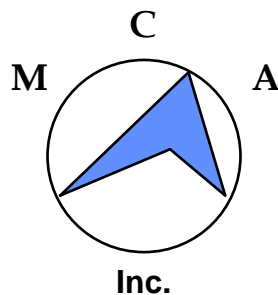


Senior Project Management & Middle Management Symposium

Detroit, MI

April 20th & 21st, 2007

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Sr. PM Symposium

April 20th & 21st, 2007

Attendees:

Bruce & Merrilees Electric: Paul Barber, Jeff Eberle, David Plyler, John Stewart

Feyen-Zylstra Electric: Josh Lester

Parson's Electric: Perry Thompson, Bill Olson, Tony Koran

MCA: Phil Nimmo, Chris Stanko, Wei Huang

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Opening Remarks:

The previous workshops have been aimed at creating a peer group of contacts for project managers of progressive Electrical Contractors throughout the country. The series began with a focus on understanding risk and the PM's responsibility for managing project related risks. The second session focused on managing manpower; the greatest variable and riskiest element of project management. The third session focused on managing money and the project's financial resources. The fourth session focused on managing material and job site flow. The recent Detroit session was an effort to bring together the participating companies and review progress that has been made towards achieving improved labor productivity through management of our three resources; material, manpower and money. In an effort to keep the session meaningful for all companies, the discussion was centered on various means of measuring the improvements that have been achieved.

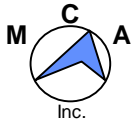
Only a few of the participants have attended some or all of the previous sessions, as a result time was spent on introductions. A small amount of "getting acquainted" time was required to get the group open and actively involved in relevant discussion. However, once accomplished the group engaged in several very insightful conversations on the topic of measuring and achieving productivity improvement through better management of the 3Ms.

Sources of Lost Productivity:

The question of where to look for productivity impacting activities led us through numerous presentations of real job site examples illustrating both productive and non-productive activities. We also spent time digging deeply into the concept of system productivity vs. individual productivity; and how these are observed, managed and measured differently within various contractor business models. Finally we looked at how accounting tools compare to productivity measurement using JPAC.

Ultimately, we revisited the primary reasons that Foremen report for non-productive "wait" or "lost" time on the jobsite and the group discussed the efforts that have been made to address these, as well as the areas that they still struggle to make headway. In most organizations that emphasis was on the material management and coordination of changes on the jobsite.

The figure included on the next page shows the results of surveys and observations assembled by MCA, Inc. and published in 2000 by the ElectricInternational Foundation and titled; "Optimal Operational Model for Electrical Contractors".



Research and Industry Review

The 10 Main Costly Causes of Non-productive “Wait Time”

1. Waiting for material – warehouse or offsite
2. Waiting for tools and equipment
3. Waiting for equipment breakdowns to be fixed
4. Rework due to design, prefabrication or field errors
5. Interfacing with other crews
6. Overcrowded work areas
7. Work place changes
8. Waiting on permits
9. Waiting for instructions
10. Other delays, the most common of which is waiting for scaffolding to be put up or taken down.

Productivity Measurement:

Our discussions regarding productivity improvement involved an introduction and review of advanced concepts relating to observations and interpretations of both accounting data and JPAC.

The group discussed several key aspects of productivity and ways to use the various data for quantifying the efforts that they have taken to impact system productivity. A considerable portion of the discussion was spent on productivity measurement as related to unit priced or non-lump sum contracts. The group agreed that productivity plays a major role in the profitability of all types of work. The group also agreed that measuring units installed per time or per labor hour are production measurement, and that measuring units installed on a cost basis is a profitability measurement – and that all of these lack the necessary ingredient of looking forward to reduce time to detect productivity impacting events and allow increased time to react. Ultimately the group seemed to reach a consensus that for this type of work the measurement of installation must be against a baseline that more closely represents that which “could” be achieved, regardless of what is estimated or what is actually accomplished.

Measuring against the estimate only represents a production measurement – against an assumed constant or known productivity, and; measurement against actual installation is statistically incorrect and meaningless since it only compares the sample to itself.

The representatives from Bruce & Merrilees took on the task of exploring ways to improve the baseline information and consequently increase the usefulness of their productivity measurement in this type of work.

Cash Management:

As a part of our review we discussed cash management; under billing vs. over billing and the true measurement of what should be billed. Each company had an opportunity to discuss the methods that they use to ensure billing accuracy and avoid under billing. We also had a brief discussion relating to actual measurement and tracking of project break-even point.

It was shared that success has been demonstrated in being able to manage cash much more effectively by not only tracking cash flow on the project, but by taking the time at the start of the project to plan for the cash flow and break-even timeframe. By creating this in a visible fashion, and sharing that with the project team, specific efforts could be successfully taken to improve the cash flow throughout the project life.

Material Management:

The group spent considerable time exploring concepts that have been tried for improving material management. The discussion included examples of prefabrication, vendor services (both on the job site and off the job site), increased preplanning, better use of look ahead and feedback to report jobsite issues with material and material flow to and on the job site and also the impact that material issues have on productivity. In essence we revisited the concept of foremen's job site planning – primary, alternate, contingency and emergency plans and the role that material availability plays on the actual work achieved on any given day.

The group was not able to reach a consensus regarding the best way to measure the impact of improved material management on an individual project (other than on those jobs where JPAC is effectively and consistently used); however they did reach a consensus that measurement using financial data at the company level shows a profound benefit from widespread application of pre-fabrication and effective vendor involvement. The amount of vendor involvement, where and how remains an area for considerable further discussion.

Closing Comments and the Next Session:

As the session closed all of the participants related positive experiences from this and previous symposiums. Bruce & Merrilees delegates accepted the challenge of further exploring the application of JPAC or similar productivity measurement on their unit priced work. Parson's representatives elected to look into the use of project audits to verify preplanning efforts and actions to improve productivity earlier in the project life cycle. Feyen-Zylstra took away several notes on topics for review and evaluation within their company.

Several of the participants expressed an increased interest in developing some ongoing dialog with one another. A list of contact information is attached in Appendix A.

The next session to be held in the fall of 2007 will be announced shortly. The topic and location are both being reviewed and considered at this time.