“Project Management Using Earned Value”
Case Study Solution 21.1
“Project Management Using Earned Value”, Solution to Case Study 21.1

SOLUTION

1. Labor for 10" pipe = $65,000/mile x 10 miles = $650,000
   Material for 10" pipe = $73,000/mile x 10 miles = $730,000
   Add-ons for 10" pipe = $36,000 x 10 miles = $360,000
   Pipe installation subtotal = $1,740,000
   Locating adjustment (AZ:+10%) = $ 174,000
   $1,914,000
   (2) Control Valves @ $40,000 ea. = $ 80,000
   $1,994,000
   Indirect Cost of 5% = $ 99,700
   $2,093,700
   SAY: $2,100,000

Assumptions

1) Excludes hydrostatic testing
2) No isolation valves required with control valves
3) No escalation included
4) Excludes Cost Risk
5) Estimate is for 10-mile long, 10" pipeline in Arizona
6) Right-of-way costs included
7) Engineering costs included
8) Freight and taxes included
9) Environmental costs included

There is more than one possible answer for this problem depending on the estimator’s assumptions. The scope is not clearly stated in the problem statement. This is often the case in real life as well, which is why documenting the assumptions used to arrive at the estimate is so important. If we had assumed that hydrostatic testing is included and that isolation valves are required with the control valves (almost a certainty), the estimate would look like this:

Pipe installation sub-total $1,740,000
Location adjustment 174,000
(2) Control Valves w/isolation valves 200,000
Hydro testing 10,000
Subtotal $2,124,000

"Indirect cost of 5% 106,000
$2,230,000
SAY: $2,200,000
2. Although the case study did not mention including an allowance for cost risk, the estimator should be aware that a conceptual estimate contains significant uncertainty. Therefore, there should be an assumption regarding an allowance for cost risk. An assumption of at least 20% for cost risk allowance would be appropriate. Our two estimates (with differing assumptions) would look like this:

<table>
<thead>
<tr>
<th>Cost Risk Allowance</th>
<th>$2,093,700</th>
<th>418,740</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>$2,512,440</td>
<td>$2,676,000</td>
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SAY: $2,500,000 SAY: $2,700,000