A Collaborative Approach to Advancing MMC

Curtins PCE Ltd



Curtins

For over 60 years, Curtins has been at the forefront of developing new and sustainable engineering solutions, designed to enhance the world around us and deliver lasting good to the people and communities we serve.

Headquartered in Liverpool, we have organically grown to 14 offices across the UK and Ireland, all offering our suite of specialist services including:

CIVILS | STRUCTURES | TRANSPORT PLANNING **GEOTECHNICAL | INFRASTRUCTURE ENVIRONMENTAL | CONSERVATION & HERITAGE**

Over our history, we have fostered lasting relationships with our clients and are renowned for our problem-solving expertise on schemes ranging in value from £100,000 developments to £1 billion masterplans.

We are proudly independent and our team of more than 400 people shape our path as an Employee-Owned Trust so we can build a better future for all.

PCE Ltd

with expertise across design, manufacture, and construction.

Our build systems utilise standardisation and repeatable design philosophies to create 'kits of parts' that provide certainty of outcome, quality, and cost.

Backed by the latest in digital construction innovation and with access to a versatile European supply chain, we bring industry-leading DfMA solutions to market with a hybrid material mindset. This approach enables us to bring architectural intent to life, combining precast concrete, reinforced steel, and engineered timber whilst adding value in terms of safety, quality, speed, and sustainability across all build sectors.

PCE are pioneers in offsite system build solutions,

Over 10 years of proactively collaborating to deliver sustainable and innovative outcomes for our clients through MMC









PROACTIVE COMMITMENT

STAINABILITY

INNOVATION









ALL BUILD SECTORS ACROSS THE UK

HR 43 **PROJECT AWARDS**



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COMMERCIAL









CAR PARKS







HEALTHCARE

HOTELS

PRISONS







CUSTODIAL

RESIDENTIAL



DATA CENTRES



SCHOOLS



EDUCATION

STUDENT ACCOMMODATION

HybriDfMA hyTower®

hyTower[®] is an innovative DfMA system for designing and building high-rise structures up to 50 storeys. It ensures certainty through a pre-engineered 'kit of parts' made from offsite-manufactured components, leveraging standardisation and repeatable designs.

With smart design and common connections principles, hyTower® blends precast concrete, reinforced steel, and engineered timber, creating sustainable and aesthetically impressive structures. Integrated façades and cores provide weatherproofing during installation, allowing safe early access for follow-on trades just two levels below the active construction level.

hyTower[®] facilitates the seamless integration of M&E systems, balconies, bathroom pods, and utility cupboards, delivering a comprehensive structural solution.

- Up to 50% faster construction
- Waste reduction (up to 90%)
- Reduced deliveries (up to 80%)
- Reduced site operatives (up to 80%)
- Material flexibility and interchangeable parts to suit project specific requirements
- Flexible grid and shape
- Certainty of outcome and cost
- Elimination of scaffolding and back-propping
- Excellent thermal, acoustic, air tightness, vibration, and fire properties
- Carbon reduced by up to a third
- Seamless integration with other hybrid-DfMA systems
- Diverse mix of façade finishes and balcony additions available
- Design coordinated in a digital twin



Unlocking Added Value from Design to Handover

By engaging with PCE and Curtins earlier within the design process, we can ensure our design and build solutions are tailored specifically to your project, to optimise performance across structural delivery.

Early engagement and collaboration ensures:

- Optimal design configuration
- Hybrid structural material flexibility
- Effective value engineering
- **Improved** coordination of M&E, services, and fitout
- Fully integrated offsite solution and reduced on-site works
- Faster and more assured project delivery
- Greater cost certainty
- More **sustainable** construction solutions
- Optimal supply chain engagement
- Real-time digital twin tracking and intelligent quality management

Click here for more information about the hyTower[®] system.





Embodied Carbon Reduction

Together we take a proactive approach to measuring and reducing embodied carbon in our projects. Using a specialised toolkit, we calculate the carbon content of key construction materials and present this data visually to clients, highlighting carbon hotspots. This allows our engineers to make informed decisions to reduce carbon and minimise environmental impact.

Our approach is backed by deep material expertise, flexible supply chain collaborations, and advanced carbon analysis tools like carbon calculators and heat mapping. We understand what drives carbon impact across the value chain, and how to reduce it. This enables meaningful opportunities to improve sustainability across our operations and collaborations.

Curtins have committed to decreasing the average embodied carbon in our projects from **340kgCO2e/m2** to **295kgCO2e/m2** by 2030.

By actively working towards these goals, we strive to make a positive impact on the environment and create a more sustainable future.







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BRENT CROSS 14

£85M | 10-12 STOREYS 3 BLOCKS | 287 APARTMENTS

Plot 14 will form the Market Quarter of the wider Brent Cross Town masterplan along with plots 12 and 13.

The superstructure from level 1 up utilises Modern Methods of Construction comprising of 200mm hollowcore planks spanning between load-bearing precast concrete sandwich panels (forming the façade) and internal precast concrete twin walls (forming the corridor walls).

In areas where there are no corridor walls the hollowcore slabs are supported by trapezoidal steel Deltabeams which in turn span onto precast concrete columns. The sandwich panels have windows cast in the factory.

The advantages of this form of construction over a traditional RC/PT frame are:

- Reduced construction programme
- Higher quality factory-controlled finishes for elements
- Safer on-site assembly of elements
- Reduced embodied carbon and vehicle movements









MOUNT OSWALD CASE STUDY **DURHAM UNIVERSITY**

£80M | 7AWARDS

This multi-awarding winning 1,000 room student accommodation development provided a new campus for two distinct colleges, alongside a vibrant supporting student centre.

Comprising five blocks of four storeys high, each of the blocks were completed within a constrained programme timeframe by utilising precast concrete panels, made up of DfMA components that were prefabricated offsite for PCE Ltd. The variety of structural solutions were each tailored to the architectural layouts of the buildings they make up.

Images courtesy of Interserve



BIM Awards





HMP FIVE WELLS WELLINGBOROUGH £253M 16 AWARDS

Development of a new and innovative Category C Prison, to replace the existing Victorian facility with 7 new houseblocks and CASU.

The project's approach pushed the boundaries of BIM Level 2 by bringing together digital, manufacturing and onsite assembly. 3D design was used to deliver the project, allowing it to be standardised and replicable across future prisons in the MoJ's Prison Estate Transformation Programme.

"PCE have demonstrated an absolute commitment to the Ministry of Justice and the Government's priorities by supporting precast manufacture at the rate needed to support challenging construction programmes. The success of delivery is now promoted across Whitehall with growing interest in the way PCE have utilised Modern Methods of Construction to deliver pace, quality and innovation including reducing embodied carbon to support the sustainability agenda."

Gareth Jones

Images courtesy of Pick Everard

1700 SAFE & SECURE PRISON CELLS

Head of MMC & Technical Services, Ministry of Justice

Digital

Leading the Way in Digital Delivery

Curtins and PCE Ltd have a rich history of innovation and Digital Delivery adoption.

The ethos of using digital tools to enhance communication and collaboration is at the heart of our combined approach.

Key to this is our use of *advanced digital twin track and trace technology*. Through this, project progress is captured in real time, showing the lifecycle status of every unique component—from design to installation. This 3D color-coded visualisation provides detailed traceability, including quality assurance (QA) data, empowering project teams to make timely, informed decisions and adopt calculated just-intime strategies that enhance value and efficiency.

This technology enhances collaboration and coordination throughout project delivery by leveraging automated data for improved visibility. Instant unit tracking, dashboards, and intelligent reporting feed into a 'digital command centre' for rapid decision-making. Our digitally driven operations create a coordinated, transparent, and predictable design and build solution that meets Golden Thread requirements.



SIR WILLIAM HENRY BRAGG BUILDING UNIVERSITY OF LEEDS £96M 10 AWARDS

CASE STUDY

The project was technically complex due to the high technical user requirements and its constrained location on site.

Through early site constraints identification process, Curtins uncovered over a dozen constraints, all of which needed careful consideration on how they would impact the safe and efficient design and construction. We developed a site constraint drawing and identification schedule within our BIM Level 2 concept data environment.

Design and modelling of the engineering for this award-winning development took place in the 4D environment, with a 'virtual' time overlay to demonstrate how this highly complex building could be phased and constructed in an extremely constrained live environment.



The building and site was immensely complex and the project was one of the largest capital investments that the university has ever undertaken. Curtins understand the complexities of our stakeholders and site, whilst creating simple, efficient and well considered engineering solutions. We have enjoyed working with Curtins on this project, they are always positive at working at solutions with a good commercial angle. They have been a truly valued part of our team.

David Oldroyd

Interim Deputy Director of Estates University of Leeds Estates Services



Projects

Image: Book of the second state of the second stat	a 2015 2016 2017	Broadmoor Hospital, Berk Client: West London Menta Health NHS Trust Value: £150m	shire al Cli Va	chin Way Custody Suite, imsby ent: Humberside Police Forc lue: £14m
Middlemoor Police Station Custody Suite, Exeter Client: Devon and Cornwall Police Value: £26m	f r Chapel Wharf, Manchester Client: Dandara Value: £130m	HMP Five Wells, Wellingboroug Client: Ministry of Justi Value: £253	Ce m Client: Uni	C plinary Biomedical Research Building iversity of Warwick Value: £54.3m
OmegaMount OswaldClient: Durham UniversityValue: £80m	Sir William Henr Client: University Value: £96m	y Bragg Building y of Leeds	Golden Surgica Client: I Value: S	Jubilee National Hospital, I Centre, Glasgow NHS Scotland 243.5m
Brent Cross Plot 14, North London Client: Related Argent Value: £85m	Brent Cross Plot 1, North London Client: Related Argent Value: £100m		mingham East Side Locks Client: Alumno Value: £35m	HMP Millsi Client: Ministry o Value
Building States of States and St	Orchard Wharf, London Client: Regal London Value: £500m	HMP Gartree, Leicestershire Client: Ministry of Justice Value: £440m		





Awards

Biomedical Research Building, University of Warwick Construction News Awards Project of the Year (£29-50m)

Offsite Awards 2021 Best Use of Concrete Technology

Broadmoor Hospital Concrete Society Awards Highly Commended

Offsite Awards 2017 Best Use of Concrete Healthcare Project of the Year Project of the Year

Golden Jubilee Eye Centre NHS Assure Design & Excellence Awards 2022 Design award – Highly Commended

HMP Five Wells BCI Awards 2020

Productivity in Construction Initiative of the Year Digital Initiative of the Year Overall Initiative of the Year Supply Chain Excellence

Constructing Excellence National Awards 2020 Offsite project of the Year **Digital Construction**

Constructing Excellence National Awards 2022 Building Project of the Year

Constructing Excellence East Midlands Awards Integration and Collaborative Working Client of the Year (Ministry of Justice) **Digital Construction** Offsite Project of the Year

Construction News Awards Digital Construction Excellence

Offsite Construction Awards 2020 Overall Winner of Winners Best Use of Concrete Technology **BIM / Digital Construction Award** Contractor of the Year (Kier)

Mount Oswald, Durham University **Constructing Excellence, North East** Value Offsite Project of the Year Building of the Year

Student Accommodation Awards 2020 Collaboration of the Year Developer of the Year - Highly Commended

Constructing Excellence. Yorkshire & Humber Digital Construction - Highly Commended

BIM Awards 2019 Project of the Year

Sir William Henry Bragg Building, University of Leeds Leeds Architecture Awards 2023 New Buildings (Over £10m in value)

RICS UK Awards 2022 Heritage Project (Yorkshire & Humber)

RIBA Yorkshire Award 2022

Constructing Excellence Yorkshire & Humber Awards 2021

Building Project of the Year Offsite Award: Highly Commended

Yorkshire Structural Engineering Awards Large Structures **Overall Awards**

Civic Trust Award 2023 Highly Commended

RIBA Yorkshire Project Architect of the Year

Get in touch...

Curtins

Dan Evans Board Director

dan.evans@curtins.com 020 7324 2240

curtins.com

PCE Ltd

Simon Harold Business Development Director

simon.harold@pceltd.co.uk 01827 301020

pceltd.co.uk



