

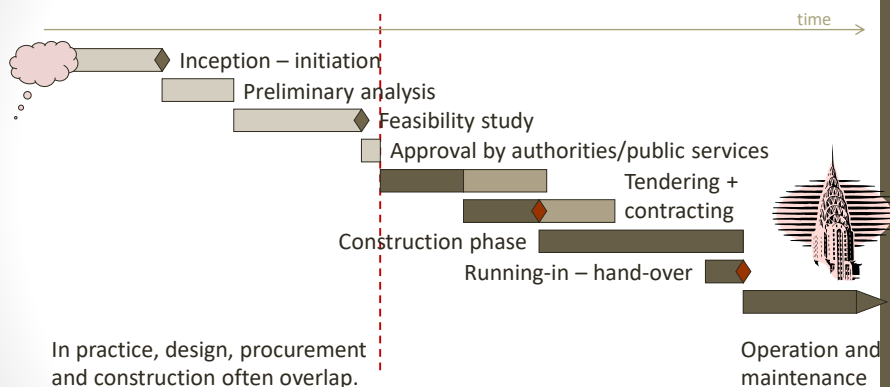
Project phases II. Tendering-construction- operation

Construction management 2.

Lepel – BME Department of Construction Technology and Management

28.03.2018

Project phases



[2]

Tendering - contracting

Documentation for building consent → realising?

[3]

Tendering - contracting

Terms

- **Client** (owner): gets the project financed, designed and built
 - **Public** owners – have to proceed in accordance with law
 - **Private** owners – individuals, partnerships, corporations
- Construction work is accomplished by **contractors**
 - **Specialty** contractors – concentrating on particular tasks
 - **Prime** contractors – assuming broader responsibility
 - **General** contractor and subcontractors
- **Procurement** is the acquisition of goods or services.
- **Tendering** = bidding process

[4]

Tendering - contracting

Documentation for building consent → **realising**

- The client selects a prime contractor on the basis of **references, acquaintance**, competitive bidding and/or negotiation (**competition**)
- **Documentation** for tendering
 - Complete construction details – construction drawings
 - Complete specifications (the documentation of the planning consent and precise descriptions of quality, performance requirements)

[5]

Tendering

- Methods of selecting the contractor
 - Direct contracting (choosing contractor by acquaintance or references)
 - Simple competition (competitive bidding or negotiation)
 - Public procurement
 - One-stage procedure
 - Two-stage procedures
 - Three-stage procedure

[6]

Tendering

- Process of tendering
 - Tender **process is determined**:
 - the type of tender
 - what will be involved
 - **Request for tender** is prepared (documentation for tendering):
 - what is required
 - the contractual requirements
 - how to respond
 - **Tenders are invited**
 - by publication of contract notice
 - by invitation

[7]

Tendering

- Process of tendering
 - **Tenderers respond**: obtaining all relevant documentation, then:
 - Attending pre tender briefing sessions
 - Clarifying any uncertainties
 - Preparing response
 - Submitting response in the *right format, on time and at the right location*
 - **Evaluation and selection**:
 - tenders checked for compliance
 - evaluated against the **criteria specified**
 - The tender that offers **best value** for money/ **lowest price** wins the business.

[8]

Tendering

- Process of tendering
 - Notification and debriefing:
 - all the tenderers are advised of the outcome
 - unsuccessful tenderers are offered a debriefing interview.
 - Contracts established and managed: between the successful tenderer and the client.

[9]

Tendering

Public procurement

- DIRECTIVE 2014/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on public procurement and repealing Directive 2004/18/EC
- Act CXLIII of 2015 on Public Procurement (Hungary)
- Gov. Decree 322/2015 (30. October)
 - Public procurement in construction
- COMMISSION REGULATION (EU) No 1336/2013 – application thresholds:
 - the Community thresholds (€ 5 548 000.- / 1 723 541 680.-HUF)
 - the National thresholds (25 000 000 and 100 000 000.- HUF)
 - based on a cost calculation

[10]

Tendering

Public procurement procedure types

- Open procedure: a contract award procedure whereby **all those interested** may submit tenders;
- Restricted procedure: a contract award procedure whereby **only those invited** by the contracting authorities may submit tenders;
- Negotiated procedure: a contract award procedure whereby contracting authorities **negotiate** the terms of the contract with **one or more of the tenderers of their choice**;

{ 11 }

Tendering

Public procurement procedure types

- Competitive dialogue: a public procurement procedure, in which the contracting authority shall conduct with the **candidates they select** a **dialogue** with the aim to identify exactly the **subject-matter** of the public procurement, and/or the **type** of and the **conditions for the relevant contract**, within the frame of conditions as defined by the contracting authority (three stages);
- Innovation Partnership
- Negotiated procedure without prior publication

{ 12 }

Tendering

Process of public procurements

- **Participation** stage
 - the first stage of two-stage procedures
 - tenders are not submitted – the contracting authority decides about the **candidate's suitability** or unsuitability
- Preparing and publishing a **contract notice**
 - **Publication** in the Official Journal of the European Union and in the Tenders Electronic Daily databank and in the Public Procurement Bulletin (paper form/online);
 - The contract notice has a **standard form**, stating the **subject-matter** and **value** of the public procurement. The contracting authority (client) specifies the **method**, the **final date** and the **place** for collecting the tender documentation and the **terms of payment** for the documents.

(13)

Tendering

- Contents of a **contract notice**
 - The **date of announcement of the results** and the planned date of signing the contract.
 - The **language(s)** of the tender.
 - The **evaluation criteria**: the lowest price tender, or the most economically advantageous tender.
 - The **criteria** of both economic and financial standing, technical and professional abilities of the tenderer, and the **certification** thereof. There can be **specific conditions**, requirements – e.g. environmental protection, quality assurance.
 - The **type and the extent of the guarantee(s)** (a performance guarantee, a guarantee for good performance or other guarantee).

(14)

Tendering

Process of public procurements

- „Buying” the **tender documentation** – contents:
 - draft **contract**
 - list of the **certificates, declarations** to be submitted
 - **technical specifications** (performance, functional requirements)
- Requesting **additional information**
 - The tenderer **may request additional information** no later than ten days before the expiry of the time-limit to submit tenders.
 - The additional information is **provided to all tenderers** no later than six days before the deadline.
 - Additional information may also be provided in the form of **consultation**.

{ 15 }

Tendering

Process of public procurements

- Providing the tender guarantee (if necessary)
- Preparing and submitting the tenders
 - The **tendering deadline** is not less than 30 (in special cases 35, 15/10) days from the date of dispatch of the notice.
 - Tenders are **submitted in writing**, in a sealed envelope.
 - Tenders indicate the **price** (tender calculation), the **deadlines** and **technical variations** (if permitted).
 - Tenderers provide proof of the adequacy of their **financial and economic standing, technical and professional ability** required for the performance of the contract

{ 16 }

Tendering

- How to prove adequacy
 - a **description of major works** carried out over the past five years (public work concerning a historic monument);
 - a **statement of the tools, plant and technical equipment** available to the contractor for carrying out the work;
 - the contractor's **education and qualifications**;
 - a statement of the firm's average annual manpower statistics and the number of executive officers for the last three years;
 - etc.

{ 17 }

Tendering

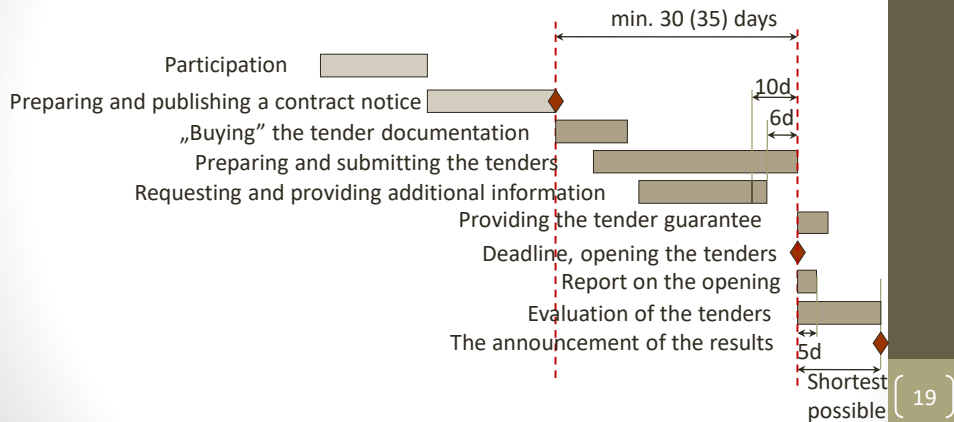
Process of public procurements

- **Opening** the tenders - announced date, time, place
- **Evaluation** of the tenders
 - Checking the tenders for **compliance** with the conditions.
 - Determining **invalid** tenders or tenderers to be **disqualified**.
 - **Assessing tenders** based on the evaluation criteria.
- The **announcement** of the results
 - The client prepares a written summary of the tenders.
 - The results of the procedure shall be **publicly announced** within three days from the decision.

{ 18 }

Tendering

- Process of public procurements



Contracting

- Lots of **contract forms and types** are available to the client;
- The selection of the proper contract form is an important decision.
- Standards for contracting: FIDIC, VOB contract templates
- Range of contract:
 - Main contracting
 - General contracting
 - Co (-general-) contracting
 - (Sub-) Contracting
 - Service / Supply
 - Representation (agency)

Contracting

- The construction contract may include:
 - Construction services;
 - Design-construct;
 - Construction management services.
- **Construction services:**
 - The general contractor has the responsibility only for the accomplishment of the **field construction**.
 - The contractor has **no input** into the design process.

{ 21 }

Contracting

- **Design-construct**
 - The client contracts a single firm for **both design and construction**.
 - The client, the designer and the builder work cooperatively in the total development of the project.
 - The contractor provides substantial **input** into the design process about materials construction methods cost estimates and construction time schedules.
- **Construction management – project management**
 - The objective is to achieve high quality at minimum cost.
 - Project planning, design, and construction are integrated tasks.
 - Management services range from coordinating contractors to broad-scale responsibilities over the whole project.

{ 22 }

Contracting

- Types of contracts
 - **Fixed-sum contract**
 - Lump-sum contract – the contractor completes a package of work for a single lump sum of money.
 - Unit-price contract – the contractor performs certain well-defined items of work for a fixed price for each unit.
 - **Cost-plus-fee contract** – the client pays all the construction costs and a fee for construction services. Bonuses and penalties for efficiency.
 - **Work-by-force account** – the client is its own constructor.
 - Working with own forces
 - Subcontracting some parts or the entire project.

[23]

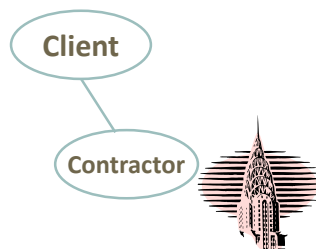
Contracting

- Types of contracts
 - **Turnkey contract** – the client delivers the facility design requirements, the contractor delivers the key of the building.
 - **Build-operate-transfer (BOT) contract** – an extension of the turnkey method:
 - The contractor **designs, constructs, operates, and maintains** the facility for a predetermined concessionary period;
 - Usually the contractor receives **no payment** from the client, but gets **all the money earned** by the project;
 - At the end of the concession period, ownership transfers from the contractor to the owner.
 - **Speculative construction** – the client builds structures for sale or lease to other parties (known or unknown buyers). The **developers** act as their **own prime contractors**.

[24]

Contracting

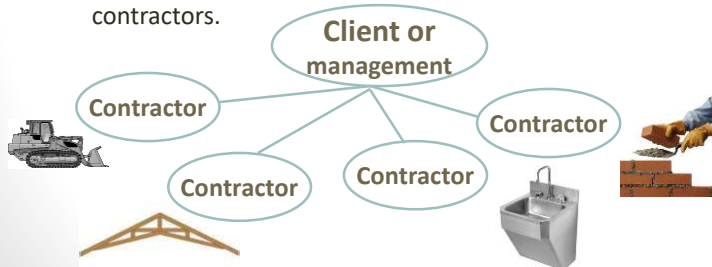
- **Single-contract system** – one prime contractor
 - The contractor brings together all the diverse elements and inputs;
 - Has the responsibility for the delivery of the finished job;
 - Fully responsible for the performance of the subcontractors.



[25]

Contracting

- **More separate contracts** – no centralised control of one prime contractor
 - Several independent contractors, each is responsible for its own work;
 - Each of these contractors are prime contractors;
 - The coordination of these contractors may be undertaken by the client, the architect, a construction manager or one of the contractors.



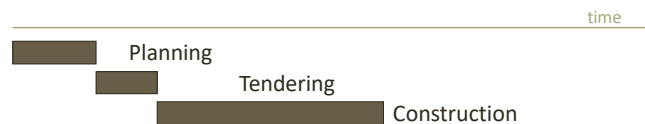
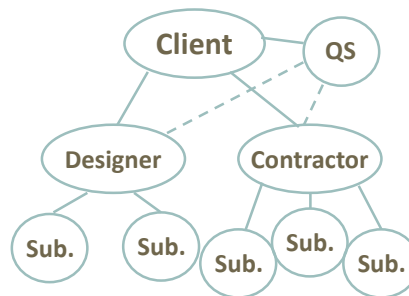
[26]

Contracting

Traditional method

Characteristics

- Long construction period
- Consecutive organisation
- Clear contracting relations



- There is no contractual relationship between the client and the subcontractors.

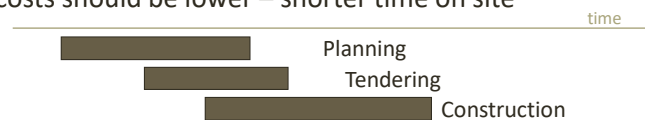
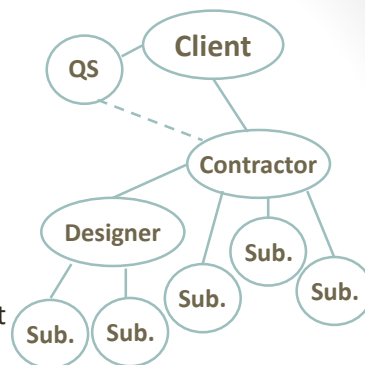
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Contracting

Turnkey method

Characteristics

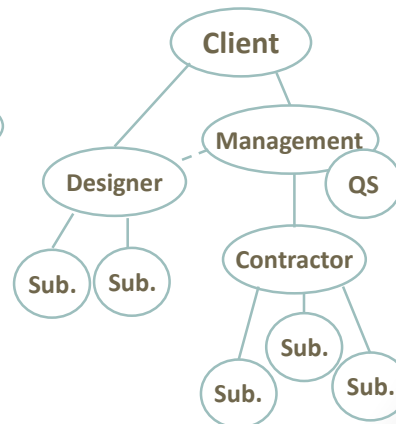
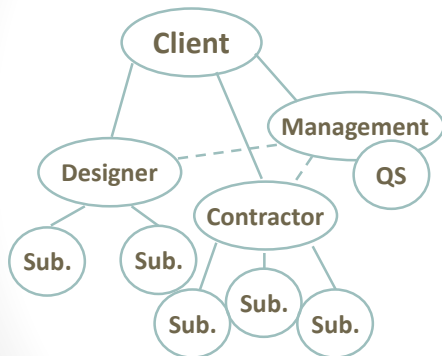
- Single point responsibility
- Can be overlapped
- Client can be sure of maximum cost before final commitment
- Integrated design and construction
 - Fits to constructor's expertise, working condition, organisation
- Thus costs should be lower – shorter time on site



[28]

Contracting

Construction management and management contracting



[29]

Contracting

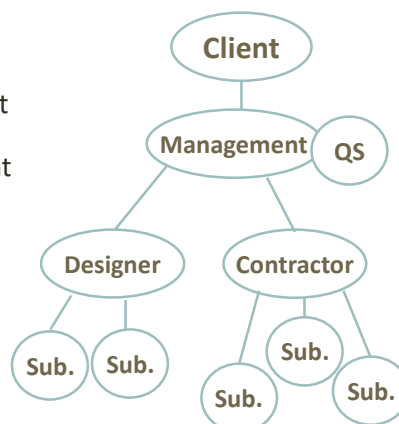
Project management types

- In-house project manager
- In-house and external project management team
- External project management

Construction project with management

Characteristics

- Management team is involved at early stage
- Design can be influenced
- Claims can be solved, delays reduced
- Save time – series of tenders, work packages



[30]

Construction process

- The **process of erecting** the building
 - Putting the materials and equipment into place
 - Providing manpower, construction equipment, materials, supplies, supervision and management
- Construction process – **influenced** by highly variable and sometimes unpredictable **factors**
 - The construction **team** changes from one job to the next
 - Different construction **sites** – differing subsoil conditions, surface topography, utilities and services...
 - Different **time, location** – differing weather, transportation, material supply, local subcontractors, labour conditions, available technologies...

{ 31 }

Construction process

- Construction process involves many **skills, materials**, hundreds of **operations**
- **Communication** with
 - The client
 - Engineers, architects
 - Lawyers
 - Financial organisations
 - Government or local authorities
 - Insurance companies
 - Material manufacturers and suppliers
 - Building tradesmen

{ 32 }

Construction process

- Tasks of the contractor:
 - To **construct** the building according to the contract
 - To **ensure** the **security** standards and legal prescriptions on the construction site
 - To **report** to the authority the **start-up** of the construction
 - To provide a written **statement of completeness** of the building (starting the handover)
 - To provide the statement of the competent technical executive (site engineer) for the permission of use.

{ 33 }

Construction process

- Main **phases** of the construction
 - Site preparation, setting up
 - Earthwork, excavation
 - Foundation
 - Substructure (basement)
 - Superstructure, loadbearing structure
 - Inner and outer finishing works (+building services)
 - Test run
 - Handover procedure

{ 34 }

Construction process

- Main **phases** of the construction
 - Earthwork, excavation



(35)

Construction process

- Main **phases** of the construction
 - Substructure (basement)
 - Superstructure, loadbearing structure
 - in situ reinforced concrete
 - masonry
 - precast concrete
 - steel/timber structure



(36)

Construction process

- Main **phases** of the construction
 - Inner and outer finishing works (+building services)



{ 37 }

Construction process

- **Controlling** the construction process
 - Controlling quality, quantity (volume) → **quality surveyor**
 - Cost controlling
 - Schedule, time control
- **Supervising** the construction
 - continuous control of the **construction logbook**
 - note all **failures** (deficiencies and faults) in the construction logbook
 - controlling **hidden structures** and **volume of the completed work** (before getting covered e.g. reinforcement)
 - **controlling** the conformance of the used **materials** (CE, etc.)
 - **informing the client** about the work done and in progress (Are they according to the contract (volume, standards, prescriptions, etc. – Is it suggested for the client to pay all the bills or not?)

{ 38 }

Construction process

Handover procedure

- It is the **legally prescribed** final period of the construction process
- **Statement of completeness** prepared by the contractor
 - the construction works are finished in accordance with the contract
 - the works are in accordance with the technical standards and legal prescriptions
 - the building is ready for proper use -> the process for the permission of use can be started
- If there are failures in the building, they are recorded and corrected by the contractor – the last bill is settled thereafter

[39]

Operation

- **Evaluation of the project** / Benchmarking (comparing with other closed projects)
- **Operation and maintenance** of the building → setting up and operating a Facility Management System
- Preparing plans for renovations, modernisations, reconstructions;
- Feed-back for future projects and FM – POE (post occupancy evaluation)
 - **Operational Review**, carried out 3 - 6 months after occupation
 - **Project Review** carried out 12 - 18 months after occupation
 - **Strategic Review** carried out 3 - 5 years after occupation.

[40]

References

- <http://en.wikipedia.org/wiki/Tendering>
- http://www.wto.org/english/tratop_e/gproc_e/gpa_overview_e.htm
- <http://ted.europa.eu/TED/main/HomePage.do>
- http://de.wikipedia.org/wiki/Vergabe-_und_Vertragsordnung_f%C3%BCr_Bauleistungen
- <http://fidic.org/>
- Guide to Post Occupancy Evaluation - AUDE and the University of Westminster, 2006. http://www.aude.ac.uk/info-centre/goodpractice/AUDE_POE_guide
- Learning from Our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation Federal Facilities Council, 2002. http://books.nap.edu/openbook.php?record_id=10288&page=1