



BULE HORA UNIVERSITY

COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Construction Technology and Management

Cost Engineering

Chapter – Two

Construction Contract and Pricing

Tendering Policy and Procedure

- For any **firm** to operate its business in a satisfactory manner, it is necessary for its policy directors to establish **a clear objectives or a strategy**.
- This strategy often depends upon **many factors** which the management body of the contractor has to make a thorough analysis of the situations at hand and take up appropriate competitive advantage.

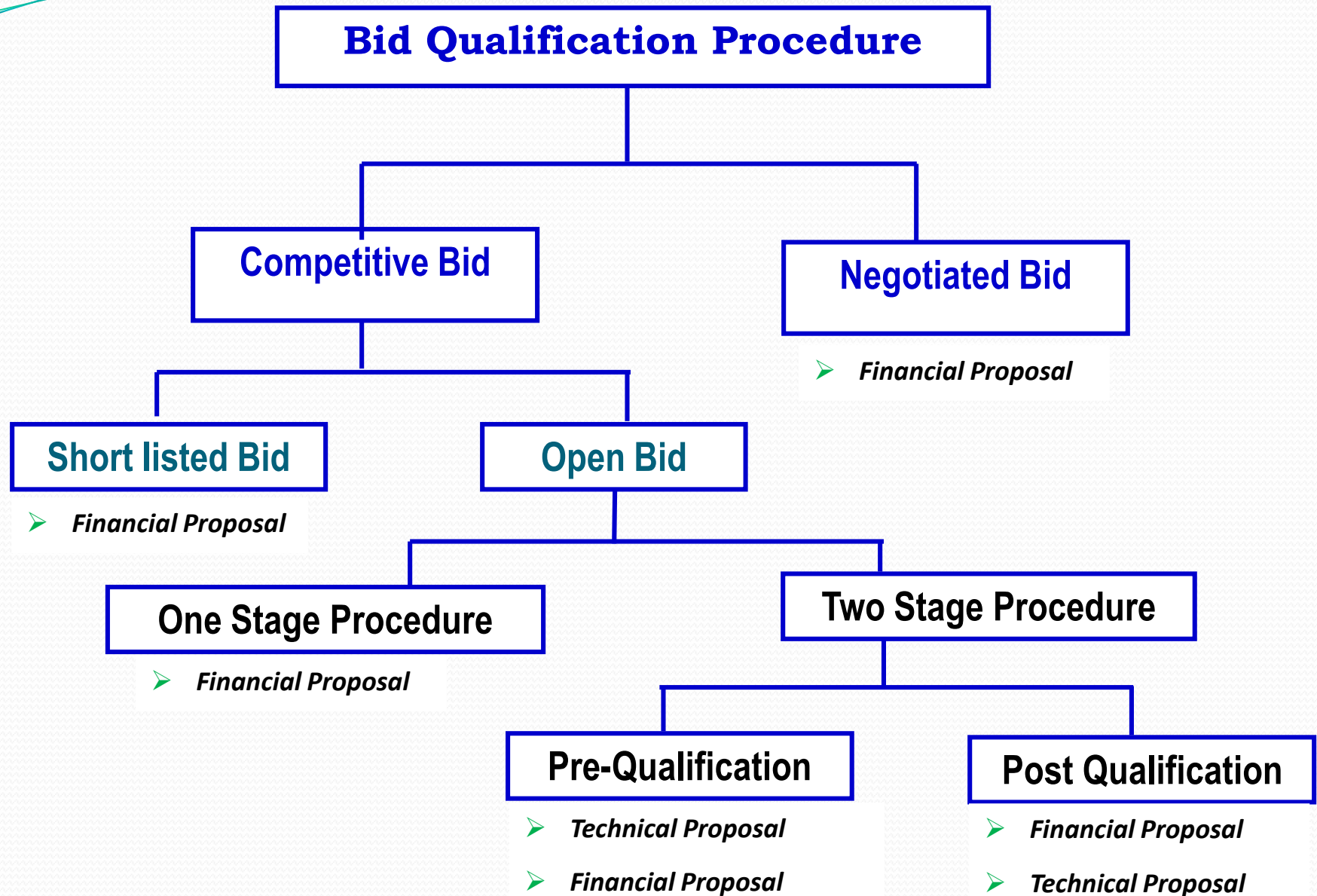
Factors that need to be considered in construction pricing

- Work at hand
- The geographical areas in which the firm will operate,
- Type of structure the organization seek to control,
- Type of client the organization is to favor, (private, local authority, community services,)
- Projected risks and uncertainties of the project,
- Form of the bid: (open, short-listed, pre-qualification, etc)

Bidding Strategy

- ❖ In a competitive tendering situation, the contracting firm is constantly facing a tradeoff of submitting a **high price for getting profit** and the resulting shortage of work, with that of a **low price for winning the contracts**, but allow little profit margin.
- ❖ Develop a bidding strategy to determine the **optimum bid**.

A competitor's bid could be obtained from the list of tender results and a bidding pattern established.



Tendering Procedure

In order that the tendering policy of the firm be maintained it is necessary that a procedure for the preparation of all tenders be established. This will vary with different contractors, depending on size and personnel.

Decision to Tender:

A management decision based on the firm's position at the time of invitation in relation to:

- ❖ Production workload
- ❖ Future commitments
- ❖ Market Estimating workload
- ❖ Capital
- ❖ Associated risk
- ❖ Prestige, reputation
- ❖ Time for preparation of tender

Collection of Information:

If management decides to tender for the project, the estimating staff should assemble information about project costs. An accurate estimate can only be produced when each element is broken down into its simplest terms and the cost estimated on factual information.

Some of the factors required include:

- Time scale for tendering with key dates as mentioned in the invitation to bid.
- Examination of contract documents, with preliminaries attached with the tender.
- Assessment of client and design team,

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- Enquiries to suppliers and sub-contractors with a time scale,
 - Site and locality visit,
 - Discussion with site management, plant and planning department,
 - Evaluation of alternatives
 - Preparation of detailed construction method statement and pre-tender programme, developed to include production outputs, gang sizes, plant details, etc.



Preparation of Estimate:

Having assembled all the information, the next task of the estimating staff is to build the cost of the unit rates. This requires the calculation of all-in rates for labor, plant, materials and extending these, using the production details from the pre-tender programme. The cost of any on site administration and services, known as project overheads is also calculated. These net production costs, together with a project appraisal report are then submitted to management for adjudication.

The Tender:

The management of the firm would consider the mark-up required on the estimated production costs, to cover the firm's overheads, profit and risk of the tender. These additional costs included, the tender figure can then be determined and submitted.

Action with Tender results:

An analysis of tenders and a comparison of results should be completed for each project to provide a basis for future bidding strategy. With a successful tender, cost information during the progress of the work and a final reconciliation of estimated and final account costs should be made.

Firm's Mark-up Target:

In a construction firm the financial turnover will be mainly derived from carrying out individual construction projects in competition with other contractors. It is necessary, therefore, that a policy be established in tendering so that each project contributes to the firm. This will entail the setting up of a mark-up target, over the production costs, for all contracts to be undertaken. To determine firm's mark-up, it is required establish:

- ❖ **Return on Capital Employed (ROCE)**, which is made to account the following costs:
 - The average weighted cost of capital (Interest of capital employed)
 - Profit margin (dividends, capital reserves)
 - Corporate obligations such as taxations and depreciation costs.
 - Contingencies to cover uncertainties (Risks)

❖ Annual Turnover on contracts:

This can be obtained from the firm's short-term plan committed or planned for execution in the current year.

❖ General overhead costs (off-site administration):

Can be identified within a company's accounts by items such as rent, telephone charges, electric bills, office equipment hire charges, payment to staff directors etc. Often it is established in relation with the total turnover planned in the trading year.

- **ROCE**= Given as percentage of capitals Employed which includes all about average weight cost, profit, taxations, and contingences(risks)
- **GOH** = given as percentage of Turnover in the year.
- Head office mark-up= $GOH + ROCE$
- Production cost = Turnover – head office mark up
- Mark-up at individual project= $(H.office\ markup/PC) \times 100$

• Example

Determination of Firm's Mark-up,

❖ Example

- Capital Employed: Birr 2,000,000
- Turnover on contracts for year: Birr 4,000,000
- General overheads: Birr 160,000
- Return on Capital Employed is given as following;
 - The average weighted cost of capital 6%
 - Profit margin 5%
 - Corporate obligations (taxations and deprecation costs).....4%
 - Contingencies to cover uncertainties (Risks).....2%

Then calculate:

- ROCE
- Head office mark-up
- Production cost
- Mark up at individual project

- v. If last years turnover was 2,000,000 birr and the fixed costs was 160,000 birr then express general overheadcost interms of percentage of previous turnover cost.

Solution

i, $ROCE = \% \times CE = 17\% (2,000,000) = \text{Birr } 340,000$

ii, Head office Mark-up = $GOH + ROCE$
 $= 160,000 + 340,000$
 $= \underline{500,000 \text{ Birr}}$

iii, Production Costs = $\text{turnover on contract} - \text{H.office mark-up}$
 $= 4,000,000 - 500,000$
 $= \underline{3,500,000 \text{ Birr}}$

iv, Mark-up at indiv. Proj. = $(\text{Head office mark-up} / PC) \times 100$
 $= (500,000 / 3,500,000) \times 100$
 $= \underline{14.3\%}$

v. Express Overhead cost in terms of percentage of previous turnover,

- Given: last year turnover.....2,000,000 birr
fixed GOH cost.....160,000 birr

- General overhead cost in %age

$$= (\text{fixed GoH cost} / \text{last year turnover})$$

$$= (160000 \text{ birr} / 2000000 \text{ birr})$$

$$= \underline{8\%}$$

General Overheads

One of the items in the mark-up is general overheads. These are the costs entailed in administering the company and providing off-site services.

❖ The general overheads vary with individual firms, but a broad list may include:

- Rent, rates on office and yard
- Fees, salaries and wages for directors and office staff
- Office equipment, stationary, postage, telephones, cars
- Office heating and lighting
- Insurances on office and staff
- Interest on capital borrowed

What is contract?

- Is an agreement between/among two or more contracting parties where the parties are bound by the law.
- All contracts are an agreement, but all agreements are not contract.

Why contract?

- ✓ To protect parties against defaulting by their contracting party, if so provide adequate compensation.
- ✓ It is one way of managing risks
- ✓ To share risks among parties.

Contract Provisions for Risk Allocation

- ❖ One of the factors to be considered by management in assessing the mark-up rate on individual contracts would be the provision and allocation of risks in a contract.
- ❖ Partial list of responsibilities assigned to different parties in a contract
 - **Force major** : "Acts of God" and other external events such as earthquake, war, etc
 - ✓ Indemnification: for losses and damages of 3rd party
 - ✓ Occupational safety and health of workers
 - ✓ Permits, licenses,
 - ✓ Differing site conditions,
 - ✓ Delays and extensions of time,
 - **Liquidated damages**,
 - ✓ Termination for default by contractor,
 - ✓ Suspension of work,

- ❖ All Pricing arrangements have some common features in the form of the legal documents binding the owner and the supplier (s) of the facility.

Common types of Pricing arrangements are:

1. Competitive Bidding

- ✓ Final bid submitted on lump sum or unit price basis

2. Negotiated Contracts

- ✓ Reimbursement is direct project cost plus the contractor's fee

- ❖ All forms of construction pricing arrangements pose differed level of risk to the parties in the contract. Hence, it is important to identify the provisions for risk in contracts

- ❖ Most **claims and disputes** arise most frequently from lump sum and unit price contracts for both public and private owners, the following factors are particularly note worthy:
 - **Unbalanced bids** in unit prices on which periodic payment estimates are based.
 - **Change orders** subject to negotiated payments
 - Changes in design or construction technology
 - Incentives' for early completion and
 - Penalties of damage for late completion,
 - Exceptional climatic condition or physical obstruction beyond the capacity of an experienced contractor

- ❖ An **unbalanced bid** refers to raising the unit prices on items to be completed in the early stage of the project and lowering the unit prices on items to be completed in the later stages.
- ❖ Also occur if a contractor feels some item of work was underestimated in amount, so that a high unit price on that item would increase profits.

Types of Construction Contracts

In addition to serving as a means of pricing construction, contracts also structure the **allocation** of risk to various parties involved:

I. Lump Sum Contract

- ❖ All risk assigned to the contractor.
- ❖ If the actual cost of the project is underestimated, the underestimated cost will reduce the contractor's profit by that amount. An overestimate has an opposite effect.

II. Unit Price Contract

- ❖ The risk of in accurate estimation of uncertain quantities for some key tasks has been removed from the contractor.

Problem: Unbalanced Bid

The following table shows the effect of “unbalanced bid” among competitors.

Price as per Tender

Description	Estimated Quantity	Unit prices (Birr)		Tender Amount (Birr)	
		Contr. A	Contr. B	Contr. A	Contr. B
Masonry Works	50 m ³	250	400	12,500	20,000
Re. Bars	5000 kg	8	6	40,000	30,000
				52,500	50,000

Actual Price during Construction

Description	Actual Quantity	Unit prices (Birr)		Actual Amount (Birr)	
		Contr. A	Contr. B	Contr. A	Contr. B
Masonry Works	200 m ³	250	400	50,000	80,000
Re. Bars	5100 kg	8	6	40,800	30,600
				90,800	110,600

III. Cost Plus Contracts :

Cost Plus Fixed Percentage Contract

- The contractor will receive the actual direct job cost plus a fixed percentage
- Purpose; for new approach/technology yet to be analyzed
- The owner takes all the risks of cost overruns

Cost Plus fixed fee contract

- The contractor will **receive** the actual direct cost plus a fixed fee and will have some incentives to complete the job quickly
- The owner takes all the risks of **cost overruns** and contractor may risk the **erosion** of its profits

Cost plus variable percentage contract:

- The contractor agrees to a penalty, if the actual cost exceeds the estimated job cost, or a reward if the actual cost is below the estimated job cost.
- Allocates all risks for cost overruns to the owner, but also provides incentives to the contractors to reduce costs.

IV. Target Estimate Contract

This is another form of contract which specifies a penalty or reward to a contractor, depending on whether the actual cost is greater than or less than the contractor's estimated direct job cost.

V. Guaranteed maximum cost contract

- Owner may choose to ask the contractor to take all the risks, both in terms of actual project cost and project time.
- The owner and contractor agree to a project cost guaranteed by the contractor as maximum.
- Suitable for **turnkey** operations.

Variation

- Increase or decrease the quantity of any work (other than by re-measurement).
- Omit any such work.
- Change the character or quality of any such work.
- Change lines, levels, dimensions.
- Execute(necessary) additional work.
- Change the sequence or timing of construction.

Payment

- Contractor shall submit to the Engineer monthly statements.
- The Employer shall pay the Contractor within 30 days.
- Interest(at prevailing bank interest rate) for delayed payment by the client.
- Minimum **interim** amount should be specified in SCC

Reading Assignment

Cost Control on PPA, GCC

- ✓ Change in Bill of Quantity
- ✓ Variations
- ✓ payment for variations
- ✓ Cash Flow forecasts
- ✓ Payment Certificates
- ✓ Payments
- ✓ Compensation Events etc
- ✓ Read and summarize PPA provisions for risk allocation, focusing on Cost Control clauses
- ✓ Section 7 (GCC-Part D Clause 37-54)

You can find PPA General Conditions of Contract

Assignment-2

#1. Balance Sheet Summary of Bonsa Construction Company:

- ✓ Fixed Asset: Birr 230,000
- ✓ Current Assets: Birr 550,000
- ✓ Current Liabilities: Birr 450,000

■ The ROCE target can be evaluated as follows:

- The average weighted cost of capital (Interest of capital employed)...8%
- Profit margin (dividends, capital reserves...) 5%
- Corporate obligations such as taxations and deprecation costs.....5%
- Contingencies to cover uncertainties (Risks).....2%

■ If Bonsa construction company is planning for a total turnover of Birr 2,200,000 in tthe planning year, one can assume a 10% fee as addministrative expenses.

- Calculate;
 - a. The return on capitals employed(ROCE)
 - b. Administrative expenses of the company(GOH)
 - c. Head office mark-up of the company
 - d. Production cost of the contract
 - e. Mark-up at individual projects
 - f. Calculate the percentage of general overheads cost.

#1. Determine firm's mark-up at individual project if the following parameters are given for a certain construction company:

- ✓ Capital Employed: Birr 3,320,220
- ✓ Turnover on contracts for year: Birr 5,643,000
- ✓ General overheads: Birr 114,650
- ✓ Return on Capital Employed: 13%

#1. Determine firm's mark-up at individual project if the following parameters are given for a certain construction company:

- ✓ Capital Employed: Birr 4,620,280
- ✓ Turnover on contracts for year: Birr 6,642,000
- ✓ General overheads: Birr 40,800
- ✓ Return on Capital Employed: 12%

Then calculate:

- i. ROCE
- ii. Head office mark-up
- iii. Production cost
- iv. Mark up at individual project
- v. If last years turnover was birr 4,620,280 and the fixed costs was 40,800 birr then express general overheadcost interms of percentage of previous turnover cost.



Congratulations! we have come to the end of the Lecture.

You are now a Qualified and Certified Construction Contract and pricing Analyst and Expert.