offer high operating efficiency using the optional energy recovery system. They offer easy access to the air connector and connection for underwater operation and feature a remote grease line connection and optional automatic greasing systems. The BXR series uses recoil sensing technology with operator actuated two-speed control and an oversize piston. This combination maximizes blow energy and bphms under varying rock conditions providing improved operating efficiency of a conventional breaker. www.rockbreaker.com

POLYDECK
The Kwikdeck Conversion System enables producers to quickly and easily convert a single or double-crowned deck to modular rubber screen media with no frame modifications. The entire installation process for each four-foot section takes about 45 minutes and uses existing bucketer bars and side retention rails. Since the modular screen panels contain no latitudinal steel insert, for non-standard deck widths, the panels can be cut to fit on site. www.polydeckscreen.com

DOOSAN
The DL420-5 CVT is the first Doosan wheel loader that combines the benefits of a traditional automatic transmission and a hydrostatic transmission in one machine. The continuously variable transmission (CVT) design automatically transitions from a hydrostatic transmission to an automatic transmission to operate at higher speeds. Unlike torque converter transmissions, the DL420-5 CVT wheel loader’s automatic transmission is a one-to-one ratio with the engine. Automatic transmission improves powertrain efficiency in load-and-carry operations. It has a net horsepower of 311 hp; operating weight of 50,177 lb.; bucket capacity of 5.5 cu. yd.; a dump height of 10 ft. 1 in.; and a breakout force of 47,210 lbf. www.doosanequipment.com

HYUNDAI
Hyundai launched an addition to its compaction-roller product line. A new tandem-drum model, the HR26T-9, joins two previously available models designed for asphalt paving and maintenance. The new model has an operating weight of 6,400 lb (2,900 kg) and drum width of 47 in (1,200 mm), with a working width of 49 in (1,250 mm). The tandem-drum roller is powered by a Tier 4 Interim-compliant Deutz D 2011 L2i diesel engine rated at 31-HP (23 kW). Front and rear scrapers keep the drums free of material buildup and a 55-gallon (208.2 l) water-spray system can sprinkle both the pavement surface of the drums in intervals determined by the operator. www.hceamericas.com

CM LABS
CM Labs featured its Vortex training systems for backhoes, excavators, wheel loaders and cranes at CONEXPO. The Vortex Advantage was on display with its customizable variety of screens, modules, seats and pedals. CM Labs also showcased its newly released Vortex Trainer. Designed for a classroom environment, the compact Vortex Trainer mounts on a desktop and features the same industrial-grade joysticks and steering wheels developed by manufacturers for cranes and heavy earthmoving equipment. www.cm-labs.com

For the latest products, visit www.rocktoroad.com.
NHES holds 20th anniversary edition in Mississauga, Ont.

Heavy equipment professionals from a variety of sectors filled the halls of The International Centre in Mississauga, Ont. for the 2017 edition of the National Heavy Equipment Show, which took place this past April.

This year’s edition, the show’s 20th anniversary show, welcomed 13,370 buyers – a number roughly on par with the last edition, held in 2015.

The focus on improving public infrastructure right across the county brought key decision makers and purchasers directly to this year’s show.

This year, show attendees included a mix of industry professionals including the leaders of the construction, road building, land improvement, and infrastructure industries – along with job seekers, students and those training for specific trades.

Special features of the 2017 edition included Rock to Road’s presentation of the ‘Top 10 Under 40’, recognizing 10 outstanding individuals under the age of 40 from throughout Canada’s aggregates and roadbuilding industry; which took place during the CAED Power Breakfast, an economic forecast presented by the Ontario Chapter of the Canadian Association of Equipment Distributors; the Ontario Asphalt Pavement Council (OAPC) Spring Operations Seminar; as well as many other exciting components including the Rental Pavilion, the Mechanics Hub Recruiting Here program, and a focus on snow and ice removal equipment.

The next edition of NHES will take place in 2019 in Mississauga, Ont.

For the latest products, visit www.rocktoroad.com.
Importance of Aboriginal consultation for aggregates operations

> When it comes to starting up new ventures in the aggregates sector, there are many factors that need to be considered to ensure their success: strategic short-term and long-term plans to adapt to ever-changing economic factors, having the necessary capital, hiring the right team, and the list goes on. But there is one key consideration in particular that some companies overlook from time to time, and by doing so, almost certainly leads to costly delays that can spell disaster for a project before it gets off the ground. That factor is proper consultation with the indigenous peoples of the land a company intends to operate within, especially when operating on Crown lands. Communication and collaboration with those peoples are not just vital for the success of new aggregates operations on Crown lands; it’s also the law.

“It’s the law of the country based on the constitution, which
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guarantees indigenous rights; that’s first and foremost,” explains Lawrence Aimoe, executive director of operations for the Aboriginal Consultation Office of the Government of Alberta, which works closely with Alberta’s Ministry of Environment and Parks, the ministry responsible for ensuring consultation is done with the local rights-bearing communities. “Anytime the Crown is going to use Crown land – and change the face of the land – there has to be discussion with the impacted nations and whoever else holds indigenous rights. So it’s not just First Nations, it could be the Metis as well.”

The main reason consultation is so important is to try and prevent the disruption of a peoples’ day-to-day lives, their burial grounds and the destruction of ancient artifacts.

> “Once you uncover a burial ground that could delay your project for some time.”

“Long before gravel was dug up for roads, the roads were the waterways of the country. That’s been going on for thousands of years,” Aimoe explains. “As a result of that, that’s where many indigenous people travelled – not just in this country, but many countries – and as a result of that, quite often encampments or what we refer to as small towns or villages were there. Along with that comes the issues that many villages or places have when you lose people due to age, sickness or otherwise – what do they do with them?”

Many of the indigenous peoples who passed away over the years were buried in the ground close to the waterways.

“Many of the times we’ve been digging into the earth where we’ve uncovered human remains, many of them turn out to be pre-historic,” Aimoe says. “The disturbance of any burial ground is never a good thing. The consultation process can address that... a lot of the elders still carry the knowledge of where people were buried or the meeting places of the nations over the years; and that kind of information obviously would be invaluable to any company that is planning on digging anywhere.”

DIGGING ON PRIVATE LAND
Companies planning on starting up aggregate operations on private lands can benefit just as much from the consultation process as those digging on land owned by the Crown.

“Our duty is for Crown land, but in terms of best practices, even when you’re digging somewhere that’s not Crown land it doesn’t hurt to consult with the neighbours to see what you might find,” Aimoe says. “Once you uncover a burial ground that could delay your project for some time.”

When operating on private lands, consulting with indigenous peoples can prevent a variety of delays in an operation. The initial delay that occurs if a burial ground is unearthed is to have tests performed to check if the bones were prehistoric or more recently buried.

“If it’s not recent, then it’s the determination of who the people are and who they belong to,” Aimoe explains, adding that once a site is determined prehistoric that it becomes an anthropological dig. “One prehistoric site uncovered had indigenous people in it from 15 separate First Nations, thus, it required those 15 nations to work with the government to perform ceremony and re-bury their ancestors.”

BUILDING RAPPORT
Even when following best practices, not all situations can be avoided. Sometimes out of ignorance with no malicious intent, workers come across geo caches when digging the land. These are also known as “borrowing man” caches – which have been occurring in indigenous communities for thousands of years – and dispose of them due to their appearance. Aimoe says that some who come across them said they thought garbage was dumped on the site – since more recent caches can have flashlight batteries, gasoline and a variety of other items for people living on the land to borrow so they can get to their destination.

“When you’re doing a dig and your people come across something like that... it’s hard to recognize it as a sacred sight, but it’s definitely a cultural sight,” Aimoe explains, adding that this is a prime example of why consulting with the local peoples is so important. “Disturb a site and it could get you into trouble.”

Whether it is a geo cache or a burial ground that has been unearthed, making the effort to consult in advance of a project’s startup can help build positive rapport with the peoples a company may later need to work with to resolve issues.

Another way companies can build positive rapport with a local population is by offering to make them a partner in a project, allowing them to have some ownership while generating jobs and revenue.

“There are a lot of nations that are able to enter into partnerships like that... you may also uncover some excellent employees for your company,” Aimoe says.

CONSULT OFTEN, AND FROM AFAR
Sometimes a company is required to perform land consultations with indigenous groups that live a significant number of miles away from a dig site. But there is good reason for this.

“We get feedback from companies that say they don’t understand why they are consulting with a nation that’s a number of miles away from where they are going to dig, but one of the things about indigenous communities is they often move over time to find food, or move because waterways change... there was a very nomadic lifestyle to many of the nations,” Aimoe explains.

One big source of frustration for First Nations communities and other indigenous peoples is when a company drops by a band office for a consultation one day, and never returns to offer updates on a site they could be spending upwards of several years extracting resources from. Consultation needs to happen throughout the life of a project, Aimoe says, especially when it comes to land reclamation.

“When doing reclamation, make sure it’s almost a partnership between the environment folks and the contractor to make sure they get it right,” he says. “The less of a footprint left behind, the better.”

If there’s any one thing Aimoe hopes people take away from this article, it is that it is very important to communicate with the nearby communities before starting up an operation anywhere in Canada.

“It could really delay plans if that constitutional requirement is not addressed – this applies to the whole country. Just be a good neighbour and a good steward of the land.”

For the latest industry news, visit www.rocktoroad.com.
UAV options: To buy or to rent?

Weighing the costs of UAV ownership for aggregate operations

When contemplating utilizing UAV/aerial applications in any operation, one of the first decisions required is whether to purchase a drone, or engage the services of a drone service provider. The following are some points to consider, if purchasing:

**EQUIPMENT**

Depending on your application, you will want a fixed wing UAV for large, open area projects. Or if you operate in smaller, confined areas, a VTOL multi-rotor may be a better option.

**COST**

The Internet and media are flooded with cool looking “hobby” drones that you can buy starting at about $1,000. If you are planning on using a drone for any surveying/mapping projects, you will need a UAV designed to carry larger specific payloads. You can expect to pay in excess of $30,000 for a survey grade UAV. In addition, the support equipment (imaging equipment, base station, computer, extra batteries, transportation equipment) can easily double the cost of the UAV.

> "If you chose to engage the services of a professional UAV service provider... ensure they are certified and insured."

**REGULATIONS**

In Canada, Transport Canada regulates the commercial use of all UAVs (regardless of size). All commercial use of UAVs in Canada requires both the crew (minimum two trained persons) and the UAV to be certified. The regulations are constantly changing, and proposed new rules will place even more onus on the commercial application of UAVs. As part of Transport Canada regulations, commercial UAV liability insurance is also required.

**TRAINING AND PERSONNEL**

Not only is it required by Transport Canada that UAV crews be properly trained, but, as with any equipment, competency training is necessary. Along with understanding and acquiring skills to operate the UAV and imaging equipment, proper and efficient workflow and operating procedures must be developed. In areas of low employee retention, the constant training of new employees could become a significant expense.

**DATA PROCESSING**

All of the equipment, training and data acquisition are only half of the equation. Without the software, computers and data processing knowledge to process the data, flying UAVs is just a hobby. Alternatively, there are offshore processing services that will process the data. This means less capital outlay, but fewer options and loss of control.

**MAINTENANCE AND REPAIRS**

Even for the experienced pilot, damage is inevitable. During the training phase it is not uncommon for an inexperienced pilot to have numerous crashes costing thousands of dollars in parts, not to mention lost time. As for maintenance, batteries have maximum charge cycles, and depending on use, will last about one year. The LiPo batteries used in UAVs can cost hundreds of dollars each. Due to the harsh environment most commercial UAVs operate in, much of the electronic equipment on board is prone to failures that can potentially cost several thousand dollars a year.

**UTILIZATION**

As with any acquired skill, without regular practice it is difficult to maintain peak proficiency. Unless the crew is operating once a week, not only will their skills suffer, but a significant capital asset and training investment is not being utilized.

If you chose to engage the services of a professional UAV service provider, the only thing you need to do is ensure they are certified and insured.

Murray Hunt is the president and chief UAV pilot for High Eye Aerial Imaging, a UAV service provider based in Ontario. This column first appeared in Ontario Miner.
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