Agenda

■ Core Competency requirements
■ Cost Planning – Preparation, Update and Control
■ Comparative Design – Cost Studies
■ Cost Reconciliation
■ Tips on successful cost planning
■ APC Questions Example
Core Competencies

- 4.1 Able to understand the build-up of properties development budget, and methods of valuation of construction costs
- 4.2 Able to use cost data including adjustments to various factors such as locations, specification, time and market forces
- 4.3 Able to demonstrate knowledge of various factors affecting economics of a design and construction
- 4.4 Able to undertake financial feasibility and comparative design studies
- 4.5 Able to prepare cost plans, update cost plans and carry out cost checks and control
- 4.6 Able to prepare cost estimates by various estimating techniques
- 4.7 Able to evaluate alternative design solutions and life cycle costing
- 4.8 Able to prepare and interpret cash flow projections and profit/loss forecasts
- 4.9 Able to prepare cost reconciliation statements with previous cost estimates and with costs of similar projects
- 4.10 Able to prepare cost analysis

*Hard to gain the competencies without practice*
Cost Planning - Preparation

When and What

- Feasibility Concept Design
  - High level
  - $/m²
- Scheme Design
  - Functional / Elemental cost
  - Major quantities
- Detailed Design
  - Sub-elements
  - Approximate quantities
Cost Planning - Preparation

Feasibility, Concept Design

■ Why?
  – To see if the project is affordable / test business case
  – Set a budget or limit for design direction

■ Technique
  – Use a unit of measurement (quantity) x a unit rate ($) = Estimate of Construction Cost

■ Alternative technique
  – Elemental evaluation of the major building elements e.g. structure, MEP, fit out
  – Functional Quantity x $ unit rate e.g. $/room, $/staff

■ Measurement – GFA v CFA v Net Internal Area
  – Area calculation – floor plans, area schedule, calculation from brief
Cost Planning - Preparation

Scheme Design - Elemental cost plan

- Why?
  - Cost allocation to ensure value for money
  - Aware of cost implications of alternative design
  - Set targets for each element
  - Enable decision on design and specification of major elements and systems before Detailed Design
  - Control expenditure

- Technique
  - Elemental cost build-up by $/m2,
  - Approximate quantities (major items)
  - Industry norms, e.g. pile no./m², type, structural ratio, wall to floor ratio, MEP system, fitout standard
  - Prime cost rates (major items)
  - Budget allowance for special features, systems
Cost Planning - Preparation

Detailed Design – Sub-elements, approximate quantities

- Why?
  - Enhance quick decision making on design details
  - Ensure Detailed Design does not deviate from Scheme Design or exceed the budget
  - Monitor cost against detailed design development
  - Preview of pre-tender estimate

- Technique
  - Sub-divide functional areas e.g. lobby, toilets, BOH
  - Approximate quantities – rebar ratio, finishes, door types, MEP main plant, ductwork, pipework
  - Composite unit rates
  - Supplier’s quotation

A Detailed Design Cost Plan is effectively a pretender estimate
Cost Planning - Preparation

Cost Plan Layout

Core content

- Summary
- Reconciliation
- Brief scope of works
- Breakdown – depend on the stage
- Outline Specification and Assumptions
- Exclusions
- List of information used
- Area schedule

Optional

- Comparison with Benchmarks / “Should Cost”
- Life cycle costing
- Value Engineering
- Risk Management
- Next steps

Are all above sections required for a feasibility cost estimate?
CFA v GFA

- Gross Floor Area V Construction Floor Area
- CFA used for QS for estimating
- GFA Architect for Building Submission, see Building Regulation definition
- CFA = areas constructed to outside of external walls
- GFA common non accountable areas
  - Fire refuge, M&E rooms, Car park
- CFA are larger than GFA
- Questions: Are A/C platform and bay windows included in GFA?
- Areas taken from drawings or client’s brief – check carefully what is included or not included

Some clients need to $/m2 GFA
Cost Data

■ Rates
  – Internal project data e.g. tender rates, benchmarking, analysed data
  – External publications
    • Consultants
    • ASD
  – Contacts e.g. client, contractor, supplier.

■ Project particulars to consider
  – Location
  – Site condition
  – Price level
  – CFA
  – Floor height
  – Service quality
  – etc.

QS are expected to remember rates for common items
Factors for adjustment of unit rates

- Programme – when will the project be tendered. Use the TPI index
- Location – site conditions, logistics, transport costs, availability of labour
- Size – height, GFA, floor to ceiling, building shape, economies of scale, net to gross efficiency
- Functional requirements – club house, meeting rooms, BOH, carpark
- Outline specification
  - Quality – 4*, A grade, Luxury
  - Architectural feature
  - Building Services Systems
  - Structural specification
- Procurement strategy

Need to consider the background of designer, contractor and client
Factors affecting future tender price

- Consumer Price Index
- Contractor pricing strategy
- Increase in labour costs due to under supply
- Currency
- Commodity Prices
- Foreign demand for construction materials
Are the following answers to questions appropriate?

- Q: What minimum information do you need to do a concept design cost plan?
  A: I need sufficient design details for tender purpose including door schedule, MEP equipment list, finishes schedule.

- Q: How long do you take to do a feasibility cost estimate for a hotel development in Central?
  A: Three months.

- Q: What do you allow for foundation?
  A: $2,000/m2

- Q: What air conditioning system do you allow in cost plan?
  A: Pending building services engineer’s advice.

- Q: What procurement method do you assume in the cost plan?
  A: At such early stage, the procurement method is not relevant to cost.

Answers above are not expected from a professional QS
Cost Plan Update

- **Must do**
  - Floor area check
  - Review outline specification, assumptions, exclusions
  - Communication – Capture latest information through meetings, emails, design presentation, client’s brief

- **How?**
  - Keep $/m², adjust the area
  - Adjust $/m²
  - Replace $/m² by approximate quantities (priced)
  - Pricing update – recent tenders, specialist / supplier’s quote
  - Focus on major items

- **Watch out**
  - Do not always re-measure everything
  - Incomplete drawings / specification

*How is the cost plan expected to change due to design development?*
Cost Planning - Control

- Cost Plan itself is the best tool
- Set targets / ceiling cost
- Monitor and action when target cost exceeded
- Set out stages / gateways for cost checks
  - When? What is it based on?
  - Review with client, design consultants
  - Next steps
- Value engineering – QS should lead
- Action plan for worse scenario
  - Contingencies
  - Options
Comparative design cost studies

- Identify key differences and price them – always review with designer
- Demonstrate understanding of relationship between different elements
- Consider change in quantity, specification, construction method
- Consider life cycle cost, operational cost, commercial impact
- Beware of specialist work / proprietary products / specified brand / supplier – get quotation
- Common questions:
  - High rise Vs Low rise, 20 / 40 / 60 storeys
  - Floor height 3.5m / 4m / 4.5m
  - Structural system – RC Vs Steel Vs Composite
  - Facade – Glass Vs Stone Vs Metal cladding
  - 2-level basement instead of 1-level basement
  - A/C systems – VAV / VRV / Air Cooled Vs Water Cooled
Cost reconciliation

What to remember?

■ Cost reconciliation is a MUST – every time a cost plan is updated
■ Do it before we send out the revised cost plan
■ Identify movements from previous cost plan
■ Details – Not too much, which can create confusion or not too little, which hides the key reasons for change
■ Demonstrate clear understanding of cost drivers
Cost reconciliation (Cont’d)

Primary factors causing changes in cost

- Client’s requirements i.e. change of project brief
- CFA
- Design development
- Tender price fluctuation
- Re-allocation of costs to suit client’s budgets
- Inclusion of excluded items and vice versa
- Correction of previous underestimate or overestimate?
Cost reconciliation (Cont’d)

Is this a good cost reconciliation?

<table>
<thead>
<tr>
<th>BBC International School</th>
<th>Estimated Construction Cost Reconciliation</th>
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<tr>
<td></td>
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<tr>
<td>Cost as at 1 April 2012</td>
<td>80,000,000.00</td>
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<tr>
<td>Use of bored piles</td>
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<td>Increase in laboratories</td>
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<td>Delete safety fence at 1/F roof</td>
<td>(259,113.22)</td>
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<td>Direct purchase of chairs by school</td>
<td>(407,555.12)</td>
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<td>Add louvre to G/F plant room</td>
<td>11,119.16</td>
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<tr>
<td>Change glass wall from $3,000/m2 to $4,000/m2</td>
<td>3,479,500.00</td>
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<td>Electrical installation</td>
<td>5,000.00</td>
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<tr>
<td>Miscellaneous</td>
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<tr>
<td>Cost as at 1 July 2012</td>
<td>92,179,823.62</td>
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Cost reconciliation

Tips

■ Put your position as the reader
■ Always record apparent movements everybody expects
■ Show savings where possible
■ Use key words
■ Give quantity and rates where appropriate
■ Communicate with client and design consultants on changes before formal report
■ Be prepared for request for VE and risks mitigation measures
Successful Cost Planning and Control

- Do your basics well – measurement
- Estimating skills – $/m^2, $/functional unit, use of norms e.g. structural ratio, size of carpark, wall to floor ratio, etc.
- Understanding of construction method / technology
- Data bank – unit rates, analysis, benchmark
- “Should Cost” instead of just “benchmark”
- Fully consider the factors other than design
- Network – clients, contractors, designers, colleagues
- Communication with project team
APC Questions Example

■ You have a project benchmark for 4-star hotel guestroom floor fit out. The cost was HK$100m. 400 rooms, standard room 25m2.
■ Prepare a feasibility cost estimate for fitting out a new 5-Star Hotel guestrooms with 200 rooms
■ What are the key assumptions?
■ What other information would you ask to prepare a detailed cost plan?
Contact

Thank you

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