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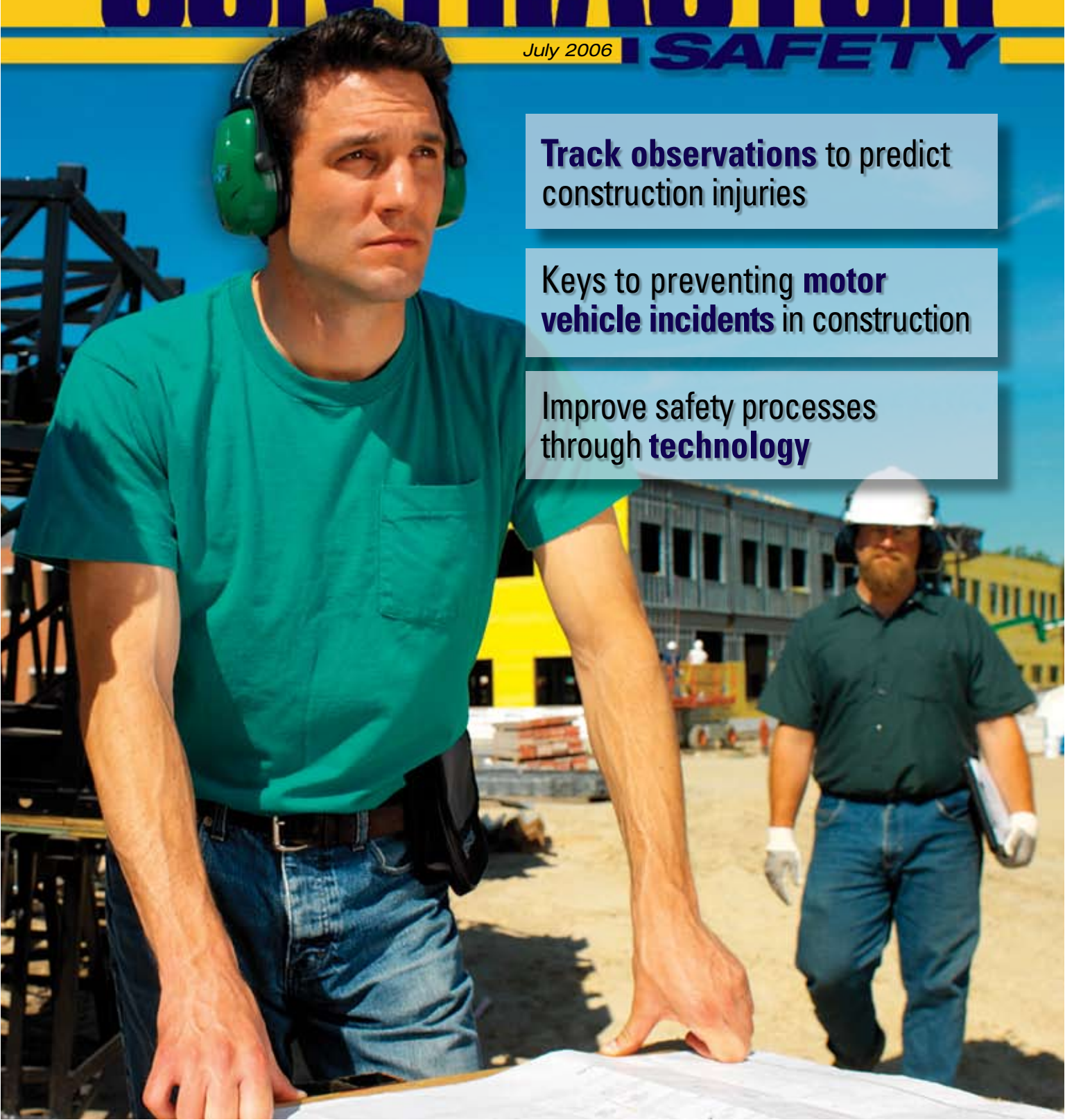
SAFETY

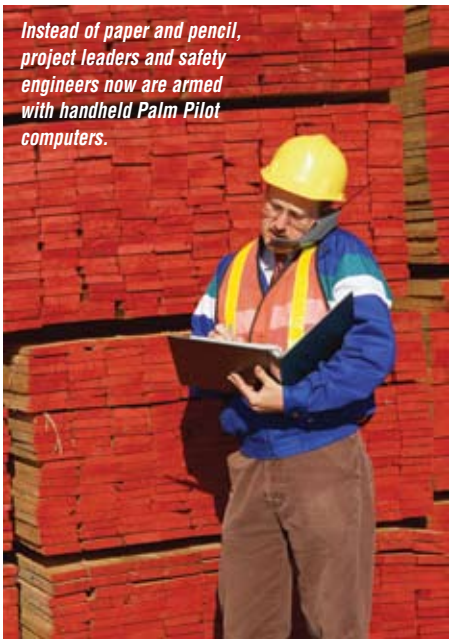
Track observations to predict construction injuries

Keys to preventing **motor vehicle incidents** in construction

Improve safety processes through **technology**



Track observations to predict construction injuries



Instead of paper and pencil, project leaders and safety engineers now are armed with handheld Palm Pilot computers.

BY RODNEY SPENCLEY

In 1900, a massive hurricane unexpectedly blasted Galveston, Texas, washing over the coastal city, killing thousands and leaving the city in ruins. At the time, the National Weather Service was in its infancy and its forecasting techniques were limited, at best.

In many ways, the devastating effects of this hurricane spurred investment and advancement in the National Weather Service, as officials realized the enormous social and economic benefits of weather forecasting nationwide.

In the construction industry, the ability to accurately forecast job site accidents can also have enormous social and economic benefits. When unsafe conditions are eliminated, companies mitigate or prevent loss and help maximize outcomes, including keeping people safe and improving the bottom line.

Forecasting limits

Unfortunately, most safety data is gathered manually, making it difficult if not impossible to compile into meaningful reports from one site, let alone projects that occur simultaneously in different geographic regions. Sometimes, data is captured electronically, but often it is not being compiled and analyzed across multiple sites, limiting its value and timeliness. The result: management gets a relatively fuzzy picture of what is occurring in the field, and unsafe conditions can go unchecked.

Is it any wonder that the industry's safety record has historically been spotty, and risk insurance for projects can average four percent of the overall project costs?

Implementing a new system

After manually gathering safety data on job sites for years, DPR Construction, Inc. implemented a new system two years ago that helps to focus on better predicting and preventing job site accidents. Historically DPR has owned an outstanding safety track record and a recordable incident rate one-third the national average. Still, the company challenges itself to be even better, creating a culture where every individual works toward an injury-free environment and improves worker safety in many ways, including investments in technology to help reach its zero accidents goal.

So how does one predict job site accidents? Well, the first step follows the lead of the National Weather Service, with ongoing leading indicator data collection and prompt analysis and reporting of the results.

Today, DPR manages diverse building projects throughout the country from its ten offices. Many of these projects are technically challenging, as they originate from leaders in a wide range of industries, such as Charles Schwab, Dell, Hewlett Packard, Kaiser Permanente, the Institute for Genomic Research, the University of Texas, among others.

Recently, DPR incorporated an automated safety audit process to take its program to new heights. The company partnered with DBO2, a Redwood City, Calif.-based software service provider to introduce the system, called DBO2 SafetyNet, across 40 project sites.

Instead of paper and pencil, project leaders and safety engineers now are armed with handheld Palm Pilot computers. At each job site, twice daily, project leaders or safety engineers record between 50 and 100 observations for safe and unsafe construction practices. Observations are categorized into 19 categories of safety, based on OSHA and other construction best practice safety guidelines.

The data is relayed via a phone line or Internet connection from the handheld PDA to DBO2's SafetyNet database server, which compiles

the observations and relays trends and patterns back to the project leader or safety professional in the field or to management for action.

Uncovering patterns

Importantly, the trends and patterns uncovered can help target specific training and educational efforts related to safety — this is the predictive capability of the system. It helps us to "see" what practices are working and relays this to all site supervisors (via email, fax, or hard copy) so that the positive behavior can be reinforced or introduced across all job sites to all team members.

Observations recorded over time provide a number of good examples, ranging from complex solutions to identifying the need to improve eye and fall prevention practices. Training materials and communication are directed to the site foreman and superintendent, who relay the information to workers. In another instance, the observations noted electrical cords were wrapped through the project site like spaghetti. So DPR issued a $250 "cord challenge" to workers to help identify a cord management solution.

Subcontractor performance

One of the primary reasons DPR implemented this system was to better manage — with objective data — the performance of subcontractors, as they are valuable members of project teams and DPR's goal for injury free environments cannot be accomplished without the assistance of everyone on the job.

Overall job site safety can also affect insurance rates, therefore, vendor relationships are closely scrutinized for safety practices. Because of the complexity of insurance — including owner-controlled, contractor-controlled or rolling wrap up programs — it is essential that companies accurately assess onsite safety. A more compelling reason to examine practices in the field, however, is to keep people safe.

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Subscription service

One of the reasons why DPR selected this new system is because it is a Web-based subscription application, meaning DPR pays a monthly subscription fee. As a result, the company avoided the capital cost of software and ongoing maintenance and upgrade fees. When upgrades to the application are made, it is transparent and painless to DPR, as the change is incorporated once at the central database server.

Interestingly, the system allows DPR to view cumulative data recorded for all subscribers in addition to its own safety data, an important tool for tracking patterns and trends. While the data collected from other companies is kept proprietary, by viewing aggregate data DPR is able to see best practices and trends across more than one million job site observations.

So far, the results are impressive for DPR. The company's recordable incidents and lost time rate together have dropped consistently below 2.0 and the company's experience modifier — a risk rating used by the insurance industry — is .33, one of the lowest in the construction industry.

Leverage technology

Just think how weather forecasting has evolved over the last century, decades, even the last few years. Years ago, it might have been good enough to say today is sunny, so tomorrow will probably be sunny. Or if we look back at all July 4th weather forecasts, we can probably estimate what this year's July 4th weather will be. Today, sophisticated climatology, analog, trends, and numerical methods are blended so that it is unlikely another Galveston disaster will happen without much advance warning.

Increased computing power and other technologies have made uncovering trends possible. In the construction industry, we too are taking advantage of computing power and observations to generate better forecasts for social and economic benefit. Like meteorologists, the more data we gather, the better we'll become at eliminating job safety problems and making all DPR projects injury free.

Rodney Spencley is corporate safety director for DPR Construction, Inc., a national commercial general contractor and construction manager. Spencley leads the company's "Injury Free Environment" program along with a designated "Safety Champion" from each office. For more information, visit www.dprinc.com.