

Those Unanticipated Impacts of Change Orders; ■■■■■■■■ HOW TO COMPUTE THEIR HIDDEN COST\$ ■■■

By Timothy J. Fitzgerald

Generally speaking, most contracts allow the owner and architect to make changes in the plans and specifications "provided they are within the general scope of the contract." Even when changes occur within these contractual guidelines, contractors often shortchange the costs of a change order. For the most part, contractors add up the materials, equipment, and manpower needed to perform that changeorder task. Yet, numerous studies have shown that these "direct" costs are only the most obvious costs for the contractor.

The extent, description, and overall impact of any change order must be considered within the context of the project. Among the more common costs that contractors fail to consider are the following:

Re-assignment of manpower. Often, in order to address the direct work associated with a change order, a contractor must re-assign workers from other tasks to perform this new work. The disruptive impacts can be particularly significant if changes come unexpectedly, if changes are major, and/or if sufficient time is not allowed to plan an orderly effort to ensure work proceeds smoothly and efficiently.

Dilution of supervision. Contractors bid work with a specific plan for crew sizes and field supervision. When changes occur, field activities associated with the integration of change order work into the basic contract work divert supervisory attention from the basic contract work. This diversion requires the attention necessary to identify a problem in the field, the time and attention to request the architect/engineer to provide information, the time required to price the change, and the effort required for coordination of the change work in the field. While the superintendent is engaged in these activities, productivity on the basic contract work is adversely affected.

Crew size inefficiency. Often when a contractor is faced with a significant change order or numerous concurrent changes, work is disrupted in one or more areas. Faced with a suspension or disruption of work in one area while the architect/engineer investigates a problem and defines a solution, and the period of time before work could actually recommence in the area, productivity is adversely affected. When workers are added and subtracted from crews without a fundamental necessity other than to avoid total unproductive time, inefficiencies are unavoidable. There is a definite limit to the number of workmen who can optimally perform a given task, and the adding or subtracting from that optimum crew size adversely impacts efficiency.

Learning curve. Whenever a worker is assigned to a task, there is a period of familiarization with the work itself, the crew to which the worker is assigned, the plan for performance, tool and materials location, etc. Studies show that when workers are moved from one area to another, performance drops accordingly.

Ripple. A change order issue for one area of work can have a profound effect on other areas of work. Changes in one area can cause changes in the schedule for other areas. Changes in one area can divert key resources from one location to another. Changes in a specific area can impact similar tasks in another.

Overtime. Contractors who try to use overtime as a tool to address a disruptive change order environment can find their costs for performance significantly under-estimated. Several studies (e.g. Business Roundtable's Construction Industry Cost Effectiveness Task Force) found that extended overtime reduced productivity because of fatigue, absenteeism, injury, and reduced ability of the worker. As a general rule, the Roundtable found that for any work performed above 48 hours a week, it took two hours to produce one hour of output. Therefore, if a contractor is estimating that it would take 10 overtime hours to perform a change order task, the actual cost could be 20 hours, and this would be at the overtime rate.

If a contractor is to carefully protect the company's bottom line, all considerations of true costs for performance of a change order are required. This does not mean that an owner will be receptive to paying for these costs, but certainly a contractor should protect its interests by submitting that these costs are real and substantial based on the realities of each particular project. ■

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