

# CEE 4333 - Estimating Planning and Control

*Fall 2006*

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## **Homework 3**

**Homework due: 10/11/06, in class**

**Enjoy!**

September 27, 2006

### **Problem 1**

Estimate the amount of material required to build a 650ft long, 6ft high, 1.5ft 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 2.5ft 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 12in wide, 22in deep and 34ft 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%.