BIM Case Study

Arthur Rank Hospice, Cambridge

Barnes Construction were appointed to undertake the design and construction of the new Arthur Rank Hospice in October 2014 with main construction works commencing June 2015.

The new hospice includes an inpatient unit, day therapy, education centre, provision of hard surfaced car parking areas, landscaping, and a footpath link to Babraham Park & Ride.

The hospice is provided within a new building on a site at Caius Farm, Shelford Bottom to the south-west of Cambridge, adjacent to the Babraham Road Park and Ride. It will provide care, advice and clinical support for both patients and their relatives. This service is highly sensitive and its aim is to enable patients and those close to them to live as fully as possible, and make the most of the time that remains.

We worked in conjunction with the design team, and supply chain to produce a 3D co-ordinated model, which provided many financial and practical advantages to the scheme. BIM was not a client requirement but was a process that was driven by the design team and fully supported by Barnes Construction, which has provided invaluable learning outcomes.

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**Project Data**

- **Project Value:** £10.5m
- **Programme Duration:** 78 Weeks
- **Architect/Lead Designer:** LSI Architects (ArchiCAD)
- **Structural/Civil Engineer:** Peter Brett Associates LLP (Autodesk Revit)
- **M&E Consultant:** Hoare Lea (Autodesk Revit)
- **Steelwork Sub-Contractor:** The Wall Engineering Company Ltd (Tekla Bimsight)
- **M&E Sub-Contractor:** Munro Building Services (Autodesk Revit)
- **Co-Ordination Software:** Autodesk Navisworks Manage & Solibri Model Viewer
- **Pricing Software:** CAD Measure
The Benefits of BIM

Clash Detection
Undertaking clash detection has allowed us to largely mitigate time and money spent during construction on resolving design co-ordination problems. Clash detection reports were produced by LSI Architects (the lead designer), and our in-house Senior Design & BIM Manager, Daniel Sheldrake, to identify where there were problems with co-ordination between design disciplines. These reports were circulated to the design team and collaborative workshops held to resolve the identified clashes.

Programming
Matthew Ramplin, Project Manager at Barnes Construction “Working on Solibri on this project has been a great advantage to both us as a principle contractor and our sub-contractors, enabling key trades to view section through the building to fully understand the construction sequencing and iron out any potential clashes is invaluable. Exploring the building model has also allowed changes in sequencing to our contractor programme putting us on the front foot from the off.”

End-User Demonstrations
Louise Knights, Project Associate Architect at LSI “One of the most valuable benefits of BIM is its ability to bring the design to lift, before it has been built. Instead of taking drawings to public or end-user consultation, we used an interactive 3D model linked to the 2D documentation, and this was a really powerful way of communicating the vision and meant we were able to get buy-in from everybody involved.”

Supply chain engagement
The model generated by Peter Brett Associates using Revit was shared with Wall Engineering, which they then used to incorporate their connections and details. The steelwork model was then shared with the design team and federated. Munro Building Services have used the models to develop detailed plant room layouts and co-ordinated their services.

On-site
The federated model has been utilised onsite when it comes to sub-contractor meetings looking at the design intent, visualisations and prior to end user site walk arounds.

BIM Measure
Using Causeway BIM Measure allowed our estimator and quantity surveyor to go through and check all measures undertaken in the traditional manner. This allowed us to expose any error in our prepared bill of quantities and identify any opportunities to save the project money.

Example of holes formed in steel members to suit mechanical ductwork, in the model and onsite.