

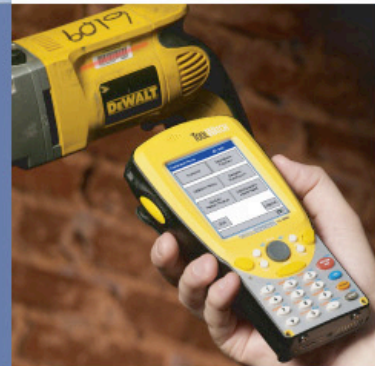


Construction Resource Management:

Improving Contractor Business Performance

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In light of the increasingly challenging business environment, construction companies are taking a closer look at their operations, searching for untapped profit-boosting opportunities and new sources of competitive differentiation. Through this analysis, many executives are discovering that their process for managing tools, equipment, materials and consumables—a process often referred to as “Construction Resource Management”—is broken. The traditional paper-and-spreadsheet-based approach is no longer effective at preventing theft, loss and employee hoarding of these critical business resources.

Even more troubling is the realization that the mismanagement of tools, equipment and materials runs much deeper than the direct costs of replacing these resources. It also leads to business interruptions that affect every department in the organization—from an accounting department that is unable to accurately manage material budgets to project managers who scramble to avoid project delays when items walk off the site to a warehouse manager who can’t effectively manage important tool calibrations and equipment certifications.

Increasingly, executives have realized that poor and inefficient Construction Resource Management places an unnecessary strain on their businesses. As a result, it has rapidly become a strategic initiative for many construction organizations, helping to generate a sustainable point of competitive differentiation and improved profitability in an unforgiving industry.

This white paper discusses the strategic advantages for today’s contractor of adopting a Construction Resource Management system. And for the organizations already considering this strategic move, this paper also details the essential factors when evaluating alternatives.

Challenges Facing Construction Companies

Construction organizations are under constant pressure to deliver projects on time and on budget—all in the face of razor-thin profit margins, increased business risk, rising client expectations, escalating insurance rates and a severe shortage of skilled labor.

The industry is also plagued by inefficiencies and low productivity. In fact, construction productivity in the U.S. has been on a steady decline over the past four decades, running at about half the rate of U.S. non-farm industry.¹ In a recent survey conducted by construction-industry consulting firm FMI, 53% of construction companies surveyed reported that their productivity has been flat or

¹ Sawyer, Tom. “World of Concrete: Haskell Leads Push for Construction Index Overhaul.” ENR.com. Jan 24, 2005. http://enr.ecnext.com/free-scripts/comsite2.pl?page=enr_document&article=necuar050124

decreasing over the past five years. Moreover, 81% of those surveyed said that they could save over 5% of their annual field labor costs through better management of productivity.²

While some of these broader issues are longer-term challenges with no easy solutions, construction companies are also suffering unnecessary losses and substantial productivity drains stemming from a problem that has a short-term solution. The issue: ineffective and inefficient management of tools, equipment, materials and consumables—some of the most critical resources in a construction organization.

For many contractors, the value of these resources runs into the millions of dollars. They are mission-critical in that they enable employees to do their work efficiently and safely. Yet these resources are constantly mobile and notoriously easy to access, and their poor management leads to unnecessary theft, employee hoarding and a whole host of ancillary problems that can cripple an organization.

The Hidden Costs of Ineffective Construction Resource Management

The losses resulting from ineffective management of construction resources are staggering. According to the National Insurance Crime Bureau, the construction industry loses more than \$1 billion annually from equipment and tool theft, a figure that is growing by approximately 20% a year.³ And according to the National Equipment Register (NER), only about 10% of stolen tools and equipment are ever recovered.⁴

Not surprisingly, the costs of having to continually replace resources can severely impair financial performance. But the consequences run much deeper than the mere cost of replacing them. Lost or stolen resources can also lead to costly project delays; lost time and decreased field productivity; injuries caused by the ineffective management of tool inspections and calibrations; inability to prove employee testing on equipment; inability to prove compliance with OSHA safety regulations; improperly maintained assets that must be replaced more often; and, for public companies, the inability to comply with the Sarbanes-Oxley Act and other mandates.

² Warner, Phil. "Construction Industry Productivity Survey—53% See Productivity as Flat or Declining." October 26, 2004. http://www.fminet.com/media_services/news.jsp?i=18263

³ Wimmer, Bruce. "FCAP Addresses Construction Theft." Florida Home Builders Association. September 2006. <http://www.fhba.com/index.cfm?referer=content.contentItem&ID=1113>

⁴ Martin, Brett. "Theft Costs Construction Industry More Than \$1 Billion Annually." Masonry Magazine. August 2006. <http://www.masonrymagazine.com/8-06/theft.html>

In spite of the growing problem and the implications of poor Construction Resource Management, most construction businesses still manage these critical resources—and all of the data surrounding them—with nothing more than spreadsheets, paper forms and human memory. As a result, these organizations are incurring unnecessary costs and taking on risks that are impeding their ability to grow and compete in an industry where there is very little room for error.

Over the last two decades, most construction businesses have invested in accounting, payroll, estimating and project management solutions to improve efficiencies and business performance. While essential for success, these applications cannot fully address the complexity of managing a sizable physical resource inventory in today's high-stakes environment.

To fully address this complex challenge, companies have been turning to Construction Resource Management systems. And as a result of this strategic initiative, these organizations have established new sources of competitive differentiation and are accelerating their journey toward bottom-line success.

Construction Resource Management Systems: What Makes Them Different

A Construction Resource Management system automates and dramatically simplifies the process of tracking and managing a construction company's business-critical resources. Combining asset and materials data into one, easily accessible, centralized database, these systems provide detailed information every department needs to ensure that *all* physical construction resources—not just tools and equipment—yield the maximum value possible.

Unlike tool tracking programs and modules developed by accounting software companies—which have emerged from a financial perspective and mainly focus on “after-the-fact” asset data—Construction Resource Management systems have been built to fully address today's complex resource management challenge while placing useful software and devices into the hands of the people who need them most: the warehouse, shop and field personnel.

Construction Resource Management systems also differ from accounting-based systems in that they enable an important component of successful tool, equipment and material management: automatic data collection. This is crucial, as collecting data manually is unproductive, expensive and highly error-prone. It also leads to outdated information, since there is often a delay between the time data is written down and the time it is keyed it into the accounting system.

The promise of optimized Construction Resource Management can only be fully achieved through a best-of-breed solution—one that employs a combination of software, hardware and some kind of unique identifier, such as a bar code label that is attached to individual items to be tracked. Bar code labels can be scanned to check items in and out of the warehouse, assigning them to a specific job or employee. The information can then be transferred back to the main database through a docking station, a USB port or even through a wireless connection.

A recent addition to the world of Construction Resource Management is the advent of radio frequency identification (RFID) for the purposes of managing tool and equipment inventories. This technology works in a similar fashion to bar code labeling, but the RFID tag is inserted into a tool rather than applied to its exterior. This makes the identification tag difficult to remove.

The RFID tag holds an identifying number that can be read with an RFID-reading tool. As with the bar code scenario, this information is then transmitted back to the main database. RFID can be integrated into a bar code scanning system, allowing the company to choose which option is appropriate for which tool or equipment. Also, most vendors offer scanning tools that can read both RFID tags and bar code labels, making it easy to use both technologies side by side.

Beyond tool and equipment management, best-of-breed Construction Resource Management systems also include functionality to manage consumables: items that require continuous replenishing, such as drill bits, grinding discs and saw blades.

Consumables raise the issue of inventory management, since without effective tracking, optimal ordering is impossible. Without access to reliable inventory levels, the accounting department is often left to guess how much should be allocated for consumable replenishment. Often the result is misappropriated funds that could better be spent elsewhere. Or worse, not enough money is allocated for such purchases, leading to a shortage of supplies and the slow-down of a project.

Important Benefits

Contractors today are, in effect, their own supply houses, tasked with provisioning their workforces with the resources that they need to perform their work effectively and efficiently. Just as world-class suppliers—companies such as Grainger, Ferguson Enterprises and The Home Depot—have optimized their operations to ensure that the right products are at the right place at the right time, construction companies should also consider optimizing this vital area of their business through the adoption of a system that effectively and efficiently manages

all of their construction resources. Benefits from adopting the right system include the following:

Improved warehouse efficiency: Any tracking system is, to a certain extent, prone to human error. But a Construction Resource Management system that employs bar code labels and laser scanning, or RFID tags and readers, significantly reduces costly human errors. In fact, studies indicate that the entry- and read-error rates using laser scanning and bar code technology drop to approximately one error in one million characters, down from one error in every 300 characters using manual data entry. This kind of reduction in data entry errors ensures that information available to the company is reliable and timely.

Improved tool and equipment retention: Increased Construction Resource Management efficiency also leads to better tool, equipment and material retention. A study conducted by Ernst & Young and the U.S. Department of Labor indicates that 85% of all industrial theft is perpetrated by employees. Because a Construction Resource Management system gives a company the power to know the location of every physical asset and the individual responsible for each item, organizations that employ such a system routinely see dramatic increases in tool retention, with 96% percent retention rates being quite common.

Increased field productivity: Construction Resource Management systems excel at ensuring that the right resources are in the right place at the right time, thereby increasing employee efficiency in the field while improving resource utilization. Project managers can be supplied a weekly list of construction resources assigned to their jobsites. If an item goes missing, project managers know to talk with the employee last responsible for that item.

Fewer costly interruptions: Besides the high cost of lost or stolen construction resources, the National Equipment Register estimates that contractors lose an additional \$300 million to \$1 billion annually resulting from the business interruptions that ensue when these resources are not available to those who need them.⁵ This includes time spent filling out theft reports, waiting for equipment to be replaced and waiting for scheduling conflicts to be resolved; the expense of short-term rental costs; and the penalties that can result from not finishing projects on time—not to mention the loss of client trust and loyalty that comes from poor project performance.

Improved safety: A major benefit of using a Construction Resource Management system is the ability to track far more information about a physical asset than just its location. For instance, these systems often help

⁵ Martin, Brett. "Theft Costs Construction Industry More Than \$1 Billion Annually." *Masonry Magazine*. August 2006. <http://www.masonrymagazine.com/8-06/theft.html>

track tool and equipment inspections and calibrations, a daunting process when relying on spreadsheets and paper forms. Most tools and equipment used on a jobsite must be regularly tested to ensure that they are working properly and are safe to operate. Some tools must be continually inspected and calibrated to be effective in the field. In fact, some of these tests are monitored by regulatory agencies such as OSHA, and companies can be held responsible if they fail to comply or are unable to prove compliance.

Improved financial performance: Automating the resource management function can also have a substantial positive financial impact on a construction business—one that is often immediately felt throughout the organization. In fact, construction businesses that have adopted these systems continually report improved bottom-line performance as a result of the following:

- Reduced costs from improved productivity and fewer project interruptions
- Unnecessary tool, equipment and material purchases
- Reduced insurance premiums
- Improved asset history that enables more informed purchasing decisions
- Greater purchasing power through the ability to combine orders
- Improved regulatory compliance

And for many organizations, the benefits are near immediate, allowing them to recoup their investment within six to nine months in a great number of cases.

Improved financial controls and regulatory compliance: Construction Resource Management systems can also help eliminate project-costing guesswork by automatically charging customers, departments or projects for resources used and lost, or for damaged items. This helps eliminate the tedious paperwork for field and warehouse employees while yielding the business intelligence managers need to accurately measure project performance.

Furthermore, with the advent of the Sarbanes-Oxley Act of 2002, public companies face new requirements for managing and reporting their assets. Experts agree that companies need to carefully track all capitalized assets as a Sarbanes-Oxley "best practice". For many companies, this means tracking all assets valued at more than \$100.

Monitoring systems that accurately track and manage resource inventories are vital to complying with these regulations. These systems record the movement or disappearance of company-owned resources, enabling accurate reporting.

Evaluating Alternatives

Construction companies have a number of choices when it comes to Construction Resource Management applications. However, the strategic nature of these systems—and the fact that they essentially manage millions of dollars' worth of business-critical resources—calls for a careful review of options. The following important factors should be considered when reviewing alternatives:

Best-of-Breed Solution: A number of tool and equipment management programs available today were developed by accounting software companies as add-on modules to their core systems. While they can certainly lead to some improvements, these applications were born from a financial, general-ledger perspective, not a Construction Resource Management paradigm. As such, they often fail to provide the fine-grained visibility today's construction organizations need when it comes to asset locations, maintenance events, training certifications, and the proper costing of resources.

Furthermore, most of these accounting-centric tool and equipment management applications tend to take more of a “scorecard” approach, focusing on after-the-fact, financial data, such as cost of ownership, depreciation, equipment revenue and billing rates. However, what most of them fail to provide is the necessary technology to collect resource data, as it develops, through the use of bar codes, RFID, GPS (Global Positioning System) and other enabling technologies.

Construction organizations that are serious about optimizing this operational area need more than a scorecard. They need to manage the construction resource game in real time. To do so, they would do well to focus their search on best-of-breed solutions—systems, tools and supporting services that have been specifically designed to tackle the full scope of today's resource management challenge, enabling construction companies to efficiently manage these processes as they happen.

For instance, when a truckload of tools, equipment and materials arrives from a job site, a best-of-breed Construction Resource Management system will place relevant, easy-to-use software and devices into the hands of warehouse and shop personnel. This enables them to easily check-in all items; service the correct assets; deploy the right tools, consumables, and equipment to the next job quickly; purchase additional items, as necessary; and generate accurate and immediate job costing information.

Most importantly, the right solution will enable the organization to repeat these processes over and over again while improving accountability, maintaining accuracy and improving productivity across the company.

Built for construction industry: As with any other mission-critical application, contractors are often better served by a system that was built specifically for the construction industry and one that has a large contractor user base. These systems tend to better reflect the unique intricacies and needs of the industry, leading to a higher and faster return on investment.

Category leadership: Another important factor to consider is the vendor's ranking in the Construction Resource Management arena. It's important to select a market leader—a vendor with proven domain expertise and a documented track record of helping construction companies achieve best-in-class resource management performance. Moreover, vendors whose sole focus is on Construction Resource Management invest all of their development efforts on adding and enhancing resource management functionality, as opposed to vendors with multiple product lines.

Ease of use: Applications that are intuitive and easy to use invariably have higher acceptance and adoption rates than those not built with their audience in mind. While a new and younger generation is beginning to percolate through the A/E/C industry, a great number of construction company employees are still not comfortable around a PC. But when a system is intuitive and clearly built around a worker's current asset management processes—and when the vendor can also demonstrate that it has a proven training and implementation program for contractors—the chances of success are greatly improved.

Centralized database with easy access from anywhere: Because the construction industry is highly mobile, it's important to consider not only the mobility options different vendors offer, but also the ability to securely access the application from any location—whether it be in the corporate office, in a jobsite trailer, in a satellite office or on the road.

Flexibility to fit different operational needs and budgets: The ideal solution should allow administrators to assign appropriate system access and responsibility based on job function and user location. But because not every user will need access to all of the system's functionality, one should look for vendors offering a variety of licensing options at various pricing levels. This flexibility keeps a business from paying for “bells and whistles” that some of the system's users will never use. It also prevents company-wide deployment of complexity that can only lead to confusion, unproductive workarounds and slow system adoption.

Integration with accounting system: It is also important to look for systems that can integrate with a company's existing accounting package. Construction Resource Management systems collect important transactional data that

eventually needs to find its way to the general ledger. A best-of-breed solution that offers integration with a company's accounting system saves time, helps prevent costly data entry errors and keeps the company's financial backbone well-fed with real-time resource cost, revenue and usage data.

Secure application: Because Construction Resource Management applications enable users to access important corporate data from multiple locations, it's important that the system offer multiple permission levels based on job function and user location. Additionally, if the system is a hosted, Web-based solution, buyers should ensure that it runs on an infrastructure with a proven track record of extremely high security and reliability.

Responsive support and extensive service options: Another important consideration is the track record and reputation of a vendor's technical support. A solution running such mission-critical business processes should include responsive, world-class support. When making customer reference calls, buyers should ask vendors' customers about their satisfaction with the support they receive. Furthermore, companies should look for vendor partners with a clear commitment to, and strong history of, professional services. Especially in the construction industry, the success of a system initiative hinges on a vendor's training and implementation options, as well as the trainers' experience with the system and their knowledge of the construction industry.

Clear long-term vision: Because most of these systems become an integral part of a company's operations, it is important to choose a vendor partner with a long-term commitment to the Construction Resource Management arena and to the construction industry as a whole. Additionally, businesses should look for vendors and platforms that can grow with their companies and plans and not require replacement a few years after deployment.

About ToolWatch Corporation: Since 1991, ToolWatch has provided smart solutions for Construction Resource Management to organizations of all sizes. With more than 6,000 installations in twenty countries around the world, its applications use the most current and reliable technology to manage resources for maximum utilization and productivity throughout an organization. ToolWatch customers include 30% of the top 400 general contractors on the ENR400 list and 28% of the top 50 specialty contractors on the ENR600 list. Going far beyond basic tool and equipment management, ToolWatch helps every department that needs information about all physical construction resources—including tools, equipment, materials and consumables.

Next Steps

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