PHOTO: SIMON KENNEDY

Structural Steel Design Awards 2022

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Introduction

Now in their 54th year, the Structural Steel Design Awards highlight the variety, innovation and excellence of modern steel construction

The 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. Now celebrating their 54th year, the 2022 Awards, jointly sponsored by the British Constructional Steelwork Association and Trimble Solutions (UK), continue that great tradition.

The entries this year reflect the wide geographical spread of steel's appeal for a variety of projects.

Projects entered for the scheme this year included large prestige city office buildings, educational facilities and beautifully designed footbridges. The judges were particularly interested in projects that reflected a reuse of existing structures and showed a commitment to lessening a project's embodied carbon.

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

Unlike the last two years when the judges were unable to visit the projects due to COVID-19, no such restrictions were in place this year.

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

Super hangar checks in

The UK's largest dual cantilever hangar has been completed at Biggin Hill Airport for aerospace company Bombardier

Famous for being one of the main Royal Air Force bases during the Battle of Britain, London Biggin Hill is today one of the fastest growing business airports in the UK.

Complementing a number of recent investments at the airport, a new Maintenance, Repair and Overhaul (MRO) hangar featuring a dual cantilever has recently been completed for Bombardier. The hangar features two 160m clear span entrances, internal cranes for servicing aircraft, offices and a VIP lounge.

The project team say the early engagement of REIDsteel as the structural steel design and build fabricator, the hangar door

▲ The cantilever truss design allowed a lower steel tonnage than conventional designs

Award: Bombardier Maintenance Hangar, Biggin Hill
Architect: Civils Contracting Ltd
Structural engineer: REIDsteel
Steelwork contractor: REIDsteel
Main contractor: Civils Contracting Ltd
Client: Biggin Hill Airport Development Ltd

The central spine of the building anchors the cantilevers as well as housing the building's functional spaces. The structure achieves remarkably good embodied carbon figures, in line with the LETI 2030 aspirational values
SSDA judges

manufacturer and the cladding company significantly helped the successful completion of the scheme.

The company's input was essential as steel elements needed to be erected and aligned on 45m-long cantilever trusses that had to accommodate complex hangar door head gear and underslung cranes.

After investigating traditional hangar solutions, a more cost-effective design was proposed, which included a cantilever truss design for the hangar, conventional construction for the offices and an elegant, glazed lounge that has minimal bracing by virtue of the diaphragm within its roof structure.

The value-engineered cantilever design, along with load-sharing elements, allowed significant reductions in material use, producing a much lower steel tonnage at 1,600 tonnes compared with more conventional designs.

The design also allowed the roof of the hangar to safely span without support from internal columns, thereby achieving the client's aspiration for two vast, unobstructed hangar floor spaces of 7,200 sq m each.

Long span cantilevers are said to be inherently vulnerable to disproportionate collapse, due to the nature of the tension connections in the top chord. To alleviate this, and to help meet the stringent deflection criteria, load-sharing trusses were used to ensure that each frame could be supported by its adjacent frames.

This created a new issue, in that fabrication tolerances could cause a frame sitting higher than its neighbours to attract unacceptably high loads. The solution lay in leaving the load-sharing trusses 'loose' until all permanent loads were applied and only then tightening up the slotted preloaded bolted connections.

The design allows for the internal underslung cranes to have a 100% coverage of both hangars, rather than the previously proposed 50% of one, which has futureproofed the project.

The dual cantilever design also means the hangar can be extended to meet changing requirements over its 50-year design life.

Sustainability was a key consideration and a value-engineering exercise ensured that the final design used steel efficiently while also reducing the environmental impact.

The resulting reduction in steel weight was key in minimising the embodied carbon and saved 850 tonnes of CO_2. The roof is designed to take solar panels and, assuming that the client achieves 50% coverage, this has the potential to save 300 tonnes of operational carbon per year.

▼ The underslung cranes now have 100% coverage of both hangars

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Steel delivers new stands at Lord's

Forming part of Marylebone Cricket Club's (MCC) ongoing masterplan to redevelop Lord's Cricket Ground, two new stands have transformed the Nursery End of the arena

Positioned either side of the media centre, the new three-tiered Compton and Edrich stands have increased the capacity of the two stands from 9,000 to 11,600 seats. The redevelopment is said to have vastly improved sightlines, removing obstructed-view seats while creating new wheelchair spaces and additional accessible seating – and adding a steel-framed roof, which partially covers the top tier.

"The design programme presented a significant challenge and we carried out a detailed design, programming and cost option study, which determined steel being selected for the main frame, where the initial project assumptions had been for concrete," explains Buro Happold senior project consultant Paul Eddleston.

"Sports projects typically need to respect the event calendar and this was no exception. Optimising the design for minimum construction time enabled the ambitious programme to be realised, although the programme developed during phase one of construction coincided

▲ The scheme has provided new seating, greater accessibility and improved sightlines

Award: Lord's Cricket Ground, Compton & Edrich Stands Redevelopment
Architect: WilkinsonEyre
Structural engineer: Buro Happold
Steelwork contractor: Severfield
Main contractor: ISG Construction
Client: Marylebone Cricket Club

A considered composition to complement the ground's historic festival atmosphere, while accommodating spectators in style and comfort. The apparent easy symmetry belies the difficulties of planning sensitivities, timetable, site and ground constraints that were overcome
SSDA judges

with the COVID-19 pandemic and the cancellation of spectator sports."

In cross-section, the structures are predominantly supported on two main columns, with further support to the lower tier. The outer column is pin-ended to respond to the aesthetic requirement of presenting a lighter colonnade facade, while the inner column provides the lateral and longitudinal strength and stiffness.

To achieve this, the inner column is a 1,400mm x 500mm fabricated box with 100mm-thick base plates anchored with Macalloy bar assemblies. For aesthetic appeal, the steelwork is largely exposed in the completed structures. The design and detailing of the connections and splices needed to respond to these specific requirements as well as catering for the significant forces being transferred through them.

To develop the required structural stiffness, the terrace rakers were designed to be continuous through the main supporting column. This required them to be deep fabricated sections, while the back-span element was designed to gently taper to the outer facade to maintain the aesthetic brief for the external view. The roof is created by a series of curved, plated rafters located on primary grids, which in turn support the timber waffle and tensioned membrane covering.

The project was challenging in its complex architectural steelwork and very tight programme. There was less than a year for the old stands to be demolished, new piling and foundations installed, and the new stands built, before the start of the 2021 cricket season (later postponed due to COVID-19 restrictions).

"Offsite manufacture was a major benefit of using steelwork as it meant the erection of the stands could be done quickly and efficiently," says Eddleston. "As there were many awkward interfaces between the steelwork rakers and precast terrace units, the use of BIM allowed the design team to ensure coordination in the 3D environment using the fabrication models for both prefabricated elements."

The lead-in period was condensed further by a detailed value-engineering process, involving Severfield, ISG and the design team, which ensured the contract was as effective and cost efficient as possible – and ultimately ensured that MCC provided final sign-off for the project to go ahead.

▼ For greater aesthetic appeal, the steelwork is largely exposed in the completed structures

Office scheme shows its steel

Trusses are left exposed in London's One Crown Place

PHOTO: HUFTON AND CROW

Commendation:
One Crown Place, London
Architect: KPF
Structural engineer: AKT II
Steelwork contractor: Severfield
Main contractor: Mace
Client: AlloyMtd

A steel-framed podium forms the centrepiece for the One Crown Place mixed-use scheme in central London. The six-storey office podium, which is topped by a series of 15 steel trusses, supports two apartment blocks that reach heights of 33 and 29 storeys respectively.

The steel trusses, which are up to 25m long, perform three functions: first, they help to create the clear column-free internal office spans for the floors up to level six. Second, levels seven and eight are accommodated within their depth, where the truss elements are left exposed as architectural highlights.

Level seven accommodates a gym, a work hub, private screening room, meeting space and other exclusive amenities for the residents, while level eight is given over to apartments.

And third, they support the two reinforced concrete residential towers that begin at level nine. The trusses are supported at each end on 600mm x 600mm double-webbed mega-columns, which were fabricated from four steel plates. All of the podium's columns are founded at ground level, above a two-storey basement.

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King's Cross connection

Providing a link across the Regent's Canal, the 25m-long Esperance Bridge has an elegant and sculptural form created with tapering and folded steel plates

PHOTOS: SIMON KENNEDY

Featuring a host of high-quality finishes, such as bespoke balustrades and drainage channels, Esperance Bridge is a simply supported Warren truss made of welded steel plates with a steel-concrete composite deck.

The reinforced concrete deck controls the dynamic behaviour and acts compositely with the steel to carry the deck loads to the trusses.

The top chord flows into the diagonal compression struts and continues around the bathtub-shaped structure to terminate at a longitudinal stiffener centred under the deck. Using this design, the flange provides improved buckling capacity for the struts and simultaneously restrains the top chord.

Fairing plates complete the expression of flow of forces from the top chord, down the diagonal struts and along to the bottom chord. Finally, the ties are stainless steel, expressing their differing function and reducing their visibility to emphasise the repeating truss module.

Recognising that the built environment has a critical role to play in reducing carbon emissions, the project team reused the existing Goods Way retaining wall on the south side of the bridge.

▲ The bridge's complex curved shapes offered a challenging delivery

This was made possible with local modifications and helped the final design for the footbridge to achieve a 20% carbon saving compared to a traditional build.

The definition of the geometry and the fabrication of the superstructure was challenging due to the complex curved shapes. The project delivery model had a period of early contractor involvement, which brought designer, architect, main contractor, quantity surveyors and steelwork contractor together at an early stage to define key details that were practical to fabricate.

The use of 3D models to review difficult details allowed for a more

Award: Esperance Bridge, King's Cross
Architect: Moxon Architects
Structural engineer: Arup
Steelwork contractor: S H Structures Ltd
Main contractor: Galldris
Client: Argent

effective collaboration. With key details established, a mock-up of a standard truss module was produced to test the fabrication and to confirm the visual appearance of the most important plate interfaces. This allowed the team to hone visual details and push the fabrication and workmanship skills to the highest standard. While complex, the modular nature of the truss form allowed a high degree of repetition, eventually streamlining both design and fabrication.

The curved plates were formed before being welded into the final assembly by the steelwork contractor. The bridge steelwork was fully fabricated offsite, providing greater control on quality and ensuring minimal disruption to an active and congested site. For the installation process, the completed bridge was lifted over the canal in one piece.

"This exceptional design perfectly captures the proud heritage of the area that defines the development. A special thanks to our key partners that meticulously worked through every detail of the design without compromise, and to the delivery team that ensured the bridge was expertly manufactured and installed to sit perfectly across the canal," says King's Cross Central Limited Partnership development manager Ben Cooper.

An elegant, pragmatic solution that is carefully crafted and beautifully made, its design appropriately reflecting the site's industrial heritage.

Thoughtful detailing of the curved steelwork to create the three-dimensional sculptural balustrade fully exploits the properties of steel and the potential it offers
SSDA judges

The project reused the existing Goods Way retaining wall on the south side of the bridge

Flexibility is fit for purpose

Steel's strength and lightness was needed for a sports hub

Commendation: Britannia Leisure Centre, Hackney
Architect: FaulknerBrowns Architects
Structural engineer: Buro Happold
Steelwork contractor: Severfield
Main contractor: Morgan Sindall Construction
Client: Hackney Council

Part of a multi-million-pound scheme that will transform an area bordering Shoreditch Park in east London, the new Britannia Leisure Centre utilised a stacked steel design to deliver its facilities within a tight footprint.

To this end, the centre has a variety of column-free areas, some of which are double-height and triple-height zones, positioned on top of or adjacent to each other, like a collection of different-sized boxes.

It accommodates extensive wet and dry facilities including a six-lane 25m pool, a training pool, leisure water, a sports hall, fitness suites, rooftop pitches, squash courts and a cafe. The client aims to create a hub that encourages participation in an active lifestyle.

Despite the pandemic, the centre has welcomed 400,000 visitors in its first six months, a 161% increase from the centre that it replaces.

The project team say steelwork was the only material that could form the centre's spans of up to 40m, remain light enough to manoeuvre into position and work within the site's tight constraints.

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PHOTOS: SIMON KENNEDY

Award: 1 Triton Square, London
Architect: Arup Associates
Structural engineer: Arup
Steelwork contractor: William Hare Ltd
Main contractor: Lendlease
Client: British Land

Reused and rebuilt

A 1990s London office block has been refurbished and enlarged to create an exemplary sustainable and healthy workplace

Formerly a headquarters building for the First National Bank of Chicago, 1 Triton Square is a prime example of the increasing trend to refurbish and enlarge existing office blocks as a cost-effective and sustainable alternative to demolition.

Opened in 1997, this concrete-framed office building was the first structure to be completed at Regent's Place, a 5.26ha fully managed mixed-use campus on the north side of London's Euston Road.

Lendlease project director Chris Carragher says the decision to refurbish the building instead of demolishing it was all about creating the most sustainable construction solution possible and is testament to British Land's sustainable values.

"Refurbishing a project is a more environmentally friendly option, as well as being cost-effective," he says.

Further highlighting the benefits of the chosen construction method, a 43% cost saving was made compared to a typical commercial building job, while overall it was 30% quicker to complete.

Arup's structural lead Andrew Robertson adds: "About 35,000 tonnes of concrete and 1,900 tonnes of steel have been reused and saved from demolition. The reuse of the structure and facade elements has resulted in carbon savings equivalent to a gas and electricity emission-free operation for 26 years."

The existing five-storey building has been extended upwards with the addition of three new steel-framed office floors and a rooftop plant level. Meanwhile, an unusually large 36m-wide atrium has been partially infilled with one new bay of steelwork all the way around, creating more office space for each of the existing floors and a smaller but still impressive 18m-wide atrium space.

Steelwork for the new upper floors is based around a 9m column grid pattern, in line with the existing structure's layout. For the new infill floor areas inside the atrium, a series of long beams create an open-plan floor area.

The new nine-storey building is now centred around the reconfigured atrium, which will

▲ The new nine-storey building is centred around the reconfigured atrium

provide links between floors via internal feature staircases.

All of the new steelwork for the scheme is either founded on the existing steel cores or off the existing main frame. Within the atrium, the existing structure was cut and carved down to the basement to allow lift pits and a ground slab to be constructed, from which the new steelwork was erected.

The new scheme has resulted in the existing structure being exposed to significant increases in loading. As a result, prior to steelwork contractor William Hare beginning its package, Lendlease had to undertake preliminary works that included strengthening existing concrete columns as well as installing 180 new piles in preparation for the new steelwork. This early work also included the removal of a steel-framed glazed roof that covered the atrium.

The addition of three new storeys translates to a significant increase in the horizontal loads on the building. Despite the new scheme making use of the existing frame to take some of these stability loads, the capacity of the existing bracing system was exceeded.

An exemplar of sustainability thanks to the use of steel. It demonstrates how an existing building can be almost doubled in floor area, for a fraction of the embodied carbon of a new building the same size. The achievement was a clear team effort where all options and details were scrutinised to meet the client's tough brief
SSDA judges

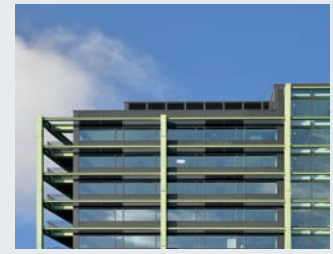
Therefore, before starting to add the new steelwork to the cores, the existing diagonal braces were sequentially replaced so they could accept the additional loads.

British Land set high sustainability aspirations for 1 Triton Square. The project was awarded a BREEAM Outstanding rating and has been named one of the UK's most sustainable HQs.

▼ Three steel-framed office floors have been added to the building

Keeping the weather out

Bristol landmark offices are 40% more thermally efficient



Commendation: Assembly Bristol, Building A
Architect: Allford Hall Monaghan Morris
Structural engineer: Arup
Steelwork contractor: Severfield
Main contractor: Galliford Try
Clients: Bell Hammer, AXA IM

Immediately recognisable for its exposed green-painted steel frame, Assembly Building A is a landmark commercial office and associated public realm adjacent to the Floating Harbour in Bristol city centre.

Spread across 13 floors, the structure is 120m-long x 25m-wide, and consists of a steel frame on a 9m x 12.5m grid, with a composite floor slab on trapezoidal metal decking.

A key innovation was designing out the thermal breaks. This was achieved by using fabricated I-sections for the steel stubs that penetrate the facade, allowing the flange and web thicknesses to be optimised and justified through 3D thermal modelling and advanced structural analysis.

This resulted in a deceivingly simple solution that was thermally 40% more efficient than the traditional approach and eliminated 270 thermal breaks together with associated fabrication, installation and weather sealing complexity.

Achieving BREEAM Excellent, the building's steelwork is exposed both internally and externally, with connections that have been carefully detailed to ensure visual consistency and elegance.

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PHOTOS: DAVID VALINSKY

Award: Tower of Light, Manchester
Architect: Tonkin Liu
Structural engineer: Arup
Main contractor: Vital Energi
Client: Manchester City Council

Tower of power

Adorned with laser-cut steel plates, a 40m-tall tower that supports five flues is a key component of a city-centre combined heat and power energy centre

Helping to improve the city's air quality, Manchester's Civic Quarter Heat Network project will supply several local buildings with low-carbon energy much of which will be derived from a new combined heat and power (CHP) energy centre.

Alongside the environmental benefits, the CHP's city-centre location meant the client wanted the facility's five flues housed within a structure with some architectural merit.

To satisfy this brief, the flues are accommodated in a 40m-tall steel tower, which has a curved perimeter shell and is known as the Tower of Light. The shell is tailored from 6mm and 8mm-thick laser-cut steel plates, which have been curved and welded together to create a stiff, strong surface. The geometric stiffness is provided by the curves, folds and corrugations in the shell that enable the thin steel plates to resist buckling without the need for any additional stiffeners.

▲ The tower was fabricated as a series of nine modules which were then stacked on site

The geometry of the shell's corrugations and perforations was developed using digital workflows to identify a structurally optimal form. Parametric tools were used to quickly generate and analyse several variations of the geometry, which allowed the design team to study the effect of changes in the form of the shell on the buckling and fatigue performance of the structure.

"Designing and fabricating the complex geometry of the unique structural steel perimeter shell of the tower was very challenging," says Arup structural engineer Chris Clarke. "A structural shell of this form and scale could not have been formed in any other material, so the use of steel was integral to the realisation of the tower."

The perimeter shell structure has the dual purpose of also acting as the facade of the tower. Using the same material to provide both the structure and the facade had a material efficiency benefit over a more conventional braced frame flue tower, which would require a non-structural facade system. A study to compare the embodied carbon of the shell

Exemplifies the synthesis of striking architectural form, advanced engineering, iterative technical analysis and craft-based fabrication. A superb example of how design can transform a utilitarian chimney into a piece of urban art, intelligently conceived and impressively executed
SSDA judges

Curved steel plates were welded together to create a surface that resists buckling

tower with a more conventional flue tower showed that the embodied carbon of this project was lower, with a vastly reduced number of components.

Due to the high number of edges and corners in the tower, there was a risk that a painted corrosion protection system would not be sufficiently reliable. Therefore, stainless steel was selected for the tower shell to ensure excellent durability. The tower is painted white for architectural reasons, but this also allowed a lower grade of stainless steel to be used and avoided expensive surface treatments, thereby reducing the project costs.

A series of decks at 4m intervals up the height of the tower support the flues and transfer their loads back to the tower shell. The decks also enable access and maintenance of the flues and have been designed with removable panels to facilitate replacement of the flues if required.

In total, the tower was fabricated as a series of nine modules. Once fabricated, modules were transported to site, stacked on top of one another and fixed together by internal preloaded bolted flange connections at the top and bottom of each module.

Flue sections were pre-installed in each of the modules prior to lifting. These flue sections were then connected when the construction of the tower structure was complete.

Steel sings in Sunderland

New music venue features double steel cantilever

PHOTO: DAVID ALLAN

Commendation: Fire Station Auditorium, Sunderland
Architects: Flanagan Lawrence, Howarth Litchfield
Structural engineer: JC Consulting
Main contractor: Brims Construction Ltd
Client: The Sunderland Music, Arts & Culture Trust

The Fire Station Auditorium project has delivered a new multi-functional destination for music and culture in Sunderland city centre.

The auditorium is a flexible space and suitable for multiple performance types, allowing a quick transition between events to maximise the use of the venue.

After being initially designed as a reinforced concrete box containing some steel elements, a value-engineering exercise was undertaken, whereby the design was switched to an entirely steel-framed project, which resulted in a saving of approximately £300,000.

The use of steelwork to form a double cantilever is key in creating the architectural inside/outside intent of the structure's main facade. The steel members cantilever internally to support the first floor around the atrium as well as externally to support the main facade and roof.

Flexibility within the auditorium is provided by multiple stage positions, and numerous seating and standing arrangements. This is complemented by collapsing handrails, moveable stairs and retractable seating.

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

New growth at RHS Wisley

Lightweight atrium frame enables flexible use of building

Commendation: Central Atrium at Hilltop, RHS Wisley
Architect: WilkinsonEyre
Structural engineer: Michael Barclay Partnership LLP
Steelwork contractor: Hillcrest Structural Ltd
Main contractor: Osborne
Client: Royal Horticultural Society

Adding to the attractions at the Royal Horticultural Society (RHS) Garden at Wisley, a steel-framed and sustainably designed education and science centre has been opened.

The building is 'Y' shaped in plan, a form designed to integrate with the landscape and encourage visitor flow through the building and surrounding gardens. It is divided into two functional wings linked by a central atrium.

At ground level, the atrium acts as a flexible public engagement space and provides the public with access to the cafe, events space, classrooms and library. At first floor level, via cantilevered walkways and a bridge, the atrium space links more restricted access areas such as laboratories and offices.

The north end of the atrium forms the main entrance to the building and opens out onto long views across the site.

A steel frame was selected to achieve a lightweight, filigree and curved grillage that could be detailed to incorporate drainage, ventilation, movement and thermal separation.

Overall, the atrium structure relies for its lateral stability on the adjoining wings but, since the atrium is subject to a different thermal environment, movement joints have been incorporated into the design.

Steel makes the City slicker

One Braham maximises space and minimises vibrations

Commendation: One Braham, London
Architect: WilkinsonEyre
Structural engineer: Arup
Steelwork contractor: Severfield
Main contractor: McLaughlin & Harvey
Client: Aldgate Developments

With a BREEAM Excellent rating, One Braham is a prestigious commercial development that forms part of a wider Aldgate masterplan.

The structure offers 27,700 sq m of office space across 19 floors, including two large open terraces on the 15th and 17th floors, while at ground level there are two retail units.

The building's facades are fully glazed with vertical brise-soleils on the east, south and western facades. The ground floor is set back to form a colonnade between a new park, the building's double-height entrance and adjacent shops.

From ground level upwards, the structure has floors comprising metal decking with exposed soffits and an insitu concrete topping that acts compositely with the steel plate girders to maximise strength and stiffness. The mobilised mass also helps to minimise floor vibrations from the tenant's footfall.

To create the client's requested industrial aesthetic in the office spaces, much of the internal steelwork has been left exposed.

The internal plate girders have bespoke holes to allow all the services to be accommodated within their depth. This service integration and the use of shallow heavy plate girders allowed one extra floor to be incorporated into the scheme.

PHOTO: MEDIAMIXER NEW MEDIA


PHOTO: PETER LANGDOWN

Portsmouth canopy shelters D-Day vessel

Merit: LCT 7074 Canopy, The D-Day Story, Portsmouth
Architect: Pritchard Architecture
Structural engineer: Mann Williams
Steelwork contractor: Hillcrest Structural Ltd
Main contractor: Ascia Construction Ltd
Clients: The National Museum of the Royal Navy, Portsmouth City Council

Part of the D-Day Story museum on Southsea (Portsmouth) seafront, this cantilevered steel canopy showcases the conservation of the sole surviving landing craft tank (LCT) from the D-Day landings on 6 June 1944.

The canopy required an elegance and simplicity that is empathetic to its sensitive surroundings, while maintaining a presence that physically relates to the robustness and mass of the ship itself. Structural steelwork provided an efficient and cost-effective design solution for the structure, owing to its high strength-to-weight ratio, which facilitated the slender yet robust form.

The canopy is supported on one side by 12 bespoke tapered fabricated mast columns, each 12m-tall and weighing 7.5 tonnes, formed from 25mm-thick plates. The columns align with the piers of a historic wall, keeping one side of the ship clear of visual distraction and providing uninterrupted views of the vessel from the roadside.


PHOTO: MATT CLAYTON

Steel stair on show at Pace Gallery

Merit: Pace Gallery, Hanover Square, London
Architect: Jamie Fobert Architects
Structural engineer: Price & Myers
Main contractor: QOB Interiors
Client: Pace Gallery

A central London gallery has been reconfigured to become the new home of the Pace Gallery, a leading international art exhibitor.

Construction included the creation of two new galleries on the first floor and an opened-up basement level that creates a third 100 sq m public volume.

The three new galleries are highly flexible, allowing the Pace team to show various types and scales of art by adding or removing internal walls and covering or revealing windows.

A sculptural steel staircase links upper and lower spaces, allowing sunlight to pour into the basement offices. The stair is fabricated from waxed raw mild steel, showing the colours of the heat marks and manufacturing processes. Its development involved close collaboration with the architect, engineer and steelwork contractor.


PHOTO: KEITH HUNTER

Hydro Ness hub stays a leap ahead

Merit: Hydro Ness, Inverness
Architect: Leslie Hutt Architect
Structural engineer: Hasson Engineering Solutions
Steelwork contractor: M Hasson and Sons Ltd
Main contractors: Bradley and Company, Hydro NI
Client: Highland Council

Signposting the benefits of renewable energy sourced from the River Ness, the Highland Council's Hydro Ness scheme also informs young people about science, technology, engineering and mathematics (STEM) skills.

As well as generating renewable electricity and reducing carbon emissions, it provides an interactive experience and a learning hub for climate change, local ecology, engineering and renewables.

Housed within a curved steel-framed canopy, the building's shape is inspired by a salmon making its way upstream.

The frame comprises steel sections curved to differing radii. Most of the structural steelwork was galvanized to ensure longevity.

The cladding panels – framed with SHS welded into co-planar triangles – are stainless steel with a swirl finish to enhance the intention of 'looking like scales of a fish'.


PHOTO: JAMES BRITTAIN

Former radio site broadcasts quality

Merit: Houlton School, Rugby
Architect: Van Heyningen and Haward Architects
Structural engineer: Price & Myers
Steelwork contractor (new blocks): Mifflin Construction Ltd
Main contractor: Morgan Sindall Construction
Client: Urban&Civic plc

Steel construction has allowed historically significant radio station buildings in Rugby to be retained and converted into the new Houlton School. The site previously hosted the first transatlantic telephone call to New York, transmitted telegraph messages to the Commonwealth and communicated with nuclear submarines during the cold war.

A new steelwork frame was threaded through the first floor of the existing Transmission Block to provide an additional four floors of accommodation, while leaving the existing first floor steel beams exposed and intact.

To improve circulation, two steelwork scissor stairs have been constructed at each end of the Transmission Block and ring beams added to restrain the existing walls around the new stair voids. Two further steel staircases are inserted into the adjacent Accommodation Block. External openings have been adjusted in the Power Hall to suit its new use as a dining and main hall.