

Cost Management and BIM

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Presentation to BIM Regions East

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AECOM

Introduction

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NEC Accredited Project Manager

- Senior Cost Manager at AECOM
- 9 years with AECOM
- Most experience in higher education, further education, science and labs



Introduction

- Cost planning and pre-contract cost management
- Tender
- Contract
- Post-contract work by the contractor
- Completion and soft landings



Cost Planning

NRM 1: Order of cost estimating and cost planning for capital building works

This is the industry standard for what we measure, how and when.

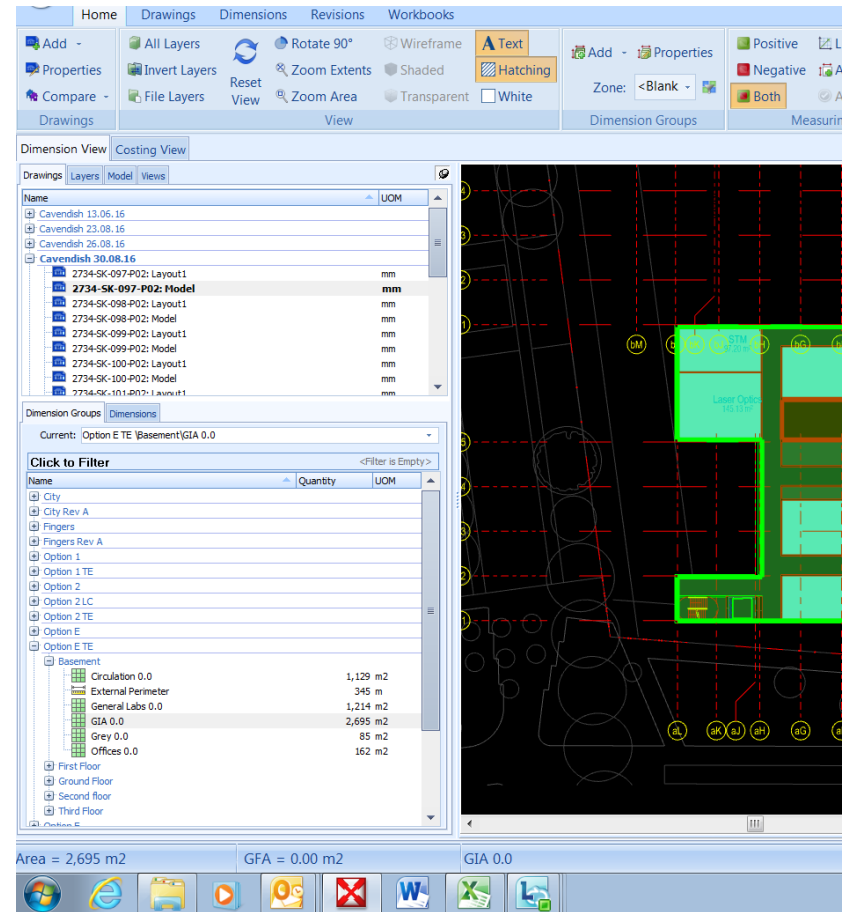
The level of detail that we measure increases as we complete these deliverables.

There will be cost checks between these formal cost plans – ‘bottom up’ design checks, and monthly progress reporting.

		RIBA Work Stages	RICS cost estimating, elemental cost planning and tender document preparation stages	OGC Gateways (Applicable to projects)	
Preparation	A	Appraisal	Order of cost estimates (as required to set authorised budget)	1	Business Justification
	B	Design Brief		2	Delivery Strategy
Design	C	Concept	Formal cost plan 1	3A	Design Brief and Concept Approval
	D	Design Development	Formal cost plan 2		
	E	Technical Design	Formal cost plan 3 Pre-tender estimate	3B	Detailed Design Approval
Pre-construction	F	Production Information	Bills of quantities (Quantified) schedule of works (Quantified) work schedules	3C	Investment Decision
	G	Tender Documentation			
	H	Tender Action			
Construction	J	Mobilisation		4	Readiness for Service
	K	Construction to Practical Completion			
Use	L	Post Practical Completion		5	Operational Review and Benefits Realisation

Cost Planning – Receiving a Model and Making it Work

- Timing of issue is exactly the same as conventional drawing issues
- Issue the 2D drawings as well
- Format – dwfx
- Size of file
- Split the files up if necessary



Cost Planning – Things That Go Wrong 1

Current Model Structure:

REF	Family Name	Level 1	Level 2	Level 3	Level 4
1	AA_SD_SGL	Doors	AA_SD_SGL	910	AA_SD_SGL
2	Floor	Floors	Floor	AA_Slab 200mm	Floor
3	Basic Wall	Basic Wall	Walls	Internal- Type PT01	Basic Wall
4	AA_Concept Window	Windows	AA_Concept Window	Concept	AA_Concept Window

Example of Preferred Model Structure (references from NRM1):

REF	Family Name	Level 1	Level 2	Level 3	Level 4
1	2- Superstructure	8- Internal Doors	1- Internal Door, Single	2- Fire Resisting Doors	Type A + NBS SPEC REF XYZ
2	1- Substructure	3- Lowest Floor Construction	1- 200mm Thick Slab, 200kg/m3 rebar	-BLANK-	Type A + NBS SPEC REF XYZ (maybe not required for floors)
3	2- Superstructure	1- Walls and Partitions	1- Walls and Partitions	3- Fixed Partitions, 200mm thick overall	TYPE PT01 + NBS SPEC REF XYZ
4	2- Superstructure	6- Windows and External Doors	1- External Windows	1- Windows, size details stated	TYPE A + NBS SPEC REF XYZ

Cost Planning – Things That Go Wrong 2

– GIA

‘Gross Internal Area is the area of a building measured to the internal face of the perimeter walls at each floor level’

- If you add up the room areas it doesn't equal the GIA because the internal divisions of space are missing

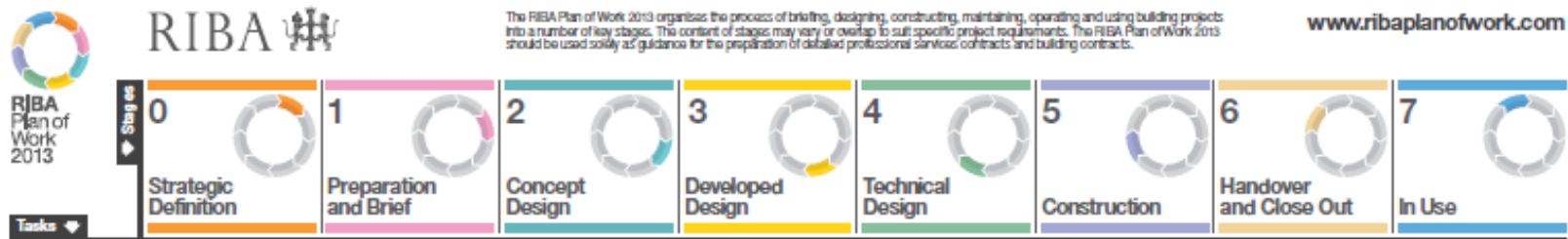
– Over- and Under- Measures

- Are the columns drawn as a continuous object running through the upper floors?
- Is the façade drawn with each façade type as an object, or with each layer of construction build-up as an object?

Tender – Common Procurement Routes

– Two Stage Design, Develop and Construct

- First stage tender late RIBA 2 or early RIBA 3
- Validation input in RIBA 3
- Contractor takes over design through RIBA 4
- Contract let at the end of RIBA 4.
- NEC Option A – Priced Contract with Activity Schedule (i.e. no bill of quantities)
- But BIM Mandate says *all* centrally-procured public sector projects



Tender – Sending the Correct Documents Out and Asking the Right Questions

– Sending the correct documents out

- Post-contract award BIM Execution Plan, Employer's Information Requirements, Asset Information Requirements, Model Production and Delivery Table, BIM Protocol and Appendices, Pre-Contract Award BIM Execution Plan, Supplier BIM Maturity Matrix
- Information Manager Tender Notes

– Asking the right questions

- Contractor tenders with a post-contract design team. Evaluation questions?
- Deliverables of a Stage 1 or Stage 2 tender. 'Provision of a Pre-contract BEP which includes Supply Chain Capability Summary, BIM Assessment Form(s), Supplier IT Assessment Form(s) and Resource Assessment Form(s)'

Contract – Including the Correct Documents

– Including the Correct Documents

- Similar to list of tender documents – what is contractually binding?
- Model not included in Works Information

Post-Contract Work by the Contractor

– Incorporating Cost Data into the Model

- Level of detail required to make good use of 4D and 5D
- Emerging level of expertise

– Complexity in costing

- Abortive design
- Lead-in times on alternative materials
- Reduced / increased subcontract markets

Completion and Soft Landings

- **Setting out the requirements of completion**
 - Contractual definition

- **Soft Landings**
 - Requirements of the contractor post-completion

Conclusion

- **Help us non-experts!** We'll check your measurements, so help us understand how it's been drawn.
- **What procurement method is your project using?** What stage will a contractor will be involved?
- **When is your project is being tendered?** Ask to see the assessment criteria. Ask to see the list of tender deliverables.
- **When is your contract being let?** Ask to see the list of documents included, and how we're defining Completion.

Thank You

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