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**Advanced Project Management**

**Spring 2010**  
**Las Vegas, Nevada**  
**Project Risk Mitigation and Reduction**  
**at the Jobsite**

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*Contact MCA now to register for the Fall 2010 Symposium, or give input on the date or topics related to*

**Jobsite Risk Reduction by Better Vendor Coordination and Partnership**

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### Project Risk Reduction and Mitigation at the Jobsite

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#### Focus

The focus of the Spring 2010 Symposium was on “Project Risk Reduction and Mitigation at the Jobsite”. The largest and most diverse Symposium yet, 13 companies were represented by 40 attendees, which included electrical and general contractors, and distributors. With input from various members of the construction delivery process, the group set out to discuss and identify how science could be introduced into construction production delivery by integrating all of the information available to the management and the field.

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#### Process Design

The session began by understanding how the design of any process or product can be successful. A short video about a successful product and process design model was introduced. The video showed how studying existing systems can lead to improvement. The following were key insights from the group after watching the process design methodology:

- Need to get the field's input on ideas
- Involve the field up front when planning for prefab
- Don't hire people that agree with you all the time

The success of this process is due to the forethought that goes into designing a product or process. Just like Agile Construction®, this process identifies the potential failures of the process being designed, and puts elements in place to prevent those failures. In Agile Construction®, Process Failure Mode Effect Analysis (PFMEA) is one method used as a structure for planning and prevention during process design. PFMEA was discussed in the Symposium, as it could also be used for planning for the construction process.

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## Project Risk Reduction and Mitigation at the Jobsite

### **Losses of Productive Energy on the Jobsite**

Energy is lost in the building process due to internal factors such as not having material, not knowing about the design changes and installing the wrong material, unscheduled absences of crew members, and trade stacking.

MCA has aggregated data from contractors using Short Interval Scheduling (SIS™) on over 90 projects over the past 3 years from 9 different companies. The data shows that about 7% of the daily scheduled hours are lost due to unscheduled activities. The reasons for these losses can be studied for improving the labor usage and reducing risk in the jobsite.

The intrinsic energy is what the labor has to do on the jobsite during the installation process. There are several activities conducted on the jobsite, which could be done externally to increase the amount of energy that can be used toward installation. Prefabrication is one method of reducing these losses by removing non-installation activities from the place of work. The group identified the following items that can be removed from the jobsite, which would help more labor go toward construction put in place at the site:

- Design
- Planning
- MEP coordination
- Material packaging
- Scheduling
- Mock-up
- Delivery and material flow design
- Recruiting upper management and estimators to the job site
- Specifics of pre-planning
- Prefabrication
- Placement of break rooms
- Scheduling transportation within job site
- Vendor partnership



The above activities will either help reduce waste of labor's time because of lack of information, or help remove activities from the point of installation such as material handling. Although there will always be losses on the jobsite due to uncontrollable events, any separation of the internal jobsite activities to external ones will contribute toward more effective transfer of the labor's value.



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## Project Risk Reduction and Mitigation at the Jobsite

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### **Planning and Tracking the Energy Expended on the Jobsite**

In order to determine what activities can be removed on a jobsite, planning and continuous monitoring are required. The Job Productivity Assurance and Control (JPAC®) method was recently established as the first construction industry standard for productivity measurement. In combination with Short Interval Scheduling (SIS™), it is possible to track how the labor energy on the jobsite is transferring into construction put in place. Participants using these processes discussed how they use them and shared lessons learned. Following are some important points, which was shared among the practitioners of the Agile Construction® and users of JPAC® and SIS™.

- Jeff Schaffer from Rosendin Electric discussed his understanding that current JPAC® and SIS™ values indicate that if their methods were to remain the same, their productivity will not improve.
- Kevin Lytle from Thompson Electric observed and worked with other companies to help their prefabrication and planning methods.
- Jim Gagnon from Baker Electric discussed their methods for project planning including assigning a project planner, implementing a document and plan tracker, developing a site plan, and introducing foreman meetings.
- Willie Micene from Rosendin Electric discussed communication errors with the General Contractor as well as his recent understanding of how much weight to give certain cost codes.
- David Moeller from Graybar discussed the importance of the relationships between the vendor as well as the general contractors.

By tracking how the Labor's energy on any given jobsite is transferring into construction put in place (through JPAC®) and where losses are coming from (through SIS™), it is possible to prepare and plan for them ahead of time. One method used for this up-front planning is process failure mode effect analysis (PFMEA). The method first identifies, for each step in the process, what are the potential failures, the effects and causes of those failures, and evaluates what controls are in place to prevent or detect the causes. A ranking method is also used to quantify these parameters, so the project team can determine their highest risk for process failure before the job starts.

The group walked through an example of the PFMEA process and five participants volunteered to pilot PFMEA on their projects:

- Keith Conti
- Jim Gagnon
- Frank Herbik
- Kevin Lytle
- Greg Sherman

MCA will follow up to structure and track the pilots, and the next symposium will include a discussion of the results.

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## Project Risk Reduction and Mitigation at the Jobsite

### Jobsite Visit to Rosendin Electric

#### Visit to Rosendin Electric's Prefab

The tradition of the symposium visit to a contractor continued, with the gracious hosting of Rosendin Electric to their prefab shop. First, John Green gave an introduction of their job planning and prefabrication processes.



#### Real-Job Examples

Chris Heger, representing Turner construction, presented a success story of the Nintendo of America project in Redmond, Washington. Turner was at ease with their selection of Holmes Electric because of Holmes's pre-planning, use of prefab, and productivity tracking with JPAC<sup>®</sup> and SIS<sup>™</sup>. The project was shortened in duration by 69 days, out of an original 18 month plan. This challenge was overcome by planning and continuous review, and the project resulted in four times the overall installation progress rate compared to other Turner projects across the country.

Jim Gagnon presented their use of the P3 (project pre-planning) process they developed at Baker Electric. One critical element in this process is the involvement

#### Closing Comments

The group closed the Symposium by discussing their insights. Everyone was in agreement that the involvement of other construction supply chain members, such as GC's and suppliers, is welcome. It was affirmed that with processes such as JPAC<sup>®</sup> for productivity tracking, pre-planning using PFMEA, and SIS<sup>™</sup> to understand energy losses, science can be introduced into the construction process. After the Symposium, the participants were eager to bring back what they learned and implement the ideas within their company. The overall discussion led to a clear focal point for our next symposium. The topic that appears to be of highest interest is "Process Failure Mode Effect Analysis."

**Coming in Fall Session— Atlanta, Georgia (date TBD):**  
**Jobsite Risk Reduction by Better**  
**Vendor Coordination and Partnership**

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