

2016

Brentwood Open Learning College

Construction Management Short Course Assessment

This document is the answers to the assessment of the short construction course.



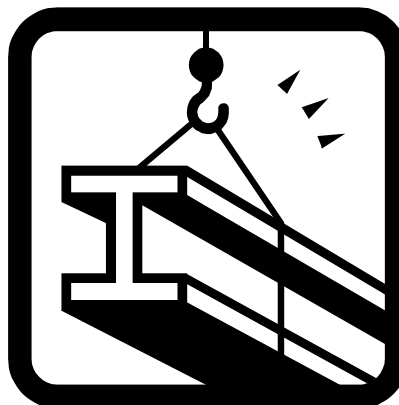
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09 November 2016





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1. DISCUSS KEY FEATURES OF THE MODERN CONSTRUCTION INDUSTRY.

A. Complexity

- **Modern construction industry is highly mechanized and complex.**
 - ✓ It involves complex interactions between a vast array of resources all interconnected into thousands of activities that may overlap simultaneously or in sequential discrete steps or even randomly

B. Uniqueness

- **No two projects are ever the same**
 - ✓ Each project is unique and defined by the nature of the site of construction and is also influenced by the weather, as well as, the ground conditions due to various site locations.

C. Mobility of Facilities

- **Construction industry requires moving resources such as labor, equipment etc., from one place to the other to create products under dynamic and hazardous working conditions.**

D. Multiplicity of Agencies

- **Many agencies are involved in construction projects from the conception of the product through to the completion of the project**
- **Each agency is expected to play a role in the project lifecycle for example:**
 - ✓ Governmental agencies
 - ✓ Land authorities
 - ✓ Planning agencies
 - ✓ Fire department
 - ✓ Town and country planning council





E. Organization

- **3 groups of people normally involved in a typical construction project**
 - ✓ **The Owner**
 - *Expected to exercise control of the finance and quality control*
 - ✓ **Engineering group**
 - *Ensures structural and aesthetic integrity*
 - *Managers*
 - *Architects*
 - *Structural engineers*
 - *Civil engineers*
 - ✓ **Construction group**
 - *Contractor motivates the workforce to execute the work professionally and to a very high standard to meet the deadline*
 - *Contractors and*
 - *workers that perform the actual work*
- **Main categories of activities of a construction project**
 - ✓ Design and planning
 - ✓ Executing construction work
 - ✓ Supervision and inspection

F. Finance

- **Financial activities involved in construction can be classified into the following categories**
 - ✓ Investments in fixed assets
 - ✓ Tools
 - ✓ Equipment
 - ✓ Machinery
 - ✓ Short term finances to meet the cash flow requirements
 - ✓ Earnest money
 - ✓ Security deposits
 - ✓ Investments in future
 - ✓ Education & Training
 - ✓ Research
 - ✓ Development of HR and technologies
 - ✓ Overheads
 - ✓ Salaries
 - ✓ Establishment expenses
 - ✓ Advertisement
 - ✓ Public relations
 - ✓ Legal expenses
- **Funding sources include credit facilities, loans, and securities. Most times, the construction industry experiences cash flow issues due to the blockage of security deposits, earnest money, and delayed payment of bills, among many other impediments.**





G. Management

- Most companies HQs are far from the project site, it becomes difficult for management to provide direct supervision and control of activities.
- It is imperative to have well-trained personnel who would execute their mandate activities professionally and on time to achieve satisfactorily high quality products

2. OUTLINE THE DUTIES OF A CONSTRUCTION SUPERVISOR.

A. The Supervisor

- The Supervisor is the link between workers and top management levels.
- They operate at first Line management
 - ✓ 3 management levels
 - **Top Level**
 - Formulate objective and policies
 - **Mid Level**
 - Procurement of materials, labour and equipment management
 - **First Line**
 - **Construction supervisor**
 - Making sure that all work meets the right quality, cost doesn't overrun budget due to mistakes and the work is completed on time.

B. Duties of a Construction Supervisor

- The main duty of the construction supervisor is to motivate and coordinate activities of other workers to get the job done on time
 - ✓ The supervisor instructs workers on what to do
 - ✓ Motivates workers to accomplish all objectives
 - ✓ Encourages teamwork spirit
 - ✓ Ensure workers are disciplined
 - ✓ Deal with all manner of conflicts arising at the work site
 - ✓ Promote a good relationship between the workers and the general public
 - ✓ Ensure plans and schedules are adhered to by regular inspection and quality control
 - ✓ Trains and develops the workforce to meet new challenge





3. WHAT IS THE QUICK METHOD OF APPROXIMATE ESTIMATE? DISCUSS THE ESTIMATING PROCEDURE IN DETAIL.

A. What is the quick method of approximate estimate?

- **Two main steps are required to quickly estimate the approximate cost of new structures:**
 - ✓ The first step involves finding the total units for constructing the structure based on the physical dimensions such as the area, volume or length.
 - ✓ Next, multiply the figure obtained in step 1 by the cost of structure per unit

B. Discuss the estimating procedure in detail.

- **Items and Units**
 - ✓ Estimator creates a list of activities that need to be performed
 - ✓ The list can be used for the Bill of quantities and tendering and making payments to contractors
 - ✓ Activities that can be undertaken include
 - Lineout
 - Excavation
 - ✓ Units of measurement are determined based on length, width, height, are or volume of various components of structures
- **Taking off. The dimensions**
 - ✓ The items listed above will require a suitable dimension being taken off. Materials and the drawings done in appropriate units for each.
 - ✓ The Liné out and excavation should result in a list consisting of items, their quantities and matching units.
 - ✓ All items are priced per unit
 - ✓ Each construction item requires materials, labour and equipment. Create applicable rates for them.
- **Materials Rate**
 - ✓ The material quality for each item should be known by the estimator base on the exact specifications given.
 - Suppliers usually provide price quotations for the materials. The material rate should also include the following costs in addition to the suppliers quoted price
 - Transport of the material
 - Loading and unloading
 - Handling on site
 - Storing, watch and ward
 - Wastage to cover breakage, losses, theft which may vary from 2%-10%





➤ **Labour Rate**

- ✓ Calculation can subsequently be made for the cost of labour per head for each day. This includes:
 - Basic wage primarily governed by the prescribed minimum wages or fair wages
 - Payment for inclement weather when the labour reports to work but cannot be assigned any work or can do work only for a part of the day due to unfavorable weather or heavy rains
 - Paid holidays
 - Expenditure incurred on travel, labour camps
 - Overtime payment
 - Sickness benefits
 - Insurance
 - Any other payment as per statutory requirement
 - Conveyance of labour
 - Items (b) to (i) form a percentage of the basic wage

➤ **Equipment Rate**

- ✓ The equipment's rate can be calculated using the quantity of item and the output of the equipment. It is performed based on the total hours the equipment can be put to work (equipment Hours) or the required unit output expected of each item. The following lists are considered when determining the equipment rate:
 - Cost of capital investment
 - Depreciation
 - Cost of fuel and lubricants
 - Repairs and maintenance
 - Salaries of operators and helpers
 - Allowance for potential idle time
 - Insurance
 - Any other related expenses
- ✓ The material rate, labour rate and the equipment rate are used to calculate the unit rate for each of the items and then subsequently, the overall cost of each item. Lump sums are quoted in cases where the cost of the item cannot be determined by measurement. This is usually obtained using past experience or based on the work content of the item.
- ✓ The costs that have been determined above collectively make up the cost associated with the actual work. The following costs should also be added:
 - Expenditure on surveys, data collection, design, drawings, and estimating
 - Land acquisition
 - Establishment required during the execution of work
 - Allowance for unforeseen works that may be found necessary in the course of execution
 - Overhead expenses, which are meant to be incurred on site, as well as, in the head quarters
 - The cost of work plus the additional associated cost summed up to give the total cost of the project.





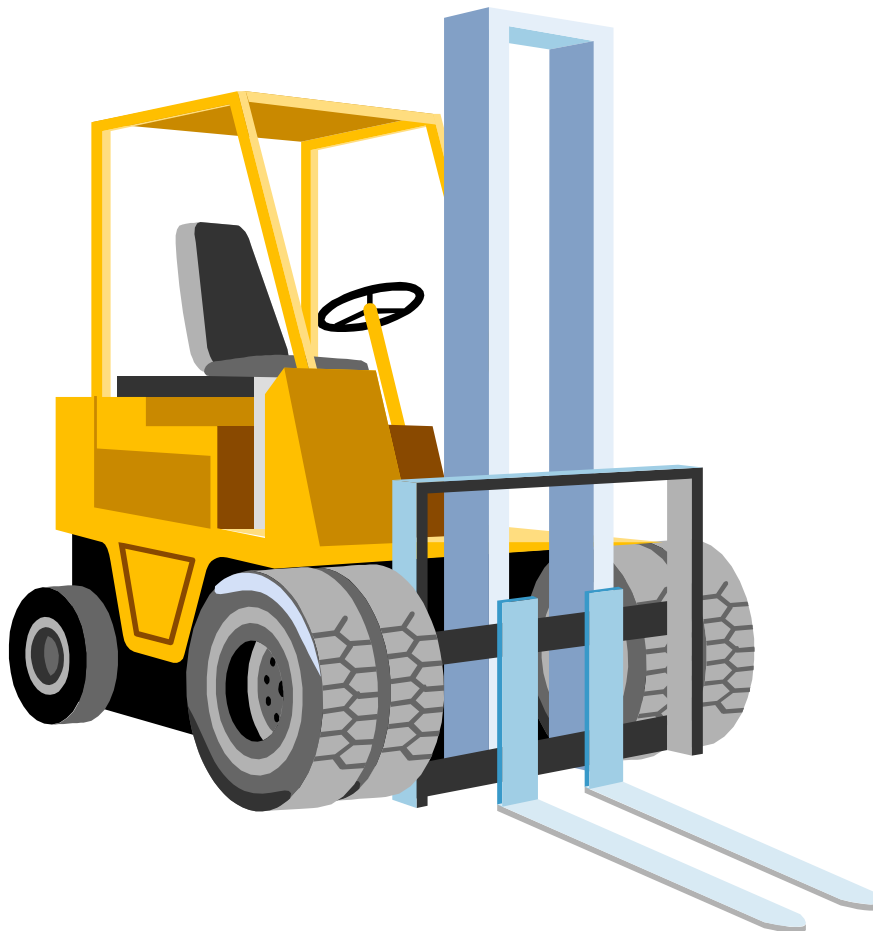
➤ **Project Approval**

✓ **Administrative Approvals**

- The approval is given by a competent authority at the user department.
- If for example, the health department wants to construct a hospital, it may contact the Public Works Department to carry out feasibility studies, provide layout drawings and specification to enable initial cost estimates to be determined as explained in the previous paragraph.
- The owner of the project (user department) is provided with the drawings and cost estimates for him/her to give the go ahead when the proposals from the Public Works Department are deemed acceptable.
- The above process is known as the administrative approval.

✓ **Technical Sanction**

- When the user department (owner) gives his approval for the initial drawings and cost estimates, the Public Works Department goes ahead to provide detailed design, drawing and cost estimates.
- Detailed reports must be approved by a competent person(s) at the Public Works Department.





4. DISCUSS THE FACTORS INVOLVED IN EQUIPMENT SELECTION? WRITE THE ADVANTAGES AND DISADVANTAGES OF PURCHASING EQUIPMENT?

A. Discuss the factors involved in equipment selection?

The following factors should be considered when selecting equipment to perform a function:

- ✓ **Equipment Productivity**
 - Determining the ideal size of equipment required to undertake task of known quantity and at a competitively low cost can be quite tricky.
 - The best way to tackle such problem of ideal equipment size is to use past experience from suppliers of the equipment and the owner's own experience.
 - Determine what is the primary use of equipment and also, identify other potential secondary functions.
 - The primary usage is what determines the size of equipment and the extra features or attachments that would be suitable for the equipment to perform productively.
- ✓ **Product Features and attachments**
 - Evaluate the impact of these extra gadgets on the overall performance of the equipment you are thinking of enhancing.
 - Careful analysis should determine all advantages and disadvantages of procuring attachments before actually renting or purchasing them.
- ✓ **Supplier Support**
 - The equipment supplier is expected to play a crucial role in the lifetime of the equipment
 - Support may involve:
 - regular inspection of equipment's,
 - Serving and pre-negotiated price of purchasing the equipment from the owner.
 - Alternatively, the arrangement could entail getting and using the equipment on short or long term lease.
- ✓ **Cost**
 - The cost of equipment should be considered with:
 - cost of servicing,
 - maintenance and repairs and
 - reselling





B. Write the advantages and disadvantages of purchasing equipment?

It is usually more economical to purchase the equipment if it is for long term use, while it is better to rent when short term use is being considered. To help in making the right decision with regards to which approach to choose, cost analysis should be carried out.

- **To acquire additional equipment, the contractor may:**
 - ✓ Purchase
 - ✓ Rent with option to purchase the equipment
 - ✓ Lease the equipment

C. Advantages of Purchasing Equipment

- **Regular availability of equipment**
- **Frequency of use is higher**
- **Equipment is likely to be well-maintained**

D. Disadvantages of Purchasing

- **It is more expensive**
- **There are opportunity costs of using personal finance to purchase equipment. It could be used for other investments**
- **Equipment may become obsolete with time as newer ones arrive on the scene**
- **Purchasing specialize equipment may close the door to other profitable opportunities somewhere else which would require the use of different equipment**
- **There is temptation to use the equipment beyond its expected lifetime resulting in lower productivity**

