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In This Issue

Current Events

INDUSTRY EVENTS

Is the CPM Critical Path REAL or IMAGINARY?

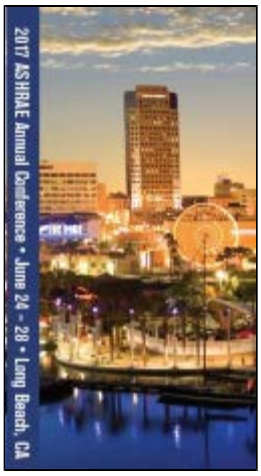
By E. Mitchell Swann, PE, Robert C. McCue, PE and Michelle N. Delehanty, PE

Where is the critical path?
This is one of the questions most often asked concerning schedule analysis. For some types of projects it is easy to anticipate where the critical path should be; for instance in high-rise building construction, the critical path is most likely to be: excavation, foundation, structure, weather enclosure (building envelope), MEP, finish activities.

Some activities will necessarily overlap. If the planned or actual critical path varies significantly from this most likely sequence of activities, then either some unique, one-of-a-kind activities are included in the work or something has disrupted the normal progression of the work. Sometimes when analyzing construction schedules MDC® finds parallel critical paths through various activities. This is not unusual and in examining the planned and actual critical paths for the work, the reasons for the parallel activities are typically easily determined.

It is the case, sometimes, that the schedule for the work is manipulated to present a “rosier picture” which can provide a false optimism (consider this ‘softer’ alternative) concerning the actual progress of either the main contractor or specialty subcontractor’s work production. In the mid-1980s, with the promise of on-site CPM schedule development and monitoring it was expected that disputes concerning project delays would become a thing of the past. Surprisingly, given the introduction of more powerful, PC-based project management software, as additional information and processing power came into the scheduling arena, additional complexity also found its way into typical project schedules.

The new scheduling tools allowed for rapid input of planned and actual



MDC® Presented at
ASHRAE, Long Beach, CA

MDC® Presented at
Architectural Engineering Institute, Omaha, NE

MDC® Attended
Int'l Arbitration Conference, Dubai

activities resulting in larger and more complex schedules. The introduction of resource leveling techniques, coupled with the denser schedules greatly complicated the analysis work required to understand, debug and simplify the schedules into a more understandable presentation. So instead of having more insight into the activities comprising the critical path and allowing for more informed project management decision-making, the now 'data rich' schedules often disguised the most important information and clouded the insight that should have been apparent in a weekly or monthly schedule review. We were in effect 'blinded by science.'

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Project Risk Management - The Real Cost of Value Engineering

By E. Mitchell Swann, PE and Larry Poli, PE

Problems stemming from "value engineering" are a common source point in many of our forensic engineering and claims management engagements involving systems, equipment or materials where the actual performance is found to be 'problematic' with respect to project expectations. Misunderstandings concerning the purpose and intent of value engineering are often at the heart of the problems we have noted. As a caution, the "value engineering" intent to reduce first costs will almost always succeed in the short term, but may fail to deliver "best value' in the long term.

The old adage- "necessity is the mother of invention" is certainly true in the case of the value engineering concept. VALUE ENGINEERING was "invented" by employees at the General Electric Company during World War II as a result of the "necessity" to find good substitutes for certain labor skills, raw materials and component parts which were in short supply. The GE employees soon realized that the substitutes, in many cases, either performed better, or were less costly or both, than the item they replaced. The next step, logically, was to apply this new process to items which weren't in short supply, but which might be improved through the use of a cost-effective substitute.

Value Engineering is sometimes referred to as Value Methodology, Value Management or Value Analysis. These terms are essentially

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ABA Construction Mid-Year Meeting,
Palm Desert, CA

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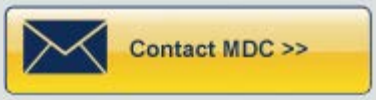

interchangeable. The Society of American Value Engineers (SAVE) International defines Value Engineering as “a systematic and structured approach for improving projects, products and processes.” Others may have a slightly different definition, but they are variations on the same theme.

Essentially, Value Engineering is a process whereby the value of the project is increased through either an increase in performance, function, or quality, etc. at the same cost or a decrease in the cost while maintaining the same performance or a combination of both. While necessity during wartime may have been instrumental in the development of the Value Engineering (VE) idea, over time the VE idea has morphed into a somewhat ‘standard practice’ that is driven by factors other than necessity. In many cases today, a VE period may be required or expected to be performed during the course of the development of a part, product or project – the goal being to maximize performance for each dollar spent.

The project under development can be an office building, the HVAC system in the building, a fan in the HVAC system or the material used in the fan blades. Value Engineering will likely occur at each step along this path and it will be done by different parties. For instance, the manufacturer of the fan may perform a VE analysis on the material used in the fan blades but would not be expected to perform a VE analysis on the HVAC system or the office building design itself. Likewise, the HVAC system designer would not be expected to ‘value engineer’ the fan blade materials.

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