What is Cost Estimation in Construction?

Worksheet

Cost estimation predicts total project expenditure (labor, materials, equipment, overhead) early in planning; cost control tracks and manages actual spending against that estimate.

Questions

1. Cost estimation methods include

A) only guessing
B) unit rates, parametric models, historical analogy, and detailed takeoff
C) only material cost
D) only labor cost

2. A budget of 10 million; actual cost after 50% complete is 5.5 million. This project is

A) under budget
B) over budget by 0.5 million
C) on budget
D) can't be determined

3. Contingency in cost estimates

A) is not necessary
B) covers unforeseen risks and small changes
C) is the same as profit
D) should never be used

4. During execution, cost control involves

A) only reporting final cost
B) tracking actual vs. budgeted cost, managing changes and forecasting final cost
C) never changing the budget
D) ignoring overruns

5. A 10,000 m office building: excavation unit rate 15/m, expected volume 2,000 m. Labor 50/m for 1,500 man-days, 8h/day at 50/h. Total excavation cost?

6. Budget estimate: 5,000,000. After 3 months, actual cost is 1,350,000 (27% of budget). Progress is 20% complete. Is the project over budget?

7. Concrete cost increased 15% due to market conditions. Original estimate 500,000. Impact on project budget of 4,000,000?

8. Define: What is cost estimation?

9. Define: When is cost estimation most accurate?

10. Define: What does contingency cover?

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Answer Key

1. B) unit rates, parametric models, historical analogy, and detailed takeoff - Multiple methods are used: unit rates (cost/unit), parametric (cost/m), analogy and detailed-line item estimates.

2. B) over budget by 0.5 million - At 50% complete, planned cost is 5 million; actual 5.5 million = 0.5M overrun.

3. B) covers unforeseen risks and small changes - Contingency (typically 5-15%) buffers for unknowns (weather, site conditions, supply delays) and minor changes.

4. B) tracking actual vs. budgeted cost, managing changes and forecasting final cost - Cost control compares actual to planned, identifies variances early and adjusts spending or scope to manage budget.

5. Material & equipment: 2,000 m 15/m = 30,000. Labor: 1,500 man-days 8h/day 50/h = 600,000. Total excavation: 30,000 + 600,000 = 630,000.

6. Earned value (20% 5,000,000) = 1,000,000 (planned value for 20% complete). Actual cost 1,350,000 vs. earned value 1,000,000 = 350,000 overrun (variance). Forecast final cost: 1,350,000 0.20 = 6,750,000 (overrun of 1,750,000).

7. Cost impact: 500,000 15% = 75,000 increase. New total budget: 4,000,000 + 75,000 = 4,075,000. This requires change order approval and budget adjustment.

8. Forecasting total project cost based on scope, design, schedule and market rates for labor, materials and equipment.

9. Detail design phase; early conceptual estimates have 30-50% accuracy; detailed estimates 5-10%.

10. Unforeseen conditions (soil conditions, weather, supply delays) and small changes; typically 5-15% of base estimate.

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