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Growing with the Oil Sands
We take a look at a Fort McMurray sand and gravel operation that has built its business around Alberta’s oil patch.

Spanning Half a Century
It has taken 50 years, but Quebec’s Highway 30 is almost complete. We tell you about the issues, the work and what has been done.

Keeping Up with the Demand
An Ontario aggregate and road construction company produces high-quality granite for top-quality asphalt and good skid resistance.

World of Asphalt and AGG1
We have a big preview of these industry shows, which are coming up in March in Charlotte, N.C.

Tire Strategy
A look at how implementing a tire strategy for your company can improve your bottom line.

Increasing Preservation’s Value
A look at ways to reduce the amount of natural resources used in roadbuilding from the International Slurry Surfacing Association.

SmartTag Technology
In this case study article, we take a look at how companies are keeping tabs on their products through the production process.

Strategies For Succession
Our Financial expert provides some scenarios aimed at making succession planning easier and more beneficial.

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Cover
Quebec’s Highway 30, which has been 50 years in the making, is almost complete. For the full story, turn to page 12. Photo courtesy of Sarah Houde, Nouvelle Autoroute 30, inc.
It’s Showtime

It’s that time of year again when venues across North America and abroad are opening their doors and turnstiles to members of the aggregates and roadbuilding industries. With a number of big shows coming up over the next few months, it’s an ideal opportunity for anyone with an interest in new technology, equipment and services to find out what is the latest and greatest, and to network with colleagues, suppliers and industry association members.

In this issue of Aggregates & Roadbuilding, you will find an extensive preview of the World of Asphalt Show and Conference (www.worldofasphalt.com), which is being held in conjunction with the AGG1 Aggregates Forum and Expo in Charlotte, N.C. The shows kick off on March 13 and close on March 15. The venue will provide space for over 300 exhibitors, and more than 6,000 visitors are expected over the two days.

On March 29 and 30, Moncton, N.B., will host the Atlantic Heavy Equipment Show (AHES). Produced by Master Promotions (www.masterpromotions.ca), the last AHES brought more than 12,000 visitors through the doors where they kicked the tires and climbed on board all kinds of large and small iron from front-end loaders to skid steers.

Two weeks later, Master Promotions (www.masterpromotions.ca) will put on the Expo Grands Travaux 2012 in Montreal. Held on April 13 and 14, the show will provide some excellent networking opportunities. The last time the event was held, over 13,000 qualified buyers walked the show.

For anyone who wants to go a little further afield, Intermat Paris (http://en.intermat.fr) is coming up from April 16 to 21. When this show was held in 2009, the organizers had 184,519 visits, with one-third of these made by international industry professionals. It was an opportunity to find out about the new machines and equipment being shown by the 1,470 exhibitors on hand, 67% of which were from overseas.

And for those looking for a live show, Hillhead 2012 (www.hillhead.com) is being held in Buxton, in the north of England from June 19 to 21. Event organizers are expecting a busy show, with 97% of the outdoor stand space already sold and most of the space in the three demonstration areas already allocated.

For anyone in our industry, attending one or more of these shows is worthwhile, and we need to support these shows to keep them coming back. These days, it’s easy to say, “I can see the equipment online,” but there’s nothing better when you are in the market for a new piece of gear than jumping on board, sitting in the operator’s seat, and talking face to face with the equipment company’s product specialist.
“We prefer to use ELRUS because of their quality, quick delivery and exceptional customer service they have provided us with over the 30 plus years we have been associated with them.”

Wally Fownes
General Manager
TBG Contracting Division of Lafarge Canada Inc.

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When many Canadians think about Alberta’s Oil Sands, they picture the big names such as Suncor, Shell, Syncrude and Canadian Natural Resources Limited (CNRL). These huge multinational corporations play a major role in the economic boom this region of the country has realized, but so do many other smaller companies that support the major oil producers.

“We have been in this region since the mid-1960s and we have had a full-time presence here for almost 20 years,” explains Wally Fownes, general manager of TBG Contracting, which is one of those smaller operations. TBG produces sand, gravel and limestone for the major oil producers and for the City of Fort McMurray. “We will do two to three million tonnes annually for the oil companies and another million tonnes per year for infrastructure work in the city,” Fownes adds, while showing historic black and white photos of TBG excavation and processing equipment being brought to the region by barge on the Athabasca River. “This is how we brought the equipment here before an all-weather gravel road was completed in 1967,” he explains while viewing the photos and adding that today, it’s a different story as Fort McMurray and the oil sands are connected to Edmonton and beyond by a major highway (Alberta Highway 63), which brings people, equipment and supplies to the area on a daily basis.

TBG started in Edmonton in the mid-1950s and was originally called Twin Bridges Gravel due to the location of its gravel pit, which was close to a pair of bridges in the city’s downtown area. Today, much of TBG’s operations are in the area around Fort McMurray, which is known as the Regional Municipality of Wood Buffalo and in 1995, TBG opened a permanent office in Fort McMurray, making the region its operational base.

TBG was acquired from its original owners by the Warren Group of Companies in 1972 before becoming a division of Lafarge Canada Inc. in 2001.

Contractor Profile

Growing with the Oil Sands

This Fort McMurray sand and gravel operation has built its business around Alberta’s oil patch.

By Bill Tice

Above photo: TBG will produce two to three million tonnes of product annually for the oil sands and another million tonnes per year for local infrastructure projects around Fort McMurray. Photo courtesy of Wally Fownes, TBG Contracting.
Rely on the Wirtgen Group’s full range of products for new construction and rehabilitation of roads. SMS Equipment’s sales and service experts, based close to your doorstep, offer the expertise and all-round support you need.

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TBG Today
As the appetite for Alberta oil continued to grow so did TBG, and today the company runs several operations in the region, including two major crushing, screening and washing plants at Athabasca Minerals’ Susan Lake site, which is ranked as Canada’s largest aggregates operation.

“Everything is ‘on demand’ up here so all of our plants are portable,” Fownes explains. “Our largest operation at Susan Lake produces mainly 20-millimetre, 40-millimetre and 75-millimetre product. These are our best-selling sizes and we provide a lot of the 40-millimetre product to the mines for haul roads within the oil sands operations.”

The haul roads Fownes describes are typically 30 metres wide and require enough aggregates to support a 350-tonne rock truck carrying a 350-tonne load. “Normally they will use a base of clay or limestone and then a metre of granular base on top of that,” he explains. “It adds up to a lot of aggregates.”

At the largest of TBG’s Susan Lake operations, crews feed the crusher with a Caterpillar 988 loader while a smaller Cat 980 is used as a back-up and for clean-up. The crusher, which is a 30-in. x 54-in. jaw crusher from Elrus, is followed by an Elrus surge bin, which feeds a 6-ft. x 20-ft. two-deck scalping screen that removes the sand. The rock goes to a Sandvik S4800 Gyrcone, a twin-screen chassis with a pair of 6-ft. x 20-ft. Eljay finishing screens that are close circuited with a Sandvik H6800 finishing cone. Programmable Thor radial stackers round out the operation. Some of the products are then trucked to a nearby wash plant. Fownes says they have an identical crushing operation that is currently at Suncor’s local site where it processes limestone.

TBG’s third portable operation is a smaller setup, which is also at Susan Lake. It handles mainly larger material (75 mm), which Fownes says helps them keep their tonnage up. It also features a 30-in. x 54-in. Elrus crusher, a two-deck scalping screen and an Elrus 2054 jaw crusher. “This is a bit unusual, but from here we go to twin 5-ft. x 18-ft. Elrus screen decks and then to a 4-ft. cone crusher and Superior stackers.”

TBG updates its equipment on a regular basis and recently acquired two new Elrus crushers along with a new Cat 988H and a pair

Half a Century with TBG
TBG Contracting has been in the aggregates business for about 60 years, and Harold Pinske has been with the company for much of that time.

Pinske, who is 73, now works on a contract basis for TBG’s Fort McMurray, Alberta operation. He started with the company in 1961 when he was in his early 20s and celebrated the half-century milestone with TBG last year. “I go back a long way with TBG,” Pinske says. “When I first started working, I had my own welding truck and I ended up in Squaw Rapids, Saskatchewan. To make ends meet, I also worked a couple of other jobs, including running a crusher for a company called Manix and Associates Contracting. I worked with a fellow at Manix by the name of Ernie Haug, who was from Edmonton. When our work at Manix finished, Ernie went back to Edmonton and started working for Twin Bridges Gravel and I went to work for the County of Prince Albert with my welding truck. Not long after that, I got a call from Ernie asking me to come to Edmonton and take a job with Twin Bridges. He sent two Mack trucks to pick up my stuff and I have worked for TBG ever since.”

For most of his time at TBG, Pinske was a full-time employee. When he turned 65, he says “they simply changed the paperwork,” as he had reached the official retirement age. “Nothing really changed except I
of 980H loaders. They also just acquired a Komatsu 600 loader and two Komatsu 500 loaders from SMS Equipment, and a new power van and tower van from Elrus.

**Customer Base**

Fownes says TBG’s main customers in the area include Suncor, CNRL, Syncrude, Shell and other oil companies operating in the region. They also supply crushed rock to Lafarge’s local concrete plants and provide materials to the regional governments for the rapidly growing infrastructure projects in the area. With so much production in the oil sands and the surge of infrastructure projects in the region, material supply close to Fort McMurray has been difficult to source, so a few years ago TBG started extracting rock from a pit east of the Athabasca River. The only problem was the town is situated on the west side of the river and there are no bridges close enough to make hauling the aggregate economically viable, so Fownes says TBG got creative and started building ice bridges during the winter months to move the rock to town.

“We will typically build an ice bridge over the Athabasca River every couple of years,” he explains. “Our Peden Pit is close to town, but it is across the river and we will normally haul around 120,000 tonnes to stockpile for use in the summer months.”

Using local crews, TBG will start building the ice bride in mid-December and it will normally be finished by early January. “We will run flooding operations for 12 hours per day when we are building the bridges,” says Fownes. “We need the ice to be about 50 inches thick before we start hauling and we check the thickness on a daily basis.”

Between the oil sands business, infrastructure work and supplying Lafarge’s concrete operations in the region, Fownes says TBG has no problem staying busy year round. He says they have about 75 employees, including office staff and production crew members in the field, and he adds that they also keep 75 trucking owner operators busy with their hauling operations. As for shifts, TBG runs two shifts that work 10 days on and then they have four days off. “We try to run the shifts back to back with a hot crew change, especially in the winter, because if you shut your machines down, it can take hours to get everything up and running again.”

Even when they take their four days off, Fownes says they will use portable generators or hot boxes to keep the equipment warm and to aid in startup.

**Recruitment**

Like most companies in the Fort McMurray area, Fownes says one of the biggest challenges TBG faces is recruitment of new employees. “The high cost of housing in the Fort McMurray area is prohibitive to young people setting up so finding skilled operators that will come here is one of the biggest hurdles we face,” he explains, while adding that they look for people who want to call Fort McMurray home and will get involved in the local community.

“I didn’t even miss a day and continued on full time. Actually, I think I’m busier now than I have ever been.”

Pinske, who is the equipment manager for the Fort McMurray operation, spends most of his days maintaining and repairing TBG’s crushing and screening equipment. He lives in Edmonton and also has a hobby farm with his wife Vivian and commutes on a weekly basis to Fort McMurray. He heads out from Edmonton every Sunday afternoon, preferring to make the 4.5 hour drive during the daylight hours and then heads back to Edmonton on Thursday afternoon, or Friday morning, depending on what parts need to go to Edmonton with him. “I’m really well connected at the repair shops in Edmonton, so when I go home, I quite often take parts with me and get them repaired on Friday or over the weekend and then bring them back with me on Sunday,” Pinske says.

When he’s in Fort McMurray, Pinske stays at the Quality Inn. It’s really his home away from home as he says he has had the same room at the hotel for 20 years and knows all of the staff. “I think Vivian likes it that I’m away from home for a few days at a time as it gives her peace and quiet,” Pinske jokes. “But I have to say, I couldn’t do this without her. We have cattle and horses on our hobby farm and she looks after them while I’m here.”

For Pinske, there have been a lot of changes in Fort McMurray since he first started coming here in the 1960s. “When I first came here, there was only a winter road so all of the equipment came by train from Edmonton to Lac La Biche and then on to Fort McMurray,” he says. “Once it got here, it was put on barges that would transport it up the Athabasca River to the oil sands area. It took a week to get everything here and then another week before it was up and running.”

Pinske, who has two children, four grandchildren and two great grandchildren, says he does think about retiring at some point. But it’s not going to be anytime soon. “My family are all after me to quit, but there is so much to do here and I am so involved with everything that it’s not fair to dump it on someone else. I believe in finishing what you start, and we have some new crushers coming and I want to be part of that,” he adds with a smile. “I need to make sure they are running the way we want them to.”
"Being part of the community is big for us as a company so we look for employees that will do the same," Fownes says. "In addition to sponsoring local ringette and volleyball, we also buy season tickets to the Oil Barons, which is the local Jr. A hockey team, we support local golf tournaments for charity and we sponsor major events in the region."

But one of the biggest community events for TBG is the "special delivery" they make annually to the First Nations community at Chipewyan Lake, which is a 3.5 hour drive (each way) northwest of Fort McMurray.

Just before Christmas every year for the past eight years, Fownes and one other employee have provided the much-needed delivery service to the Chipewyan Lake community for a local program called Santas Anonymous. TBG provides the manpower and the vehicles required to make the often treacherous trip, most of which is through frozen muskeg and primitive snow covered roads. Their contribution is to take two Ford F-350 pickups and load them up with food, toys and necessities that have been collected through the program by Father Patrick Mercredi High School in Fort McMurray, and deliver them to the Chipewyan Lake community, which numbers around 60 people.

The program provides needy families all over the Wood Buffalo Region with a traditional Christmas dinner and makes sure that kids under 18 each receive at least two wrapped toys. Families with babies receive food, diapers and clothing. Many of the communities are on major roads, making the deliveries fairly routine, but before TBG stepped up, Santa’s Anonymous often found it difficult to find volunteers that could safely make the Chipewyan run. "We get really excited every year about this program," Fownes explains. "It is a great cause and although it can be challenging, we enjoy doing it."

Staying Safe
Safety is also big at TBG and Fownes reports that they just hit 200,000 hours incident- and accident-free in late 2011. "Because safety is such a high priority at all of the oil sands operations, contractors like us are expected to meet the same safety standards as the major companies," he says. “However, we are just fine with that. Safety is just part of the job. We have pre-startup inspections, regular audits, we are in the COR program and we participate in the Alberta Construction Safety Association. Plus, for a small company, we have a huge amount of safety resources available to us as part of Lafarge. We are a ‘small, large company’ where we operate like a small local company but have lots of resources we can pull from Lafarge when needed.”

Although Fownes is the first to admit that working in the oil sands can be hectic, he says he wouldn’t have it any other way. "When you are working in this business, every day can be a challenge, but it is also rewarding," concludes Fownes. “Everything that goes on here happens at a very fast pace and whoever can react the quickest will normally get the work. It’s never boring. We go from working on new pilot projects to building ice bridges, but for me, and most of the people that work at TBG, that’s the way we like it.”
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Almost five decades after it began, it seems the long-delayed Highway 30 project will finally be completed by the end of this year. The work to connect the last two portions of the highway to the rest of the already completed road is currently underway on Montreal’s south shore, most of it as part of a private-public partnership (PPP) involving hundreds of contractors.

Out of the six construction sites that are simultaneously open, five are operated by a consortium going by the name of Nouvelle Autoroute 30. The company is, until the job is completed, responsible for the construction of the $1.5-billion project’s western portion. Once the highway is open, Nouvelle Autoroute 30 will manage and supervise the maintenance on the same portion of the road.

The History

When originally imagined in the early 1960s, Highway 30 was to answer the need for a high-speed, high-capacity road south of the St. Lawrence River, between the town of Sorel-Tracy and La Belle Province’s main city’s south shore, then connecting it to the westernmost part of Highway 20, which becomes the 401 once across the Ontario border. This road was to allow cars and trucks coming from either Quebec’s south shore or Ontario and the United States to avoid driving through Montreal, especially since the project was initiated a full decade before the first section of another major roadway, Ville Marie Expressway, opened in 1972.

The overall work was never built in a sequential fashion, and construction sites have been scattered over the future road’s design. The then-new Highway 30 (originally christened “Route 3”), was opened to traffic in 1968 as a 6.9-kilometre stretch between Route 116 and Highway 20 in the town of St-Bruno-de-Montarville, 20 kilometres southeast of Montreal. In the meantime, another site was underway near Salaberry-de-Valleyfield and the 1970s saw the construction of a 9.2-kilometre section linking Valleyfield and St-Thimothée. Tracy and Brossard, which are 80 kilometres apart, were finally connected in 1982. The latter town was connected to Candiac in 1996 and the current works on the eastern part of the highway have been ongoing since 2005, and are expected to be completed late this year. The construction of the private sector-managed western portion started in the spring of 2009 and its opening is scheduled.

Fifty years after it was originally started, the long-awaited completion of Quebec’s Highway 30 is almost here. It’s been a long road, filled with delays, controversies and political manoeuvring.

By Martin Forgues
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Such a huge project, of course, comes with problems, delays and controversies. The first significant delay came in 1977 when Quebec’s Department of Transportation decreed an eight-year moratorium on all new roadbuilding projects in the province, bringing to a halt the opening of new sections while allowing existing sites to continue operating.

Another major complication came in 2005 when the Mohawk Tribal Council in Kahnawake demanded to be consulted about any work to be undergone near territories on which they had laid claims, and they opposed the construction of an interchange linking Highway 30 to Highway 730, the latter of which borders the reserve. According to an article published by Montreal’s La Presse in 2008, work was halted in the early summer of 2007 when warrior radicals blocked access to the site. The dispute was never officially settled even though construction has since resumed.

Some controversy was also sparked in 2010 when an engineer working on the western section went public about his concerns over the private consortium’s plan to deal with what he described as major flaws in the design of a bridge that is to cross the St. Lawrence River.

Schedules and Budgets

Now that the project is in its final stage, all that remains is to connect the eastern portion in Candiac to the Highway 20/Highway 540 interchange, located near Vaudreuil-Dorion, making it a 54-kilometre stretch. The western portion for which Nouvelle Autoroute 30 is responsible comprises five sites: the Highway 20/Highway 540 interchange connection; a short, 90-metre-long tunnel under the Soulanges Canal; a two-kilometre stretch that includes a bridge crossing the St. Lawrence; a 2.5-kilometre section including another bridge crossing the Saint-Lawrence Seaway over the Beauharnois Canal; and an interchange linking the highway to Route 138 in Chateauguay.

The eastern portion, for which Transports Quebec (the provincial department of transportation) is responsible, is much smaller. A nine-kilometre stretch between Candiac and Saint-Constant that links to Highway 730 is already open to traffic. What is to be completed is the overpass, which will be built above boulevard Jean-Leeman.

“The aim of this portion of Highway 30 is to provide commuters and truckers with a bypass road and alleviate Montreal’s already problematic road network,” said Transports Quebec spokesperson Cynthia Martin.

The recent problems encountered on Montreal’s crumbling road infrastructures will not affect the works on Highway 30. “Completing the highway is somewhat considered a priority for Transports Quebec, especially given Montreal’s current issues with traffic,” Martin added. “Schedules will be met.”

This optimism is shared by Denis Léonard, chief executive officer of the private partnership agreement at Nouvelle Autoroute 30. “Going past the current deadline would be too costly not to put our priorities at the right place, and we will respect what we agreed upon with Transports Quebec,” he said.

The impact on traffic is thought to be tremendous. According to Transports Quebec, the new section, when completed, will relieve Montreal’s road network of an estimated 40,000 vehicles per hour.
The department also predicts a significant decrease of 18% in the number of car accidents on existing roads 132 and 201. It will also make access to highways much easier for residents of the western part of Montérégie, reducing the average distance between communities and highways from 18 kilometres to eight kilometres.

Some positive effects might be felt on the economy and the environment as well. Transports Québec estimated that 18,900 jobs – direct and indirect – have been created by the overall project. According to a document released by the department, another 450 jobs will see the light of day annually in newly accessible industrial parks located in western Montérégie. Two hundred million dollars is expected to be saved with the new decreases in transit time through Montreal’s metropolitan area, as well as $25 million in costs directed to the everyday use of motor vehicles, such as gas. When it comes to the environmental impact of having fewer vehicles driving through Montreal, greenhouse gas emissions are expected to decrease by 1% in the metropolitan area.

There has also been a moderate yet inevitable impact on the region’s agriculture. Approximately six square kilometres of arable land has been expropriated to establish the highway’s footprint, 99% of which had already been completed by 2009. According to various sources, little resistance has been met by citizens, farmers and landowners, with the notable exception of the Mohawk traditionalists and environmental activists. “This project will destroy 550 hectares of already disappearing arable land among the most fertile in Quebec, going against the government’s alleged pledge to sustainable development,” a statement by ecological advocacy group Équiterre said.

Where’s the Bus?

While car users and truckers will likely benefit from positive odds of seeing their lives on the road getting easier upon the highway’s final opening, things will not be the same for public transit commuters who want to move among the communities located along Highway 30, such as Vaudreuil, Châteauguay, Saint-Constant and Candiac, each sheltering on average 20,000 to 25,000 residents. While billions of dollars in public infrastructure (commuter trains, reserved lanes for buses, and a future Montreal tramway project) have been announced, Highway 30’s completion doesn’t address the much-documented need for a better public transportation system.

The lack of such an initiative is at first very surprising, given the provincial Liberal government’s official stance of making sustainable development, including improving current public transit networks, a priority. While commuter train and bus lines are accessible to the aforementioned communities, residents who commute to Montreal have very few options to move among those towns. “At Transports Québec, we didn’t address the issue because we think that there is no sufficient demand for public transportation along Highway 30,” said Martin. She also pointed out that since the project completely avoids Montreal, there is little need to improve upon existing networks.

Environmental groups have criticized the absence of public transit agencies at the Highway 30 completion project partnership table over the years. “This government does the opposite of what it says, and while talking about public transit, it strives to put more cars on the road,” said ecological advocacy group Équiterre in a statement.
PPP for the Future

In September 2008, a PPP was signed between Transports Québec and Nouvelle Autoroute 30, inc., a consortium formed by world-leading companies Acciona and Iridium that is charged by Transports Québec with overseeing the western portion of the overall project. The first is also involved in other major projects across Canada – mostly wind farms – and the latter, described by Nouvelle Autoroute 30 as the global leader in establishing public-private partnerships, already has a proven track record, having been responsible for the building of 5,000 kilometres of road as PPPs worldwide. A division of Nouvelle Autoroute 30, inc., Nouvelle Autoroute 30 CJV, inc., composed of companies Dragados Canada, Acciona Infrastructures Canada, Aecon and Verreault, is responsible for design and construction. Two more companies, Arup and S.I.C.E., are on board as “strategic partners”, including consulting. And it doesn’t end there. “On top of that, over 400 contractors are involved in the PPP, creating over 500 jobs in the process,” said Nouvelle Autoroute 30 CEO Léonard.

And while the PPP inherited the bulkiest part of the project – 42 kilometres out of 54 kilometres – Transports Québec denies having resorted to a PPP to address the popular perception that the public sector is unable to manage major roadbuilding works. “The decision to create a PPP simply reflects current trends in building public infrastructures,” Martin said. This is echoed on Léonard’s side. “A public-private partnership is a very efficient way of meeting schedule and budgetary demands, as there are major incentives for a private conglomerate to complete work within deadlines.”

This PPP is the second of its kind in La Belle Province. Although first announced in 2003 as the upcoming norm for staging and managing future government projects, the concept has been challenged over the years by Quebec’s population and opposition parties as a sneaky way of giving away government infrastructures to the private sector. Such a project – the Suroit natural gas energy plant – was aborted in 2004 due to public pressure. Since then, Transports Québec has signed a PPP to build Quebec’s first privately managed toll bridge on Highway 25 to link the cities of Montreal and Laval.

When work on its part of the highway is completed and before it turns it over to Transports Québec in 2047, the consortium will be responsible not only for maintaining and managing the infrastructure, but also for collecting tolls. According to Léonard, the price should be around 20 cents per axle. But unlike the Highway 25 bridge, which only has an automatic payment system using sophisticated motion sensors and high-speed cameras that capture licence plates, tolling on the western part of Highway 30 will be more conventional. “Our system will still be comprised of the traditional gate system,” added Léonard. “There will also be a subscription-based option for frequent users, using transponders much like the ones installed on the Highway 25 bridge.”

It looks like public-private partnerships might become the norm in Quebec when it comes to roadbuilding. “If this project proves as successful and cost effective as the Highway 25 bridge, there will be more,” noted Martin.

Heavy Work Means Heavy Machinery

Of course, such a major work sees the use of very heavy machinery. Cranes and bridge-laying equipment are put to the task along all six sites. Very busy at this stage are slipform pavers and concrete texturing and curing machines. Demix Construction, a division of Holcim Canada, which specializes in paving, is charged with surfacing the eastern government-managed part of the project.

At work on the Jean-Leman overpass site is the S1500 slipform paver, built by Guntert and Zimmerman, which has been preferred over its little brother, the S850, because the former had the appropriate width capacity required for the overpass, although both have telescopic paving frames.

Also used by Demix is the Gomaco TC-600 concrete texturing and curing machine.

While surrounded by crumbling roads – mainly the result of Quebec’s extreme-changing weather, Highway 30 will not benefit from new construction techniques. “We looked at a very conventional way of building the highway, which is much like the rest,” Léonard concluded.

Much-Needed Relief

The completion of Highway 30 will come to its long-awaited conclusion by the end of next year after years of delays, redesign, political debates and opposition from a plethora of interest groups. The decision made by the provincial government to switch over to a public-private partnership from a more conventional management model can be seen as an initiative to affirm the desire to finally put an end to 50 years of procrastination, be it intentional or not. It’s also paving the way for more PPP-managed projects, confirming the will of Quebec’s authorities – be they provincial or municipal – of going back to tolling to assure proper funding for public infrastructures. In upcoming projects, such as a future new Champlain bridge and the demolition and reconstruction of the much-overdue Turcot interchange, decision-makers are likely to submit PPP proposals.

As Montreal’s road infrastructures keep descending in a steady, fast-paced decline, the need for an alternative is nowadays even more evident than five decades ago, when the project of building Highway 30 was first launched. It’s clear that Quebec’s economic core can’t sustain its current traffic volume, given the hundreds of thousands of vehicles its roads carry every day. It could be argued that such decay might have been at least partially avoided should there have been a viable option for a high-speed road for the portion of the traffic that doesn’t need to drive through Montreal. While it might, as environmentalists fear, put more vehicles on the road, there is no doubt that the completion of Highway 30 will alleviate traffic jams in Montreal’s metropolitan area.

Martin Forgues is a freelancer journalist based in Montreal, Que. He researched and produced this article for Aggregates & Roadbuilding.
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Danford Aggregates’ granite quarry near Madoc, Ont., was a very busy place in late November 2011. The extremely mild fall weather had meant companies all over the province were able to stretch out their roadbuilding activities, and demand for Danford’s granite aggregates (FC1, FC2 Superpave) was still intense. “We fill orders from all over eastern Ontario and as far away as Hamilton in southern Ontario, which is about a five-hour drive from here,” says aggregate operations manager Jamie Danford. “It’s a very high-quality source of gneiss granite, which produces excellent asphalt with good skid resistance. The demand just keeps increasing.”

In addition to the granite quarry, the company operates two limestone quarries and eight gravel pits. Danford Aggregates is a separate business, added some time ago to Danford Construction, which was started by Jamie’s grandfather Samuel over 50 years ago. Still active in the business are Samuel’s son Walter (president) and third-generation family members and co-owners Jamie, Sam (equipment manager) and Al (operations manager). During their lifetimes, second-generation family members Brian and Doug also helped build the business.

In a year, the company handles 250,000 to 300,000 tonnes each of limestone, granite and gravel. There are about 50 employees during construction season, and about 40 during the winter when the company continues aggregate production as the weather permits, and also does some winter road maintenance subcontracting.

On the road construction side, Danford mainly handles excavating, with paving contracted out. “This year was unusual because we spent about three and a half months implementing the plan for the closure of a local historic talc mine,” says Danford. “It involved moving a lot of material to get the sloping done on areas that had been blasted, and it’s now an amazing rehabilitated site. The difference is incredible.” Danford is doing part of the work for another mine closure in 2012. The company has also had a CCIL-certified aggregates testing lab for six years.
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Danford spent about three and a half months in 2011 implementing the plan for the rehabilitation of a local historic talc mine.

Granite Production Flow

The quarry floor is currently about 40 feet below the ground surface; tests have shown there are at least 50 ft. of granite below the floor. Blasting, done by Cruickshank of Kingston, produces 36-in. minus rubble, which is fed into the primary crusher (a 3055 Pioneer) by Caterpillar 988H, while a CAT H140 breaker is used to break oversized rubble. A 6-ft. x 16-ft. scalping screen removes fines and also flat and elongated pieces that don’t meet cubicity standards. The primary crusher produces 9-in. minus product, which goes into a Sandvik S3800 gyratory secondary crusher. The 3-in. minus product is fed into a surge bin which provides a consistent flow to the tertiary Sandvik H3800, which makes a half-inch end product. The spread is powered with an 1100KW generator, and shifts run 6 a.m. to 6 p.m.

“Everyone in our operation is important, but our crusher operators, our crusher ‘ground’ crew and the operators who run the loaders for feeding and stockpiling/load- ing are critically important,” says Danford. “Your crusher operator is adjusting things continually to make sure the process produces a consistent product, but the ability of your feeder to provide the jaw with a mixture of rubble sizes is a big part of that too. Stock- piling must also be done correctly or you lose consistency there. And your ‘ground’ operators who monitor the crusher all day are key to making sure the machinery is all working properly.” Danford says that a person in that position, who is scanning continuously for things like bearing wear, can potentially save the company tens of thousands of dollars in avoided repairs and downtime on an ongoing basis.

Cruickshank generally blasts granite for Danford every five or six weeks, but the sum- mer of 2011 was a little different – to say the least. “They actually set their biggest blast- ing record ever here and then they broke it and set their new record here,” says Danford. “When we asked them to do bigger blasts, they made it happen. We lose two days’ pro- duction every time we move the crusher out and in for a blast, so bigger blasts let us keep production going.” The biggest blast they have carried out involved about 660 holes.

The two limestone quarries, operated since 1995 and 2004, produce aggregates for a wide variety of purposes. “We make granular A, M, B for concrete and asphalt road bases, gabion stone for drainage, clear stone for drainage and HL3 and HL4 for surface treatments,” says Danford. In 2010, they purchased a Terex Cedar Rapids spread for use in their limestone pits and quarries. “We decided on that one because it’s more portable than some others on the market – the screen and cone are on one chassis – and the company has a good reputation and it was also ready to purchase,” says Danford. “We didn’t want to wait and we didn’t have to with this unit.” A Caterpillar 980G feeds the Elrus 2442 primary crusher, which pro- duces 6-in. minus product. A surge feeder provides consistent flow to a closed-circuit secondary cone plant MVP280 Terex Cedar Rapids with a 6-ft. x 20-ft. screen on Masaba frames. McCloskey conveyors move the fin- ished product. In late November, they were making granular B at 275 tonnes per hour, with a Caterpillar 966G handling stockpiling and shipping.

Danford will begin operation of another quarry (traprock) in the next year or so. “The traprock meets concrete and asphalt aggreg- ate standards as well as Class 1 & 2 railway ballast,” says Danford. “There are reserves of 20 million tonnes.” The company held public meetings during the fall 2010 to edu- cate the public about quarry operation. “We are committed to following all the guidelines set out by government agencies at various levels, and have good relationships with our local municipalities and citizens,” says Dan- ford. “It’s important to us that we are good neighbours.”

Treena Hein is a freelance journalist based in Pembroke, Ont. She researched and pro- duced this article for Aggregates & Roadbuilding.
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World of Asphalt and AGG1

These Charlotte, N.C. shows in March will offer significantly more exhibitor space than the 2010 event.

By Treena Hein

The Charlotte, N.C. shows in March will offer significantly more exhibitor space than the 2010 event. Your calendar for 2012 is no doubt already filling up with many items, but if you haven’t already done it, add one more. From March 13 to 15, the leading exposition and education resource for the asphalt industry – World of Asphalt Show & Conference – is happening in Charlotte, N.C. Held annually except in CONEXPO-CON/AGG years, the event features in-depth industry-focused educational programming and comprehensive exhibits that showcase the latest technologies and innovations in asphalt-related equipment, products and services.

At the same site, visitors will find the AGG1 Aggregates Forum & Expo. “The asphalt and aggregates industries complement each other, so the co-location is a natural fit,” says show director Melissa Magestro. “The shows are industry-run with a strong customer focus. We want both attendees and exhibitors to get real value for themselves and their businesses.”

Over 300 exhibitors with 6,000 industry professionals are expected to be on hand. As of early January, both shows had already broken records for reserved exhibit space – and together at that point in time, ‘World of Asphalt’ and AGG1 offered almost 20% more space than last year.

As before, this year’s shows will feature cutting-edge educational presentations and professional development seminars. AGG1 presentations range from building better community relations and dust control to maintaining conveyor belts and the frac sand process. “Those companies that are going to recover strongest and fastest are going to be the ones with employees learning and networking,” says AGG1 chair Rick Feltes. “AGG1 offers the opportunity for that.” Feltes also represents the National Stone, Sand and Gravel Association (NSSSGA), which owns AGG1 and co-owns ‘World of Asphalt’ with the National Asphalt Pavement Association (NAPA) and the Association of Equipment Manufacturers (AEM). AEM produces both shows. “World of Asphalt attendees will find the products, services and the education they need to stay competitive in the industry today,” adds Richard Moore, ‘World of Asphalt’ chair and NAPA representative. “And just as important is the opportunity to talk with fellow professionals from all aspects of the asphalt and aggregates industries, across the U.S., Canada and other countries, to gain perspective about what’s ahead.”

Among the large number of exhibitors will be Terex Roadbuilding. “We are excited for the return of ‘World of Asphalt’ and to meet with our asphalt paving and production customers,” says Mark Oehmke, director of sales and marketing for North America. Deister will also be on hand, a company celebrating its 100th anniversary this year. “Deister is excited to participate in the upcoming show, as it’s always a great forum to connect with many long-term customers and to meet new potential customers,” says representative Carol Wasson. “It’s a great show for sharing ideas and creating new solutions.”

Terex Minerals Processing Systems also looks forward to seeing all of its distributors and customers in Charlotte. “This a very exciting show for us that has very strong attendance planned,” says marketing director John Garrison. “AGG1 offers many educational opportunities, and allows us to have more one-on-one conversations to get feedback on needs from our customers.” He adds, “Face-time and feedback from the people who use our products is what fuels our product development priorities and designs.”

Other Exhibitors Attending

Among those at ‘World of Asphalt’/AGG1 will be Derrick Corporation, showcasing its advanced closed-loop technology, which de-

waters thickener/clarifier underflow within the wash plant circuit and completely eliminates settling ponds. “The Derrick DE-7200 centrifuge dewater 100% of the super-fines present within most thickener/clarifier underflows to a stackable and conveyable form at 75% solids,” says advertising manager Frank Russom. “Zero water reports to the ground. The centrifuge has only two moving parts, unlike outdated belt presses or ‘batch-operated’ plate and frame designs. It requires zero manpower and reduces chemical consumption.”

On hand at Telsmith’s booth will be its new JCP 2238-38 two-stage portable crushing plant that includes a Hydra-Jaw 2238 as the primary crusher, and a 38 SBS Cone to complete final crushing after sorting through the included screen. “This self-contained, electric-drive portable crushing unit can be moved with minimal disconnection,” says spokesperson George Baker, “allowing for consistent, close proximity of crushable material, maximizing the efficiency of your quarry operation.”

Visitors to the Terex Roadbuilding booth will see the company’s new 950 hp Terex RS950B Reclaimer/Stabilizer, with 30%...
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- **BTFM3P-3620**
  - Triple shaft horizontal screen

- **BHST-1616**
  - High-speed vibrating screen

- **VFG-6024**
  - Vibrating grizzly feeder

- **UHS-4616-DDS**
  - Dual sand deck asphalt batch plant vibrating screen

- **VGB-8416**
  - Vibrating grizzly

- **USM-2512**
  - 2-deck inclined drum mix asphalt plant scalping screen

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more horsepower than competitors’ machines. “A centre-mount cutter design maximizes production, while a V-Belt power-band cutter drive offers more operating efficiency,” notes Oehmke. “Its standard 8-ft. cutter delivers up to a 16-in. cutting depth, while available rotors provide the 10-ft. cutter widths and 20-in. cutting depths.” It also offers four-wheel drive and customizable configuration.

Also at the show will be the Volvo L250G Wheel Loader from Volvo Construction Equipment, the industry’s first wheel loader in the 39-ton weight class, says spokesperson Jean Hiller. “The L250G is purpose built to be a heavy-duty machine with plenty of power and features larger bucket sizes,” she notes. “In North America specifically, when loading triaxle on-highway trucks, a new nine-cubic-yard rehandling bucket quickly fills a truck in only two passes.”

Metso will officially launch its new C120 jaw crusher to the North American market at AGG1. “The C120 has a large feed opening of 34 x 47 in. (1200 x 870 mm) and an aggressive cavity cross-section, providing high performance and reduction ratio,” says Linda Bergmann, marketing communications analyst. Metso will also unveil its Lokotrack LT120, the latest and most advanced of their track-mounted jaw crusher plants.

Get to know the Loadrite X2350 at the booth of Loadrite Onboard Weighing Solutions – a rugged and proven hydraulic-based payload weighing system for excavators. “With hundreds in place…around the world, the X2350 will monitor your operations and help reduce your operational costs, with a short payback period,” says sales and marketing executive Michael Mayer. “The X2350 has proven its usefulness and adaptability in the toughest operating environments.”

New for 2012, Terex Minerals Processing Systems will be showcasing their new CRS-6203FV wheeled feeder/screen plant. “This plant has many built-in, user-friendly features for maintenance, as well as key design features to maximize production,” says Gar- rison. “This plant is also the launching pad for our latest screening technology, our new LJ-TSV6203 variable slope screen.”

At Polydeck Screen Corporation’s booth, the company will highlight its ‘Flexi’ series of modular rubber screen panels that eliminate blinding in high moisture applications. “Their flexible material compounds provide a trampoline effect that prevents sticky material from clogging screen openings, which means your maintenance crews will have more time to spend on issues other than screen cleaning,” says senior marketing manager Dennis Zeiger. “It also means your screen decks will run longer, putting more saleable product per day on the ground.”

Emerson Power Transmission Solutions will display a new working demo called the Sand Box – featuring a Browning heli- cal shaftmount speed reducer with seal and bushing system, Sealmaster USRB mounted spherical roller bearing with contact seal and flinger, Browning performance belt drives and a CSI wireless vibration transmitter. “I’m particular eager this year to present our new campaign ‘Puzzled by Downtime,’” says director of global marketing Matt Stoneburner. This campaign will present solutions to prevent downtime.

Visitors to Masaba’s booth will be able to see a demonstration of its Masaba Magnum Telescoping Conveyor patented ‘Track Technology,’ which eliminates cable maintenance issues versus a winch system, says Jim Peters- son, vice-president of sales and business development. It also improves safety from cable breakage and uncontrolled rollback, and the collapsible stinger cover eliminates dust.

Roadtec will be showcasing two Tier 4i pavers at the show, which feature a completely new design, as well as a new cold planer model, a Tier 4i Shuttle Buggy MTV, and the new front-mounted, heavy-duty broom. “The brand new remote diagnostic system, which allows contractors to monitor machine performance and productivity remotely, will also be demonstrated,” says spokesperson Stephanie Rider.
In 1974, we started making asphalt plants with a simple philosophy. Take care of the customer and business will take care of itself. More than 35 years later — with over 1,000 ADM plants operating in 40 countries — that philosophy is what sets us apart. With a plant to compete on any level and the type of personal service you won't find with the big guys, we make it easy for you to take care of business.

Small-town service is alive and well. Call 260-637-5729 to put ADM to work for you today.
At Flexco’s booth, representatives will explain how their ‘Belt Conveyor Audit Program’ helps operations evaluate the performance of each conveyor system, and allows them to proactively address belt conveyor concerns before they lead to costly repairs and unscheduled downtime. Focusing on issues such as spillage, carryback, and mistracking, Flexco specialists record their findings and return to the operation with a complete presentation on the system, identifying immediate needs and suggested future fixes, says public relations specialist Kelly Clancy.

McLanahan, a pioneer of sand production using cyclones/separators and dewatering screens, will have both plant and equipment models on display. “Correct-scale replicas of potential layouts of systems and individual equipment will be provided, for further understanding of the way McLanahan provides answers, not just products,” says marketing manager Heather DeRensis Wilt. “The combination of cyclones and dewatering screens results in a drier product and less usable sand lost to waste. Available in fixed, modular and mobile configuration, our plants can be used for washing, organics removal and fines recovery.”

At the Deister booth, staff will be available to talk about customizing any piece of Deister feeding, scalping and screening equipment. “Deister will also be highlighting its new portable plants, and its new UltraFines Recovery System,” says Wasson. Deister will also introduce the latest addition to its line of premium-quality screening equipment, the Deister Portable Feeder Screener - Style horizontal 6 x 20 and 8 x 20 screening plants.

Screen Machine Industries, one of the largest manufacturers of portable crushers, screeners, trommels and conveyors in North America, will have information on their complete line of portable impact and jaw crushers, screening plants, hammermills, trommel screens and portable stacking conveyors.

Martin Engineering will showcase the Martin PIT VIPER, an aggressive pre-cleaner with a forceful angle of attack to provide excellent belt-cleaning efficiency. “The one-piece blade contains 20% more urethane than comparable pre-cleaners, extending service life,” says marketing communications administrator Chelsea Blake. “The ‘one-pin, no-tool’ blade replacement makes for easy service. Stop by our booth to learn how Martin Engineering’s belt cleaners can remove sticky sand and wet fines.”

Those who stop by to see Wirtgen America will find the latest on their advanced asphalt paving and recycling, and minerals processing technologies, such as the new Vögele VR 600-2 screed, designed exclusively for North America for use with the Vögele Vision line of asphalt pavers. They will also display the HD+ line of Hamm tandem rollers, featuring conventional vibration, high-vibe and exclusive Oscillation compaction, and high-performance asphalt reclaiming equipment like the Wirtgen W 200, W 210 and the new W 250 cold mills.

At the Superior booth, visitors will find the market’s first ever primary and secondary belt cleaning system to share the same, common mounting point, says spokesperson Corey Poppe. “With one pole, maintenance workers can avoid adding to their conveyor’s structure, a common task to accommodate secondary cleaners,” he notes. “Another key feature is the Exterra SFL Dual Belt Cleaner’s unique tensioning system – the patented design creates a pressure that is set once, for the life of the blade, during installation.”

Bigger and better than ever, ‘World of Asphalt’ and AGG1 are sure to be of value to every visitor. “Exhibitors know the show is a proven way to grow their businesses,” says Magestro,” and attendees will find the latest product innovations to also position themselves for growth.”

Treena Hein is a freelance journalist based in Pembroke, Ont. She researched and produced this article for Aggregates & Roadbuilding.
WE’VE DRAWN A LINE IN THE SAND.

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frac sand plant operators struggle with poorly designed systems that break down and under deliver.

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A key component to a successful infrastructure project is the continuous, cost-effective, and efficient operation of machinery that powers the project. Given that tires account for nearly 20% of the maintenance costs of trucks, loaders, and haulers, careful attention to how you select your tires, and keeping in mind the wide portfolio of tires that are necessary to address your project needs, is essential. Here are a few tips from the tire industry experts at Dynamic Tire Corp., a distributor of quality tires that include products for the roadbuilding and aggregates industries.

Tire Applications – The Right Tire for the Right Job
The key to selecting a long-lasting, cost-effective, and appropriate tire for the aggregates and roadbuilding industries is to look into some key features of tires that can address your job needs:

- Open-Shoulder vs. Closed-Shoulder Drive Tires – Closed-shoulder patterns are ideal for long tread life line-haul operations. Open-shoulder designs provide far better traction in off-road conditions, stone ejection, resistance to cutting, and are good for regional applications that are typical in construction environments.

- Stone Ejection – A key part of preventing tire casing damage is a tire’s stone ejection capabilities. Failure to remove embedded stones results in tread and casing damage over time, as uneven surfaces can cause tire failure due to pinpoint pressures.

- On/Off-Road and Severe Service Application Tires – Many open-shoulder drive tires such as the Aeolus HN362 or Sailun S758 provide excellent on- and off-road traction, ideal for construction applications such as roadbuilding, with the ability to deliver excellent comfort and durability in on-highway situations. Severe Service Application tires are designed with maximum traction in mind, and are best suited to primarily off-road construction and hauling applications.

Tire Procurement Management
When looking at your next tire purchase, consider making a checklist that answers these questions:

1. Have I accounted for economies of scale/volume discounts by purchasing tires for all of my project machinery?
2. Where is the closest retailer or distributor to my project for my tire needs in case of emergencies?
3. Do I have a list of high tire turnover equipment that should have a minimum stock of tires in inventory?
4. Which tire brands and products are the best-in-class for my particular application?
5. Seasonality – Are my tire treads deep enough to provide adequate traction in the fall and winter?
6. What’s my cost-benefit to retreading a tire versus buying a new one?

These are all key questions to address when a downed dump truck can cost hundreds of dollars per hour, far outstripping the costs of not having tires at your disposal when a failure occurs.

Retreading – Sustainability for the Environment, and Your Budget
Did you know that it takes only seven gallons of oil to make a retread, compared to the 22 gallons in a new tire? Not to mention that giving a properly maintained tire casing a retread can reduce landfill pollution. “In many cases the retread rubber being applied to a serviceable casing is of higher quality than the original, giving a longer service life. In addition, a retread can save up to 60% of initial costs versus a new tire,” says Marcel Leclair, CEO of Ironhead Rubber Technologies, a Canadian retreading provider.

Considering the tremendous cost savings, as well as the environmentally friendly message attached to retreaded tires, they are definitely worth adding to your tire purchasing strategy.

Asian-Made Tires – Worth Looking Into
With rapidly advancing technologies, initial cost advantages, and improved casing durabilities, Asian brands such as Aeolus and Double Coin are worth looking into when exploring your next tire purchase. These days, Asian-made tires are not just cost effective and cheerful, but they offer exceptional value.

Humphrey Ho is senior director of marketing at Dynamic Tire in Brampton, Ont. He researched and produced this article for Canadian Forest Industries with input from Ray Giancanti and Ron Dolan, who are commercial tire specialists with Dynamic.
**Front hopper:**
*Binder material*
Generous size with an enormous capacity of 31 t. Funnel shaped for uniform emptying without segregation.

**Upper hopper:**
*Wearing course material*
Seventeen-ton capacity and a shorter route to the rear screed, which saves energy by eliminating the need for additional electrical heating.

**Front screed:**
*Binder course*
The front screed is a high-compaction unit with tampers, vibration and final compaction unit (pressure plate) for an optimally compacted binder course. This screed can be raised and deactivated for structures such as bridge decks where no binder course is required.

**Rear screed:**
*Wearing course*
A standard Dynapac tamping, vibrating screed applies the wearing course. It is positioned directly behind the front high-compaction screed. The surface profile and slope for both screeds can be synchronized from one display. This makes changing the slope when driving around curves extremely easy.

**Weight in perfect balance**
The drive unit for the module is positioned at the very front. As a result, it is very accessible and serves as a counterweight for transportation and paving.

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For more information on integral paving, check out [www.compactasphalt.com](http://www.compactasphalt.com)

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While the economic downturn has taken a little wind out of the “green,” or “sustainability,” movement’s sails, the environment is still on the minds of legislators and the general public. From greenhouse gases and the Clean Air Act, to storm water legislation, to Leadership in Energy and Environmental Design (LEED), green is going strong. And as an eco-friendly and socially responsible aid to infrastructure, pavement preservation deserves recognition and additional consideration for the role it plays.

**Green Benefits You Can See**

As a short list of their benefits, compared to mill and fill alone, preservation methods such as slurry and micro surfacing and chip sealing consume less aggregate and binder – i.e., natural resources. The fact that they reduce the need to demolish, haul and dispose of (or even recycle) old pavements, coupled with the fact that they are quicker, cooler processes to apply, translates to a reduction in waste, emissions and greenhouse gases. Simply put, the carbon footprint from pavement preservation projects is lower than that from traditional asphalt paving.

Pavement preservation methods offer additional, less obvious green advantages as well. For example, because there is no need to establish a nearby aggregate source or hot-mix asphalt plant, dust from crushing and screening, additional emissions and energy needs are reduced. Roads are drivable within a short period after the treatments have been applied, reducing traffic delays and the associated greenhouse gas (GHG) emissions.

“In general, the longer a contractor is out there, the more energy and materials you consume, the more emissions and greenhouse gases you create, and the more risk there is to workers and the general public – it’s a snowball effect that pavement preservation keeps under control,” explains Rusty Price, president and general manager for Intermountain Slurry Seal, a subsidiary of Granite Construction Inc.

Research backs Price’s logic. For instance, BASF Corporation’s recent “Micro Surfacing Eco-Efficiency Analysis (EEA)” found that, compared to mill and fill techniques alone, micro surfacing consumes 40% less primary energy, uses 50% fewer resources by mass and creates 45% fewer GHG emissions. Further, the BASF EEA report has been verified by NSF International, a not-for-profit, non-governmental organization accredited by the American National Standards Institute (ANSI) to develop standards and provide third-party conformity assessment services. NSF determined that the EEA complies with its Protocol P352: Validation and Verification of Eco-Efficiency Analyses.

The laws surrounding emissions and storm water have no doubt made more contractors aware of pavement preservation’s green benefits than the agencies whose projects they fulfill. According to Price, “Those of us who work with chip seal, slurry seal, microsurfacing, etc., already know that these techniques are environmentally friendly. They require less materials and energy, and they create fewer emissions and less risk to the environment and the public. It should make sense to everyone that the green benefits are there,” he says. “Unfortunately, for agencies, the green aspect has so far been mostly ancillary to pavement preservation’s low-cost benefits.”

One exception to date, however, has been the Federal Highway Administration’s Central Federal Lands Highway Division and under this agency, the U.S. National Park Service. Charles “Chuck” Luedders, P.E., pavements engineer for the division, says that when a contractor deals with the National Park Service, every job has to have the environment in mind as a major concern.
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13’-9” x 6’-9” hopper provides 7.4 cubic yards of capacity and folds hydraulically
National Parks: Handle With Care

Luedders says that within our National Parks, pavement preservation, especially chip seal and micro surfacing, has been a good option for maintaining infrastructure assets – from both a budgetary and a green point of view. “The biggest advantage for most agencies is that pavement preservation extends budgets; for the most part, ‘green’ is a side benefit. For National Parks, however, it is a primary benefit,” he says. “Their major concerns are the environment and the visitor experience. We are always providing information to them on the green benefits of pavement preservation and how quickly the work can be completed.”

In addition to the normal eco-friendly aspects to pavement preservation, the National Parks require some special steps to be taken as part of their preservation projects. For instance, in most chip seal projects, loose aggregate can be swept to the side of the road. But in the National Parks, it must be swept and hauled off of the park’s land because the stone is not native to the ecology. “Once the excess chips are vacuumed up, they’re taken to another location,” says Luedders. “The contractor can then sell them to homeowners, or if they are cleaned up and meet specification, they can be reused on the roadway.”

Price explains that other National Parks requirements include taking special care with emulsions to keep them only on the road surface and off of curbs, rocks and greenery. “We have to be careful transferring from the transport trucks to the spreaders, and also ensure that aggregate and emulsions stay out of storm drains and water sources such as rivers, lakes and streams. You have to know where the storm water goes every inch of the way and watch the weather,” he says. “You can’t lay an emulsion if there’s going to be a thunderstorm.”

Overspray of asphalt onto historic features is another concern, according to Luedders. In some National Parks, even the stone curbing is considered historic, and must be covered with tape or protective paper. These requirements are typically written into the job specifications.

“When National Parks jobs, we conduct pre-construction meetings to help employees remember that the environment is a top priority,” Price says. “But in general, we try to make the environment a priority everywhere we work. We don’t like upsetting anyone, whether they’re homeowners or agencies.”

Luedders agrees. “From a PR standpoint, for any such project, it’s a good idea to emphasize the green nature of pavement preservation. It gets the public behind the projects, as opposed to only looking at the cost as a reason to preserve,” he suggests.

Additional Points To Ponder

Pavement preservation fits well with the current interest in sustainable development. Defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs,” sustainable development tries to balance the needs of people, nature and the economy – and it includes green construction practices as part of its tenets.

Similarly, the U.S. Green Building Council has introduced the LEED (Leadership in Energy and Environmental Design) program to encourage developers to design more sustainable projects. LEED has grown and evolved from a single standard for new construction to several different project development and delivery processes. The rating systems address new construction and major renovations, existing buildings, core and shell, commercial interiors, schools, retail, health care, homes and neighbourhood development. In many cases, pavement plays a role in the overall rating. Several of LEED’s intents are to reduce pollution from construction activities by controlling soil erosion, sedimentation, and airborne emissions and dust.

Pavement preservation methods provide numerous environmental benefits, including reducing the consumption of natural resources and reducing emissions. At the bidding stage and beyond, it would certainly be beneficial for contractors to bring all of these points to the specifying agencies’ attention.

“I’ve said for years that there has to be more than a low bid. There has to be something of value besides finding the lowest cost,” Price says. “Keeping the environment in mind is one of those added benefits.”

Pierre Pelletier, a 30-year pavement preservation industry veteran, is the president of the International Slurry Surfacing Association (ISSA) and general manager of marketing and business development at Terry Asphalt Materials, Inc. To contact Pierre, call 615-630-2315 or e-mail ppeltier@terryasphalt.com or visit ISSA’s website at www.slurry.org.
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Metso’s SmartTag – The Next Generation and Beyond

SmartTag™ is an RFID (radio frequency identification) based technology designed to allow tracking of ore from its source through blasting, run of mine (ROM) pads, crushers, intermediate stockpiles and finally into the concentrator.

By Michael Wortley, General Manager – PTI Products, Metso Process Technology & Innovation

Metso’s Process Technology and Innovation group is a world leader in mineral processing consulting. A significant amount of this consulting work involves process integration and optimization (PIO) studies, which includes investigating the effects of drill and blast design and implementation on downstream processing. Critical to these studies is the ability to track specific ore into and through the plant.

To increase the accuracy of this ore tracking, Metso Process Technology and Innovation (PTI) developed a system to track ore using RFID transponders called SmartTag™. Since its commercialization in 2007 SmartTag has been used in the majority of PTI’s consulting projects and several permanent systems have been installed worldwide.

The benefits of using SmartTag include: linking spatial mine data to time-based processing data; increased confidence in ore blending; proactive process changes for known ore types; and accurate measurement of residence times in stockpiles and bins.

Since 2007 there have been significant advancements with RFID technology that have allowed PTI to extend the reach of SmartTag™ beyond secondary crushing to tertiary crushing and beyond. This has been achieved by drastically reducing the size of the SmartTags from a diameter of 60 mm to 20 mm. The new, smaller RFID tags have been successfully used in several studies.

The SmartTag System

A SmartTag RFID tag travels through a mine and mineral processing plant in a series of simple steps. Initially, the tag and insertion location is logged using a hand-held computer or PDA, then it is inserted into the ore (e.g., into a blast hole). The tag travels with the ore through digging, transport and processing, before being detected at detection locations (on conveyor belts), when the time and specific tag is recorded. The RFID tag data is then loaded into a database and analyzed as required.

To achieve this, the SmartTag system requires five main components. The first component in the SmartTag system is a PDA, which allows the initial RFID tag insertion process to become more efficient and accurate. Each RFID tag is added to the database using one of three options; it is associated with a GPS co-ordinate; it is associated with a predefined point (such as a blast hole); or it is associated with a new point, which can be accurately located later.

At present the system does not allow for high-precision GPS but it can locate the nearest point in a series of predefined points, such as blast holes, and allow the user to associate RFID tags with these points.

The next component in the system, the antenna, is located at the conveyor belts. The antenna both induces a charge on the tag and also receives a transmitted signal back from the tag. The design of the antenna is decided by two parameters, which are its size and its robustness. The size of the antenna dictates the size and the strength of the field it radiates. For this application the area of field strong enough to charge the tag should be as large as possible; therefore, the antenna used for the SmartTag system is the largest available for this frequency of RFID system.

An RFID reader then decodes the signal from the antenna and determines the ID of the RFID tag passing the antenna. Later versions of the readers also have auto-tuning capabilities, which ensure that the maximum possible read distance is achieved at all times. In the SmartTag system the reader then transmits the ID using serial communications.

A data logging, or buffer, stage improves the reliability of the systems and also makes movable systems possible. The data logger receives data directly from the RFID reader, stores the IDs with the time they were detected and monitors vital system parameters, such as the tuning state of the antenna. The data logging stage also makes SmartTag less reliant on communication links (such as wireless) as the data is stored at the detection point until a link is established to the software applications. The critical communications links, like the one between the antenna and the reader, are all wired and very reliable.

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Adding Mini RFID Tags
To expand the applications of SmartTag through and beyond second-
ary crushing, a mini RFID tag was required. To incorporate the mini
RFID tags into the SmartTag system, PTI faced two significant chal-
lengthes; firstly, the reduced read distance, and secondly, making the
mini tags robust.

By reducing the size of the RFID tag, the size of the antenna in
the tag is also reduced. The size of the antenna in the tag is directly
proportional to the amount of charge that is induced, for a given field
strength. Therefore, the read range of a tag will be reduced as the size
of the tag is reduced.

Through investigation, the 20 mm tags were found to have an in-
sufficient read range for the standard SmartTag installation. PTI tri-
angled two methods for fixing this issue; one method was to use two
antennas while the second method was to place the antenna closer to
the RFID tags.

Both systems were tested at an iron ore mine. Both approaches,
dual antennas and closer antenna distance, were found to have similar
detection capability. However, based purely on the ease of installation,
a single antenna located under the belt was chosen as the new standard
installation method.

The second challenge faced when incorporating the mini RFID
tags into the SmartTag system was how to protect them sufficiently
to survive a blast. A method previously used by PTI to achieve this
was to encase the tags in a two-part epoxy. The method works well for
protecting the tags, and although it is time consuming and expensive
it is currently the preferred method for protecting the tags. Different
encasing materials, such as reinforced nylon, are still being
investigated.

After encasing in epoxy, the mini-tags have a diameter of 20
mm and are shown, with a standard SmartTag as reference, in Fig-
ure 1. The size of the mini RFID tags allows them to pass easily
through screens with apertures down to 25 mm.

Conclusions
Metso PTI has successfully incorporated a smaller, or mini, RFID tag
into its SmartTag system. The changes to the system installation are
minor and increase the reliability of the system as a whole. In several
examples the mini RFID tags have proven to be, on average, more ro-
bust than normal sized RFID tags.

The PTI team envisage that with the successful incorporation of
the mini RFID tags into the SmartTag system it will allow applications
for the system to be expanded. These new applications could include
a wider use in the iron ore industry where size is the critical material
quality. PTI is now working on proving the reliability of the next size of
RFID tags, the even smaller micro RFID tag, which can pass through a

SQL (Structured Query Language) database. The database, located
on a dedicated server, stores all the information about the detection
points, detected RFID tags and original locations. There are several
SmartTag software applications that either input data into the database
or use the data to output information. These include the SmartTag-
Server, which reads data from the data loggers, the SmartTagPDA,
which exchanges data with the PDAs and translates site blast hole
layout diagrams, and the SmartTagRes, which calculates the residence
time between two detection points.

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With the decreasing size of RFID tags and the development of SmartTag into a truly distributed system, it can be extended past the mine to cover the whole minerals supply chain. Detection points can now be located in the plant, the port and even at the location of the customer, such as a blast furnace.

Case Studies

The two case studies presented here demonstrate applications where it is advantageous to use the mini RFID tags rather than the normal sized RFID tags.

Case Study 1 – Secondary Crushing Circuit

As part of a wider PIO study, a secondary crushing circuit was surveyed while being fed with a particular ore type. To determine the origin of the ore at any particular time and, most importantly, during the surveys, SmartTag detection points were set up at three locations around the circuit. The three locations were primary crusher product, secondary crusher feed and secondary crusher product.

A total of 384 mini RFID tags were placed on eight polygons (a polygon is defined as different ore zones within the mine block model) after the blast, the ROM pad and trucks as they tipped ore into the primary crusher.

Of the 384 tags placed onto either the muck pile or the ROM pad, 45% were detected. However, if this is compared with the percentage of each polygon that had been excavated by the end of the trial it is a fair conclusion that many of the RFID tags that weren’t detected were also not excavated during the trial.

To determine the survival rate of the tags during secondary crushing the number of tags detected before and after the secondary crusher were compared. Of the 128 tags detected before the secondary crusher, 97 were also detected after secondary crushing.

However, as there were 52 tags that were detected after the secondary crusher but weren’t detected before the secondary crusher, the real survival rate is difficult to determine. By just comparing RFID tags detected at both detection points, it can be concluded that at least 76% of the mini-tags survived secondary crushing, although this number is likely to be much higher.

The screen immediately following the secondary crusher uses panels with 55 mm apertures and, as expected, none of the tags were recycled back through the secondary crusher.

The primary application for SmartTag was to determine the origin of the ore being processed during the plant surveys. In this application, where the plant feed included ore from ROM mixing and stock piles, SmartTag was essential for determining which materials were processed in the plant at the time of the surveys. Mini-tags were required to enable the ore source to be tracked all the way through secondary crushing, and proved to be robust enough to survive both blasting and secondary crushing.

Case Study 2 – HPGR Circuit

PTI was contracted to assess the performance of a circuit at a mine located in South America. The SmartTag system was used in this application to allow the PTI engineers to know exactly when a surveyed blast was being processed. For this reason, detection points were located on conveyor belts carrying the product of the primary crusher, the output of the stockpile and the HPGR (high pressure grinding roll) feed.

As the blast was being audited, RFID tags were deposited into 68 blast holes, using an even split of 34 normal tags and 34 mini-tags. A further 50 tags were later added into the trays of 25 trucks at the primary crusher, using one of each of the two different types of tags in each truck.

A total of 68 tags were identified at the primary crusher product detection point, 23 at the stockpile output detection point and 41 at the HPGR feed detection point.

The excavation of the muck pile took place two months after the blast. The SmartTag system monitored the material passing through the process over a period of 30 hours. During this period, a total of 67 different tags were detected; 33 were of normal size and 34 were mini-tags.

For the stockpile and HPGR feed detection points, the recovery was calculated with reference to the 64 distinct RFID tags detected at the primary crusher. Of the normal tags detected at the primary crusher detection point, 42.4% were then detected at the HPGR feed detection point; whereas for the mini-tags 67.6% of tags detected at the primary crusher were also detected at the HPGR feed.

This shows that the survival rate of the mini-tags in the circuit is higher than that of the normal tags. In a hypothetical situation, where the secondary screening mesh is smaller than 50 x 50 mm, normal tags certainly would not reach the HPGR.

The detection of tags at the primary crusher was also affected by the removal of the SmartTag system before the entire blast was processed (for logistical reasons).

The tags were used to track the material during an optimization campaign at the plant. During the plant survey the material that fed the plant originated from the central portion of the blast.

An unexpected result was that three of the mini-tags were twice detected at the HPGR feed detection point. An explanation for this is that they survived the HPGRs and returned with the circulating ore (screened to +5 mm).

Michael Wortley is general manager – PTI Products, Metso Process Technology & Innovation. This article is based on a paper that was presented at the 35th APCOM Symposium 2011 in Wollongong, Australia.
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Il wrote this article to help business owners maximize the financial benefits a well-thought-out and well-executed business succession plan can create for them and their families. This may involve passing the business to the next generation or selling it to a third party. Regardless of the business owners’ situation, they have only two options: to sell when they want with a plan, or not.

It is critical to state the obvious up front: You, the business owner, want the process to reflect your goals and objectives. The succession strategy must flow from here.

In addition to maximizing the after-tax value generated by the succession plan, other goals may include preserving the family/business legacy, ensuring discretion and fairness, and making the transition a smooth one.

There are four succession strategies you may wish to consider:

1. Sale to family members
   When choosing this option, your goals may include preserving the family legacy, ensuring a discreet and quick transaction and being more focused on the quality of the transaction for all parties than on the value you derive from it.

   Risks may be involved. For example, family members may not be experienced enough to lead the business; infighting may result from inequitable share distribution; or some family members may not want the responsibility of taking over the business.

   If you are going to keep the business within the family, you need to be sure that your successors are competent, and have the desire and leadership qualities to be successful.

2. Sale to your management team
   Your driving goals here are to get fair value for your business; to reward the management team; and to ensure a smooth transition of business and employees, and a discreet transaction. Risks you face include management not being able to raise the money to fund the transaction or management becoming distracted from running the business as the transaction details are negotiated. This can be a complex process as both the present and future business plan will come under close scrutiny by the prospective financial backers. You also need to manage three entities – the seller, management and capital providers.

3. Recapitalization/partial sale to keep you in the game
   You may require liquidity now to address personal needs while maintaining a strong belief in the future growth of the business. Many business owners believe that the only option here is to sell but a recapitalization of the balance sheet can provide short-term personal capital while allowing you to partner with a deep-pocketed investor to help the business to the next level of growth.

   Trouble may occur due to a lack of shared vision or chemistry with the new partner; or your reluctance to take on debt, which private equity investors require to partially fund the transaction and the business. This can be a complex process, as a detailed business plan and growth strategy will need to be built to withstand significant scrutiny. Your willingness to remain in business, however, will provide credibility and help the transaction go smoothly.

4. Sale to a third party
   If you sell outside the family, you will want to maximize the value and proceeds you receive. Maintaining a family legacy will not be an issue, although owners who sell long-established family businesses clearly want their brand to remain positive in the hearts and minds of their many loyal and valued customers. While industry players are probably the most motivated purchasers, they could weaken your position should rumours start flying. You may also run the risk of losing employees and customers once word is out that the business is being sold.

   This need not be a complex process, as the buyer is usually knowledgeable about the industry and will have its own plans to implement in taking the business forward.

   Regardless of the option you choose, ensure you have experienced advisors to help mitigate your risks.

Not Necessarily All or Nothing
   Your changing role need not be an all-or-nothing proposition. Methods of selling your business to the next generation or a third party are fairly well known. management-led buyouts (MBOs) and recapitalizations tend to be less familiar.

   Here are two case histories to illustrate both options.

1. Management-led buyout
   Situation: The family owned the business and has been running it since the early 1900s. It is a major employer in several rural communities. The husband and wife (the founders) transferred ownership to two sons who have key leadership roles in the business.

   The sons are now in their 70s and transferred much of their operating responsibility to key management. These employees had an average of 20 years’ service and saw growth opportunities for the business.

   The owners had three goals: to receive 100% liquidity; to preserve the business culture and jobs; and to reward management for their efforts.

   Solution: A management-led buyout was recommended in order to: continue the longstanding legacy; ensure a smooth and discreet transition of ownership; align with deep-pocketed partners to pursue growth opportunities and share risk.

   The advisor and his experts set out these steps: assigning a reason- able price to the business; identifying the amount of capital management should invest and the resulting ownership ratio and equity dilution; creating an appropriate capital structure; bringing the financing to market;
The Aggregates & Roadbuilding bi-weekly e-newsletter serves the Canadian aggregate and roadbuilding industry by providing up-to-date news and information, industry innovation, features, and other topics including regulatory issues.
Closing the deal.

How it transpired: Several challenges existed. The company’s historical growth had been stagnant owing to the owners’ wish to divert company cash flow to dividend creation versus reinvesting in the business. Management was consulted to ensure their growth strategy would be visible in the eyes of investors. They also had concerns over having a “Bay Street” equity partner.

Ultimately, both private equity investors and banks showed great interest. The transaction allowed the owners to exit fully and management received an additional equity boost to realize the growth plan.

New capital was also injected into the business to execute the growth plan.

2. Recapitalization

Situation: The founder, who was in his mid-50s, required liquidity for estate planning purposes. He was under the initial impression he had to sell 100% of his business to achieve this goal. He saw significant business growth potential but was not prepared to put more of his capital at risk. He was the majority shareholder among a group consisting of several employees.

His business was generating strong sales growth and produced healthy EBITDA margins. The prospects for the business were good and enjoyed steadily increasing market share. It had also carved out a small but growing niche in the U.S. and had many acquisition opportunities.

Solution: The advisor recommended that a business recapitalization would better meet the founder’s objectives than a sale. The shareholders were advised with the help of his experts through the recapitalization process, which included valuation of the business; pros and cons of liquidity alternatives; appropriate capital structure; introducing the company to the financial market; and closing the deal.

How it transpired: Initial challenges included satisfying investors and lenders that key individuals were not leaving the business; finding an equity partner with whom the owner and management could work effectively and who had the necessary experience to add value; getting management comfortable with the idea of taking on an equity partner and operating with more debt.

The opportunity generated tremendous investor and lender interest. The shareholders withdrew virtually all of the equity in the business but retained a disproportionately high level of ownership. The partnership jelled and led to several strategic acquisitions as the business grew.

Sleep Well by Creating Long-term Cash Flow Outside the Business

It is important to understand the value of a creating an investment portfolio long before you leave or sell the business as another source of cash flow.

By setting up an investment portfolio well in advance of making any business succession or sale decisions, you are planting the seeds for a potentially prosperous future, as your financial needs change with your lifestyle requirements.

Creating an investment portfolio is also an excellent way to get comfortable with diversifying your investments versus focusing on one money generator – your business.

Please see my articles on diversification and risk reduction and how to identify the right financial advisor (Aggregates & Roadbuilding Magazine Sept/October 2011 issue) and “The Value of Professional Advice” (May/June 2011 issue). For easy access, visit my website at www.jimsandersongroup.com.

Jim Sanderson is a wealth advisor with 25 years in the investment services industry. The Jim Sanderson Group at ScotiaMcLeod specializes in creating and distributing wealth for successful individuals and companies in the aggregate and roadbuilding industries across Canada. He helps his clients supported by a team of experts in insurance, merchant banking, trusts and estates.

The most appropriate choice for a business owner is dependent on their goals or objectives.

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<tr>
<th>Goals</th>
<th>Potential Risks</th>
<th>Complexity</th>
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<tbody>
<tr>
<td>Sales to family members (children/relatives)</td>
<td>• Preserve family legacy</td>
<td>• Ensure that sufficient evidence exists regarding the competence of the family members, their leadership qualities and their desire to manage and grow the business</td>
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<td></td>
<td>• Value maximization is not a key objective</td>
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<td></td>
<td>• Discreet and quick transaction</td>
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<tr>
<td>Sales to management team (MBO)</td>
<td>• Receive reasonable value (but not the “last nickel”) for the business</td>
<td>• Fairly complex as a significant amount of diligence will be done on both the existing and future business plan</td>
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<tr>
<td></td>
<td>• Reward management team</td>
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<td></td>
<td>• Ensure a smooth transition of business and employees</td>
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<td>• Discreet transaction</td>
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<td>Recapitalization/Partial sale (control or minority sale)</td>
<td>• Owner desires some liquidity now, however, remains committed to the growth of the company</td>
<td>• Mid-level complexity as required to build and sell a comprehensive business plan and growth strategy, however, willingness of shareholder to remain in business provides a level of support and comfort towards the transaction</td>
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<tr>
<td></td>
<td>• Participate in the future growth of the business</td>
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<td>• Discreet transaction</td>
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<tr>
<td>Sale to a third party</td>
<td>• Maximize value/proceeds received</td>
<td>• Fairly straightforward. Does not require a detailed growth plan or complex financial model because buyer is knowledgeable and typically have their own plans</td>
</tr>
<tr>
<td></td>
<td>• Family legacy is not a key objective</td>
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