IMAGE: BEN ADDY

STEEL for life Structural Steel Design Awards 2025

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Introduction

Since 1969, the Structural Steel Design Awards have showcased excellence in modern steel construction. This year's shortlist continues the tradition

Jointly sponsored by the British Constructional Steelwork Association (BCSA) and Steel for Life and celebrating their 57th year, the 2025 Structural Steel Design Awards (SSDA) have once again highlighted and rewarded many of the best examples of excellence, ambition and innovation in our built environment.

The entries this year reflect the wide geographical spread of steel's appeal for a variety of projects, which include prestigious office schemes, beautifully designed footbridges, large industrial buildings and complex sculptures.

The judges assessed each project for excellence in architecture, engineering, fabrication and sustainability, as well as the value each scheme added to its local community.

Twenty-one projects made the shortlist, from which judges presented six awards, six commendations and three merits.

The SSDA's cross-industry judging panel includes chairman Professor Roger Plank alongside Sarah Pellereau representing the Institution of Structural Engineers; Chris Nash, Bill Taylor and Oliver Tyler representing the Royal Institute of British Architects; Richard Barrett and David Chapman representing the steelwork contracting industry; Brogan MacDonald and Emily McDonald representing the Institution of Civil Engineers.

IMAGE: BEN BISEK

Steel's green signal at Moorgate

Occupying a previously vacant City of London plot, 21 Moorfields spans an important underground station with an architecturally detailed exposed steel frame

Accommodating Deutsche Bank's London headquarters, the 17-storey 21 Moorfields project required some complex engineering to create a structural steel frame that spans the full width of Moorgate station, a distance which is equivalent in length to the wingspan of a jumbo jet.

Maximising the project's footprint, the eastern façade (along Moorgate) cantilevers out over the Elizabeth Line ticket office with a seven-storey, fully exposed perimeter truss creating a signpost to the building's main entrance.

The cantilever is created by a combination of tripod supports and a series of bowstring

▲ The eastern façade (along Moorgate) cantilevers out over the Elizabeth Line ticket office

A project of global significance with an immensely challenging site above the operational rail interchange and new station box. The elegant solution underplays the complexity involved in the design and sets a new benchmark
SSDA judges

trusses, measuring 25m-long and each weighing 70t.

Using the capacity of an existing slab, which is also the station roof, the structural design features six 7m-deep 'launching trusses', which are up to 55m in length.

Built above the rail assets, the trusses created a temporary support for the floors during the construction programme, while in the completed scheme, they accommodate the building's first floor and main entrance, as well as a mezzanine (second floor) within their depth. Below the trusses, the existing slab supports a basement, at ground floor level, for the building's back-of-house and plant equipment areas.

During construction, each truss facilitated the build-up of a 10-storey steel box section mega arch, which in turn enabled the installation of the concrete floor slabs and the remaining steel frame.

The mega arches are integrated into the building's cores, only exiting on to the floorplates at levels 7 to 10, thereby minimising the number of columns to only six within each of the 100m-long x 60m-wide floorplates.

The structure continues upwards in a more traditional beam and column design to level 17. Incorporated into these floors are terraces and set-backs, which satisfy a number of rights to light issues, and historical sight paths to St Paul's Cathedral.

Before any steelwork could be erected on site, a piling conundrum had to be solved as there are a number of assets below ground, including six London Underground lines, two Elizabeth Line tunnels and a ticket hall, as well as a major sewer. This meant locations for any new piles were extremely limited and their installation required a significant amount of temporary steelwork.

A total of 16 piles, each 2.4m or 1.8m in diameter and 60m-long were threaded between the numerous under-site constraints.

Once the piling had been completed, the project team were able to reuse much of the temporary steelwork to support the launching truss installation, which contributed to cutting the carbon footprint of the building.

Each truss/arch system is connected and founded on a pile at each end but, because of the limited locations, the spacing between each truss and the shape of each arch varies. The piles and their locations have consequently dictated the column lines for the entire superstructure.

"Structural steelwork was selected for its ability to meet the complex demands of the site. It allowed for lightweight and stiff long-span solutions that minimised the number of columns and foundation points required to achieve the development's potential," explains Chris Papanastasiou, UK structures division lead for Robert Bird Group.

"Steel's versatility enabled significant architectural expression without compromising on size or weight, ideal for integrating bespoke structural elements like transfer structures and launching trusses."

Award: 21 Moorfields, London
Architect: WilkinsonEyre
Structural engineer: Robert Bird Group
Steelwork contractor: William Hare Limited
Main contractor: Sir Robert McAlpine
Client: Landsec
Consultant: Gleeds

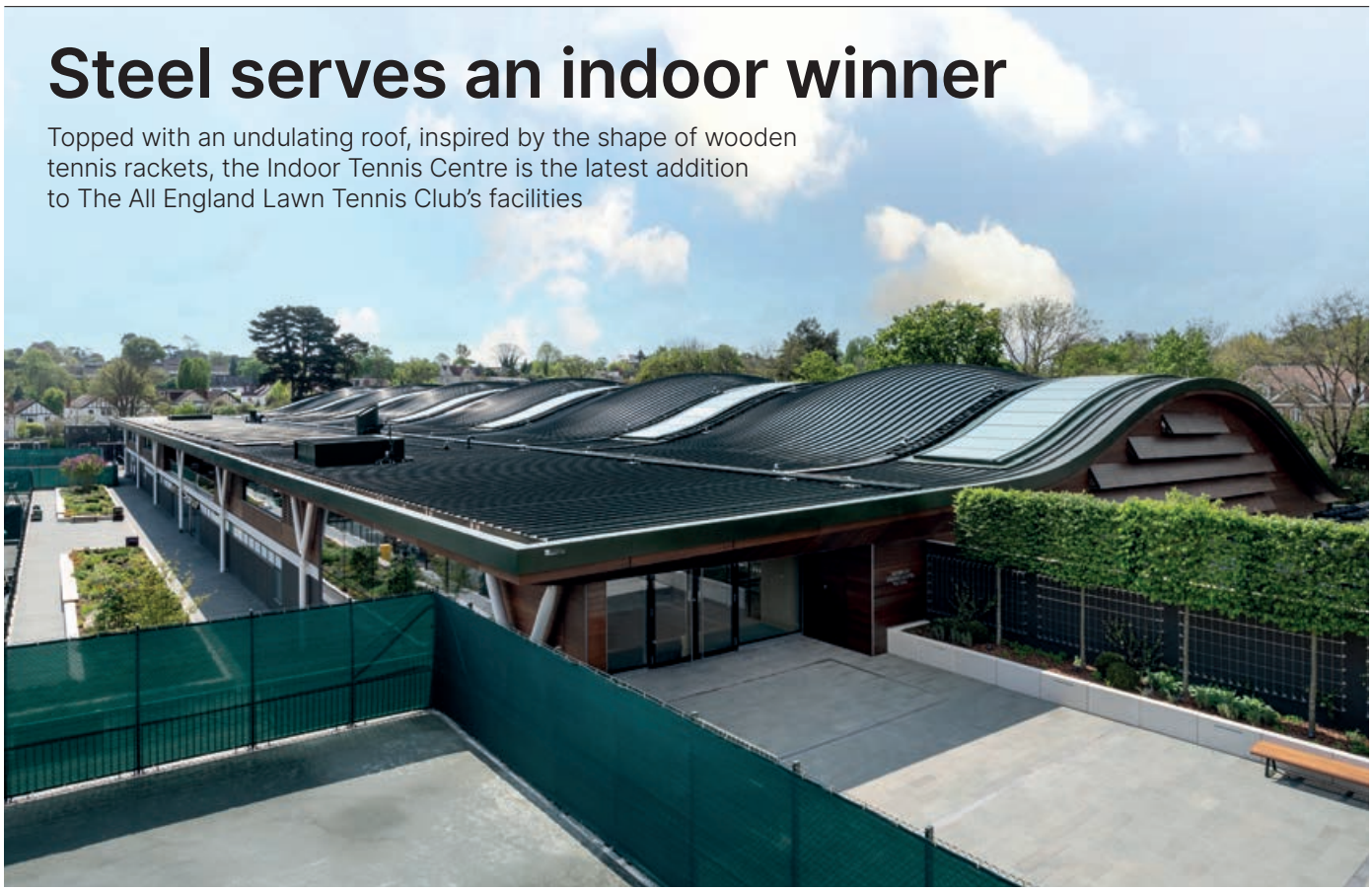
▼ Detail shot of the eastern façade cantilever structure

IMAGE: BEN BISEK

Produced by the BCSA and Steel for Life in association with Construction Management

Steel serves an indoor winner

Topped with an undulating roof, inspired by the shape of wooden tennis rackets, the Indoor Tennis Centre is the latest addition to The All England Lawn Tennis Club's facilities



Located across the road from the main All England Club estate, the steel-framed Indoor Tennis Centre (ITC) accommodates six indoor courts and six outdoor courts, members' family room and bar, changing facilities and a basement car park.

Part of the All England Club's long-term development masterplan and replacing an older facility, the ITC building is topped with an iconic double-curved undulating steel roof.

According to Hopkins Architects, the undulating profile of the roof follows the space in which tennis is played, with high points over the centre of the nets (to account for lobs) and a reduced height over the runoffs around the court perimeters.

Overall, the roof measures approximately 110m-long x 50m-wide, with the latter incorporating the clear 38m spans required by the tennis courts.

The geometry of the roof was constrained both internally by the playing volume requirements and externally by planning limitations on height, together with a desire to minimise the internal space to reduce the heating/cooling requirements.

"This resulted in a very limited zone for the structure, which naturally lent itself to a series of tied steel arches that provide strength and spanning ability without bulk, ensuring the elegance of the roof," says Cundall partner David Rivers.

▲ The roof design high points over the centre of the nets to account for lobs

"The use of the tied arches creates a balanced system that in turn reduces the forces applied to the supporting concrete frame, contributing to its sleek aesthetic while helping to reduce embodied carbon."

The tight tolerances, achievable with steelwork, also suited these goals, while the ability to fabricate millimetre-precise sections ensured that the geometry of the roof, over each of the six courts, remained consistent.

According to steelwork contractor Billington Structures, the geometry

Award: AELTC Indoor Tennis Centre, London
Architect: Hopkins Architects
Structural engineer: Cundall
Steelwork contractor: Billlington Structures Limited
Main contractor: Willmott Dixon
Client: The All England Lawn Tennis Club

The ITC, 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
SSDA judges

and length of the curved spans, coupled with the aesthetic requirements for squared corners, meant the arches had to be formed with fabricated box sections (typically 500mm x 300mm sections). With varying degrees of curvature, the arches are connected together by a series of secondary beams.

A lot of workshop precision was needed to ensure each curved beam was identical and fabricated to the required high level of quality.

The long spans necessitated a splice, but to avoid the need for onsite welding at height, a hidden connection detail was developed. This allowed the members to be bolted together in thirds and maintained the appearance of one continuous steel member for each arch.

The building's stability system has been discreetly designed and includes two movement joints, incorporated into the building's length to manage thermal effects. There is cross bracing, hidden in the roof structure, which acts in combination with local portalisation and lateral connections to the concrete cores.

The All England Club said: "This ambitious project aimed to deliver the best possible internal playing conditions, while providing a dual-purpose facility that meets both its year-round and Championships needs."

▼ The roof incorporates the 38m spans required by a tennis court

Reuse and remodel

A new steel-framed office space, created within an existing warehouse, demonstrates how inner city industrial buildings can be reconfigured with minimal material use

IMAGE: RICHARD FRASER

Commendation: 25A Vinery Road, Cambridge
Architect: Owers Warwick Architects
Structural engineer: Cambridge Architectural Research
Main contractor: PB Doyle
Client: Vinery Mews Ltd

A former storage warehouse in the centre of Cambridge has been carefully and creatively converted into a two-storey office space with the aid of steel construction.

Surrounded by neighbouring properties, access to the site was limited and so the steelwork members had to be fabricated and delivered to site in small sections.

The confined site also lacked the space for a traditional façade retention system, and so the steel frame was designed with a dual function, so that during construction it provided the necessary temporary propping.

New support columns were inserted against the existing façades to provide lateral restraint. Once in place, they allowed the existing roof to be removed in a controlled sequence to make way for the new lightweight structure.

Produced by the BCSA and Steel for Life in association with Construction Management

IMAGE: MATTHEW NICHOL PHOTOGRAPHY

Gigafactory is fully charged with steel

Helping to deliver a significant increase in UK electric vehicle battery production, a gigafactory in Sunderland has set new benchmarks in modular and efficient construction

Expected to manufacture batteries for 100,000 vehicles annually, AESC UK's Sunderland gigafactory is housed within a huge steel frame covering an area equivalent to 23 football pitches.

The project forms part of a wider £1 billion partnership between Nissan and Sunderland City Council to create an electric vehicle hub, envisaged as the world's first EV manufacturing ecosystem.

Set to employ more than 1,000 staff, the factory will utilise 100% carbon neutral energy, aligning with AESC UK's global sustainability commitments.

Working on behalf of main contractor Wates Construction, Severfield fabricated, supplied and erected a significant tonnage of both hot and cold-rolled steelwork for the main frame and its associated structures.

According to Wates, the race to deliver the UK's first gigafactory meant there was no blueprint for this project: "They needed a partner of choice, and Severfield stepped in."

The challenges around a facility of this nature included a client who needed to procure materials as late as possible in order to incorporate the latest technologies.

▲ 1,600 steel frames, fitted with MEP components, were manufactured offsite for the project

"Due to the nature of the product and the ever-changing technology required in battery manufacture, our main challenge was managing and incorporating the constant changes from both the process design and the related mechanical, electrical and plumbing (MEP)," says Severfield project manager James Massheder.

With around 14,000km of mains cabling within the building, the installation of the MEP was initially going to require a major installation programme.

However, an innovative approach was used, whereby 1,600 steel frames were manufactured offsite, fitted with the required MEP and

Award: AESC UK, Sunderland
Architect: Tetra Tech | RPS
Structural engineer and steelwork contractor: Severfield plc
Main contractor: Wates Construction
Client: AESC UK

This ambitious and nationally significant project hosts AESC's cutting-edge production facility. Covering a huge area 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
SSDA judges

then delivered to the project to be installed along with the main frame's steelwork.

A first in Wates' experience, this offsite prefabrication approach is said to have eliminated more than 500,000 hours of working at height from the project.

Spanning the majority of the steel-framed facility and creating the required column-free spaces, the building includes a series of large fabricated roof trusses, which are supported by perimeter columns with flange thicknesses exceeding 90mm.

The steel frame also supports manufacturing equipment that creates substantial imposed loads. During the design phase, this required meticulous planning and robust structural solutions to the steelwork.

Additionally, stringent deflection limits were imposed on the project's long-span floor beams in order to uphold the structural integrity and the required performance standards.

Other steelwork design challenges that had to be overcome included the limited availability of locations for vertical bracing. This was solved with an innovative engineering solution that maintained stability, both during construction and in the completed building.

Fire engineering was another critical consideration, involving the careful selection of steel member sizes and the application of intumescent paint to meet rigorous fire rating requirements, while ensuring structural safety and operational functionality.

To maintain an efficient construction programme, up to 50 truckloads of steel were delivered to the site each week.

Initially, the steelwork was transported from Severfield's factory at Thirsk in North Yorkshire, nearly 200 miles from the site. To cut journey times, a temporary assembly facility was established at Pallion shipyard in Sunderland, which saved the project approximately 38t CO_2.

IMAGE: MATTHEW NICHOL PHOTOGRAPHY

▼ Up to 50 truckloads of steel were delivered to site each week

Just the ticket

Incorporating a green wall, a seven-storey BREEAM 'Excellent' commercial building has been constructed above an Elizabeth Line ticket hall

IMAGE: JACK HOBHOUSE

Commendation: 65 Davies Street, London
Architect: PLP Architecture
Structural engineer: Arup
Steelwork contractor: BHC Limited
Main contractor: Multiplex Construction Europe Ltd
Client: Grosvenor

Positioned on the edge of London's prestigious Mayfair district, 65 Davies Street is an over-station development offering 19,800m² of high-quality office space across the six upper floors.

The building is located directly above an underground station and, consequently, its design had to address unique technical challenges in terms of efficiency and acoustic performance.

Acoustic bearings were installed at every connection point between the station and the new steel superstructure to provide the necessary isolation. The building's structural column grid was developed to align with the station box below, creating an efficient and lightweight solution.

This included a tight and regular column spacing around the building's perimeter and large spans within the floorplate's centre. Every column position had to be developed and verified against the Elizabeth Line construction team's design model.

Produced by the BCSA and Steel for Life in association with Construction Management

Steel goes back to school with Quakers

Emerging from the post-Covid outdoor learning landscape, weathering steel has created a sculptural pavilion canopy to span a teaching and performance space at an Irish grammar school

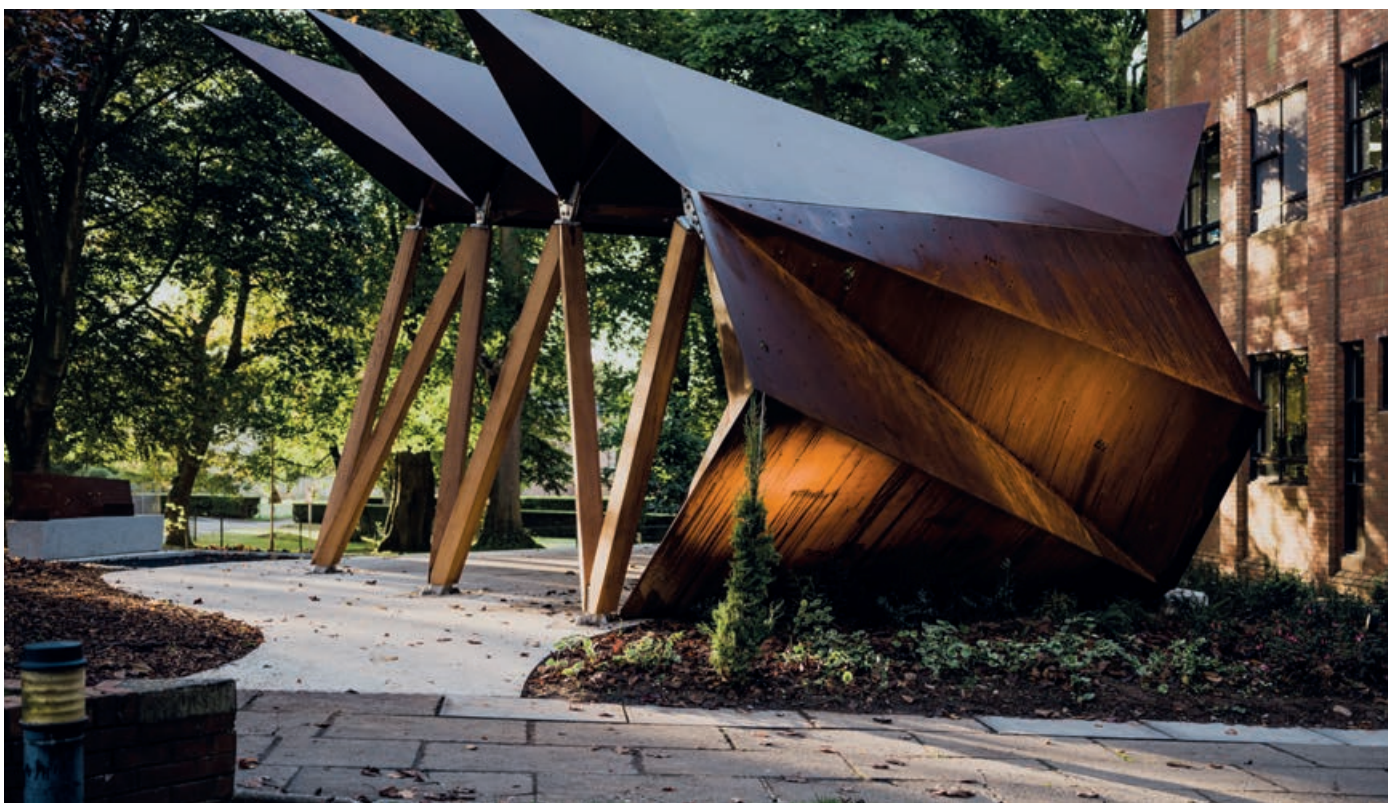


IMAGE: STUDIO IDIR

Commissioned as a legacy project to mark Friends' School Lisburn's 250th anniversary (in 2024), steelwork has been used to create an outdoor educational and performance space, which is both functional and an artwork in its own right.

Supported by a series of iroko hardwood-clad steel posts, the pavilion's undulating design draws its inspiration from the school's heritage by deconstructing the eight-pointed Quaker star to form the distinctive roof profile.

The use of weathering steel for the canopy provides a weatherproof, zero-maintenance finish with the material's characteristic rusty appearance, creating an aesthetic structure that sits comfortably with the surrounding red-brick school buildings.

▲ Weathering steel forms the distinctive roof canopy

During the early stages of the project's design, the team collaborated with the school and its pupils, conducting workshops with music and arts students to understand their preferences.

During the fabrication stage, a competition for technology students was held at main contractor Fabrite's factory. Pupils were invited to

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 that maximises the pedagogical value of the project and provides a new focal point on the campus
SSDA judges

Award: Friends' School Lisburn, Northern Ireland
Architect: Studio idir Architects
Structural engineer: Eamson
Main contractor: Fabrite
Client: Friends' School Lisburn

design a perforation for the canopy backdrop, with the winning design, featuring five children holding hands, used in the finished structure.

"Working with the design team was a real pleasure, as they were focused on the needs of the school from the start, and I was impressed with how they engaged with us throughout the different stages of the project," says Friends' School Lisburn principal Stephen Moore.

"Pupils of all ages and abilities have been interacting and enjoying the structure."

From a structural engineering point of view, the project presented unique challenges due to its scale and complex shape.

The non-linear geometry required careful consideration of load paths and the distribution of forces across the structure. To address these challenges, the team constructed a precise 3D model of the canopy and utilised finite element analysis, which is a computerised product used to predict loads, forces and other physical effects on a structure.

The model helped the design team ensure structural integrity, while minimising material usage to achieve an optimised, lightweight and aesthetically pleasing form.

"It was challenging to hold on to the purity of the original design," says Studio idir Architects' Aisling Rusk.

"In practical terms, it was very hard to present the structure in the usual two-dimensional plans and elevations, because it just wasn't envisaged in that way. It took a lot of meetings and model sharing to agree where the structure would sit and how the rainwater would run off the roof without compromising the clean lines."

Weathering steel's unique properties made it challenging to fabricate and assemble. Close cooperation between the designers and the steel fabricator ensured the structural elements were transportable and easily assembled on site.

To help with the erection process, the connections between the steel crown and the raking columns were designed to provide temporary stability, while the structure was being installed.

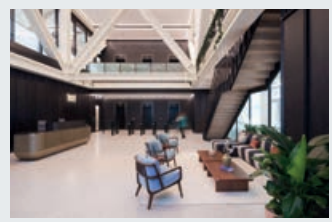
The performance space is positioned so as not to disturb the site's mature trees, which now surround it, offering additional shelter.

▼ Local students designed a perforation for the canopy backdrop, featuring five children holding hands

IMAGE: STUDIO IDIR

Truss solution for over-station site

Sat above an underground rail tunnel and a ventilation shaft, the design and construction of a 10-storey City office scheme had to overcome a number of unique challenges



Commendation: 101 Moorgate, London
Architect: Orms
Lead Designer: Mott MacDonald
Structural engineer: Waterman Group
Steelwork contractor: BHC Limited
Main contractor: Mace Group
Client: Aviva Investors

Spanning over a busy City of London station, 101 Moorgate has created approximately 21,300m² of office space and 882m² of ground floor retail. The building features a double-height reception area, a mezzanine level business lounge and multiple private and communal roof terraces that offer city views.

The challenging site constraints required the design and construction of a series of storey-high steel trusses. "Structural steelwork provided a cost-effective solution to the challenge of working with the load limits on the top of the station box and clear spans over the rail infrastructure," says Waterman Group director Andrew Sherlock.

Produced by the BCSA and Steel for Life in association with Construction Management

Steel's Severn crossing in the faithful city

Connected to the National Cycle Network, a new river crossing in Worcester has created a sustainable commuting option for the city's northern neighbourhoods

IMAGE: MOXON ARCHITECTS

Part of the local council's commitment to deliver fully accessible, active travel infrastructure in locations that most need it, the Kepax Bridge provides a much-needed connection across the River Severn.

The 145m-long cable-stayed pedestrian and cycle bridge, which is named after the 19th century Kepax Ferry that once operated nearby, is already a local landmark.

Its 'hockey stick' deck alignment allows the structure to integrate with riverside pathways, while elevating key sections of the bridge above flood-prone areas.

The bridge's eastern approach begins in the historic Gheluvelt Park, where its deck initially parallels with the river before curving westward to span the Severn. Anchored by a 29m-tall, A-shaped pylon, the slender steel structure is supported by a series of cables (spaced at 12m intervals) and piers.

"Structural steelwork was selected because it was well-suited to the segmental cantilever erection method used for constructing the bridge over the river," explains James Hartland, principal bridge engineer at Jacobs.

▲ The cable-stayed pedestrian and cycle bridge has a 'hockey stick' deck alignment to avoid flood-prone areas

"All of the components were lifted in from above, with a small pontoon used to provide access for bolt tightening. This approach helped minimise disruption to recreational river traffic and protected the sensitive ecology of the area.

"Steel also enabled faster and more flexible assembly of prefabricated elements, which were split into manageable pieces for delivery due to access constraints."

Award: Kepax Bridge, Worcestershire
Architect: Moxon Architects Ltd
Structural engineer: Jacobs
Main contractor: Alun Griffiths (Contractors) Ltd
Client: Worcestershire County Council

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
SSDA judges

The use of steelwork is said to have brought several other key benefits to the scheme. Its speed of erection helped shorten the construction programme and reduce associated risks, particularly important given the persistent threat of flooding.

Another benefit was the material's adaptability, which allowed the fabricators to craft the steel sections into the required complex form. This geometry-driven design is shaped by numerous constraints including current and future flood levels, gentle gradients and ecology. Steelwork enabled a refined structural form that responded to all of these in an elegant and efficient way.

The client's brief for the bridge was to connect communities and encourage sustainable transport. As a public infrastructure investment, the design represents good value over its 120-year design life. It anticipates increased flooding due to climate change and it will remain resilient and operational even in the worst conditions.

With minimal interference to the sensitive river landscape, the structure uses traditional materials sparingly and robustly (concrete below flood level and steel above). The design, which includes a slender deck and an efficient structural configuration, is said to contribute to minimal embodied carbon.

Finished in a dark blue-green hue, the bridge mimics the palette of its natural surroundings, while its ribbed soffit highlights the structure's sweeping geometry when viewed from below.

The 4m-wide crossing, which features a slip-resistant walking surface, has been designed to comfortably accommodate both leisure users and commuters. Meanwhile, a crafted parapet, composed of inward-leaning stainless-steel rods, provides safety for cyclists and pedestrians along the deck.

Councillor Marc Bayliss, cabinet member for Highways and Transport at Worcestershire County Council, says: "The bridge is iconic and the natural beauty of the city is really visible from it. The contractors did a fantastic job and I would like to say thank you to everyone who has made the vision a reality."

IMAGE: BEN ADDY

▼ Steel's speed of erection helped reduce the risk of flooding affecting the build programme

Steel exhibits long-span qualities

Structural steelwork has provided an efficient solution for the expansion of ExCeL London

Commendation:
ExCeL Phase 3, London
Architect: Grimshaw
Structural engineer: CampbellReith
Steelwork contractor: Severfield plc
Main contractor: McLaren Construction Group PLC
Client: ExCeL London

Originally opened in 2000, the third phase of construction at ExCeL London has extended the facility by a further 215m (the building is now 820m-long), delivering an additional 40,000m², which includes 12,000m² of ground floor exhibition space and 9,500m² of conferencing accommodation on the uppermost level.

A series of steel trusses, positioned at first-floor level and roof, span the width of the extension and form the required column-free spaces. Adding some complexity to the scheme, the upper level of steelwork cantilevers 13m over the adjacent Royal Victoria Dock. The feature maximises the available floor space, while avoiding any loadings being imposed on the historic dock wall.

Produced by the BCSA and Steel for Life in association with Construction Management

Steel rides high with Porsche Sculpture

A complex sculpture, supporting six Porsche sports cars, is an exemplary application of steelwork efficiency and design

IMAGE: DAVID BARBOUR

▲ The Porsche Sculpture is 25m-tall and built from 40t of steel

A selection of six valuable cars, suspended from an intricate and complex steel sculpture, provided one of the highlights of the 2023 Goodwood Festival of Speed.

Containing 40t of steelwork, the Porsche Sculpture was installed to commemorate 75 years of the German manufacturer's sports cars.

Standing 25m-tall, the cantilevered structure included three interconnected hoops and six spars that supported the Porsches, which ranged in age from a 1951 model up to and including a contemporary car.

Designed, fabricated and installed within a tight 28-week delivery timeframe, the structure presented numerous challenges.

"The technical challenges were all related to the complex geometry and achieving the required aesthetic quality. The central hub is a dodecahedron that needed to interface with 12 tubes of two different diameters," explains Diales Associate Director Bruno Postle.

"The hub required the necessary strength to transmit all of the loads, while also being buildable with all interfaces positioned at the correct angles and locations. It also needed to look good."

Steelwork was the natural choice for the sculpture as no other material could provide the same combination of strength, affordability and adjustability.

Steel's ability to be reworked allows it to be shaped into the necessary complex forms required for the sculpture. While alternative materials

> **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**
> **SSDA judges**

Award: The Porsche Sculpture at 2023 Goodwood Festival of Speed
Artist: Gerry Judah Ltd
Structural engineer: Diales
Main contractor: Littlehampton Welding Ltd
Client: Goodwood Festival of Speed

could theoretically have been used, they would not have provided the same strength and would be vulnerable to impact damage, while lacking the adjustability needed to create the required forms.

Another engineering challenge was developing a stable cantilevered structure, with a low mass distribution at height, that would manage dynamic response.

Dynamic loads, such as those produced by gusts of wind, will introduce twisting forces to a structure if its centre of mass and stiffness do not coincide.

Variable thicknesses of the structural elements (20mm plate at critical junctions, tapering to 4mm plate in less stressed areas) optimised the weight and distribution of the sculpture.

The sculpture was fabricated in Littlehampton, only 15km from the installation site. The compressed timeline required concurrent design and fabrication, with late design changes needing to be implemented during the production process.

Once the fabrication process was complete, the entire sculpture was trial assembled in order to make sure every part fitted together exactly. It was then disassembled and transported to site.

The hoops, which were too big to be delivered to site as complete pieces, arrived onsite in three sections. The spars, with the longest measuring approximately 16.5m-long, arrived pre-assembled in single pieces.

Once they were at Goodwood, the sections were re-assembled, using a custom-designed rigging system and two cranes, which were required to complete the precise positioning of the sculpture's steel elements.

To maintain the structural stability throughout the erection programme, the base and hub were installed first, then the spars with their pre-attached vehicles and finally the suspended hoops.

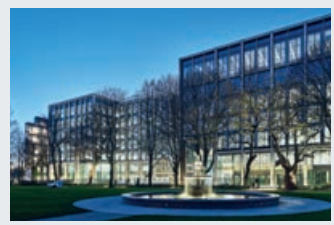
After the festival, the sculpture was disassembled in the reverse order of assembly. It is now in storage, awaiting its next festival appointment.

IMAGE: PORSCHE CARS

▼ An engineering challenge was developing a stable cantilevered structure that could handle dynamic loads

Steelwork efficiency

An efficient steel-framed design has created a seven-storey Dublin commercial development



Commendation: Two to Four Wilton Park, Dublin
Architect: Henry J Lyons
Structural engineer: Arup
Steelwork contractor: Severfield plc
Main contractor: John Sisk & Son
Client: IPUT Real Estate Dublin

Located in a historic Dublin area, close to the Grand Canal, Two to Four Wilton Park is a commercial office scheme, separated into three blocks, with each featuring a full-height atrium. Open-plan floorplates have been created by positioning all of the columns along the perimeter or around the atria.

The building required a total of 5,000t of structural steelwork, with one of the most challenging aspects being an 8m-wide double-height opening between two of the blocks. The upper levels are formed with cellular beams (used for services integration) supporting a metal decked composite flooring solution.

The positioning and sizing of the beams' openings were optimised to align with key mechanical and electrical routes, thereby reducing the need for secondary penetrations.

Produced by the BCSA and Steel for Life in association with Construction Management

Outstanding offices

Achieving some of the highest wellbeing and environmental credentials, the Worship Square development has replaced two energy-inefficient buildings with a single high-quality modern office block

Commendation: Worship Square, 65 Clifton Street, London
Architect: Make Architects, jmarchitects
Structural engineer: Heyne Tillett Steel
Steelwork contractor: BHC Limited
Main contractor and client: HB Reavis

Sat next to a new public square in the South Shoreditch Conservation Area, the nine-storey Worship Square office scheme was designed to be highly efficient in terms of cost, space, materials and emissions.

The design brief set out embodied carbon targets that were more than 50% lower than the UK Green Building Council baseline and 18% lower than the 2030 Greater London Authority aspirational benchmark. The project has achieved BREEAM 'Outstanding', WELL Platinum and NABERS 5.5* ratings.

Much of the steel frame, which is erected around a centrally positioned concrete core, is left exposed within the completed scheme, creating a modern industrial-looking interior.

Aligning with the project's sustainable approach, steelwork contractor BHC, used recycled and renewably produced steel for all of the columns and beams.

IMAGE: MAKE ARCHITECTS

Bridge checks in at hotel estate

Spanning a busy highway, an iconic steel bridge provides a safe connection between two parts of a private estate

Merit: Manor Farm Bridge, Somerset
Architect and structural engineer: Dyse Structural Engineers
Steelwork contractor and main contractor: Beaver Bridges Ltd
Client: Emily Estates

The 33m-long Manor Farm Bridge links two parts of the Emily Estate (home of the award-winning Newt boutique hotel) in Somerset, providing access across the A359 for farm traffic, residents and visitors alike.

The structure was designed and fabricated with complex curved steel girders, which were fitted with architectural steel fin cladding, a pedestrian handrail and a concrete anti-cracking road surface.

To allow the structure to be transported from Beaver Bridges' Wigan fabrication yard, it was manufactured in 12 dismountable sections. Once on site, the bridge was fully assembled and then lifted into place using a 600t-capacity crane.

The bridge should require minimal maintenance during its lifespan as it has been painted offsite with multi-layer anti-corrosion protection.

The six SSDA 2025 national finalists
- The Rainham Riverside Belvedere, London
- Edenica, 100 Fetter Lane, London
- Island, 17-27 John Dalton Street, Manchester
- Palmerston Court, London
- Pennyburn Bridge, Northern Ireland
- Skelton Grange EfW, Leeds

Top class

The Spectra building is the largest and most flexible building on the University of Hertfordshire's Hatfield campus

Merit: Spectra, University of Hertfordshire
Architect: ADP
Structural engineer: AECOM
Steelwork contractor: Elland Steel Structures Ltd
Main contractor: Morgan Sindall Group
Client: University of Hertfordshire

Formed with a composite steel frame, Spectra has brought together the university's numerous STEM faculties into one multi-functional building.

The design of the five-storey building creates four separate teaching zones, divided by full-height atriums, feature stairs and central open-plan collaboration spaces.

The regular column grid, lack of transfer structures, robust vibration resistance and flexible floorplates have created an adaptable structure ideal for modern education and research hubs.

The upper floors accommodate offices, IT laboratories, dark rooms, simulator suites, clean rooms, wind tunnels and robotics workshops, while the ground level houses workshops, with an internal crane and a strong floor.

The majority of the steelwork, which is exposed throughout the completed building, was sourced from Electric Arc Furnace production facilities, providing a low carbon content to the primary frame.

Historic makeover

Part of the restoration of the Grade II* listed Barmouth Viaduct's metallic spans have been replaced with new replica steelwork elements

Merit: Barmouth Viaduct Metallic Spans Replacement, Wales
Structural engineer: Tony Gee and Partners LLP
Main contractor: Alun Griffiths (Contractors)
Client: Network Rail

Carrying a single-track railway line over the Mawddach Estuary in North Wales, the 760m-long Barmouth Viaduct has now reopened following an extensive restoration programme.

The five metallic spans (the remainder of the viaduct is timber-framed) have been meticulously replaced with new steelwork elements.

Using the existing foundations, the new structure required a large number of bespoke steelwork details and complex connections (detailed to look like Edwardian rivets) in order to replicate the original viaduct.

The new steelwork sections were delivered by rail across the existing timber viaduct.

Bespoke gantry cranes were developed to run along the top of the new bridge during the steelwork installation programme. This method ensured no lifting operations were carried out beyond the footprint of the structure and thereby avoiding unnecessary disruption to the marine environment.

IMAGE: MULHOLLAND MEDIA