

BBSE3009 Project Management and Engineering Economics

<http://www.mech.hku.hk/bse/bbse3009/>



Site Organisation and Supervision (SOS)



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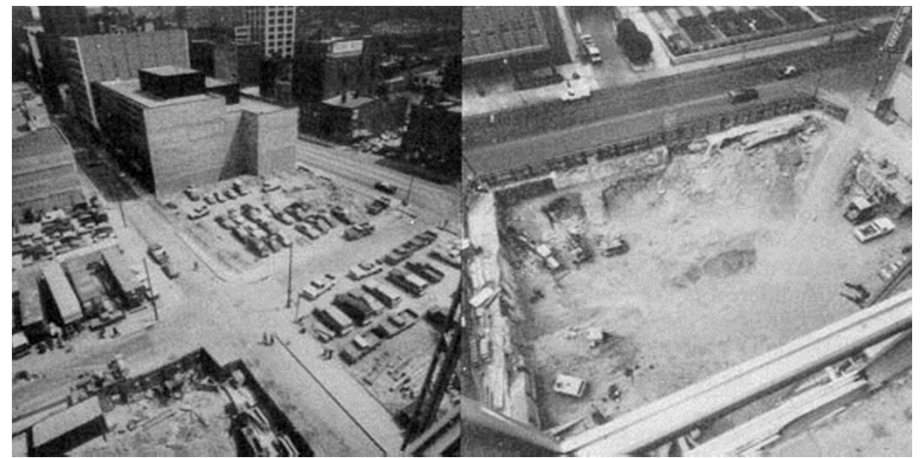
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Contractor's Preparation



- Construction project planning
 - Working method
 - Resources planning
 - Schedule and programming
- Techniques & tools
 - Method statement
 - Contract programme



Table 1. Example of a method statement

Description of items	Quantity	Details of method	Plant	Output per week	Plant labour involved	Period required
Excavate pipe trench	500 m	Excavate backfill plant	Backacter	500 m	4 labourers	1 week
PVC pipe	500 m	Lower by hand	Nil	250 m	6 labourers	2 weeks
Basement excavation	4,000 m ³	Excavate direct load to lorry	Backactor and lorry	2,000 m ³	2 labourers	2 weeks
Basement reinforcement	5,000 kg	Supplier cut and bent	Nil	1,666 kg	2 steel fixers	3 weeks
Basement concrete	400 m ³	Site mixed	14/10 mixer	100 m ³	6 concretors	4 weeks

Contract: XYZ Development Project														
Activities	Time in months													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Site preparation/set-up	=====	==												
Sub-structure		=====	=====	=====	==									
Drainage		=	=====	=====	==									
R.C. frame				=====	=====	=====								
Masonry						==	=====	==						
Cladding							==	=====	==					
Services					=====	=====	=====	=====	=====	==				
Roof covering								=====	=====	=====				
Partitions						==	=====	=====	=====	=====				
Carpentry/joinery						==	==			=====	=====	=====	=	
Internal finishings												=====	=====	
Glazing												==	=====	
Painting					==	=====	=====	==					=====	
External works										==	=====	=====	=====	=
Site clearance														=====

Figure 1. Example of a master programme

Contractor's Preparation



- Site layout
 - Study, plan and organise the unused areas of site to accommodate construction equipment, materials and buildings for use in the works
 - What are the influencing factors?
 - How to work out the site plan?
 - What are the primary considerations?



Contractor's Preparation



- Site layout (cont'd)
 - Major items to consider:
 - Temporary buildings (offices, welfare building, drying rooms, sanitary conveniences)
 - Material storage areas
 - Location of plant
 - Temporary roads, hardstanding and access
 - Sundry points (e.g. stand pipes, site name boards, vehicle wash areas)

Contractor's Preparation



- Schedule of resources
 - Plant schedule
 - Staff schedule
 - Labour requirement schedule
 - Materials schedule
 - Schedule of sub-contractor's work
- Sundry arrangements
 - Temporary site services, insurance, licences, etc.

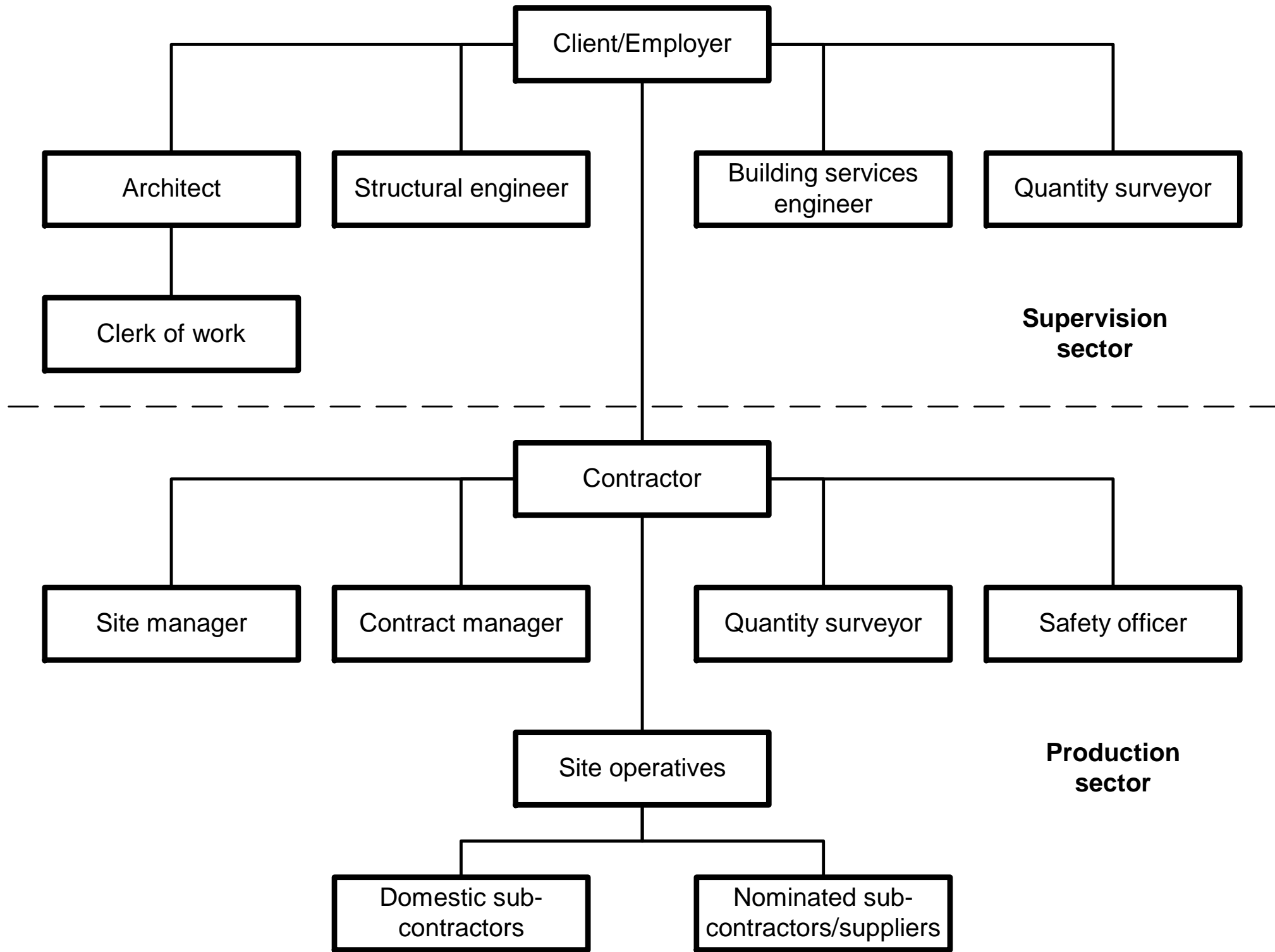


Site Production



- Setting up the site
 - Site grid, site levels, site boundaries
 - Temporary buildings & facilities
- Project administration
 - Project team and site personnel
 - Their responsibilities and roles





Site Production



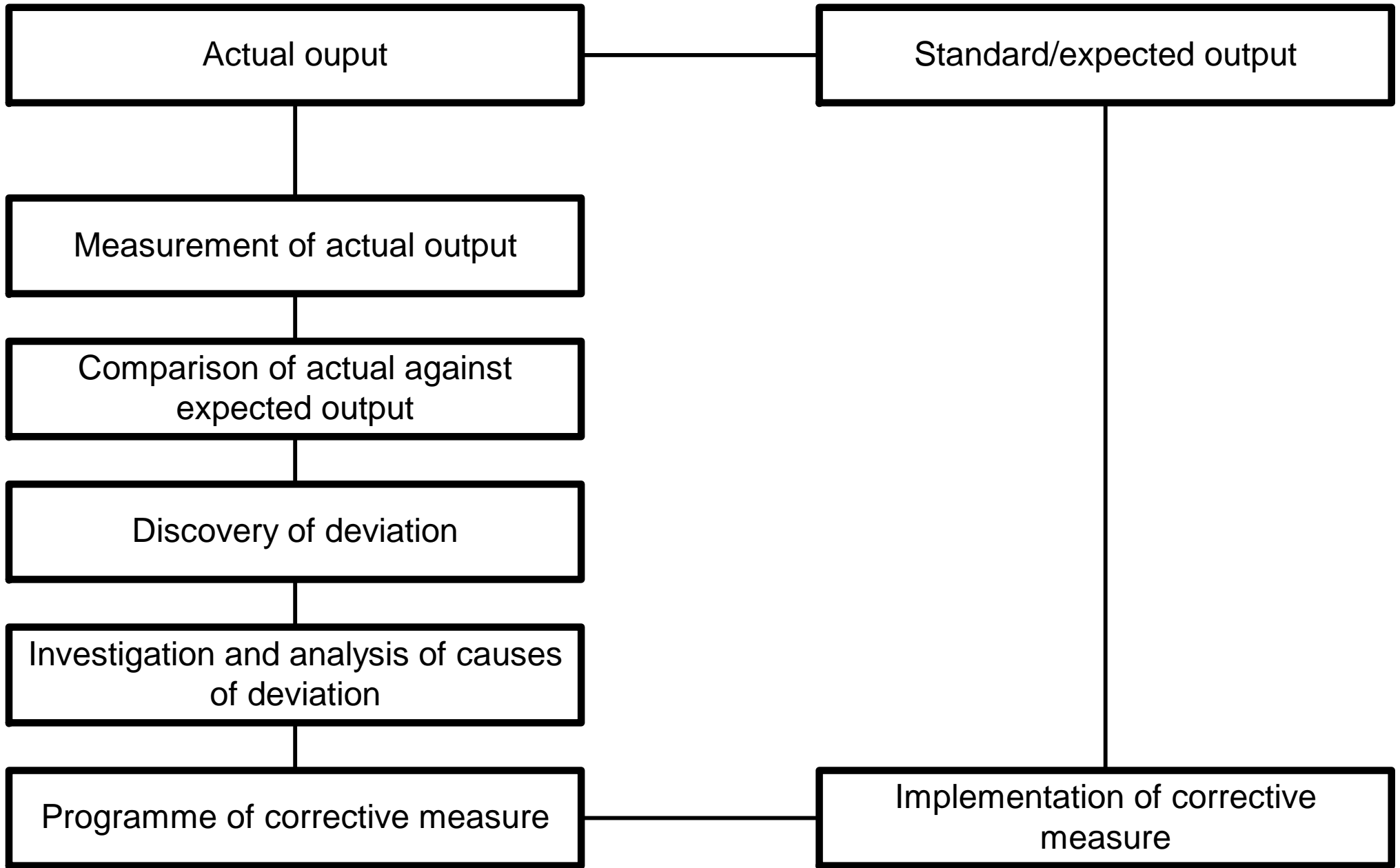
- Site personnel (see notes for details)
 - Clerk of works
 - Contract manager
 - Site agent/manager
 - Safety officer
 - Quantity surveyors
 - Engineers



Control Process



- Control over the execution of the projects
 - Measure progress or result against a standard (established by the planning & programming)
- Monitoring cycle
 - Measure actual output, compare against planned
 - Analyse the cause of deviation, propose corrective measures, the process is then repeated



The control process

Control Process



- Areas of control (see notes for details)
 - Labour
 - Sub-contractors
 - Productivity
 - Materials
 - Plant
- Aims: quality, safety, efficiency



Control Process



- Examples of factors that affect M&E site productivity (see the figures in handout)
 - Ishikawa (or fishbone) diagrams*:
 - How to read it?
 - How to use it?
 - Pre-construction stage factors
 - Construction stage factors

*Ishikawa diagram - Wikipedia, http://en.wikipedia.org/wiki/Ishikawa_diagram
(How to Construct a Fishbone Diagram (9:21), <http://youtu.be/AT4hdB3UcMk>)

Practical Examples



- Video: Site Organisation and Planning [29 min.], Qi Training, Swindon, Wilts, 1990. [AV 690.11 S62 VHS]
 - For concrete practice on the site
 - Also apply to other practice



Practical Examples



- Leading questions to discuss
 - What are the key issues for site organisation?
 - Ans:
- Who are involved in the planning process?
- Ans:
- How could we ensure quality, safety, efficiency?
- Ans:

Practical Examples



- Case Study: HKU Kadoorie Biological Sciences Building (the section on Site Planning)
 - <http://civcal.media.hku.hk/biosci/default.htm>
- Case Study: HKU Medical Complex (the section on Site Planning)
 - <http://civcal.media.hku.hk/medical/default.htm>
- Case Study: 2-storey Prefabricated Building at HKU (the section on Site Planning)
 - <http://civcal.media.hku.hk/prefab/default.htm>