

CEE 4333 - Estimating Planning and Control

Fall 2005

Amlan Mukherjee

Homework 3

Homework due: 09/28/05, in class

Enjoy!

September 21, 2005

Problem 1

Estimate the amount of material required to build a 650 ft long, 6 ft high, 1.5 ft thick foundation wall. Concrete will be poured on site following a 1 : 1 : 1.75 mixture by volume. The wall reinforcement will consist of horizontal and vertical steel bars. The horizontal reinforcement is made up of #4 bars spaced one foot on center on each face of the wall. The vertical reinforcement is made up of U-shaped #2 bars located every 2.5 ft along the wall. Finally, the 180 lb/CF concrete will be poured at a rate of 3ft/hour. The concrete temperature is expected to be 60°F. *15 Points*

Problem 2

Text book Problem 15.2

10 Points

Problem 3

Text book Problem 11.1

15 Points

Problem 4

Estimate the cost of 68 concrete beams for a building. The beams are 12 in wide, 22 in deep and 34 ft long. The forms will be used 4 times and be constructed with plywood and dimension lumber. Estimate the total cost and cost/SFCA (square foot contact area). Use data from RS Means. *15 Points*

Problem 5

Text book Problem 10.7

15 Points

Problem 6

An owner is performing an analysis to determine the type of carpet to install in his 30-floor office building. Two major suppliers have made offers. Brand A offers a medium traffic nylon carpet for \$18 per SY and gaurantees 4 years without replacing. Brand B offers a heavy traffic nylon carpet for \$27 per SY and gaurantees 6 years without replacing. It is estimated that laborers would install 10 SY per hour and that the labor cost (wages + benefits + taxes) will be \$25 per hour.

10 Points

Which brand is better (lower cost per SF) under a life cycle cost analysis? Assume an inflation rate of 2.5% and a market rate of return of 10%.