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Bidding for BIM

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CIF
Bidding for BIM



Lean Construction, Building Information Modelling (BIM), Innovation and Continuous Improvement Committee

Table of Contents

Foreword	4
1. Introduction	4
2. Agreement on Process & Standards to be utilised (PAS 1192-2)	5
3. Employers Information Requirements (EIR)	6
4. BIM Protocol included in all Appointments, Contracts, Sub-Contracts (Including	6
5. Participants Pre-Qualified on BIM Capability (PAS 91 Table 8 Questions)	7
6. Appoint Project Information Manager	8
7. Professional Indemnity Insurance	8
8. BIM Execution Plan (BEP)	9
9. BIM Capability Assessments for all participants & Project Implementation Plan (PIP)	9
10. Common Data Environment (CDE) in place (compliant with BS 1192)	10
11. Digital Plan of Work	10
12. Task Information Delivery Plans (TIDP) & Master Information Delivery Plan (MIDP)	11



CIF

Bidding for BIM



Lean Construction, Building Information Modelling (BIM), Innovation and Continuous Improvement Committee

Foreword

The development of this document, Bidding for BIM, has set out with the objective of streamlining and mitigating the inefficiencies during the prequalification BIM tender construction procurement process.

It has been assumed in the preparation of this Construction Industry Federation document that the execution of its provisions will be entrusted to a competent person or persons for whose use it has been produced.

1. Introduction

Building Information Modelling (BIM) has become an industry standard on all types of construction projects. As more construction companies reap the benefits of BIM, more projects add a modelling component.

When a tender package is received for pricing that has a BIM element, it is imperative the all areas are covered to ensure that the Project has been priced correctly, you understand clearly what you are going to receive, but most importantly what you must deliver at the end of the project to the client.

There are many factors that will alter the information within the pricing of a project such as:

- Procurement routes (design and build, traditional, 2-stage, novated designers etc.)
- Programme, as the programme develops the timing of the release of information may need to be altered
- Specialist Designers, what specialists are needed and when information is required

The use of this set of common criteria by those who undertake prequalification activity or provide prequalification services will help to streamline tendering processes by:

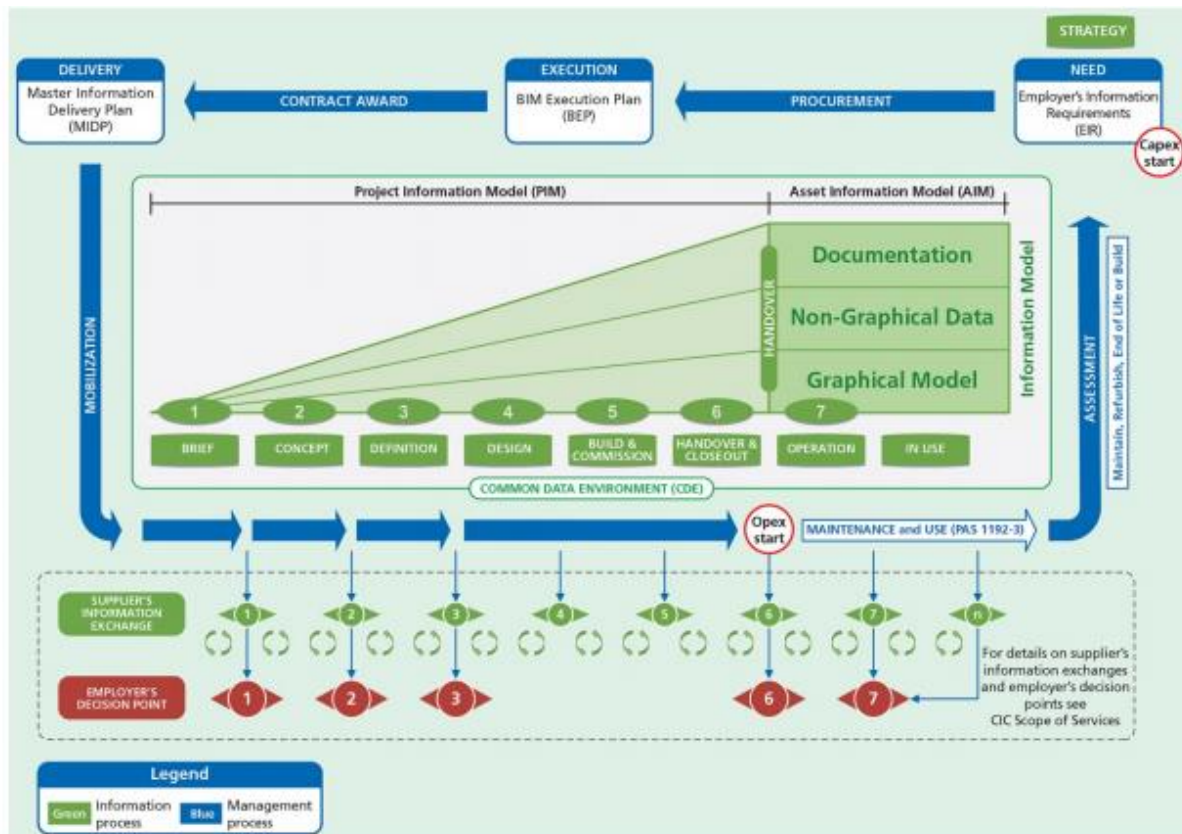
- Reducing the risk of pricing without all relative information;
- Facilitating the identification of suitably projects for main/specialist subcontractors;
- Increasing consistency between various prequalification databases;
- Clarifying the distinction between criteria at the prequalification and contract award stages of the procurement process



CIF Bidding for BIM



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The information delivery cycle, PAS 1192-2:2013

Below is a list which will provide guidance when bidding for a BIM project.

2. Agreement on Process & Standards to be utilised (PAS 1192-2)

Ensure each member of staff working on the bid is competent and has a good working knowledge of this document before proceeding. At present, this is PAS 1192-2 but will transition into ISO 19650 in the near future.

Resources:

- Has the Employers Information Requirements (EIR) been provided within the tender documents?
- Standards to be used UK (BS 1192 / PAS 1192 / BS 8541) US (BIMForum/AIA)
- Classification (Uniclass 2015)
- Asset Information Model (AIM) requirements (PAS 1192-3)
- Non-graphical data requirements (BS 1192-4)
- Data security requirements (PAS 1192-5)
- Handover Procedure & Post Occupancy Evaluations ("soft landings" – BS8536)



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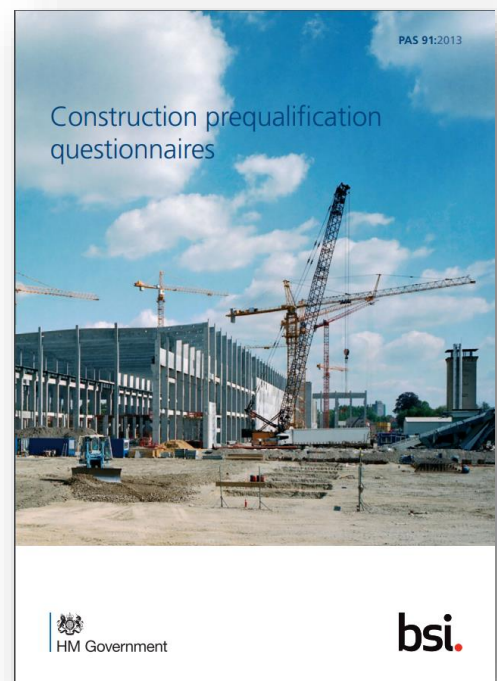
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5. Participants Pre-Qualified on BIM Capability (PAS 91 Table 8 Questions) with supporting documents.

BSI PAS 91 is a publicly available specification (PAS) and is the standard capability form when tendering for a BIM project. The document is used to streamline and reduce the cost of prequalification. To be eligible, it is necessary that suppliers demonstrate that they possess or have access to the governance, qualifications and references, expertise, competence, health and safety/environmental/financial and other essential capabilities to the extent necessary for them to be considered appropriate to undertake work and deliver services for potential buyers

Table 8:

- **O4-Q1:** Do you have the capability of working with a project using a “Common Data Environment” as described in PAS 1192:2:2013?
- **O4-Q2** Do you have documented policy, systems and procedures to achieve “Level 2 BIM” maturity as defined in the government’s BIM Strategy?
- **O4-Q3** Do you have the capability of developing and delivering or working to (depending upon the role(s) that this PQQ covers) a BIM Execution Plan (BEP) as described in PAS 1192:2:2013?
- **O4-Q4** Do you have arrangements for training employees in BIM related skills and do you assess their capabilities?



Resources: <http://shop.bsigroup.com/upload/PASs/PAS91-2013.pdf>



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6. Appoint Project Information Manager (scope of service incorporated into appointment/contract) (CIC BIM Protocol)

Design Stage (Lead Designer)
Construction Stage (Main Contractor)
Operations Stage

The Client is legal obliged to have an Information Manager on every project in accordance with the CIC BIM Protocol. This position was created for several reasons, to interrogate the model, protect the client, provide guidance but additionally to ensure that the client understands what they are to receive at the end of a project. This ensures that non-realistic expectations are not put on the all project stakeholders.

Resources:

<https://www.thenbs.com/knowledge/the-cic-bim-protocol-a-critical-analysis>

<http://bim-level2.org/en/guidance/>



7. Professional Indemnity Insurance

(Insurers advised on participation in BIM project / Integrated Project Insurance)
(CIC Best Practice Guide for Professional Indemnity Insurance)

Please ensure this is in place and covers all elements relating to Building Information Modelling. The aim of this best practice guide when created was to support the construction industry's take up of Level 2 Building Information Modelling, by summarising the key areas of risk which Professional Indemnity ('PI') insurers associate with level 2 BIM and what you can do about those risks as a prudent insured. We are therefore looking to inform you, the insured, of what you might be required to do in order to ensure that your PI insurance arrangements are in order.

Resources: <http://cic.org.uk/download.php?f=best-practice-guide-for-professional-indemnity-insurance-when-using-bim.pdf>



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8. BIM Execution Plan (BEP) Pre-Appointment / Pre-Contract Post-Appointment / Post-Contract

This BIM Execution Plan (BEP) focuses specifically on project delivery, where the majority of graphical data, non-graphical data and documents, known collectively as the Project Information Model (PIM), are accumulated from design, construction activities and then on to the operation of the building.

For a main contractor, having a good knowledge of the client's requirements set out within their EIR will be imperative when completing an adequate BEP. As a specialist subcontractor, it is imperative to understand your requirements set out within the BEP, what you need to deliver and what will be provided in terms of the standard of the model that has been received from the design team, or lack of model detail that has been delivered. Important note, ensure to check the design model when received to ensure it meets the deliverables for a given project stage.

Resources: <https://www.thenbs.com/knowledge/what-is-a-bim-execution-plan-bep>

<http://www.cpic.org.uk/cpix/cpix-bim-execution-plan/>

9. BIM Capability Assessments for all participants & Project Implementation Plan (PIP)

The BIM Assessment Form provides a meaningful method of assessing a project member's BIM competence and maturity. It comprises four sections:

- **Gateway questions:** A set of key questions about willingness to exchange data and Quality of that data. If the answer to any of these questions is 'No' then contact the project BIM enabling team.
- **12 Areas of BIM:** An opportunity to introduce the 12 Areas of BIM from which the project will benefit, and an opportunity for the company being assessed to demonstrate understanding of each of the areas and which areas they could support the project with.
- **BIM Project Experience:** An opportunity to highlight up to three projects where the benefits of BIM have been realised.
- **BIM Capability questionnaire:** The BIM Capability questions, in this section are a discussion starter and are intended to help the project BIM enabling team identify training, coaching and support required.

Resources: <http://www.cpic.org.uk/>



CIF Bidding for BIM



Lean Construction, Building Information Modelling (BIM), Innovation and Continuous Improvement Committee

10. Common Data Environment (CDE) in place (compliant with BS 1192)

A common data environment (CDE) is a central repository where construction project information is housed. The contents of the CDE are not limited to assets created in a BIM environment and may also include documentation, graphical model and non-graphical assets.

Do you currently have a Common Data Environment in place? If not, as a main contractor this will have to be priced in for the BIM Project. A main contractor will generally provide a CDE to the Design Consultants and Specialist Contractors, which will enable them to feed all information into this central location.

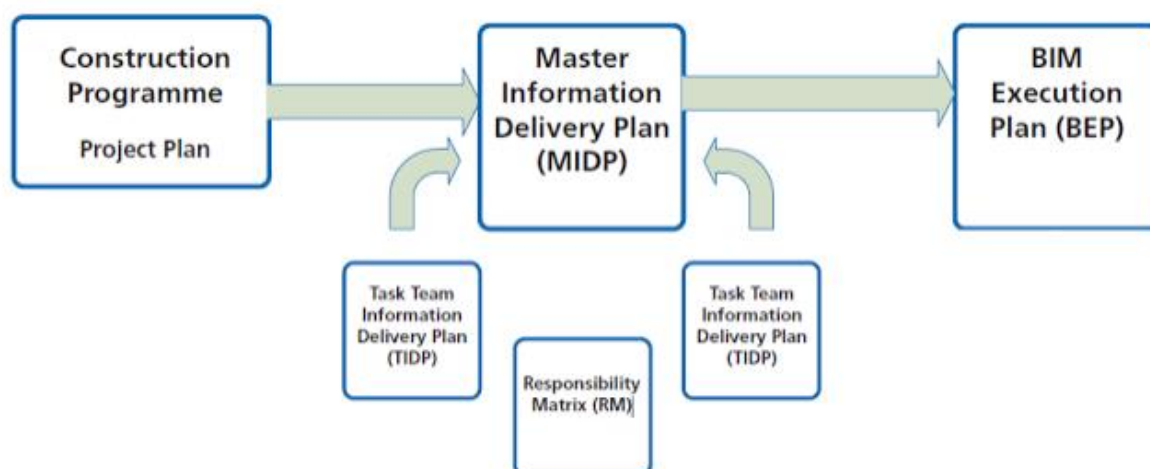
Resources: <https://www.thenbs.com/knowledge/what-is-the-common-data-environment-cde>

11. Digital Plan of Work (list of Participants, Roles, Stages, Tasks, Deliverables, Level of Detail, Level of Information)

A digital plan of work enables a main contractor to define the deliverables required at each stage of a construction project – from developing the strategy through to managing the asset. The content from the plan of work develops over as more information is known about the project. It should be made available to all participants on the project so that they know who must deliver what information and when. This is generally delivered to all members of a project free and information stored within the NBS Tool kit.

Resources: <https://www.thenbs.com/knowledge/what-is-the-digital-plan-of-work>

<https://toolkit.thenbs.com/>



Above: Part extract from PAS 1192-2:2013



CIF Bidding for BIM



Lean Construction, Building Information Modelling (BIM), Innovation and Continuous Improvement Committee

12. Task Information Delivery Plans (TIDP) & Master Information Delivery Plan (MIDP)

The Task Information Delivery Plan (TIDP) will appear like an issue register for drawings. It is referenced as a list of information deliverables by each task including format, date and responsibilities.

The Master Information Delivery Plan (MIDP) is a primary plan which is used to manage the delivery of information during the project lifecycle. Each project stakeholders (TIDP) milestones will align and feed into a project (MIDP).

Resources: <http://bim-level2.org/en/standards/>

<http://bimblog.bondbryan.com/producing-a-task-information-delivery-plan-tidp-from-archicad-19/>

Additional Notes:

- First question to any client when engaging within the BIM process – What do you want the model for?
- Second question when engaging a client regarding a model – Do you have an EIR?
- Ensure employers BIM objectives and associated BIM uses
- Ensure the client has an Information manager engaged, that they follow the BIM process. In addition to having a clear, Informative EIR in which to produce the BEP and price accordingly.
- Ensure that as-built deliverables are agreed and clearly stated as the cost between delivering an as-built model verified in the field by redline PDFs and a point cloud scan are vastly different.



CIF Bidding for BIM



Lean Construction, Building Information Modelling (BIM), Innovation and Continuous Improvement Committee

Sample Model Production Delivery Table (MPDT) which can be created from the digital plan of work and edited to suit the team's deliverable when taking part on a BIM project.

Ensure the item that is to be in the model is clearly labelled

Appendix A - Model Production Delivery Table												
			2 - Concept Design			3 - Developed Design			4 - Technical Design			
Aspect of design			Design team			Design team			Design team			
Classification	Title	Notes	Design responsibility	Level of detail (LOD)	Level of information (LOI)	Design responsibility	Level of detail (LOD)	Level of information (LOI)	Design responsibility	Level of detail (LOD)	Level of information (LOI)	Code
SL_20_10_30	Framed partition systems	Acoustic considerations - drilling holes in the walls for lead lines or interactive whiteboards will reduce acoustics - so they must be designed out. Ensure that the barriers for air-pre-stressed concrete floors are taking into consideration for acoustics. Refer to with the architect.	Architect	2	2	Architect	3	3	Architect	4	4	
SL_20_10_30	Framed wall structure systems	Check span before specification - different spans for open hall and other large double height spaces.	Architect	2	2	Architect	3	3	Architect	4	4	
SL_20_10_35	Framed glazed systems	Typically specification influenced by Secured by Design and PAS24 requirements based on Crime Impact Assessment for each site. Impact on strength and security of frame, glass and assess control system influenced by secondary fire strategy, operation needs of user and MCC / Zwick insurance requirements.	Architect	2	2	Architect	3	3	Architect	4	4	
SL_20_10_60	Panel outside systems	Note: all windows with exception of narrow eally gaps require full height doors and shutters. Inquire cover and fitting strategy needed for each window. Consider also LRV using differential requirement between doors and panels for visually impaired. Check window doors include anti-lift up detail and locking mechanism. It is available for use by people with the latest site preferences for full height PSE used in all pupil toilets with anti-ramp and anti-prise bar fittings to prevent	Architect	2	2	Architect	3	3	Architect	4	4	

Ensure role responsibility is clearly labelled

Ensure Levels of Detail (LOD) is provided

Ensure Level of Information (LOI) is provided

Ensure stage is specified of when this has to be delivered