MORGAN SINDALL
CONSTRUCTION

Digital Construction

Improving certainty for better outcomes

The coordination of people, process and technology to drive efficient and effective solutions in the built environment.

Digital construction

Improving certainty for better outcomes

Morgan Sindall Construction's approach to Digital Construction ensures your project is delivered safer, within the agreed programme and costs, and to the high quality standards expected by Morgan Sindall Construction and their Perfect Delivery ethos.

Digital Construction enables the generation and management of information on a project during its entire life cycle to create digital and built assets. Digital Construction is an evolution of Building Information Modelling (BIM).

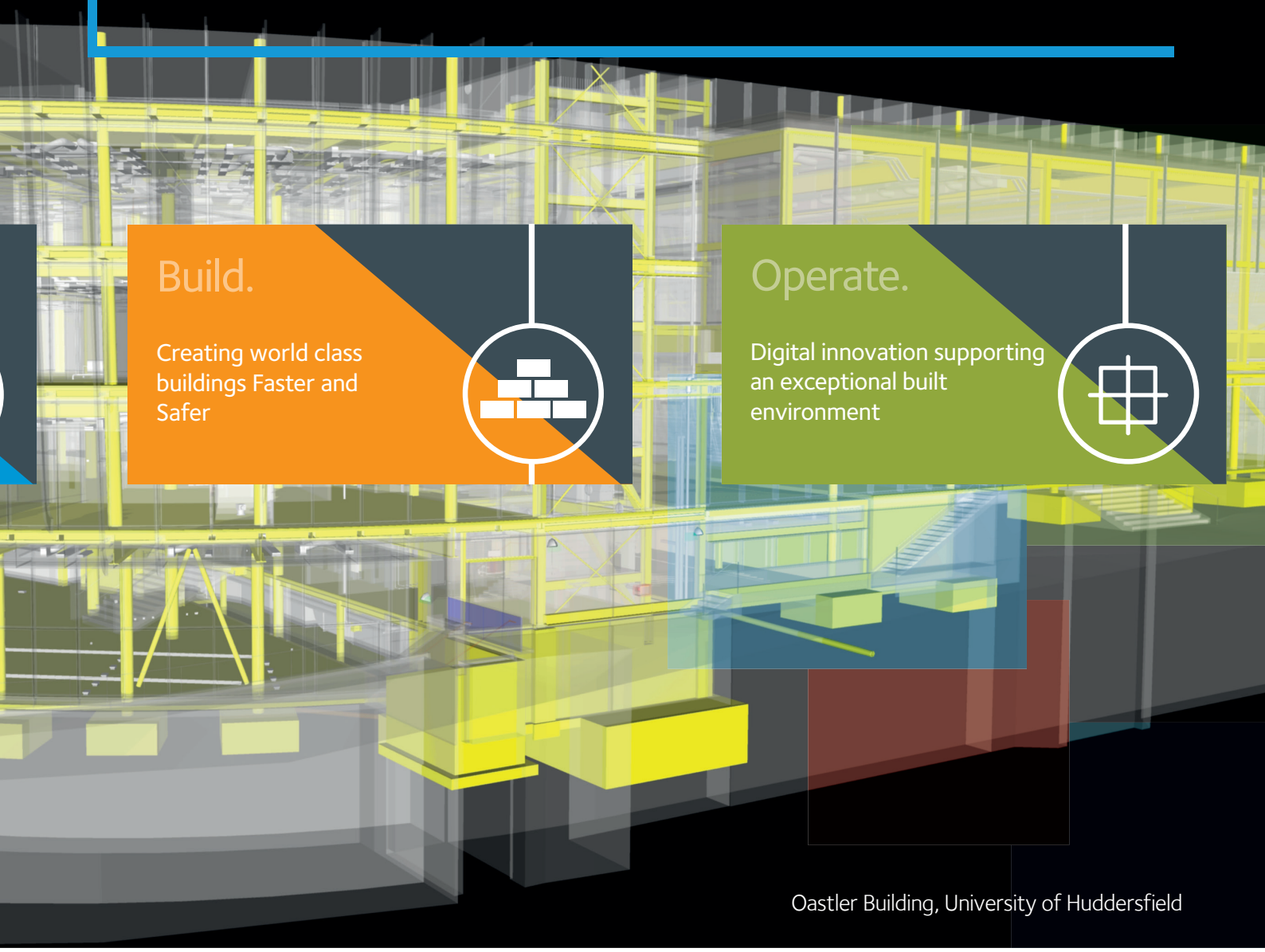
Through use of an 'information masterplan', Digital Construction helps us maximise the value and efficiency of your projects, increasing collaboration and accountability through use of a single source of information.

By connecting everyone involved in a project, Digital Construction improves consistency, supports decision making and reduces risk throughout the design, construction and operation of the project. It allows the opportunity to identify and solve potential problems in a virtual environment, saving time and money and reducing waste.

We are committed to being at the forefront of technological advances, and incorporating the latest innovations into our working practices for the benefit of our customers.

We make Digital Construction easy to understand and will guide you each step of the way, helping you see how the use of Digital Construction adds significant value to your project.

Digital Construction consistently delivers better throughout the design, build and operation phases of your project.



Oastler Building, University of Huddersfield

We believe the practical use of technology is no longer an optional benefit to a project but a necessity.

That is why we have embedded Digital Construction into our business strategy, sitting at the core of our promise to our customers.

Our tried and tested methodology produces better outcomes for our customers, some of which are listed below;

- Development of a tighter brief that fully addresses customer ambitions earlier in the process
- Consistent and continuous validation of project information
- "Right First Time" design and delivery through better collaboration and richer information
- Improved Health & Safety awareness before, during and after construction
- Tighter cost control from inception to project completion
- Better understanding of the proposals through the use of immersive technologies
- Programme and Cost Analysis of change more transparent through model interrogation

Our national team of expertly trained staff are perfectly equipped to guide you through the collaborative Digital Construction process and technologies.

To aid the briefing stage of a project, we have created a menu of design, build and operational related outcomes and benefits listed on the following pages.

Design

Optimised collaboration for improved outcomes

We will combine our extensive knowledge with your own expertise to ensure your needs and aspirations are delivered.

From the very conception of your project, Digital Construction allows you to make informed decisions that will ultimately bring sizable benefits to each of the subsequent stages of the building's lifecycle.

We will learn about your venture and your wider vision through our initial discussion, our Digital Construction team is able to virtually construct your building brick by brick, so you are able to walk through it virtually. This allows you to give instant feedback which can be used to adjust the design accordingly.

A wide range of stakeholders, including the eventual end users, are also able to walk through the building in order to provide their own distinct input. During the briefing and design stage, this can prove crucial in providing insights that will benefit the operation of the building.

Our flexible and adaptable approach is designed to meet your needs. We encourage all feedback – no insight or observation, however small, is ever irrelevant – and then work with you to incorporate the required modifications into the design. This results in more informed decisions that create the best value design.

This process is key in reducing risk, and allows us to collectively develop a nuanced design that eradicates the risk of snags, glitches and safety risks before a spade has touched the ground.

Using 3D design not only improves the efficiency of the build programme, getting a project to site quicker and minimising the preconstruction period, but helps to keep costs down. If such interventions were made once the project was live they would result in significant disruptions as well as substantial costs.

Incorporating great ideas once the build has started can cause delays and significant cost – Digital Construction enables the optimum design to be created before the point of no return.

Your needs are addressed by our commitment to transparent collaboration until the design corresponds to your brief or surpasses it.

This is achieved through our comprehensive Digital Construction design and delivery process.

This methodical approach will leave you assured of the building's performance before work begins.

> "Visibility of the process is worth its weight in gold. Seeing the output in 2D CAD drawings is hard for clients. In BIM you can sit down and give peace of mind to the client. "
>
> *Lesley Woolfries, West Dunbartonshire Council*

Renton Campus

Objective	Outcome		Benefit
Optimised collaboration for improved outcomes	Peace of mind that your needs are addressed	Enhanced customer and stakeholder engagement to ensure aspirations are delivered	Use of immersive technologies (AR/VR) to ensure better understanding of proposals and brief are met
			Reduced scope creep through certainty of delivery and tighter brief development
			Transparency of engagement allows quicker and more informed decision making leading to design programme certainty
		Improved quality of deliverables through enhanced collaboration and coordination	Improved quality of embedded data through use of experienced information managers
			Improved accuracy and consistency through collaborative culture and regular federation and clash detection of models
			Optimum and best value design due to modelled and rich information earlier in the design process
		Surety of technical compliance to provide healthier and more efficient buildings	Environment modelling providing technical certainty
			Engineering and compiance checking using modelling to reduce risk through design
			Energy targets delivered through computer modelling and historical data feedback
	Right first time	Greater risk and cost control through richer information and early in process	Tighter brief resulting in fewer variations and reducing disruption risk in the build phase
			Health and safety risks modelled to identify residual issues and project constraints
			Sequencing and logistics modelled leading to leaner prorammes and cost efficiency
		Whole lifecycle and project feedback informing continuous improvement	Lessons learned from previous projects are embedded into models enabling more efficient solutions
			Continuous upskilling and training of our supply chain through feedback from previous experiences
			Improved building efficiency and performance through lifecycle feedback

Build

Creating world class buildings faster and more safely

The intricate design process means key stakeholders have worked to together to reach a collective decision on every aspect of the building through monitoring of 3D imagery. This means the build programme begins with an unparalleled level of knowledge and control over what happens next and the timescales involved. This provides assurance that your programme is being delivered exactly as planned.

Once the build programme starts there should be little need for further adjustments. Access to rich information means potential technical queries from the site team have been answered in advance, the entire workforce shares a co-ordinated approach to the build programme and a range of concerns have been discussed and resolved.

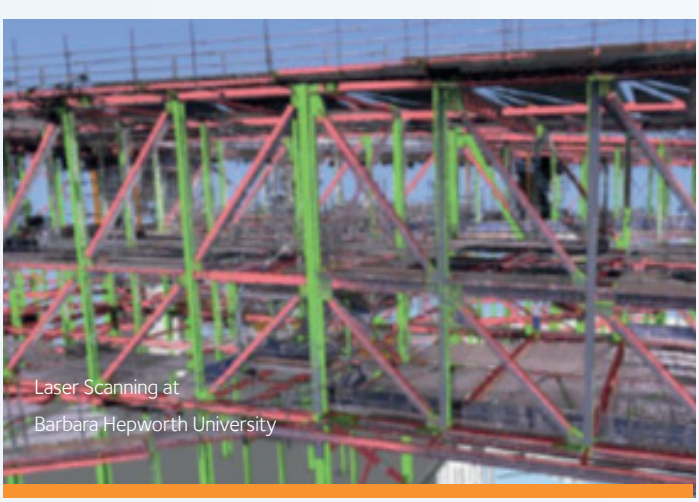
We understand that sometimes a change on a project may be required. The use of 3D models and presence of richer information allows us to fully understand the impact of potential changes faster, the feasibility of the request and greater certainty on the cost of the change.

Your build programme will be supported by Digital Construction technologies and methods such as:

- Digital fabrication, the process of turning data into objects and components which are then transported and assembled in the appropriate location on site.
- Clash avoidance, ensuring no complications arise from multiple disciplines working on a project at the same time.
- Coordinated discipline information within the virtual construction model, providing you with an unparalleled insight into a project's progress, and is also pivotal in increasing safety and certainty in the build programme.

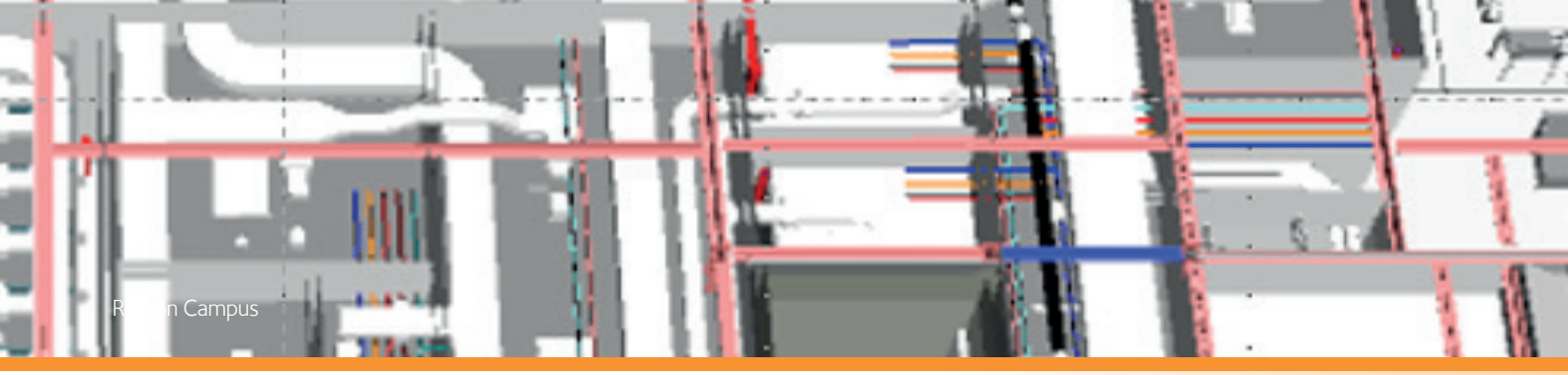
We have used Digital Construction to successfully deliver projects in sectors such as Education, Leisure, Defence, Commercial and Residential.

Manchester Metropolitan University Logistics Planning



Laser Scanning at Barbara Hepworth University

Augmented Reality at Barbara Hepworth University



Objective	Outcome		Benefit
Creating world class buildings faster and more safely	Certainty of delivery	Improved cost and programme certainty through better collaboration and fully coordinated designs	Improved coordination and sequencing activities leading to programme certainty
			Using BIM to extract accurate quantities to inform cost and programme development
			BIM visualisations enable better understanding of scope for commercial and operational teams
		Built right first time by building virtually before building in reality	Reduced risk of variation, technical query or rework through better quality of information
			Enhanced operative and supply chain engagement through use of immersive technologies on site
			Improved accuracy of right information to right stakeholder at the right time by using model information
		Improving safety through better collaboration and risk identification	Explore construction logistics to reduce health and safety risks
			Using the model to find the most efficient and safe solutions
			Construction stage health and safety risk identification
	Certainty of quality	Delivering quality through digital fabrication and improved information accuracy	Minimise waste through accurate detailing and off-site manufacture opportunities
			Implementing model usage by the site team and supply chain improving quality control and accurate delivery
			Specification improvements through the adoption of standardisation from manufacturers and suppliers
		Improved change management creating certainty and reduced change	Reduced risk of variation, technical queries and reworking through better visualisation of buildings
			Improved certainty of cost and programme through evaluation of change using models
			Change optioneering through running 'what if' scenarios within model

Operate

Digital innovation supporting an exceptional built environment

Morgan Sindall Construction's use of Digital Construction facilitates the delivery of projects to be proud of, that exceed client expectations and creates buildings that people love to use.

The benefits of Asset Rich Digital Construction are felt long after a project is complete. The legacy we leave our customers is as important as the experience we have when creating and delivering the project. Through the use of our digital asset information platform Springboard, we put this resource at your fingertips.

Springboard, combined with our standard information management processes, is used to effectively capture and validate asset information. This provides accurate and efficient digital asset data with minimal resource required by our design teams and supply chain. This is achieved through our automated systems and mapping operational and maintenance (O&M) information with the digital model.

Our specialist Information Managers will help guide you on the critical information and valuable asset data to operate your building, so the right information is provided on your maintainable assets without information overload.

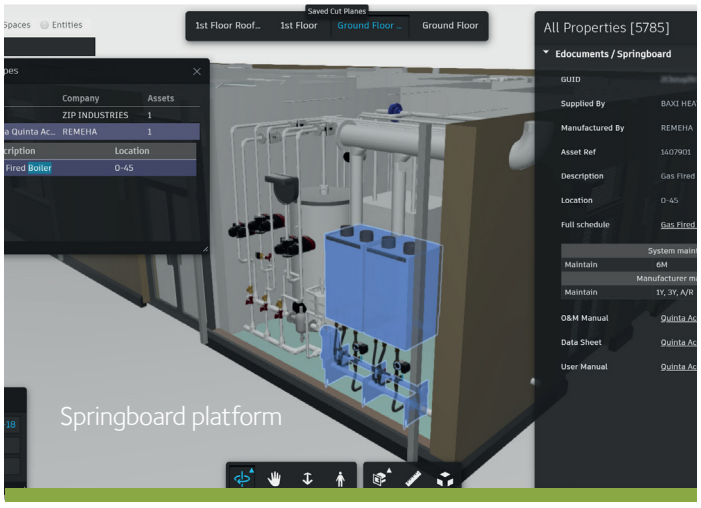
Our specialist Information Managers will also audit the delivery of asset data, to ensure accurate information is provided on your maintainable assets.

> "Morgan Sindall Construction's use of BIM has provided an exceptionally high quality platform to support the ongoing operation and maintenance of our facility."
>
> *Fin Garvey, Slough Borough Council*

Our Springboard handover platform allows:

- Quick and easy access to full O&M information, as well as accurate information to run the building.
- Enables facilities management teams to plan equipment maintenance in advance of handover, enabling the maximising of efficiencies and the maintaining of warranties. Additionally, specific manufacturers' equipment performance data is detailed to aid running of the physical asset at the optimum level, avoiding unnecessary replacement costs.
- Navigate to asset information using 2D/3D visuals of the digital asset or floor plans. QR codes can be generated, printed and installed on equipment, enabling your team to rapidly access asset information
- Built in tools ensure information requirements are met and traceable, together with import and export functionality to ensure collaboration with other software systems.

We will provide training and support to facilities managers in this new way of working, to ensure the full benefits of the digital twin are realised.

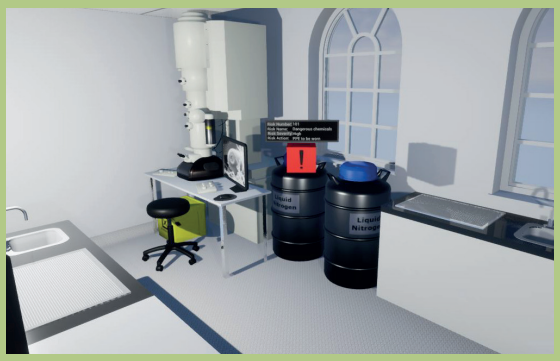


Objective	Outcome		Benefit
Digital innovation supporting an exceptional built environment	Improved functioning of your building	Increase efficiency of asset over lifecycle by delivering accurate facility data	Model linked to digital O&M through springboard portal
			Embedded supportive learning material/videos within the electronic O&M
			Output to CAFM Systems allowing asset data to inform scheduled preventative maintenance
		Improved quality of information passed to customers of both physical and digital assets	Improved accuracy of O&Ms, asset data and model through checking process prior to handover
			Populated data ensures lifecycle and maintenance information maintained
			Embedded health and safety information ensured residual risk information is not lost to customers
		Better performing buildings	Serving data on maintainable assets to aid running of building at optimum level and to avoid unnecessary replacement costs
			Readily accessible performance and warrant data
			Monitor building performance and preventative maintenance requirements
		Easily accessible asset data for use by customers and end users	Provide offline version of digital O&M with intelligent links to source data like a traditional O&M
			Provide QR codes on maintenance assets allowing FM teams instant access to asset data
			360 panoramic photographs linked to O&M to see both the digital and built asset
		Supported management systems provided for first year	Facilities managers and relevant building users trained on Springboard system at handover
			Editable content of O&M supported during the defects period ensuring latest maintenance information
			Soft landings support for your FM teams ensuring effective use of your asset from handover

Why Morgan Sindall Construction

Continually driving to improve the design, construction and operation of the built environment

3D - Visualisation

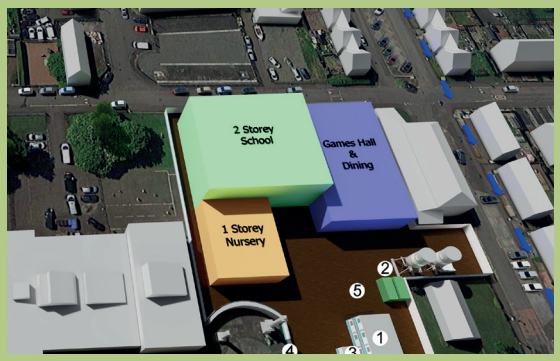


Solent University
Risk Cubes embedded In Model

Paddington Village, Liverpool
Masterplan

Renton Primary
Engagement Visualisations

3D – Immersive Reality



Renton Primary
Site Optioneering Study

Auggd
Site Quality via Immersive Reality

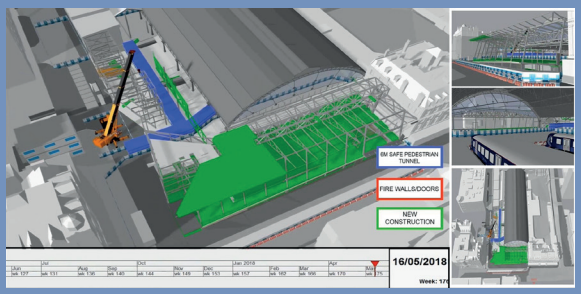
Oastler Building, University of Huddersfield
Engagement Visualisations & Laser Scanning

At Morgan Sindall Construction, we are dedicated to developing the service we offer to clients, ensuring we are able to support them in achieving their ambitions. Moving forward, our approach to the use of Digital Construction will continue to evolve in line with the world around us, delivering ever more efficient and effective solutions.

We would love to talk to you about how we can support the delivery of your next project and help you create and define your business Digital Construction strategic requirement for a framework of projects.

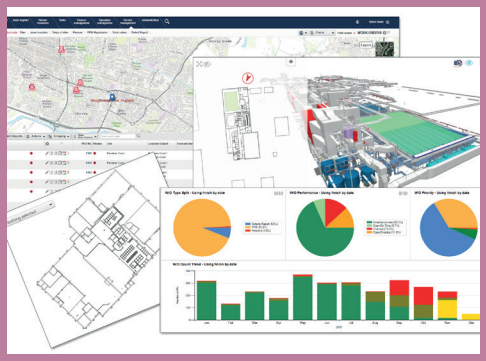
Our collaborative approach, incorporating the key elements of people, process and technology, means you can be certain that this initial conversation will be the first step towards the creation of a building that will continue to flourish long after construction has completed.

4D - Planning



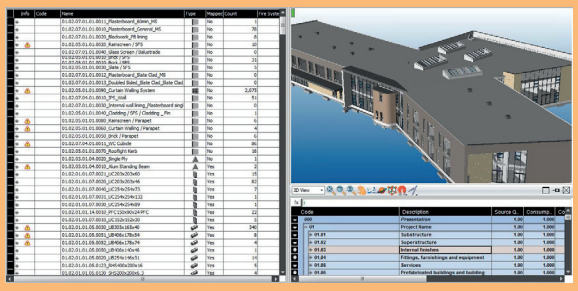
Queen Street Station
Logistics Planning and Programming

6D - Operation



Slough PPJV
Deployment of CAFM system on framework

5D - Cost Management



Balloch Primary Campus
Cost Plan Management

"The use of Springboard is of great benefit to me and my team in running the building. All the information is readily available and the speed at which the information can be extracted is head and shoulders quicker than the existing manuals.

The 3D model is just great, this new initiative tells you exactly where the items are."

Alan G Moth, Facilities Manager
The Co-operative Academy

Morgan Sindall Construction has delivered over 40 BIM projects since 2016, with an increased demand of 65% and a combined value of over £525 million.

On Digital Construction projects we have experienced 66% fewer variations while 26% of projects have progressed ahead of schedule due to improved design efficiency and quality of information available to the delivery team.

To find out more

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