

A Caterpillar publication serving governmental agencies

SPRING 2008

# GOVERNMENTAL *Solutions*

## NEXT GENERATION

Former Florida landfill finds  
new life as a transfer station

**Work Zone Safety**

**Make a Backhoe  
Loader Work for  
Your Agency**



# Ease of Operation

New industrial loader features joystick implement controls



Whether cutting weeds along miles of county road, gang mowing, or landscaping, the new Cat® 414E IL Industrial Loader features seat-mounted joystick implement controls for outstanding comfort and ease of operation.

With just one joystick instead of multiple levers, the machine gives the operator full control of all five functions (raise, lower, float, tilt and pitch) for the three-point

tool carrier. The operator can also activate auxiliary hydraulics and work tools.

The category 2 three-point hitch on the 414E IL is fully integrated into the purpose-built box section frame, simplifying operation and providing superior operator comfort.

The front loader is the same system as used on the Caterpillar 416E backhoe loader. The front loader can use a multi-purpose bucket as well as a wide range of Cat Work Tools.

Front work tools, in addition to general purpose and multi-purpose buckets, include forks, a material handling arm, angle brooms and snow pushers.



## A Better Look

Cab innovations include a sloping front hood and divergent lift arms to enable the operator to see more of the forward work area and loader attachments. The operator also has an unobstructed view to the rear work tool.

The seat rotates 20 degrees from forward for excellent visibility and operator comfort when operating rear implements. The seat-mounted joystick controls for the rear implement set an industry standard for industrial tractors and rotate with the seat for easy operation regardless of seat position.

The power train features a Cat 3054C DINA (Direct Injection Naturally Aspirated) diesel engine, producing 74 net horsepower. An optional turbocharged 3054C DIT produces 89 net horsepower. All-wheel drive is standard for productive performance on slopes and in all underfoot conditions.

To learn more about how the 414E can benefit your agency, stop by or call today, or visit [Cat.com](http://Cat.com).

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## CONTENTS

COVER STORY:

**Next generation** 4

Landfill finds new life.

**Teamwork** 6

Work zone safety a group effort.

**Budget conscious** 9

Renting work tools saves money.

**Compare and save** 10

Preventive maintenance savings.

**The long run** 11

Life cycle costing.

**A permanent fix** 12

Cold planer makes patches last.

**End-to-end** 14

Put your backhoe loader to work.



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# NEXT GENERATION

Former landfill finds new life as transfer station

**T**he Martin County, Florida Landfill has been closed since 2005, but more than 18,000 tons of waste and recyclables are transported to the site monthly—to be sorted. The county uses the landfill as a transfer station for household waste, construction debris, plant material, and recyclables.

Though the landfill is no longer the final destination for the county's waste, disposal costs are less than processing fees so the landfill has found a second life as a transfer station. Revenue generated at the site is used for the long-term

maintenance of the transfer station and old landfill.

Because fees vary for recyclables and each type of waste, materials are sorted at the site before transport. With more than 18,000 tons of material—including 10,164 tons of household waste—moved through the transfer station in December 2007 alone, that's a big job.

The processing fee for household waste is \$57 per ton,

and the county pays \$33.72 per ton to dispose of the waste. The charge for construction debris is \$40.60 per ton, while disposal costs \$29

per ton. The fee for plant material is \$24.33 per ton, with a disposal cost of \$18.50 per ton. There is no charge for recyclables, and no cost incurred for disposal of the materials.

Metal, rubber tires, and white goods are separated for recycling.

In addition, clean concrete is separated for use in artificial reefs and roads onsite.



TOM ONEAL

"If somebody comes in with a load of clean concrete, we keep that separate. If we receive a load of clean tiles off a roof, we've got a place for that, too. We try to separate materials as much as we can," said Tom Oneal, lead mechanic for the Martin County Utilities and Solid Waste Division.

A variety of Cat equipment and work tools help Martin County meet the challenge of separating materials at the site.

## Making Material Move

Refuse haulers from communities across the county deliver household waste to the transfer station, where a Cat® M322C Material Handler and a Cat G315 Demolition and Sorting Grapple loads material into transport trucks. A Cat 966G Wheel Loader feeds the material handler.

The M322C is located on the top floor, and lowers waste into trucks on the lower level. "We try to get the trucks as close to 80,000 pounds as we can. We use the grapple to mash the material down, and to pull material out if the truck is overweight," said Oneal.

Construction debris is sorted and loaded into trucks by a Cat 330D Hydraulic Excavator with a thumb. A Cat IT62H Integrated Toolcarrier has been ordered, and will be feeding debris to the excavator before summer begins.

An IT62H Integrated Toolcarrier is already at work at the site—loading plant material into trucks. "We have an extended-reach bucket because the trucks are 13-feet, 2-inches at the top. A regular loader can't reach that high," Oneal said.

The toolcarrier also utilizes a regular bucket, rake, hydraulic planting rake, hydraulic brush, broom, and forks to complete a variety of other jobs. "People drop off big, long telephone poles, and we use the forks for things like that. We also use the forks to unload trucks," said Oneal.

The county plans to standardize the fleet by ordering more toolcarriers to replace existing equipment. "If we standardize our fleet with toolcarriers, any machine will be able to do the job of any other machine. If a machine encounters a problem, a quick change of work tools, and we're back in business," Oneal said.

The greatest challenge at the transfer station is keeping up with the flow of material. Standardizing equipment so one machine can easily replace another – along with the dependability of Cat machines – will enable the county to meet the challenge.

"If a machine experiences a little bit of downtime, the material starts piling out the door. We can't afford unscheduled downtime," said Oneal.

A Cat M318 Material Handler and 257B Multi Terrain Loader round out the fleet at the transfer station. Cat machines and work tools keep the Martin County crew ahead of the tons of waste materials and recyclables that flow through the site each day. ☺

**"We use the grapple to mash the material down and pull material out if the truck is overweight."**



# Teamwork Key to Safety

Work zone safety a product of designer, road crew and drivers



**S**afety of your agency's employees is of the utmost importance, but some jobs, such as working on roads and streets, are inherently dangerous. While safety is a priority for all agency employees, a concentrated effort is necessary to keep road crews safe.

Work zone safety is a team effort, which includes the designer of the temporary traffic control (TTC) plan, the crew placing the traffic control devices outlined in the TTC, the individuals completing the work, and the drivers of vehicles passing through the construction zone.

The designer of the TTC determines the number, type, and location of traffic control devices (signs, arrow boards, cones, barrels, and barriers, as well as flaggers) to delineate the work zone and safely guide drivers and pedestrians through the zone.

Depending on the project, the plan may range in scope from very detailed to a standard highway agency drawing from a manual. Regardless of the job, the plan needs to be prepared by a person who knows the fundamental principles of temporary traffic control, as well as the road work to be completed.

Of course, any plan is only as good as its implementation. Care must be taken to place traffic control devices as planned. The distance between advance warning signs must be spot on, and the space between barrels accurate. Incorrectly placed signs and barriers

can confuse drivers, increasing the chance of vehicles entering closed lanes and endangering the road crew.

Ultimately, individual members of the road crew are responsible for their personal safety. For instance, if it appears drivers are confused by the placement of barrels or warning signs, time must be taken to consult the plan and meet with the designer to make the changes needed to keep the work zone safe.

Also, individuals need to dress properly—safety vests and work boots are musts. Safety glasses and hard hats should also be worn. When working in live traffic, face oncoming vehicles whenever possible and be sure to stay clear of active traffic lanes. Seat belts and roll-over protection must be used on equipment and vehicles as specified in manufacturer operating manuals.

Flaggers have the most dangerous job in the work zone, and must take special precautions. High visibility, fluorescent clothing with reflective material is required.

OSHA recommends flagger stations be illuminated, with lighting of 5 foot-candles or greater. Flaggers must be trained, and use stop/slow paddles. Flags are to be used only in emergencies.

Drivers must also do their part in the work zone – no speeding, no passing, don't change lanes, obey signs and other traffic controls, follow flagger instructions, and turn off the radio. 🚫



## Remote-Controlled Flagger

**T**o improve safety and save costs, the Minnesota Department of Transportation is utilizing remote-controlled stop/slow signs to replace human flaggers on low-speed, low-volume, two-lane roadways.

The Autoflagger removes flaggers from a traffic lane or shoulder, improving safety for the person controlling traffic through the work zone.



Using the remote control, one person can work the stop/slow signs on both ends of the work zone. "Instead of two people flagging, we only need one," said Ken Nelson of the Minnesota Department of Transportation.

Because one person is controlling traffic at both ends of the work zone, Autoflagger is limited to sites where the entire work zone is visible. The maximum length is approximately 800 feet. "After 800 feet, people begin losing depth perception, and can't see if a car is coming through or not," Nelson said.

The Minnesota Department of Transportation limits the use of the Autoflagger to work zones where speeds are 45 mph or less, and average daily traffic counts are less than 1,500 vehicles.

For more information, visit [Autoflagger.com](http://Autoflagger.com).

## CLEAN EMISSIONS

The Caterpillar® Diesel Particulate Filter System for off-highway machines has earned Level 3 conditional verification from the California Environmental Protection Agency Air Resources Board. The verification formally recognizes the Caterpillar passive filter system as effective and reliable in achieving at least an 85 percent reduction in particulate matter resulting from exhaust emissions.

The system also meets the California 2009 regulation governing nitrogen dioxide emissions. Conditional verification is equivalent to verification, making the system legal for sale in California.

The verification covers wheeled machines with Tier 1, 2, and 3 engines in the 175 to 300 horsepower range. Caterpillar expects the verification to be extended to tracked machines and the horsepower range extended



as more field testing data are considered.

The Caterpillar Diesel Particulate Filter System features a passive regeneration system to automatically remove particulate

buildup. The filter requires no downtime to regenerate and no external heat source or fuel source. Caterpillar Emissions Solutions offers a number of retrofit options through Cat dealers.

For more information about Caterpillar Diesel Particulate Filter Systems or other emissions reduction options, contact our dealership or visit [Cat.com/EmissionsSolutions](http://Cat.com/EmissionsSolutions).

## APWA CALENDAR

Upcoming training and education programs from the American Public Works Association (APWA) include:

<b>March 10-12</b>	Construction Inspection: A Review Workshop will be held in Atlanta.
<b>March 20</b>	The Click, Listen, & Learn program, Target Emergency Preparedness #3: After the Disaster – Reimbursement.
<b>April 3</b>	The Click, Listen, & Learn program, Work Zones – Safety First.
<b>April 9-10</b>	The workshop, Symposium on Climate Change, in Tempe, Ariz.
<b>April 13-16</b>	The North American Snow Conference in Louisville, Ky.
<b>April 17</b>	The Click, Listen, & Learn program, Innovative Funding – Getting to the End of the Rainbow.
<b>May 7-9</b>	The Public Fleet Management Workshop will be held in Grimsby, Ontario, Canada.

For more information or to register online, visit [APWA.Net/Education](http://APWA.Net/Education). Questions? Call the APWA's Education Department at (800) 848-2792.



## BUDGET-CON\$CIIOUS

Renting work tools saves money

It's a challenge faced by many governmental agencies—a budget stripped to the bare minimum. The work still needs to be completed, of course, but funding to pay for the personnel and equipment is scarce.

That's when the rental of Cat® Work Tools really pays off. There are a number of ways renting work tools helps your governmental agency stay within its budget.

- **Minimize Inventory** – Renting work tools for specialized jobs saves on inventory costs. Purchasing work tools that aren't commonly used may not make sense financially.

- **Reduce Warehousing** – Eliminate the need for large storage areas

and reduce your overhead costs by renting work tools for specialized tasks.

- **Work Efficiently** – Rather than using equipment simply because your agency owns it, renting enables you to utilize the work tool that matches the job. This eliminates the hidden costs of inefficiency caused by using the wrong size or type of work tool.

- **No Maintenance Costs** – Utilizing rental work tools eliminates maintenance costs, maintenance record keeping, and spare parts inventory.

- **Avoid Breakdowns** – Eliminate the costs associated with equipment breakdown. Prior to each rental, rigorous

maintenance by our trained staff assures equipment is productive and reliable.

- **No Obsolescence** – Owning obsolete models slows work. Renting the newest, fastest work tools enables you to complete your projects on time and within budget.

- **Capital Conservation** – Renting frees agency funds for other potentially more productive uses.

To learn more about how renting Cat Work Tools can help keep your agency within its budget, contact our dealership or visit [Cat.com](http://Cat.com).





## Compare and Save

Preventive maintenance costs less for Cat® equipment than other brands

**T**he little things add up. This is especially true when comparing preventive maintenance costs for Cat® equipment to other models.

When considering the purchase of a backhoe loader, realize that your agency may be able to save thousands of dollars in maintenance costs with Cat equipment.

Preventive maintenance for a Cat 416E Backhoe Loader over five years costs \$11,102.17, compared to \$13,639.45 for a Case 580M Backhoe Loader over the same period, a savings of \$2,537.28 for the owner of Cat machines, according to figures provided by Caterpillar.

The numbers are based on manufacturer-recommended maintenance over five years on machines operating a total of 5,000 hours, with ser-

vice work performed at a labor rate of \$75 per hour.

As the following figures show, maintenance costs for the Cat equipment are less than the Case machine.

- Recommended maintenance of the Cat Backhoe Loader's 48 grease fittings totals \$6,005 over five years, while the upkeep of the Case's 59 grease fittings costs \$7,510 for the same time period, a savings of \$1,505 for Cat machine owners.
- The hydraulic oil and filter in the Case machine are replaced at 1,000-hour intervals compared to every 2,000 hours for the Cat machine, generating a savings of \$694.50 for agencies owning Cat equipment.

- Engine oil and filters for each of the backhoe loaders should be changed every 500 hours. The Cat filter costs \$1 less than the Case filter, and with Caterpillar requiring 1.9 gallons of engine oil per change compared to 3.35 gallons for the Case machine, resulting in a savings of \$48 over five years.

Add it up, and maintenance costs for Cat equipment are less than the other makes. For more information on how we can help save money for your agency in the long run, contact our dealership today or check out Life Cycle Costing information at [GovBidSpec.com](http://GovBidSpec.com). ☎



### LIFE CYCLE COSTING

## The Long Run

Agency analyst and city council learn true cost of equipment ownership

**U**sing Life Cycle Costing (LCC) to purchase a backhoe loader last fall will save the city of Mount Pleasant, Mich. nearly \$4,000 in operating costs over the next three years.

After receiving four bids for the purchase of a new backhoe loader, Department of Public Works Analyst Michelle Smith recommended that LCC be used to determine which machine would be the least expensive to operate over a three-year period.

Using the purchase price, anticipated maintenance and repair costs, and the expected resale value of the machines, it was determined the Cat® 420E Backhoe Loader would

cost the city \$8.98 per hour to operate, considerably less than the \$10.78, \$11.68 and \$12.14 hourly rates for the other models bid.

The figures are based on an average of 740 hours of operation per year for three years. The city has two backhoe loaders in its fleet, and each is used an average of 740 hours per year.

The new backhoe loader is part of the city's motor pool, and is used by the public works, water, streets, and park departments.

"Using Life Cycle Costing, we knew it would cost us less than the other models," said Smith.

The city council was impressed by Smith's efforts to determine the

true cost of ownership, and plans to use LCC principles for other purchases. "It's not the initial cost, but the overall cost that is important—that's what I learned from this," Smith said.

Life Cycle Costing evaluates all owning and operating costs over a machine's working life. With LCC, you purchase based on total, long-term costs rather than simply the lowest initial price.

Contact our dealership today and ask about our Life Cycle Costing calculator to help you compare the owning and operating costs of different manufacturers' machines and help your agency receive the best value for your budget dollar. ☎



BOB BLACKBURN

## A Permanent Fix

Cat® Cold Planer makes patch work last

**L**ike many communities that ring the Greater Kansas City area, the city of Liberty has seen steady population growth over the past decade. The Missouri city's population has increased nearly 14 percent since 2000 and now sits just under 30,000.

While the growing population has brought more infrastructure to the 28.9 square-mile municipality, the city's \$2.3 million public works budget hasn't increased as fast as demand for services. The directive of doing more with less is nothing new for governmental agencies. One way Liberty has tried to accomplish this goal is by getting the most productivity for the lowest cost.

### Operating efficiently

Caterpillar products help the city maintain efficiency in two main ways, said Bob Blackburn, Liberty's Superintendent of Public Works. First, Caterpillar products are reliable. There's little worry that members of his crew will be idle while they wait for repairs or parts to arrive.

"Before, when we had (non-Cat equipment), it seemed like we were always waiting for parts—or some piece of equipment was broken down," said Blackburn, who has been with the department for 33 years. Those long waits not only wasted time, but departmental money, he said. And, if there is a need with Caterpillar products, the local dealer steps in immediately, Blackburn said.

### Downtime avoided

"Downtime is nothing compared to what it used to be before Caterpillar," Blackburn said. Cat products are also versatile, an important consideration when Blackburn's 23-member crew regularly goes from patching potholes to moving pallets in a day's work.

A Cat® 268B Skid Steer Loader is a key weapon in

Liberty's arsenal. Liberty has added several Cat Work Tools for the skid steer loader so it can do more jobs efficiently and effectively.

The addition of a Cat PC205 Cold Planer work tool makes road patching jobs go more quickly—and makes the repairs last longer, Blackburn said.

The cold planer delivers pristine cuts to the asphalt, leaving a textured bottom surface without the jagged side edges usually found on patch jobs. Because the cold planer removes the ruts and imperfect edges, Blackburn's crew can lay down smooth, symmetrical patches of asphalt.

"The patch job lasts longer when you're able to provide a clean cut before laying down the asphalt," he said. "The cold planer lets us make permanent fixes."

And the flexibility of the cold planer work tool means the city can use it for small spot repairs as well as bigger projects.

Another big advantage is how quickly the Cat Work Tools can be attached to the skid steer loader. "It only takes minutes to exchange work tools, and it's a job one person can do," Blackburn said.

A multi-purpose bucket, an H63 Hammer and pallet forks are other Cat Work Tools used with the 268B Skid Steer Loader.

"Because of the versatility offered by the work tools, the 268B also is used by the city's Water Utility for its projects as well," Blackburn said. "We use the skid steer loader every day. It's the most versatile machine that anyone makes."

Blackburn said reliability and versatility make Caterpillar the best choice for his department. "We've had other manufacturers' products in here, but any 'savings' in up-front cost were lost because they weren't as reliable as Caterpillar," he said. "And, with the Cat Dealer's buyback guarantee and service, the machines are definitely worth the money." ☺

# End-to-End Productivity

Making a backhoe loader work harder for your governmental agency



ROBERT BROBST

**B**ackhoe loaders are a staple in the fleets of many governmental agencies. As with any piece of equipment, agencies want to complete as much work as efficiently and inexpensively as possible with backhoe loaders.

Robert Brobst, a trustee with Saybrook Township in Ashtabula County, Ohio, who has more than 28 years of governmental road experience, talked about how the town utilizes its Cat® 430E Backhoe Loader. With a population of just under 10,000, the township's seven-person road department, including the superintendent, maintains 46 miles of paved roads, as well as a cemetery and the township grounds.

**Q** How is the backhoe loader used, what sort of applications?

**A** We use it for ditching, to clean up debris in roadways, installation of storm drainage pipes and driveway culverts. We also use the backhoe loader to dig out bad spots in our roads prior to repairs.

**Q** One of the advantages of the backhoe loader is the variety of tasks that can be completed using the backhoe or the loader end of the machine. What are some examples of jobs where your agency makes use of both the backhoe and the loader ends of the machine?

**A** We use the loader to load trucks with different materials (dirt, stone, etc.) for various jobs. We use the hoe to excavate and load dirt from ditches; off load stone from trucks to backfill trenches and cover pipe; and final grade cover material after the pipe installation.

**Q** What work tools do you own for the backhoe end of the machine, and how are they utilized?

**A** We utilize a hydraulic thumb for removing fallen trees from our roadways. It is also very handy in cleaning up garbage that has been dumped on the sides of the roads. Having the thumb on the machine, we can pick up heavy couches, chairs, and mattresses that have been saturated with rain. Not only do we avoid straining our backs trying to lift and move the soaked items, but also we're not exposed to contaminated items with unknown blood-borne pathogens.

**Q** What work tools do you use on the loader end of the machine, and how are they utilized?

**A** We have a power broom that we use to clean gravel and stone off roads, and brush dirt and debris away during and after the completion of different jobs. The use of the power broom eliminates safety concerns when the normal traffic flow resumes. 🚧



## Top of the Line

**T**he new Cat® 450E Backhoe Loader is in the 17-foot dig depth class and is the largest backhoe loader in the Caterpillar line. The 450E has 124 net horsepower and a backhoe digging depth of 17 feet, 3 inches when equipped with a standard stick. The new extendible stick pushes the 450E digging depth to 21 feet, 4 inches.

The new pilot operated joystick control system, larger bucket (the general purpose loader bucket is 1.75 cubic yards), increased hydraulic flow and stronger rimpull combine for faster cycle times than the 446D it replaces.

New combined-function auxiliary hydraulic lines on the backhoe enable the 450E to support all one-way and two-way hydraulic work tools,

such as hammers, compactors, thumbs, augers and tilting couplers.

The new cab with curved glass and contoured fenders gives the 450E a distinct look, improves serviceability and provides superior visibility. The low hood enhances sight lines to the loader, and the hood tilts forward for easy service access.

The Cat C4.4 engine is electronically controlled and meets all U.S. EPA Tier 3/EU Stage III emissions requirements. The engine is a

four-cylinder diesel with 4.4 liters displacement. Compared to the previous model, the engine has 21 percent more horsepower and 10 percent more torque, which powers the improved performance of the 450E.

For more information, contact our dealership or visit [Cat.com](http://Cat.com).



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## The New C-Series

Featuring a one-piece frame for extra strength and long-lasting life, the new Cat® C-Series Skid Steer Loaders will add versatility and dependability to your agency's fleet.

Operator comfort is standard in every model. The High Flow XPS hydraulic system is available to expand versatility and enable your agency to equip C-Series machines for a wide variety of applications. Stop by or give us a call today to learn more about the new C-Series machines.

