What is Cost Estimation?

Worksheet

Cost estimation is the practice of calculating a project's likely construction cost, most simply as total floor area multiplied by a cost rate per unit area (C = A Cr), refined into more detailed methods as design progresses.

Questions

1. A 300 m building at $1,000/m costs approximately?

A) $30,000
B) $300,000
C) $3,000,000
D) $3,000

2. Which estimate type is typically the LEAST accurate?

A) Definitive bid estimate
B) Detailed quantity takeoff
C) Order-of-magnitude estimate
D) Elemental estimate

3. What does a quantity takeoff measure?

A) Only the site area
B) Every material and labor item from the drawings
C) The architect's fee
D) The zoning setback

4. If the budget is fixed, increasing the cost rate per m means the affordable floor area must

A) increase
B) decrease
C) stay the same
D) double automatically

5. A house has 180 m of gross floor area and a local cost rate of $1,200/m. Estimate the construction cost.

6. A schematic-design office building is 4,500 m at $1,800/m. What is the order-of-magnitude estimate, and what is the 25% range?

7. A renovation has a fixed budget of $450,000 and a cost rate of $1,500/m. What is the maximum floor area that fits the budget?

8. Define: What is cost estimation?

9. Define: Simplest cost estimation formula?

10. Define: Why do estimates get more accurate over time?

Answer Key

1. B) $300,000 - C = 300 1,000 = $300,000.

2. C) Order-of-magnitude estimate - Order-of-magnitude estimates happen earliest, with the least design information, so they carry the widest error range.

3. B) Every material and labor item from the drawings - A takeoff itemizes materials and labor quantities directly from construction documents.

4. B) decrease - Since A = C/Cr, a higher rate with fixed C lowers the affordable area.

5. C = A Cr C = 180 1,200 C = $216,000

6. C = 4,500 1,800 = $8,100,000 Low bound = 8,100,000 0.75 = $6,075,000 High bound = 8,100,000 1.25 = $10,125,000

7. C = A Cr A = C / Cr A = 450,000 / 1,500 A = 300 m

8. Predicting a project's construction cost before it is built, so design decisions stay within budget.

9. C = A Cr - floor area times cost rate per unit area.

10. Early estimates use rough area rates; later ones use detailed quantity takeoffs from finished drawings.