

Unit 1

Management Contracting, Design and Procurement Routes

1.1 Project Organization

The top management of the owner sets the overall policy and selects the appropriate organization to take charge of a proposed project. Its policy will dictate how the project life cycle is divided among organizations and which professionals should be engaged. Decisions by the top management of the owner will also influence the organization to be adopted for project management. In general, there are many ways to decompose a project into stages. The most typical ways are:

- 1) Sequential Processing – the project is divided into separate stages and each stage is carried out successively in sequence.
- 2) Parallel Processing – the project is divided into independent parts such that all stages are carried out simultaneously.
- 3) Staggered Processing – the project may be overlapping, such as the use of phased design-construct procedures for fast track operation.

It should be pointed out that some decomposition may work out better than others, depending on the circumstances. In any case, the prevalence of decomposition makes the subsequent integration particularly important. The critical issues involved in organization for project management are:

- How many organizations are involved?
- What are the relationships among the organization?
- When are the various organizations brought into the project?

1.2 What is procurement?

Procurement is the process of acquiring new services or products and includes contract strategy, contract documentation and contractor selection. It extends to all members of the supply chain, including those responsible for operation and maintenance. The Association for Project Management (APM) Body of Knowledge states that “The procurement strategy should include potential sources of supply, terms and types of contract, conditions of contract, and the type of pricing and method of supplier selection. For many projects, procured goods and services form the highest percentage of expenditure and so it is important to achieve value for money through careful appraisal and management.

Important issues that can affect the selection of a procurement route are:

- 1) Clearly defined project objectives from the client.
- 2) Responsibilities of the parties to the contract, which must be accurately stated.
- 3) Risk allocation between the parties involved in the contract.
- 4) Payment mechanism.
- 5) Incentive mechanism to secure a proficient performance from the contractor.
- 6) Motivation for the client to supply the necessary data and support to the contractor.
- 7) Client having enough flexibility to add changes.
- 8) Clients being able to methodically assess change in a fair manner.

Methods of Procurement (Procurement Systems)

1.2.1 Traditional Design Bid Build System:

- The Owner hires a design professional in charge for the preparation of the design and contract documents.
- Usually competitive bid or negotiation with contractors.
- The general contractor is in charge of the delivery of the project.
- The contractor is the only one responsible of the execution of the work.
- Uses the sequential construction process
- It is usually a lump sum bid
- It is a trust-based collaborative relationship between the designing team and owner.
- The interests of the participants are:
 - The owner is interested in the quality and value of the construction. He is also concerned with the delivery schedule and site safety.
 - The contractor is concerned with the profit, the construction completion time, relationships and reputation.
 - The design team is concerned with the aesthetics, at the profit, quality of work and recognition.

Advantages of the Traditional Method:

- 1) Well known method.
- 2) Cost already defined.
- 3) Good contractual protection for the owner.
- 4) Owner not too involved in the actual construction process.

Disadvantages of the Traditional Method:

- 1) Generally, design not reviewed for constructability before construction.

- 2) Sequential and linear process of construction usually prevents task overlapping and implementation of time and money saving strategies.
- 3) Few Interactions among the participants.
- 4) Construction cannot start until the design is complete.

1.2.2 Construction Management System:

Construction management gives as a consultant responsibility for identifying all the roles needed to undertake any one project, selecting teams to perform these roles and establishing the coordination needed to ensure that the project organization as a whole works efficiently to meet agreed objectives. In this approach to procurement, the actual construction work is carried out by specialist works contractors who enter into direct contracts with the client.

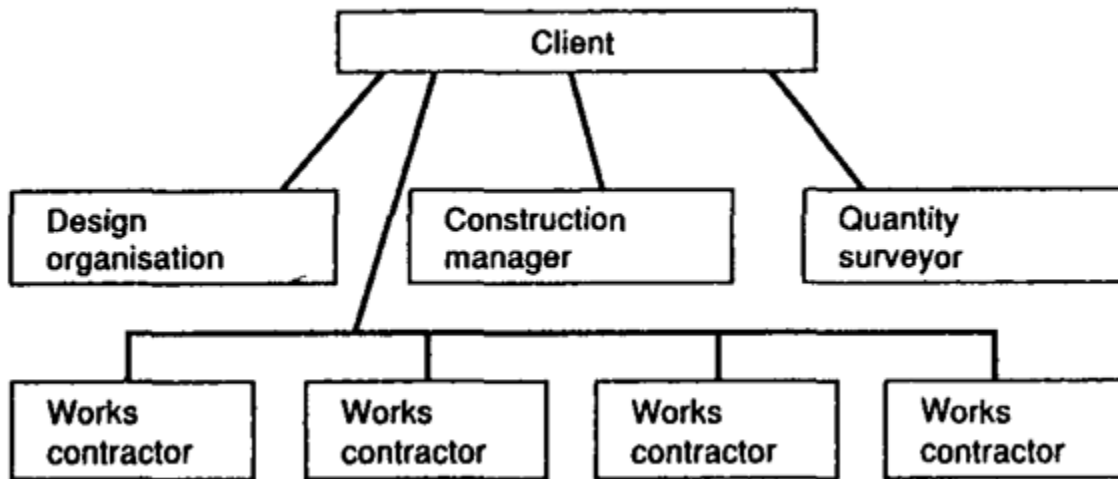


Figure: Pure Construction Management (Construction Management)

Construction Management Procedures

The procedures involved in construction management:

- 1) The owner hires, based on qualifications, both a design firm and a construction management firm before the beginning of the construction of the project
- 2) Owner enters into in fiduciary relationship with the PCM (Pure Construction Manager). The PCM acts as facilitator/mediator in conflicts and is generally paid a fixed fee.
- 3) Owner selects and hires (potentially based on the advice from the PCM) the work package contractors.

Construction Management is most probably used in the following situations:

- 1) The client is familiar with construction processes and techniques and knows some or all of the professional team.
- 2) The risks associated with the project are dominated by timeliness and cost.
- 3) The project is technically complex, involving diverse technologies and subsystems.
- 4) The client needs to retain the right to make minor variations to requirements as the project proceeds.
- 5) The nature of the project is such that it is realistic to separate professional responsibility for its design from professional responsibility for its management.
- 6) The client requires an early start on site.
- 7) The cost to the client needs to be competitive.

Thus, it can be summarized that the construction work is carried out by 'works contractors' engaged directly by the client, and hence the client assumes the contractual position of the main contractor. Since most clients do not have sufficient expertise to manage the works contractors, they usually employ a construction management firm, on a fee basis, to do this on their behalf. The firm could be a contracting organization or a professional consultant. In general the organizations using this system are large ones with rolling programs, considerable experience of similar projects and often some in-house expertise.

Advantages of Pure Construction Management

- 1) One trusted common reference point for construction: the PCM.
- 2) Great flexibility in the schedule.
- 3) Great flexibility for changes.
- 4) Small financial risks for PCM.

Disadvantages of Pure Construction Management

- 1) Participants must all be cooperative and have open communication
- 2) All parties must be committed from the beginning.
- 3) Small incentive for CM (they get paid anyway).
- 4) High risk of loss of reputation.

1.2.3. Management Contracting

The management contract is a system whereby a main contractor is appointed, either by negotiation or in competition, and works closely with the team of professionals. The management contractor is precluded from carrying out any of the physical works using directly employed labor. His role is primarily that of planner, manager and organizer. All physical construction is undertaken by subcontractors (works contractors) selected in competition. The management contractor provides common services to the subcontractors such as welfare facilities, any plant and equipment that is not confined to one sub-trade, and sufficient management both on and off the site to undertake the planning and management, coordination and control of the project. He is paid a fee for:

- 1) His services and, in addition.
- 2) The cost of his on-site management.
- 3) Common services
- 4) The cost of all the work undertaken by subcontractors.

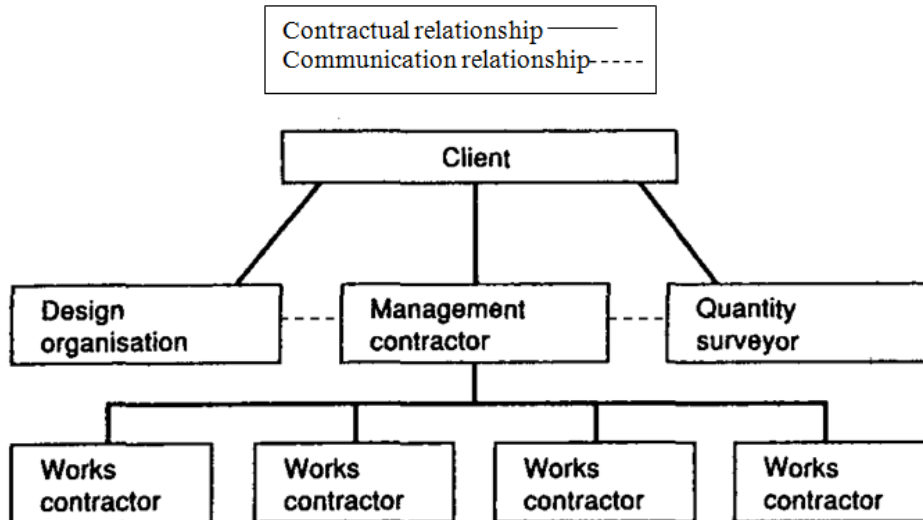


Figure: Construction Management at Risk (Management Contracting)

Advantages

Management contracts can be particularly advantageous when there is a need for the following:

- 1) An early start to the project for the following reasons:
 - a. Political
 - b. Budgetary
 - c. Procurement.
- 2) An early completion of the project is desired but design cannot be completed prior to construction. This requires good planning and control of the design/construction overlap and careful packaging of construction contracts – the normal skill of the management contractor.
- 3) Innovative and high-technology projects when it is likely that design change will occur throughout.
- 4) Organizational complexity. Typically this may arise from the need to manage and coordinate a considerable number of contractors and contractual interfaces and possibly design organizations and it is useful when the client has insufficient specialist management resources for the project.

Disadvantages

- 1) Owner takes responsibility for design defects / omissions.
- 2) Owner may not have full control on contract changes as desired
- 3) The GMP (Guaranteed Maximum Price) is a defined price for an undefined product

Management Contracting Procedure

The procedures to be adopted in management contracting usually incorporate the following activities and requirements:

- 1) The works are divided into packages agreed by the professional team and the management contractor as being most appropriate for the particular project.
- 2) Competitive tenders are normally invited for each package from tenderers selected by the professional team (usually architect or contract administrator, quantity surveyor, and structural, mechanical and electrical engineers), the employer and the management contractor. Thus the architect is precluded from obtaining single quotations from his own selected subcontractors, and the management contractor cannot invite tenders from specialist contracting or subcontracting firms within his own Group.
- 3) The management contractor provides from his own resources:
 - a. Site supervisory, technical and administrative staff to run the contract.
 - b. Those facilities to be shared by the subcontractors where they are not included in any of the agreed subcontract packages, such as the normal preliminaries items.

Management Contracting Payment Mechanism

The management contractor is normally paid by monthly installments computed on the following basis:

- 1) The amounts due to be paid by him to subcontractors which have been valued by the quantity surveyor in conjunction with the management contractor and have been certified by the architect.
- 2) The cost to him of providing site staff and shared facilities.
- 3) A management fee which may be in two parts:
 - a. A pre-commencement management fee, which will be a lump sum including the cost of any staff involved in pre-commencement activities of the management contractor.
 - b. A construction management fee which is a percentage of the cost to the management contractor, including payments to be made by him to the subcontractors.

1.2.4 Design and Build Method

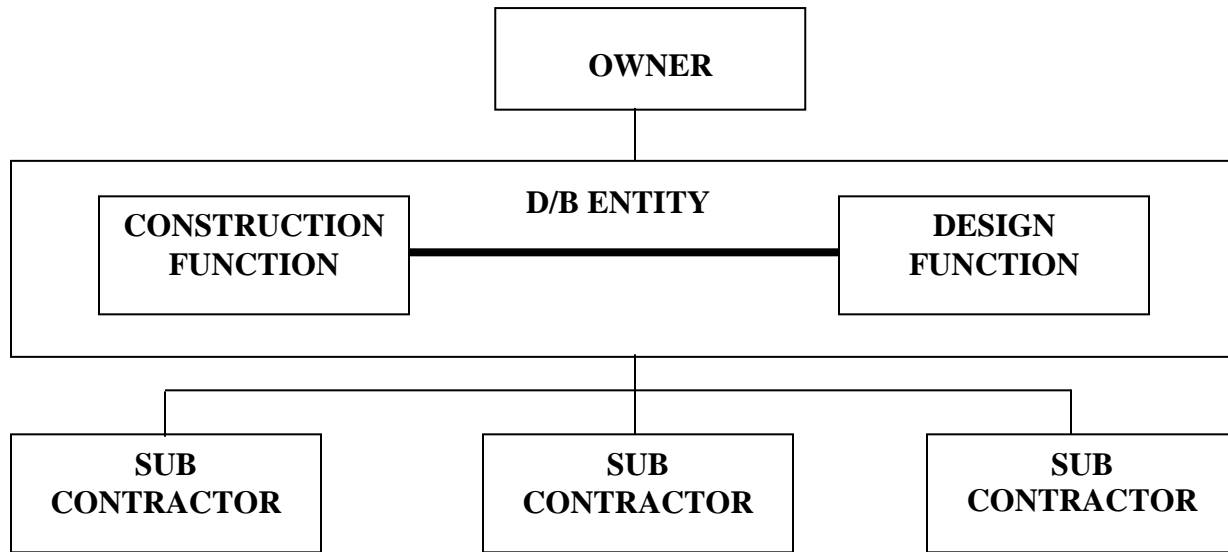
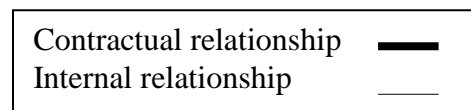


Figure: Design and Build Method



- The owner hires a design/build firm that will complete design and construction.
- This firm can be a design/build firm but also a joint-venture firm of a design firm & construction firm for this specific project.
- The design/build firm hires subcontractors.
- One contractual team responsible for design and construction function.
- Owners put more emphasis on schedule.
- Owner with enough knowledge about design and construction to establish the initial parameters, review proposals and monitor the process.

Advantages of DB

- 1) Easier incorporation of changes in most
- 2) Good for complex projects.

Disadvantages of DB

- 1) Pricing isn't possible at the beginning.
- 2) Risk of sacrificing quality to protect profit.
- 3) May take a direction that the Owner does not really want