

# Design and Build Contracts

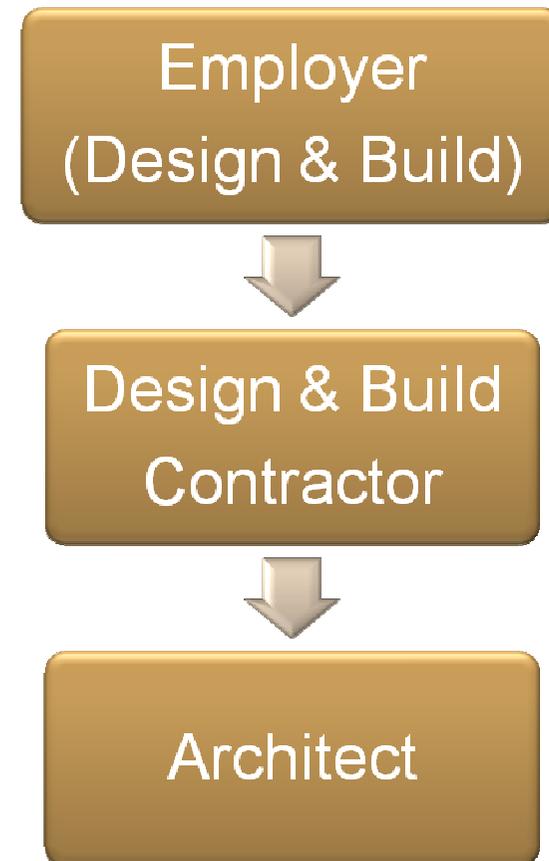
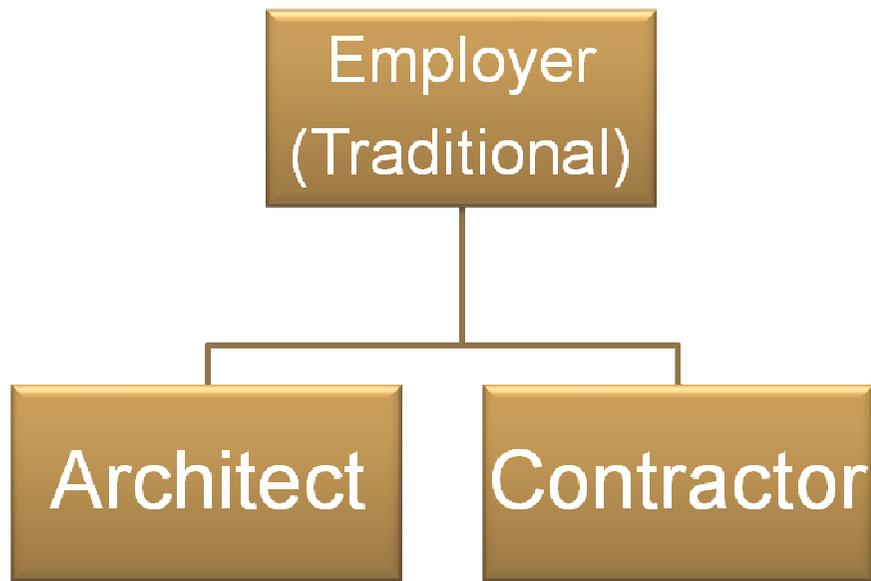


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# Design and Build

- What is design and build?
- Anatomy of a Design and Build Contract?
- Advantages
- Main Features
  - Scope of Design Liability
  - ICE
  - Variations
  - Payment Issues
- Questions

## Traditional Model v D&B Model



## Traditional Model v D&B Model

- Design and Build is not new
- Used extensively across the World particularly for house building and process plants
- United States - 40% of construction market
- Hong Kong – increasing use
  - KCRC and MTRC Projects
  - Hong Kong-Zhuhai Bridge
  - Tamar Project
  - Kai Tak Cruise Terminal

# Contract Documents

- Formal Agreement
- Conditions of Contract
- Employer's Requirements
- Contractor's Proposals
- Schedule of Rates

## Advantages of D&B Contracts

- Single point of responsibility for the Employer
- Greater cost certainty
- Reduces conflicts between Contractor and Designer
- Increases buildability
- Allows for value engineering and presents opportunities for the contractor to increase profit
- Fast Track Projects
  - Overlapping programmes for design and construction
  - Fewer Extensions of Time
- Bankability

## Main Features



## Liability for Design

- Key point of difference relates to design
  - Who produces it?
  - Who is liability for it?
  - The extent of liability:  
Reasonable skill and care v fitness for purpose
  - How the Employer can control the design?

## Liability for Design

*EMI v IBA (1980)* – House of Lords

### **Facts:**

1. IBA contracted with EMI for EMI to "supply and erect a television mast"
2. IBA required EMI to enter into a nominated subcontract with BICC to supply and erect the mast
3. The mast was 1250 feet high cylindrical structure with three lanes of stays, each at 120 degrees
4. At that time "no one had designed and built such a cylindrical mast in the UK and no one had built a cylindrical mast of that height anywhere in the World"

## Liability for Design

*EMI v IBA (1980)* – House of Lords

### **Facts:**

1. The Project involved work which was both at and beyond the frontier of professional knowledge
2. The mast was complete and accepted in 1966 and in 1969, it collapsed
3. A committee of enquiry found that the collapse was caused by the combination of vortex shredding and asymmetrical ice loading
4. IBA sued EMI and BICC, the subcontractor

# Liability for Design

*EMI v IBA (1980)* – House of Lords

## **Decision: Liability for Design**

1. EMI defended the claim that they were not responsible for the design. This was because the contract did not state that EMI was liable for design and in reality BICC had designed the mast and had dealt with IBA directly
2. The House of Lords held EMI liable for design
  - supply, delivery, erection and installation includes liability for design
  - if not, then IBA had no contractual remedy for design defects
  - EMI could price for risk

cf *Norta Wallpapers v John Sisk (1978)*

## Liability for Design

*EMI v IBA (1980)* – House of Lords

### **Decision: Scope of Duty**

1. Court of Appeal decided that design not negligent but EMI were still liable because the obligation was to provide a mast which was "fit for purpose"
2. House of Lords decided that the failure to take into account stress caused by asymmetric ice loading was negligent – therefore no need to decide whether there was a fit for purpose obligation

## Liability for Design

*EMI v IBA (1980)* – House of Lords

### **Decision: Scope of Duty**

However:

*"In the absence of a clear, contractual indication to the contrary, I see no reason why one in the course of his business contracts to design, supply and erect a television mast is not under an obligation to ensure that it is reasonably fit for the purpose for which he know it is intended to be use."*

per Lord Scarman

## Liability for Design

*EMI v IBA (1980)* – House of Lords

### **Decision: Scope of Duty**

*"In the circumstances it is not necessary to consider whether EMI had by their contract undertaken to supply a mast reasonably fit for purpose for which they knew it was intended...but had that been argued, I would myself have been surprised if it had been concluded that they had not done so."*

per Viscount Dilhorne

# Viking Grain Storage v T H White Installations

## The Facts

- Viking appointed White to design and build a grain drying and storage installation. White were specialists in that field
- Water seeped through the floor and into various parts of the installation
- Viking sued White. The court was asked to consider two preliminary issues:
  - Whether it was to be implied into the contract that materials are to be of good quality and reasonably fit for their purpose
  - Whether it was to be implied into the contract that the completed works would be reasonably fit for their purpose

## Viking Grain Storage v T H White Installations

- HH Judge John Davies QC:
- *"If the purpose is known to the seller as to show reliance on his skill and judgment, a warranty of fitness will be implied"*
- *... The virtue of an implied term of fitness for purpose is that it prescribes a relatively simple and certain standard of liability based on 'reasonable' fitness of the finished product, irrespective of fault and of whether its unfitness derived from the quality of work or materials of design"*

# Standard Form Contracts

- Hong Kong Government
- KCRC Conditions
- FIDIC

## Hong Kong GCC for D&B Contracts (1999 Edition)

- Clause 23(1):
  - The contractor shall, unless it is otherwise provided in the contract, have in respect of any defect or insufficiency in the design of the Works ... The like liability to the Employer ... As would **an appropriate professional designer** holding himself out as competent to take on the design of the Works, provided always that:
    - (a) ... the Contractor shall ensure that all ... **Plant and materials** are **reasonably fit for purpose** intended by the contract.
    - (b) ... **In no circumstances** shall the Contractor be obliged to ensure that the **design** is **fit for the purpose** intended by the Contract.
- Key: **the contractual duty** and **to what it relates.**

# KCRC Conditions

- GCC 12.2

The Contractor shall be entirely responsible for the Contractor's design of the Permanent Works and the Temporary Works.

- GCC 12.3

The Contractor warrants to the Employer that:

- (a) He has exercised and shall to continue to exercise in his design of the Permanent Works and Temporary Works, all the skill and care to be expected of a professionally qualified and competent designer.
- (b) The Permanent Works and Temporary Works shall comply in all respects with the Contract and Design Documents.

# KCRC Conditions

- GCC 37

...Nothing within this clause or contained elsewhere in the Contract shall deem any design obligation to be subject to a fitness for purpose obligation.

# FIDIC Silver Book

## Article 4.1

The Contractor shall design, execute and complete the Works, and shall remedy any defects in the Works. When completed, the Works shall be fit for the purpose for which the Works are intended as defined in the Contract.

# The Principal's Consultant

## Role in a design and construct contract

- Will produce the design and specification for tendering but not the whole design:
  - Invariably not the whole design at tender stage
  - Specification is likely to be significantly more performance based
- Review of Contractor's design:
  - Careful consideration
  - Judgment as to what is acceptance/what complies
- Practical limits on control over design changes:
  - Design changes could be expensive
  - Cf GCE Clause 24

# The Contractor's Consultant

## Terms of the Consultancy Agreement

### Standard of Care

- An express reasonable skill and care clause is required
- An express exclusion of fitness for purpose would be better
- Do not accept a "back to back" clause
- Programming Requirements
  - Review carefully clauses imposing obligations to review "diligently" or "in accordance with the Contractor's programme"
  - The consultancy agreement may also seek to pass on liabilities such as liquidated damages to the engineer

# The Consultant's Liability

- *Greaves v Baynham Meikle*
  - The contractors undertook to build a warehouse for the employer, supplying materials, labour and necessary experts
  - The constructors engaged consultant structural engineers to design the warehouse, making known the purpose: storing and moving oil drums by forklift truck
  - Shortly after completion, due to vibrations caused by the forklift trucks, the floor began to crack
  - Held: that because the designers *knew* of the employer's requirements, they (as well as the contractors) would be liable

## The Consultant's Liability

- *Greaves v Baynham Meikle*
  - It was judged that the facts of the relationship gave rise to knowledge that the warehouse was to be used by forklift trucks
  - The case did not impose a higher duty than the usual test – but in special circumstances the standard of reasonable skill and care required can be higher in particular circumstances

## Consultants Group International v Worman

- Worman expressly agreed to design and build an abattoir which was fit for purpose and would comply with EEC standards, undertakings which were breached
- It was held that CGI's obligations to Worman were equivalent to Worman's obligations to Turner
- It was therefore implied into the CGI/Worman contract that CGI's design obligations should reach the fit for purpose standard



# The Contractor's Consultant

- Novation:
  - Common in other Jurisdictions
  - Not common in Hong Kong
  - Case Study:
    - Sports Stadium Project
    - Architect carried out Scheme Design
    - Contract - design and build
    - The Project was late
    - Contractor sued Architect for breach of warranty about the state of the design

# The Independent Checking Engineer

- Roles and Responsibilities
- Duties and obligations may be set out in the consultancy agreement.
- Will also be concurrently liable in tort for negligence
- Should ensure that the ICE consultancy sets out
  - Exact extent of scope of works
  - No general warranties concerning fitness for purpose
  - Limitations/Exclusions of liability

# Variations

- Variations are still possible
- Usually limited to changes to the Employer's Requirements
- Contractor's Responsibility for Design Development
  - Multiplex v Epsworth Hospital (1995)
  - Attempts to define development of the design

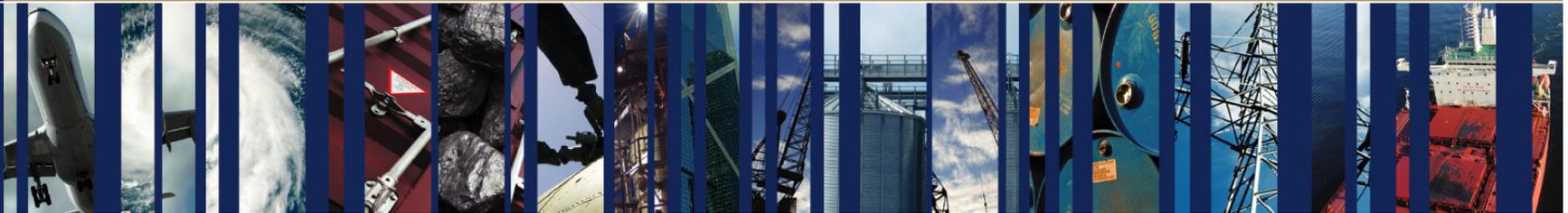
# Payment

- Usually lump sum contracts
  - Not remeasurement
  - Often payment is made by way of completion of set milestones
  - A schedule of rates is included for the valuation of variations
  
- Can be Cost Plus – or GMP Contracts
  - Case Study - Australian International School
    - Payment by Milestones
    - Value Engineering
    - Funding obtained from external sources
    - Pain Share/Gain Share arrangement
    - On time and within budget

# Problems

- Design – Lowest cost leads to poor design
- Project Management - Duplication of Costs
- Lack of Control over the Design
- Drafting of Project Brief or Employer's Requirements
  - Interpretation of subjective terms - eg best quality
  - Not restricting design freedom of the Contractor

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