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Technology—The Future of the Construction Industry

By Michelle Johnson and Robert Mercado | Monday, March 16, 2020

One of the most challenging obstacles contractors face is securing qualified skilled laborers to meet the demands of their current workload. The advent of more sophisticated technology on jobsites is alleviating the problem in part as contractors are increasingly utilizing technology to assist in achieving timely job completion. The use of technology also makes current workers accountable for meeting production timelines. Of course, technology is not new to the construction industry; however, significant advances are enabling construction contractors to take greater advantage of technology to fill the gap in human capital.

Building Information Modeling is a prime example. During the design stage, BIM, combined with virtual and augmented reality, can facilitate sharper results and greater efficiencies. BIM assists contractors in choosing materials, fittings and design changes in order to make post-completion buildings more maintainable. For example, BIM enables the maintenance team to do a virtual walkthrough of the building to understand placement of the mechanical system in order to determine access and ability to service the system. This allows design changes to be made before the construction stage begins and can reduce or eliminate delays and change orders in the construction process.

Contractors are looking for more controlled environments in order to reduce the amount of skilled labor needed to complete projects and mitigate the negative effects of external impacts on the construction process, such as weather.

One way this is being achieved is by uploading plans and specs to an automated factory assembly line, which allows contractors to erect walls and fabricate buildings in a warehouse environment. A combination of software and equipment is employed to create a jig where robotics is used to connect all the materials to build the walls. This eliminates the contractor’s need for as many skilled laborers and provides for a better quality, more consistent product. The constructed walls can then be placed on a flatbed, brought to the jobsite and installed.

Contractors are also leveraging technology to monitor labor productivity on jobsites with the use of drones and cameras. For example, a contractor constructing a large sporting

arena in the Northeast was given permission to place cameras on buildings surrounding the jobsite. The contractor was able to monitor the project by controlling the cameras from its office and mobile devices. This allowed questions to be answered in real time by project managers and others who may not have been onsite but could view the project as if they were.

Mobile devices can also be used to capture employees as they arrive and leave the project in order to control true labor costs. A GPS reading is provided on the image to ensure the employee is onsite. When an employee leaves for the day, another image is taken. In addition, through the mobile devices, employees can also be asked to affirm that they did not get hurt on the project that day, thus reducing the number of claims filed and ensuring the validity of worker compensation claims filed.

Although technology has positively streamlined the construction industry, not everyone is up to speed yet. It is incumbent on construction workers to continually hone their skills and learn new methods of operation in order to be competitive in a labor market increasingly influenced by the use of software, robots and machines. Today's—and certainly tomorrow's—construction laborers are expected to have technological knowledge.

To bring more interest into the construction industry, middle and high schools are now combining Science, Technology, Engineering and Mathematics coursework into their construction trades programs. Involvement with and understanding of STEM subjects will help raise the caliber of the construction trade force in the age of technology.

There will always be a need for skilled construction workers. Contractors should promote craftsmanship training and look for new ways to incorporate technology in their crafts, as well as continue professional development. With appropriately skilled workers, project managers and other leaders will be able to provide more accurate budgets, appropriate materials selection and overall be able to deliver timelier projects that technology helped create by streamlining the build, the workforce and the project design.

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