

Construction Management 1-2

BMETKEPM105

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Construction Management

Construction Management

- Idea → Hand-over and use
 - Find out
 - Plan/Prepare
 - Perform } an investment
- PROJECT
 - GOAL - have to be achieved
 - Fixed cost / time / quality
- MANAGEMENT
 - Plan / organise / direct / lead / command / control

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Participants

- Someone
 - Wants a building (has the idea / plot / money)
 - Have to determine how the building will look (programme, design)
 - Have to produce required materials, products, equipment for the construction of building
 - Have to build it - control and direct
- Someone has to coordinate and harmonise the participants and the processes

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Participants

- Direct
 - Client
 - Designer
 - Architect
 - Other specialists
 - Contractor
 - General contractor
 - Sub-contractors
- Indirect
 - Authorities
 - Public services
 - Financing organisations
 - Insurance companies
 - Etc.
- External
 - Public
 - Media

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A building project

- Temporary enterprise
- 3-5 to 4-7 years
- High intensity of human and material resources

- Unique aims
- Unique participants
- Unique tools

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Phases of a building project

- Inception phase - initiation
- Preliminary analysis
- Feasibility study
- Tendering + contract
- Construction phase
- Running-in - hand-over
- Operation and maintenance

- Project preparation
- Planning
- Preparation of implementation
- Implementation (construction)
- Project end

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Project preparation

- Idea
- Real estate development / Project development
- Formulating the AIM
- Finding the participants
- Examining feasibility
- Decision / Planning

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Phases of a building project

Time →

- Idea
- R. E. development
- Project development
- Formulating the AIM
- Finding the participants
- Project organisation
- Examining feasibility

Project preparation

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Project preparation

- Initiation
 - Preliminary brief
 - List the client's wishes and ideas about the building
 - Based on his findings from the prefeasibility study
 - Programme of the building (rooms/functions)
 - Preliminary analysis
 - Detailed brief
 - Feasibility study
- Information required
- General limiting conditions
 - Budget
 - Code requirements
 - Community values
 - General building costs
 - by occupancy type
 - by location, etc.
 - General forms of construction
 - that are appropriate to the construction

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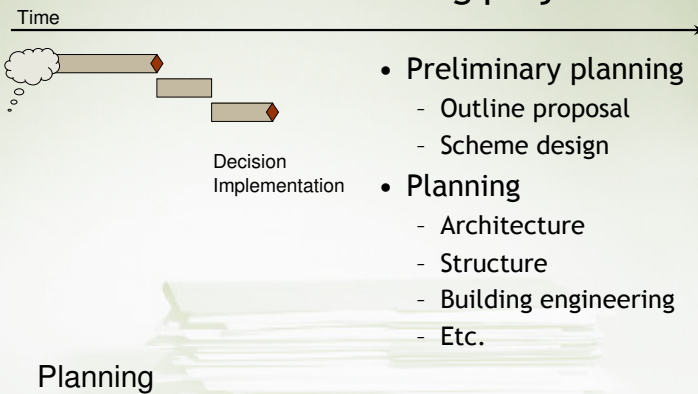
Planning

- Preliminary planning
- Planning
 - Architecture
 - Structure
 - Building engineering
 - Etc.
- Decision / Implementation
- Approval by authorities
- Building permit

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Phases of a building project



- Preliminary planning
 - Outline proposal
 - Scheme design
- Planning
 - Architecture
 - Structure
 - Building engineering
 - Etc.

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Planning

- Preliminary drawings and models
 - Proposed design
 - ↓
 - Detailed drawings
 - Written specifications
 - GOAL: to completely describe the desired construction
 - Rough/preliminary cost estimate
- Architect
 - Other specialists
 - Structural engineers
 - Civil engineers
 - Landscape designers
 - Mechanical engineers
 - Electrical engineers
 - Interior design
 - Etc.
 - Outside consultants or employees

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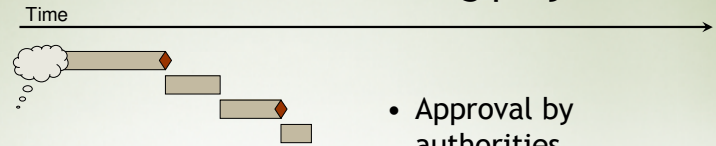
Planning

- | | |
|---|---|
| <ul style="list-style-type: none"> • Preliminary design <ul style="list-style-type: none"> - General building size and form - Selected basic construction and type of structural system - General use of materials • Definitive design <ul style="list-style-type: none"> - Layouts of plans and elevations - Selection of essential control dimensions and modules - Description of basic materials and products | <p>Information required</p> <ul style="list-style-type: none"> • Reasonable alternatives for the basic construction • General planning requirements • Unit costs (selected systems and materials) <p style="text-align: center;">↓</p> <ul style="list-style-type: none"> • Construction details appropriate to design goals and choices for materials and products • Dimensions and planning modules • General design data |
|---|---|

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Phases of a building project



- Approval by authorities
- Approval by public services
- Building permit

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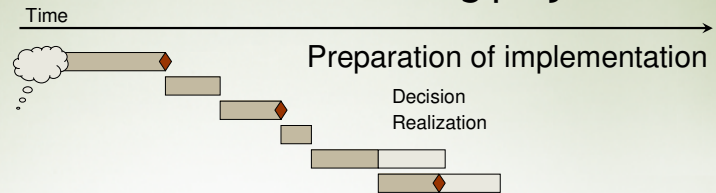
Preparation of implementation

- Detail design
 - Documentation for tendering (tender set of drawings)
 - Documentation for construction (working drawings)
- Tendering
 - Getting a quotation (bid/price) from the contractor
 - Choosing from several possible contractors
- Contract
- Decision / Realization

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Phases of a building project



- Detail design
 - Documentation for tendering (tender set of drawings)
 - Documentation for construction (working drawings)
- Tendering
 - Getting a bid from the contractor
 - Choosing from several possible contractors
- Signing the contract

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Preparation of implementation

- Set of contract documents
 - Complete construction details
 - Complete specifications (precise descriptions of quality, performance requirements)
- Final cost estimate
- Typical questions for final design
 - What specific material or product is to be used for a given item of the construction?
 - What specific data must be recorded to completely identify a chosen material or product for design purposes?
 - What are appropriate details for the construction of various elements of the building?

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Preparation of implementation

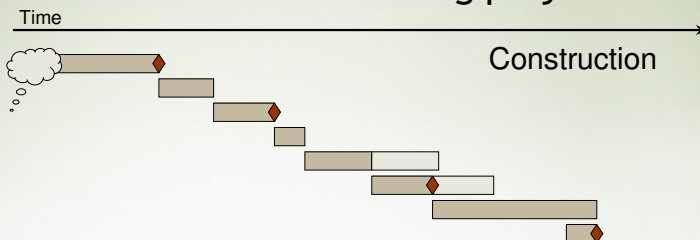
- Qualification/prequalification
- Tendering
 - Open tender
 - Restricted tender
 - Negotiated tender

} number of contractors invited
- Bills of quantities to be priced
- Standard bid proposal forms
- The successful tenderer is usually the contractor with the lowest contract sum or the aspects of rating are given

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Phases of a building project



- Planning/designing the plot/time/costs
- Erecting the building according to the plans
- Supervision of construction
- Running-in; Hand-over - take-over

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Construction

- Managing resources
 - Labour
 - Materials
 - Machinery
 - Money
- Managing changes
 - Acceptable range for performance and alternatives
- Managing time
 - Verification of time schedules
- Managing quality
 - Procedures for inspections, tests, certifications, etc.
- Hand-over - take-over of the building (reviewing the constructions - quality and quantity - and the plans)

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Phases of a building project

- Operation and maintenance of the building
- Setting up (and operating) a Facility Management System

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Project end

- Operation and maintenance of the building
- Setting up (and operating) a Facility Management System
- Selling/renting the building
- Evaluation of the project / Benchmarking (comparing with other closed projects)
- Feed-back for future projects

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Quality - quantity - time - costs

Quality requirements	Architectural/ function program	Framework schedule	Basic budget
Detailed brief	Preliminary plans	Draft schedule	Cost estimation
Specification	Design/ plans	General time-plan	Cost plan at design stage
Quality control	Detail design/ plans	Detailed time-plan	Cost calculation
	Realization/ plans	Time control	Cost check

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Assignment

- Pre-tender planning
 - General cost estimation
 - Time schedule
 - Site visit report
 - Method statement
- Pre-contract planning
 - Overall programme / master programme
 - List of operations
 - Survey for quantities (time schedule - bar chart)
 - Labour schedule
 - Plant schedule
 - Material schedule
 - Site layout (building site) during the
 - Earthwork
 - Foundation work
 - Construction of load bearing structure
- Tendering-contracting
 - Specification
 - General conditions
 - General requirements
 - Other divisions
 - Time schedule - network diagram (in the form of a precedence diagram, 10-15 operations)

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