



Structural Steel Design Awards 2025

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Structural Steel Design Awards 2025 sponsors



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Introduction

By Professor Roger Plank – Chairman of the Judges Panel

It has been my privilege to chair the judging panel for this year's awards, and I would like to thank my fellow judges, each an expert in their own field, and sharing a passion for high quality design and construction, for giving so freely of their time.

The awards scheme provides an opportunity for the sector to showcase excellence in the use of structural steel across a wide range of projects varying in nature, scale, regional location and budget. The variety of projects submitted this year and the high quality of all those which made it to the final stage demonstrate just what can be achieved in structural steelwork construction.

The judging process starts shortly after the closing date for submissions with a preliminary selection based on a 'desk-top' review of the entries. It is therefore critically important to provide clear, concise, well-illustrated documentation highlighting those aspects of the project which make it special, with contributions, where appropriate, from each member of the project team. Good photographs, particularly of the finished structure, are especially helpful.

We look for high quality in all aspects of a project, and are particularly keen to understand the challenges faced, how these were addressed, and the contribution of steel to the outcome. Aspects such as innovation, smart working, problem-solving and community benefit are therefore as relevant as appearance and scale. At a time when climate change is high on everyone's agenda, we are keen to learn about ways in which a project contributes to a more sustainable future.

The shortlisted schemes are all then notified and invited to host a visit by the judges. These visits are a special feature of this awards scheme, giving the judges a firsthand opportunity to understand and experience the selected projects, and to quiz the project teams about any specific points. In this way, we can build up a much clearer view of the special merits of individual entries and this is extremely helpful in coming to our final decisions. It is particularly useful if the visits involve all key members of the project team, including the client, to provide the broadest perspective.

Once all visits have been completed, the judging panel reassembles to compare notes and exchange views. We consider the merits of all aspects including architecture and engineering, the quality of fabrication and assembly, any innovations or challenges, issues of sustainability, and the contribution the project makes to society at large. With such a diverse range of projects, this is no easy task, but the judges bring all their professional experience and expertise to bear in reaching a consensus.

All projects reaching the final stage have set extremely high standards but some go an extra step. For these, commendations are given to projects which demonstrate excellence in many aspects, whilst awards are for exceptional work, and projects which have specific exemplary features are awarded merits.

In conclusion I can say, on behalf of all the judges, that all of the projects recognised in the Structural Steel Design Awards this year reflect the impressive quality of the current steel construction industry, and everyone involved should be proud of what has been achieved.

“ Objectives of the Scheme

...to recognise the high standard of structural and architectural design attainable in the use of steel and its potential in terms of sustainability, cost-effectiveness, aesthetics and innovation.

The Judges

The Structural Steel Design Awards is proud to present the esteemed panel of judges, a group of leading experts and professionals dedicated to recognising excellence and innovation in constructional steelwork. The panel brings together a wealth of experience from across a number of disciplines – architecture, structural and civil engineering, the steelwork contracting industry and sustainability, ensuring a comprehensive and rounded evaluation of all the entries.

“**2026 entries
are now open**”



Scan for further details



**Professor Roger Plank PhD BSc CEng FStructE MICE –
Chairman of the Panel**

Representing the Institution of Structural Engineers

Roger Plank is a structural engineer and, having recently retired as Professor of Architecture and Structural Engineering at the University of Sheffield, is currently a Director of Vulcan Solutions Ltd, offering software and consultancy services in fire engineering. He has collaborated extensively with the steel construction sector in the fields of fire engineering and sustainability, and is a Past President of the Institution of Structural Engineers.



Richard Barrett MA (Cantab)

Representing the Steelwork Contracting Industry

Richard Barrett was Managing Director of Barrett Steel Buildings for over 20 years prior to its sale in 2007, in a management buyout, and is Chairman of steel stockholder Barrett Steel. Richard studied engineering at Cambridge University, graduating in 1978. At Barrett Steel Buildings, he developed the business into a leading specialist in the design and build of steel-framed buildings for structures such as distribution warehouses, retail parks, schools, offices and hospitals. He was President of the BCSA from 2007 to 2009, and was a member of BCSA's Council from 1994 to 2017.



David Chapman BEng CEng MStructE

Representing the Steelwork Contracting Industry

David Chapman is a chartered structural engineer and has been working in the steel industry since 1986. He started his career working for the steel fabricators Wescol Glosford and Dyer and during his 17 years there he was involved in stadia, warehouse, office projects etc, and became their Technical Director. Following this, David spent 20 years working for the Corus/Tata Steel/BCSA JV as Technical Manager. In 2023 he joined ArcelorMittal Steligenca and is responsible for the promotion of the company's combined product offering and sustainability within the UK.



Brogan MacDonald CEng CEnv MICE

Representing the Institution of Civil Engineers

Brogan MacDonald is a chartered engineer and environmentalist blending technical expertise in structural engineering with a holistic approach to sustainability. She is Head of Sustainability for Building Structures at Ramboll UK and leads the implementation of the company's comprehensive sustainability strategy; to reduce embodied carbon by 50% by 2030, promoting the reuse of existing buildings and elements, integrating nature into designs, and enhancing climate resilience and adaptation. Brogan leads Ramboll UK's commitments to SteelZero, as well as providing sustainability training and upskilling to over 180 engineers and technicians across the UK and India.



Sarah Pellereau MEng CEng MStructE

Representing the Institution of Structural Engineers

Sarah Pellereau is an Associate Director at Elliott Wood with 24 years' experience. She has been involved in a number of award-winning schemes including leading a project shortlisted for the Stirling Prize. As a structural engineer, she is rare in having graduated with a Part 1 in Architecture as well as a Masters in Engineering from the University of Leeds. She has a diverse portfolio of experiences in structural design but has also worked on site with the Channel Tunnel Rail Link alterations to St Pancras Station and tutored at Nottingham University.



Emily McDonald MEng MA (Cantab) CEng MICE

Representing the Institution of Civil Engineers

Emily McDonald is a Partner in Buro Happold with over 25 years experience and has recently become UK Managing Director. She joined the practice as a graduate from Cambridge University, having trained as a civil and structural engineer. She has extensive experience working on a wide range of projects including innovative new builds and refurbishment schemes across various sectors and typologies. She was involved in diverse and landmark projects; Cutty Sark Conservation project and Phase One of the Battersea Power Station redevelopment. Emily is currently the Project Principal leading large multi-disciplinary teams of engineers on projects including: Stratford Waterfront East Bank and the Barbican Renewal Project.



Bill Taylor BA (Hons) DipArch MA RIBA FRSA

Representing the Royal Institute of British Architects

Bill Taylor is an Architect in private practice. Having joined architects Michael and Patty Hopkins straight from Sheffield University School of Architecture in 1982, he became the youngest of the five founding partners in Michael Hopkins and Partners in 1988. In 2010 Bill left the practice to concentrate on his own projects and has also collaborated with architect Robin Snell and his practice. He is a founding member of Tensinet, the pan European organisation researching lightweight and tensile construction, has been a member of the RIBA National Awards Group, CABE Design Review Panels and a Senior Assessor/Client Adviser for the RIBA competitions programme.



Christopher Nash BA (Hons) DipArch RIBA FRSA

Representing the Architectural Profession

Christopher Nash is a Senior Consultant Architect. He graduated in 1978 from Bristol University School of Architecture and was a Director and Partner at Grimshaw Architects until retiring from the Partnership in 2012. While at Grimshaw, Chris was responsible for many of the practice's high-profile buildings, through which he developed a working knowledge of the steel construction industry. Chris continues to practise as a consultant in architectural practice management, architectural education and property development.



Oliver Tyler BA (Hons) DipArch RIBA

Representing the Royal Institute of British Architects

Oliver Tyler is Managing Director of architects WilkinsonEyre, which he joined in 1991 to then become Director in 1999. He has over 40 years experience in architectural practice leading and coordinating the design and construction of many high-profile building and infrastructure projects including; the Dyson Headquarters in Wiltshire and the Liverpool Arena Convention Centre, along with a number of major infrastructure projects in London including; Liverpool Street Station for the Elizabeth Line and the London Cable Car across the Thames. In recent years Oliver has been responsible for a number of commercial buildings in the City of London including 8 Finsbury Circus and the 50-storey tower, 8 Bishopsgate. He has been an SSDA judge for over 15 years.

Award

Kepax Bridge, Worcestershire

PROJECT TEAM

Architect:
Moxon Architects Ltd

Structural Engineer:
Jacobs

Main Contractor:
Alun Griffiths (Contractors) Ltd

Client:
Worcestershire County Council



© Simon Kennedy

Kepax Bridge is a sculptural steel footbridge located in Worcester, spanning the River Sever to connect communities and promote sustainable travel. Designed to remain accessible year-round, even during floods, it provides a vital link between residential areas, green spaces, and the National Cycle Network. The bridge's elegant form and efficient structural configuration respond directly to the site's physical constraints which include limited access, sensitive ecology and uneven topography, while delivering a resilient and inclusive piece of infrastructure.

The bridge's slender deck is suspended from a dynamic steel pylon via stay cables, with supports spaced at 12m intervals over the park, river, piers and wooded bank.

The deck combines standard closed-section steel edge beams with profiled steel plate cross beams and a simple deck plate, creating a consistent cross section that balances lightness and strength. Along the edges of the painted carbon steel deck, stainless steel parapets run the full length, elevating the user experience and highlighting the bridge's form. The steel pylon itself is elegant and entirely efficient. The fully fabricated form combines these two simple elements into a dynamic composition that balances the forces at play, which anchors the structure visually and structurally.

The bridge's design responds to both environmental and social needs. It spans not only the river, but also a former landfill site and wooded banks, with landscaping and long

approach tracks integrated into the scheme. The alignment and elevation were carefully chosen to ensure year-round usability, avoiding the pitfalls of previous crossings that become inaccessible during floods. The bridge's presence is both understated and iconic, framing views from the park while serving as a visible waymarker from afar.

Engineering challenges were met with innovation and precision. The two asymmetric and perpendicular cable-supported spans required careful sequencing to maintain balance and geometry during erection. They also had to resolve the forces acting in the differing planes into an optimal plan position for the back-stay anchorage.

The pylon head, subject to out-of-plane forces due to its varying cross-section, was detailed for torsional robustness, as well as factoring in adequate access for fabrication. The inclusion of a 4m long machined node bar with enhanced through-thickness properties assisted with this.

Flood resilience was considered for every component of the structure, from holding-down bolts to bearings and anchorages, to ensure the structure would be safe from flood water, whilst maintaining an efficient but robust structural configuration.

Ensuring a satisfactory response of the bridge under pedestrian and wind induced vibrations proved to be a challenge. Wind tunnel testing confirmed aerodynamic stability and mitigation measures, including various baffle configurations, were also tested for future proofing in case anything was to change regarding the bridge's characteristics or the environment, so components can be retrofitted.

The voids in the deck edge beams were pumped full of grout with carefully selected density characteristics to supplement the available damping mass of the structure. Implementing this has negated the expense and future upkeep required for mass tuned dampers.

Delivery of the project required exceptional operational resilience. Frequent flooding, narrow residential access routes, and unexpected ground conditions were overcome through meticulous planning and community

engagement. A 1,000 tonne crane was mobilised for the installation and prefabricated steelwork was delivered via narrow residential roads. This required meticulous planning, contingency allowances in movement orders and community engagement providing clear communications regarding temporary transportation re-routing and anticipated disruptions. Ecological constraints were respected throughout, preserving habitats for rare migratory fish and dense bat populations.

The bridge has already made a significant impact. Nearly 50,000 journeys were recorded in the first three months, with users praising its accessibility and scenic views. Worcester Snoezelen, a local charity supporting people with disabilities, described the bridge as a "game changer," enabling inclusive outdoor activity and launching a new Memorial Walk to celebrate its accessibility.

Environmental performance was a core objective. The bridge is designed for a 120-year lifespan, with minimal embodied carbon achieved through efficient use of steel and reinforced concrete supports. Its elevated structure avoids direct impact on the riverbed, and native species were replanted to offset the effects of construction. Integrated drainage and flood mitigation enhance resilience, while biodiversity net gain was achieved through new habitats for mammals, reptiles, and birds. Low-energy LED lighting is subtly embedded in the parapets, balancing safety with environmental sensitivity.

The bridge's primary steel components are designed for disassembly, allowing for future reuse or recycling. While not yet formally recognised by industry standards, the project exemplifies best practice in sustainable infrastructure and inclusive design.

Kepax Bridge is the result of strong collaboration between client, design, and construction teams, supported by active community involvement. Local running and cycling groups influenced the bridge's form and connections and were present at its celebratory opening. The project demonstrates how thoughtful design, engineering excellence, and stakeholder engagement can deliver infrastructure that is both beautiful and transformative.



© Ben Addy

“Judges’ comment

The sweeping mast-supported deck structure for this foot and cycle bridge visibly demonstrates its clear load paths at a suitable scale in the landscape. It is clearly well-used in providing a new public crossing of the wide floodplain of the River Severn.

Award

AELTC Indoor Tennis Centre, London

PROJECT TEAM

Architect:
Hopkins Architects

Structural Engineer:
Cundall

Steelwork Contractor:
Billington Structures Limited

Main Contractor:
Willmott Dixon

Client:
The All England Lawn Tennis Club



The Indoor Tennis Centre (ITC) at The All England Lawn Tennis Club (AELTC) in Wimbledon is a steel-framed sports facility that exemplifies the fusion of architectural elegance and engineering precision. Located across the road from the main estate, the ITC forms part of a long-term masterplan to enhance connectivity, security, and amenities for Members and guests.

Replacing an outdated indoor facility, which had reached its end of life and no longer fit for purpose, the new centre provides six new indoor courts, six new external clay courts, a members' bar, changing areas, and a basement car park with electric vehicle charging and accessible parking.

The standout feature of the ITC is its double-curved, undulating roof, inspired by the form of vintage wooden tennis rackets popular in the 70s and 80s. This sculptural roof creates a grand internal playing experience while adhering to strict external planning height limits and internal spatial requirements. The roof's profile rises over the centre of the nets on each court to accommodate lobs, and dips around the perimeter to reduce the overall volume of the facility and energy demand for heating the space.

Nothing is hung from the court soffit, which creates a seamless flowing ceiling. The dividing nets are suspended from cables beneath the main steel ties and

lighting has been integrated into the soffit alongside the exposed paired steel arches. There are no other services sitting above the courts. Aligning the exposed primary steelwork with the carefully defined and profiled light boxes, along with the timber soffit panels, required coordination between the project team to achieve exacting construction tolerances and the roof's movements during construction and in its completion.

The roof has a plan area of approximately 50m x 110m, with each court requiring a 38 metre clear span. A further challenge was the need to limit the structural zone to comply with internal playing requirements and external height planning limitations. To achieve this, the primary spanning members were designed as pairs of tied arches, with stainless steel tie cables acting in tension, to balance the outward thrust from them. The arches were formed from fabricated box sections, typically 500 x 300mm with a regular series of internal stiffeners. UB 457 x 191 x 98 secondary beams then spanned between these, with varying degrees of curvature.

Two plan movement joints were incorporated to manage thermal effects, while plan cross-bracing, which was hidden between the ceiling and the roof, combined with local portalisation and lateral connections to the concrete cores, provided a discrete stability system. A bespoke designed sliding bearing detail at one end allowed for movement of the arch and tie, while balancing the compression and tension forces. This was then welded in the permanent condition, ensuring minimal visual impact and maintaining the architectural vision.

Precision fabrication was imperative to ensure that each curved beam was identical. To mitigate the need for welding at height, whilst maintaining the appearance of a continuous member, a hidden splice detail was developed that allowed the arches to be bolted together in thirds providing a seamless appearance. As a consequence, a considered erection sequence had to be developed, with temporary props holding each section in place to allow bolting of the splices and to prevent splaying of the arches until the tension ties were in place.

Careful tightening using a tensioning device ensured the stress in the ties was sufficient to balance the thrust before depropping the arch. Monitoring of geometry and movement was critical to achieving equilibrium and maintaining the roof's visual and structural integrity.

Delivery of the project faced numerous challenges, including COVID-19 restrictions, Brexit-related supply issues, and the rigid timeline of The Championships. The standing seam roof required a bespoke jigsaw of welded panels to accommodate the double curvature, and the timber ceiling, comprising 1,100 birch ply panels, was refined through off-site mock-ups to ensure compliance and visual quality. Collaborative working across trades enabled adjustments to the support grid and fixing brackets, ensuring alignment and flexibility.

The ITC was designed to meet both year-round and Championship needs, with sustainability at its core. Passive design measures reduce energy demand, while renewable technologies such as air source heat pumps and photovoltaic panels contribute to low operational carbon. Rooflights provide diffused daylight to reduce artificial lighting, and natural cross-ventilation cools the courts overnight.

The landscape strategy reflects AELTC's ethos of "tennis in an English garden," enhancing biodiversity through native planting, tree preservation, and the installation of bird and bat boxes. The project achieved a BREEAM 'Very Good' rating, demonstrating its commitment to environmental performance.

Collaboration was key to the project's success. Full-scale mock-ups of steelwork and 3D-printed connection prototypes helped visualise and refine the design. The result is a facility that embodies AELTC's pursuit of excellence and readiness for future generations, which could only have been achieved with structural steel.



“Judges’ comment

The Indoor Tennis Centre at Wimbledon, distinguished by its graceful double-curvature roof, is beautifully finished and an outstanding addition to the estate. Exposed structural steelwork enhances the interior, creating a striking and welcoming volume. Exemplary coordination between disciplines ensured refined detailing, resulting in a building of clarity and elegance.

Award

The Porsche Sculpture at the 2023 Goodwood Festival of Speed

PROJECT TEAM

Artist:
Gerry Judah Ltd

Structural Engineer:
Diales

Main Contractor:
Littlehampton Welding Ltd

Client:
Goodwood Festival of Speed



The Porsche Sculpture at the 2023 Goodwood Festival of Speed was a 25 metre high steel structure installed at Goodwood House in West Sussex. Designed to commemorate 75 years of Porsche sports cars, the sculpture supported six original vehicles, including priceless historic models, on three soaring, interconnected hoops. This cantilevered steel structure exemplified the fusion of engineering precision, material efficiency, and artistic vision, delivering a visually striking centrepiece that captivated festival-goers and met the highest technical standards.

The sculpture's form was inspired by the dynamic motion of racing and the elegance of Porsche's design legacy. Three interconnected hoops support six Porsche vehicles ranging from a 1951 Porsche 356 to a contemporary model. Steel

was chosen to add to the expressive form of the sculpture, to meet the project deliverables and allow for future reuse through demountable connections. Currently disassembled and in storage, the components were designed for future reinstallation at another UK location, with an anticipated service life of 25 years when in its permanent configuration.

Twelve structural members converged at a central hub, requiring precise geometric coordination and a dodecahedral configuration with five-fold axial symmetry to maintain connection clarity. A monocoque-shell system was initially considered but rejected for aesthetic reasons, as opposing pentagons on the dodecahedron rotate 36° relative to each other, resulting in awkward lines that wouldn't provide the desired aesthetics.

The design and fabrication schedule ran simultaneously, which meant that critical decisions had to be finalised early in the process, yet allow for later adjustments and fine-tuning. The hoops, initially conceived as free-form shapes, were rationalised into constant-radius curves to balance visual intent with fabrication feasibility. The final design was delivered within a compressed 28 week timeline, from concept sketch to installation, with the first steel ordered just four weeks after the initial artistic concept was shared on Christmas Day 2022. There was a hard deadline of July, only a few months later.

Engineering challenges centred on achieving a stable cantilevered structure with dynamic performance and minimal mass distribution at height. The sculpture's off-vertical orientation positioned the centre of gravity over the existing foundation, improving its stability and enabling the foundation reuse. Variable thickness steel fins, ranging from 20mm plate at critical junctions to 4mm at elevated positions, were used to optimise weight distribution. An integrated computational workflow was used on the project, enabling rapid assessment of deflections, frequencies and stress distributions throughout an iterative design process.

Fabrication was carried out just 15km from the installation site, minimising transport impacts prior to installation on site. The size of the hoops prevented transportation of them intact, so they required segmentation and test assembly in the workshop. They were then disassembled for on-site rewelding.

The installation sequence was developed to maintain structural integrity during each phase, with particular attention to temporary stability during the attachment of the suspended elements. The base and hub were installed first, followed by the arms with the pre attached vehicles and suspended hoops. Bolted connections at the central hub eliminated the need for welding at height, and custom rigging systems with twin coordinated cranes enabled precise six-degree-of-freedom positioning of the arms and hoops during installation.

Delivery was constrained by the immovable festival deadline and the need to coordinate with other events

at Goodwood House. Safety protocols were rigorously applied, particularly during lifting operations involving valuable vehicles. The sculpture was installed on time and performed flawlessly throughout the festival, becoming a central gathering point and visual highlight.

The project's environmental impact was minimised through several key strategies. Iterative design reduced steel usage by approximately 33% from initial estimates. The reuse of an existing foundation eliminated the need for a new concrete base and excavation. Bolted connections enabled disassembly and future reinstallation, extending the sculpture's service life beyond its initial temporary application.

The sculpture's success was confirmed by Porsche's commission to reinstall a modified version permanently. Beyond satisfying the corporate client, the structure resonated with the public, offering a dramatic and memorable experience. Public engagement included previews, a fireworks-lit unveiling ceremony, social media campaigns, and online videos documenting the assembly process.

Collaboration was central to the project's success, which was demonstrated through an integrated approach to structural engineering that balanced technical performance requirements with physical constraints. The most innovative aspect was the implementation of a single comprehensive design model that served multiple functions from concept development through to fabrication, which created a collaborative approach to the project and ensured alignment across disciplines. The project demonstrated how temporary structures can be engineered for long-term use through thoughtful design, efficient fabrication, and strategic planning.

The Porsche Sculpture at Goodwood stands as a testament to what can be achieved when structural steel is used not only as a material of strength and stability, but also as a medium for storytelling and celebration. It is a bold, elegant, and technically accomplished structure that honours Porsche's legacy while pushing the boundaries of temporary installation design.



“ Judges’ comment

The sculpture, which displays a number of original Porsche sports cars on cantilevered arms, exemplifies the extraordinary flexibility of steel as a material. It is a visually exciting, dynamic form that has been cleverly engineered, carefully detailed and skilfully fabricated - the result of a true team effort.

Award

AESC, Sunderland

PROJECT TEAM

Architect and Consultant Engineers:
Tetra Tech | RPS

Structural Engineer and Steelwork Contractor:
Severfield plc

Main Contractor:
Wates Construction

Client:
AESC UK



© Matthew Nichol Photography

The AESC UK Gigafactory in Sunderland is a landmark steel-framed industrial facility that sets a new benchmark for sustainable construction and advanced manufacturing. The project forms part of a £1bn initiative with Nissan and Sunderland City Council to create EV36Zero, an electric vehicle hub creating a world-first EV manufacturing ecosystem. Designed to produce batteries for 100,000 electric vehicles annually, the facility spans 360 metres and covers an area equivalent to 23 football pitches, making it one of the largest and most ambitious industrial developments in the UK.

The main steel frame and associated structures, comprises both hot and cold-rolled fabricated and installed elements, coated in a combination of primed

and fire-protection paint. The project involved the construction of large, fabricated truss sections, necessitating expert fabrication and precise material handling to accommodate substantial floor loadings from the battery making equipment. The column flanges, exceeding 90mm in thickness, were designed to support the overall structure and were spliced and bolted together on site.

From the start of the project, ground conditions were challenging so there was a stringent focus on the safety of personnel, equipment and deliveries. There were up to 50 loads of fabricated steelwork offloaded to site daily, at its peak, so coordination was imperative to maintain safety and programme efficiency.

One of the most complex challenges centred on the various elements of the design that form the fire strategy. In particular stopping fire passing through services, compartments and other sterile zones. A big consideration was given to the fire stopping and compartmentation detailing around the movement joint and the movement that had to be accommodated due to its proximity to the transition point between the multi-storey and single-storey areas of the building. The varied fire risk profiles and environmental conditions, driven by multiple cleanroom and manufacturing processes, required constant design adaptation and coordination with MEP systems. Fire engineering considerations influenced steel section sizing and intumescent paint application, ensuring compliance with rigorous safety standards.

From an engineering perspective, the project presented several challenges in accommodating expansive areas with high imposed loads to support manufacturing equipment. This led to significant equivalent horizontal forces (EHF) loads, which required meticulous planning and robust structural solutions. Stringent deflection limits were imposed on long-span floor beams to uphold structural integrity and performance standards. There was also limited availability of locations for vertical bracing, which demanded innovative engineering solutions to effectively maintain stability.

Steel enabled the long-span floors required for this behemoth factory and could be more readily adapted as the design evolved throughout the process, shaped by the latest battery making technologies coming to market. It was an evolving process with designs changing during the fabrication process, which demonstrates the flexibility the material affords during the build, but also provides an adaptable space for future changes.

A key strategy of the project, to meet the demands of the client who wanted to procure as late as possible to incorporate the latest technologies, meant that the erection sequence was outside a conventional and logical programme. This meant that ongoing requests could be accommodated and saved a significant amount of time. This was further enhanced by adopting a modular

construction approach, whereby the steel frames were taken to an off-site facility where mechanical, electrical and plumbing services were installed directly before being lifted into place on site. This innovation eliminated over 500,000 hours of working at height, enhancing safety and efficiency.

Environmental impact was a core focus. The project incorporated a vast system beneath the car park, capable of storing rainwater equivalent to five Olympic-sized swimming pools. With 80% of the construction premanufactured off-site, carbon emissions were reduced, and 60,000 onsite man hours were saved. Relocating steel assembly to Pallion shipyard, just five miles from the site, cut transport distances by 27,200 miles and saved 38 tonnes of CO₂.

The Gigafactory is powered by 100% carbon-neutral energy and designed to support the UK's transition to next-generation electric vehicles. Its advanced batteries offer a 30% increase in energy density, improving vehicle range and efficiency. The facility will create over 1,000 jobs and contribute significantly to the UK's carbon reduction goals.

Community engagement was integral to the project's success. An on-site allotment was created featuring artwork from employees' children and local schools, fostering pride and involvement. School tours offered students insight into the construction process and inspired interest in careers in the built environment.

The Gigafactory's delivery required unprecedented collaboration and adaptability. With no blueprint for a facility of this scale, the flexible approach by the team enabled rapid design adjustments and unconventional phasing to meet aggressive programme deadlines. Proactive coordination ensured seamless integration of modular frames and maintained quality throughout.

The AESC UK Gigafactory stands as a transformative achievement in industrial construction. It combines technical excellence, environmental leadership, and community engagement to deliver a facility that will power the future of sustainable transport in the UK and beyond.



© Matthew Nichol Photography



© Matthew Nichol Photography

“ Judges’ comment

This ambitious and nationally significant project hosts AESC’s cutting-edge production facility manufacturing batteries for 100,000 electric vehicles annually. Covering an area equivalent to 23 football pitches and with battery production technology evolving even as the building was being erected, the whole project team responded to the challenge with impressive speed and flexibility.

Award

Friends' School Lisburn, Northern Ireland

PROJECT TEAM

Architect:
Studio idir Architects

Structural Engineer:
Eamson

Client:
Friends' School Lisburn

Main Contractor:
Fabrite



The Corten Pavilion at Friends' School Lisburn in Northern Ireland is a sculptural steel-framed outdoor performance and learning space, designed to mark the school's 250th anniversary in 2024. Nestled among mature trees and red-brick buildings, the pavilion is both a functional shelter and a striking piece of public art. Its undulating canopy, formed from weathering Corten steel and supported by iroko-clad steel posts, reflects the grammar school's Quaker heritage and values, drawing inspiration from the deconstructed eight-pointed star.

The project emerged in the post-COVID landscape, responding to the need for outdoor learning environments. The design draws from Quaker symbolism and values,

and was informed by workshops held with art, music and technology pupils at the school. They were also invited to design a perforation for the canopy backdrop, with the winning design featured. The result is a structure that is inclusive, intuitive, and deeply connected to its community. It also meets the client's brief: for the structure to be both functional and an artwork in its own right.

Architecturally, the pavilion's complex geometry defied conventional two-dimensional drawings. The eight-pointed Quaker star was deconstructed into its constituent parts and then tessellated back together to form the distinctive roof profile. The design team relied on physical (using paper and card) and digital modelling to resolve the

form and ensure effective rainwater drainage without compromising the clean lines. The canopy's crisp 10mm edges guide water along its valleys, in a zigzag formation towards the fringe of the structure, where it discreetly falls into drains within surrounding planting, preserving the aesthetic while nourishing the plants.

Structurally, the pavilion posed unique challenges, no less its shape, which is why steel was chosen for its lightweight but durable properties. Corten steel promotes the formation of a stable, reddish-brown patina, akin to rust, which protects the underlying steel from further corrosion, creating a warm inviting colour for students to congregate under. The canopy was designed with a sacrificial thickness, ensuring structural integrity is maintained, even after 50 years of natural weathering.

The non-linear geometry required precise load path analysis and finite element modelling to scrutinise the canopy's structural behaviour under various load conditions, ensuring structural integrity while minimising material usage to create a lightweight and aesthetically pleasing form.

Fabrication and assembly were challenging due to the properties of Corten steel, so it demanded innovation and precision. A full-scale assembly was constructed in the workshop to resolve the obtuse angles and intersecting planes. The intricate layout of the bases demanded the use of an electronic surveying station to establish their locations on the workshop floor. From this, a temporary structure was built to support the roof panels, so that the support legs could be formed, with the various intersecting angles and connections. Once complete, the pavilion was disassembled for transport and reassembled on site with minimal disruption.

Delivering the final pavilion was equally challenging to ensure it was set out exactly as the trial erection. A prefabricated ring beam, created in the workshop environment, was cast into the concrete slab to ensure accurate foundation setting. The intricate nature of the roof structure proved difficult to lower into place by crane. The centre of gravity was entirely 'off-centre' causing significant challenge to the slinging of the panels into position. The iroko timber cladding for the six angular steel posts was

then applied, so that from afar it looks like the canopy is floating. Despite these challenges, the pavilion was delivered on time and within budget, thanks to the dedication and collaboration of all parties.

Environmentally, the pavilion exemplifies low-impact design. Corten steel requires no treatment or maintenance and is fully recyclable. The timber cladding is easily replaceable, and the structure's open-air design results in negligible operational energy use. Embodied carbon was calculated at 567kg CO₂/m², and the annual operational emissions are just 0.1kg CO₂/m². The pavilion's placement avoids disturbance to tree root zones, and its form blends seamlessly with the natural surroundings.

Social sustainability was central to the project. The pavilion offers a flexible, weather-resistant space for outdoor learning, performance, and reflection. It has become a focal point for school life, used spontaneously by pupils aged 4 to 18 and celebrated during the school's anniversary events. The inclusive design encourages interaction with nature and supports wellbeing.

The project's success is rooted in deep collaboration. Architects, engineers, fabricators, and contractors worked in lockstep to preserve the purity of the original concept. The client's trust and engagement were instrumental, and the involvement of pupils added a layer of meaning and ownership. The result is a structure that is both technically accomplished and emotionally enriching.

The Corten Pavilion at Friends' School Lisburn is a testament to what can be achieved with vision, teamwork, and a commitment to excellence. It is a beautiful, durable, and inspiring space that enriches its community and stands as a lasting legacy for generations to come.



“ Judges' comment

Imaginatively conceived, with full involvement of the school and its leadership, and thoughtfully delivered, this deceptively simple canopy exemplifies the remarkable potential of weathering steel no matter the scale. The clearly legible folded plate structure creates an elegant form which maximises the pedagogical value of the project and provides a new focal point on the campus.

Award

21 Moorfields, London

PROJECT TEAM

Architect:
WilkinsonEyre

Structural Engineer:
Robert Bird Group

Steelwork Contractor:
William Hare Limited

Main Contractor:
Sir Robert McAlpine

Client:
Landsec

Consultant:
Gleeds



© Dirk Lindner 2022

21 Moorfields is a steel-framed commercial and mixed-use development in the heart of the City of London, suspended above Moorgate Station at the intersection of the Circle, Northern and Elizabeth Lines. The project spent five years in development and a further five years on site and accommodates Deutsche Bank's UK headquarters. It delivers 550,000 sqft of prime office space, arranged as two buildings on a podium above a live rail interchange. The structure is a remarkable feat of engineering and architectural collaboration, transforming a site that had stood vacant for 15 years into a vibrant, connected urban destination.

The building's entrance is located on the first floor, above the station's ticket hall, accessed via a dramatic three-storey escalator lobby, visible from Moorgate. With 85% of the site perimeter occupied by the station, the design required a column-free span across the entire footprint. This was achieved by placing 16 perimeter piles, each 2.4m in diameter and 60m deep, making them the highest-loaded individual piles ever constructed in London. The office floors were then slotted into a multi-storey bridge. These foundations support a series of 55m-spanning steel trussed arches and triangulated trusses, which define the building's expressive architectural language.

The structural design was driven by the constraints of building over a live station. Composite steel floor beams with lightweight concrete slabs enabled long spans and reduced weight. A sequence of over 60 construction stages was developed to manage force distribution and ensure safety. Lightweight steel-braced cores, supported on transfer trusses, provide lateral stability, while primary elements were designed with alternative load paths and blast resistance, including over 200 element removal cases assessed using non-linear dynamic analysis. Something which could not be achieved with any other construction material.

Fabrication and erection required extensive temporary works. A steel grillage was constructed to support piling rigs and cranes, later reused for superstructure works. Six 7m-deep launching trusses were installed to span the station, providing temporary support and becoming permanent structural elements. These facilitated the construction of 10-storey mega arches, minimising internal columns and maximising open floorplates. Large 20 tonne nodes were positioned on-site with precision, and connection detailing was coordinated across disciplines to meet architectural and logistical constraints.

Delivery was shaped by the retained deck of Moorgate Station, which imposed strict loading limits. Steelwork was lifted through temporary openings, and geospatial monitoring confirmed predicted movements. Two ballasted base tower cranes were supported off the existing structure.

The scheme successfully met its objective of delivering a world-class headquarters for Deutsche Bank on one of London's most complex sites. The design team worked seamlessly with contractors to overcome engineering and logistical challenges, integrating the new building with the Elizabeth Line and revitalising the surrounding public area.

Environmental performance was a key focus. The reuse of the station roof and foundations maximised material efficiency, with the smaller west building entirely supported on existing structure. The absence of a basement, a typically carbon-intensive element, was offset by using ground level for mechanical, electrical, plumbing and logistics. High-capacity monopiles reduced concrete requirements, and topology optimisation reduced steel tonnage by 20%. S460 steel and plate girders further enhanced material efficiency.

A whole lifecycle carbon assessment was conducted in line with RICS methodology, with the final figure at post-completion stage showing a 25% reduction from initial estimates. The predicted Energy Use Intensity (EUI) was 69.1 kWh/m² (Landlord). Water conservation strategies included low-flow fixtures and rainwater harvesting, saving nearly 400,000 litres annually. A biodiversity area and blue roof enhanced ecological value.

The project achieved BREEAM 'Outstanding', LEED Gold, and WELL Enabled certifications. It was a pilot for the Design for Performance Initiative, contributing to the launch of NABERS UK. The new green Highwalk connects to the Barbican, catalysing regeneration and improving pedestrian access.

Collaboration was central to the project's success. Architects, engineers, contractors, and suppliers worked together over several years, sharing parametric and 3D models. Specialist suppliers were engaged early under Pre-Construction Services Agreements, securing 75% of contract costs before main contractor tender.

21 Moorfields is a landmark achievement in urban engineering and design. It demonstrates how steel can unlock complex sites, deliver architectural ambition, and support sustainable development. Floating above a live station, it is a bold and elegant addition to London's skyline and a model for future infrastructure-integrated buildings.



© Ben Bisek

“ Judges' comment

A project of global significance with an immensely challenging site above the operational rail interchange and new station box. Only 16 pile locations were available to found the ten-storey development supported on a bridging structure which spans the entire width of the station. The elegant solution underplays the complexity involved in the design and sets a new benchmark.

Commendation

Structural Steel
Design Awards 2025

Two to Four Wilton Park, Dublin, Republic of Ireland

PROJECT TEAM

Architect:
Henry J Lyons

Structural Engineer:
Arup

Steelwork Contractor:
Severfield plc

Main Contractor:
John Sisk & Son

Client:
IPUT Real Estate Dublin

“Judges’ comment

With a straightforward, logical plan, these contemporary offices make reference to the traditional Dublin terraces. The column free floors, punctured by atria and featuring exposed structural steel are impressive. The building steps back from the adjacent Conservation Area resulting in interlinked and generously landscaped roof gardens. A very assured project by a highly motivated team.



Wilton Park is a landmark seven-storey steel-framed commercial development in Dublin, comprising three interconnected blocks totalling 450,000 sqft. Located beside a one-acre park on the Grand Canal, the project redefines urban placemaking by integrating premium office space with vibrant public spaces. The three blocks feature column-free office spaces, achieved through placing structural columns around the perimeter and the full-height atriums, enabling expansive, flexible floorplates tailored to modern workplace needs.

One of the buildings’ highlights are the double-height lobby areas, which are supported by two large transfer beams spanning 10.5m and weighing 16.5 tonnes each. These were lifted in sections, to remain within the crane capabilities, and spliced in situ with plated bolt arrangements. The structural design also supports extensive loading from rooftop landscaping and plant equipment without any compromise to the 2.8m floor to ceiling heights and allowed castellated beams that accommodate service ducts.

Fabrication and erection involved complex logistics in a constrained city centre site. A secondary offloading zone was identified to optimise crane usage and avoid delays. Large custom-shaped asymmetric members were precisely fabricated and safely handled, with off-site trials and detailed sequencing ensuring smooth installation on site. Erection began with full-height vertical bays and MEWPs operating on the basement slab, transitioning to deckriders on upper floors. Splice connections and



temporary works were meticulously planned to maintain safety and efficiency. With careful planning throughout the full process, the buildings were delivered over 12 months.

The structural design incorporated digitised workflows for steel column optimisation, tolerance studies for core interfaces, and coordinated cellular beam openings for seamless service integration. Consisting of 5,000 tonnes of steel, the design was a seven-storey beam and column structure. Early-stage collaboration between the project team, fostered a strong collaborative spirit, which helped when adapting to evolving design requirements.

Environmental stewardship was central to the project. The redevelopment of the adjacent park introduced 70 trees and 15,000 shrubs, enhancing biodiversity and reconnecting the community with green space. Rooftop solar panels and deep substrate planting support rainwater management and reduce surface runoff. The project achieved LEED Platinum, WiredScore Platinum, WELL Gold, and BER A3 energy ratings, reflecting its commitment to sustainability and occupant wellbeing.

Wilton Park exemplifies how structural steel can deliver architectural ambition, engineering precision, and environmental responsibility in a dense urban setting. Through innovation, collaboration, and meticulous planning, the project has created a dynamic workplace and civic asset, chosen by leading global firms for their European headquarters.

Commendation

Structural Steel
Design Awards 2025

65 Davies Street, London

PROJECT TEAM

Architect:
PLP Architecture

Structural Engineer:
Arup

Steelwork Contractor:
BHC Limited

Main Contractor:
Multiplex Construction Europe Ltd

Client:
Grosvenor



© Jack Hobhouse

65 Davies Street is a seven-storey steel-framed commercial development in London's prestigious Mayfair district, offering 65,000 sqft of premium office space directly above the Bond Street Elizabeth Line station's ticket hall. The building integrates seamlessly with its historic surroundings through a façade of terracotta, stone, and bronze, while delivering modern, flexible workspaces with exceptional connectivity.

The structure sits atop the operational station box, requiring acoustic isolation to prevent vibration transfer. Elastomeric bearings were installed at every structural connection, including vertical and lateral supports, demanding bespoke engineering solutions and close coordination with Crossrail. The steel frame was designed with a tight and regular column grid around the perimeter of the building and large spans within the centre of the floor plate. This was to optimise load distribution and minimise the weight impact on the station below. Off-site fire protection and precision fabrication ensured quality and efficiency, while exposed steel elements in the stairwell and lift shafts required architectural finishes and coatings.

Logistics were a major challenge due to the constrained central London site, public footpaths and a fully operational underground station below. To overcome this, the construction sequence was reimagined, using five-storey columns to reduce crane and site machinery time, and lessen risk. Curved sections and the exposed façade in the stairwell, required quality fabrication and



engineering to deliver a top-class finish. To maximise room height, the slim floor beams were tapered at their ends to accommodate mechanical, electrical and plumbing services. The project team's use of advanced digital modelling and 3D coordination enabled seamless integration across disciplines.

Sustainability was central to the project's vision. The building is fully electric, with rooftop solar panels and a biodiverse green wall planted with wildflowers. Steel procurement focused on high recycled content, and off-site fabrication powered by renewable energy halved associated carbon emissions. These efforts contributed to BREEAM 'Excellent', WELL Gold, and WiredScore Platinum certifications.

Public art by Clare Twomey and a landscaped trellis wall enhance the building's civic presence, while its pre-letting success reflects its market appeal and long-term value. The development supports the regeneration of Mayfair, aligning with broader transformations in Grosvenor Square and the South Molton area.

65 Davies Street exemplifies how structural steel can deliver architectural excellence, technical innovation, and environmental responsibility in a complex urban setting. Through collaboration, precision, and a commitment to sustainability, the project sets a benchmark for future over-station developments and reaffirms Mayfair's status as a global destination for business and culture.

Judges' comment

The concept for this high specification office building above Bond Street, Elizabeth Line station, was clear from the reference project right through to completion. The top-level team met the challenges from isolating vibration, noise and accommodating the air vents from the train movements below with great sophistication in the detail and contextual response.

Commendation

Structural Steel
Design Awards 2025

101 Moorgate, London

PROJECT TEAM

Architect:
Orms

Lead Designer:
Mott MacDonald

Structural Engineer:
Waterman Group

Steelwork Contractor:
BHC Limited

Main Contractor:
Mace Group

Client:
Aviva Investors

“Judges’ comment

This is a very well executed project providing ten-storeys of over-station development above Moorgate station with all the complexities of transfer structures and acoustic isolation to be expected without compromising sustainable accreditation. Of particular delight was the double height atrium where the storey high exposed trusses were a true celebration of steel.



© Chris Skillern Photography

101 Moorgate is a ten-storey steel-framed commercial and retail development located above Moorgate Station in London’s financial district. Designed as an over-station structure, it delivers 70,000 sqft of Grade A office space and 2,700 sqft of retail, integrating seamlessly with the city’s transport infrastructure while setting new standards in sustainability and urban design.

The building’s steel frame spans directly above the ventilation and access shafts of the Elizabeth Line and the Metropolitan Line tunnels, requiring innovative engineering solutions. Two 60 tonne steel trusses were chosen and installed for their efficiency in spanning four tube lines, forming the double-height atrium entrance. These trusses were fabricated in smaller sections due to crane limitations and site-welded to achieve a seamless finish. Supporting the outer columns and façade, exposed tension rods with 180mm pins were installed using bespoke cradles and jacks. These dog bones have become architectural features within the building, while providing essential structural support for the perimeter of the building.

Acoustic isolation was critical, with elastomeric bearings used at all structural connections to prevent vibration transfer from the station below. The superstructure features lightweight composite slabs with shallow beams and reinforced lightweight concrete, reducing embodied carbon and meeting strict loading criteria.



Off-site construction methods, including precast concrete panels with integrated glazing, further reduced waste and energy use.

Logistics posed significant challenges due to the constrained city-centre site and proximity to Moorgate Station. The team used a phased erection strategy, splitting floorplates and sequencing installation to maintain laydown areas and minimise disruption. Collaboration with Network Rail and Transport for London ensured safety and compliance throughout. The project’s delivery was recognised with multiple accolades for traffic and logistics management.

Sustainability was central to the project’s vision. The building is fully electric, powered by air-source heat pumps and photovoltaic panels. Over 4,200 sqft of external terraces enhance biodiversity and occupant wellbeing. These features contribute to the project’s pursuit of BREEAM ‘Outstanding’ and WELL Platinum certifications.

101 Moorgate exemplifies how structural steel can enable complex urban developments that are both technically ambitious and environmentally responsible. Through collaborative design, engineering excellence, and a commitment to sustainability, the project has transformed a challenging site into a high-performance, people-focused space that enhances the city and community.

Commendation

25A Vinery Road, Cambridge

PROJECT TEAM

Architect:
Owers Warwick Architects

Structural Engineer:
Cambridge Architectural Research Ltd

Main Contractor:
PB Doyle

Client:
Vinery Mews Ltd

“Judges’ comment

Vinery Road demonstrates an elegant adaptation of an existing masonry and steel warehouse into a new office. The refined steel frame complements the original structure while enhancing functionality, and the carefully detailed exposed steelwork enriches the architecture. Re-using the existing fabric made the project more sustainable than building new.



© Richard Fraser

Vinery Road is a steel-framed office retrofit project located in central Cambridge, transforming a disused industrial warehouse into a contemporary workspace for small and medium-sized enterprises. Surrounded by two-storey terraced housing, the site posed significant spatial and logistical constraints, requiring a sensitive and efficient design approach.

The new steel structure was inserted within the existing brick envelope to brace the retained façades, support a new roof, and create a mezzanine floor. Designed to follow the profile of the neighbouring unit, the structure includes slender cruciform columns, tensioned roof trusses, and plated beam connections, all exposed and painted black to contrast with timber finishes. The steelwork was carefully detailed to maximise headroom and minimise servicing requirements, allowing the building to function without ceilings and with discreet mechanical and electrical systems.

Engineering challenges included designing the permanent structure to double as temporary works, due to the lack of space for façade retention. New columns provided lateral restraint, while the mezzanine floor acted as a diaphragm, enabling the safe removal of the original roof trusses. The raised tension bars and thin floor construction allowed the mezzanine to achieve greater height than the adjacent unit, enhancing spatial quality.



The design was well considered to reduce the amount of bespoke fabricated elements needed. Rolled steel angles (RSAs) were used for the roof trusses and welded RSAs for the ground floor columns. As the new structure had to match the profile of the other unit, there was a challenge in fabricating to the right height and within the right tolerances. The solution was to introduce a separate section at the head of the columns that support the roof. The splicing of this separate stub onto the columns allowed for on-site adjustment of the height of the roof truss, to match with the adjoining roof.

The steelwork was delivered in small sections to accommodate narrow access routes and assembled using MEWPs and mobile scaffolds. Each phase of steelwork, the boundary columns, roof trusses, mezzanine, and stairs, was sequenced to avoid congestion and maintain progress.

The scheme showcases the advantages of using steel, as a fast assembly material, requires less demand on the workforce compared to a concrete pour, and how small fabricators can contribute to the building preservation effort within a restrained budget.

Vinery Road is a model for adaptive reuse, proving that even modest buildings can be transformed into inspiring, functional spaces through intelligent design, collaborative engineering, and the creative application of steel.

Commendation

Structural Steel
Design Awards 2025

Worship Square, 65 Clifton Street, London

PROJECT TEAM

Architect:
Make Architects

Architect:
jmachitects

Structural Engineer:
Heyne Tillett Steel

Steelwork Contractor:
BHC Limited

Main Contractor and Client:
HB Reavis

“Judges’ comment

The collaborative effort of this team really came across demonstrating the passion and zeal with which they had pushed each decision to consider sustainability. The building packs a lot in and of particular note is the thoughtful use of setbacks and colour to limit the impact of massing on the surrounding neighbourhood.



© Make Architects

Worship Square is a nine-storey steel-framed commercial development located in the South Shoreditch Conservation Area, London. It replaces two energy-inefficient reinforced concrete-framed buildings. The new structural steel frame sits above a two-storey basement, the length of the site, offering efficiency and flexibility for a modern, resilient office building. It forms part of a wider regeneration scheme that includes a new public square and pocket park. The project delivers 140,000 sqft of flexible, service-led workspace, designed to be net zero carbon in both construction and operation.

The structure-first approach to the design was driven by efficiency, sustainability, and wellbeing. In addition, a 20% reduction in the cost plan was being targeted, while meeting ambitious environmental targets, so steel was the preferred structural option due to cost certainty and an established supply chain. The design prioritised a tight core layout, maximum efficiency in the floorplates and a simplified double basement. Service openings were strategically placed to reduce beam utilisation and steel tonnage. Below ground, a secant piled wall and reused existing piles enhanced bearing capacity while eliminating the need for carbon-heavy liner walls. Temporary works were designed with the same efficiency, supporting the basement and overall stability during construction.

The frame was fabricated using 550mm deep universal beams and S460 columns throughout, all from electric arc



© Heyne Tillett Steel

production. Despite a cost uplift for this choice, the 30% increase in strength resulted in an overall weight reduction, making it the most efficient option in terms of cost and embodied carbon. Logistics were tightly coordinated due to limited site space, with steel delivered just-in-time and lifted into place for installation using two tower cranes.

The building's exposed steelwork contributes to its industrial aesthetic, aligning with Shoreditch's character. Interior features include communal roof terraces, a vegetable garden, fitness studio, and a 'living lobby'. The design prioritises natural light, with pronounced window reveals and a lantern-like upper façade. Occupier wellbeing is central, supported by app-controlled concierge services, Brompton bike hire and extensive cycle parking.

Worship Square achieved BREEAM 'Outstanding', WELL Platinum, SmartScore and WiredScore Platinum, and is designed to meet a NABERS 5.5* rating. The demolition phase diverted 100% of waste from landfill, and the rooftop allotments and wormery promote biodiversity and circularity.

Community engagement was integral, particularly with the neighbouring primary school, so construction phases were adjusted to minimise disruption. Worship Square sets a benchmark for sustainable, people-focused urban development, combining technical excellence, environmental responsibility, and community integration.

Commendation

 **Structural Steel
Design Awards 2025**

ExCeL Phase 3, London

PROJECT TEAM

Architect:
Grimshaw

Structural Engineer:
CampbellReith

Steelwork Contractor:
Severfield plc

Main Contractor:
McLaren Construction Group PLC

Client:
ExCeL London



ExCeL Phase 3 is a steel-framed extension to London's ExCeL venue, located along the Royal Docks and within the City Airport exclusion zone. The project adds 40,000 sqm to the overall development including flexible, column-free exhibition and conferencing space, a 55m clear-span upper-level floor and a dramatic 13m cantilever over the dock edge. Constructional steel was the only option to deliver these complex feats of engineering. Designed for disassembly and incorporating 50% recycled steel, the structure exemplifies sustainable innovation and engineering excellence.

The building's location presented unique challenges. Proximity to a live airport restricted crane heights, requiring bespoke lifting strategies and 3D modelling to comply with flight path regulations. In addition, bespoke acoustic design solutions and testing for the building envelope were also required, given the sensitivities of conferencing within an airport environment. The venue remained operational throughout construction, including hosting the Formula E World Championships, with the racetrack passing through the new structure. This demanded precise phasing and coordination to ensure safety and aesthetic integrity during the event.

Engineering complexity was driven by the need for vast column-free spaces, integration with the existing venue, and avoidance of piling in the existing 1930s historic dock. Storey-height trusses were used to span the exhibition halls, with detailed presets and tight tolerances ensuring structural performance. The roof bracing was uniquely positioned below the purlins due to height constraints, requiring



innovative connection design. Exposed architectural steelwork in the atrium demanded hidden fixings.

Fabrication and logistics were equally demanding. Wide-load truss deliveries required police escorts and precise scheduling to meet site constraints. Cranes and MEWPs operated on floating rafts using bespoke matting systems to reduce ground pressure. Temporary stability analysis ensured safe erection of tall, exposed structures, and BIM Level 2 coordination streamlined collaboration across the project team.

The completed venue is net zero carbon in construction and operation, achieving BREEAM 'Excellent' and PAS 2060 certification. It features London's largest rooftop PV installation, delivering over 15.5 GWh annually, and includes urban greening with a 50% biodiversity net gain. Public realm enhancements include a floating pontoon, dockside landscaping, and reduced car parking to promote sustainable transport.

Social value was embedded throughout, with apprenticeships, school engagement, and support for local charities and sports academies. A 2,000 sqm production kitchen will serve community food initiatives, and venue access will support youth recreation.

ExCeL Phase 3 sets a new benchmark for sustainable, large-scale event infrastructure, combining technical ambition, environmental leadership, and community impact.

Judges' comment

This thoughtful, carefully considered building which integrates with previous phases of the ExCeL site, was particularly well delivered. Working with the challenges of the City Airport exclusion zone, a live historic dock and incorporating part of a Formula E race track, this project delivers at scale and embraced the requirements of sustainable and economical design.

Manor Farm Bridge, Somerset

PROJECT TEAM

Architect and Structural Engineer:
Dyse Structural Engineers

Steelwork Contractor and Main Contractor:
Beaver Bridges Ltd

Client:
Emily Estates

“Judges’ comment

This private commission has resulted in a beautiful bridge to an exemplary standard of steel design and workmanship that goes way beyond the simple requirements of bridging the highway for farm traffic and provides a new safe route for the Monarch’s Way bridlepath.



Manor Farm Bridge is a 33 metre long vehicular and pedestrian bridge located at Emily Estate in Somerset, home to the award-winning Newt Hotel and the celebrated Viper aerial walkway. The bridge exemplifies architectural innovation, engineering precision, and environmental sensitivity. It connects previously divided farmland across the A359, improving logistics for agricultural vehicles and offering safe, sustainable access for residents, pedestrians, cyclists, and equestrians.

The bridge’s design reflects the estate’s premium aesthetic, incorporating curved steel girders, 60 tonnes of bespoke architectural fins, and a vehicle restraint system. Each fin is structurally integral and uniquely fabricated, requiring advanced CAD modelling and meticulous welding to ensure perpendicularity and alignment. Hidden inspection hatches were seamlessly integrated into the fin cladding to meet maintenance requirements without compromising visual integrity.

The use of architectural fins created many challenges as each one was unique in design, manufacture and installation. Joining the fins to the girders prior to the lift created a risk of twisting and becoming out of alignment. This was exacerbated when the road surface was installed, so the next test was to ensure the bridge would not buckle in the lift and under the weight of wet concrete.

Engineered to withstand dynamic loads from fully-loaded farm traffic, the bridge features a steep camber for road



clearance below, semi-integral bearings, and a durable exposed aggregate road surface edged in Blue Lias stone. The steelwork was fabricated in 12 transportable sections, reassembled on site and then lifted into place using a 600 tonne crane, with site safety and logistics expertly managed throughout.

The bridge’s installation has significantly improved farm operations, reduced reliance on public roads, and enhanced the estate’s connectivity. Its lightweight steel structure complements the surrounding landscape and architectural language, while a dedicated landscaping scheme provides visual screening and ecological enrichment. The bridge’s corrosion protection was applied offsite, ensuring longevity and minimal maintenance, and its steel components are recyclable, supporting circular economy principles.

Delivered on time and within budget, Manor Farm Bridge is a testament to collaborative excellence. The project team overcame complex design, fabrication, and engineering challenges, transforming a concept by South African architect Mark Thomas into a UK-compliant structure approved by Somerset Council.

Through community engagement, innovative design, and sustainable construction, Manor Farm Bridge stands as a landmark of rural infrastructure. It showcases how structural steel can deliver both function and beauty, creating a lasting legacy for the estate and its visitors.

Barmouth Viaduct Metallic Spans Replacement, Wales

PROJECT TEAM

Structural Engineer:
Tony Gee and Partners LLP

Main Contractor:
Alun Griffiths (Contractors) Ltd

Client:
Network Rail



© Mulholland Media



© Mulholland Media

Barmouth Viaduct is a Grade II* listed railway and pedestrian bridge located in northwest Wales, spanning 760 metres across the Mawddach Estuary. It is formed of five metallic spans to the north and the rest to the south are timber. Those in the north were corroding and deteriorating, so needed to be replaced, along with reinstatement of the swing mechanism. To add to the complexity, the project team had to work with the estuarial conditions, concealed services, remote location and preserve the historic character while meeting modern engineering standards. The new steel structure replicates the original design, including imitation rivets and retained swing mechanism elements, and reuses the original cast iron caissons to minimise environmental impact and cost.

The viaduct's renewal presented exceptional design and engineering challenges. The bespoke steel rocker bearings, built-up sections, and complex connections required detailed analysis and coordination. A new H-frame was designed to over-sail the retained swing mechanism, providing structural support and enabling future maintenance. The staged installation demanded precise sequencing, and stability checks at every phase, with the permanent and temporary works designed in tandem to ensure compatibility.

A 3D model was used to verify geometry and avoid clashes. The imitation rivets were CNC cut and manually welded to maintain heritage aesthetics. The steelwork

was delivered on a strict timeline for trial erection and movement in the site compound before the track closed for the main works to begin.

Construction was executed during a three-month autumn track blockade to avoid peak tourism disruption. The narrow corridor, tidal conditions, and limited lifting capacity required bespoke gantry cranes and temporary gantry beams integrated into the new trusses. The northern abutment's limitations led to innovative installation methods, including site welding and staged lifting. The swing span was jacked to cantilever over its support, allowing horizontal installation of the H-frame steelwork.

Environmental sensitivity was central to the project. No new foundations were constructed, and the estuary bed remained untouched. Scaffolding platforms were supported off existing caissons, and materials were transported via rail across the timber viaduct, avoiding plant movement on the sand. Work was scheduled outside breeding seasons, and UK-based fabrication reduced transport emissions.

Collaboration between designers, contractors, and suppliers ensured the project was delivered on time and with minimal disruption. Barmouth Viaduct's renewal is a landmark achievement in heritage-sensitive engineering, showcasing innovation, precision, and environmental stewardship in a uniquely challenging setting.

Judges' comment

This new viaduct replicates an iconic listed structure which had deteriorated due to the harsh estuarine environment. The new superstructure was designed to fit within the existing enabling it to be moved into position using the existing railway, and to support the old as it was dismantled. An outstanding example of construction-led design.

Spectra, University of Hertfordshire

PROJECT TEAM

Architect:

ADP

Structural Engineer:

AECOM

Steelwork Contractor:

Elland Steel Structures Ltd

Main Contractor:

Morgan Sindall Group

Client:

University of Hertfordshire

Judges' comment

The Spectra Building is an inspiring new university facility, designed within strict parameters. Constructed in steel, the long spans provide flexibility, enabling spaces to adapt as funding and study needs evolve. This forward-looking approach delivers functionality, sustainability, and design excellence, creating a building the university can rightly be proud of.



The Spectra Building is a five-storey composite steel-framed teaching and research facility located at the University of Hertfordshire's College Lane Campus in Hatfield. Designed to unite the university's STEM departments under one roof, it is now the largest and most adaptable building on campus. Its structural steel frame, paired with precast concrete cores and piled foundations with suspended ground floor slabs, supports a highly flexible layout that accommodates civil, structural and automotive engineering, physics, computer science, mathematics, robotics, and astronomy.

The building's regular 9 x 9m grid and lack of transfer structures enable future adaptability while minimising carbon impact. Exposed steelwork and services are celebrated throughout, showcasing engineering principles to students and visitors. The columns are spliced at level 2 where the section size reduces to limit carbon expenditure. In addition, it has supported differing activities on each floorplate, which require combinations of high loads and vibration sensitivity. Feature elements include long-span steel staircases, timber-clad handrails, and full height atriums, so multiple construction materials can be witnessed in a single view. The ground floor CDIO (Conceive, Design, Implement, Operate) workshops feature operable walls suspended from the steel frame to divide or combine adjacent spaces, and a strong floor workshop with crane beams designed for destructive testing rigs.



Fabrication and erection required innovative sequencing due to delays in the precast core delivery. Temporary bracing and modified connections allowed the steel frame to be constructed independently, maintaining programme momentum. The long-span stairs were delivered in one piece, requiring precise routing and welding to meet architectural and regulatory standards.

The building's design supports disassembly and reconfiguration of non-load-bearing partitions, enabling the university to evolve its teaching and research spaces over time. Sustainability was embedded from the outset, targeting BREEAM 'Excellent' through a fabric-first approach, prefabricated materials, daylighting strategies, and low-energy services. All primary steel sections were sourced from EAF production, thus reducing embodied carbon.

Spectra's impact extends beyond the university. It addresses national STEM skills shortages by providing state-of-the-art facilities for students and researchers, while enhancing collaboration across disciplines and with industry partners. Communal spaces and visible research areas foster interaction and innovation.

The Spectra Building exemplifies how structural steel can deliver a sustainable, flexible, and inspiring educational environment. It stands as a beacon of engineering excellence and collaborative design, ready to support the future of STEM education and research.

National Finalists

† Structural Steel
Design Awards 2025

Edenica, 100 Fetter Lane, London

PROJECT TEAM

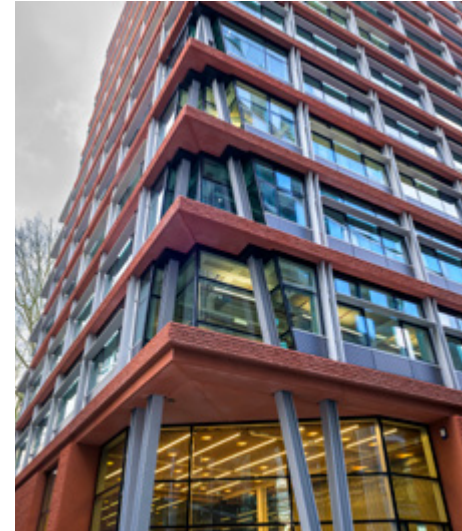
Architect: **Fletcher Priest Architects**

Structural Engineer: **Waterman Group**

Steelwork Contractor: **Bourne Group Ltd**

Main Contractor: **Mace Group**

Client: **Yard Nine and BauMont Real Estate Capital**



© Michael Cockerham 2025

“ Judges’ comment

The compact site of this mid-city project presented constraints that the team overcame with great intelligence to achieve a harmonious building of naturally ventilated and lit office floors that respond sensitively to the location. This is the first city building to use material passporting with associated QR codes on the model for future component re-use.

Island, 17-27 John Dalton Street, Manchester

PROJECT TEAM

Architect: **Cartwright Pickard**

Structural Engineer: **Curtins**

Main Contractor: **Bowmer and Kirkland**

Client: **HBD**



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“ Judges’ comment

Located in the heart of the Business District, this nine-storey office development with curved corners and a façade of brick panels, blends in seamlessly with Manchester’s traditional city centre architecture. The project has achieved net zero operational carbon and boasts several prestigious sustainability certifications.

National Finalists

Structural Steel
Design Awards 2025

Pennyburn Bridge, Northern Ireland

PROJECT TEAM

Architect: **Design ID Consulting Limited**

Architect: **McAdam Design**

Structural Engineer: **Structural Design and Detailing Ltd**

Steelwork Contractor: **M. Hasson & Sons Ltd**

Main Contractor: **FP McCann**

Client: **Derry City & Strabane District Council**



“ Judges’ comment

This simple and attractive bridge, sitting well into the estuarial landscape, is the latest addition to the Northwest Greenway Network that provides much needed connectivity for the local communities. Floodplain and ecological/environmental constraints required the bridge to be installed in an impressive single lift using a 1000 tonne crane.

Skelton Grange EfW, Leeds

PROJECT TEAM

Architect: **Weedon Architects Limited**

Structural Engineer: **Doran Consulting**

Steelwork Contractor: **Billington Structures Limited**

Main Contractor: **Kanadevia Inova AG**

Client: **enfinium Skelton Grange Limited**



“ Judges’ comment

Replacing a former coal-fired power station, this cutting-edge facility can process over 400,000 tonnes of waste annually, generating electricity for over 100,000 homes. To meet a tight 41-week steelwork erection schedule, during which access was needed for the installation of large, specialised plant items, the steelwork contractor used advanced digital modelling and innovative modular roof assemblies.

National Finalists

The Rainham Riverside Belvedere, London

PROJECT TEAM

Architect: **Untitled Practice**

Structural Engineer: **Flow Structures Limited**

Main Contractor: **Borras Construction Ltd**

Client: **London Riverside BID**



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“ Judges’ comment

This project is a testament to the commitment, tenacity and enthusiasm of the whole project team that needed to pull together to deliver this. It is carefully considered and detailed and is clearly already used and appreciated by the local community on what would otherwise have been a rather forgotten and unloved site.

Palmerston Court, London

PROJECT TEAM

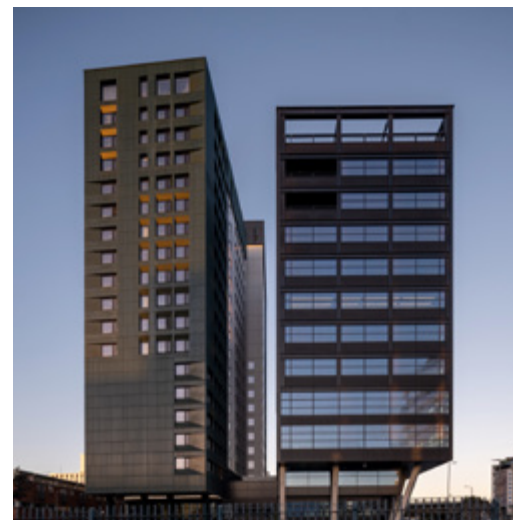
Architect: **Allford Hall Monaghan Morris**

Structural Engineer: **Walsh**

Steelwork Contractor: **William Hare Limited**

Main Contractor: **Mace Group**

Client: **Urbanest**



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“ Judges’ comment

Palmerston Court is distinguished by its innovative use of composite planks and steel, lifted into place to accelerate construction while achieving a less industrial exposed finish. Site constraints at ground level necessitated raking columns, cleverly avoiding large cantilevers and delivering carbon savings. The scheme illustrates efficiency, ingenuity, and architectural refinement.

