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SKID LOADERS

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grammed to drop to a certain level for scooping mulch.

Joysticks also have ergonomic value: "Because controls are operated while holding on to the handgrip bar, operators maintain balance and can operate any of the machine functions at any time," says Jon Kuyers, utility product segment manager for Vermeer, Pella, IA. He notes that some competitive units cannot drive and operate multiple functions without removing their hands from the levers or bar.

"Joysticks minimize fatigue and decrease the effort needed to operate equipment," says Kelly Moore, Gehl's product manager for skid loaders in West Bend, WI. "Effort required on the hand, arm and wrist is minimal. Whether you are running one hour or 10 hours, the dollars spent at the outset give a long-term payback in easier operation."

Typically, the upgrade to a joystick is about \$2,000 because of the more sophisticated controls and complexity of the controllers.

Other ergonomics

Perry, OK-based Ditch Witch has "pilot-operated ground drive controls." They provide highly responsive steer-



John Deere unveiled the new CT 313 compact track loader in February.

ing with little or no vibration feedback, which increases operator comfort.

"Our foot pedal-operated auxiliary feature allows for hands-free operation of the auxiliary controls," says Matt Collins, Ditch Witch Compact Utility product manager.

Gehl's machines offer quiet cabs with noise levels — "operator ear levels" — from 85 dB down to 82 dB, depending on model. The cabs have AM/FM radio with weather band to allow weather tracking. The systems even allow the operator to plug an iPod or satellite radio into the speakers.

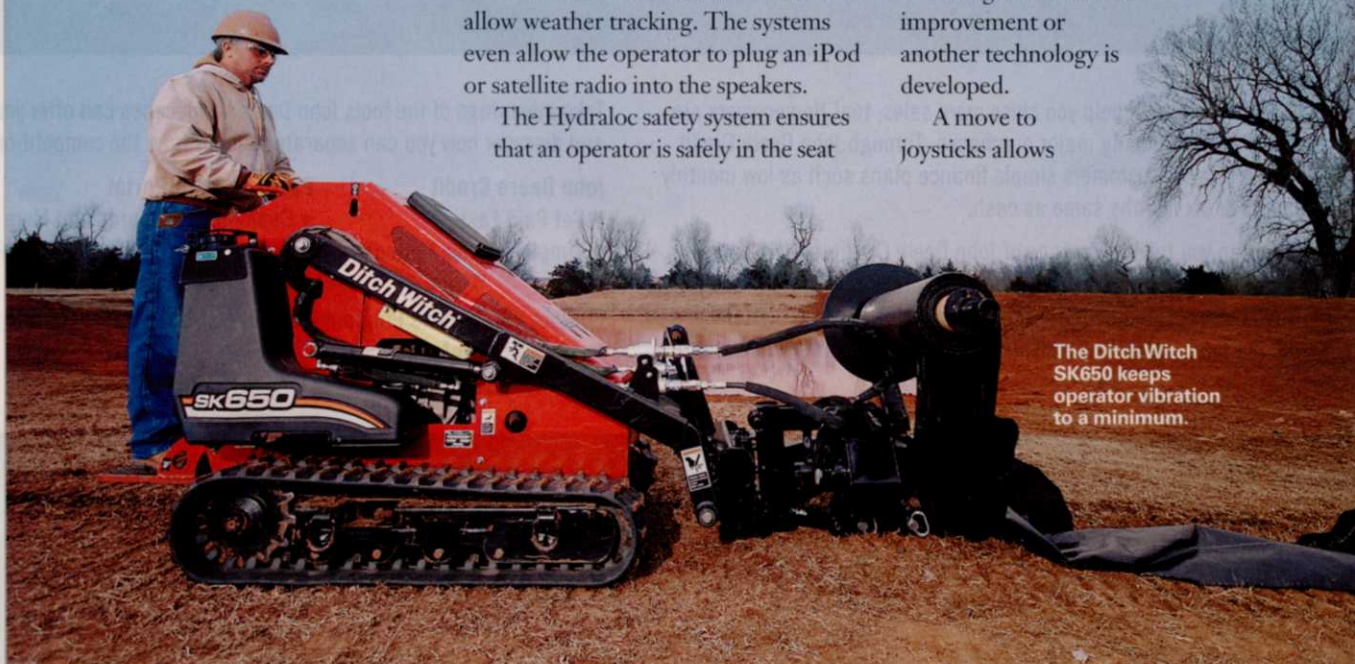
The Hydraloc safety system ensures that an operator is safely in the seat

before moving or operating the machine. In addition, those seats — which will be available on the new V270 machine coming out this spring — have deluxe suspension, with adjustments for operator size and weight, and extra cushioning.

Sipping fuel

While fuel costs have decreased, many observers believe the lull is only temporary until either the economy shows signs of consistent improvement or another technology is developed.

A move to joysticks allows



The Ditch Witch SK650 keeps operator vibration to a minimum.



The handgrip controls on this Vermeer S400TX offers operator ergonomics.

John Deere to put most of its models' operations at the fingertip level. This frees up the floor area for a fuel-saving foot throttle, Zupancic explains. The lever throttle can be set in the 30% to 50% range. When the operator needs more speed, simply pushing the foot throttle gives the speed boost. But the moment the operator lifts his foot, the fuel consumption goes back to a minimal level.

"This also reduces the outside noise levels," Zupancic points out.

Gehl's Moore agrees that foot throttles make operation more efficient. "You use the foot control when you need more power or speed, backing off to go slower," he explains. "When it is not engaged, you're not using diesel."

Another move taken by some manufacturers is electronic fuel injection instead of the mechanical injection seen on many loaders. Deere is looking in this direction to give the right fuel burn for turning vs. straight-line driving, for example. Of course, good maintenance will help keep the unit running correctly.

"Contractors should make sure their mini skid steer is in peak operating condition, as this will help efficiency,"

says Kuyers. He adds that the most consistent method of saving on fuel costs is having a clearly laid out job plan that minimizes wasted travel and operation.

"Extra trips require extra fuel, and having a Lean methodology for working on the jobsite will help most contractors increase productivity while reducing costs," he says.

Another option is to know whether your diesel engine can use B20 to reduce cost. Some biodiesel blends may be less expensive than regular diesel, depending on your local market.

"Of course, fuel efficiency and fuel prices play a large part in ownership, but other factors like labor costs and downtime can be equally important," notes Collins. Using a mini skid steer can reduce labor hours and allow contractors to work more efficiently on the jobsite, therefore generating more revenue."

Collins adds that adopting a preventive maintenance program is another way for contractors to reduce downtime, making them more efficient — although users should always refer to the operator's manual for specific information and factory recommendations. Major maintenance checks would include:

► **Engine-related maintenance.** This includes filters, engine oil, coolant and fuel quality.

► **Track and undercarriage.** Keep it clean, and replace worn sprockets and bushings.

► **Operator controls.** Keep them maintained by using them correctly.

"By maximizing fuel efficiency on the jobsite, annual fuel consumption will be reduced — saving money no matter what fuel and diesel prices are," Collins says.

Equipment costs

"Machinery costs will begin to stabilize and commodity prices — steel, copper, fuel — should become less volatile in the near-term," Kuyers says. While steel has decreased from its high point in 2008, he notes that some of the input materials have not decreased to their previous amounts, thus causing an increase in overall prices.

Moore agrees. "We had a huge surge in component costs last summer and fall. Steel had some big increases. Things have leveled out, but we still have a way to go."

Moore sees prices stabilizing. "Maybe, after a while, we'll see some more decreases in equipment costs," he adds.

"Over the years, we have seen an increase in component costs on equipment, but with the changes in our current environment, pricing has started to level out," agrees Collins.

Zupancic says Deere took its increases in November 2008 and that he does not foresee any further increase in the near future.

"You might see a 1% increase for the new features we are talking about," he adds. "But the return on that up-front cost will save the owner a lot of money from more efficient operation over the life of the machine. It's worth paying the bit extra up front to get the return over the longer term." *LM*

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COMING SOON
Don't miss the
LM Reports spotlight
in *Landscape Management's*
June issue.

PROBLEMSOLVER

LANDSCAPE TROUBLESHOOTING TIPS » BY H. BRUCE HELLERICK

PROBLEM

Rolling Stones lead singer Mick Jagger once said, "Anything worth doing is worth overdoing." While that may be true for rock music, it doesn't hold for landscapes. As professionals, we need to create more interest and excitement in the landscape. Many contractors use various tulip and viola combinations to create great-looking beds, but sometimes the execution is a bit too enthusiastic. Here, the entire bed is filled with pansies and tulips. How do you accommodate the client's desire for both violas and tulips without creating too busy a scene?



SOLUTION

Contractors often get carried away planting too many bulbs to make a spectacular display — and forget that it's the violas that really provide the long-term color presentation. By simply planting fewer bulbs with wider spacing, however, you allow each type of flower to be spectacular instead of competing with one another.

In this case, we removed about 24 extra bulbs along the front and sides of the bed that did not need to be planted, which also helps the bottom line: 24 bulbs times 20 cents per bulb is \$4.80; multiplied by 100 beds is \$480. You save money and keep your client very happy.



Every day you see horticultural problems. Sometimes the solution is obvious, but others are much more difficult to solve. Brickman Group Senior Horticulture Specialist H. Bruce Hellerick tackles these issues each month in Problem Solver. He can be reached at Hellerick@BrickmanGroup.com.

A FRESH LOOK AT FERTIGATION

It's time for contractors to take another look at the economic and environmental benefits of supplying nutrients to living landscapes.

BY **RON HALL** EDITOR-AT-LARGE

FERTIGATION, THE PRACTICE of supplying nutrients to plants through irrigation, is going mainstream with landscape maintenance contractors. Economic, environmental and aesthetic considerations are converging to put it in the property maintenance spotlight.

The higher costs of labor, granular fertilizers and, in many regions of the country, irrigation water, are prompting contractors to investigate fertigation. They're following the path that many golf course superintendents and institutional grounds managers took a generation earlier, finding fertigation to be a more efficient way to create healthy, attractive landscapes.

"Until recently, landscape maintenance contractors hadn't recognized the huge potential of fertigation for their businesses," says Michael Chaplinsky, Turf Feeding Systems, Houston. "It's getting their attention now that everybody in the industry is looking to address landscape quality issues while reducing inputs — in particular fertilizers and pesticides. Contractors are looking for ways to increase efficiency, too. I'm getting more calls every day from large landscape maintenance companies and irrigators."

Labor saver

Chaplinsky, whose company has been supplying fertigation equipment worldwide for more than 20 years, says simple economics — the rise in the cost of dry fertilizer and the cost of labor

required to apply it — is one of several drivers for the newfound interest in the practice of delivering nutrients to turfgrass with irrigation water. Contractors maintaining sizable properties can save considerable expense and get better results by "fertigating" the common areas (a streetscape in an HOA, for example) and freeing up manpower for the smaller areas of a property that require more intensive maintenance.

"It's a huge labor saver for the

contractor, especially on large commercial properties," adds Darin A. Brasch, national sales manager for EZ Flo, a Sewickley, PA-based fertigation equipment supplier. "For example, it was taking a company in San Diego four days using seven employees to feed one commercial property. One employee can feed 20 properties in a single day with fertigation. Basically, he just travels to the sites and fills the tanks."

Better water

Another consideration is environmental as well as economic: the growing concern over the availability, quality and cost of fresh water. All three factors are addressed by fertigation, say proponents of the practice.



Bob Knapp and Nadja Galadram see the benefits of fertigation.

“Everybody is talking about water conservation, but I think the conversation should focus on water efficiency, on improving the efficiency of water,” says Chaplinsky.

He maintains that with fertigation, using tiny, regular doses of NPK fertilizer mixed with humates and other organic products in the irrigation water promotes healthier, more stress-resistant landscape plants, including turfgrass. Plants that grow in soils with beneficial microbes fostered by fertigation require less water and fewer chemical inputs to survive stresses and still remain attractive, he says.

Nadja Galadram, owner of Let’s Grow Soil Lab, Yelm, WA, has seen the results, and agrees. Acting as an eco-consultant and working with grounds professional Bob Knapp at the State Farm DuPont (WA) Operations Center site, Galadram has seen steady improvement in the biological activity of the soil there since instituting a more holistic approach to maintenance several years ago. Her strategy includes using fertigation to supply plants with nutrients, microbial inoculants and organic substances that she has used to increase food crop health in eco-agriculture.

“This February I did eco-soil tests there,” says Galadram of the 13.5 acres of turfgrass at the site. “I took 6-in. soil samples under the turf and found about three earthworms in every spot. Using a variety of strategies, we’ve improved what was a dead soil, and we’ve seen its cation exchange capacity (CEC) go up, up, up over five years. Soil particles can now hold onto and use those nutrients that roots and soil microbes need the most.”

“Plants will only take in what they need, when they need it,” adds EZ Flo’s Brasch. “This is a very efficient way to fertilize plants, whether they’re trees, flowerbeds or turfgrass.”

A better way

Proponents agree that fertigation is an especially efficient way to get nutrients to plants and build plant root mass because the relatively tiny amounts of

BENEFITS OF FERTIGATION

► **Water conservation:** The U.S. Environmental Protection Agency (EPA) says that more than 50% of water used to irrigate landscapes is wasted, and provides no benefit whatsoever to landscapes. Micro-fertilization applied properly through fertigation, using micro amounts of fertilizer in combination with proven organic additives, promote root growth and strength. A deeper, denser root system uses water and nutrients more efficiently.

► **Reduced labor expenses:** Light feeding through fertigation will control plant growth rate, and the injection rate can be adjusted down to keep the growth rate to a minimum while maintaining rich plant color. This will allow mowing intervals to be set as far apart as possible, and prevent the necessity of hauling off excessive cuttings, which can be costly.

► **Improved turf quality:** Light and continual feeding improves the health and appearance of the landscape while avoiding surge growth. Why would anyone, especially a maintenance contractor, want the grass to grow so rapidly that they have to mow more than once a week, especially in the spring when it’s difficult to keep up with the work? In addition to labor cost, think of the extra clippings — not to mention the emissions from the maintenance equipment when over-fertilized lawns grow too fast.

► **Reduced pesticide use:** A healthy landscape is more resistant to disease, insects and weeds. This is possible through fertigation. The best way to force weeds out is by having thick, healthy turfgrass. Insects and disease attack plants that are succulent or stressed. Keeping plants healthy in their optimum growth with thick cell walls also minimizes sources of stress.

► **Reduced non-point-source pollution (NPSP):** Studies have shown that plants never get to use much of the granular fertilizer applied to landscapes, and this is especially true when consumers fertilize their own properties. Property owners often do not read fertilizer labels, and when they do, they tend to put down too much — reasoning that if a little bit is good, more is better. Some unused fertilizer leaches through the soil. Fertilizer that ends up on sidewalks or driveways is eventually washed from the property by rain and ends up in streams, ponds and lakes. Applying small — in some cases, micro — amounts of fertilizer with irrigation greatly reduces the likelihood of NPSP.

fertilizer and organic products applied with irrigation is absorbed by the plants’ leaves, stems and roots. Because so little is applied at a time, there’s little chance for build-up of nitrate salts in the soil or for fertilizer runoff and non-point-source pollution, adds Brasch.

Converting a sprinkler irrigation system into a fertigation system is relatively easy and fairly inexpensive. Experienced irrigators should have no problem retrofitting most systems, which entails installing liquid fertilizer tanks into the main irrigation lines, and an injector

pump into the irrigation control panel. A backflow check valve keeps nutrients out of the drinking water supply. The injector pump, which can be calibrated depending on the specific fertilizer used, monitors the rate of flow of irrigation water. Fertilizers can be applied separately or combined for a specific blend.

But, in the end, property owners aren’t as interested in technology as they are upon results, a beautiful property.

“Most people don’t want an irrigation system. All they really want are green plants,” says Chaplinsky. **LMM**

Fertigation cuts down on labor and water use.





ROCK REVIVAL

Creative Waters' James McPhail rescues a back yard from a subpar water feature and turns it once again into a thing of beauty.

BY SOL LIEBERMAN

GORDON HANKS' BACKYARD water feature was like a stubborn black fly on a birthday cake. The mess of cracked concrete and outdated stones on the hillside didn't fit with Hanks' masterful garden (right), which included a Japanese maple, a memorial rose garden and meticulous formal planting that left not a pruning or placement to whimsy. Hanks — a self-proclaimed perfectionist — retired in May, which gave him more time to edge and deadhead while sneering at the stone albatross.

And it wasn't just aesthetics that sowed discontent. The water feature leaked, too. The pond wouldn't stay full, and Hanks' groomed French drains weren't doing enough to prevent parts of his lawn, which were attracting mosquitoes, from drowning.

"Ecologically, it wasn't very sound," said Hanks of the 15-year-old feature — which cost \$10,000, not including money spent in upkeep. It had to go.



BEFORE

So early last summer, Hanks called James "Jimmy Mac" McPhail, owner and operator of Creative Waters of Draper, UT, for a water feature redo at his 1.3-acre property in Little Cottonwood Creek Valley, a picturesque Salt Lake City community nestled among the Wasatch Mountains. McPhail, who was cruising through his 20th season of installing features ranging from \$5,000 for a simple waterfall to \$300,000 for a grand commercial feature, was glad to take the Hanks job. After an assessment of the 85-by-65-ft. area, Hanks and McPhail came to terms on the project. And after \$112,000, six weeks and 1,000 hours of labor, Hanks had a new feature that more than met with his approval.

A job well done

Other than a few days battling the elements, the project went off without a hitch for McPhail's 4-person crew.

"It's absolutely beautiful," says Hanks. "It looks like it has been here forever."

McPhail installed two Tuscan waterfalls on the hillside, cascading a casual 55 ft. until coming together for the final 30

ROCK REVIVAL



Top. The Creative Waters crew starts the project with careful excavation.

Right. Each rock was hand-placed to avoid tearing the liner. **Left.** The rock staircase was built with spaces for the client to customize with his own plantings.

ft. toward the lower lake, which is large and hourglass-shaped. The upper ponds — 9 in. deep — do a nice job reflecting the nearby ponderosa pines. A walkway flanks the lake, and a cantilevered rock stretches out from the walkway so Hanks' grandchildren can reach out and touch the waterfall.

Big boulders and cleverly placed small stones are peppered throughout, and a 4-ft., powdercoated Tuscan iron arched bridge is the finishing touch.

McPhail is good at his job. At 6 ft. 5 in. and 250 lbs., he looks the part of a rock mover, too. But McPhail is more of a "rock whisperer" — a careful artist who shapes stubborn tonnage into stone sensations.

Much of his artistry is instinctual. When he and Hanks met to discuss the project for the first time, Hanks said to McPhail, "Give me an idea of what you're going to do." McPhail responded, "I really can't. To give a specific drawing is impossible." This freethinking process allows McPhail to adjust on the fly if he sees something he doesn't like, and it has helped him to build a healthy business.

Quality first

McPhail's business is also helped by other contractors. Because there is no license for water feature installation, many clients get stuck with shoddy work that would never pass muster for a Creative Waters job. "At least 35% of my work is tear-out and reduce," he says.

McPhail says some landscapers use quick fixes, like a track hoe with a thumb to pick up rocks and drop them down on

the liner, which pinches and often tears it so owners have to refill the water constantly. To him, this is a cardinal sin.

"Water feature 101: Don't drop the rock," says McPhail, who hand-places his stones from a strap to avoid punctures and leakage. Done his way, he says, water loss is limited to evaporation — which amounts to 0.25 in. per day at the most, plus ancillary splash.

But to McPhail, it's more than just about laying stones. It's a step-by-step process in which you must be willing to pivot and deviate from your original plan. And it all starts with the prep excavation.

"It looks like something you'd find in Egypt. The earth is staircased out," he says of the beginning stages of a water feature. Once the fall section is planned, he often coats the floors with sand to cover any sharp protrusions. Then it's on to the liners — three layers that also act as corrosive barriers and protect against ground squirrels and mice that may try to nest.

First, he lays an 8-oz. geotextile fabric, followed by a 45-mm rubber liner, and then a second layer of geotextile. Then he gets to setting the stones.

"Twist 'em, turn 'em, rotate 'em, chisel 'em," McPhail says. He points out that he used surface stone like quartz and hardened sandstone of different colors — never limestone — on the Hanks feature. He also left planting spaces, so Hanks could personalize his new feature after all the "heavy lifting" was done.

Now that Hanks has a backyard water feature that complements his world-class garden, he can settle in to sculpt and prune in peace. If tweaks are needed, McPhail will be willing, but surprised. Unless it's for coffee, McPhail says clients rarely call and ask, "When are you coming back?" **LM**

LIEBERMAN is a freelance writer based in Pismo Beach, CA. Contact him at solomonlieberman@gmail.com.

Be responsible and make sure your crews aren't digging their own graves.

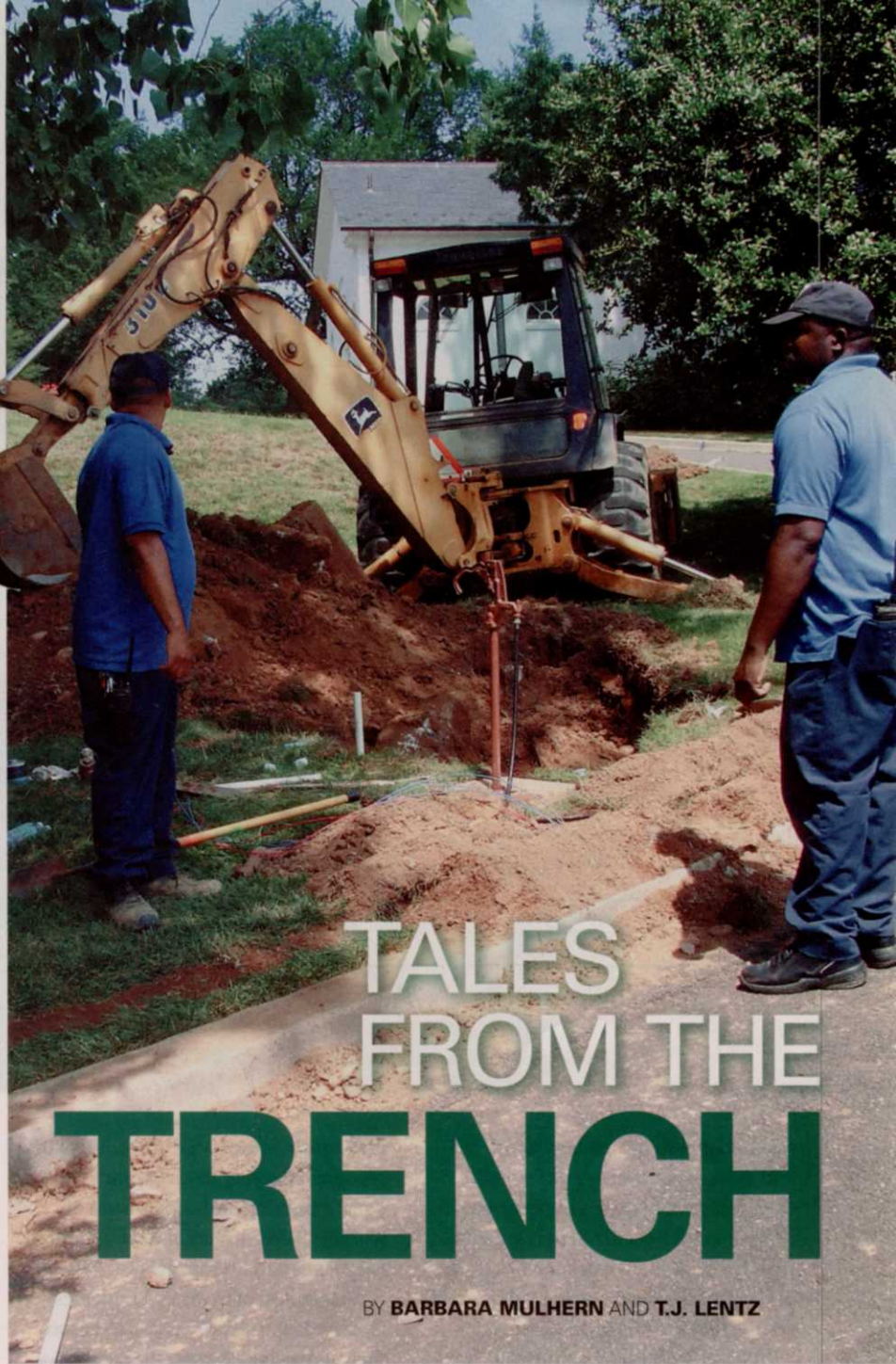
IN GREENWICH, CT, a 59-year-old groundskeeper installing a drainage pipe in a trench at a country club died after a portion of the trench collapsed. Occupational Safety and Health Administration (OSHA) inspectors found that the walls of the 6-ft.-deep trench had not been shored, sloped or otherwise protected against collapse. The country club paid \$20,250 for seven violations of OSHA standards.

In Reno, NV, a 20-year-old man and his 39-year-old co-worker died following the collapse of a 12-ft.-deep trench at a golf course. OSHA investigators found a number of safety violations, including lack of a protective system to prevent a cave-in, inadequate means of access or egress, failure by the employer to require head protection, and failure to adequately train employees in the recognition of hazards. Among those the 39-year-old worker left behind were three children, ages 12 to 15.

These deaths are among the many that occur each year in trenching and excavation cave-ins throughout the United States. Landscape contractors and grounds maintenance employers whose workers are engaged in trenching and excavation activities must ensure proper training and safety precautions are in place.

Industry at risk

The landscape services industry is a high hazard industry. A single traumatic injury or death can put a small company out of business. According to a National Institute for Occupational Safety and Health (NIOSH) fact sheet, titled "Fatal Injuries Among Landscape



TALES FROM THE TRENCH

BY BARBARA MULHERN AND T.J. LENTZ

Services Workers" (NIOSH Publication No. 2008-144), workers in the landscape services industry make up less than 1% of the total U.S. workforce — yet they experience approximately 3.5% of all of the occupational fatalities.

In addition to potential OSHA investigations and legal fees, a traumatic injury or fatality will result in increased insurance premiums; downtime; lost management and administrative time; the need to recruit, train and replace workers; poor employee

morale; and even the potential loss of good customers.

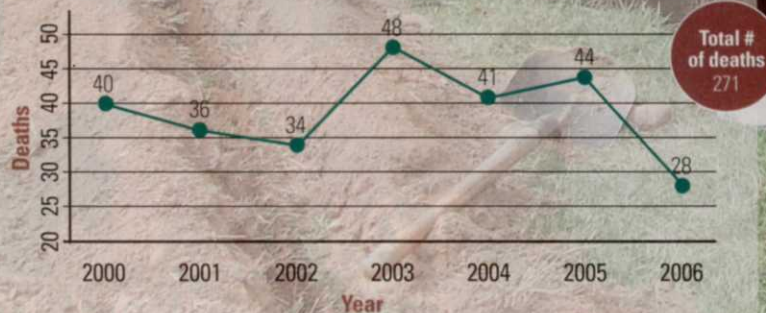
Trenching hazards

U.S. Bureau of Labor Statistics (BLS) data show that 271 workers died in trenching or excavation cave-ins from 2000 through 2006. (See "Deaths from Trenching or Excavation Cave-ins," next page.) A review of multiple national databases by NIOSH researchers found that trenching and excavation hazards during construction activities



TRENCH

DEATHS FROM TRENCHING OR EXCAVATION CAVE-INS



Source: U.S. Bureau of Labor Statistics Census of Fatal Occupational Injuries

resulted in 488 deaths between 1992 and 2000 — an average of 54 fatalities each year. Sixty-eight percent of those fatalities occurred in companies with fewer than 50 workers. Forty-six percent of the deaths occurred in small companies with 10 or fewer workers.

The NIOSH research also showed that 19% of these workers who died were Hispanic — a fast-growing worker population in the landscape industry. In June 2008, the Centers for Disease Control (CDC) published a report noting that between 1992 and 2006, 11,303 Hispanic workers in the United States died from job-related injuries. The death rate for Hispanic workers was consistently higher than the rate for all U.S. workers. An editorial note in the report stated that factors contributing to higher numbers of work-related deaths among Hispanic workers include

inadequate knowledge and control of recognized safety hazards, and inadequate training and supervision of workers, often exacerbated by different languages and literacy levels.

Regardless of workers' ethnicities and primary language, it's critical to ensure they understand the specific hazards involved in trenching and excavation work. In a publication titled "Excavations," Oregon-OSHA (OR-OSHA) notes that a cave-in can trap a worker within seconds, and kill the person within minutes. Two cubic yards of soil may weigh 4,000 to 6,000 lbs., and a person who is buried will suffocate in less than three minutes, OR-OSHA says. *Note: The weight of the soil around the person is usually the cause of the suffocation, because the pressure from the soil against the chest prevents the lungs from expanding for breathing.*

Yet cave-ins aren't the only hazards

workers involved in trenching and excavation face. Among the other hazards are:

- › Electrical hazards from overhead or underground power lines.
- › Contact with underground natural gas lines or other utility lines. Be sure to call 811 before you dig. Each state has different rules and regulations governing digging, some stricter than others. 811 will connect you directly to your local one-call center. For more information on your state's notification requirements, visit www.call811.com/state-specific.aspx.
- › Falling hazards.
- › Wet conditions.
- › Hazardous atmospheres (heat and cold stress, stinging or biting animals and insects, and poisonous plants). Refer to the NIOSH Safety and Health Web Topic Page for Outdoor Worker Hazards.
- › Confined space issues.