

PAVINGNEWS

A CATERPILLAR PUBLICATION SERVING THE GLOBAL PAVING INDUSTRY

Machine Drive Power

THE CONSTRUCTION WORLD'S NEXT 'GAME CHANGER'



Study Concludes Mapping Matters

GPS Enables
Uniform Compaction

CATERPILLAR®

Helping Customers,

BOTH LARGE AND SMALL

In March, Caterpillar—and Caterpillar Paving Products—put our machines on display at the CONEXPO-CON/AGG 2014 worldwide construction tradeshow in Las Vegas, Nevada. The booth featured Cat® Connect, technology and services to help you monitor, manage and enhance jobsite operations. Cat Connect technology is integrated with the machines and scalable to meet job requirements. It helps our customers overcome challenges of all types.

For example, we have technology that allows soil compactor operators to understand when there are problems with the base, or when compaction is complete and they can move on to the next area. This gives contractors more ability to control a process fraught with variables. Please read about our exclusive Machine Drive Power technology on page 4.

We also have additional technologies that contribute to your success in other ways. One such technology allows you to mill asphalt all day, all week, or even several weeks without stopping to replace your cutting

bits. To learn more, read about NovaPick diamond cutting bits on page 16.

In fact, all of our machines have technology you see and technology you don't see. Our new line of utility compactors are more productive, reliable and economical to use. You can read about them on page 10.

Further, our training and consulting experts have launched an enhanced array of world-class training programs for paving, compaction and milling. As you know, it takes not only the right equipment, but also well-trained operators to ensure success.

As we head into 2014, let us know how we can better serve you. With our machines, training and Cat Connect, we are well positioned to assist our customers in every phase of construction, from breaking ground to rehabilitation.

Our Cat dealer network is unrivaled for customer support. Caterpillar is a single-source provider for the road building industry, ensuring the success and sustainable growth of all of our customers, both large and small. ■



KEVIN ADAMS

WORLDWIDE SALES AND MARKETING
SUPPORT MANAGER



Feature ARTICLES

Paving News: 2014 - Issue 1

4 Machine Drive Power

The Construction World's Next 'Game Changer'

10 Cat Utility Compactors

Feature Improved Visibility and Fuel Consumption

11 Paving on the Wide-Open Interstate

Longitudinal Joints Eliminated

14 GPS Mapping Makes a Difference

3D Paving, Intelligent Compaction Key to Project Success

16 Not a Run-of-The-Mill Pick

NovaPick Diamond Picks Essential to Tight Airport Deadline

18 News & Notes

New Cat Paving Apps Available; Technology Featured at CONEXPO-CON/AGG 2014

Paving News is published in a cooperative effort between the Global Paving Marketing Communications Group at Caterpillar Inc. and High Velocity Communications Inc. It is distributed free of charge to those in the paving and road building industries. If you are not currently receiving *Paving News* and would like to, or have a change of address, please send your name, company name and address to: Paving News Subscription Dept., 1720 Dolphin Drive, Suite D, Waukesha, WI 53186-1489. CAT, CATERPILLAR, their respective logos, "Caterpillar Yellow" and the "Power Edge" trade dress, BUILT FOR IT, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission. All contents of this publication are protected under U.S. and international copyright laws, and may not be reproduced without permission. Featured machines may include additional equipment for special applications or customer modifications not offered by Caterpillar. Because specifications are subject to change without notice, check with your Cat Dealer for the latest equipment information. Printed in the U.S.A. Volume 5, Number 1. © 2014 Caterpillar All Rights Reserved



Machine Drive Power

THE CONSTRUCTION WORLD'S NEXT 'GAME CHANGER'



Don Taylor has seen some construction breakthroughs in his day.

"The first was the change from cable to hydraulics," said Taylor, project manager at McAninch Corp., an Iowa highway, heavy and utility construction firm. "Next was GPS," and the stakeless sites that came with it.

Taylor might soon add a third breakthrough to his list: MDP, or Machine Drive Power.

"It's a game changer," he said.

MDP Defined

MDP is a machine-integrated soil compaction measurement technology. Contractors at several jobsites around the world, including Greece, Germany and an interstate on-off ramp being built by McAninch in Altoona, Iowa, are testing it.

MDP is one element of Intelligent Compaction (IC), which is gaining prevalence on jobsites daily. IC is commonly understood to include:

- An integrated compaction measurement system (an

accelerometer, or in this case MDP).

- A system with the ability to tie jobsite positioning location with a GPS.
- A way to record and take gathered data for analysis.

Machine Drive Power is a not a breakthrough in how machines compact. Instead, MDP evaluates the rolling resistance.

"It gives an indication of Soil stiffness by measuring the rolling resistance on the drum," said Loïc Le Bellec, Regional Sales Support

Consultant for Caterpillar Paving Products. “It correlates the fact that the looser the material is, the harder it is for the drum to roll over the pile of material in front it.”

That resistance provides an indication of soil stiffness and load-bearing strength, and whether compaction is adequate to hold the road, parking lot, building—or whatever is planned for the site.

MDP, a proprietary technology developed by Caterpillar, is catching the attention of contractors worldwide for several reasons. It works on all soil types, including cohesives. It can enable a compactor to act as a proof roller, even when not vibrating. Machine Drive Power can eliminate multiple passes of a compactor, and therefore deliver considerable cost savings.

But the ultimate benefit—to contractors, quality control lovers, and taxpayers—might be summed up in one word: uniformity.

Uniformity

Uniformity has always been an issue. Is the entire site compacted the same way, or are there areas of structural weakness?

Uniformity matters because weak areas ultimately become failures. That means going back and making costly repairs.

Historic methods of testing can only provide a snapshot, and are no guarantee of uniformity. Typically only 1 percent of the jobsite is tested.

That has left compaction experts to search for uniformity by other means. Among those experts is Dr. David White, a civil engineering professor at Iowa State University in the U.S.

White has spent years studying soil compaction, and months gathering data at the Altoona jobsite. Among his most important findings: MDP is an outstanding

indicator of soil stiffness, load-bearing strength or the ability for the compacted soil to resist deflection on a consistent basis, across the entire jobsite.

In other words, it makes uniformity achievable.

The only way to truly achieve the desired uniformity is through Intelligent Compaction. Why?

Uniformity requires a map—operators need to know where they’ve been. The GPS mapping element of IC covers that.

Uniformity requires measurement of the entire site. That is accomplished through machine-integrated technology delivered through the MDP component of Intelligent Compaction. (The compactor measures while it works over the entire site.)

The Altoona Experience

The on-off ramp in Altoona proved a great testing ground for Intelligent Compaction and MDP. Specifically, the site demonstrated the ease of preventive measures, compared with costly post-construction repairs.

Operator Eddy Butler went to work on the ramp, viewing real-time results on an easy-to-use monitor display on the Cat CS74B Soil Compactor, outfitted with Cat Compaction Control, an Intelligent Compaction technology, including MDP.

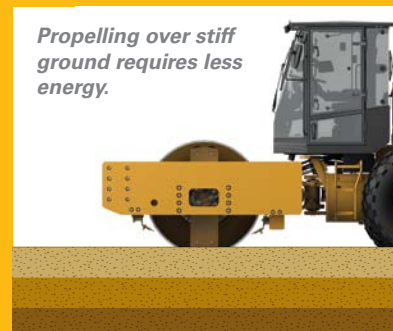
A green area on the display meant the area had been covered and the targets had been met. A red area indicated what White refers to as a “troublespot.”

Butler had quickly seen green most of the day—and the previous days, too. But when he made two passes over an area and still saw red, he knew an adjustment had to be made.

The first victory was the fact Butler knew there was a problem.



MDP: HOW DOES IT WORK?



Machine Drive Power, or MDP, measures the energy necessary to overcome rolling resistance, a more tangible and direct measurement of soil stiffness.

THE BENEFITS OF MDP

Cost Savings

- Taxpayers will benefit from extended life of public projects, such as roads, airports, levees and other infrastructure investments
- Fewer required passes mean lower costs, which are likely to reduce bids
- Realizing compaction problems during the job so adjustments can be made immediately, avoiding rework

Fewer Passes

- Reduced fuel burn
- More efficient use of labor/labor costs
- Productive use of machinery
- Helps meet project deadlines

Monitoring

- Display in cab provides operator with real-time feedback
- Stiffness can be monitored both in the cab and remotely—at a computer, on an iPad, or over a smartphone
- State and federal inspectors can remotely monitor a project

Data Collection

- Does not measure as deeply as accelerometer-based system; monitors closer to the depth of the lift
- Operators produce data on 100 percent of the surface, compared with 1 percent using traditional portable testing devices/methods
- Works well on all typewe of soils: fines, granular and cohesive
- Measures with the vibe system on or off; can handle proof rolling
- Performs on smooth drums, padfoot drums or smooth drums equipped with shell kits
- No need for core samples and the structural weaknesses they can create



He worked in a soil with heavy clay content, and an accelerometer-based instrument would have had difficulty finding the trouble.

Butler realized the red probably resulted from too much moisture. He switched from the compactor to a tractor and disk and spent about 15 minutes turning the soil so it would dry more quickly.

Then it was time to take another pass with the CS74B. The screen turned green, and Troxler density samples later confirmed the target had been achieved. “We’ve not been wrong yet about whether we would pass a test,” Butler said.

Not making the adjustment would have proven costly. That section of road might not have passed a test or, worse, would have gone unnoticed and failed prematurely. In other words, the site would not have been uniform, and the discovery likely not made until the asphalt started cracking.

A Game Changer and Cost Saver

The fact that Butler was only inconvenienced for a few minutes, compared with having to prematurely rebuild the ramp, shows why Intelligent Compaction and MDP are the “game changer” Taylor referred to.

“It gives you confidence that you’ve reached density and can move on,” Taylor said. He and others testing the technology say it is a more accurate indicator of stiffness and load-bearing strength than anything they have seen to date, perhaps in part because of the high clay content of the Iowa soil—though it works well in other materials, too.

“You can add a lot of road life with (road base) uniformity,” Taylor said. “If the base has no weaknesses, you’ll only have to replace a wear course from time to time.”



Successful in Europe, too

The testing has gone beyond the U.S., with several demonstrations being completed in Germany, France, Sweden and Netherlands.

“All feedback from customers about Cat Compaction Control in general and the MDP system in particular have been very positive,” said Le Bellec. “We are confident that this is the right technology for our customers and that it will help them getting more productivity and more efficiency out of their soil compactors.”

Changes in Specs?

There are gains beyond uniformity, and productivity is among them. “With this system (MDP), we were able to reduce the number of passes from eight, to two or three,” said Jesse Boston, project foreman for McAninch.

Reducing passes impacts fuel consumption, machine wear and labor costs. In Altoona, it also helped make up for time lost to heavy rains.

How could the number of passes be reduced so dramatically? Soil compaction method specs typically

require a pass for each inch of material, up to 8 inches. Therefore many jobsites routinely require eight passes (with a movement in one direction considered a single pass).

The belief is that the method specs—in this example the requirement of eight passes—are the best way to ensure the foundation can later bear the load. Without a good measurement technology, method specs were the best approach.

Now that IC and its MDP component are available, the method specs and the passes they require are getting another look.

“Most of those passes are a waste,” Taylor said. “Many times on jobsites, we could probably get compaction densities with haul trucks. We might not even need rollers. But the specs call for eight passes, so we make them.”

Many contractors would welcome a change in specs. Some advocate “performance specs,” where a compaction goal is assigned to each layer of material. Finding a way to meet that goal would then fall on the contractor.

Taylor understands method specs were utilized because they were the best available option, but believes that will no longer be the case with IC and MDP technology, he said.

IC and MDP measurements are being considered in some other corners, with state and federal transportation officials taking closer looks. Changing minds and methods can be a difficult process,

yet Taylor believes MDP to be so beneficial that adjustments will have to be made.

"You can't leave technology like this on the shelf," he said. "You would have better measurements, and better roads, at a lower cost. Those are tough points to argue." ■

compaction SOLUTIONS

BOOKS

The Cat Paving Products *Guide to Soil Compaction* has been printed and is available for purchase through local Cat dealers and on amazon.com.

The *Guide to Soil Compaction* features more than 100 illustrations and as many photos. The written material addresses everything from the basics to the latest Intelligent Compaction technology, and its role on the jobsite.

The book is the second in a series of publications that offers technical expertise and advice on how to tackle specific applications. The first book, the *Guide to Asphalt Compaction*, was published in 2012 and has been printed in English and many other languages.



TRAINING

Caterpillar training professionals can bring their expertise to your jobsite. Or, if you prefer, contact your local Cat dealer. They will help arrange a seminar near you, and alert you to times and locations for more extensive sessions.



Cat utility compactors

FEATURE IMPROVED VISIBILITY AND FUEL CONSUMPTION



The new B-Series line of Cat Utility Compactors, including CB22B, CB24B, CB24B XT, CB32B, CB34B, CB34B XW, CC24B and CC34B, feature key enhancements that will help contractors achieve compaction more efficiently than ever.

This wide range of models provides excellent versatility to compete in the 1.8 mt to 5 mt size class. Typical applications include streets, bike paths, courtyards, patchwork, parking lots, driveways, town centers, and shoulder work.

Highlights Include:

- A simple, comfortable operating environment with increased legroom, improved access, intuitive controls and easy viewing LCD display for day and night operation.
- The ROPS and canopy can be easily lowered without tools.
- Efficient compaction performance is achieved through better visibility, increased drum diameters, multiple frequency vibratory systems and optional ballast additions on some models.
- The water spray system continues to be very reliable and the large capacity provides up to 10 hours of operation without refilling.
- The engines offer plenty of power for consistent performance on grades and are able to operate in Eco-mode for reduced fuel consumption and lower sound levels.
- This new line of utility compactors is designed for the rental market by providing easy operation, durable components, extensive legroom, and fuel-efficient engines for lower overall operating costs.

CALL YOUR CAT DEALER FOR MORE INFORMATION ON THE NEW LINE OF UTILITY COMPACTORS.



Paving on the Wide-Open Interstate

LONGITUDINAL JOINTS ELIMINATED

Materials and trucks were in short supply on the paving of Interstate I-95 near Island Falls, a town of 600 in eastern Maine. Challenges were not.

The project featured:

- Wide-width paving to eliminate longitudinal joints.
- The use of reclaimed asphalt pavement (RAP) as a structural layer.
- A location so remote the job ended at the Canadian border.
- A tight deadline, combined with the second wettest summer in state history.

But Lane Construction came through, in part because of its plan—or, rather, plans. “We had

a plan A, a plan B and a plan C,” says Cecil Dillon, project superintendent. “There always was a backup plan.”

Preparation included equipment, training and staging. It also meant ensuring the right people were in place, a list that includes Dillon, a Lane paving specialist from North Carolina who temporarily relocated to Maine to oversee the project.

The Project

The work was ambitious, to say the least. A 16 km (10 mile) stretch of the northbound interstate was closed for two months. Plans called for milling 228 mm (9 in.) of existing asphalt, fine-grading of the subgrade, and then placing

and compacting 584 mm (23 in.) of dense-grade aggregate. Next came crushing and placing 76 mm (3 in.) of RAP, followed by a 76 mm (3 in.) lift of rich asphalt.

Two 51 mm (2 in.) lifts of asphalt with a stone size of 3 mm (1/8 in.) were placed on top, at a width of 7.6 m (25 ft.).

Logistical challenges that resulted from the remote location were further complicated by the weather, but Lane still managed to finish 12 days ahead of schedule.

Paving

Lane is a large company—it does business in 20 states—with a rich history. Its knowledge, resources and staff were leveraged to ensure success. “Planning started two

1. The Cat AP1055E was set up to pave at a width of 7.6 m (25 ft).
2. The crew kept a close eye on the mat behind the paver.
3. The use of Recycled Asphalt Pavement (RAP) created another variable for the crew to monitor.

4. Trucking patterns were tight, which created logistical challenges but did ensure mix was hot when placed, helping to prevent segregation.
5. RAP-based mix was placed at a depth of 76 mm (3 in).



months before the first shovel was put into the ground,” Dillon says. “It was a moving jigsaw puzzle, and we had the pieces. We had an excellent workforce, and we utilized a paver capable of pulling two travel lanes at once.”

The planning included some adjustments, such as constant monitoring and communication about the weather, and implementation of a wide-width paver. Schedules also were thoroughly planned. The paving shift was 10 hours. Offset schedules for those doing prep work meant crew members were on-site for as much as 14 hours per day, six days per week.

Those hours had to be productive when it was time to pave. “We were using the 1055E, a Cat paver with an extra wide, 25 ft. (7.6 m) screed, that would allow us to do two lanes at once,” explains Ken Blakely, Lane’s mechanical supervisor for the state of Maine. “We were going to be paving in an area where frost heaves cause a lot of damage, and the extra-wide screed on the 1055E would eliminate the central

longitudinal seam where water seeps in.”

The Lane team was pleased with the Cat AP1055E and the way the machine proved itself on the job. “The performance of the wide, 25 ft. (7.6 m) paver—I believe there is a comfort level now that wasn’t previously there,” Dillon says.

Other factors that had contributed to the project’s difficulty were the long distances to the asphalt plant and the remote location.

“Trucking was an issue,” Dillon says. “There were not enough trucks available in that area so we brought them from all over, and there were no silos at the plant for storage so we had to plan the trucking perfectly to ensure we were able to keep the plant running while not having trucks waiting idle.”

The tight truck timing did have a benefit: It helped ensure mix was promptly placed, which in turn helped prevent segregation. Continuous movement was another effort in the attempt to fight segregation. “There was a constant flow of material,” Dillon says.

RAP Success

RAP is not commonly used as a lift on top of the dense-graded material. “The DOT proposed it because it’s green and because it was available,” Dillon says. Aggregate, like trucks, was in short supply because of the remote location. The RAP used on the Island Falls job was removed during milling, crushed to a 25 mm (1 in.) sieve size and then placed on the dense-graded material.

The RAP exceeded expectations. “After the first half mile we realized that it was going to work really well, and actually we will propose the use of it on other jobs,” Dillon says.

A challenging job, to be certain. Yet in some ways, it was business as usual for Lane. “Personally, I think the secret is to focus on doing every single ton as if it were the only ton you’re doing,” Dillon says. ■



The Cat AP1055E was able to meet high-quality standards and eliminate the longitudinal joint.

GPS Mapping Makes a Difference

BENEFITS IN ASPHALT COMPACTION ON DISPLAY DURING TEST

A comprehensive study of the role GPS mapping systems can play in asphalt compaction quality control was recently completed in Germany.

While results are still being compiled, data does conclude that GPS systems with pass counting and temperature monitoring lead to more uniform compaction. That is significant, as inconsistent compaction densities create weaknesses and ultimately contribute to premature failure.

The Goal

Compaction control with mapping is not new to Germany. It is a

process that has been utilized on soil compactors for years.

The next step is to apply the technology to asphalt compaction, and include temperature monitoring as well. The benefits of GPS systems are many, but two are particularly important. The GPS systems:

1. Enable operators to monitor conditions as they work.
2. Store and analyze data to improve processes on future jobsites.

The test was led by a group of contractors, university officials and compaction equipment manufacturers. Caterpillar was among the manufacturers, utilizing

Cat CD54B Tandem Vibratory Rollers. Trimble CCS900 Compaction Control Systems were installed on the machines.

The test measured homogeneity. It did not analyze density, but only homogeneity of compaction work.

Taking the test

The research occurred during two weeks in the summer of 2013. The location was B10 near Pirmasens, Germany, where paving contractor Juchem was placing asphalt.

- Four roller manufacturers—Caterpillar, Amman, Bomag and Hamm—demonstrated GPS mapping system technology



for compaction on the jobsite. Caterpillar utilized Trimble systems.

- Each of the four manufacturers had a 1000 m test section in which to operate their compactor and system. Juchem operators ran the machines, regardless of the manufacturer.

- A fifth 1000 m length of road served as the test control. It was compacted by Juchem with a mapping system that was not visible to the operator.

- Conditions were kept constant, and overseen by academics associated with the University of Siegen.

The testing process was the same for the 8 cm binder and 4 cm wearing courses. Jobsite conditions were closely monitored to help ensure homogeneity, and a rolling pattern chosen to match paving speed and asphalt temperature.

The Results

Manufacturers provided rollers based on performance-

class requirements. Caterpillar Paving Products provided four drum-steered Cat CD54B Tandem Vibratory Rollers.

The rollers utilized the Trimble CCS900 Compaction Control System for mapping and temperature monitoring, which includes a smart GNSS antenna for precise machine location, two infrared temperature sensors, a GPRS modem for communication with the Internet, and an optional accelerometer and compaction sensor for recording the CMV values.

Study participants agreed to not release competitive information, but a key conclusion can be made public: The compaction homogeneity for all brands using mapping was visibly better than the test control section compacted without mapping.

A Quality Roller

Although density was not a comparison criterion, the numbers were recorded. In the test section,

the Cat CD54B achieved more than 98 percent compaction density after four passes on the SMA wearing course. (A pass is the movement of a roller in one direction.)

Andreas Fellenzer, a compactor operator, pointed out that the improved mapping systems still require a quality roller—with good visibility.

“The Cat compactor offers a clear view, a spacious cab, precise control and quiet operation,” Fellenzer said. The driver's position can be turned through 360° and can be swung up to 10 cm sideways over the edge of the cab to give good visibility to drum edges. ■



Not a Run-of-the-Mill Pick

NOVAPICK DIAMOND PICKS
ESSENTIAL TO TIGHT AIRPORT
DEADLINE

The Tri-Cities Regional Airport milling job in Johnson City, Tenn., sounded like a good one: Work with a reputable, organized general contractor and remove the kind of tonnage that helps a company maximize its fleet investment.

But there was a challenge, too, and it was a big one: Remove the required 14,000 tons in 20 hours.

Eric P. Long, vice president of Haw River, N.C.-based Delta Contracting, met with the general contractor and the two firms realized utilizing diamond mill bits was the best alternative given the timeframe. They made the decision to equip five of the seven mills on the jobsite with NovaPic™ Diamond Picks, designed and manufactured by Novatek.

The mills went to work on a Friday night and finished in 19 hours—ahead of schedule. “There is no way that job would have been completed in that time without the diamond picks,” said Long. “They made the difference.”

Diamond Bits Pass the Test

Long and his team started working with NovaPick diamond bits two years ago. Their inauguration occurred on a job with abrasive, river-rock material. The required cut was 2.5 inches, and 450,000 square yards were removed.

At first Delta utilized carbide bits, but they only lasted a few hours. Change-outs were required two or three times per day.

“It was really tough material,” Long said. “We seemed to spend more time changing bits than actually milling.”

Delta then switched to NovaPick. “We changed out four teeth the rest of the job, which lasted a few more weeks,” Long said. “Two of the four teeth we lost were damaged while taking the mill off the trailer. We had two teeth go down that entire job.”



“There is no way that job would have been completed in that time without the diamond picks”

Eric P. Long
VICE PRESIDENT,
DELTA CONTRACTING

Even more amazing is how long the bits remained productive after the river-rock job. Some of the bits used on the Johnson City airport job, more than a year later, were at work on that first job—and many others in between.

Fuel Consumption and Other Benefits

There are many advantages of NovaPicks, and most were on display on the Johnson City jobsite.

Productivity. The teeth last 40 times longer than carbide bits. Long estimated carbide teeth would have required at least two replacements during the airport milling. The increased productivity means demanding deadlines can be reached.

Fuel savings. The diamond picks reduce fuel consumption anywhere from 10 percent to 15 percent, Long said. “The diamonds stay sharp, and that’s easier on the engine. It doesn’t have to work as hard, and therefore doesn’t burn as much fuel.”

Consistent height. The fact the picks don’t wear creates several consistency benefits. “We ran GPS on the airport job,” Long said. “From the beginning, we had to measure height to set stations. If we had run carbide, we would have been wearing teeth down, and would have had to adjust during the night. With NovaPicks, we just set sail because we never lost height on our tools. They stayed the same.”

Smooth surface. The diamond picks leave behind a surface that appears micromilled, Long said. “The milling surface looks a whole lot better, and that leads to better smoothness when the surface is placed,” he said.

Engagement increases. The picks improve the mill’s engagement time, resulting in more efficient utilization of support equipment. The trucks, brooms and clean-up crew don’t sit idle.

The Tri-Cities Airport job was an unqualified success. Productivity, fuel savings and consistency all came together to deliver great results for the general contractor—and help Delta earn some money, too.

“I’d give it an A-plus,” Long said. ■



DIAMOND PICKS

NovaPick™

Three New Apps Place Application Efficiencies at Your Fingertips

The Soil Compaction Calculator app is set for release and will be the third offered by Caterpillar Paving Products, joining the Amplitude app and Production Calculator app.

The Soil Compaction app will help you evaluate compaction needs—and find application-matched solutions, too. The app, for Apple iOS and Android mobile devices, will help you evaluate and understand the relationship between the soil, the machine and operational parameters in order to meet density specifications.

The Soil Calculator app provides recommendations based on user-entered data, Cat Soil Compactor data, and soil models. The functions include recommending the number of passes, appropriate machine size, moisture content and lift thickness.

The interface is easy to use, and essentially walks you through

the process. Helpful visuals are provided to help you make the appropriate selections and avoid unproductive choices.

The soil app will join the Production Calculator app and the Amplitude app, released during 2013.

The Production Calculator app is modeled after the popular Production Calculator on CD. The app is a tool for asphalt paving professionals to plan their paving jobs by helping to estimate trucking needs, paving speeds, compaction and other factors. The calculator can help optimize the jobsite, reducing inefficiency and contributing to smoothness.

Other features include the ability to build a library of specs from prior jobs for later reference, as well as e-mailing job summaries from your device.

The Amplitude app is the first step in finding the optimum



amplitude and vibratory settings. The app processes input data on conditions and specs, and analyzes the various options—including which of the five amplitude settings to leverage, along with factoring in Versa Vibe™ and dual amplitude/dual frequency systems.

The result: Applying the optimal compaction energy into the mat. ■

Cat Paving at CONEXPO

A variety of Caterpillar Paving products and personnel were on hand at CONEXPO-CON/AGG 2014, held March 4-8 in Las Vegas.

Cat Paving showcased new built-in technological features that make jobsites more productive—and crews more cost-efficient.

Specific machines that feature these technologies, and were on display, include the new CB24B

Utility Compactor; AP555E and AP1055E Asphalt Pavers; PM200 Cold Planer; CB54B Tandem Vibratory Roller; CS54B Vibratory Soil Compactor; and CW34 Pneumatic Tire Roller. ■





UNDERNEATH IT ALL CONFIDENCE

If you are measuring compaction with a soil compactor, your accelerometer-based system might be missing the mark.

Machine Drive Power (MDP) is a new, innovative soil compaction measurement technology available only from Caterpillar.

MDP measures closer to the depth of the lift with less variability than accelerometer-based systems, even on cohesive soils. That gives you confidence that the soil you are compacting will support the load.

Feature	Machine Drive Power (MDP)	Accelerometer-based Compaction Measurement
Measurement Depth*	30 - 60 cm (12 - 24 in)	1 - 1.2 m (3.3 - 4 ft)
Can be correlated with plate load test	✓	
Usable with smooth drum, padfoot, or padfoot shell kit	✓	
Usable on granular or cohesive material	✓	
Measures with vibratory system on or off	✓	
Exclusive Cat® technology	✓	

* Dependent on soil type, moisture and other factors.

Ask your local Cat dealer about rental and purchase options for your next soil compaction job.

BUILT FOR IT.™



Find us online at www.cat.com/paving



facebook.com/CATPaving



youtube.com/CATPaving

QEXC1769-01

© 2014 Caterpillar. All Rights Reserved. CAT, CATERPILLAR, BUILT FOR IT, their respective logos, "Caterpillar Yellow," the "Power Edge" trade dress as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.



www.artba.org

The information source
for Transportation
Construction Professionals



**American Road
& Transportation
Builders Association**

**NEED A ROLLER?
WE CAN HELP.**



Cat® Utility Rollers feature:

- Best overall value
- Easy transportation
- Versatile and easy to operate
- Simple maintenance
- Reliable and durable
- Triple filtration

Whether you lease or purchase, there's a
Cat Utility Roller to help you finish the job.

Contact your local Cat dealer for details
or visit: www.cat.com/paving

BUILT FOR IT.™



[www.cat.com/
paving](http://www.cat.com/paving)

© 2014 Caterpillar. All rights reserved.
CAT, CATERPILLAR, BUILT FOR IT, their
respective logos, "Caterpillar Yellow" and
the POWER EDGE trade dress, as well
as corporate and product identity used
herein, are trademarks of Caterpillar and
may not be used without permission.

