

“Project Management Using Earned Value”
Case Study Solution 21.1

21.1

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Developing An Estimate

“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 =	<u>\$360,000</u>
	Pipe installation subtotal =	\$1,740,000
	Locating adjustment (AZ:+10%)	<u>\$ 174,000</u>
		\$1,914,000
	(2) Control Valves @ \$40,000 ea. =	<u>\$ 80,000</u>
		\$1,994,000
	Indirect Cost of 5% =	<u>\$ 99,700</u>
		\$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	<u>10,000</u>
	Subtotal	\$2,124,000
"	Indirect cost of 5%	<u>106,000</u>
		\$2,230,000
	SAY:	\$2,200,000

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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:

	\$2,093,700	\$2,230,000
Cost Risk Allowance	<u>418,740</u>	<u>446,000</u>
	\$2,512,440	\$2,676,000
	SAY: \$2,500,000	SAY: \$2,700,000