COURSE OBJECTIVES

Construction Estimating

SUR 245-4

GENERAL OBJECTIVES:

1. This course has courses Quantity Surveying 1 and 2 as prerequisites and as such its main objective is to develop in the student the art and skill whereby a monetary value can be placed on the volume of work previously measured.

2. To develop an awareness of those factors that affect the cost of construction work and to analyze the influences that effect change in these factors.

3. To encourage the habit of systematically recording all those statistics which are the stock in trade of the good estimator.

SPECIFIC OBJECTIVES:

Unit 1 - General Introduction to Estimating

1. Identify and differentiate between the two types of estimate.

2. Prepare a format for preparation and presentation of an estimate.

3. Draw up a check list for estimate control.

4. Define a lump sum estimate.

5. Define a unit cost estimate.

6. Identify the main sources of current and forecast labour rates.

7. Give at least three sources for labour production rates.

8. Calculate the production rates of a variety of tradesmen in a given job example.

9. List the factors that contribute to the estimation of overhead costs.

Unit 1 - Continued ...

10. Describe the types of taxes peculiar to construction work.
11. Identify the nine forms of insurance normally employed in the construction industry.
12. Identify the purpose and costs of the three forms of bond used in construction industry.
13. List the factors affecting the selection of a profit value on a bid.

Unit 2 - Equipment Costs

1. Identify and differentiate between eight different ways of acquiring construction equipment.
2. List the three main methods of computing a value for depreciation.
3. Calculate a depreciation rate using the straight line methods.
4. Calculate a depreciation rate using the declining balance method.
5. Calculate a depreciation rate using the sum of the years digits method.
6. Calculate the cost of maintenance and repair for a given piece of equipment.
7. Assess the investment costs incurred in plant purchase.
8. Describe the basis for estimating both fuel and lubrication changes.
9. Estimate the inclusive hourly rate for any given piece of equipment excluding operator charges.

Unit 3 - Handling and Transportation

1. By estimation determine the optimum manning for an unloading job.
2. Estimate the lump sum and unit cost estimate for loading, transporting and unloading of any civil engineering material.

Unit 4 - Excavation and Earthworks

1. Prepare an estimate for land excavation.
2. Prepare an estimate for trench excavation to justify machine selection.
3. Estimate the unit cost of an excavation using a power shovel.
4. Employing the techniques from units 2 and 3, estimate the total cost of both operating and owning a power shovel.
5. Calculate the shrinkage factor for a given excavated material.
6. Estimate the total cost and unit cost for the excavation and transportation of any known subsoil.
7. Estimate the cost of excavation, transportation and deposition of any subsoil using tractor scrapers.
8. Estimate the cost of drilling and blasting a given bed of rock.
9. Plan and estimate a water table lowering scheme.

Unit 5 - Highways and Pavements

1. Prepare a total cost estimate for clearing a heavily treed bush lot.
2. Prepare a detailed total and unit cost estimate for a given length of reinforced concrete highway.
3. Prepare similar estimates for an asphalt highway.

Unit 6 - Concrete Construction

1. Using an original design prepare a material take-off and bid estimate for the formwork to concrete retaining wall.
2. Prepare an estimate for the formwork and support for a section of beam and slab flooring.
3. Prepare a take-off and estimate for the cutting, bending and placing »f the reinforcement in an R.C. structure.

Unit 6 - Continued ....

4. Estimate the total and unit cost for making, transporting, placing and curing the concrete for a given structure.

Unit 7 - Floors and Floor Finishes

1. Estimate the cost of labour in hand finishing any given insitu floor finish.
2. Re-estimate #1 using power equipment.
3. Estimate the unit cost of both labour and materials for any tiled floor finish.
4. Estimate the total and unit cost for a given metal deck floor system.
5. Estimate the unit cost for a given composite (concrete and steel deck) floor.

Unit 8 - Unit Prices

1. Calculate unit cost per cubic metre for a reinforced concrete structure.
2. Calculate unit cost per square metre for a given highway project.
3. Calculate unit cost per cubic metre for an earth dam.

Unit 9 - Sub Contracts

1. Prepare a bid invitation for a sub-trade.
2. Prepare a bid analysis for a given sub trade.