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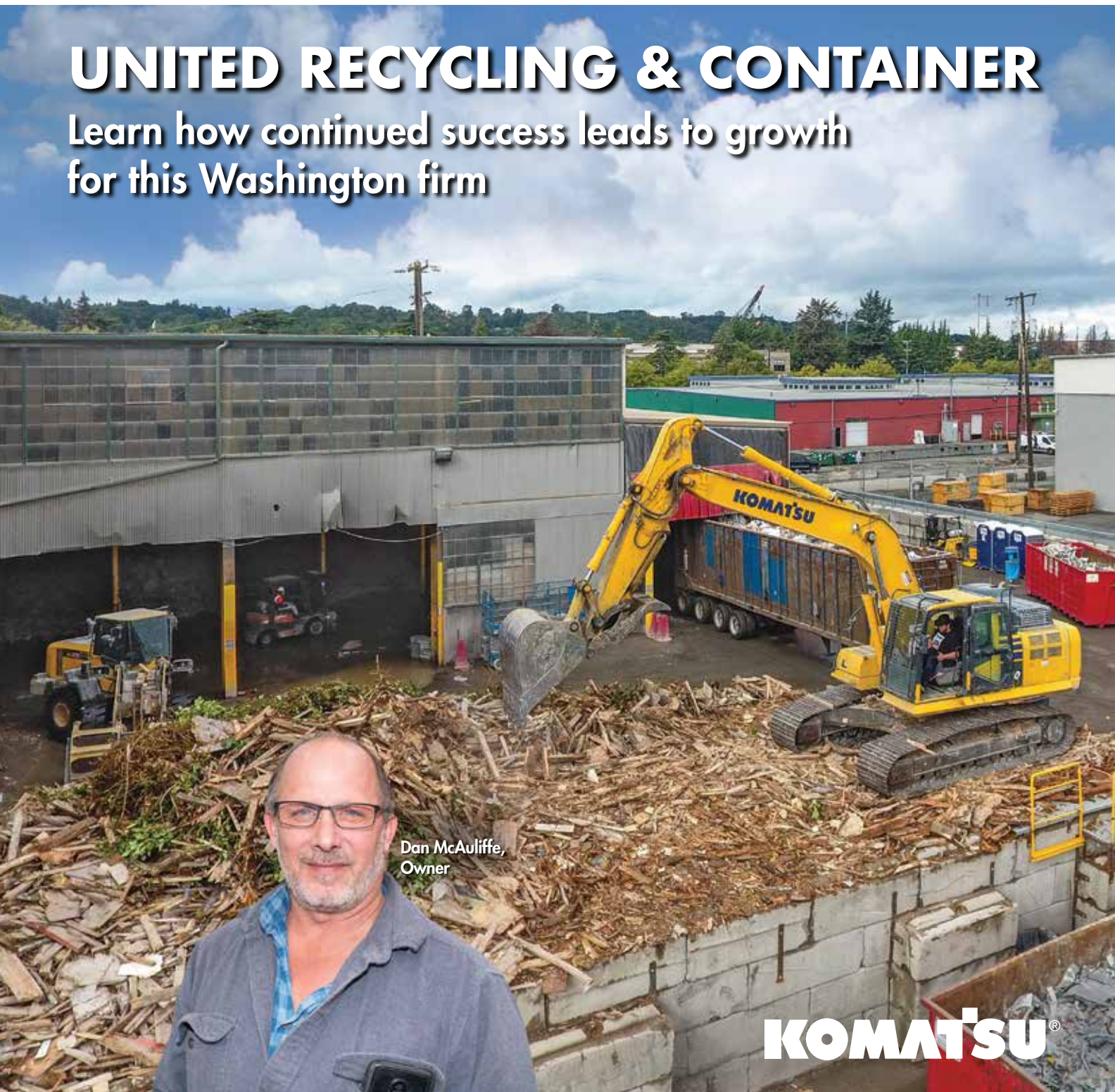
A PUBLICATION FOR AND ABOUT OUR CUSTOMERS IN THE NORTHWEST

UPDATE

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UNITED RECYCLING & CONTAINER

Learn how continued success leads to growth
for this Washington firm



Dan McAuliffe,
Owner

KOMATSU®



Brian Sheridan

**Construction
remains
in positive
territory**

MODERN
MACHINERY

Dear Valued Customer:

Economists and industry organizations predict further strength in construction throughout 2018. Many see growth across several market sectors, and if Congress delivers on new infrastructure legislation, that would also add to the positive outlook. At Modern Machinery, we are hopeful that will be the case.

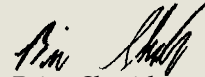
Growth in the construction industry means more machinery in the field. Modern Machinery is aligned with great manufacturers who we believe engineer and build the best equipment in the industry. Komatsu is a perfect example. No other company can match its *intelligent* Machine Control dozers and excavators, which are making businesses like yours more productive, efficient and profitable. You can read about one such firm in this issue of your Modern Machinery Update.

Of course, there are times when standard machinery is your best choice. Komatsu's extensive lineup of Dash-11 excavators stands out for its unrivaled power, durability, reliability and productivity. Read about several models inside.

These, and many other Komatsu Tier 4 products, are covered by Komatsu CARE for the first three years or 2,000 hours. Our technicians perform the scheduled maintenance at times and locations convenient for you, which minimizes your downtime. We track your machines' hours, contact you when services are due and get them done.

Modern Machinery can also service your older Komatsu machines, other brands we carry and competitive equipment as well. If there is anything you need, from sales and rentals to parts, maintenance and repairs, we have you covered. Call or stop by one of our branch locations for more information.

Sincerely,
Modern Machinery


Brian Sheridan
President



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UNITED RECYCLING & CONTAINER

Continued success leads to growth for this Washington firm



Dan McAuliffe,
Owner



Discover more at
ModernUpdate.com

Twenty-five years ago, Dan McAuliffe decided to leave the declining sand and gravel industry of the Pacific Northwest. Wanting to stay in the greater-Seattle area, he found a new medium to sift – construction and demolition materials – as he started what would eventually become United Recycling & Container in Snohomish, Wash. Today, it has grown to include multiple locations and has served as a catalyst for growth into multiple industries across the region.

The transition from sand and gravel to construction and demolition recycling was gradual. Originally, McAuliffe founded the company as Topsoils, Inc. with his wife, Nicki. She kept the books while he ran the yard, made topsoil and sold recycled material to customers. As the business gained momentum, Topsoils, Inc. quickly outgrew its name.

“We began taking in concrete, asphalt and wood,” recalled McAuliffe. “After 10 years,

we were accepting material from local land clearing and demolition jobs. When we started receiving material from bridge and tunnel work, I realized it didn’t make much sense to call the company Topsoils, Inc. Our product didn’t look like topsoil anymore.”

With an expanding service list and customer base, McAuliffe renamed the business United Recycling & Container in 2002. The decade-long shift from producing topsoil to recycling wood, concrete and many other construction-site materials helped him build quality relationships with local customers.

Fast growth

By 2014, the now aptly named company needed more land to meet increased demand. McAuliffe chose to open a second plant, United Recycling Seattle, after recognizing the need for a recycling facility closer to the booming city. He created a business plan for the spinoff, and while the two plants were similar in their services, what ensued in Seattle was wholly unexpected.

“In the beginning, we estimated needing a certain number of people as well as equipment and infrastructure for the Seattle location, based on the history at Snohomish,” said McAuliffe. “We were totally off. Within the first month, we surpassed our estimated first-year benchmarks. By the third month, we passed our five-year goals. After that, I quit projecting. We were growing so fast that I walked into the office on a Wednesday and decided we needed to start a swing shift. By Monday, we had hired an additional 20 workers.”

With the necessary staff in place to meet its production needs, the Seattle plant has been a beacon of success.

A crew at United Recycling Seattle uses a Komatsu WA270 wheel loader and PC240LC-11 excavator to organize a pile of material for recycling.





▶ VIDEO

As much as 500 tons of construction and demolition debris is processed daily at United Recycling Seattle. Komatsu machines, including a WA270 wheel loader and PC240LC-11 excavator, are the front-line machines for the operation. "Komatsu offers the reliable equipment that we need to keep daily operations running smoothly," said United Recycling Seattle Manager Todd Beebe.

"As long as we can process it – we get through it," remarked Mechele Baird, who is Human Resources Director at United Recycling Seattle. "When we started, we processed approximately 250 tons a day. Right now, we're averaging nearly 500 tons per day."

United Recycling Seattle currently has more than 60 employees, while the company as a whole surpasses 150. Between the Snohomish and Seattle plants, 1,000 tons of construction and demolition material is processed daily.

Komatsu equipment

As production soared at the Seattle plant, it was apparent that newer machines were needed to replace the older equipment. This is where Modern Machinery Territory Manager Marc Bandy came into the picture. He knew which Komatsu pieces would fit the company best.

"We needed more productive equipment right away," said McAuliffe. "Modern Machinery was excellent about recommending the right Komatsu equipment to us."

The machines of choice for United Recycling & Container are Komatsu WA270 wheel loaders.

"We use the WA270 wheel loaders to manage everything that we produce," shared United Recycling Seattle Manager Todd Beebe. "They push material through the door, separate it out, move it back toward the person separating and then can be used to load it into the hopper. We have at least seven loaders working at any given time."

Several of the WA270s have modified attachments. A grapple bucket makes moving

materials of various sizes around the plant more efficient. Loose items are less likely to fall and reduce production. Other wheel loaders are rigged with forks, helping operators stack and transport larger materials. Overall, Beebe prefers the WA270 for its compact size and power. He also appreciates the dependability.

"The material isn't always heavy, but it's consistent," said Beebe. "Because the material doesn't stop coming in, our equipment is constantly in use. Komatsu offers the reliable equipment we need to keep daily operations running smoothly."

The company has purchased several PC240LC-11 and PC360LC excavators as well. Equipped with smaller buckets, employees are able to pre-sort the material, which saves time and increases tonnage processed per hour. The excavators have rubber-edge buckets to reduce scraping and damage to the facility's floors.

Additionally, McAuliffe notes that his Komatsu equipment is only outmatched by the service Modern Machinery provides.

"Throughout the years, Modern Machinery has grown as I have," McAuliffe recalled. "They've maintained great products, a steady supply of parts and had quality mechanics and service techs available to limit downtime, which is very important to a company of our size."

Safety, integrity and service

A safe workplace is also essential to running a business. United Recycling & Container holds regular meetings for operators, laborers



Todd Beebe,
United Recycling
Seattle Manager



Mechele Baird,
Human Resources
Director

Continued . . .

Integrity-first philosophy

... continued

and drivers to ensure a healthy working environment. McAuliffe takes it a step further with a safety committee composed of various employees to address specific issues that surface within the company. He hopes that taking extra precautions will protect his

United Recycling & Container Owner Dan McAuliffe (left) relies on Modern Machinery Territory Manager Marc Bandy for Komatsu equipment and service.



At its facility in Snohomish, Wash., a United Recycling & Container operator loads material into a grinder with a Komatsu PC360LC excavator.

Using a Komatsu WA270 wheel loader, a United Recycling & Container operator fills a conveyor for processing.



workers as well as result in greater production and less downtime.

"Any injury is preventable," said McAuliffe. "Even if a truck bumps a pole, I view that as a personal injury. The safety committee addresses any concerns that may arise at our facilities. This group reassures our drivers, technicians and operators that they're indispensable."

"Providing a safe environment is important, but running your business with integrity is also essential," he added. "If I can't do that, nobody is going to work for or with me in the future."

That integrity-first philosophy has often led McAuliffe to help customers find economical solutions for their immediate needs, even if it involves using a service outside of his company.

"If I want to keep customers 10 or 20 years down the line, I need to act with their best interests in mind," said McAuliffe. "I might miss out on their business by showing them somewhere more convenient or economically feasible today, but in the long term, they'll appreciate my honesty. The hope is they return here for business because they know I'm on their side. I think it creates a stronger bond between customers and our company."

Future plans

McAuliffe has long surpassed his vision from 25 years ago as he has transitioned his firm from a small topsoil plant to a multifaceted entity throughout the Seattle area. While growth and success have resulted, he is never satisfied and continually looks for new business ideas.

"If there is a chance for us to achieve success, we take it," noted McAuliffe. "We also operate United Metals and Clearview nursery, and my son, Marcus, manages United Construction, which we started several years ago. We saw an opportunity to build car lifts and car parking stalls for large high-rise buildings. Marcus is currently in Portland overseeing two construction sites, and we've got several more planned for the year. We're always open to finding a niche."

With an eye toward expansion, it's unsurprising that a third United Recycling plant is in the works. McAuliffe expects to continue to grow his company and provide the highest quality, integrity and service for decades to come. ■

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"Komatsu has been a great partner for us. They've been with us through the years, even when we started small and not many other places wanted to talk to us. They believed in us and helped us grow. From a custom financing plan to tech like KOMTRAX, to customer service and Komatsu CARE, and of course reliable products—they offer everything to help our bottom line grow." **Rachelle Reigard, President**

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"We have a Komatsu PC210LCi and it's been better than I even expected. The speed and time you save just having your line work and not having to worry about over excavating—that's huge. I hated those bigger commercial jobs where you'd have hundreds of stakes marking all your corners, offsets and gridlines. And to not have a need for any of that, especially if it's an export site or it doesn't even really have to be, just room for your spoil piles. Keeping track of corners—major time saver! I'd say, with iMC, I'm about a third faster getting the job done."

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JUMP RIGHT IN

Demo Days gives customers opportunity to operate latest equipment

More than 300 customers and industry professionals attended Komatsu's most recent Demo Days event at its Cartersville Customer Center in Cartersville, Ga.

"Demo Days is the perfect opportunity for customers because they can come here and operate the newest machines, and our staff members can answer any questions they have," explained Director of Training and Publications Bill Chimley.

The entire lineup of Komatsu *intelligent* Machine Control dozers and excavators – the industry's first machines with integrated GPS and machine control technology – were available for attendees to operate. In total, nearly 30 pieces of equipment were on-hand for demonstration, including a remote-control D155AXi *intelligent* Machine Control dozer and a Hybrid HB365LC excavator in addition to haul trucks, dozers, excavators and wheel loaders.

"The *intelligent* Machine Control pieces are always a big hit at Demo Days," noted Chimley. "Customers get the chance to jump in an integrated dozer or excavator and see exactly what the technology can offer. Plus, they can operate it in a safe, controlled

environment with an expert right there to provide proper training."

Manufacturing operation tour

Customers had two options for the morning. They could attend information sessions at the Cartersville Customer Center focused on Komatsu technology or tour the Chattanooga Manufacturing Operation (CMO) facility in Tennessee to see how the machines are made.

"The CMO tour is a neat experience as well," he added. "Seeing the machines being assembled and then operating them that afternoon gives customers a chance to really get a feel for our equipment – from fabrication to operation." ■



Bill Chimley,
Director of Training
and Publications



Discover more at
ModernUpdate.com



Modern Machinery
Territory Manager
Rick Bosman (left)
gets ready to demo
equipment with Eben
Twaddle of Interwest
Construction, Inc.

Komatsu's recent Demo Days event in Cartersville, Ga., featured nearly 30 pieces of equipment – including excavators, dozers, wheel loaders, haul trucks and a motor grader – available for customers to operate.

▶ VIDEO



The whole range

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PREVIEW PAYOFF

How virtually designing infrastructure jobs with building information modeling saves taxpayer dollars

No longer the infrastructure envy of the world, many of the United States' roads, bridges and tunnels are crumbling and in need of substantial maintenance or replacement. Compounding these challenges are the pressures of increased urbanization and population growth, which will place added stress on already strained systems.

So, while the Beltway banter continues about addressing infrastructure funding, we can no longer focus solely on the amount of spending, but rather the manner by which those dollars are spent. Secretary of Transportation Elaine Chao captured the point perfectly in her confirmation hearing last year when she said, "It's also important to recognize that the way we build and deliver projects is as important as how much we invest."

Using building information modeling – BIM – will allow the federal government to do far more with taxpayer dollars by virtually building first in order to validate the approach and costs.

But what is BIM? Simply stated, BIM allows project teams across all disciplines – designers, engineers, construction teams and project sponsors/owners – to build in the digital world before doing so in the physical world. The benefits? Reduced risk, waste and rework in construction, which typically lead to cost overruns.

Many governments around the world have or are in the process of creating requirements for spending funds more responsibly with an eye on long-term growth and modernization of government-funded infrastructure. China, Germany, Japan, the United Kingdom (U.K.), France and others are in the lead on developing BIM policies or standards and demonstrating real value on behalf of their constituencies.

Perhaps the U.S. Department of Transportation should take a page out of the U.K.'s playbook. That nation implemented a technology policy that all government-funded projects, including infrastructure, are required to use BIM. Using the BIM process, between 2009 and 2015, the policy saved U.K. taxpayers 15 to 20 percent in construction costs, roughly the equivalent of more than \$1 billion U.S. dollars.

Ben Franklin popularized the phrase, "a penny saved is a penny earned." When it comes to spending taxpayer dollars on infrastructure, the proverb has even greater meaning. Millions saved means we can put America's roads, railways, airports and bridges reliably back to work and help create many thousands of meaningful jobs. ■

Editor's note: This article is excerpted from one that was originally published in The Hill. To see the full article, please visit <http://thehill.com/opinion/technology/363166-to-address-americas-crumbling-infrastructure-follow-britains-lead>.



Jim Lynch,
Vice President,
Autodesk
Construction
Products Group

Jim Lynch is a 30-year veteran of the computer-aided drafting industry. He has served in a variety of senior management roles in the AEC (architecture, engineering and construction), manufacturing and electronic design automation industries.

Jim Lynch, Vice President of Autodesk Construction Products Group, says using building information modeling will allow the federal government to do far more with taxpayer dollars by virtually building first in order to validate the approach and costs.



FORECAST 2018

Industry experts predict further growth in most construction industry sectors

Ten years ago, the construction industry faced a major crisis. The nation's worst economic period since the Great Depression had pulled it down. New starts were relatively small, firms were closing at a rapid pace and many of those that were hanging on were forced to slash staff in an effort to stay afloat.

A decade later, the landscape looks quite different. The end of 2017 saw construction employment at its highest level since November 2008, totaling nearly 7 million jobs. The Associated General Contractors of America's Chief Economist Ken Simonson noted that the year-over-year growth rate in industry jobs of 2.7 percent from November 2016 to November 2017 was nearly twice the rise in total nonfarm payroll employment. He also pointed out that factors such as a lack of skilled workers and tight profit margins prevented an even higher number.

"Employment and pay in the construction industry have risen more rapidly throughout the past year than in the economy overall,

as the supply of unemployed, experienced workers continues to shrink," said Simonson. "With low overall unemployment, contractors are likely to have increasing trouble filling many types of hourly craft and salaried openings."

While there is a lack of skilled workers, there are seemingly plenty of upcoming project opportunities in 2018. Construction finished 2017 on a positive note with nearly every sector showing strong growth. Industry groups and individuals largely see more of the same for 2018, especially if Congress passes proposed infrastructure legislation that has been under discussion for nearly two years.

There is apparent consensus that construction as a whole will increase this year. Simonson expects growth of 2 to 7 percent overall. ConstructConnect forecasts a 4.8 percent increase to \$773.1 billion. The American Institute of Architects (AIA) Consensus Construction Forecast panel predicts 3.5 to 4 percent growth, and Dodge Data & Analytics sees a 3 percent climb to \$765 billion.

"For 2018, there are several positive factors which suggest that the construction expansion has further room to proceed," said Robert Murray, Chief Economist for Dodge Data & Analytics. "The U.S. economy is anticipated to demonstrate moderate job growth. Long-term interest rates may see some upward movement but not substantially. Overall, the year is likely to show some construction sectors register gains, while other project types settle back."

Single-family housing leads the way

All economists and organizations point to single-family housing as a bright spot in

Construction industry organizations and individuals see single-family housing continuing to gain momentum. Dodge Data & Analytics says housing starts will rise 9 percent in dollars, corresponding to a 7 percent increase in units to 850,000.





Public works spending, including highways and bridges, is expected to increase after falling last year. The American Road & Transportation Builders Association believes air terminals; public transit; Class 1 railroads; and private driveway, street and parking lot construction associated with residential and commercial developments will also be up in 2018.

the construction industry. Dodge Data & Analytics says it will rise 9 percent in dollars, corresponding to a 7 percent increase in units to 850,000. Dodge cites continued employment growth for easing caution by potential homebuyers as well as older millennials in their 30s helping to lift demand.

That fits with ConstructConnect's analysis, which notes that residential construction should remain strong in 2018, but is partially contingent on whether millennials start making the move from living in downtown metropolitan areas to becoming homeowners.

"If millennials decide they want to have single-family housing like their parents and grandparents, it will help to drive residential starts," said ConstructConnect Chief Economist Alex Carrick. "We've had 10 years when housing starts were less than the 1.4 million benchmark that represents equilibrium. So, if housing really gets going, it's going to drive the economy for years to come."

Much of the commercial and industrial sectors were red hot last year, with most up 6 to 10 percent. That growth trend will continue, albeit at a slower pace. Overall, those two categories accounted for 8.8 percent growth in 2017. AIA foresees a 4 percent uptick in 2018, with retail growth leading the way at 4.6 percent, followed by office space, hotels and industrial facilities. The latter category was down nearly 7 percent

last year, but AIA predicts a 1.1 percent rise this year.

Public spending rebound

Another area of agreement is public spending, including transportation, which fell 2.8 percent in 2017. Modest improvement is expected, although it will vary from state to state and region to region. That's due in part to several states passing referendums or legislation to increase their gas taxes to pay for infrastructure. The last surface transportation bill (FAST Act, 2015) also calls for rising federal funds for highways and bridges in 2018.

The American Road & Transportation Builders Association (ARTBA) believes air terminals; public transit; Class 1 railroads; and private driveway, street and parking lot construction associated with residential and commercial developments will be up this year.

"The fundamentals of this market are positive," said ARTBA Chief Economist Dr. Alison Premo Black in a Rock Products News article detailing the organization's outlook. "There are a lot of things going on that could support growth in the coming year, including the local and federal investment part of it. It really depends on where you are working. We are seeing much more variation in the regional, state and even local or urban level. There are states and areas that are showing very strong, significant growth and potential for growth throughout the next few years." ■

EXTRA BENEFITS

Tier 4 Final technology brings more than fuel efficiency to Komatsu excavators



Justin Lantin,
Komatsu Product
Manager,
Excavators

The PC210LC-11 features additional horsepower and increased operating weight, compared to its predecessor.

Whether your business loads trucks, digs trenches, provides mass excavation or all of the above, Komatsu has a Tier 4 Final construction-size excavator equipped to get the job done. Komatsu designed the excavators to do more than meet the stringent emissions standards that come with Tier 4 Final regulations.

"They maintain, or improve, the production of their predecessors, while being more fuel-efficient," said Justin Lantin, Komatsu Product Manager, Excavators. "As an added bonus, with new Komatsu technology and innovation, in some cases you can do the same work with a Dash-11 excavator that's a size-class-smaller than the one you are replacing. For example, a customer who owns an older PC400, which we no longer manufacture, may be able to get as much or

more production with a new PC390LC-11. In that case, they wouldn't need to go to the next size class to replace it. We would work with them to find the right fit."

Performance and production

Production is the name of the game when it comes to excavators. Each Komatsu Tier 4 Final machine features a Closed-Center Load Sensing Hydraulic System that provides quick response and smooth operation to maximize productivity. An electronic-control system optimally controls the engine and hydraulic system according to the operating conditions.

Operators can match the machine to the work at hand by selecting the proper working mode, each of which matches the engine speed, pump delivery and system pressure to the application for maximum efficiency. Six modes are available, including Power, Economy, Lifting, Breaker, Attachment Power and Attachment Economy.

"Today's market requires excavators to be more than digging machines. For example, customers want hydraulic packages to run multiple attachments," said Lantin. "Our Dash-11 excavators have standard electrical connectors that allow users to easily add proportional joysticks, either at the factory or as a kit that doesn't require extensive wiring. Operators can control attachments with a thumb button on the joysticks."

The PC360LC-11 and PC390LC-11 feature an enhanced Power mode that provides improved performance in demanding applications. In standard Power mode, the new logic provides up to a 12 percent increase in production, compared to Dash-10 models.





Quick Specs on Komatsu's Dash-11 Excavators

Model	Net Horsepower	Operating Weight	Bucket Capacity
PC138USLC-11	97.2 hp	34,563-37,547 lb	0.34-1.00 cu yd
PC238USLC-11	165 hp	54,230-55,660 lb	0.66-1.57 cu yd
PC170LC-11	121 hp	38,720-43,115 lb	0.48-1.24 cu yd
PC210LC-11	165 hp	51,397-53,882 lb	0.66-1.57 cu yd
PC240LC-11	177 hp	55,763-56,360 lb	0.76-1.85 cu yd
PC290LC-11	196 hp	70,702-72,091 lb	0.76-2.13 cu yd
PC360LC-11	257 hp	78,645-80,547 lb	0.89-2.56 cu yd
PC390LC-11	257 hp	87,867-90,441 lb	0.89-2.91 cu yd
PC490LC-11	359 hp	105,670-110,220 lb	1.47-4.15 cu yd

Komatsu's standard Dash-11 excavator lineup features nine models, ranging in size from the tight-tail-swing 97.2-horsepower PC138USLC-11 to the 359-horsepower PC490LC-11. Each provides excellent production, stability, durability and power along with features that make them more efficient and offer lower owning and operating costs, compared to their predecessors.

"The enhanced Power mode combines flow from both pumps and provides greater available torque to the hydraulic pumps when digging," said Lantin. "That creates better cycle times and digging performance and lowers per-ton costs."

Durability, stability

All Komatsu excavators are built to last. Komatsu uses one-piece steel castings in the booms and arms, providing increased durability to the front work equipment. The loads are spread out through the use of castings, minimizing high-stress areas. Larger machines used for heavier workloads have unique characteristics that further improve their durability and stability. The PC290LC-11 has a longer arm and boom for extended reach and a heavy-duty undercarriage for stability and long life.

"The PC240LC-11 is a great machine that fits a lot of contractors. The next-size-larger PC290 is a PC240 on steroids," said Lantin. "It has a larger counterweight, and a larger and longer boom, as well as bigger arm and bucket cylinders. The PC290 also has improved lifting and digging performance. The productivity is fantastic."

The PC360LC-11, PC390LC-11 and PC490LC-11 feature a heavy-duty design. For instance, the PC390LC-11 has a more robust undercarriage that uses larger-size-class

components. The bigger undercarriage has a 6 percent wider track gauge and offers up to 18 percent greater over-the-side lift capacity than the PC360LC-11.

"The PC360LC-11 is a good fit, right in between a utility-size machine and bigger excavators," said Lantin. "It's great for pipeline and general construction, site development and trenching. When a company needs extra lift capacity, that's where the PC390LC-11 comes in, and the PC490LC-11 is great for moving mass quantities of material in short order."

New standards

Komatsu added standard features to the Dash-11 excavators to increase operator comfort, efficiency and monitoring. Enhanced work environments in the ROPS-certified cab meet Level 1 Operator Protective Guard requirements. Features include a high-back, heated, air-suspension seat with adjustable arm rests; a large, LCD color-monitor panel with a 7-inch, high-resolution screen; Eco-Guidance that offers tips for lowering fuel consumption; and enhanced attachment control. In addition, an Equipment Management Monitoring System continuously checks the machine operation and vital systems to identify issues and assist with troubleshooting.

Continued . . .

Dash-11 excavators armed with latest technology

... continued

Komatsu carried over the standard rearview camera from its Dash-10 models and improved operator usage. The monitor now has a combination screen that shows a view from the camera, and it sits alongside all the main gauges.

"That gives operators greater situational awareness and helps improve productivity," according to Lantin. "They don't have to pause operation and push a button to get the camera view."

All Tier 4 Final excavators have Komatsu Auto Idle Shutdown that helps reduce unnecessary idle time and operating costs. They also include a standard Operator Identification System, which reports key machine information for multiple operators, applications and job locations.

"Operators are only limited by their imaginations when it comes to using the system," Lantin pointed out. "They can get data for a particular project, do bucket-versus-hammer or other attachment analyses and a whole lot more. It allows them to set very specific benchmarks."

All Dash-11 excavators feature the latest version of KOMTRAX monitoring technology, which is available via the Internet or through a mobile app on a smart phone or tablet. Data now includes

diesel exhaust fluid (DEF) levels, ambient air temperatures and pressures, as well as standard items, such as locations, hours and codes.

"Every manufacturer is required to use DEF in Tier 4 Final equipment, but we stand out in a couple of ways," said Lantin. "I believe Komatsu is the only manufacturer that puts a site gauge on the tank, which allows users to quickly check the DEF level without getting in and turning on the machine to read the gauge. More significantly, we separated the DEF pump from the tank, placing the pump in a more accessible location. If the pump needs a new filter, it's done in minutes, whereas other manufacturers combine the pump and tank, requiring a lengthy process to simply change a pump filter.

"Another standout feature is that Komatsu's design gives operators some peace of mind when it comes to DEF level and working on slope," he added. "Even if the gauge reads empty, there is actually enough reserve margin in the tank. The DEF pick-up will remain submerged up to the slope limit of 70 percent. Overall, we're seeing that DEF usage is running close to where we expected it to be – at about two gallons for every 100 gallons of fuel, if not a little lower. Komatsu has also designed DEF tank capacity to run through two full tanks of fuel before requiring DEF."

When Komatsu rolled out its Tier 4 Interim machines, it also introduced Komatsu CARE, which provides complimentary scheduled service for the first three years or 2,000 hours. Factory-trained technicians perform all work at a convenient time and location and conduct a 50-point inspection at the same time. Komatsu distributors track the machines through KOMTRAX, contact the owner when a service is due and schedule the work.

"Komatsu CARE also covers two Komatsu Diesel Particulate Filter (DPF) exchanges in the first five years," Lantin noted. "Most manufacturers charge for changing the DPF. That is complimentary with Komatsu and done with minimal downtime because the service tech puts in a fresh filter, versus waiting for the old filter to be cleaned and reinstalled. Komatsu CARE is a great program that provides world-class support to world-class machines." ■

The PC390LC-11 has a robust undercarriage that uses larger-size-class components. The bigger undercarriage has a 6 percent wider track gauge and offers up to 18 percent greater over-the-side lift capacity than the PC360LC-11. "When a company needs extra lift capacity, that's where the PC390LC-11 comes in," said Justin Lantin, Komatsu Product Manager, Excavators.



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029

INTELLIGENT DOZING

Experienced earthmoving contractor boosts efficiency with Komatsu D51EXi dozer



Cody Weaver,
Owner,
CW Construction



Discover more

Cody Weaver started moving dirt at the age of 12 and hasn't stopped. Throughout the years, the Owner of CW Construction learned how to do it as efficiently and competitively as possible by maximizing production time. Approximately a year ago, he upped the ante further with the addition of a Komatsu D51EXi *intelligent* Machine Control dozer.

Weaver uses it to prep subgrade for roadways, level pads, cut and move massive amounts of dirt, as well as place sub-base materials, among other tasks. The dozer features factory-integrated machine control that requires no masts or cables like traditional aftermarket GPS grading systems.

"I love that it provides automatic dozing from rough cut to finish grade, and that the system is integrated into the machine," said Weaver. "The accuracy is impressive. It eliminates overcutting and the need to replace materials with expensive fill."

Once engaged, Komatsu's *intelligent* Machine Control system automatically starts the cut and

lowers to grade in a typical dozing pass. If the load increases to maximum capacity, the blade automatically raises to minimize track slip, ensuring productive dozing. This allows the dozer to achieve up to 8 percent greater efficiency in moving materials, based on start-to-finish grade testing against typical aftermarket machine-control systems.

Four modes

Operators can select from four distinct operating modes (Cut and Cutting, Spreading and Simple Grading) to optimize performance to the application. They can also tailor blade loads to material conditions by choosing from light, normal or heavy blade-load settings.

"It virtually eliminates the need for staking and grade checkers," Weaver stated. "You can just plug in the plans, set the machine and it does the work, making even the newest operators look like they have been running a dozer for years. Our time, material and labor savings are remarkable." ■

CW Construction's *intelligent* Machine Control D51EXi dozer cuts, grades and pushes material. "I love that it provides automatic dozing from rough cut to finish grade, and that the system is integrated into the machine, so there are no masts or cables to install or remove," said Owner Cody Weaver. "The accuracy is impressive. Our time, material and labor savings are remarkable."

▶ VIDEO



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"Komatsu's i-machines definitely make my operators better at what they do. I mean, we haven't been using this technology for the past twenty years, so it's pretty new. But this tech makes it easier to do our job—makes it so that my operators can work more efficiently, and we get a better finished product."



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028

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NEW MADILL LOG LOADERS

Upgrades make 3000, 4000 models more productive than their predecessors

Madill did more than meet emissions standards with its new Tier 4 Final 3000 and 4000 log loaders. It replaced and upgraded older models, making each machine more productive and efficient in harvesting and processing a variety of wood species.

The 388-horsepower, 105,000-pound (with attachment) 4000 replaces the 3800 with significant changes, including a more robust undercarriage that's longer and provides better stability. It features large components such as 30-inch double grousers and nine excavator rollers per side, as well as ski-type rock guards.

"A closed-loop, energy-recovery swing drive powers the loader's multifunction capability with no slowdown," said Modern Machinery Territory Manager Russ Smith. "Of the previous two models, the 3800, was the most used in the Northwest woods. We expect that will be the case with the 4000, but both new machines are great, and it's really a matter of preference as to which one customers choose."

Enhanced display features

The 315-horsepower, 95,700-pound 3000 maintains the undercarriage of the 2850 it replaces. This log loader has twin swing drives with adjustable free swing. Like its predecessor, the 3000 offers a heads-up display in the cab, but the new model provides additional information such as engine stats.

"The 4000 has a heads-up display too – another upgrade from the 3800, which had analog switches. Some were inconveniently located and, at times, were tough to see," said Madill Product Support Manager Josh Abanto. "Both loaders have the same redesigned cab that gives

operators increased comfort. The deck layout is very clean too, with all service items easily accessible so operators and technicians spend less time on maintenance and more in production. Either model is an excellent choice." ■



Madill's new 4000 and 3000 log loaders offer excellent production and greater efficiency. The 4000, pictured here, has a larger undercarriage than its predecessor and a closed-loop, energy-recovery swing drive that gives it power with no slow down.

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NEXT-GENERATION INNOVATION

Vögele's SUPER 2000-3i, SUPER 2003-3i asphalt pavers deliver high laydown rates

What do you do when you have already introduced a next-generation 10-foot tracked asphalt paver? If you're Vögele, you add a wheeled version and give customers in the highway construction and large-scale commercial application markets another strong option.

Vögele recently debuted the wheeled SUPER 2003-3i after rolling out the tracked SUPER 2000-3i last year. Given their enormous tractive effort and high laydown rates, the new machines are ideal for paving in wide passes. Both can be supplied with mix easily and quickly using a material hopper that holds 16.5 tons, wide hopper wings and sturdy rubber flashings fitted to the hopper apron.

The hydraulically operated hopper apron prevents material spills during truck exchanges. It guides the material inside the hopper directly onto the conveyors, so no hand work is required. The wide conveyor tunnel and powerful, hydraulic separate drives for the conveyors and augers support high laydown rates of up to 1,540 tons per hour.

Large, 16-inch diameter auger flights with precision pitch ensure excellent spreading of material when paving in large widths or at lower engine rpm. Vögele's unique auger flight design provides prolonged service life versus standard flight designs. Thanks to its effectiveness in spreading material, the pavers always have an optimal head of material in front of the screed to meet the demands of each paving situation.

New ergonomics

ErgoPlus 3, the latest version of the Vögele operating system, was enhanced with a

number of new ergonomic and functional features. For example, with its new mounting system, the paver operator's console can now be shifted conveniently and easily between the right and left sides of the operator's stand when in use. In addition, the console has a large color display that ensures good readability even in poor lighting conditions. The screed consoles were completely redesigned, making operation of these new Dash-3 machines easier for the entire paving crew. ■



Vögele's SUPER 2000-3i's and 2003-3i's high-performance and precision systems that convey and spread material support high laydown rates and consistent quality.

BETTER BUCKETS

ESCO introduces general-purpose wheel loader models that reduce spillage, provide long life

Wheel loaders are general purpose machines that provide great versatility. In one application you may load gravel and in another mulch or other lighter materials. Getting by with one bucket may not be the most productive or efficient choice.

Fortunately, ESCO now offers a competitive line of general-purpose (GP) buckets for WL20 to WL80 class

Super Extreme Duty Plate (SXD) Lip Bucket features ESCO's Ultralok® Chisel Points for penetration and strength. The SXD bucket is available for 20-ton to 75-ton excavators in capacities of 0.64 to 5.97 cubic yards.

ESCO's general-purpose wheel loader buckets reduce spillage and provide high-wear protection for loaders in the WL20 to WL80 classes. They range from 2.0 to 9.0 cubic yards.

loaders, ranging from 2.0 to 9.0 cubic yards of capacity.

The buckets feature curved, side-reinforcement plates to reduce spillage and AR400 wear protection in high-wear areas. All ESCO GP loader buckets come standard with a spill guard, bolt-on skid shoes and a replaceable bolt-on edge. They are available with direct-pin or quick-coupler connections.

ESCO GP buckets are precision-manufactured with premium materials for long, reliable service, which reduces maintenance requirements for greater jobsite safety. They were developed to provide more production than conventional loader bucket designs.

Extreme-duty excavator bucket

For excavators, ESCO offers its SXDP (Super Extreme Duty Plate) Lip Bucket, which is designed for the most severe-duty, high-wear applications. It includes all of the ESCO XDP bucket features, plus an extreme-duty wear package providing more cast-wear protection than any other ESCO construction-excavator bucket.

This bucket has ESCO's Ultralok® Chisel Points for penetration and strength, two cast shrouds on each wing, cast-corner wear shoes (heel bands), cast weld-on lip shrouds, AR400 horizontal-wear kit and vertical-wear pads. The Ultralok system has an integrated hammerless lock that offers safer and easier tooth replacement.

The standard SXDP bucket is available for 20-ton to 75-ton excavators in capacities of 0.64 to 5.97 cubic yards. ■



ALL ABOUT QUALITY

General Manager Walt Nichols says Komatsu's CMO builds products to stringent standards

QUESTION: What products are produced at the Chattanooga Manufacturing Operation (CMO)?

ANSWER: From a construction standpoint, our focus is standard hydraulic excavators from the 21-ton PC210LC-11 to the 49-ton PC490LC-11, as well as *intelligent* Machine Control PC360LCi-11 and PC490LCi-11 models. We mainly supply the North American market. In addition, CMO produces forestry excavators, tracked harvesters and tracked feller bunchers. This is the only Komatsu plant in the world that builds those forestry-tracked machines. Nearly everything we manufacture is Tier 4 Final. CMO is the only plant in North America that cleans diesel particulate filters from Tier 4 Final machines.

QUESTION: Why is it a good choice to buy a machine built at CMO?

ANSWER: It's all about quality. Komatsu has stringent standards, from the fabrication and welding of frames to genuine Komatsu parts and components. Outside vendors who supply certain items have to meet Komatsu's engineering standards, or we don't use them.

Our team of more than 400 people takes great pride in assembling what we all believe are the best machines in the construction and forestry industries. Many staff members have been here 20 years or more. Each is dedicated to ensuring that every piece of equipment is built correctly, tested and ready to move dirt or timber productively and efficiently.

QUESTION: How do you determine how many machines to build?

ANSWER: There are several factors that come into play. Markets are one of them. We also

Continued . . .



Walt Nichols,
General Manager, Chattanooga
Manufacturing Operation

This is one of a series of articles based on interviews with key people at Komatsu discussing the company's commitment to its customers in the construction and mining industries – and their visions for the future.

Approximately 12 years ago, Walt Nichols and his wife, Kelly, were looking to make a change. The couple was living in the Atlanta area with their young daughter. However, both were natives of Chattanooga, Tenn., and still had family there, so they wanted to move back.

They relocated to Chattanooga, and Nichols landed a job with Komatsu in the Supply Chain Division. "Growing up, I actually lived close to Komatsu's Chattanooga Manufacturing Operation. I drove past it nearly every day.

"My background was in operations and management with one of the major delivery companies. I didn't know much about manufacturing, but I learned quickly and was hooked," he said.

Within a year he was managing the Import Department, procuring machines from all over the world. A move into the role of Production, Planning and Control Manager for the plant followed.

From there, he became Director of Manufacturing Administration, a position he held for the past seven years before becoming General Manager in October 2017. Nichols is now responsible for overseeing every department within the plant, including quality, safety, production, material management and more. "Each successive role was good preparation for this position," said Nichols. "I really enjoy it here. We have a dedicated staff with many years of experience who take great pride in building Komatsu equipment."

Long-tenured staff takes pride in craftsmanship

... continued



The 21-ton PC210LC-11 is the smallest excavator that Komatsu's Chattanooga Manufacturing Operation produces. The largest is the 49-ton PC490LC-11.



Four sizes of forestry-tracked harvesters and tracked feller bunchers are built at the Chattanooga Manufacturing Operation, including the XT460L-3.

work closely with distributors and customers to ensure we are meeting their needs. There are other Komatsu factories around the world that build the same machines, and we coordinate with them. For instance, if they can't meet their current demand for some reason, CMO may ramp up to help and vice versa. As an example, when a tsunami hit Japan a few years ago, it devastated many areas of the country. Our Japanese excavator plant was occupied building machines to assist with the cleanup. That caused a spike in our production because, for a time, we had to build all the machines to supply North America.

QUESTION: Do you manufacture custom-order machines?

ANSWER: From a planning standpoint we keep ourselves flexible enough to be able to accommodate those requests. Our commitment on an order is eight days from when it's submitted to the time we have it on a truck ready to ship. In most instances, we beat that. Some super-specialty items might take a little longer.

QUESTION: Speaking of customers, do you encourage them to visit CMO?

ANSWER: Absolutely, and the public as well! We have a lot of visitors come through every year. We want them to see how Komatsu machines are manufactured and the quality that's built in. ■



Komatsu's Chattanooga Manufacturing Operation builds standard excavators ranging from the PC210LC-11 to the PC490LC-11, as well as *intelligent* Machine Control PC360LCi-11 and PC490LCi-11 models. Additionally, it produces log loaders as well as tracked harvesters and feller bunchers for the forestry industry.



Go Build campaign aims to change perceptions, gain new recruits

A new website was launched recently by Go Build and is aimed at changing perceptions of construction and gaining new recruits to an industry that continues to experience a worker shortage. According to the site, "Go Build is a comprehensive workforce development initiative that seeks to enhance the image of the construction industry and inform young people, parents and educators about opportunities in the skilled trades – because a four-year degree isn't the only way to make a living."

The website is only one component of the industry-driven, image-building Go Build program, which hopes to rebrand and

promote the entire construction industry via a multiplatform public relations campaign, according to an Engineering News Record article by Jim Parsons. He says it will maximize the use of video-enhanced social media, a lively and information-packed website, ads, grassroots outreach and other carefully crafted elements.

"We created our own playbook – an aggressive, comprehensive and sustained effort with a look and feel that engages young people and inspires them to explore careers in the construction trades," said Executive Director Ryan Dwyer in the article. ■



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TAXES, TOLLS

Most Americans want better roads, and they are willing to pay for them

Two recent surveys showed that a majority of Americans support higher taxes and/or increased tolling to fund transportation infrastructure. In one study from HNTB Corporation, more than 75 percent of respondents said they back paying more at the pump or the tollbooth, especially if the money is earmarked specifically for road projects.

Fifty-five percent supported a gas tax increase in a Bloomberg national poll. It noted that the idea has bipartisan support with 51 percent of Republicans saying yes as well as 64 percent of Democrats.

"People are fed up," stated former U.S. Transportation Secretary and gas tax supporter Ray LaHood, in a Bloomberg article. "They're ready for politicians to take action."

Several states have recently raised their gas taxes – many by public vote – but the federal levy has remained at 18.4 cents per gallon since 1993. The federal tax is the primary source of revenue for the Highway Trust Fund (HTF).

Shoring up the shortfall

Factors such as inflation and more economical cars have led to a shortfall in funds needed to repair roads and bridges. Congress has transferred money from other areas of the federal budget to fill the gap. The Congressional Budget Office says the HTF will be insolvent by 2021 without additional funding.

Seventy-three percent of those surveyed are in favor of public-private partnerships, according to HNTB's research, which also showed that 80 percent of respondents are behind increased tolling. Avoiding congestion and saving time were major reasons why, with respondents saying they would pay on average \$1.70 to use an express lane if that saved 15 to 30 minutes of travel time.

"People are willing to pay higher taxes and tolls, if they know that the money was going to pay for transportation," said Kevin Hoeflich, Chairman of Toll Services at HNTB in a recent Reuters article. "They've seen... funding get diverted to other areas and not where they expected." ■



Recent polls show most Americans are willing to pay more at the pump, or in tolling, if it means better roads and bridges. "People are fed up," stated former U.S. Transportation Secretary Ray LaHood in a Bloomberg article. "They're ready for politicians to take action."



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Manufacturer/Model	Description	Serial No.	Year	Hours	Price
CRAWLER DOZERS					
KOMATSU D155AX-8	SIGMA BLADE, MS RIPPER	100137	2017	726	POR
KOMATSU D155AX-7	U BLADE, MS RIPPER	90047	2012	4,854	\$235,000
KOMATSU D65WX-17	PAT BLADE, MS RIPPER	1943	2014	2,885	\$195,000
KOMATSU D65PX-18	S-BLADE	90216	2016	3,484	POR
KOMATSU D65PX-17	PAT BLADE	1001	2014	2,931	POR
KOMATSU D61PXI-23	PAT BLADE, UHF, DRAWBAR	31693	2015	3,985	POR
KOMATSU D61PX-23	PAT BLADE	31539	2015	4,400	POR
KOMATSU D61EX-15E0	PAT BLADE, MS RIPPER	B47212	2012	1,491	POR
KOMATSU D51EX-22	PAT BLADE, MS RIPPER	B13348	2014	1,227	POR
KOMATSU D39PX-24	PAT BLADE	95004	2016	1,073	POR
WHEEL LOADERS					
KOMATSU WA500-8	8-YD BUCKET, AJSS	90065	2017	3,160	POR
KOMATSU WA500-3LK	7.2-YD BUCKET, ECSS, STICK STEER	A72389	2005	14,780	\$45,000
KOMATSU WA470-8	5.5-YD BUCKET	A49025	2017	1,750	POR
KOMATSU WA380-8	QC	15043	2016	1,786	POR
KOMATSU WA380-8	QC	A74126	2016	2,573	POR
KOMATSU WA320-7	QC	80437	2014	3,419	POR
KOMATSU WA270-8	QC	83274	2017	1,018	POR
KOMATSU WA270-7	QC	80748	2015	1,631	POR
HYDRAULIC EXCAVATORS					
KOMATSU PC650LC-8E0	14' ARM	65106	2012	8,982	\$275,000
KOMATSU PC490LC-11	11' ARM, QC	85036	2016	1,600	POR
KOMATSU PC490LC-10	13' ARM, QC, THUMB, 3RD MEMBER HYDS.	A40160	2012	4,233	POR
KOMATSU PC360LC-11	13' ARM, QC	A35233	2015	1,849	POR
KOMATSU PC360LC-11	13' ARM, QC, THUMB	A35166	2015	2,182	POR
KOMATSU PC360LC-10	10' ARM, QC, COMBO HYDS, ALUBE	A33085	2014	3,842	POR
KOMATSU PC350HD-8	10'6" ARM, QC, THIRD MEMBER HYDS	A00022	2011	6,435	POR
KOMATSU PC240LC-11	10' ARM	95196	2017	2,900	\$185,000
KOMATSU PC228USLC-10	9'6" ARM, QC, THUMB	2319	2016	1,270	POR
KOMATSU PC228USLC-10	9'6" ARM, QC, AUX HYDS	2434	2016	1,283	POR
KOMATSU PC210LC-11	9'7" ARM, QC, THUMB	A12451	2017	313	POR
KOMATSU PC170LC-11	8'7" ARM, QC, THUMB	35080	2017	575	POR
KOMATSU PC138USLC-11	8' ARM, QC, THUMB	50477	2017	533	POR
KOMATSU PC88MR-10	QC, THUMB, 24" BUCKET, STEEL TRACKS	7482	2015	1,188	POR
KOMATSU PC88MR-8	QC, THUMB, 30" BUCKET, STEEL TRACKS	5941	2012	2,648	POR
KOMATSU PC45MR-5	QC, THUMB, ROADLINERS, 24" & 36" BUCKETS	30069	2016	835	POR
MOTOR GRADERS					
KOMATSU GD655-5	14' BLADE, RIPPER	55420	2013	1,501	POR
KOMATSU GD655-6	14' BLADE, RIPPER, 3DMC2 TOPCON	60250	2018	274	POR

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Manufacturer/Model	Description	Serial No.	Year	Hours	Price
FORESTRY EQUIPMENT					
KOMATSU XT450L-2	BUNCHER, 24B360VI	A4050	2014	7,171	POR
KOMATSU XT445L-2	BUNCHER, BAR SAW	A3037	2014	7,100	POR
TIMBCO 445EXL	BUNCHER	FT4C2887032907	2007	14,000	POR
TIMBCO 445EXL	QFH22B	FT4C2818092006	2006	12,895	\$130,000
VALMET 540T	445EXL BUNCHER-TOTAL REBUILD	VFT4C2112120502	2003	12,277	POR
TIMBER PRO TL735B	BUNCHER, 22B, 360VI	TL735B0129020612	2012	8,223	POR
VALMET 890.3	FORWARDER W/ BRUKS CHIPPER	310249	2007	5,824	\$565,000
KOMATSU PC390LL-10	LOG LOADER, TC60 GRAPPLE	A50602	2013	6,521	POR
SENNEBOGEN 830M-HDS	SB LOG LOADER, TC60 GRAPPLE	83001714	2014	451	POR

OFF-ROAD TRUCKS					
KOMATSU HM400-5	ARTICULATED TRUCK, TAILGATE	10295	2016	2,190	POR
KOMATSU HM400-5	ARTICULATED TRUCK, TAILGATE	10205	2016	2,224	POR
KOMATSU HM400-3	ARTICULATED TRUCK, TAILGATE	3755	2014	3,221	POR
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	10213	2016	2,194	POR
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	10214	2016	1,721	POR
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	10065	2015	2,058	POR
KOMATSU HM300-5	ARTICULATED TRUCK, TAILGATE	10120	2015	3,197	POR
MOROOKA MST2200VDR	MOROOKA CRAWLER CARRIER	AR224112	2016	1,045	POR
MOROOKA MST1500VDR	MOROOKA CRAWLER CARRIER	AR1506004	2017	245	POR

AGGREGATE EQUIPMENT					
CEDARAPIDS 1313	RC54STD PLANT W/ 6X16 2DK SCREEN	PC311995			\$195,000
JCI 1400LS	1400LS PLANT W/ 6X16 2DK SCREEN	C50273			\$195,000
JCI K300/6203	JCI KODIAK CLOSE-CIRCUIT PLANT	P171908	2017	475	POR
PIONEER FT2650	PIONEER TRACK MOUNTED JAW CRUSHER	416532	2017	925	POR
PIONEER GT125	PIONEER TRACK MOUNTED JAW CRUSHER	416324	2017	998	POR
JCI FT200CC	JCI TRACK MOUNTED CONE CRUSHER	T170319	2017	372	POR
METSO LT1110S	METSO CRAWLER MOUNTED IMPACT CRUSHER	77749	2015	2,160	\$280,000
KPI-JCI 6203-32	6X20 3 DK SCREEN PLANT	S16SPT0190	2016	1	POR
FEB TEC PRO 1	PRO SCREEN	P262A17	2017	13	POR
SPOMAC 5X16	WASH PLANT W/ 36" SAND SCREW	S15WPT0169	2015		POR
JCI GT165	JCI CRAWLER MOUNTED SCREEN PLANT	164278	2017	429	POR
KPI 36"X100'	KPI SELF CONTAINED RADIAL STACKER	412085	2012	3,320	POR
KPI 36"X136'	SUPER STACKING CONVEYOR, 4WD	416525/416526	2017	2	POR
FEB TEC 42PBF	42" BELT FEEDER	BF424230713	2013	1,176	POR
MESABA SDU	MASABA SIDE DUMP TRUCK UNLOADER	2011461	2011	1	\$150,000

COMPACTION					
HAMM 3410	84" HAMM SMOOTH SINGLE DRUM	H1792538	2016	116	\$99,000
HAMM H16I	84" HAMM SMOOTH SINGLE DRUM	H2110757	2016	419	POR
HAMM H11I	84" HAMM SMOOTH SINGLE DRUM	H2110608	2016	228	POR
HAMM H16I	84" HAMM SMOOTH SINGLE DRUM	H2110757	2016	419	POR
HAMM H5I	54" HAMM SMOOTH SINGLE DRUM	H2220011	2014	105	\$65,000
HAMM HD+140IVHF	84" HAMM ASPHALT ROLLER	H2070055	2014	2,209	POR
HAMM HD+120IVO	78" HAMM ASPHALT ROLLER, OZZIE	H2070026	2014	2,039	POR
HAMM HD12VV	47" HAMM ASPHALT ROLLER	H2300369	2015	773	POR
HAMM HD+70IVT	66" HAMM COMBO ASPHALT ROLLER	H1860083	2015	1,107	POR
HAMM HD14VO	54" HAMM ASPHALT ROLLER	H2310183	2016	780	POR
HAMM HD12VV	47" HAMM ASPHALT ROLLER	H2300369	2015	773	POR

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