"Project Management Using Earned Value"
Case Study Solution 28.1

28.1

CASE STUDY

The Brick Wall

"Project Management Using Earned Value," Solution to Case Study 28.1

Solution

1. (a) We must first examine how much budgeted work remains. The total was $10,000 and we have earned $4,500 through day 3. This means that $5,500 of work remains.

   (b) Next we must decide what future performance is likely to be on this remaining work. Material costs are fixed and will not change. There is $3,500 of remaining material costs (3.5 feet of wall). Labor costs, however, must be evaluated. To date, we have earned $2,000 worth of labor while expending $3,000. One way to generate an EAC would be to assume that this level of performance would continue in the future. There is a remaining Labor effort valued at $2,000 in the budget. Since it is requiring $1.50 of actual cost for every $1.00 earned, we could estimate that the remaining $2,000 would cost $2,000 x $1.50 = $3,000.

   (c) The final step is to add this projected cost to the cost already experienced to date. This can be expressed as a formula like this: EAC = Actual cost to date + ETC, where ETC is the Estimated Cost to Complete the remaining work. Using this approach, we would estimate a total cost at completion of $5,500 + $3,500 (material) + $3,000 (labor) = $12,000. This would result in an overrun of $2,000, twice the overrun experienced to date.

   Another option would be to recognize that day 3 was an aberration because of weather. At the end of day 2 the project was precisely on schedule and on budget. So we could assume that the remaining $3,500 of budgeted material and $2,000 of budgeted labor work will cost exactly $5,500. Since EAC = Actual to Date + Estimate to Complete = $5,500 + $5,500 = $11,000. This estimates an overrun of $1,000, the same as experienced to date.

   This illustrates why a RANGE of EAC values are usually generated and submitted for review, based on "best case", "worst case", and "most likely case" assumptions. The $11,000 would likely be the "best case" value, while the "most likely" case would be based on many things. There is detailed discussion of this topic in a later chapter, "Performance Measurement Calculations and Estimates at Completion".

   Given the information provided in the problem, it would appear that the most likely EAC would be $11,000.

2. In Case A, there are 64 budgeted labor hours of work remaining (ie., 2 days x 8 hours/day x 4 workers) @ $31.25 per hour. To accomplish this in the one remaining day would require 32 of those hours to be paid as overtime, or $46.88 per hour. Therefore, remaining labor cost would be 32 hours x $31.25/hour + 32 hours x $46.88/hour = $2,500.16, rounded to $2,500. Remaining material cost is $3,500, so total remaining cost would be $6,000. That would mean an EAC of $11,500.

3. In Case B, it would take less than 64 labor hours because of the improved productivity. Assuming the 15% improvement, and with all hours on straight time, the $2,000 remaining labor budget should become $1,700. The EAC for Case B would then be $5,500 + $3,500 + $1,700 = $10,700.