

TOPIC 7: OVERVIEW OF THE CONSTRUCTION ESTIMATING PROCESS

By

Dr. Mohamad Syazli Fathi
Lecturer
Universiti Teknologi Malaysia

INTRODUCTION

- Estimating is the fundamental process of the construction industry that answers the question “How much is the project expected to cost?”.
- The estimate will serve as the basis for developing the job costing system and the construction schedule. The job costing system compares the actual cost of a project to specific line items of the estimate.
- The data will tell which items need more cost control during the construction process.
- The duration of the various activities in a construction schedule will be derived from the estimate.

INTRODUCTION – cont. 1

- The estimator starts by studying the drawings and specifications then accurately lists the required quantities of materials and finally prices the estimated quantities.
- However, many additional factors can affect the future events of construction: labor productivity, material availability, financial markets, weather, constructability issues, equipment availability, contract types, ethics, quality issues, control systems, management ability and so on. For these reasons it is important that the estimator have a good understanding of the total construction process.

THE SUCCESSFUL ESTIMATOR

The most important qualifications of a successful estimator:

1. Ability to read and interpret drawings and specifications
2. Good communication skills
3. Knowledge of basic mathematics
4. Patience and ability to do careful, thorough work
5. Good understanding of field operations and procedures
6. Ability to visualize the three-dimensional project from looking at the drawings
7. Ability to identify risks and then neutralize them as much as possible
8. Ability to anticipate all the construction steps in building the project

THE SUCCESSFUL ESTIMATOR – cont. 1

9. Good organizational ability, to communicate the estimate in a logical and clear presentation
10. Ability to produce or help produce a construction schedule
11. Good understanding of labor productivity and equipment performance
12. Understanding and ability to use the construction company's job costing system
13. Ability to recognize when the construction company's standards for estimating costs do not apply to a particular line item in the estimate

THE SUCCESSFUL ESTIMATOR – cont. 2

14. Understanding of the contractual relationships
15. Creativity and ability to think of alternative construction method
16. Ability to develop a strategy for being successful in the bidding and negotiating phase of the project
17. Ability to meet deadlines and still remain calm
18. A solid code of ethics

TYPES OF ESTIMATES

- Estimates are performed throughout the construction process. The success or failure of a project depends on the accuracy of several major estimates.
- The types of estimates are:
 1. Feasibility Estimates
 2. Conceptual Estimates
 3. System estimate (Elemental Estimates or Parametric Estimates)

FEASIBILITY ESTIMATES

- ▶ The purpose is to determine whether or not the project should be built.
- ▶ The project must be a sound economic investment for a private owner.
- ▶ The cost of the construction is only one part of a feasibility estimate.
- ▶ Before the process can begin the owner will also need to consider the following costs: land, design, tax depreciation, investment tax credit, capital gains, annual maintenance and repairs, and financing. All of the costs have to be compared to the expected gross income on an annual basis. The net income can be estimated. The owner can make a decision based on the economics of the process.

FEASIBILITY ESTIMATES – CONT. 1

- ▶ A person responsible for a feasibility estimate must have the skills required to make a complete and reliable estimate, must be knowledgeable of the expected life of construction materials, accounting principles, current related tax laws and an awareness of design.

CONCEPTUAL ESTIMATES

- ▶ Typically, several iterations of the building design will be needed before a final decision is made. Each iteration is accompanied by a cost estimate called a conceptual estimate.
- ▶ The estimator must conceptualize the completed building before it is fully designed.
- ▶ The estimate may have to be revised several times throughout the design process as the aesthetics and materials are determined.
- ▶ Design&build and construction management depend heavily on conceptual estimates. These project are usually built on a fast track or phased construction process. If the conceptual estimate fails to provide reliable information,

CONCEPTUAL ESTIMATES – cont. 1

the owner may start the project only to find that there is not enough capital to complete it as originally designed.

- ▶ The pricing data of the conceptual estimate will come from the details of similar projects, summarized into work packages and applied to the project being estimated. A reliable cost data bank will have to be developed for the conceptual estimating process. Adjustments for economic conditions and geographical location must be made. It is also important to clearly define the elements of the data bank so there will be no misunderstanding on what information is included.

SYSTEM ESTIMATE

- ▶ The system estimate is also known as an elemental or parametric estimate.
- ▶ This method has the potential of being the most accurate of all the conceptual estimating methods.
- ▶ With the systems approach, the project is first divided into functional system. The construction company will need to define what is included in each system. However, the systems are usually all-encompassing.
- ▶ Ex: the exterior wall system could be defined as exterior face brick, sheathing, steel studs, insulation, interior gypsum board, taping and interior painting. All of the individual components form one unit of measure in square feet of exterior wall.

SYSTEM ESTIMATE — cont.1

- ▶ The pricing is accomplished by multiplying the square feet of wall by a unit price that includes all the elements of the system.
- ▶ The unit pricing may be determined by summing all of the unit prices of the elements of the system or by multiplying the system takeoff unit by a factor from the company historical data bank.

SOURCES OF ESTIMATING INFORMATION

- The best sources of information for estimating costs is a company's own past experience.
- Information about the actual quantity of materials installed, the actual number of labor or work hours and the actual equipment hours required to perform each task is invaluable information to the estimating and project control process. It is important that accurate field information be received to develop the estimating information data bank.

RISKS IN ESTIMATING

- The environment that surrounds the construction cost estimate is very risky. The estimator should try to identify as many of those risk areas as possible.
- Risk can be decreased by making as few assumptions as possible, doing the estimate in a methodical fashion and making logical decisions.
- The risk can be divided into risks associated with the project and risks associated with the process of estimating.

RISKS IN ESTIMATING — cont.1

- Some of the ways to identify uncertainties associated with the project:
 1. Study all documents associated with the project thoroughly, including those that are referenced in the contract documents.
 2. Make a site visitation before the bid
 3. Investigate the financial capabilities of the owners and their ethical business relations
 4. Identify responsible subcontractors and material suppliers that can meet the demand of the project
 5. Develop a strategy for getting the project
 6. Identify clauses in the specifications that are open-ended or would transfer risk to the construction firm
- Etc.....

ETHICS IN THE ESTIMATING PROCESS

- High ethical standards should be maintained during the estimating process.
- Guidelines for setting prices and receiving quotations that are fair and equitable to all parties should be developed.
- Acts of collusion or conspiracy with the implied or express purpose of defrauding clients, supplies or subcontractor should be forbidden by the construction company. The estimator should use business practices that are fair and honest when dealing with subcontractors, materials suppliers, designers and owners.
- The practice called "bid peddling" or "bid shopping" by general contractors should be discouraged.