Construction Estimating Using Excel 3rd edition Peterson Test Bank

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ESSAY. Write your answer in the space provided or on a separate sheet of paper.

1) What is the definition of the quantity takeoff?

Answer: The quantity takeoff is where the estimator prepares a complete list of materials, labor, and equipment necessary to complete a construction project.

2) How does the quantity takeoff fit into the overall estimating process?

Answer: It must be complete before a company can determine the cost of materials, labor, and equipment, which are a necessary part of a complete bid.

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ESSAY. Write your answer in the space provided or on a separate sheet of paper.

1) Using Figures 34–3 and 34–4, determine the base cost per square foot for an 85,000–square–foot, steel–frame parking garage with face–brick over concrete block exterior.
   Answer: $81.70 per square foot

2) Using Figures 34–3 and 34–4, determine base perimeter for an 85,000–square–foot parking garage.
   Answer: 529 feet

3) Using Figures 34–3 and 34–4, determine the perimeter adjustment for an 85,000–square–foot parking garage.
   Answer: $1.80 per square foot

4) Using Figures 34–3 and 34–4, determine the story–height adjustment for an 85,000–square–foot parking garage.
   Answer: $0.85 per square foot

5) Using Figures 34–3 and 34–4, determine the added cost for a 12–inch by 18–inch traffic sign.
   Answer: $97.50 per each

6) What items would you include on an 8–foot–high, wood–framed, interior wall for a residence?
   Answer: The items should include: sole plate, wood studs, top plate, 1/2–inch drywall, paint, and base.

7) Your company just completed a 1,100–square–foot convince store for a client for $225,000. Next year, the same client wants to build a 1,300–square–foot convince store in the same city. Determine the estimated cost of the convince store using an inflation factor of 4 percent per year.
   Answer: First adjust for size using an E of 0.9 using Eq. 34–1 as follows:

$$\text{Cost} = \text{Cost} \times \text{TCM} = \$225{,}000\left(\frac{1{,}300}{1{,}100}\right)^{0.9} = \$261{,}504$$

Finally, adjust for inflation using Eq. 34–4 as follows:

$$\text{Cost}_{t+n} = \text{Cost}_t\,(1 + \overline{f})^n = \$261{,}504(1 + 0.04)^1 = \$271{,}964$$

Use $272,000

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8) Using Figures 34–3 and 34–4, determine the cost for a 180–foot by 269–foot, three–story, precast concrete parking garage with face–brick over concrete block exterior. The parking garage is expected to have a 460 parking stalls and one parking attendant booth. The average story height is 11.0 feet.

Answer: The area and perimeter of the parking garage is determined as follows:

Area = (180 ft)(269 ft)(3 stories) = 145,260 sf

Perimeter = 180 ft + 269 ft + 180 ft + 269 ft = 898 ft

From Figure 34–3, the cost per square foot for a 145,000–square–foot parking garage with precast concrete parking garage with face–brick over concrete block exterior is $66.80. From Figure 34–3, the base perimeter is 723 feet and the perimeter adjustment is $1.10 per square foot per 100 foot of perimeter. The perimeter adjustment is as follows:

$$\text{Perimeter Add} = \left(\frac{898\text{ ft} - 723\text{ ft}}{100\text{ ft}}\right)\$1.10/\text{sft} = \$1.93/\text{sft}$$

From Figure 34–4, the base story height is 10 feet and, from Figure 34–3, the adjustment for the story height is $0.65 per square foot per foot of height. The story–height adjustment is as follows:

Story–Height Add = (1 ft) ($0.65/ft–sft) = $0.65/sft

The base cost per square foot is as follows:

Cost = $66.80 + $1.93 + $0.65 = $69.38/sft

The base cost is calculated as follows:

Cost = (145,260 sft) ($69.38/sft) = $10,078,139

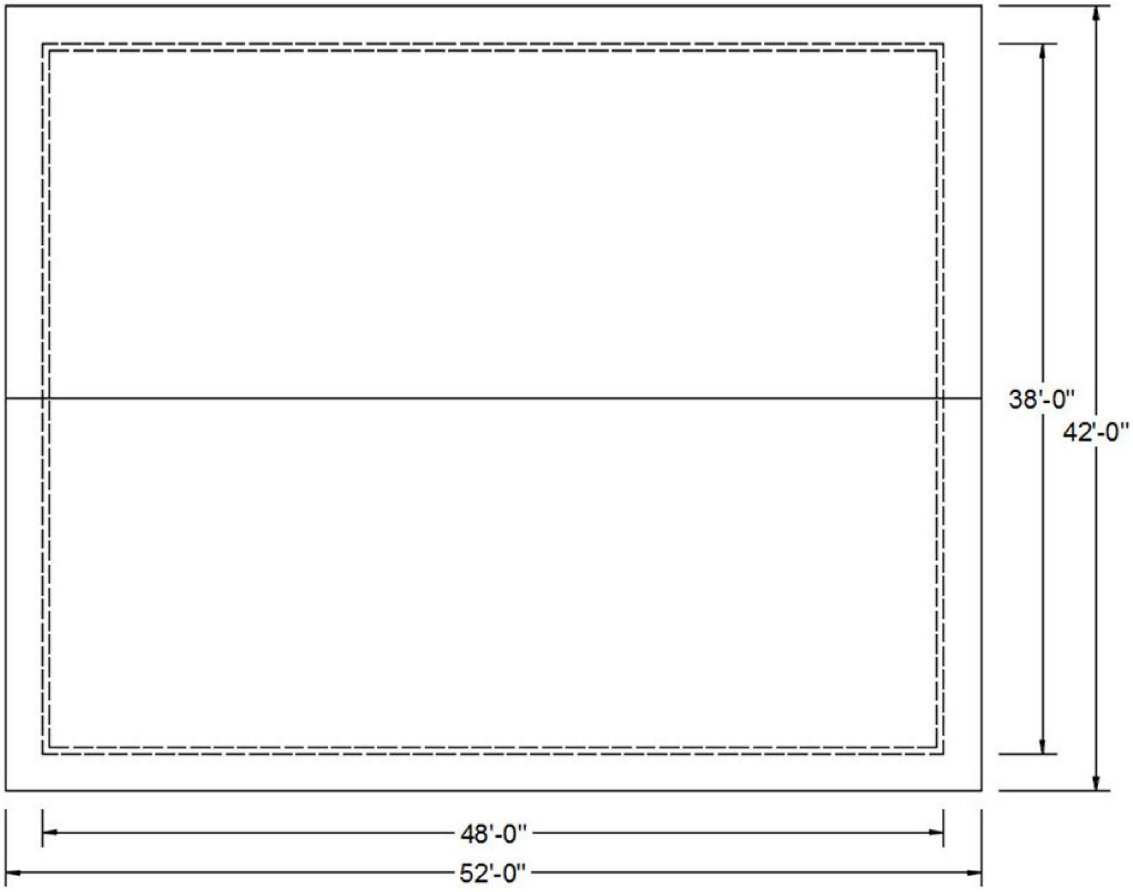
Add the following costs to the base cost: one 3500# elevator at $173,000; parking booth at $13,800; 460 painted parking stalls at $8.60 per stall; and 460 precast parking bumpers at $63.00 per stall.

Cost = $10,078,139 + $173,000 + $13,800 + 460($8.60 + $63.00) = $10,297,874

Use $10,300,000

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9) Roof Takeoff Workbook from Chapters 33 and 34
Using the worksheet from Chapters 33 and 34, prepare a bid for the following roof. The slope of the roof is 4:12, the shingles are to be 20–year three–tab, the underlayment is to be 15# felt, the vents are to be turtle, there are two HVAC flashings, and one plumbing flashing.



Answer: **Takeoff**

Client Information

Name:	
Address:	
City:	
State:	
Zip Code:	
Phone #:	

Project Information

Name:	
Address:	
City:	
State:	
Zip Code:	
Phone #:	

Roof Information

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Roof Slope:	4	:12
Shingle Type:	20–year Three Tab	
Underlayment:	15# Felt	
Ridge(s):	52	ft
No. of Ridges:	1	ea
Hip(s)/Valley(s):	--	ft
Horiz. Perimeter:	104	ft
Sloped Perimeter:	84	ft
Horiz. Counter:	--	ft
Sloped Counter:	--	ft
HVAC Flashings:	2	ea
Plumbing Flashings:	1	ea
Vent Type:	Turtle	
Plan View Area:	2,184	sft
Unit Price:	1.52	/sft

Roof Area

Area	Length	Width
1	52	42
2		
3		
4		
5		
6		
7		
8		
9		
10		

Bid

Bill To:	Ship To:

Materials	Quantity	Unit Price	Total
20–year Three Tab	71 bundle	12.39	879.69
20–year Three Tab Cap	3 bundle	15.75	47.25
Roofing Nails	25 lbs	1.39	34.75
15# Felt	8 rolls	14.95	119.60
Underlayment Nails	40.0 C	1.00	40.00
10' Drip Edge	20 ea	2.99	59.80
10' Counter Flashing	-- ea	3.99	--
20' Ridge Vent	-- ea	42.00	--
Turtle Vents	18 ea	7.00	126.00

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HVAC Flashing	2 ea	9.00	18.00
Plumbing Flashing	1 ea	4.00	4.00
		Subtotal	1,329.09
Tax (6.5%)			86.39
Roofing Crew	59.6 lhrs	35.00	2,086.00
		Total	3,501.48

Half of the payment is due at delivery of materials. The remaining payment is due upon completion of the roofing.

By: _____. Date: _____.

Pricing Data

	Item	Price
Shingles		
20–year Three Tab	12.39	$/bundle
25–year Architectural	15.98	$/bundle
30–year Architectural	16.65	$/bundle
40–year Architectural	17.35	$/bundle
Cap Shingles		
20–year Three Tab	15.75	$/bundle
25–year Architectural	31.29	$/bundle
30–year Architectural	33.29	$/bundle
40–year Architectural	35.29	$/bundle
Underlayment		
15# Felt	14.95	$/roll
30# Felt	13.95	$/roll
Flashings & Vents		
Drip Edge	2.99	$/ea
Counter	3.99	$/ea
Ridge Vent	42.00	$/ea
Turtle Vents (61 sq in)	7.00	$/ea
HVAC Pipe Flashing	9.00	$/ea
Plumbing Flashing	4.00	$/ea
Nails		
Roofing Nails	1.39	$/lb
Underlayment Nails	1.00	$/C

Item	Labor Productivity	
20–year Three Tab	2.50	lhr/squ
25–year Architectural	2.80	lhr/squ
30–year Architectural	3.00	lhr/squ
40–year Architectural	3.20	lhr/squ

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