"Project Management Using Earned Value"
Case Study Solution 30.1

30.1

CASE STUDY

The Brick Wall

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 project 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 project 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 due to 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 project 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 could be based on many things. There is detailed discussion of this topic in a later chapter, "Performance Measurement Calculations".

   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 (i.e., 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 = $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 $1,739. The EAC for Case B would then be $5,500 + $3,500 + $1,739 = $10,739.