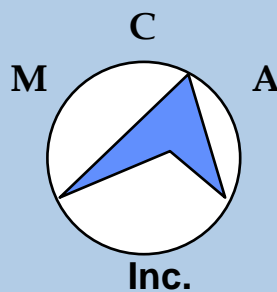


#6



Senior Project Management & Middle Management Symposium

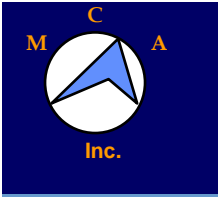
Airport Hilton
St Louis, MO
April 3rd & 4th, 2008



3040 Airpark Drive South, Suite C, Flint, MI 48507

Tel. (810) 232-9797 / Fax (810) 232-9746





Attendees:

Aschinger Electric: Scott Johnson, Bob Fowler, Tim Bosek, Darryl Lorance, Julia Strumpler, Scott Aschinger, Greg Bax, Skip Shank

Feyen-Zylstra Electric: Josh Lester

Holmes Electric: Kim Mazuk

Miller Electric: Tim Hinson

Thompson Electric: Kevin Lytle, Todd Becker

MCA: Phil Nimmo, Heather Moore

Executive Summary:

The sixth senior and middle management symposium produced an unprecedented level of participation and collaboration. During the session each participant had an opportunity to hear about other companies' efforts to reduce project risk, increase productivity and grow profitably within their respective market areas.

Discussion lead by MCA consisted of reviewing market trends, understanding project risk, roles of the project team members, individual v. system productivity, planning and scheduling work, tracking progress and learning from projects. Each topic lead to considerable in-depth discussion in both small groups and as an entire body. The key points of interest to the group led to some very meaningful and effective take home action items for each participating company. The participants were asked to gather into teams consisting of their respective company participants and determine what could be effectively implemented within their organization over the next six months that would have a profound and measurable impact; the results are as follows:

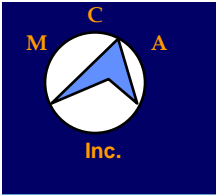
Aschinger Electric (electrical):

1. Improved material planning and staging of materials
2. Reduction of internal conflicts—improving the system productivity by increasing awareness and visibility

Aschinger Electric (commercial):

1. “Ship Naked” reduce onsite assembly and clean-up
2. Better use of the warehouse to reduce labor expenditures
3. Implement effective use of cost codes
4. Enforce policies aimed at reducing “will call”
5. Maintain up to date scope of work for our projects





Executive Summary—continued:

Fayen-Zylstra:

1. Develop and pilot an effective prefabrication process on a couple of select jobs
2. Develop and maintain an effective schedule for every job

Holmes Electric:

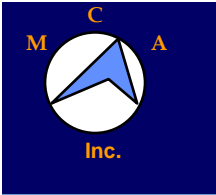
1. Be more pragmatic—develop a leadership style that promotes an increased opportunity for people to see for themselves what I have been saying at too high a level
2. Understand labor as a resource— individuals are people however project management requires planning and coordinating resources, including labor

Thompson Electric:

1. Increase gross profits by 1%
2. Develop and implement improved processes and procedures aimed at packaging and delivery of material for efficient installation
3. Investigate the crew skills that are assigned to specific tasks— where should TEC be mobilizing the most talented people?
4. Experiment with a pre-fab crew concept where the same crew designs in the field, comes into the shop to build and then returns to the field for installation
5. Evaluate and improve risk assessment / identification process during bidding

The next symposium will be scheduled for the late October or early November timeframe and will allow an opportunity for these groups to report back on their progress, as well as introduce new opportunities for further discussion on other topics relevant to the industry. Date and location to be announced shortly.





Session Highlights:

Introduction:

MCA, Inc. founded in 1990 by Dr. Perry Daneshgari is a scientific research and implementation company. MCA studies industries and companies to learn effective applications of fundamental business principles. In the mid-1990s MCA began studying the construction industry including electrical contractors. For more than a decade now MCA has conducted research and published findings relating to efficient applications of fundamental business principles within the contractors' business models.

During these same years MCA has been asked to help many progressive, market and industry leading organizations to design, test and implement more efficient business processes using a proven methodology. This exposure to the industry led to the first symposium held in Chicago, IL in the summer of 2004. The first symposium was attended by owners and presidents of leading contractors to strategically discuss topics of concern to the industry. During this session the attendees asked that a series of symposium sessions be initiated at a more operational level; to allow mid-level managers and senior project managers an opportunity to develop collaborative relationships with their non-competing peers.

Previously, MCA has hosted five such symposiums; the first in Atlanta focused on understanding project risk. The second session in Denver focused on topics of manpower planning and management. The third session was held in Las Vegas and investigated cash management at the project level. The fourth session was held in Pittsburgh targeting material management and vendor relationships. The fifth symposium was held in Detroit and focused on operational measurements for project management. This past week, the sixth symposium was held in St. Louis and included concepts from each of the previous sessions and also introduced the topics of project planning and project scheduling; from a subcontractor's perspective.

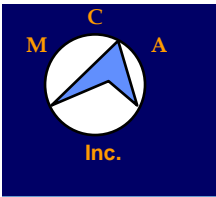
Construction Environment:

Today the construction industry operates at a very fast pace, is inherently lean and the risk has shifted. Management of business risk and integration risk have a far greater impact on profitability than on the technical risk. Commercial buildings are easier, faster, require less sophisticated tools and materials than industrial projects and can be built by a less "talented" workforce. With this in mind the group reviewed the basic distinction between individual and system productivity; what is required to ensure that the work can be efficiently installed in a predictable manner, and when it is needed?

"what information do we need in order to manage the outcome of our projects?"

- **Scope, qualifications, exclusions**
- Schedule – with more than 1 line for electrical
- Special environmental issues – weather
- Type of construction
- **Drawings**, shop drawings, submittals, **specs.**
- Manpower needed, manpower available
- **Contact people – owner, GC, engineer, etc.**
- **Type of contract – contract fixed cost, T&M, NTE**
- Estimated hours by breakdown area, task, or cost code
- Questionable issues
- **Size of job**
- Schedule
- **Type of job**
- Manpower required
- Equipment requirements
- **Materials, subs, pricing**
- **Loading docks – delivery**
- **Service elevators? Or do we need cranes**
- Design drawings in house?
- Re-engineered drawing to field
- **Permits / inspections**
- **KickOff meeting with estimator, pm foreman**
- Potential complications? Rock excavation?
- **Foreman's handbook w/contacts, submittals, company processes, etc.**
- **Smoking area?**
- Other MEP contractors for coordination
- **Transportation**
- **Owner restrictions**
- **Safety**
- **Parking**





- Security
- Store materials on the job
- Billing cycle
- Where to send the invoice
- Pre-job meeting
- Design meeting
- Review scope / take off
- Supplier used – contact list
- VE ideas
- Pre fab – discussions
- On site meeting
- Task coordination
- Delivery dates
- Manpower projections
- Schedule

Corporate Environment:

Within the business model of the contractor the project manager needs to identify where the information is and how to obtain it when needed. As the previous brainstorming clearly shows; only about one-third of the information is available when it is needed. The group then discussed and focused the list of required information into those items that are specifically needed to track labor productivity, and current job performance.

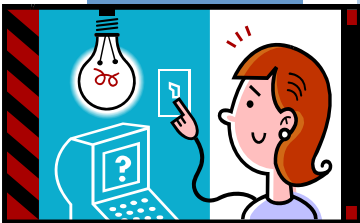
Information required to track labor productivity and current job performance

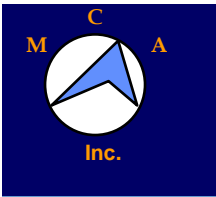
- Explain process to be accurate on cost codes to field
- Actual install hours
- Showing delays / schedule problems
- Uninstalled scope – missed
- Where at on job – tracking
- Estimating issues – good? Bad?
- Are VE ideas working?
- Prefab working?
- Problems with manpower?
- Are results consistent with past jobs from same company – good or bad GC?
- How we worked w/GC's foreman?
- Possible conditions that weren't taken into consideration?
- Labor method working? Shortcuts or better way to install
- Review on actual job / find good & bad on project?
- Accurate picture of installation
- Base to adjust estimation
- Individual performance
- Job conditions
- Hidden costs
- Schedule adjustments
- General contractor performance / cooperation
- Crew performance
- Rework
- Better feedback on actual labor hours used
- Better idea of material costs and quality used
- Shows where most of the labor was consumed
- Overmanned vs. undermanned
- Was prefab successful?
- Identifies variables that were not accounted for when there are differences?
- Shows actual vs. estimate
- Sometimes different due to definitions [of the cost codes]
- Actual info can help fine-tune estimating labor units; or point out if the field did the job a way different than the estimator envisioned
- Field reality can raise a flag for changed conditions that need to be addressed
- Accurate info can make you more competitive and / or less losses

Knowing where to look:

The project manager is ultimately accountable and responsible for the outcome of the job. This means that having the information and knowing what to do with it is critically important to the result; further more, knowing what things are going to impact the successful outcome of the project can not be left to chance. In order for each member of the project team to perform their respective duties in a manner that supports the desired outcome it is necessary that everyone on the project team have the same picture of what it is that is being built—the scope of work.

A third brainstorming session for the smaller teams was focused on where the scope of work comes from and how it is communicated to the project team. The results of this brainstorming is tabulated below:





- Scope letter
- Changes
- Customer request / owners time / future
- Spec book
- Drawings
- Contract documents
- Equipment needs
- Type of work
- Location
- NEC
- GC
- Budget availability
- Div 16,000
- Owner
- Customer
- Architect
- Plans / specs
- Engineers
- You
- Electricians
- Codes – NEC, IBC, NFPA, AHJ, APA, CYZ, SBCA, ASRAM
- End user
- Progress of the job
- Change orders
- RFQs, RFI's
- Estimator
- General contractor
- Subcontractors
- Troubleshooting
- Available materials (supplies)
- Pre-fab opportunities
- Other trades
- Contract
- Inspectors
- Current market
- Based on proposal & owner input on design build
- Based on drawings & specs on hard bid projects
- Based on customer / end user needs
- Based on other trades' electrical requirements
- From the customer
- RFP/RFQ
- Experience
- Napkins
- Ourselves
- Code / local jurisdiction
- Pre-construction review
- Drawings & specs
- Owner changes
- Dollars
- Experience of the GC

Planning versus Scheduling:

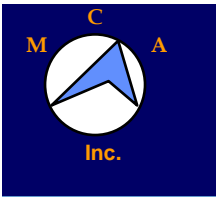
From the perspective of the owner, construction manager or general contractor the plan is little more than a picture or description of the final product and the schedule represents little more than “buckets of time” allocated to each trade to accomplish their respective portion of the work. What needs to be done by each trade, what order it needs to be done and how progress is measured and tracked is typically left to the expertise of the subcontractors' project managers.

Because it is often common practice for the project manager to manage a project without being provided the entire scope and a complete project plan or even a schedule, the group split again into the smaller teams and took on the task of developing a useful work breakdown schedule (WBS) for a project based only on a high level description of the outcome.

During the course of completing an exercise involving the development of a WBS for selected projects the individual teams found that they achieved various levels of success due primarily to the fact that there is not a consistent distinction between planning and scheduling within the industry. Many questions and much discussion ensued with regard to application of the project model in light of external influences and matters still beyond the control of the project manager and the project team. It was agreed that further investigation into the effective application of the project planning and scheduling will be a suitable topic for more detailed investigation at future symposium sessions.

Understanding the what is happening in the field:

When the group reconvened after the evening break there was considerable discussion regarding the use and interpretation of the data that is provided from the various sources. This discussion led into the distinction between “special causes” and “common causes” of variation. In the terms of our project management, the variation refers to any real departure from the project plan, project schedules, or our baseline productivity and budget expectations for the project.



The team used productivity measurement as a basis for the discussion of factors that represent special causes. Special causes being those which effect a project as a result of specific circumstances. These are the types of factors that will cause a standard signal to appear in the JPAC trend. Some of the factors that have been observed by the group are:

- Learning curve
- Weather
- Other trades interference
- Late materials
- Stacked trades
- Personnel
- Out of sequence work
- Good ole boy syndrome

Special Causes are the things that are recognized with the help of JPAC and can be addressed immediately with corrective action.

In contrast to the special causes are common causes. Common causes of variation on construction projects are those factors that are not necessarily unique to the circumstances of that particular project at that point in time. Unlike special causes, common causes require changes to the business processes in order to correct them; they are “larger” than the project itself. The group took time to review the use of Short Interval Schedules as a means of recognizing common causes. The factors that routinely and consistently prevent our project teams from being able to accomplish their work at the time and location scheduled are common causes. Properly using SIS helps to prevent common causes from erroneously being treated as special causes.

In an effort to help the group visualize how to correct common causes of variation the smaller teams once again formed to discuss ways of improving the system productivity by 1 hour per week per man. The suggestions that the teams came up with are:

- Material handling / packaging
- Materials available
- Friendly competition
- Working lunch
- Stage deliveries
- Positive morale
- Power sander / specialty tools
- Lifts
- Pre-built assemblies
- Employee / incentives / games
- Planning out the day
- More scheduled deliveries

All of these items require process and system level changes, not just a simple correction on a specific jobsite in order to effect a change for the entire company.

Brining Value back to the Company:

After reviewing the types of things that can be done to improve labor productivity by 1 hour per week per man, and recapping the various discussion topics the group was broken into teams according their respective employer. These teams were asked to identify a few things that they had heard, learned or discussed during the session that could be effectively implemented within their own organizations, or on their own projects within the next six months.

A list of these action items is included on pages 2 & 3 of this report, in the executive summary. During the next symposium the representatives from these companies will have an opportunity to share their efforts and accomplishments with regard to these actions as well as any barriers that were encountered.

The date and location of the next session will be announced prior to June 1st, 2008.

