Structural Steel Design Awards 2026

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The British Constructional Steelwork Association Ltd
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BCSA

The British Constructional Steelwork Association Ltd

4 Whitehall Court,
Westminster,
London SW1A 2ES

Tel: 020 7839 8566
Email: marketing@bcsa.org.uk
Web: www.bcsa.org.uk
www.steelconstruction.info

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INTRODUCTION

The Structural Steel Design Awards scheme, fast approaching its 60th year, is an opportunity to celebrate the versatility of structural steelwork and the contribution the sector can make to the built environment. The success of the scheme depends partly on the projects entered and partly on the judges who review them. This year we received a good range of entries and I would like to thank all involved in submitting these. But I would also like to encourage more to do so in future – it need not be an onerous task and we are happy to advise on any aspects, particularly for those entering for the first time.

The judges, each an expert in their own field and sharing a passion for high-quality design and construction, have the difficult task of comparing the wide range of projects submitted and I would like to thank them for giving so freely of their time. We make a preliminary selection based on a 'desktop' review of the entries so, in preparing submissions, it is important to provide clear, concise, well-illustrated documentation highlighting those aspects of the project which make it special. Good photographs, particularly of the finished structure, are especially welcome and throughout the process it is very helpful to have input from all key members of the project team, including the client, to provide the broadest perspective.

Unlike other award schemes, we visit all shortlisted entries unless special circumstances prevent it. This provides a first-hand opportunity to understand and experience what the project teams have achieved and to quiz them 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.

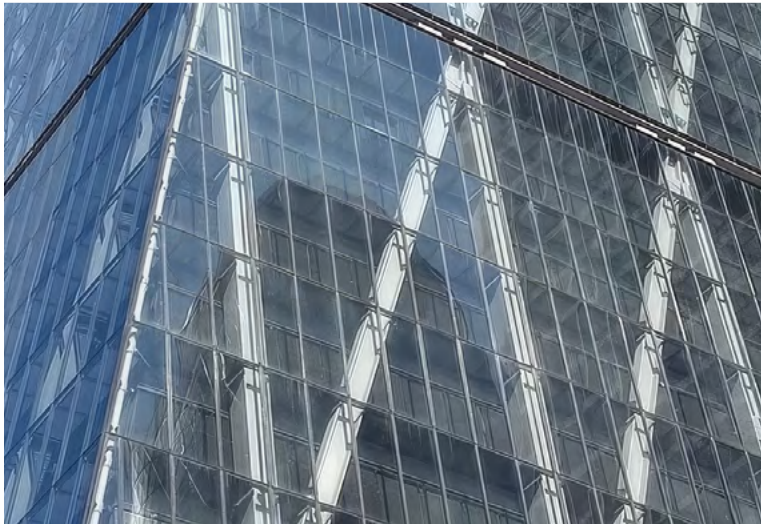
Once all visits have been completed, the judging panel reassembles to compare notes and exchange views. With such a diverse range of projects, this is no easy task, but the judges bring all their professional experience and expertise to bear in reaching a consensus. Throughout the judging process, we 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. We look for high quality and are particularly keen to understand the challenges faced, how these were addressed and the contribution of steel to the outcome.

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, and everyone involved should be proud of what has been achieved. It is indeed my privilege, as a judge, to have the opportunity to visit some of these schemes and to learn of the amazing achievements, so in conclusion I would like to express my gratitude to you for this and my congratulations to you all.

Professor Roger Plank
Chairman of the Judges Panel

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

This year's Structural Steel Design Awards are 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.

Professor Roger Plank
PhD BSc CEng FIStructE 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.

Tim Burton

Representing the Steelwork Contracting Industry

Tim Burton is former Chairman of the British Constructional Steelwork Association Bridges Committee and has a long association with the Association.

During his extensive career in steel construction, Tim has contributed to countless landmark projects in the UK and overseas. These include London's One Canada Square, the Tsing Ma suspension bridge in Hong Kong and Scotland's iconic Kelpies artwork.

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 MIStructE

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 Steligence and is responsible for the promotion of the company's combined product offering and sustainability within the UK.

Ewan Jones
BSc (Hons) BArch (Hons) RIBA

Representing the Architectural Profession and Chair of the Design Commission for Wales

Ewan Jones is a regional managing principal at 10 Design, an international architectural practice. With over 30 years' experience at the intersection of architecture, engineering and construction, he has designed award-winning structures across a range of scales and sectors.

Ewan works closely with developers, leading office, residential and mixed-use schemes. He has also worked on major infrastructure projects, including railway stations, energy generation and bridges. Previously a Partner at Grimshaw, his built portfolio includes The St Botolph Building and Lloyds Bank's headquarters in the City of London, Newport City Footbridge and HS2's Colne Valley Viaduct.

Emily McDonald
MEng MA (Cantab) CEng MICE

Representing the Institution of Civil Engineers

Emily McDonald is the UK+ Managing Director and Partner at Buro Happold, with nearly 30 years' experience. A civil and structural engineer by training, she joined the practice as a graduate from Cambridge University. She has extensive experience across multi-disciplinary projects, including innovative new builds and refurbishment schemes across several sectors and typologies. Her landmark projects include the Cutty Sark Conservation Project and Phase One of the Battersea Power Station redevelopment, now known as Circus West Village and Faraday House. Emily has led large multi-disciplinary engineering teams on projects including Stratford Waterfront East Bank and is currently Project Principal for the Barbican Renewal Project.

Bill Taylor
BA (Hons) DipArch MA RIBA FRSA

Representing the Architectural Profession

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 and CABE Design Review Panels and a Senior Assessor/Client Adviser for the RIBA competitions programme.

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. As the Head of Sustainability for Building Structures at Ramboll UK, she leads the implementation of the company's sustainability strategy: reducing 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 on Ramboll's UK commitments to ConcreteZero and SteelZero, as well as providing sustainability training and upskilling to over 180 engineers and technicians across the UK and India, ensuring they have the technical competence to engineer the future.

Sarah Pellereau
MEng CEng MIStructE

Representing the Institution of Structural Engineers

Sarah Pellereau is a Director at Elliott Wood with 25 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 Master's in Engineering from the University of Leeds. She has a diverse portfolio of experience in structural design but has also worked on-site with the CTRL alterations to St Pancras Station and tutored at Nottingham University.

Oliver Tyler
BA (Hons) DipArch RIBA

Representing the Architectural Profession

Oliver Tyler is Managing Director of architects WilkinsonEyre. He joined the practice in 1991, becoming a Director in 1999, and has nearly 40 years' experience in architectural practice. He has led the design and construction of many high-profile building and infrastructure projects, including the Dyson Headquarters, Liverpool Arena Convention Centre, Stratford Regional Station, Liverpool Street Station for the Elizabeth Line and the London Cable Car. More recently, Oliver has been responsible for commercial buildings in the City of London, including 8 Finsbury Circus and the 50-storey 8 Bishopsgate, both recipients of the City Building of the Year Award. Oliver has been an SSDA judge for over 15 years.

PROJECT OF THE YEAR AND AWARD

Manchester Airport Terminal 2 Reconfiguration

PROJECT TEAM

Architect: Pascall + Watson

Structural Engineer: Buro Happold

Steelwork Contractor: Leach Structural Steelwork Ltd

Main Superstructure Contractor: McCrory Holdings

Client: Manchester Airport Group

© Pascall + Watson

Manchester Airport Terminal 2 Reconfiguration has transformed a 30-year-old terminal into a modern passenger facility while the international airport remained fully operational. The project upgraded the departures, security and arrivals areas within the existing four-storey building, forming the second phase of a decade-long transformation programme designed to improve the terminal's functionality and passenger experience.

Covering 71,000m², Terminal 2 comprises four structures separated by movement joints, with an existing space-frame roof spanning the central atrium and check-in hall. The project required major alterations to this complex building, including 3,800m² of internal floor infills, modifications to primary structural elements and the lateral stability system, and new external structures and bridges.

Structural steelwork provided the flexibility needed to undertake these interventions while retaining the existing façades and roof. The new structure maintained the established column spacing and service strategies, created additional passenger capacity and avoided the need to strengthen the existing foundations. This allowed substantial changes to be made without imposing unnecessary additional loads or disrupting more of the terminal than required.

Using steel also complemented the terminal's original construction, allowing new members to be connected precisely to the retained frame. Components could be fabricated to suit surveyed conditions, transported in manageable sections and assembled within confined work areas, providing essential adaptability throughout the phased design and construction.

Understanding the existing structure was a significant challenge. The terminal had been modified throughout its life, but limited records were available to document every change. Structural analysis models were developed from archived information and supplemented by detailed surveys, creating a reliable picture of the building before the proposed interventions were assessed.

Computational engineering was used to compare the existing and proposed analysis models. A bespoke script identified the effects of each intervention, enabling the design to minimise its impact on the retained structure and limit the number of new structural elements. This detailed assessment was vital when altering load paths and stability systems within a building that remained in continuous use.

One of the most complex interventions was the creation of the "sky bar" beneath the glazed space-frame roof. A carefully sequenced arrangement of temporary and permanent steelwork allowed existing members to be removed and the new floorplate installed without compromising the structure above. The work demanded close control of temporary conditions as the load paths changed throughout construction.

Fabricated plated beams were introduced within part of the new floorplate to minimise structural depth. Reducing the structural zone maximised the available floor-to-ceiling height and preserved space for building services, directly supporting the quality and openness of the passenger environment. Bespoke steel connections were also developed to fit around the retained structure, limit disruption and maintain separation between landside and airside areas.

Every item of internal steelwork was brought into the terminal without a single crane lift. Members were transported through the front doors on wheeled equipment before being moved and lifted into position using rigging and winching. This unusual installation strategy responded to the restricted internal environment and enabled extensive steel alterations to proceed without interrupting the terminal's operations.

Programming and sequencing were governed by the operational airport. Work areas had to remain securely separated from passengers, staff and aircraft operations, while access to airside locations was tightly controlled. The design and construction teams therefore had to remain agile, coordinating structural interventions around changing operational constraints and delivering them within tightly defined working periods.

The project also created new structures beyond the existing terminal. An external transfer facility on the airfield was connected to the main building by a double-storey steel bridge, alongside a new back-of-house vertical circulation core. These additions improve movement through the airport while integrating with the reconfigured internal spaces and established terminal structure.

Reuse formed an important part of the structural strategy. More than 75t of steelwork removed from the existing building was incorporated into the permanent structure, while other recovered members were repurposed as temporary works. The embodied carbon associated with modules A1-A5 was calculated at 137kgCO_2e/m².

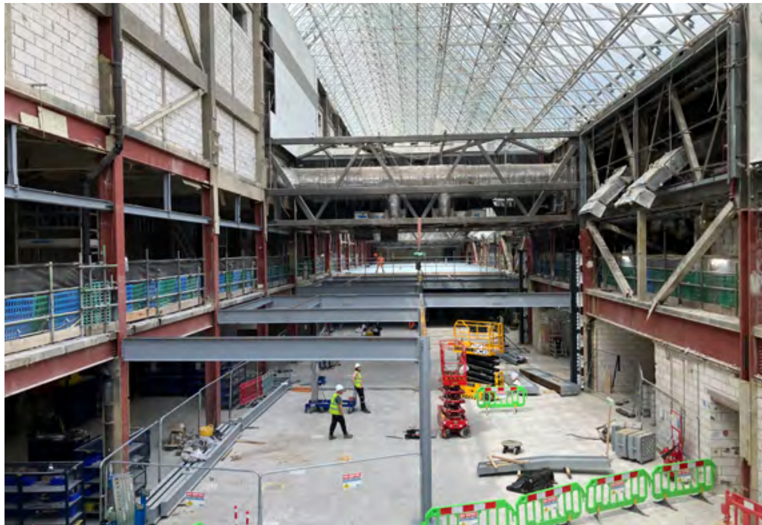
The completed terminal provides increased capacity and an improved journey through check-in, security, departures and arrivals. Reduced security queues allow passengers to spend more time within the airside retail areas, while the transfer of airline operations into the completed terminal supports more efficient airport operations. The structural alterations were therefore fundamental to both the quality of the passenger experience and the terminal's commercial performance.

Manchester Airport Terminal 2 Reconfiguration demonstrates the exceptional adaptability of structural steelwork. New members, reused steel and bespoke connections were integrated into a complex existing building, enabling load paths, floorplates and stability systems to be transformed while the airport remained operational. Rigorous analysis, inventive temporary works and crane-free internal installation resolved challenges rarely encountered on conventional projects. The result is a world-class terminal created through the precise and imaginative reconfiguration of its steel structure.

© Buro Happold

JUDGES' COMMENT

"A major upgrade to the existing 71,000m² Terminal 2 structure, all within a live operational environment. Incredibly complex structural modifications have transformed the departure, security and arrivals areas and created a state-of-the-art passenger experience. Bespoke steel connections were devised to limit disruption and maintain separation between landside and airside boundaries. Over 1,000t of steelwork for the inside of the building had to be wheeled in without a single crane lift and lifted into position using rigging and winching."



SPECIAL JUDGES' AWARD AND COMMENDATION

TBC.London

PROJECT TEAM

Architect: Stiff + Trevillion and ECE Architecture

Structural Engineer: Webb Yates

Structural Engineer (Donor Site): Civic

Main Contractor: Willmott Dixon

M&E Engineer: Atelier Ten

Client: FORE Partnership

© Jack Hobhouse

TBC.London transforms a dated commercial building within the Tower Bridge Conservation Area into a mixed-use, workspace-led development. The project retains and selectively adapts the existing concrete frame, using structural steelwork to create new floorplates, reconfigure the cores and add further levels. This approach allowed the building to be extended and modernised while responding carefully to its constrained historic setting.

Steel was selected for its ability to work with the retained structure, provide long spans and support future adaptation. Clear structural grids and coordinated service zones allow building services to be integrated with exposed soffits without compromising headroom. The resulting floorplates can accommodate multiple occupiers and future reconfiguration, extending the building's useful life.

TBC.London is the UK's first major commercial building to incorporate large-scale reuse of pre-war structural steel through its Urban Mining initiative. Approximately 40t of steel removed from The Elephant, the retrofit of a former 1930s department store on Oxford Street, was transferred directly to TBC.London and incorporated into its structure. The reclaimed members were almost 100 years old, establishing a significant precedent for circular construction at commercial scale.

The opportunity emerged after the primary steel strategy for TBC.London had been developed. Rather than treating this as a barrier, the design was reassessed so that reclaimed sections could be accepted without changing the building's structural, spatial or performance requirements. The inherent adaptability of steel allowed load paths, connections and tolerances to be adjusted while maintaining the intended programme and architectural design.

Reclaimed members were used alongside new steelwork within a coherent structural frame. Variable historic section sizes and details required bespoke connection strategies and careful allocation of members. Their dimensions made some sections best suited to the lower levels, while others were used as secondary steelwork trimming risers and openings or supporting plant, minimising their effect on floor-to-ceiling heights.

Demonstrating that the pre-war steel could satisfy modern requirements was central to the process. As the members did not have contemporary certification, they underwent destructive and non-destructive assessment, including tensile, chemical, metallographic and carbon-equivalent-value testing. Newly issued guidance for the reuse of pre-1970 steel was applied in practice, informing material verification, connection design, load paths and performance checks.

Before fabrication, the recovered steel arrived with redundant plates and evidence of its previous use. Each member had to be identified, cleaned, tested, prepared and reworked to contemporary tolerances and connection details. This process retained the structural value of the original material while ensuring that the finished steelwork met the project's requirements for safety, durability and finish.

Delivering the reclaimed steel required close coordination between two unrelated live construction projects. Members suitable for reuse had to be identified and secured before they entered the recycling stream. Demolition, testing, design, fabrication and installation programmes were aligned so that the steel could be transferred directly between the projects without intermediary storage or resale.

The direct transfer avoided storage, resale and procurement interfaces, demonstrating that reclaimed steel can remain a valuable structural product rather than becoming recycled feedstock. It also showed how early commitment and decision-making can manage the risks associated with historic materials within a commercial programme.

The timing added complexity because dismantling at The Elephant was already under way when the opportunity was identified. Accelerated testing and decision-making allowed suitable members to be allocated quickly, while their integration was incorporated into the existing construction sequence. This maintained buildability, safe site operations and programme certainty despite the late change in material supply.

The wider structural design also responded to significant site constraints. New foundations lie within the influence zone of the Tower Bridge anchor blocks, requiring rigorous ground-movement assessments to minimise the effect of additional loading. Retaining the existing concrete frame and adding structural steelwork only where required reduced the amount of new structural material needed while enabling the building's planned vertical extension.

TBC.London achieved whole-building embodied carbon below 300kgCO_2e/m² for modules A1-A5. Alongside the 40t of reclaimed steel, the remaining steelwork was specified with a minimum recycled content of 56%. The fully electric development achieved BREEAM Outstanding at 95.6%, WELL Platinum and NABERS 5-star ratings, and aligns with operational net-zero carbon targets.

The project's influence extends beyond the completed building. Challenges encountered while recovering, verifying and integrating historic steel contributed to the creation of The Engineers Reuse Collective. Launched in 2024, the not-for-profit group provides a forum for practising engineers to implement, demonstrate and champion reuse, turning project-specific experience into shared industry knowledge.

TBC.London demonstrates that steel can support retention, extension and long-term adaptability while also being recovered and reused across project boundaries. Its combination of retained structure, new steelwork and century-old members achieved substantial carbon reductions without compromising performance, safety or programme. By proving that large-scale reuse is commercially deliverable, the project challenges established procurement and construction practices. Its legacy is both a high-performing building and a practical model for a more circular approach to structural steelwork.

© Four Bay Structures

JUDGES' COMMENT

“The UK's first major commercial building to incorporate large-scale reuse of pre-war steel, TBC.London has redefined what is possible in circular construction, challenging industry norms and proving that ambitious carbon reduction can be achieved at commercial scale. It inspired the creation of The Engineers Reuse Collective, championing reuse across the built environment, creating a legacy of collaboration, innovation and industry-wide change.”

© Civic

38 Berkeley Square, London

PROJECT TEAM

Architect: Piercy & Co

Structural Engineer: Elliott Wood

Main Contractor: Mace Group Limited

Client: Berkeley Estate Asset Management


© P&Co

Located in the heart of Mayfair, 38 Berkeley Square replaces an existing building with a new steel-framed commercial development comprising 11-storeys, including a two-storey basement. Providing more than 85,000ft² of office accommodation and approximately 7,000ft² of communal terraces, it offers larger, more flexible floorplates and improved floor-to-ceiling heights while contributing positively to its historically significant setting.

The project's defining achievement is its innovative steel-framed structural solution, which enabled exposed cross-laminated timber (CLT) floor panels to be incorporated within a substantial commercial office building. Steel provides the strength, spanning capability and adaptability required to create generous open floorplates while responding to the restricted planning envelope and the demands of the architectural and servicing strategies.

Achieving the required floor-to-ceiling heights demanded an exceptionally shallow and highly coordinated structural system. Conventional downstand beams and suspended ceilings would have reduced the available clear height, so an alternative arrangement was developed using upstand steel beams with web openings. These support notched CLT panels to create a flat, exposed soffit below, while openings within the steel beams allow services to pass through the structure and be accommodated within the raised-floor plenum.

The arrangement maximises the available internal height and maintains uncluttered office ceilings without compromising the structural grid or servicing strategy. Steel's high strength-to-weight ratio made it possible to achieve the required spans within the restricted structural zone. Its adaptability also allowed service openings, connections, façade supports and interfaces with the floor panels to be accurately coordinated before manufacture.

The reduced weight of the steel and timber superstructure brought further benefits below ground. By limiting the loads transferred to the foundations, the design allowed a raft foundation to be adopted in place of a deep piled solution. This halved the volume of concrete required below ground, reduced the construction programme and minimised the potential effect of the works on neighbouring heritage assets.

The steel frame performs several demanding structural roles beyond supporting the floor panels. At the upper levels, the building steps back to create terraces, introducing complex transfer conditions. The steelwork accommodates these transfers within the floor build-up, maintaining clear and uncluttered ceiling zones. The frame was also designed to act as a Vierendeel truss in plan, transferring horizontal wind forces to the reinforced concrete stability walls.

The lightweight floor construction required detailed assessment of its response to movement and vibration. The upstand beam configuration also left the top flanges of the steelwork unrestrained in the conventional manner, requiring their behaviour to be carefully considered as part of the structural design. These challenges were resolved while retaining both the shallow floor zone and architectural quality of the exposed soffits.

Bespoke connections were developed between the steel beams and CLT panels to provide the required structural performance while accommodating the different characteristics of the two materials. At critical interfaces, the steelwork was overboarded to limit heat transfer into the timber and maintain the required compartmentation between floors.

Fire performance was a major consideration because the CLT remains exposed within the completed offices. The building's reinforced concrete stability system does not rely on the timber floors, while sprinklers are incorporated throughout the development. Detailed analytical work demonstrated the performance of the structure, including the behaviour of the steel–timber interfaces and the ability of the exposed timber to self-extinguish. This provided a route to regulatory approval without costly full-scale physical testing and allowed the original programme to be maintained.

The upstand steelwork required a high degree of precision during fabrication. As the beams interrupt the continuity of the floor panels, accurately positioned steel-to-timber connections were essential. Service openings, connection holes and brackets supporting the precast concrete façade were incorporated into the fabricated steelwork. Plates were welded to the undersides of the beams to support the upstand arrangement, while sacrificial brackets facilitated the installation of temporary edge protection.

With virtually no ground-level storage or conventional lay-down space available, erection of the steel frame was carefully phased. Completed sections of each floor provided temporary lay-down areas as construction progressed, while just-in-time deliveries limited the amount of material held on site. Early coordination ensured the steel components arrived ready for installation, which was particularly important within the constrained central London site.

The development has achieved BREEAM Outstanding and LEED Gold, together with a NABERS UK Design for Performance target rating of 4.5 stars. Circa 99% of the structural steel was sourced from mills certified to BES 6001, while 68% was manufactured in the UK and a further 30% in mainland Europe.

Work undertaken to establish the compliant hybrid structural solution has also contributed to the Commercial Timber Guidebook. Funded by Built by Nature, the initiative supports wider understanding of hybrid commercial construction and engagement with the insurance industry.

38 Berkeley Square demonstrates how structural steelwork can unlock new approaches to low-carbon commercial construction. The steel frame makes the long spans, shallow floor zone, integrated services, lightweight superstructure and exposed internal finish possible. Through its precision and adaptability, steel provides the framework that brings the architectural, structural and environmental strategies together.

JUDGES' COMMENT

"This was an exemplary project using a hybrid steel and CLT frame, setting a benchmark for future low-carbon construction. The judges praised the team's collaboration and industry leadership, engaging Building Control, the London Fire Brigade and insurers, helping to shape the Commercial Timber Guidebook. Its success was driven by both a forward-thinking client and a highly committed design team."

AWARD

Gairnshiel Jubilee Bridge

PROJECT TEAM

Architect: Moxon Architects Ltd

Structural Engineer: Arcadis

Steelwork Contractor: J&D Pierce Contracts Ltd

Main Contractor: Wills Bros Civil Engineering Ltd

Client: Aberdeenshire Council

Gairnshiel Jubilee Bridge provides a new crossing of the River Gairn on the important north-south route between Deeside and Speyside. Located immediately downstream of the Category A-listed bridge built in 1749, the new structure carries two lanes of traffic and accommodates large goods vehicles, protecting the historic crossing from further vehicle strikes and allowing it to be retained for pedestrians, cyclists and equestrians.

The project called for a modern, resilient bridge that would improve access without overwhelming its sensitive Highland setting. Six possible alignments were explored, balancing road length, land boundaries, topography, flood risk and the relationship with the existing bridge. The selected route runs parallel to its historic neighbour and connects with the road network at a low point in the landscape.

River flood levels required a single clear span, while the low highway alignment demanded a shallow structural depth. Structural steelwork provided the strength and efficiency needed to span 35m while maintaining a slender profile and carrying full highway loading. Working compositely with the concrete deck, the steel structure delivers the required capacity without creating an unduly deep or visually dominant crossing.

The primary structure comprises bespoke fabricated box girders that evolved from an earlier plate-girder proposal. Although unconventional for a bridge of this span, the closed-box solution brought significant benefits for erection, durability and maintenance. The girders support permanent formwork soffit panels and the wet concrete load during construction, while their enclosed form removes external ledges and reduces areas where water and debris can collect.

Careful shaping allows the substantial steel structure to appear deceptively slender. The girders are inset from the parapets and their inclined webs taper towards the underside, causing the structure to recede into shadow when viewed from the surrounding landscape. The weathering steel will develop a muted russet tone over time, complementing the colours of the glen and contrasting with the lighter granite above.

Weathering steel was selected for its appearance and contribution to a low-maintenance structure. Its evolving finish supports the intended landscape integration, while integral abutments increase structural efficiency and eliminate bearing maintenance. Together, these decisions create a robust bridge with reduced ongoing maintenance needs throughout its service life in this remote Highland location.

The slender steelwork is paired with precast concrete parapets faced in locally reclaimed granite. Stone sourced from dismantled agricultural buildings around Aberdeen was already weathered and retained evidence of its former uses, while the coping stones were reclaimed from Aberdeen Harbour. The granite-faced parapets and wing walls taper into the landscape, echoing the form of the historic crossing without attempting to imitate it.

The use of reclaimed granite alongside a durable, fully recyclable steel structure also supports the project's material-efficiency objectives, combining long-term performance with reduced demand for newly quarried stone for the parapets.

The remote site, reached by single-track roads, imposed strict limits on deliveries, storage and on-site fabrication. Offsite manufacture was therefore central to the construction strategy. The primary steelwork was fabricated and trial-assembled before delivery, ensuring the components fitted correctly and reducing work beside the river.

The completed steel structure was too large to be transported in one piece. It was delivered in two sections, precisely aligned and welded together on site to create the finished span. This required careful control of geometry and workmanship to maintain the structural integrity and clean appearance of the bespoke box girders.

Erection was undertaken using a 600t crane within a single 10-hour working window. Transport movements, site operations and crane positioning had to be closely coordinated around the limited access. Freezing temperatures, changing weather and the seasonal flood risk of the River Gairn added further constraints, making advance planning and offsite preparation essential.

Ground conditions, the water table and flood risk also informed the foundation and abutment design. Sheet piling was adopted, together with flood-resilient integral abutments and wing walls. The clear-span arrangement avoids placing supports within the river, while the robust steel and concrete structure establishes a dependable crossing capable of serving modern traffic.

Beyond its immediate function, the bridge supports a more resilient regional road network. The former crossing's restricted geometry and vulnerability to vehicle strikes had caused road closures and detours of up to 58km. Diverting modern traffic onto the new bridge safeguards the listed structure while maintaining an important connection between communities.

Gairnshiel Jubilee Bridge demonstrates how structural steelwork can provide the strength and efficiency required for modern infrastructure while responding sensitively to a historic landscape. Its fabricated box girders provide the capacity required for modern highway traffic, yet their tapered geometry, recessed position and weathering finish allow the bridge to sit quietly within the landscape. Precision fabrication, trial assembly and carefully planned erection overcame the challenges of the remote site, while the low-maintenance design responds to its long-term operational needs. The result is an elegant contemporary companion to the historic bridge: technically assured, economical and deeply connected to its distinctive Highland setting.

© Ben Addy

JUDGES' COMMENT

"This new bridge is located close to the 18th-century listed stone structure it replaces, and the design thoughtfully responds to its context. The slender, 35m-long weathering steel structure with its 'recycled' stone parapets integrates effortlessly into the Highland landscape. Carefully detailed, this bespoke structure is elegant, efficient and designed for minimal ongoing maintenance."

© Ben Addy

AWARD

Fortnum & Mason Double Helix, London

PROJECT TEAM

Architect: Ben Pentreath Ltd

Structural Engineer:
Format Engineers Ltd and Ramboll

Main Contractor: Portview Fit-Out Ltd

Client: Fortnum & Mason

© Timothy Soar

Located at the centre of Fortnum & Mason's flagship store at 181 Piccadilly, the Double Helix Staircase forms a new circulation route connecting the retail floors while providing a distinctive architectural focal point within the refurbished interior. One of only a small number of double-helix staircases worldwide, it combines advanced structural engineering and digital modelling with traditional materials, bespoke detailing and refined craftsmanship.

The staircase comprises two intertwined flights arranged around the same central opening. Translating this ambitious concept into a structurally workable solution required its geometry, proportions and visual symmetry to be maintained while creating a structure capable of spanning considerable distances within the new atrium.

Structural steelwork was fundamental to achieving the slender appearance and complex geometry. Its strength and adaptability allowed the stair elements to remain visually light while providing the required structural performance. Curved steel stringers form the primary structure and establish the continuous double-helix geometry, while the completed staircase brings together timber treads, GRG soffits, hand-forged balustrade panels and bespoke brass fittings inspired by Fortnum & Mason's tea leaves.

The original structural concept relied on sections of the staircase being partially hung. During detailed design, an alternative clear-spanning solution was developed, simplifying its structural behaviour and improving its visual clarity. This contractor-led development represented a significant change to the original concept, producing a more efficient and buildable structure while preserving the architectural intent.

The long spans and slender elements required advanced digital analysis and optimisation to demonstrate the necessary strength and stiffness. The design also had to account for forces transferred into the existing building and the interaction between movement in the staircase and the surrounding structure. Resolving these considerations without introducing visually intrusive supports was central to the finished result.

The continuous geometry placed particularly high demands on fabrication. The curved steel stringers and bespoke components were manufactured to tight tolerances so that the two flights followed their intended paths and remained visually balanced. Any variation in the primary steelwork could have affected the alignment of the timber, balustrades, soffits and decorative finishes.

Three-dimensional scanning and advanced surveying techniques supported fabrication and installation. Accurate information about the existing building and developing structure allowed the steelwork and finishes to be coordinated before assembly. This helped ensure the timber treads, GRG soffits, balustrades and brass details fitted correctly, protecting the quality of the staircase and the wider refurbishment programme.

The staircase was delivered as an integrated package, requiring close coordination between the structural steelwork and architectural finishes. Transitions between the stained quarter-sawn oak, hand-forged metalwork, brass fittings and GRG soffits were carefully developed so the completed staircase reads as one coherent element. Contemporary modelling, surveying and fabrication methods were combined with materials and craftsmanship that complement the store's historic character. The steel structure is largely concealed, allowing the finishes and flowing form to define its appearance.

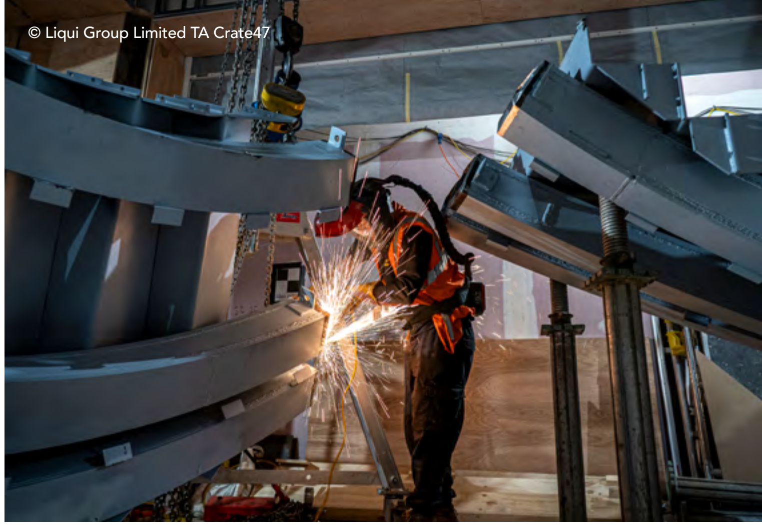
Installing the structure presented challenges comparable to its design and fabrication. The store remained operational throughout the works, requiring construction activity to be managed to minimise disruption to customers and retail operations. Much of the installation was undertaken outside trading hours, with strict controls on noise and other activities while the store was open.

The Piccadilly location created further logistical constraints. Deliveries were made during limited road-closure windows, after which every component was distributed internally through the historic building. Access was restricted to an opening approximately 1,500mm wide and 2m high, limiting the size of individual elements and influencing how the staircase was divided for transportation and assembly.

Bespoke lifting frames and internal gantries were designed to move and install the steelwork safely within the restricted building. The installation sequence was coordinated with the timber, balustrades, soffits and decorative finishes to maintain progress and avoid damage to completed work. These arrangements had to operate without the access or large-scale lifting equipment normally available on a new-build project. Careful sequencing was essential throughout, as each steel element had to be manoeuvred through the store, lifted into position and connected within the confined atrium before the architectural finishes could be completed.

Despite these constraints, the staircase was successfully installed within the live retail environment and has created a prominent new route through the store. By making movement between floors more visible and inviting, it has increased footfall to the upper levels while providing customers with a memorable architectural experience.

The Fortnum & Mason Double Helix demonstrates how structural steelwork can enable an ambitious architectural concept while remaining largely hidden within the finished feature. Advanced analysis, precision fabrication and carefully planned installation were combined with traditional craftsmanship to resolve the complex geometry. The steel structure and architectural finishes form a refined and coherent whole, while the new circulation route provides a practical commercial benefit. The result is both a technically accomplished structure and a distinctive addition to one of London's best-known retail interiors.



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JUDGES' COMMENT

"This three-storey double-helix staircase is a joy! It combines modern analysis and fabrication techniques for the hidden steel with immaculate craftsmanship for the finishes. The construction challenge was significant, working in a live shop but minimising any impact on customers. The delighted client confirmed the intervention's commercial success, increasing footfall to upper levels while creating a beautiful and memorable architectural feature."

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AWARD

Hill Dickinson Stadium, Liverpool

PROJECT TEAM

Architect: BDP Pattern

Structural Engineer: Buro Happold

Steelwork Contractor: Severfield

Main Contractor: Laing O'Rourke

Client: Everton FC 'The People's Project'

© Matthew Nichol Photography

Hill Dickinson Stadium occupies a constrained site at Bramley-Moore Dock on Liverpool's River Mersey, providing Everton FC with a new 52,769-seat home. Built within a former Victorian dock, the stadium transforms a previously private industrial waterfront while retaining the Grade II-listed dock structures. Its structural design was central to overcoming the site constraints and delivering the stadium's distinctive architectural form.

The stadium is defined by its sweeping, low-profile barrel roof, which responds to the industrial character of the surrounding maritime buildings. Structural steelwork made this geometry possible, creating long, column-free spans over the seating while maintaining a slender roof profile. Glazed openings at the north and south ends reinforce the roof's strong east-west orientation and provide views towards the city and river.

Over the east and west stands, the steel trusses extend in cantilever for up to 50m. The roofs above the north and south stands are formed by parallel east-west trusses spanning up to 175m. Together, these elements create a coherent structural response to the barrel-shaped enclosure, providing the strength and flexibility required to realise its complex geometry.

Efficient truss depths and high-strength S460 steel reduced the roof's dead load while maintaining the required structural performance. Detailed analysis of loading, pre-camber and deflection allowed the steelwork to remain slender despite the substantial spans. Bearings and articulated joints enable the end roofs and façades to be supported across three separate stand structures, accommodating their interaction without compromising the overall architectural form.

Efficiency was refined through design development, contractor engagement and detailed assessment of loading requirements. The completed roof structure weighs 130kg/m², including purlins and cladding rails, measured across its plan area. Between RIBA Stages 3 and 4, optimisation removed 900t of steel from the roof design, representing an embodied carbon reduction of 2,200tCO_2e.

The scale and movement of the roof required the fabrication model to account for both its design geometry and its pre-set position during construction. As each grid line had a different predicted deflection, the steel model was effectively developed twice: first at the final design level and again at the pre-set level required for fabrication and erection. This ensured the roof achieved the intended geometry after deflecting under its own weight.

The north and south roof trusses measure up to 175m long and 12m deep, with individual trusses weighing as much as 250t. They were pre-assembled and erected in sections up to 60m long, some weighing more than 90t. Complex temporary works and jacking arrangements held each section at its calculated pre-set height before controlled de-jacking allowed the steelwork to move into its permanent position.

The east and west roof structures presented a different erection challenge. Twelve trusses on each side cantilever from the stands, with the barrel form wrapping around the rear of the roof towards the terraces. The cantilevered portions were divided into three pre-assembled lifts, while the curved barrel was erected in smaller sections. Movement was monitored throughout construction, allowing adjustments to maintain the required accuracy.

Exposure to high winds and changing weather beside the Mersey made reducing the number of lifts a priority. A dedicated roof assembly area was established on the pitch, using up to ten mobile cranes and 30 mobile elevating work platforms. Pre-assembly transferred work from exposed positions at height to a more controlled environment, improving programme efficiency and supporting safer installation.

The dock location created further constraints. Water, retained heritage structures and existing infrastructure surrounded the stadium on three sides, limiting access, lifting positions and available workspaces. Construction of the eight independent stand structures required detailed planning, particularly at the corners where multiple activities converged. Four-dimensional planning coordinated sequencing, plant selection and access while protecting the historic dock walls.

Temporary works were designed as carefully as the permanent steelwork. Approximately 350t of erection trestles were designed for reuse and are being employed on other projects. Temporary bracing incorporated reused steel where possible, while 100t of bracing was dismantled in full lengths and returned for future reuse. This approach maximised the value of the temporary steelwork required to deliver the long-span roof.

Early collaboration allowed minor adjustments to the permanent works to improve fabrication, assembly and erection. Detailed digital coordination enabled structural behaviour to be considered through every construction stage, from pre-assembly and lifting to jacking and final deflection. This integration of design and construction was essential to delivering the complex roof accurately within the constrained waterfront site.

Hill Dickinson Stadium demonstrates structural steelwork's ability to deliver architecture at exceptional scale. Its high-strength trusses achieve long spans and dramatic cantilevers while maintaining the low, curved profile that defines the stadium. Careful optimisation reduced material use, while precision modelling, extensive pre-assembly and reusable temporary works supported its construction. The result is an efficient and striking roof structure that responds to Liverpool's maritime heritage and establishes a first-class stadium on the banks of the Mersey.

JUDGES' COMMENT

“Built over a historic dock which was infilled with sand from the adjacent River Mersey, the striking low-profile, barrel form of the roof encloses a stadium with unusually high sustainability credentials. The steel has been very carefully designed and detailed, and its installation painstakingly planned to maximise efficient use of temporary works. A truly first-class stadium.”

© Matthew Nichol Photography

COMMENDATION

The Bakery Building, Dublin

PROJECT TEAM

Architect: AHMM

Structural Engineer: CORA

Steelwork Contractor: Steel & Roofing Systems

Main Contractor: PJ Hegarty & Sons

Client: Google Ireland Ltd

JUDGES' COMMENT

"With two additional floors and a new façade, this latest transformation of a 1940s bakery now provides a hi-tech facility for Google. An impressive 85t of steel was disassembled, tested and reused in creating this most imposing building."

The Bakery Building transforms a former industrial structure in central Dublin into an expanded, high-technology workplace. Originally constructed as a bakery in 1946 with a riveted steel frame, the building was converted into offices during the 1980s before undergoing its latest comprehensive refurbishment and extension.

Structural steelwork enabled the existing building to be retained while accommodating significant vertical and internal expansion. Four new steel cores extend from ground-floor level to the roof across nine levels. Two additional storeys were constructed above the retained frame, together with a further level of rooftop plant steelwork and two new mezzanine floors.

Steel was combined with composite metal-deck slabs to provide a lightweight construction solution. Minimising additional load was essential, as the two-storey vertical extension had to be supported on the existing piled foundations. This avoided the need for new foundations while allowing the building to expand.

At the front of the building, the existing glazed atrium was removed and the structure extended using new steelwork. Circular hollow section columns from the original atrium were retained and repositioned at a higher level within the new eight-storey elevation, demonstrating the adaptability of the existing components.

Steel reuse was central to the project's sustainability strategy. More than 85t of structural steelwork was carefully dismantled from the existing building, transported to the fabrication workshop and reworked for installation in new locations. Delivering this process required detailed design, testing, tracking and coordination so that individual sections could be identified, assessed, modified and returned to the construction programme.

SCI Publication P427 informed the testing, design and fabrication of the reclaimed members, enabling the completed steelwork to achieve the necessary compliance and CE marking. Reuse also provided a cost benefit because the recovered sections were supplied to the fabricator as project-owned material.

The reclaimed sections were supplemented with low-embodied-carbon steel, further reducing the impact of the new structure. Embodied carbon for the shell-and-core works was calculated at 207kgCO_2e/m² for modules A1-A5 and 461kgCO_2e/m² across modules A-C.

The Bakery Building demonstrates how structural steel can facilitate extensive adaptation while retaining valuable existing resources. Its lightweight construction enabled two additional floors without replacing the piled foundations, while the recovery and reuse of 85t of steel established a significant precedent for circular construction in Ireland. The result combines engineering, fabrication and close coordination to give a 1940s structure a new purpose on a constrained urban site.

COMMENDATION

Vyshhorod Bridge, Kyiv, Ukraine

PROJECT TEAM

Structural Engineer:
Ukrainian State Road Research Institute

Steelwork Contractor: Cairnhill Structures Limited

Main Contractor: Dogus Insaat UK Limited

Client: Ministry of Regional Development and Construction of Ukraine

JUDGES' COMMENT

"An object lesson in 'bridge building' in most senses of those words, this project has enormous physical, social and emotional significance to the communities that it reconnects. UK Government funding, British fabrication, Turkish engineering and Ukrainian technical delivery operated seamlessly and the teamwork was exemplary. A remarkable achievement."

Vyshhorod Bridge restores a vital transport connection near Kyiv after the original concrete crossing was demolished by the Ukrainian Armed Forces in February 2022 to obstruct the advance of Russian troops. Its loss forced local residents to rely on a temporary crossing that could not carry heavy traffic, creating longer travel for communities and businesses.

A steel replacement was selected to accelerate reconstruction and return this critical infrastructure to service sooner. The bridge incorporates a 46.8m central span formed from 1.5m-deep plate girders, fabricated in 15.6m sections and joined using bolted splices. The new steelwork had to replicate the structural depth of the original concrete deck while providing an efficient, rapidly erected replacement.

Approximately 400t of steel for the core structure was fabricated in Coatbridge, Scotland. The scope included manufacturing drawings, steel supply, fabrication of the plate girders and cross-bracing, bolts and protective treatment. Complete erectable loads were prepared in kit form, simplifying transportation and supporting efficient assembly after delivery to Ukraine.

Fabrication demanded tight control of girder camber, sweep and flange rotation. Ukrainian design codes and specifications also had to be interpreted correctly across language and regulatory differences. Quality proposals were checked with the Ukrainian engineering authority, while the completed steelwork complied with Ukrainian Standard DSTU EN 1090-2.

The severe Ukrainian winter introduced further technical requirements. S355 steel was tested for performance at temperatures of -40°C, with suitable welding procedures used during fabrication. A multi-coat protective system was closely monitored and inspected to ensure the required quality.

TCB bolts were proposed as an alternative to the specified conventional HSFG bolts. Before accepting the change, the Ukrainian client undertook mechanical testing using supplied bolts and installation equipment. This technical collaboration allowed a familiar bridge connection system to be adopted while satisfying the project's requirements.

Following approval delays, manufacture was accelerated to meet the time limit associated with the UK Export Finance Guarantee and complete delivery during 2025. Maintaining quality and dimensional accuracy under this compressed programme was particularly important because the steelwork was destined for installation in an active conflict area.

Vyshhorod Bridge demonstrates how structural steelwork can combine speed, quality and precision in exceptionally difficult circumstances. UK fabrication, coordinated delivery and carefully controlled bolted construction enabled a nationally important crossing to be restored while war continued. The project reconnects communities, accommodates heavy traffic and provides a powerful example of international engineering cooperation delivering essential infrastructure quickly and safely.

COMMENDATION

BAE Govan, Glasgow

PROJECT TEAM

Architect: Corstorphine & Wright Architects

Structural Engineer: Robert Bird Group

Steelwork Contractor: Severfield

Main Contractor: McLaughlin & Harvey

Client: BAE Systems

JUDGES' COMMENT

“This impressive workshop, 50m high and measuring 170m x 88m, now enables BAE Systems to fabricate frigates for the Royal Navy throughout the year. Construction of such a huge structure required close collaboration between the entire team, enabling completion within three years.”

© Matthew Nichol Photography

© Matthew Nichol Photography

BAE Govan is a major shipbuilding facility at the Govan yard on the River Clyde, designed to transform construction of the Royal Navy's Type 26 frigates. Measuring approximately 171m long, 88m wide and 50m high, the fully enclosed workshop can accommodate two vessels simultaneously, enabling fabrication to continue throughout the year and supporting a faster production programme.

Creating the required footprint involved infilling the existing wet dock, establishing a structural base for the building while retaining direct access for launching completed vessels. Above this substantial substructure, structural steelwork provides the long spans and open interior needed for large-scale ship assembly.

The frame comprises 35m-high lattice columns supported on 10m-high concrete walls. Eighteen roof trusses span the hall, while full-length crane beams support two 100t and two 20t gantry cranes. Connection design accounted for fatigue arising from frequent crane operation, combining heavy lifting requirements with an efficient long-span structure capable of rapid erection.

Ship and material movements shaped both ends of the building. At the southern elevation, a 16m-high access door accommodates material deliveries, while a much larger vertically opening door at the northern end allows completed vessels to move from the workshop towards the water. Achieving the required erection tolerances around these large openings demanded precise fabrication and installation.

The scale and pace of construction required extensive prefabrication. Lattice columns and other large assemblies were configured within road transport limits, while mechanical and electrical services were installed on roof-truss sections at ground level before lifting. Heavy fittings were also attached so they could be slid or rotated along members, avoiding manual handling during erection.

Site access was limited to one route shared with other trades. Detailed sequencing coordinated deliveries and work areas, while erection peaked at seven steelwork squads. Reusable temporary works were developed where required, and permanent steel elements provided global temporary stability wherever possible, reducing additional temporary steelwork.

Progressing from an initial sketch in the third quarter of 2022 to becoming an operational facility in the second quarter of 2025, BAE Govan demonstrates what structural steelwork can achieve at exceptional scale and speed. Its long-span frame, heavy crane capacity and carefully engineered access create a game-changing all-weather environment for constructing two frigates simultaneously within an articulated and efficient industrial structure.

COMMENDATION

The Ribbon, London

PROJECT TEAM

Architect: Orms Architects

Structural Engineer: Heyne Tillett Steel

Steelwork Contractor: Billington Structures Limited

Main Contractor: Wates Construction

Client: CBRE

JUDGES' COMMENT

“The Ribbon is a beautifully coordinated example of exposed steel design, creating a 12-metre clear span on an exceptionally constrained site. Every element was carefully considered, from the self-supporting façade to concealed fixings and refined level changes. Strong collaboration between architect, engineer and fabricator has delivered an elegant, high-quality space.”

The Ribbon is a ten-storey steel-framed commercial development at the prominent junction of Oxford Street and Wells Street. Replacing a 1960s building, it provides retail accommodation at the lower levels and modern offices above, delivering 40% more floorspace within one of London's most constrained construction sites.

The steel frame creates open-plan offices through 12m internal spans and a regular grid, with perimeter columns positioned at 6.5m centres. This minimises internal obstructions and provides flexible floorplates capable of accommodating different tenants and future changes. Upper-level setbacks form terraces along the principal elevations, requiring transfer and partially non-composite beam solutions.

Structural steelwork is exposed throughout the interiors, contributing to their refined industrial character. Cellular beams accommodate building services within the structural depth, while selected pipework is embedded within internal columns to maintain uncluttered surfaces. Concealed fixings and carefully resolved changes in level support the clean architectural finish, alongside a self-supporting façade with its own structural frame.

The light steel solution reduced foundation and piling requirements, limiting excavation and material use. The development is targeting NABERS 5-star, BREEAM Outstanding and WELL Platinum ratings, together with WiredScore Platinum, RESET Air for the shell and core, and an EPC A rating.

With no laydown area, deliveries were offloaded from a pit lane on Wells Street and lifted immediately by tower crane. Steelwork was erected two floors at a time in coordination with the metal decking, ensuring completed slabs were available to support access equipment as construction progressed.

Restricted crane positions required an innovative basement-founded temporary support system. A steel grillage and braced frames transferred crane loads through slab openings into the foundations. The project also demanded precise detailing where the new frame met an adjacent protected building.

The permanent structure supported much of the temporary works strategy, allowing crane operations and phased erection to proceed safely without occupying scarce surface space. This approach maintained progress while reducing congestion.

Digital fabrication models coordinated connections, protective treatments and finishes. Exposed members received 120-minute intumescent fire protection and high-quality decorative coatings, applied offsite under controlled conditions before being touched up after erection.

The Ribbon demonstrates how steel can combine long spans, architectural quality and efficient construction on an exceptionally restricted site. Its exposed frame, integrated services, refined connections and carefully planned erection create an elegant and adaptable commercial building, while the lightweight steel structure and reduced foundation requirements support its environmental ambitions.

COMMENDATION

334 Oxford Street, London

PROJECT TEAM

Architect: Allford Hall Monaghan Morris

Structural Engineer: AKT II

Steelwork Contractor: Severfield

Main Contractor: Bovis

Client: Capital Real Estate Partners

JUDGES' COMMENT

“Breathing new form, function and life into a very tired old department store, this impressive project showcases how, through intelligent analysis and site investigation, new and existing steelwork can combine on a large scale to create a new look, flexible and holistic building at the heart of a heavily constrained site.”

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334 Oxford Street transforms the former six-storey Debenhams flagship store into a mixed-use development with retail accommodation at basement, ground and first-floor levels and offices above. The deep retrofit retains substantial elements of the existing structure while introducing a new central core, deeper basement, extended floorplates and three additional storeys.

Combining retained and new steelwork enabled the building to be extended while creating open office spans, perimeter terraces and a more flexible structural grid. The lightweight steel extension limited strengthening requirements and helped accommodate differential settlement between the existing structure and new construction.

Understanding the retained frame was a major engineering challenge. Many primary members were concealed by encasements, façades and walls or absent from original records. Six floors were surveyed to establish the positions and dimensions of columns, beams and slab edges, allowing interfaces to be developed as the existing structure was progressively exposed.

Each finding led to specific requirements for strengthening, metal-deck support and façade connections. Bespoke new-to-existing connections were designed to work with the riveted historic steelwork while achieving the required structural performance and a refined finish. Standardised extended fin plates could be cut to suit verified site positions, providing flexibility where existing geometry varied.

Cellular beams integrate building services within the structural zone, preserving ceiling heights and supporting flexible commercial floorplates. S460 steel was used for new columns, reducing steel tonnage by 71t, saving 37.1tCO_2e and increasing lettable area.

Construction logistics were demanding on Oxford Street. Three tower cranes were used, including one supported by the existing frame. Retained steelwork was strengthened to resist both permanent loads and temporary crane forces during construction, demonstrating how the existing structure contributed throughout delivery.

The structural steelwork achieved an embodied carbon figure of 83kgCO_2e/m² for modules A1-A5. 70% of the new steel was produced using electric arc furnaces (EAFs), while reused enabling-works steel was incorporated where appropriate. New members were hard-stamped to support identification and potential reuse in the future.

The development is targeting BREEAM Outstanding for its offices and a NABERS 5-star Design for Performance rating. It is also designed to be WELL-enabled.

334 Oxford Street demonstrates how detailed surveys and carefully designed new steelwork can extend and modernise an existing building while retaining parts of its original structure. The careful integration of existing and new steelwork enabled extensive change while retaining valuable structure, reducing material demand and creating a coherent framework for the building's successful next life.

MERIT

Stonecutter, London

PROJECT TEAM

Architect: TP Bennett

Structural Engineer: Thornton Tomasetti

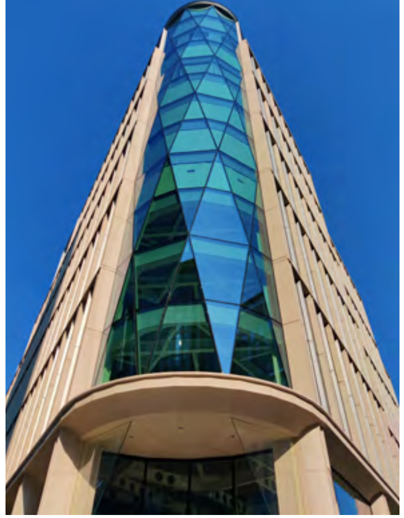
Steelwork Contractor: William Hare Limited

Main Contractor: Mace Group Limited

Client: Ivanhoé Cambridge & Pimco Real Estate and CO-RE

JUDGES' COMMENT

"Through close collaboration in sourcing steel, stringent material specification and reuse of many existing piles, Stonecutter demonstrates how ambitious embodied carbon targets can be achieved alongside commercial value, becoming the first to meet the City of London's aspirational embodied carbon benchmarks."



Stonecutter is a 13-storey steel-framed commercial development near Fleet Street and Farringdon in the City of London. Replacing an existing building, it provides expansive, flexible office floors while demonstrating how careful structural design, material specification and steel procurement can deliver substantial embodied-carbon reductions within a commercially viable new development.

The lightweight steel frame allowed the new building to provide 66% more floor area while remaining lighter than its predecessor. Matching the new structural weight to the former building enabled the existing piled foundations to be reused, avoiding additional foundation construction and delivering savings in carbon, programme and cost.

Large open-plan floors are virtually column-free, supporting adaptable layouts and future changes in occupation. At the upper levels, double-height Vierendeel trusses positioned within the elevations allow the large roof terraces to remain free of internal columns. This solution avoids internal columns while integrating the structural requirements with the building's architectural form.

Fabrication and erection required careful planning around the capacity of the site's tower cranes. A 40t plate girder above the Stonecutter entrance could not be divided because its appearance had to be maintained. It was therefore installed by mobile crane during a planned weekend road closure.

Three multi-storey Vierendeel trusses between Levels 8 and 14 were too large to lift as complete assemblies. They were delivered and erected in smaller sections before being connected on site using TCB connections. Detailed sequencing and logistical coordination maintained both their structural performance and visual integrity within the constrained central London location.

Reducing embodied carbon required close coordination between structural design and steel procurement. During the pre-construction period, alternative material sources, beam types, tonnages, costs and associated carbon were compared across hundreds of components. This enabled material choices to be refined while maintaining structural and commercial requirements.

The completed building achieved whole-building upfront embodied carbon of 581kgCO_2e/m² for modules A1-A5, below the City of London's aspirational benchmark of 600kgCO_2e/m² and the London Plan benchmark of 950kgCO_2e/m². The structure accounts for 349kgCO_2e/m². Stonecutter is the first City of London office development to achieve the aspirational target since life-cycle carbon assessments became a planning requirement in March 2022.

Stonecutter has also achieved BREEAM Excellent, WELL Gold, Core Gold Certification and Wired Gold. The project demonstrates how lightweight structural steelwork, foundation reuse and informed procurement can increase commercial value while meeting ambitious carbon targets. Its long-span frame provides flexible offices while demonstrating an approach to lower-carbon construction on a constrained urban site.

MERIT

The Whale on the Wharf (Skyscraper), London

PROJECT TEAM

Artist: StudioKCA

Structural Engineer: Thornton Tomasetti

Geotechnical Engineer: A-squared Studio

Main Contractor: DiveCo Marine Ltd

Client: CWG

JUDGES' COMMENT

"The Whale on the Wharf is a remarkable 12m-tall sculpture, supported by a repurposed steel structure and crafted from five tonnes of ocean plastic. Delivered through exceptional collaboration, including complex marine logistics and diving coordination, it combines thoughtful engineering, innovative low-carbon design and a compelling environmental story, setting a new benchmark for purpose-driven structures."

The Whale on the Wharf (Skyscraper) is a 12m-tall public artwork permanently installed within the dock at Wood Wharf, Canary Wharf. Depicting a whale breaching from the water, the sculpture is clad with five tonnes of plastic recovered from the Pacific and Atlantic Oceans, transforming marine waste into a powerful environmental statement.

The illusion of the whale emerging from the dock is made possible by a submerged structural steel frame. Although the sculpture is relatively lightweight, its asymmetric pose and wind loading on the cantilevered spine generate significant tension within the supporting system. These forces are transferred through the steelwork into concrete foundations below the water.

The dock location created exceptional engineering and installation challenges. The sculpture stands in approximately 5m of water, directly above underground railway tunnels and close to Grade I-listed dock walls. With limited visibility beneath the surface, construction required carefully coordinated marine operations and a detailed sequence for divers, lifting equipment and the installation team.

The underwater foundations were formed using precast manhole rings as cofferdams. Steel plunge columns had to be positioned accurately within them before concrete was poured underwater. The submerged frame was protected using a marine-grade paint system combined with cathodic protection to address the demanding exposure conditions.

The 4t supporting frame was fabricated almost entirely from reclaimed steel sections recovered from decommissioned pipelines, cancelled projects, surplus stock and demolished buildings. Offsite fabrication allowed the structure to be assembled and checked before being transported by barge from Tilbury along the Thames and moored within the dock ahead of installation.

Steel was selected because it could be fabricated, transported and erected efficiently within the constrained marine environment. It also provided a compatible connection with the sculpture's original steel spine. Once the supporting frame and spine were installed, reclaimed plastic panels were attached to complete the artwork.

Circular-economy principles also informed the foundations. The concrete incorporated spent coffee grounds collected from local cafés and converted into biochar. The completed structural elements achieved total A1-A3 emissions of 10,788kgCO_2e, compared with an estimated 28,600kgCO_2e for virgin steelwork and conventional concrete. The reclaimed steel reduced its contribution from an estimated 9,829kgCO_2e to 1,593kgCO_2e.

The Whale on the Wharf demonstrates how reclaimed steel, low-carbon concrete and complex marine engineering can support an ambitious piece of public art. Its largely concealed structure combines technical innovation with a compelling environmental purpose, turning recovered materials into a memorable landmark for London's waterfront.

MERIT

PUMA Flagship Store, London

PROJECT TEAM

Architect: Johnson Pinney Architects

Structural Engineer: Eckersley O'Callaghan

Main Contractor: Goodman Hichens PLC

Steelwork Contractor: Malci Construction

Project Management: Mett Build

Client: PUMA UK Ltd

JUDGES' COMMENT

"Retention of the structural steel supporting four storeys of occupied offices above was made possible through intelligent analysis and painstaking in situ remodelling of structural members and connections. A new landmark along this primary shopping street, the 'effortlessness' of the end result conceals the technical and erection complexities that were overcome."

PUMA Flagship Store occupies the basement, ground and first floors of an existing commercial building on Oxford Street, with four storeys of offices remaining occupied above. The refurbishment transforms the retail frontage through a new 10m-high glazed façade, extensive alterations to the entrance steelwork, a mezzanine extension and exposed feature staircases.

The principal structural challenge was replacing the entrance's heavy, fragmented appearance with a slender exposed steel frame while continuing to support the occupied building. Rather than removing the existing three-storey columns, the design retained, reshaped and strengthened them, reducing waste, temporary works and disruption on one of London's busiest streets.

Existing information was limited and important steelwork remained concealed. Intrusive investigations, surveys and monitoring established the frame's geometry, condition and structural role. The entrance columns were also assumed to contribute to the building's lateral stability, requiring the modified frame to resist both vertical and horizontal loads while improving on the original performance.

Renovation was completed progressively in situ. Each column was carefully trimmed one side at a time, with new steel plates progressively welded in place to maintain structural adequacy throughout construction. Temporary shoring and lateral restraints controlled instability and buckling risks, while unforeseen connection conditions required design adjustments as construction progressed.

One level of horizontal beams was removed to increase light into the store. The glass façade was structurally separated from the entrance frame, spanning from top to bottom without intermediate out-of-plane restraints and remaining self-supporting in plane. This reduced sensitivity to movement and allowed the steelwork to be optimised for its primary load-bearing role.

Extremely tight tolerances between the façade and exposed steel demanded repeated surveys and close coordination as construction progressed. The resulting box-column appearance, sharp corners and concealed connections create a clean composition in which the complexity of the alterations is largely invisible.

Internally, a large exposed steel staircase and cantilevered mezzanine extension contribute to the flagship store's architectural identity. Steel provided the slender sections, precise finishes and installation flexibility required within the constrained programme and occupied building.

The retained-column solution produced 37tCO_2e of A1-A5 emissions from new plates and temporary works, a 43% reduction from the estimated 67tCO_2e associated with complete column replacement.

PUMA Flagship Store demonstrates how careful analysis and in situ steelwork alterations can transform an existing building while preserving offices above. Its refined façade and exposed staircase conceal a technically demanding intervention delivered through precision, sequencing and collaboration on Oxford Street.

MERIT

Sandyford House, Newcastle upon Tyne

PROJECT TEAM

Architect: GT3 Architects

Structural Engineer:
JC Consulting and WB Engineers

Main Contractor and Client: Jomast

JUDGES' COMMENT

"The inefficiencies of a shallow plan concrete building have been turned to advantage through the use of structural steel in this transformation of redundant offices to residential apartments. This workmanlike piece of logical design and construction within tight budgets has resulted in a building that has new life and a positive identity."

Sandyford House transforms a redundant 1970s concrete office building at a prominent gateway into Newcastle city centre into a residential development with a distinctive new identity. The project extends the retained structure both vertically and in plan, with a braced steel frame providing additional accommodation within the constrained budget.

A detailed feasibility study assessed the capacity of the existing reinforced concrete frame after removal of its heavy concrete cladding and the change from office to residential loading. Surveys and structural analysis also established whether the cores could resist the additional lateral forces created by the proposed extensions.

These investigations defined the parameters for a new braced steel frame. Steel's relatively low weight allowed additional floors and a plan extension to be introduced without significantly overloading the retained structure. This practical approach used the building's shallow plan and available structural capacity, avoiding replacement of the retained concrete frame.

The extension combines steelwork with precast concrete floor planks. Plan bracing provides stiffness to the new floors, eliminating the need for a structural topping and reducing additional dead load. It also created a more predictable connection between the new frame and existing concrete than attempting to form a single diaphragm across both structures.

Considerable engineering was required at the junctions between old and new construction. The design coordinated load transfer between the existing concrete shear walls and slabs and the new floor and vertical bracing. Local repairs were undertaken where required, allowing the retained and added structures to perform together.

Precast planks provided immediate working platforms as construction progressed, enabling access equipment to operate safely while the frame was erected. At one corner, restricted ground-level access prevented conventional construction, so hangers were introduced to support the ends of the floor beams.

The city-centre location and an upper floor 45m above ground created logistical challenges, while proximity to a Metro line imposed restrictions on lifting and sequencing. The steel and precast solution supported a phased, tower-crane-led construction programme within these constraints.

Retaining and repurposing the existing structure saved more than 1,375tCO_2e in the superstructure compared with a new-build alternative, excluding further savings from the basement and foundations. The completed development meets RIBA domestic embodied-carbon targets.

Sandyford House demonstrates how logical steel design can deliver value through retention, efficient construction and additional floors. Its practical structural interventions have given an obsolete office building a viable residential future and a warmer, more positive presence within Newcastle's urban landscape.

MERIT

Tan House Footbridge, Berkshire

PROJECT TEAM

Designer: Format Engineers Ltd

Structural Engineer: Format Engineers Ltd and WSP

Main Contractor: Balfour Beatty

Client: Network Rail

JUDGES' COMMENT

"Tan House Footbridge combines innovation, efficiency and architectural quality, creating an elegant, visually porous fan-shaped structure using repurposed steel with the design adapted to suit the available sections. Delivered within tight railway constraints, the bridge was transported by rail and installed during a short possession."

Tan House Footbridge is a 53m-long, triple-span crossing over a busy railway in Wokingham. Completed in November 2024, the 5m-high structure replaces two obsolete pedestrian bridges and connects parkland with a new residential development. Its design combines a distinctive architectural form with low-carbon construction and demanding railway logistics.

The bridge comprises a stiffened U-frame deck suspended from fan-shaped columns, with 14m-long stair structures at each end. This unusual arrangement creates a slender and visually porous crossing, allowing users to see the trains below while maintaining a strong sense of enclosure and safety.

Structural steel was selected for its economy, slenderness and compatibility between new and repurposed members. The design uses a high proportion of recovered steel that might otherwise have been treated as waste, reducing demand for newly manufactured material while demonstrating how reclaimed sections can be incorporated into permanent railway infrastructure.

Available repurposed sections had different sizes and profiles from those typically used in conventional bridge design. Parametric digital tools assessed the stock and refined the structural form around the sections' dimensions and properties. This allowed the design to respond directly to the material available rather than requiring sections to be manufactured to a predetermined arrangement.

Using repurposed steel required research, procurement controls and material testing to demonstrate its suitability. The recovered members were combined with new steelwork within a coherent structure, proving that a bespoke, site-specific bridge could remain practical and economical while achieving a substantial carbon reduction.

The completed structure achieved a SCORBS rating of A, equivalent to 639kgCO_2e per functional area. Its embodied carbon is considerably lower than that of standard railway footbridges, establishing a benchmark for future infrastructure projects.

The project demonstrates that a site-specific architectural design can reduce both capital costs and embodied carbon while remaining commercially competitive with standard railway footbridge designs.

Construction was governed by the restricted railway boundary and short, pre-planned possessions. Large prefabricated elements were delivered by rail, but had to remain small enough to pass beneath existing bridges along the route. The sections were then lifted rapidly into position during narrow line closures, reducing work beside the operational railway.

Tan House Footbridge demonstrates how material reuse, digital design and prefabrication can deliver architectural quality within a tightly controlled infrastructure environment. Its fan-shaped steel structure provides a significant improvement on the former crossings, while the research and lessons developed through the project are informing wider industry publications and future bridge designs across railway infrastructure.

First Street, Manchester

PROJECT TEAM

Architect: Jon Matthews Architects

Structural Engineer: Ramboll

Steelwork Contractor: Elland Steel Structures Ltd

Main Contractor: BAM Construction Ltd

Client: Ask Real Estate Ltd

JUDGES' COMMENT

"Utilising long-span steel beams, this development features a column-free interior providing highly flexible, top-quality office accommodation. Notable features include a fibre-reinforced composite deck floor and a carefully designed façade to minimise solar gain, contributing to the very strong sustainability credentials."

81 Newgate Street, London

PROJECT TEAM

Architect: Kohn Pedersen Fox Associates

Structural Engineer: AKT II

Steelwork Contractor: Severfield

Main Contractor: Mace Group Limited

Client: Pella Real Estate

JUDGES' COMMENT

"81 Newgate Street is a retrofit at a substantial scale. Retaining over 70% of the original structure, the former BT building has been extended by over 50%, creating significant value within the same footprint and a high-quality new headquarters for HSBC."

The Jellicoe, London

PROJECT TEAM

Architect: Piercy & Company

Structural Engineer: Arup

Steelwork Contractor: Severfield

Main Contractor: McLaren Construction

Client: The King's Cross Group

JUDGES' COMMENT

"One of the final King's Cross masterplan plots, this mixed-use scheme creates offices and homes with a shared podium, basement and garden. The lightweight steel frame enabled The Jellicoe to achieve BREEAM Outstanding whilst managing the impact on adjacent shallow brick-built rail tunnels."

The Bolt of Lightning, Warrington

PROJECT TEAM

Architect: Peter W Naylor

Structural Engineer: WSP

Main Contractor: D Morgan plc

Client: Miller Developments

JUDGES' COMMENT

"Set on the former RAF Burtonwood site, wartime base for the USAF Lightning P-38s, this sculpture represents the plane soaring skywards on curved cantilevered box sections, with integrated bespoke mass dampers to minimise vibration. A striking memorial achieved through good teamwork and careful planning."

NATIONAL FINALIST

Greycoat Stores, London

PROJECT TEAM

Architect: SPPARC and Veretec

Structural Engineer:
Mason Navarro Pledge Limited

Client: LaSalle Investment Management

JUDGES' COMMENT

"This tired 1880s-built structure has been transformed through a sympathetic renovation into a premium work, leisure and retail facility. Structural steel was the only practical framing solution given the spans required and the irregular geometry of the existing structure."

Structural Steel Design Awards 2027

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Photography from the 2026 SSDAs

Structural Steel
Design Awards 2026

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