Introduction – Building project management

Construction management 2.
(BMEEPEKT601-BMEEPEKK601)
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Introduction

• Lecturers:
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  • Guest lecturers
• Requirements
  • Two mid-semester tests (30-30 min.)
  • Exam
  • Assignment (for students of BMEEPEKK601)
Introduction

• Main topics
  • Introduction - Basic information on the semester. Phases of the project.
  • Participants - The participants of the construction project.
  • Project phases I. – Preparation and planning. Starting of construction projects, preparation and planning. Selecting architect (competition).
  • Project phases II. – Construction and operation. Selecting contractor.
  • Project Management – basics
  • PM in construction industry
  • Scheduling I. – Basics and theory of time planning.
  • Scheduling II. – The methods of scheduling. Network time planning.
  • Scheduling III. – Computer aided scheduling
  • Budget, cost estimation
  • Cost calculation methods

Building project management

• Idea → Hand-over and use
  • Find out
  • Plan/Prepare
  • Perform
  • PROJECT
  • Single, complex, unique task, that is limited in costs and time, and has predefined goals, and assigned sources.
  • GOAL – have to be achieved
  • Fixed cost / time / quality
• MANAGEMENT
  • Skills and techniques
  • Plan / organise / direct / lead / command / control
Building project management

• 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

Building project management

• 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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Participants
- Direct
  - Client
  - Designer
    - Architect
    - Structural engineer
    - Civil engineer
    - Mechanical engineer
    - Electrical engineer
  - Contractor
    - General contractor
    - Sub-contractors
- Indirect
  - Authorities
    - Public services
  - Financing organisations
  - Insurance companies
  - Etc.
- External
  - Public
  - Media

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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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Phases of a building project

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

Decision
Planning

Project preparation

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Phases of a building project: 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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Phases of a building project

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

Planning

- Architect
- Other specialists
  - Structural engineers
  - Civil engineers
  - Landscape designers
  - Mechanical engineers
  - Electrical engineers
  - Interior design
  - Etc.
- Outside consultants or employees

- Preliminary drawings and models
- Proposed design
  - Detailed drawings
  - Written specifications
  - GOAL: to completely describe the desired construction
  - Rough/preliminary cost estimate
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Phases of a building project: planning

- Preliminary design
  - General building size and form
  - Selected basic construction and type of structural system
  - General use of materials
- Definitive design
  - Layouts of plans and elevations
  - Selection of essential control dimensions and modules
  - Description of basic materials and products
- Information required
  - Reasonable alternatives for the basic construction
  - General planning requirements
  - Unit costs (selected systems and materials)
  - 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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Phases of a building project

- 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
  - Signing the contract

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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Phases of a building project: preparation of implementation

• Qualification/prequalification
• Tendering
  • Open tender
  • Restricted tender
  • Negotiated tender
• 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 of the building – reviewing the constructions (quality and quantity) and the plans
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Phases of a building project: 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.

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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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Phases of a building project: 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