

By Dr. Perry Daneshgari

# Agile Electrical Construction, Part 1

## THE IMPACT OF JOB PLANNING ON PROFITS

**R**ECENTLY, LEAN CONSTRUCTION has been celebrated as the new fad among the construction management gurus. In reality, it is not the leanness of the construction that matters, but rather its agility and responsiveness to change. Agile construction will allow the contractor to react to daily schedule changes and stay ahead of the curve.

The typical reason given for lack of planning is “the schedule changes.” In other words, we avoid planning because schedules change. Planning and scheduling serve different purposes for managing any construction project. Schedules are made to change; they are change management tools, changing in order to respond to changing circumstances on the job site while organizing the details needed to accomplish the plan. Plans are made to manage the job layout, workflow and productivity; they outline how the work will be accomplished.

Every contractor, project manager and foreman intuitively knows that planning helps improve the production, however no one knows by how much or why. Based on our 15 years of research, we now have data that pragmatically and statistically prove the strong correlation of planning to productivity and therefore to profitability. The agile response of the contractors to the changes on the job site could be managed by a simple “three-day-look-ahead” of labor, material and tools.

### Job planning

Construction planning necessary to manage the project can be categorized in four different areas: estimate hand-off to project management, job layout and value engineering, procurement planning, and job kickoffs (three-day-look-ahead-short-interval scheduling).

Of these four, job planning is the most critical. To identify, track and quantify the impact of planning on productivity, and through productivity its impact on profitability, we will define two processes:

- Job Productivity Assurance and Control (JPAC)
- Short-Interval-Scheduling (SIS)

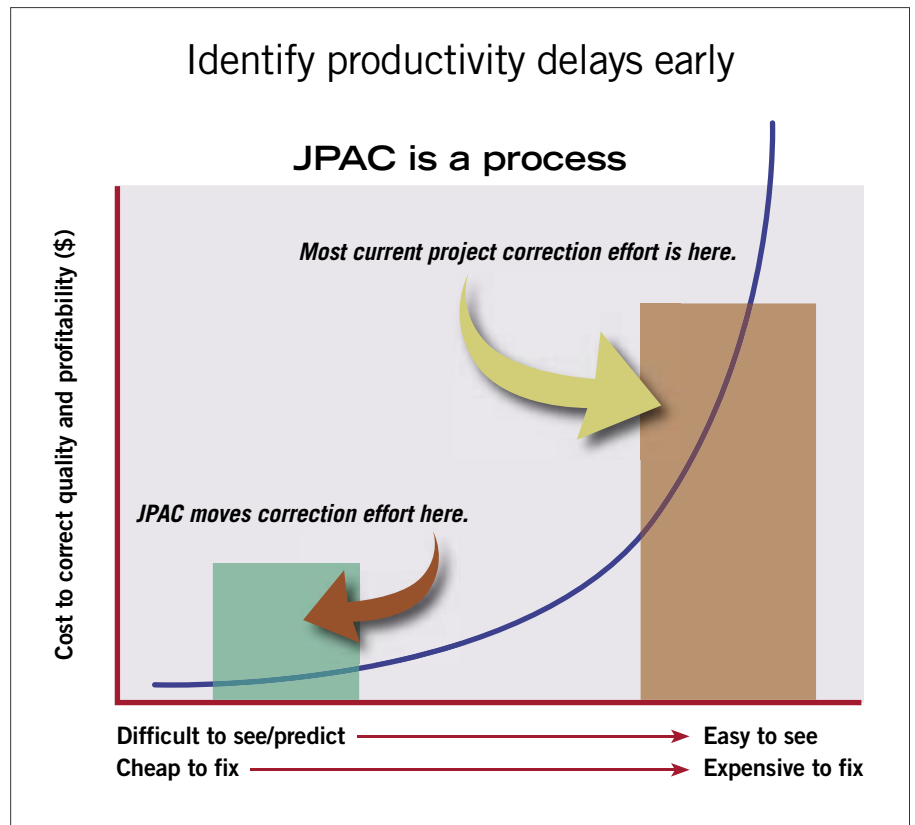
### Job Productivity Assurance and Control (JPAC):

Production in construction is defined by construction-put-in-place and measured from the accounting perspective by earned revenues. Productivity is the effectiveness of production, measured by using the observed percent completion to evaluate labor productivity and report on whether resulting profits are above or below the expected

earnings. JPAC differs from the standard accounting approach for the measurement of job progress in that it measures day-to-day productivity vs. a set construction budget goal to focus on measuring labor production. Accounting and enterprise resource planning (ERP) programs measure the job cost, and therefore measure production and not productivity. Production measurement will show the earned revenue, where productivity measurement will report on earned profits above or below the expected earnings.

### Short-Interval-Scheduling (SIS):

SIS is used to validate the JPAC productivity measurement as well as identify the root causes of special events on the job. SIS allows the contractor to carry out its plans for productivity by bringing together the materi-



als and labor needed to support a coordinated effort in managing all the aspects of the job plan. In SIS, the operator (electrician or foreman) is simply asked to schedule his/her work for the next three days. The schedule is then scored by the project manager on a daily basis, with deviations from the schedule identified by a cause.

### How should we measure productivity?

Labor productivity must be tracked from the labor's perspective. By using only a few high level company cost codes that define the activities performed, the productivity of the job can be tracked and projected from the labor's perspective. Measuring labor productivity with accounting methods al-

lows hours to be moved from one cost code to another to hide the productivity variance. The contractor will pay for eight hours of work; however, he will never know which cost codes cost him how much. Productivity delays and their resulting impacts may not be recognized until the end of the project when they are both most visible and most costly (see figure on page 149).

The initial JPAC plan by the project planning team involves segregating the job according to the type of work being performed. The cost codes should be only high-level "activity codes." They should be used consistently across projects on a company-wide (or division-wide) basis. Different divisions doing different types of work may need to use a different set of cost codes, but each division should only have about 15 to 20.

Of those, only 7 to 10 different codes will generally be used on any one job. Once the high-level cost codes are assigned with allocated hours, each cost code is then broken down into tasks by the project management team. The hours assigned to each task constitutes the job budget, which should reflect the way the technician or the operator will see the work performed. This budget may be calculated very differently than an estimate used to win the project.

Our research has repeatedly verified that the best foremen visualize the job by only the area that they are working on and that only for a maximum of three days in advance, indicating the task breakdown in JPAC should be no bigger than 3 to 5 days. Therefore, the task breakdown should reflect the work in small, well-defined, measurable pieces reflecting the way the technicians view job progress: visible, tangible areas, such as one room, one area, one wing, one phase, one operation at a time.

April's productivity column will continue the coverage of agile electrical construction. **EC**

**DANESHGARI** is president of MCA Inc. He is a consultant for various electrical and general contracting companies and can be reached at 810.232.9797. Michelle Wilson and Heather White contributed to this report.