

S.T. Wooten Transformation

PART 1 OF 3

By E. Victor Brown

Paving the Way to Inventory and Maintenance Control Management



The large diversification of equipment, divisions, and jobsites made it challenging to organize every piece of equipment, as well as parts inventory and maintenance needs, without a process to minimize the chaos.

For one of the largest heavy construction firms in North Carolina, getting a handle on inventory control and standardizing maintenance procedures are the keys to future growth and competitiveness.

Since business growth is a long road where each new mile racks up business complexities, it's common for companies to be unaware of culturally engrained inefficiencies that can make them less competitive. This is particularly true in the heavy construction industry, where greater success and divisional growth means unseen challenges.

Rolling stock maintenance and inventory control are two major examples of such challenges that can silently erode a company's ability to compete effectively in an increasingly competitive business-bidding climate. These challenges pressed S.T. Wooten to transform its business through inventory and maintenance control processes and systems to make it more competitive and profitable.

OVERVIEW

Since 1952, S.T. Wooten has been a family-owned, North Carolina-based heavy construction firm that has grown into one of the largest and most reputable firms of its kind in the state. The company specializes

in heavy highway construction, grading, utilities, site work, concrete construction, structures, asphalt paving, design-build and engineering, and commercial and residential construction.

S.T. Wooten has plant facilities for hot-, warm-, cold-mix asphalt, and ready-mix concrete to tackle projects ranging from massive to small civil and commercial infrastructure projects, which span across Central and Eastern North Carolina. In fact, the company boasts some 17 ready-mix concrete plants, 11 asphalt plants, six maintenance shops, seven commercial construction offices, and 855 employees across Central and Eastern, North Carolina.

While the company's growth and profitability are hallmarks of quality in project management and execution, it had become increasingly isolated across its many divisions and offices. This had led to a company structure with a multitude of redundancies and lack of information and communication flow, which often made the company's divisions seem like separate businesses. S.T. Wooten quickly realized that this made it difficult to lower operating costs in the increasingly competitive bidding landscape.

CHALLENGES

Due to the varied nature of the company's business, the rolling stock includes nearly 100 different types of equipment—with an average of five or more of each type—from a variety of manufacturers. While the company saw the challenge of inventory control with so many pieces and their vast array of parts, standardization wherever possible has been the rule.

According to S.T. Wooten equipment division general manager, William Hammock, the resultant maintenance and inventory needs were at the center of the challenges to identifying and reigning in costs. "Our large diversification of equipment, divisions, and jobsites makes it challenging to have our finger on the pulse of every piece of equipment, as well as parts inventory and maintenance needs," explains Hammock.

S.T. Wooten logistics manager, Kelly Webb, echoed this sentiment and the reasons for needing to get a better handle on inventory and maintenance/repair from a people, processes, and systems perspective.

"We'd grown into a company where there were no set maintenance and repair protocols to differentiate between emergency and maintenance calls with the rolling stock," explains

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Webb. "This created an atmosphere where everything was seen as an emergency by operators, which in turn created a process of endless phone calls, maintenance crews in the field, unscheduled equipment downtime, and unregulated inventory control."

Without a standardized identification of what constituted an emergency repair—plus, a lack of inventory control, charges for parts via PO and express shipment were driving up costs. "The reality is that we weren't having challenges that we understood or recognized," says Hammock. "Consequently, we didn't have insight into how much that manner of conducting our maintenance operation was costing us, which put us at a disadvantage in understanding repair costs as well as the parts component."

ASSESSMENT

The company strongly suspected that a full assessment of business processes relating to inventory and maintenance was the ideal place to reduce operational costs. The results of a thorough search for a

firm that could help S.T. Wooten in this endeavor led it to engage the services of TBR Strategies, a North Carolina Maintenance and Reliability Consulting firm with a successful track record in helping companies like S.T. Wooten. The consultancy would bring its customized Total Process Reliability (TPR) process to bear in tackling the problems.

With an initial focus on the equipment division, TBR began a Maintenance Effectiveness Assessment (MEA) of the entire company in late 2013. The MEA assessment revealed a lack of full awareness of the true costs of equipment repairs without a company-wide structure for inventory control and repair-level protocols. "We track and manage our operational costs, so we really understand current cost impacts and use this information to predict costs for future bids," explains Hammock. "We needed to bring that same level of detail to tracking and understanding our maintenance cost."

By January of 2014, S.T. Wooten had identified the need for an inventory control management system

and process. This would dovetail into preventive maintenance (PM) protocols and a variety of other different initiatives. An internal steering council in partnership with TBR consultants completed an attack plan by the end of 2014's first quarter. At this stage, the company put into place an internal inventory control management team headed by Webb.

S.T. Wooten created an internal TPR department, which consists of a manager and two coordinators. Over the course of the next 18 months, various staffers from throughout the company would fill the roles of TPR coordinators to ensure a wide variety of viewpoints in order to bring different perspectives to the process. "TPR requires total company involvement, including all divisions and departments, so that everyone is onboard and on the same page to ensure a smooth and effective process," says Webb. ■

Check out Part 2 in the next issue of MCS as S.T. Wooten begins the process of changing the way inventory is handled, thus changing the culture of the company.

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Paving the Way to Inventory and Maintenance Control Management

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For one of the largest heavy construction firm in North Carolina, getting a handle on inventory control and standardizing maintenance procedures are the keys to future growth and competitiveness. These challenges pressed S.T. Wooten to transform its business through inventory and maintenance control processes and systems to make it more competitive and profitable. These improvements were part of the company's Total Process Reliability (TPR) efforts.

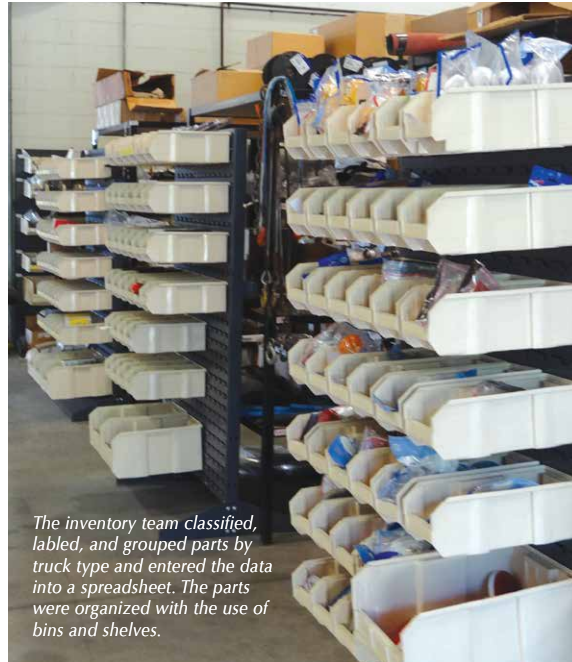
SYSTEM PROCESSES

Utilizing MEA data, S.T. Wooten began the process of revamping the inventory and maintenance aspects of the company under the direction of logistics manager, Kelly Webb. This began with the creation of process flow diagrams for inventory and parts, which showed step-by-step procedures. In addition, the company expanded existing process guides with greater detail and created RACI charts to identify the responsibility and accountability roles in maintenance and repair process completion under the guidance of Raleigh-based TBR Strategies LLC.

The company vetted its E360 Computerized Maintenance Management System (CMMS), along with other options for ideal compatibility of present and future needs. The E360 was the ideal choice. S.T. Wooten worked with the provider to create customized KPIs; tracking and measurement of a wide variety of equipment, inventory, and maintenance parameters for creating detailed reports; and software for use in the asphalt and concrete plants to track repairs based on component tracking.

CULTURAL SHIFT

The cultural shift of moving away from an entrenched laissez-faire approach to inventory, maintenance, and repairs was challenging. A significant portion of the company's workforce has been with them for 20-plus years. That brings a great many



The inventory team classified, labeled, and grouped parts by truck type and entered the data into a spreadsheet. The parts were organized with the use of bins and shelves.

positives, but also challenges in changing a business's operational culture in unfamiliar ways.

To foster a culture of inclusiveness, information sharing, and feedback, the company initiated structured communication about the upcoming process changes via email, newsletter, and word-of-mouth for initial information sharing. This structured outreach effort included formal meetings among departments, divisions, and crews to provide information and solicit feedback and questions.

INVENTORY CONTROL MANAGEMENT

Inventory management would begin with the equipment division's two main rolling stock locations, which are its Wilson, North Carolina, Equipment

Division, and its Sims, North Carolina, truck shop. The Sims location is the company's heavy on-road equipment shop and home base for dump trucks and concrete trucks from three manufacturers. The Wilson location handles the majority of light fleet vehicles, as well as heavy off-road equipment.

In the approach to inventory management, analysis revealed inventory space at the Wilson location to be too small to hold sufficient stock to meet needs. Although the company explored several solutions, it decided to remodel a large office space at Wilson to create a primary inventory location. It also converted a small warehouse at the Sims location to create a secondary inventory location.

One of the first steps was for all the inventory control personnel to attend Marshall Institutes 3-day inventory control training, then a 3-day advanced MRO inventory control program by TBR Strategies. S.T. Wooten invested considerable time upfront in developing flow charts and process guides to serve as standardized operating procedures.

After remodeling the space, the company brought parts personnel into the process to gather all parts from their various

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locations. A parts vendor representative assisted parts manager, Andy Holcomb, in identifying and categorizing all parts as being good, obsolete, no longer relevant to rolling stock, or nonreturnable, in addition to other identification parameters.

While the company sold unusable parts for scrap, it returned a significant percentage of the unusable stock with value for refunds. Part numbers identified the remaining parts, enabling the inventory team to classify, label, and group them by truck type. After putting the parts into a spreadsheet, the inventory team simultaneously put them into bins, on shelves, and organized them.

After completing the process of finalizing spreadsheets, S T Wooten completed the final stage of entering the data into the CMMS for tracking with both the Sims and Wilson parts inventory locations in September 2015. The next phase will be to do the same at all six of their satellite locations, where parts and inventory are stored for maintenance and repairs.

THE MAINTENANCE PROCESS MIX

On the maintenance and repair side of the equation, the team developed PM, corrective maintenance, and emergency maintenance repair categories as the basis for assigning incoming repair incidents. As for emergency maintenance, the goal was to have critical spares on hand to eliminate the significant cost and subsequent lost production time associated with express shipping of parts for critical need repairs.

The company divided PM protocols into five categories with different levels of performed maintenance to ensure the changing of all oils and filters within a 2,000-hour cycle. These cycles become structured, scheduled maintenance intervals, which occur every 125 and 250 hours of service for rolling stock. The 125-hour is condition inspection.

This is all set up in the company's eCMS EPR software system based on hours of service, which allows PMs to coincide with the meter readings on the equipment. The system automatically makes weekly update checks for equipment reaching a 40-hour threshold of the 250-hour mark (210 to 250 hours). It sends an alert to the CMMS for the PM planner or scheduler to order the filters and parts needed for a PM1, 2, 3, 4A, or 4B.

They can then schedule the maintenance at the best time for the jobsite and the operator. Once scheduled, the PM planner or scheduler can assign a technician to one of three new PM trucks to perform the PM as part of their full-time functionality.

Predictive maintenance is next on the rollout schedule, which will enable them

to anticipate and prepare for scheduled parts replacements using the system's lifecycle tracking data based on hours of use. ■

Check out the conclusion, Part 3, in the next issue of MCS as S.T. Wooten shares the final steps taken for the inventory and maintenance control overhaul and lessons learned in the process.



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The road to efficiency is a long one that must be paved with the right methodologies, processes, and technology for effective inventory and maintenance control management.

OPERATOR CARE

The new operator care program takes advantage of the greatest resource in anticipating, finding, and even correcting problems with rolling stock before it becomes a problem. "Since operators spend the most time with the equipment, we're training them on what to look for so that they can take on part of the maintenance by performing routine lubrications and checking the machine over," says Kelly Webb, logistics manager. "By knowing these ins and outs, they can notice when there is something wrong, so they can report these corrective maintenance needs."

The company has created operator care standards—using the OEM standards of each vendor for each piece of equipment—that coincide with a machine-based checklist. The checklist goes with every specific piece of equipment, based on manufacturer and model, and is used for daily operator inspections and greasing standards.

Operators complete the inspection checklist every day at the start of the shift and perform the necessary routine maintenance, such as greasing and cleaning. Each piece of equipment has a black box that contains the operator's manual, plus the operator care standards, including the inspection and greasing checklists, grease gun, tools, and other items relevant to operator care.

In order to provide operators with the necessary training to fulfill this vital role, the company brings the operators and the

specific piece of equipment into the shop. Using Total Productive Maintenance (TPM) principles devised by Japanese engineer Seiichi Nakajima and adapted by TBR consultants, the company learns how to increase equipment reliability, decrease downtime, and create a unified asset management process.

This is exemplified using clean, lubricate, adjust, inspect, repair, and eliminate (CLAIRE) and equipment improvement teams (EIT) training. With training from Raleigh-based TBR Strategies consultants, an internal three-person TPR department conducted the training process in numerous

scheduled events that took place over the course of a week.

Here, the team works with the operator to go over the machine based on the operator care standards. This includes any needed cleaning and painting, as well as parts replacement and minor repairs needed to bring the machine back up to standards.

Once completed, they outfit it with its own operator care black box and decal, showing the machine is up to standards. "We're a huge company, so in addition to learning a lot about TPR and how it will transform our operational culture, they get an opportunity to meet and work with people from other divisions that they otherwise would never meet, which forms relationships that make the company stronger," explains Webb.

The company also trains managers on these standards. The managers participate in annual meetings to discuss progress, challenges, and upcoming steps for TPR. This enables them to assist field operators with equipment compliance accountability. The company's size has required a gradual implementation process, which accounts for the extended rollout time.

"Once everyone's trained on operator care, we'll have a team of over 130 trained operator care auditors that can ensure standards adherence," explains Webb. "This includes providing a grade score for machines and their operators

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so that any deficiencies can be immediately addressed by supervisors to get the equipment back up to standards."

Daily checklists are passed from operators to supervisors, then to superintendents, and finally to the TPR department with compliance checks along the way. The TPR department then electronically scans the checklist into a document manager for processing and equipment history tracking.

RESULTS

So far, the changes have been dramatic in terms of time and cost savings. For example, 2015 savings yielded a 10 percent reduction in maintenance and repair costs over 2014. Planned maintenance and inventory control protocols significantly reduced the time for conducting repairs, doubling planned maintenance activities over the previous year. Additionally, the company is seeing about a 95 percent scheduled compliance with PMs while netting a 30 percent reduction in overtime, with more gains to come.

A newly instituted operator hotline enables operators to call from the field for emergency repair assessment that follows a prescribed corrective plan. The hotline routes non-emergency calls to corrective maintenance in order to provide ample time for troubleshooting, parts and kit assembly for the mechanic, and repair scheduling. The new inventory control system enables maintenance providers and mechanics to see available inventory at both locations from their side of the system and have it delivered by Holcomb.

All non-emergency repairs now have coordinated shutdowns for the repair at non-peak production times for the field operation, which minimizes costly downtime, lowers repair costs, and therefore operational costs. "The old way created a ripple effect with whole crews, jobs, and schedules disrupted, which ultimately affects the bottom line," explains Webb. "This new process allows us to standardize so that we're maximizing mechanic wrench time, minimizing production impact, and tracking repairs for better metrics on equipment lifecycles."

THE FUTURE

With several months left until the completion of inventory control for the equipment division, the next step

is to move to plant maintenance operations, which, in essence starts the process all over again with a different part of the company. At that point, they will move to the company's six satellite locations from eastern North Carolina to the Greensboro and Raleigh areas, where they have shops and jobs.

The road to efficiency is a long one that must be paved with the right methodologies, processes, and technology. As S.T. Wooten continues down that road, the well-constructed bridges and structures that seamlessly integrate those processes, methodologies, and technology will bring greater bottom-line gains the further they go. ■

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