JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

M.Tech-II Semester (CM)

COURSE CODE(CREDITS): 10M11CE213 MAX. MARKS: 25

COURSE NAME: Construction Cost Analysis

COURSE INSTRUCTORS: Mr. Kaushal Kumar MAX. TIME: 1 Hour 30 Minutes

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Note: (a)*All questions are compulsory.*

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

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Q1. Short Answer type: [***2x5 = 10 Marks***]

a) Why are construction contingencies used on early budget estimate?
b) What choices does a project owner have if the budget estimate is greater than amount of funding available for the project?
c) Why might a lump sum estimate be less than a budget or a guaranteed maximum price estimate?
d) What is the difference between "preconstruction cost" and "fee"?
e) Name three items of work that may be performed by a general contractor during the preconstruction phase.

Q2. Using the labor rates that follow, prepare a preconstruction services estimate for a 5- month preconstruction phase. Assume the contractor charges an hourly rate that has a 2.0 multiplier (billing rate of 2.0 times the actual hourly rate to cover corporate costs).

Assume the following team members and durations:

- Project Manager: 1 day per week
- Chief Estimator: 8 hours (assume 120% wage of project manager)
- Chief Scheduler: 8 hours (assume 80% wage of project manager)
- OIC: No cost
- Superintendent: 12 hours
- Project Engineer: 2 hours per week
- Company Labor Rates: Project Manager-$25 per hour
  Superintendent-$30 per hour
  Project Engineer-$20 per hour **[5 Marks]**

Q3. Develop a programming budget estimate for a 100,000 square-foot warehouse, assuming a square-foot cost factor of $60 per square foot. The site will be about 200,000 square feet with a site development cost of $3 per square foot. Use the same factors as shown in Figure 3-1 for other owner costs, except assume owner-furnished FFE will be about $1,000,000 and owner soft costs will be $800,000. **[5 Marks]**

Western Construction Company
550 South 7th Avenue
Kent, Washington 98002

Project: New Classroom Building, State University, Olympia, Washington
Estimator: Jerry Jackson
Estimate Date: January 15, 2003

Programming Budget Estimate

	Scope	Unit Price	Total
Building Construction	50,000 sq ft	$110/sq ft	$5,500,000
Site Development	200,000 sq ft	$5/sq ft	$1,000,000
Subtotal (Construction Costs)			$6,500,000
Programming Fees	Allowance		$50,000
Design Fees	6% of Construction Cost		$390,000
Geotechnical Investigation	Allowance		$100,000
Testing & Inspection Fees	3% of Construction Cost		$195,000
Permits & Fees	2% of Construction Cost		$130,000
Insurance	2% of Construction Cost		$130,000
Owner-Furnished Furniture, Fixtures, & Equip	Allowance		$1,500,000
Owner Soft Costs	Allowance		$2,000,000
Subtotal (Costs)			$10,995,000
Sales Tax	8% of Subtotal		$880,000
Owner Contingency	20% of Subtotal		$2,200,000
Total Budget Estimate			$14,075,000

FIGURE 3–1 Programming budget estimate.

Q4. Using a unit price recommended by the architect in the programming construction budget as given below. The size of the the project is 30,000 sq. feet. What would be the budget estimate have been if the anticipated size of the project were 35,000 square feet? **[5 Marks]**

Cascade Consulting Services
100 South 10th Avenue
Kent, Washington 98002

Project: Training Center
Estimator: Arnold Hopkins
Estimate Date: January 28, 2003

Schematic Design Construction Budget Estimate

System	Quantity	Units	Unit Price	Budget
Sitework (including sidewalks and landscape)	120,000	sf of site	$3	$360,000
Substructure (foundations and concrete slab)	27,000	sf footprint	$5	$135,000
Superstructure (tilt-up concrete panels and steel)	35,000	sf of floor	$8	$280,000
Enclosure (including windows and roof)	35,000	sf of floor	$6	$210,000
Finishes	35,000	sf of floor	$10	$350,000
Premium for welding shop	2,000	sf of floor	$25	$50,000
Bridge Crane	1	allowance	$70,000	$70,000
Elevator	2	stops	$15,000	$30,000
Mechanical	35,000	sf of floor	$7	$245,000
Electrical	35,000	sf of floor	$5	$175,000
Subtotal				$1,905,000
Contractor Markups (general conditions, fee, insurance, and taxes)			15%	$285,800
Subtotal				$2,190,800
Construction Contingency			10%	$190,500
Subtotal				$2,381,300
Rounding Adjustments				$18,700
Total				$2,400,000

FIGURE 4–2 Schematic design construction budget estimate.

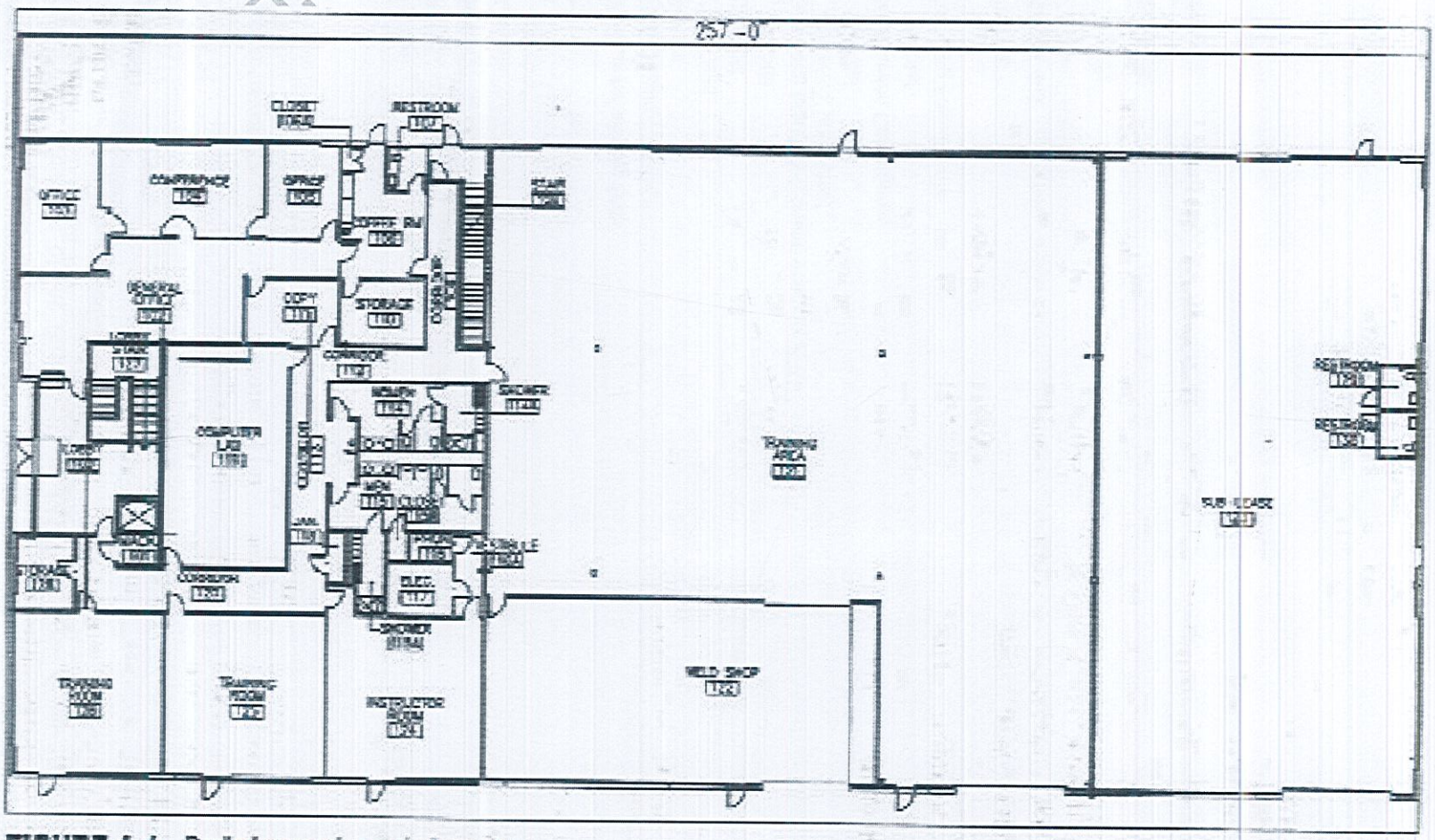

FIGURE 4–1 Preliminary schematic floor plan.