Issue 3 2012

## PART IN CONTRACT TO A Caterpillar publication serving the global paving industry

## White Caps, White Knuckles

Snow on Mountains Adds Urgency to Job



#### Pressure Points

On-Site Adjustments Crucial to Compaction Success





**Lieven Van Broekhoven** Worldwide Sales and Marketing Manager

## Time on Your Side

he concept of time, something we all strive to manage better, dominates this issue of *Paving News.* One of the stories ("500 Million Good Vibrations," page 18), in particular, made me think of time in a little different way.

Equipment superintendent Ben Burra calculated 70,000 hours of vibratory operation accumulated by his company's Cat<sup>®</sup> compaction fleet before one of those rollers experienced a failure of the eccentric weight housing. And, he calculated that machine had produced over 500 million vibratory shaft revolutions before it simply wore out. 500 million revolutions of an off-center eccentric weight is a pretty good record. But, it doesn't surprise me all that much since our eccentric weights are so well designed and tested for durability.

Then there's another kind of time uptime—that we talk about in the story on service parts kits. Cat Paving and our Cat dealers make it easy to schedule offseason repairs by providing paver and screed repair kits with all the parts under one part number. We know what it takes to keep your equipment running and we make it less time-consuming and less expensive to prepare for 2013.

Finally, there's the idea that your paving equipment should be ready when

it's time to pave. All day. Every day.

That's the way we look at it. You'll get that sense of urgency reinforced when you read about Riverside Contracting racing against the snow and cold temperatures in Montana. It would be great if all our paving jobs were done in warm and dry weather. In the real world of asphalt paving, weather delays can be costly. Riverside counts on their Cat Asphalt Pavers to be 100 percent reliable to meet production goals before weather shuts down a season.

Beating the clock also means overcoming challenges on the jobsite. Quality equipment can help prevent many issues, but even the most wellequipped crews need to adjust on the jobsite. The Cat Paving team's industry knowledge is second-to-none, as you'll see in the "Pressure Points" story on page 12. That knowledge, combined with quality training and equipment, can overcome just about any jobsite challenge—and keep projects on track.

Yes, we are all driven by time, it seems. Be ready. Don't waste time. Don't be late. Many people in the asphalt paving business are working to get time on their sides. They're using Cat equipment. Cat Paving. All day. Every day. Ready when you are.

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## White Caps, White Knuckles

#### Snow on the Mountains Adds Urgency to Job



S ometimes a simple glance over a shoulder can pressure a paving crew. The haul trucks might be lining up, or the rollers might be falling behind.

Curt Cooper and his crew have their own view of pressure. "There is snow on the mountaintops," Cooper, the paving superintendent with Riverside Contracting Inc., said earlier this fall. "The temperatures have been falling, and we've been working around that. But once you see that snow at higher elevations, it's a real wakeup call."

The Riverside team recently raced the clock, and fought steadily cooling conditions, on a highway job between Saltese and De Borgia, Montana.

They hit their deadline, but it wasn't without a few anxious moments—particularly when they looked up at the highlands.

#### The Project

Riverside Contracting, based in Missoula, was selected to prep and pave Overlook Pass. The project consisted of a 7.4 km (4.6 mile) stretch to an overpass bridge on Interstate 90. The bridge deck was not paved, but work resumed on the opposite side, where another 5 km (3.1 mile) stretch of paving began.

The existing concrete road was built in 1984, so the longevity had been good. But it also had become rough, with an IRI of 300 inches per mile (4.7 m/km).

Plans called for using the existing concrete as a base, though it had to be prepped to do so. Riverside crews used a "guillotine" to crack the concrete, but only to the extent it would create hairline fractures. Next a 41 metric ton (45 short ton) pneumatic roller, pulled by a tractor, made nine passes over the road.

"Even after the roller has passed

over, the road really doesn't look different," Cooper said. "The cracking is done to prevent concrete slabs from tipping after we pave."

A leveling course, intermediate course and surface lift of hot mix were placed on the cracked road. IRI of over 55 was a penalty. The crew's compaction density goal was 94 percent.

#### Paving

A leveling course was required given the high initial roughness. That lift was just under 25 mm (1"). "It was an opportunity to fill in the irregularities," Cooper said.

The next two lifts were each 61 mm (2.4"). All three lifts used a Superpave mix with 19 mm ( $\frac{3}{4}$ ") sieve size.

Riverside took steps to speed the process given the proximity to the end of the season. Much of it involved working around the installation of jersey rail.



Existing concrete was prepped and used as the base.



Two lifts were placed on top of the leveling course.

On the 7.4 km (4.6 mile) section alone, 4,877 m (16,000') of jersey rail was newly installed on the shoulder. That led Riverside to finish the shoulder paving first so the rail subcontractors could begin their work while the driving lane was still being paved.

"It gets the subs in there sooner, and it doesn't hurt anything," Cooper said. "They were able to work on the rails while we put the top lift on the driving lane."

Paving widths varied from about 2.4 m (8') for shoulder pulls, to 3.6 m (12') for the driving lane, to 4.9 m (16') for the passing lane.

The mix was placed at an average of 326 metric tons (360 U.S. tons) per hour. The existing 2 percent cross slope was matched.

Five or six 27 metric ton (29.5 U.S. ton) belly-dump haul trucks were utilized; the number varied based on how quickly the trucks were able to reverse course and return to the plant. A windrow elevator deposited the mix in the hopper of the Cat<sup>®</sup> AP1055E. Riverside also owns two Cat AP1055D models, which were utilized when double-shifts were required at the end of the job.

"The AP1055E is intuitive," Cooper said. "We hopped on and took off and have been paving ever since. We haven't put a wrench to it yet either."

The electric screed heat proved crucial on the cold job, as did the generator. "It ran the lighting systems, and we needed them when we started to pull double-shifts," Cooper said. The temperatures stayed warmer into the night, and Riverside utilized that time to meet its deadline. "We would run into the night, as late as 8 or 9 o'clock," he said.

#### The Cold

Crews could not pave until the temperature was 1.7° C (35° F) and rising. That often meant a much later start in the morning. "We did whatever we could later in the day, as prep for the following morning," Cooper said. That included placement of the tack. Water from rollers also had to be replaced nightly with windshield washing fluid.

"As soon as we hit 32 (degrees) in the morning, we fired up the plant," Cooper said. "We usually had trucks on the road about 45 minutes later." The electric screed also began warming up well before the mix arrived.



The existing 2 percent cross slope was matched.



The cold weather often meant a later start—and finish. Electric screed heat proved crucial given the cold.





#### TRAINING MAKES A DIFFERENCE



To a man (or woman), Riverside Contracting employees understand the value of training. That's because many of the company's employees have undergone Paving Operations Training through Caterpillar.

"We send three or four people every year to the Caterpillar training center in Arizona," said Curt Cooper, paving superintendent with Riverside. "Those training classes have been a tremendous help."

The sessions are held at the Caterpillar Demonstration and Learning Center in Tinaja Hills, Az.—just outside Tucson.

"There are classroom lessons and hands-on training," said Cooper, who went through the sessions a few years ago. "You learn in the classroom and take some tests. Then you head outside and pave with sand. The sand is very similar to asphalt in many ways.

"To me, the hands-on operating sessions really helped. You can try certain automation features and experiment with the screed. There are some newer features on these pavers that I wanted to try, but never really felt like I could experiment on a jobsite. Sometimes a jobsite is a hard place to learn the latest techniques and improved machine features."

Crew members who complete the training have a much more thorough understanding of using automation to improve performance, Cooper said. "They also improve a great deal in terms of screed operation," he said.

The Caterpillar trainers are professional, knowledgeable and understand the real-world challenges crew members face on jobsites.

"Our employees love going there," Cooper said. "Those who do go come back energized, and determined to do the job better."

The result is improved productivity and profitability—and specs that are met and often exceeded. "Training has proven to be a very worthwhile investment," Cooper said. There was no need to cover loads, despite the temperatures, because a mobile batch plant manufactured the mix on-site. The mix left the plant at about  $171^{\circ}$  C ( $340^{\circ}$  F) in the morning, compared with about  $154^{\circ}$  C ( $310^{\circ}$  F) during the warmer parts of the day.

"Having the plant right there was crucial with the cold," Cooper said. "Still, the cold made everything more urgent, and the timing tighter. The rollers had to be right behind the paver—and each other. That mix is tough to work with, even when it's warm, so that was a challenge. You can't even rake it."

#### Rolling

Three rollers handled compaction. Their patterns varied based on that day's circumstances, but a typical pattern was used.

The breakdown roller, working tight to the paver, made nine vibratory passes. The mat temperature was about  $140^{\circ}$  C (285° F) when the rolling started.

The intermediate roller immediately followed (and no more than 10 minutes behind the paver) and made seven passes—all vibratory except the last. It worked on mat temperatures of about  $127^{\circ}$  C (260° F).

The finish roller made three vibratory passes, then finished with two static passes. "We don't normally use the vibe setting on the finish roller, but this mix and these temperatures were so tough, we felt we had to," Cooper said.

#### SEGREGATION PREVENTION

Riverside took many steps to prevent segregation and optimize results in terms of smoothness. Among them:

**Continuous movement.** "We try to pave continuously," said Curt Cooper, paving supervisor for Riverside Contracting, Inc. "Once the paver matches the plant, we keep moving." **The windrow.** The windrow elevator plays a role, as does the windrow man. "He keeps everything consistent," Cooper said.

**Loading.** "We use three drops: front, back and middle," he said.

**Stockpiling**. Riverside used stone sizes of 12.5 mm and 19 mm (½", ¾") and

crushed fines. There was a separate pile for each stone size in the plant yard. The materials were delivered, then leveled by a dozer. The next delivery was placed on top of the leveled surface. Later, a wheel loader dug into the side of the pile when gathering aggregate for the plant. "Doing it in layers provided a good cross-section, and consistent material," Cooper said.

**Feeder bins.** Riverside used the feeder bins as another opportunity to essentially remix materials and add consistency. "We have fivebin feeders," Cooper said. "The ½" material is the most consistent, so we feed that out of a single bin. We split the other two types of materials—the ¾" and the fines—into four bins. Then we pull materials from all five bins when manufacturing asphalt. That mixes it again."

**Consistent silo.** Materials do not sit long in the silo. "We keep the silo at about the same level every time a truck is loaded to prevent coning," Cooper said. "We keep about 55 tons (50 metric tons) in the surge hopper. When a truck is loaded, 29.5 tons (27 metric tons) is pulled. The plant is batching midstream and away we go."



The compaction results were constantly monitored, and the patterns adjusted throughout the day as the conditions changed.

#### On Time, on Target

The crew's flexibility, and its ability to adjust daily and throughout the season, led to an on-target project in terms of specifications. It also meant the crew was gone before the snow piled up on the freshly paved road.



Mix was placed at an average of 326 metric tons (360 U.S. tons) per hour.



A mobile batch plant was close enough that loads did not have to be covered.

## Service Repair Kits

#### Single Parts Numbers and Competitive Prices

hen you are ready to replace wear parts and schedule off-season repairs, we can deliver a parts solution with carefully designed service repair kits.

These kits include all the parts necessary to complete specific repairs under a single part number, and at a competitive price.

Kits are packaged for over-thecounter sale, or through the service shop.

Contact our dealership for more information about service repair kits.

#### **PAVER KITS**

#### **Auger Segments Kit**

Contains a complete set of auger segments (half and quarter segments) and all the hardware necessary to attach the segments to the auger shaft.

#### **Auger Bearings Kit**

Contains the outside and inside auger bearings and the necessary hardware.

#### **Auger Assembly Kit**

All the parts necessary for a complete auger service repair are in this kit. Those parts include: segments, bearings, hardware, center deflector and chain chase guard.

#### Feeder Bed Plate Kit

This kit consists of plates and all the hardware required for installation.

#### **Feeder Chain Kit**

Includes a fully assembled feeder chain set, both right and left side.

#### **Feeder Chain Guard Kit**

Contains plates and hardware necessary for installation.

#### **Feeder Foot Shaft Rebuild Kit**

Includes foot shaft assembly and bearings necessary for repair.

#### Feeder Head Shaft Rebuild Kit

Head shaft assembly and bearings necessary for repair make up this kit.

#### **Track Pad Kit**

Contains the pads and hardware to completely replace the track pads on both sides of the machine. This is a good option if the undercarriage link assembly and shoes are not worn.

#### SCREED KITS

#### **Screed Plate Kit**

Contains the plates and all of the hardware for a basic screed repair plate. Screed plates are one of the highest wear components.

#### **Tamper Bar Kit**

The tamper blades, wear plates, pins, bolts, nuts and washers for a basic tamper bar repair are in this kit.

#### **Screed Service Kit**

Includes screed plates, hardware, tamper blades, tamper wear plates, pins, bolts, nuts and washers for a complete screed repair.

#### **Screed Heating Element Kit**

This kit is for electric heated screeds only. The kit contains the heating element that is bolted onto the screed plate.



#### PRODUCT SUPPORT

## Compact Equipment on Your Jobsite



#### When to Use an SSL, MTL, CTL

Every paving contractor inevitably requires compact construction equipment. It might be to clean up spilled asphalt from the front of a paver, or to haul asphalt to areas that require handwork, such as manholes, grates and other areas.

A customer also might demand onestop shopping, and require a contractor to handle everything—or face handling nothing. Other times, contractors find themselves on jobs that need some grading, but where a larger machine would be overkill. Or maybe they need a work tool attachment that a compact machine can handle—or simply a machine with a bucket to deliver asphalt.

Despite the small size, compact machine selection is every bit as important as finding the right match for a large job. So which machine—skid steer loader, multi terrain loader or compact track loader—is the best fit for your jobsite?

#### **Skid Steer Loaders**

The SSL is still the best fit for many applications. Consider the wheeled machine when:

• Working on surfaces that aren't particularly sloped, rugged or wet. If a SSL can get the job done, it's often the right choice because of the speed and productivity of a rubber-tired machine.

• Looking for compaction. The tires help compact materials, which is desirable in some applications.

• In some grading applications, in particular for use in driveway and sidewalk prep work.

#### **Multi Terrain Loaders**

MTLs feature rubber-track undercarriages. Consider MTLs when:

• Working in wet conditions. The undercarriage has low ground pressure and excellent flotation so contractors can work in almost any weather.

• Working on tender surfaces. This is crucial for operators who often have to travel over grass and turf on their worksites. MTLs also are a good fit when traveling over other surfaces that could be damaged, such as sidewalks.

• Working on construction sites where nails and other sharp objects can puncture tires.

• Working on grades that require more traction than a wheeled SSL can provide.

#### **Compact Track Loaders**

CTLs feature a steel-track undercarriage, compared with the rubber undercarriage on MTLs. Consider CTLs when:

• Working in the toughest applications. For paving contractors, that often means sharp aggregate, broken pavement, reinforcement rods and steep grades.

• Working in fines. The steel track undercarriage holds up well in silt and sand.

• Power is required. The CTL has a reputation for applying maximum power to the ground, making it a good fit in difficult grading and even dozing applications.

• Speed and tracks are required. The fully suspended steel-track undercarriage helps deliver a smooth ride, which in turn aids in load retention.

The full range of Cat® work tool attachments for compact machines is interchangeable among the three types. Call your paving representative for more information on the best Cat compact machine and work tool attachment combination for your applications.



## **Pressure Points**

On-Site Adjustments Crucial to Compaction Success

ood crews and equipment help contractors avoid many challenges. Yet even the best contractors acknowledge that not every issue can be avoided. The key, then, is the response. What can be done to make an issue a minor inconvenience, versus a bonus killer? Here is a look at some common compaction challenges, and some tips on how they can be overcome.





Stone Matrix Asphalt with polymer-modified asphalt cement stuck to steel drum.

#### Asphalt Pick-up on Dry Drum Surfaces

The most common cause of downtime on double drum asphalt compactors is a malfunctioning drum spray system.

If any part of the steel drum does not have a water film on the surface, hot asphalt is likely to stick to the drum. The stickier the asphalt mix, the more severe the problem. A small amount of asphalt pick-up on the drum quickly becomes a large problem. With each drum rotation, the amount of pick-up increases and the mat will begin to show divots. When asphalt begins to stick to a drum surface, operation of that compactor must be terminated until the drum is completely clean and any problem with the drum spray system is repaired. Continuing to operate the compactor will result in severe mat damage that will require extensive handwork to fill in and level divots left in the mat.

The primary cause of dry areas on the drum surface is a plugged spray nozzle. Good maintenance and clean water supply are the keys to preventing plugged spray nozzles.



- Use clean water. Whenever possible, fill water spray reservoirs with water from approved sources. If you have to use pond water, for example, increase the frequency of maintenance steps.
- Change main spray system filters. Follow the filter change interval shown in the machine's Operation and Maintenance Manual. When the main spray system filter is plugged, water bypasses the filter and unfiltered water goes to the spray bars. Unfiltered water is more likely to cause spray nozzles to plug. Always have a spare filter stored on the compactor or in the maintenance vehicle.
- Maintain inlet filters. Most water reservoirs have an inlet filter inside the reservoir fill port. The inlet filter is the first stage of water filtration. Do not discard the inlet filter. Place the water supply hose inside the inlet filter.
- Clean spray nozzles. The spray nozzles have internal brass or

plastic screens. Nozzle screens should be examined daily for contamination. Clean nozzle screens thoroughly as needed. If you use contaminated water, increase the frequency of nozzle maintenance. If only one side of the nozzle is plugged, the spray pattern will be smaller and can cause the dry strip on the drum and start the asphalt pickup.

- Maintain water distribution mats. The drum will have some type of water distribution mat to help spread the water film evenly on the drum surface. As the distribution mats wear, you may have to adjust them to maintain good drum contact. Replace distribution mats according to wear indicators.
- Understand spray system capabilities. Most water spray systems offer full-time or intermittent spray. Never sacrifice water coverage in an effort to conserve water. It is better to stop more frequently for water refills than to stop for drum cleaning.

• Protect the water spray system during cold weather. An optional water spray system antifreeze kit is available. It includes a separate reservoir for antifreeze. At the end of the shift, the operator can circulate antifreeze through the system to prevent overnight freezing.

#### **USER TIP:**

Know how to operate the water spray system in the event of water spray pump failure. Most water spray systems include two water pumps and most systems have the capability to supply both spray bars with only one pump. Know what needs to be done to operate with one pump while a replacement pump is being delivered.



Hot asphalt can stick to rubber tires and the clumps can fall off the tires to create a substantial loss
of smoothness and cosmetic appearance.

#### Asphalt Pick-up on Rubber Tires

Asphalt also can stick to rubber tires. The severity of asphalt sticking to rubber tires depends primarily on the stickiness of the asphalt. Tire pick-up is also affected by the difference in temperature between the surface of the asphalt layer and the rubber tires.

When asphalt begins to stick to the rubber tires of a pneumatic compactor, the operator must immediately stop and correct the problem.

- Use a bio-degradeable release agent to clean the affected tires. Apply more release agent to the tires before resuming the compaction process.
- Be sure the distribution mats and tire scrapers are properly positioned and in good working condition.



Wheel covers are an important feature on pneumatic compactors and should be utilized to help prevent heat loss in the rubber tires.

- Move the pneumatic compactor on the asphalt layer in an area where the surface temperature is relatively low.
- Heat the tires by operating on the warm mat before moving ahead to a higher temperature zone.

Heating the rubber tires and keeping them at the correct temperature are very important. Wheel covers help keep heat confined around both axles. Caterpillar recommends using wheel covers on pneumatic compactors for all asphalt compaction applications.

Covers are especially important when compacting asphalt that contains modified asphalt cement. If wheel covers are not installed, the tires are exposed to the ambient conditions and can lose heat rapidly.

Release agents are sometimes used to help prevent hot asphalt from sticking to rubber tires. Always confirm with the public works department what release agents are permitted. Most compactors have a tire spray system that is often filled with water and an additive. Common additives include detergents, water softeners or purpose-designed additives that increase the film thickness of the water sprayed on the tires.

In some areas, natural vegetable oil is substituted for water in the spray system reservoir. Do not use petroleum distillates as they are harmful to asphalt and the environment.

To prepare the pneumatic compactor for placement in the desired position behind the paver, plan your approach to heating the tires. Apply a release agent (if needed), and keep the tires hot.

• Before the start of the paving and compaction process, operate the pneumatic compactor on a paved surface behind the starting point. Operate at a high speed to build heat in the rubber tires by flexing them.

#### USER TIP:

When loading a pneumatic compactor on a transport, be sure to roll up the wheel covers and secure them in the transport position. If you leave the covers down, the tires may run over the covers and damage them.

- When using a release agent, wet the tires thoroughly just as the compactor is ready to start its first pattern.
- Check the temperature of the asphalt layer and guide the pneumatic compactor operator into the correct temperature zone.
- Be alert for any sign of excessive asphalt pick-up on the tires. Especially watch for asphalt clumps falling off the tires when the compactor stops and reverses.
- If you see excessive asphalt pick-up, immediately clean the tires. Move the compactor back to a cooler temperature zone. Gradually move the compactor forward allowing the tires to heat up prior to reaching the desired temperature zone.
- Once the tires are heated, keep them heated. If there is an interruption to the paving and compaction process, do not park the pneumatic compactor. Move the compactor to a place on the asphalt layer where it can continue to roll in order to keep the rubber tires heated.

#### **Deep Pneumatic Tire Marks**

Using a pneumatic compactor on hot asphalt layers, especially layers 75 mm

(3") thick or thicker can result in deep tire marks that are difficult to clean up, particularly behind vibratory screeds.

Ordinarily, a pneumatic compactor is used during the intermediate phase of compaction on an asphalt layer that is already close to final target density. The tire marks it leaves in the mat are normally shallow and can be smoothed out by the finish-phase compactor.

However, if the compactor is used during the initial compaction phase or if the pneumatic compactor rolls an area where the mat is thicker and hotter than normal, the rubber tires can leave deep marks that do not clean up easily during finish compaction.

Using a pneumatic compactor during the initial phase is usually done when compacting a base or binder layer that is going to have another layer laid on top of it. In that instance, the tire marks and loss of smoothness are less of an issue.

Using a pneumatic compactor during the initial phase on the final layer (wearing layer) of asphalt is not common because the final layer is often measured for smoothness. A pneumatic compactor is normally in the intermediate position when compacting the final asphalt layer.

If deep tire marks appear during the compaction of the final layer, move the pneumatic compactor farther behind the paver where the asphalt layer is cooler, or decrease tire pressure to flatten the tires somewhat and reduce the tire contact pressure.

**Vibratory Drum Impact marks** 

When too much vibratory compaction energy is applied to an asphalt layer, impact marks that do not clean up during the finish phase may appear on the surface of the asphalt layer.

In the above photo, it is obvious why the asphalt layer has drum impact marks. The compactor made numerous, slow vibratory passes over the joint between the asphalt layer and the concrete gutter in an effort to knock down the asphalt layer for a better height match. It is certain that the drums were bouncing in this area.

You can even see the resulting white, powdery surface that indicates fractured aggregate. In this case, the problem was created by the paving crew that paved the joint height too high. The compactor can only reduce the thickness of the layer so much. When the layer becomes dense, the drums will begin to bounce and leave impact marks.

By way of review, if you begin to feel drum bouncing or if you begin to see impact marks in the surface of the asphalt layer, you should adjust one or more of the following variables:

- Check the working speed to make sure you are operating in the range that produces 26 to 46 impacts per meter (8-14 impacts per foot).
- Switch to a lower amplitude setting.
- If available on the machine, switch to a higher frequency.
- Operate with one drum vibrating and one drum static.
- Operate in the static mode.

#### Parking on the Asphalt Layer

An asphalt compactor of any type should never be stopped to wait on an asphalt layer until that layer is completely compacted and has cooled below 20° C (70° F). It is especially important to avoid stopping and waiting on an asphalt layer that will be measured for smoothness. Make every effort to stop the compactor in a location that will not damage the freshly placed mat.

Anytime a roller stops and parks on a fresh asphalt layer, the drums or tires will dent the mat. The photos illustrate the effect of a six-minute stop on the asphalt layer. In this example, the paver had stopped while waiting for more haul units. The initial phase compactor completed its pattern and the operator parked with the drums at an angle and with a portion of the drums on the 90 cm (3') emergency lane and a portion



 Tire marks left by the pneumatic compactor can normally be cleaned up by the finish-phase compactor.



Deep tire marks created by operating on a thick layer composed of a tender mix will be difficult to clean up.



The breakdown roller stops while waiting for more mix to feed the paver (left). Compaction resumes after six minutes, leaving behind a dented mat and pooled water (center). The steel drums cause significant heat loss in the mat during the stop (right).

of the drums extending onto the driving lane that is going to be measured for smoothness.

After a six-minute stop, the paving process started again and the compactor operator started a new pattern. A view of the mat where the compactor had been parked reveals that water has pooled in the area where the drums sat and where the mat has been dented.

A thermal image shows that the steel drums caused significant heat loss in the mat where the drums sat. The temperature of the mat is  $65^{\circ}$  C ( $150^{\circ}$  F) where the two steel drums were located.

The mat has two more compaction phases remaining, intermediate and finish. However, the temperature of the mat in this area is now much lower than found in the normal patterns.

At the end of the shift, the finishcompacted driving lane was measured for smoothness using a profilograph. The Profile Index at the location where the compactor parked for six minutes shows two depressions and bulges caused by the steel drums and not cleaned up during the intermediate and finish compaction phases. The Profile Index is proof that parking on a hot mat for any length of time and at any angle is likely to leave permanent bumps in the mat.

If the paving process is interrupted, Caterpillar recommends parking any affected compactor on a surface that is cold and completely dense or that is not part of a driving lane. If no suitable parking area is available, the compactor(s) should deactivate the vibratory system, move to an area of the asphalt layer that is away from an active rolling pattern and continue to operate at slow speed on the mat until the paving process resumes.



## News & Notes



#### **500 MILLION GOOD VIBRATIONS**

Equipment breakdowns can lead to angry words. But when Ben Burra's roller broke down, he sent words of praise to Cat Paving Products.

Burra, equipment superintendent at Arrow Road Construction in Mt. Prospect, III., recently notified Cat Paving that the eccentric weight housing had failed on his Cat® CB334E Tandem Vibratory Roller.

Instead of yelling, Burra did some math—and came up with impressive results.

Burra multiplied the vibrations per minute (2,800) by 60 to determine the number of vibrations in an hour (168,000). He multiplied the 168,000 by 6,200—the number of hours the roller had operated. The total number: 1,041,600,000.

"The compactor isn't vibrating 100 percent of the time, so to be conservative I used half the number and came up with 500 million," he said. "That many vibrations, without a breakdown. It's phenomenal. It takes your breath away." As Burra wrote to Cat Paving, "In other words ... it just wore out after the 500 million revolutions (conservatively) that the 14 pound shaft has made inside the housing and the COUNTLESS times an operator has tried to compact concrete. There are not enough adjectives to describe this type of performance."

Burra said the equipment is "definitely not overmaintained."

"The failure was simply that it got tired, and that issue was just with the rear. The front is still fine. It's a manmade part, a piece of steel. It broke into a few pieces. It was a simple break—there were no leaks, no hydraulic issues."

Arrow began converting its fleet to all Cat asphalt rollers in 2005; the company now owns 17. Burra has witnessed a pattern of quality similar to what he experienced with the CB334E.

"Since that time (2005) we have logged nearly 70,000 hours of compaction time across the entire fleet of these Cat rollers. The CB334E was our very first failure of an eccentric housing."

#### COMPACTION GUIDE EARNS AWARD

The Cat Paving Products *Guide to Asphalt Compaction* earned the American Graphic Design Award.

For nearly five decades, Graphic Design USA has sponsored national design competitions that spotlight areas of excellence and opportunity for creative professionals. The awards are open to advertising agencies, graphic design firms, corporations, institutions, publishers and more. It honors outstanding work of all kinds and across all media.

There were more than 8,000 entries in the 2012 contest.

The Guide to Asphalt Compaction was released in spring at INTERMAT 2012 in Paris. More than 180 color photos and illustrations support the in-depth, easy-to-read book.

The book was published in English, French and German, with other language versions likely to be added in the future.



#### **ONLINE PRESENCE GROWING**

Earlier this year, Cat Paving Products added a new, more focused "microsite" at **paving.cat.com**. The site continues to attract new visitors—who also are spending more time on the site.

Paving products will still be featured on the larger cat.com site, but the new site—**paving.cat.com**—features only paving products. It is designed specifically for customers seeking product and/or industry information.

New products in particular are highlighted on **paving.cat.com**, with literature, videos and virtual  $360^{\circ}$  walkarounds.

The Cat Paving presence also continues to grow. Included on the page are posts inviting customers to ask questions, which Cat Paving experts will make every effort to answer.

The facebook page also alerts visitors to upcoming events, such as trade shows. In addition, new product information—including videos—is located in a convenient, easy-to-access location.

### **PAVING.CAT.COM**



#### **CAT MACHINES ARE CONTRACTORS' CHOICES**

Cat Paving machines earned six "Contractors' Choice" awards from Roads&Bridges magazine.

Readers of the magazine once again voted the Cat AP1055D their favorite paver. The AP1055D has won the gold medal every year since the contest started in 2006.

#### Gold medal winners were:

- The AP1055D, in the "asphalt paver" category
- The AP555E, in the "asphalt paver (small)" category
- The RM500 in the "reclaimer/soil stabilizer" category
- The CB64 in the "compaction (asphalt)" category
- The Extend-A-Mat 10-20B in the "asphalt screed" category

In addition, the PM200 received a silver medal in the "asphalt milling machines" category.

Readers of *Roads&Bridges* annually vote for the awards by selecting the equipment they feel performs best on their jobsites.



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Turn those smaller paving jobs into bigger revenue with the dynamic combination of our **AP255E paver** and **CB14B utility roller**. Perfect for sidewalks, alley ways and driveways. Let Cat<sup>®</sup> Paving Products help your crews do even more.

PAVING ALL DAY. EVERY DAY.



Find us online at paving.cat.com



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