# Structural Steel Design Awards 2019

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## INTRODUCTION

"Again, there has been a high number of quality entries to the Awards Scheme.

This year there has been a greater variety in the types of projects entered for the scheme. Scales of entry range from the largest sports building projects, through prestige city and regional office buildings, to smaller educational projects. While there are no residential projects this year, we see an increase in high quality leisure sector projects and footbridges.

There are jaw-dropping achievements here, and beautiful gems. I believe everyone involved in the steel construction industry should be proud of what has been achieved, and I trust that the Structural Steel Design Awards reflect the quality of the achievement."

**Chris Nash BA (Hons) DipArch RIBA FRSA - Chairman of the Judges Panel**

## THE JUDGES

**Chris Nash BA (Hons) DipArch RIBA FRSA - Chairman of the Panel**
Representing the Royal Institute of British Architects

**Richard Barrett MA (Cantab)**
Representing the Steelwork Contracting industry

**Paul Hulme BEng (Hons) CEng FICE**
Representing the Institution of Civil Engineers

**Sarah Pellereau MEng CEng MIStructE**
Representing the Institution of Structural Engineers

**Professor Roger Plank PhD BSc CEng FIStructE MICE**
Representing the Institution of Structural Engineers

**Julia Ratcliffe MEng CEng FIStructE PE**
Representing the Institution of Structural Engineers

**Bill Taylor BA (Hons) DipArch MA RIBA FRSA**
Representing the Royal Institute of British Architects

**Oliver Tyler BA (Hons) DipArch RIBA**
Representing the Royal Institute of British Architects

## 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 efficiency, cost-effectiveness, aesthetics and innovation"

# Award

# Wimbledon No.1 Court

**PROJECT TEAM**

Architect: **KSS**
Structural Engineer: **Thornton Tomasetti Ltd**
Steelwork Contractor: **Severfield**
Main Contractor: **Sir Robert McAlpine**
Client: **The All England Lawn Tennis Club**

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Constructed over a three-year period, the steelwork element of the re-development of the No.1 Court included the demolition of the existing roof built in 1997, infilling and extension of the level 4 and 5 floorplate steel and new fixed roof, followed by the construction of a moving roof that will provide full rain cover during the Championships.

The main client requirement was that the works to the No.1 Court would still allow the Championships to take place with a minimum of disruption. This resulted in one of the more interesting aspects of the build and necessitated the development of a staged site programme that incorporated into the working methods and temporary works the appearance and character expected of the All England Lawn Tennis Club.

Other objectives for the design were to extend the terraces to maximise the seating within the existing structure and provide new, enlarged and improved debenture/hospitality facilities, whilst optimising grass growing conditions throughout the year both on the No.1 Court itself and the adjacent grass courts. In addition, the movable roof had to be deployed, and the internal environment conditioned, both to eliminate condensation on the playing surface and provide a comfortable spectator environment, all within a 30-minute stoppage of play.

The structure for the east and west sections of the static roof is largely symmetrical. There are long span prismatic trusses spanning 47m between the existing cores, and 80m between new supporting columns installed in the corners. The exception is the NW corner, where the truss is supported on another transfer truss spanning between the cores. The top and bottom chords follow the profile of the cladding surfaces and are large tubular sections. These main elements provide sufficient vertical stiffness to support the weight of the static and moving roofs, good lateral stiffness to resist the lateral forces imposed on the structure from both wind and the moving roof, and create a large open internal space within the truss that facilitates the integration of the MEP equipment.

A secondary structure provides support to the rails that carry the moving roof. The inclination of the prismatic trusses, and the positioning of this secondary structure, enables the load from the moving roof to be located over the bottom chord of the prismatic truss for structural efficiency.

The southern roof utilises two planar trusses spanning across the width of the bowl. The inner truss spans between a planar truss in the corners which transfers the load back to the new corner columns and the existing cores. The rear truss is located such that it is spanning between the cores. This arrangement allows the inner roof structure to cantilever out over the bowl, with the forces being resolved as a push-pull on the two trusses.

The north quadrant of the static roof differs from the south as it carries a large quantity of plant. To achieve the necessary structural strength, the last moving roof truss, that is actually always static, has been incorporated into the static roof structure. This truss is much deeper than the southern roof trusses, and therefore offers a more efficient structural form.

The retractable roof for No. 1 Court is a concertina system using fabric panels tensioned between long span triangular trusses, which in turn span between the east and west sections of the static roof.

The triangular trusses, approximately 6.6m-deep and 1.5m-wide, span in an east-west direction over the court, and are supported on bogeys that run on rails supported by the east and west primary prismatic trusses. Bearings on the bogeys at each end allow thermal expansion and contraction in the plane of the truss and the leading trusses of the two halves have bearings on the east side that are fixed in the east/west direction to provide some stability to the group.

The complex geometry and heavy loading led to the development of jigs that were used in the workshop to achieve the requisite accuracy of fabrication of highly complex connection assemblies, some of which included up to twelve incoming members to a single node.

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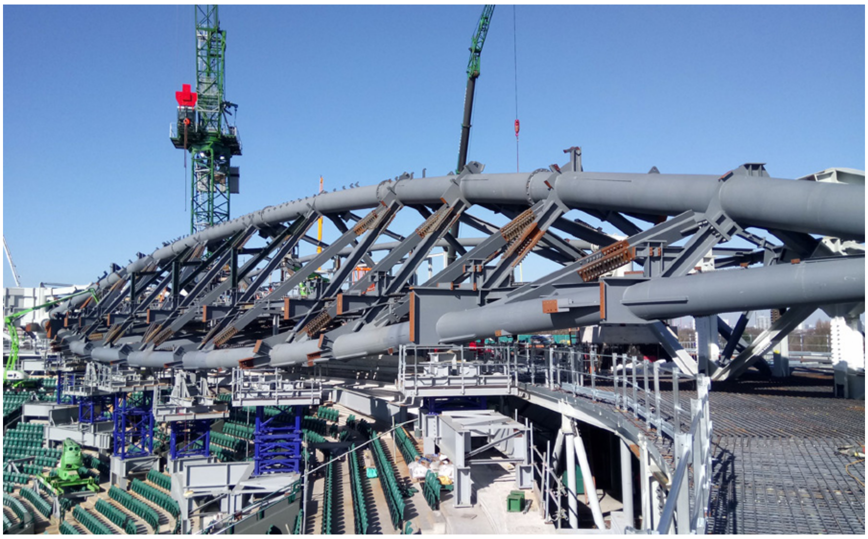

On site, not only were the existing cores used for permanent support of the fixed roof steelwork, they were also used as temporary support for the four tower cranes used during construction, for which they were temporarily post-tensioned.

The use of structural steelwork, with offsite fabrication and rapid site assembly, allowed the site construction to take place in the windows between Championships. Further, the spans required for the roof trusses and the stiffness needed to control the movements at the critical interfaces between the fixed and moving parts, precluded any form of construction other than steel.

Overall, the structure has been designed to be in keeping with the existing structure, whilst including up-to-date technology. This has allowed the architectural aspects of the existing site to be maintained.

## Judges' comment

Installing a moving roof over No.1 Court involved the adaption of the 1997 building without interrupting the annual tennis Championships. This extraordinarily complex work was carried out over three seasons with minimum public awareness. Large movable steel trusses installed to very exacting tolerances over the existing building provide a roof that can shelter a match from rain within minutes.

# Taplow Riverside Footbridge

**PROJECT TEAM**

Architect: **Knight Architects**
Structural Engineer: **COWI**
Steelwork Contractor: **S H Structures Ltd**
Main Contractor: **Land & Water**
Client: **Berkeley Group**

© Anthony Prevost

Taplow Riverside Footbridge is the latest crossing over the River Thames. Opened in November 2018 by the Prime Minister, Theresa May, this 40m arch bridge crosses the river at a site with very limited construction access and in an area of natural beauty.

Since Victorian times, Ray Mill Island, located in the River Thames between the town of Maidenhead and the village of Taplow has been a popular attraction for both locals and tourists. However, access to the island has always been restricted by local geography. The redevelopment of the derelict 48-acre Taplow Paper Mill site by Berkeley Homes offered the opportunity to connect these communities and allow the riverside to be once again open to all.

An initial proposal for a truss-type footbridge was criticised by local residents, who felt the design was 'industrial' and out of character with the area. This prompted Berkeley Homes to appoint Knight Architects and COWI to develop a slender and elegant design to suit the natural beauty of the site and enhance user experience whilst still being cost-effective.

The steel structure was designed with structural efficiency in mind but allowing a clear architectural identity to be developed comprising three key features; the arch, deck and flat plate hangers.

The slender arches drew inspiration from the nearby Maidenhead Railway Bridge by Brunel, famously employing the 'flattest brick arches in the world'. The arches are triangular in cross section and lean outwards to produce a dramatic visual effect, opening up the views from the bridge of the river and surrounding landscape. The arch geometry was devised to avoid double curvature to facilitate fabrication from steel plate, and the triangular shape results in a much greater transparency, emphasising the slenderness of the design. The white colour of the arch was chosen to stand out from the natural backdrop, whilst adding to the slender appearance and giving an attractive profile along the river.

The arches support a slender composite steel-concrete deck formed by a steel tray comprising the edge beams and bottom plate, which was filled with in-situ

concrete after the bridge was installed. Transverse stiffeners are revealed below and extend outwards to form the hangers. This composite construction results in improved structural behaviour, particularly from the point of view of dynamic response and acoustics, but also facilitated easy construction. The bridge dynamic response is clearly perceptible but within acceptable limits as defined by the Eurocode.

The flat plate hangers, with expressed pinned joints at their ends, provide lateral stability to the arch, enabling greater slenderness than if wire strands had been used. To maintain the desired transparency achieved by using thin plates, high-strength steel was used for the shortest hangers which experience out-of-plane moments created by relative longitudinal movement between the deck and the arch.

The parapets continue the theme with closely spaced thin steel uprights welded to the deck supporting the timber handrail, maximising transparency when viewed from upstream or downstream. The dark grey of the deck and parapet contrasts with the white arch to accentuate the visual slenderness of the bridge.

The site for the bridge presented numerous challenges. Access was impeded to the west by a 1.5 tonne capacity timber bridge, to the east by a boggy marshland and the Berkeley Homes construction site and to the north & south by several protected trees on the riverbank. The only viable access route left was the river.

Offsite fabrication enabled a high quality of finish to be achieved and allowed for a trial assembly, ensuring a more efficient on-site build. The structure was transported in three parts by road to an assembly yard a short distance downstream of the bridge site. The bridge was built up on temporary works enabling a high quality of workmanship and dimensional control to be achieved before the entire steel structure was then lifted onto a pontoon, floated upriver and installed using hydraulic jacks in a single well-planned operation.

The ends of the arches have a simple end plate detail, with a knuckle arrangement which allowed rotation during concreting of the deck to reduce bending effects and minimise plate thicknesses. This was then cast into the abutment on completion to act as a fixed end for live load effects, avoiding the use of a bearing at these points for a maintenance-free solution which is particularly crucial as they are below flood level.

The pinned connections of the hangers to the arches employ stainless steel details, separated from the carbon steel by nylon separators.

The slender, sculptural form of the Taplow Riverside Footbridge has already become a popular local landmark. The use of steel was crucial in allowing the team to achieve a high-quality structure which adds to the landscape of this unique location. The final result far exceeded the client's expectations, providing an iconic addition to the river area.

## Judges' comment

This elegant bridge comprises twin steel arches, triangular in section, with the deck suspended via inclined steel plate hangers. The result is a distinctive, slender structure providing a valuable link between communities and fitting in sensitively with its environment. The steelwork is beautifully detailed, and trial assembly helped ensure trouble-free installation, using barges on the river, despite challenging conditions.

# Award

# Coal Drops Yard, London

**PROJECT TEAM**

Architect: **Heatherwick Studio**
Structural Engineer: **Arup**
Steelwork Contractor: **Severfield**
Main Contractor: **BAM Construction**
Client: **King's Cross Central Limited Partnership**

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The King's Cross development is a visionary urban regeneration masterplan in the heart of London. Coal Drops Yard was to form a focal point within this development, a vibrant retail destination that boasted public squares, bars, restaurants, and cafés.

The development is centred around the East and West Coal Drops. These long brick buildings were originally built in the 1850s and used to distribute coal around London, which had arrived from the north of England by train. The buildings were separated by a cobbled yard space, each building consisting of a 13m-wide, 3-floored, masonry structure with repeating cross-walls at 6m. This footprint did not lend itself to the large retail units desired of the scheme. Furthermore, the East Coal Drop was protected as a Grade II listed building, the buildings had suffered fire damage, and had evidentially been left for many years, so it was clear that significant intervention was required.

These constraints led the team to reach a design solution whereby the two buildings became linked at roof level by creating a new floor that 'floated' over the central yard space below.

While English Heritage and Camden Council gave their permission to link the roofs via a bridge-like structure, they requested to connect the roof in a way which maintained the idea that the East and West Coal Drops were two separate entities.

This request led to the ground-breaking architectural design of the 'kissing point' in which the inner roofs of the East and West Coal Drops stretched toward one another and delicately touched high above the central yard. The merging of the roofs was such that visually they appeared to connect at an indefinitely small point while the floor below hung from a roof that was seemingly devoid of any significant structure.

The structural solution to the kissing point concept presented several challenges. The roof support solution had to allow the complex roof geometry to be formed whilst being supported on buildings set 33m apart. The weight of the new roof and the floating floor below had to be carried without exposing the existing heritage structure to any additional loading or deflection. The magnitude of movements experienced by the delicate architectural façade, which spanned 7m vertically between the new floor and roof, had to be limited.

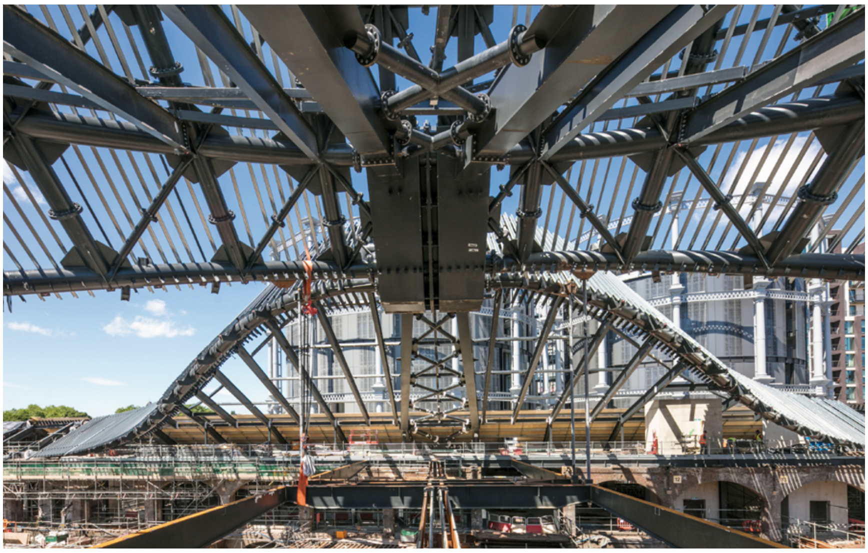
As this required both high stiffness and strength in combination with limited space for new structural elements, clearly steel was the only structural material that could deliver a cost-efficient solution.

The steel structure consists of three 'bows' (or tied arches) that rest upon one other. The central bow spans the shortest distance between buildings and hides a steel V-shaped member within the small cladding envelope that is available at the kissing point. Hidden below the floating floor a tie carries a 20MN tension to resolve this bow. The ribbon-shaped roofs are formed by the 2nd and 3rd bows. These consist of a ribbon-shaped truss complete with three chords and bracing and are supported at the northern and southern end of the Coal Drop buildings and centrally on the first bow. Their horizontal forces are resolved with a tie hidden at floor level on the inner edge of each building.

The suspended floor is hung from the leading edge of the ribbon trusses, with a series of steel hangers that connect to composite beams of the new floor. The ties and floor diaphragm resolve horizontal forces allowing new steel columns and foundations within the existing building footprint to support the vertical load of the new structure.

The roof steelwork was fabricated to a pre-set geometry to compensate for the predicted deformations under dead loads. The aim was to ensure that the new suspended floor would settle to a flat and level position at the point of completion. This required points of the roof steelwork to be fabricated up to 90mm away from their final positions.

The majority of roof steelwork was broken into large fabricated sections which were transported to site then sub-assembled before being lifted into position. The process allowed for minimum site assembly, temporary works, and working at height activities.



© John Sturrock

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The roof was erected on temporary trestles with a de-propping facility incorporated at each temporary support location, which allowed the roof to be erected and bolted together in its pre-set condition, and once it was acting as a single unit, to be de-propped in a controlled manner.

The project contained considerable risk given the complexity of the site and the circumstances arising from the heritage structures. However, Coal Drops Yard is not only a success story of architecture and engineering. Forming a key locale within the King's Cross redevelopment this project has significantly contributed to the revitalisation of this once abandoned and derelict corner of London. This legacy will surely form a catalyst for change in the surrounding areas.

## Judges' comment

The kissing roof that links the two original Coal Drop buildings led to a solution of three steel bowstring frames all working together, shaped to reflect the ribbon roof. New exposed steel at deck level is extremely well integrated and carefully detailed to be in keeping with the original structure, strengthening and extending it to suit its new purpose.

# Tombola HQ, Sunderland

## PROJECT TEAM

Architect: **Ryder Architecture**
Structural Engineer: **s h e d**
Main Contractor: **Brims Construction Ltd**
Client: **Tombola**

Online gaming giant Tombola's new headquarters building is an important element of their business plan for future growth and international expansion. Designed to attract and retain the best talent from the region and further afield, the building is key to their desire to double the size of their tech team by 2020. By providing a stimulating, attractive working environment, it will help resist the lure of larger centres like London and California, keep jobs in the region and boost the local economy. Beyond that, the building also raises the bar and sets a new standard for the 21st Century workplace environment for other employers to match by investing in higher quality working environments.

The new £7m building at Wylam Wharf in Sunderland stands next to the company's existing headquarters, which is a former bonded warehouse dating from the late 1700s, within a conservation area, on the banks of the River Wear.

The 2,485m$^2$ modern addition creates a riverside campus feel that incorporates both the old and new buildings as well as a new riverside courtyard created between the two. The scale of the new building, its multiple pitch roof and brick construction reflects the warehouses which characterise this section of the riverside.

Modern and technologically advanced open-plan offices for approximately 160 staff occupy the first and second floors, and a three-storey high atrium floods natural light throughout the glazed building. The ground floor includes a reception area, a bistro and gym for employees with bleacher style stairs leading to the modern open-plan upper floors. The stunning 15m-high atrium with wide bleacher steps and 15m$^2$ video wall opposite, delivers a real 'wow' factor for all visitors and provides an amazing open space for meetings. The building also boasts a diverse range of informal training / presentation suites with the latest AV / video conferencing technology.

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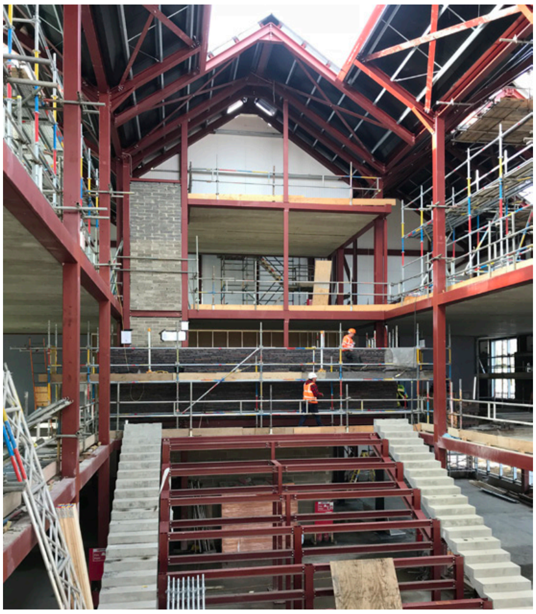


From the outset, Tombola wanted to create a working environment attractive to young professionals, an address with a historic industrial location and a campus hub for the activity that an ever-growing and busy tech firm generates daily. The resulting building provides an environment that encourages harmony with a workplace culture of informality and flexibility. Agile workspaces within the open-plan and airy environment, supported by strategically located private meeting rooms, enable closer collaboration with other teams with the removal of the physical barriers that existed in the old building. The new space facilitates more idea sharing, more communication, and more organic interactions.

Tombola HQ is a unique structural solution combining all three main design disciplines in one solution, architecture, M&E and structure. The exposed steel frame has been aesthetically detailed to a high standard rarely seen on commercial projects, with the additional integration of heating and cooling being cast in and monolithic with the exposed concrete slabs. Great care was taken through significant collaboration performed to ensure that all the elements worked seamlessly together. The steel frame is braced but also has moment frames, set-back columns on the northern edge to create the dramatic building overhang and cantilevers to form the full-height glazed eastern façade.

The office floorplates are clear span with exposed concrete soffits providing radiant heating and cooling. To allow the floors to appear to float and the fenestration to span fully to the soffits, all supporting beams are detailed as Rectangular Hollow Sections (RHS) with projecting plates welded to the bottom flange to carry the 250mm thick precast concrete floor slabs. The main columns are structural hollow sections too and this keeps their size to a minimum and continues the sleek lines of the building from the horizontal to the vertical. The RHS edge floor beams also support the brickwork façade thus providing a solution that is very efficient in terms of member numbers.

The roof appears to float which is made possible by utilising a moment frame. All the UC section rafters are within a shallow construction zone, with purlins within the depth of the UCs, and no horizontal ties. The structure-free rooflights provide unobstructed views of the dramatic skies.

The central atrium again is structure-free and provides an open-plan flexible-use area for the staff for collaboration and sharing collective inspiration. The AV and fire alarm systems are hidden within the hollow section structure, using them as containment systems to keep the sleek and uninterrupted finish.

Overall the building could not have been delivered in its amazing form without using a steel-framed superstructure. It has created a stylish and laid-back working environment that is completely in harmony with a culture of modern informality and flexibility. It's the ideal workplace for smart software developers, wanting to build long-term careers and a great working environment for collaboration and innovation. The subtleties have to be seen to be appreciated with this truly spectacular setting granted a calibre of building it deserved.

## Judges' comment

This project exemplifies how, with a dedicated client and a top-class team, structural steel can produce cost-effective yet beautiful results that are much loved by its users. Through simple yet sophisticated design and rigorous attention to detail, this wonderful headquarters building exhibits exceptional quality and value. It is a clear Award winner.

# Tottenham Hotspur Football Club, New Stadium

**PROJECT TEAM**

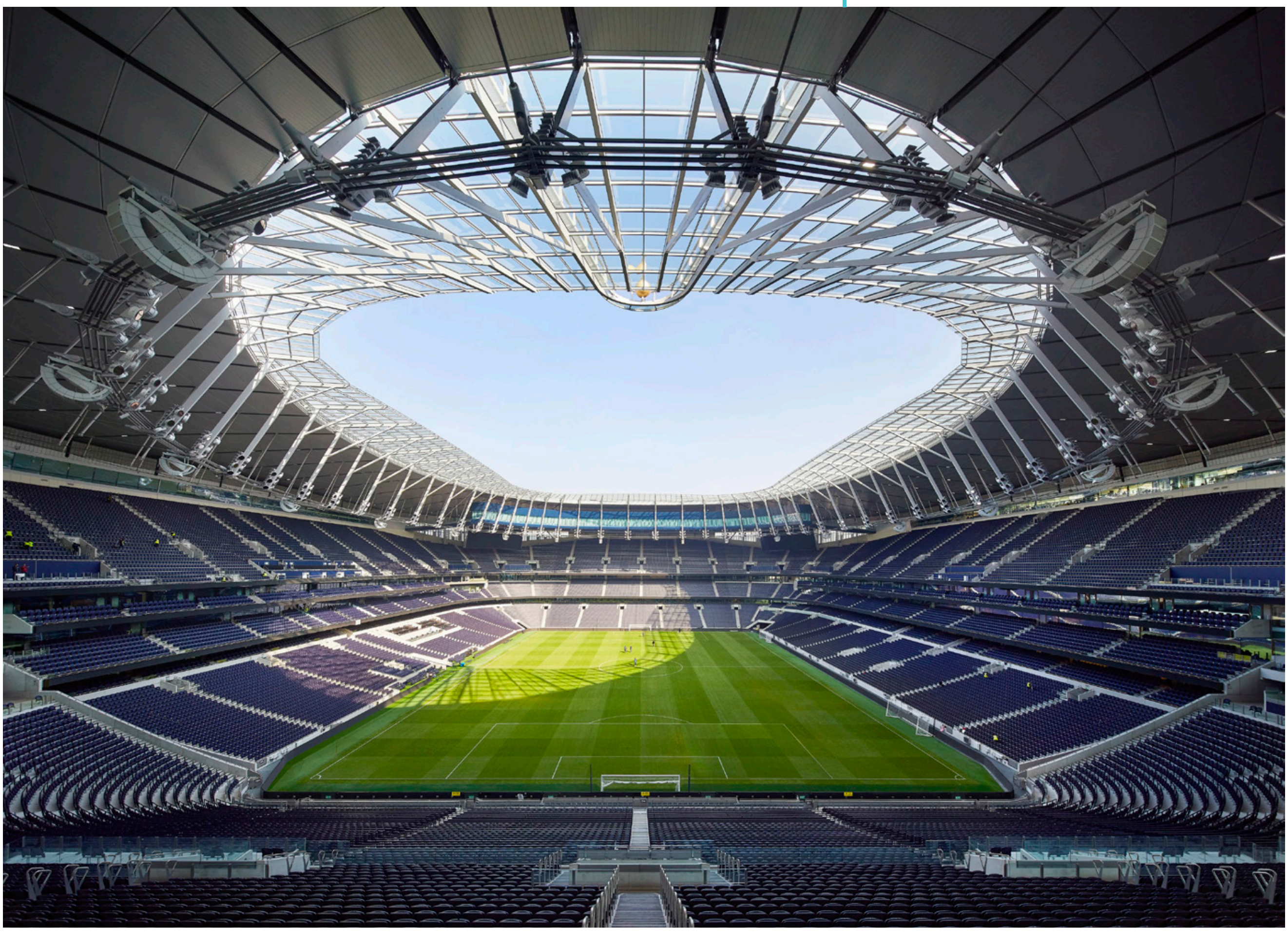
Architect: **Populous**

Structural Engineers: **BuroHappold Engineering, schlaich bergermann partner**

Steelwork Contractor: **Severfield**

Main Contractor: **Mace**

Client: **Tottenham Hotspur Football Club**



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The brief was for a 60,000-seat stadium on a site north of the existing stadium, with a tight atmospheric bowl and a dedicated single tier home end for general admittance fans only. The addition of a sliding pitch was to allow for non-football event days and provided a design constraint that led to some of the most exciting architecture, engineering and fabrication on the project.

The 4-year construction period included the erection of five key steelwork features, representing a combination of elegant steelwork design and pure industrial engineering and fabrication, namely; east stand Y columns and transfer structure, south stand tree columns, south stand transfer structures, north stand cantilever structure and west stand atrium structure.

Supporting Level 3 of the east stand, the Y columns were one of the first major pieces of structural steelwork to be erected at the new stadium. They provide an atrium at the entrance to the east stand and reduce the number of columns coming to ground level by collecting a column on each branch. They also allow the façade to be cut back into the building producing a dramatic overhang.

Above the Y columns, an additional level of transfer structure is provided in order to create column-free space at Level 3. Formed using sloping steel columns to reduce the span and improve the dynamic performance of the stand, the transfer truss is two stories deep and spans 30m. The sloping columns are fabricated from plate to form tapering box sections.

The south stand tree structures were created to provide an elegant method of transferring the 17,000-seat south stand over the sliding pitch below. The culmination of elegant architectural design, robust structural engineering and careful fabrication, the trees are the main feature of the south stand. Using the same

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aesthetic logic as the east stand Y columns, 8 individual branches meet at a complex fabricated knuckle joint, before separating again as they meet a concrete plinth at concourse level.

Beneath the south stand there are a series of mega transfer trusses, spanning in three sections across the sliding pitch. These trusses have been coordinated and integrated with the architecture such that the concourses, toilets, concessions and vomitoria are all as uninterrupted as possible. The south stand was critical path to erecting the cable net roof, so temporary bracing was added to allow the back of bowl to be completed. The stand was erected from both pitch side and outside the stadium to reduce construction time.

The north stand cantilevers 10m over the tier below. This is formed using box section rakers, which are propped using plan trusses. The load is delivered into the reinforced concrete cores using pre-stressed high-strength bars. Significant dynamic analysis was carried out to justify the performance of the stand.

The west stand is supported on a series of slender steel box section columns, which are 21m tall. These columns create a spectacular space below. There are also several propped cantilever balconies and escalator platforms, which are hung from the structure above.

In addition to stadium operations, there is an entire level of offices within the stadium. The efficiency of the architectural and services design to accommodate significant office space into the structure was key and the steel frame provided the flexibility of column positioning to make these spaces viable.

The long span nature of many areas of the new stadium led to the use of steel and the shapes and forms created are both elegant and robust. Further, the construction programme was such that steel provided a significantly reduced erection period; some areas were even changed from concrete to steel construction at a late stage.

Minimising site durations was key in the design and fabrication. Where possible, bolted connections were used. In visible areas, hand holes and recessed cover plates allowed internal bolted connections to be used, reducing the need for site welding and shortening site durations.

The loads in some of the structure are significant and connection design was incredibly complex. The combination of heavy sections and high loads meant that splice connections had to be carefully located. Additional constraints such as the distance between the sliding pitch surface and the splice connections meant that even the orientation of the bolts was considered.

The complexity of some of the structure required special jigs to be created and the use of surveying techniques to ensure accuracy in fabrication.

The stadium has been designed as an icon, a new benchmark in stadium design, and as a catalyst for urban regeneration of the surrounding area. The steel structure plays a key role in delivering this unique aesthetic. The stadium is the first in the world to have a sliding pitch that splits in to the three parts. This allows the stadium to be adapted for multi-use, including concerts and NFL, increasing its utilisation.

## Judges' comment

The new stadium is not just for football but provides a multi-function entertainment facility. The complex new building was constructed on the confined urban site of Spurs' old stadium thus providing continuity for fans and community. The steelwork, which has been finished to a very high standard, plays an integral part in the form and architectural expression of the new building.

# Battersea Arts Centre

**PROJECT TEAM**
Architect: **Haworth Tompkins**
Structural Engineer: **Heyne Tillett Steel**
Main Contractor: **8Build Limited**
Client: **Battersea Arts Centre**

Upgrade works to refurbish and extend the Grade II listed Battersea Arts Centre in London were nearing completion in March 2015 when a tragic fire broke out in the northern half of the building, destroying the roof of the Grand Hall. While this was heart-breaking it presented an opportunity to create something special and enhance the current use of the building.

The brief was to create a flexible space that is not just used for performances, but also ceremonies, debates, gatherings, food shows, fashion shows, community use and more.

The new roof needed to provide enough flexibility to support a large number of rigging point configurations for technical equipment and lighting and incorporate walkways to provide easy access for technical crew along its length. It also had to support plant, acoustic attenuators and an ornate lattice plywood ceiling.

Other upgrades to the space included demountable side galleries, modifications to the balcony to support an organ, rebuilt dressing rooms to the sides of the stage and a new stage roof, again built for flexibility to support a combination of rigging points.

An early decision was to provide two lines of walkways along the length of the hall. This drove the form of the roof trusses into 'space-frames' using RSA and PFC members. The curvature of the original arched ceiling was still visible in the surviving plaster relief on the north buttress wall. This curve was surveyed and is incorporated in the lower chords of the new trusses and ceiling.

The original roof trusses had deep, plated haunches which were built into brickwork buttresses. The proposed design required a significant increase of load and therefore thrust on the buttresses, and with the increased build-up of finishes there was a subsequent decrease in available depth, and hence stiffness, of the truss haunches. To overcome this, a design was developed utilising elastomeric bearing pads on one side of each truss that allowed the truss to 'relax' during the initial loading of the roof.

These movements were monitored during construction and the bearings locked in place once 50% of the roof build-up was installed. This ensured the thrust on the buttresses would not exceed the original loading and minimised live-load deflections. Using this technique avoided any strengthening works to the original masonry structure.

The trusses were fabricated offsite, delivered in three sections and installed through removable sections in the temporary scaffold roof using a mobile crane.

## Judges' comment

Following a fire, the parameters of the original ceiling and roof finishes were set. However, the need to meet current regulations and improve plant provisions resulted in the roof truss needing to be slimmed down at its pinch point. An elegant solution of doubling up new trusses and linking them to form a boxed section allowed that to happen.

# Commendation

Structural Steel Design Awards 2019

# Fen Court, London

## PROJECT TEAM

Architect: **Eric Parry Architects**
Structural Engineer: **Arup**
Steelwork Contractor: **William Hare**
Main Contractor: **Sir Robert McAlpine**
Client: **Generali Real Estate**

© Eric Parry Architects

Fen Court is a 39,000m$^2$, 15-storey office and retail project that includes a 2,200m$^2$ roof terrace with 360-degree views of London's Square Mile. Located within London's expanding financial district, Fen Court is a notable addition to the London skyline. Towering 65m above street level, the distinctive crown-shaped design on the 10$^{th}$ floor, along with spacious offices, rooftop restaurant and London's first publicly accessible roof garden, make this project truly unique.

The minimal, yet sharp, geometries of the building's façade were part of the initial vision for Fen Court. The constantly-changing crystalline appearance of the upper floors is determined by daylight and the weather, making the top floors reflect light differently depending on the conditions. The modern steel and glass design, combined with the natural green space of the roof garden, provides a welcome contrast to the imposing city environment.

The upper office floors have a double-skin passive façade, with dichroic glass in the outer panes, giving this section of the building its changeable appearance. The high-performance façade also includes motorized blinds, giving occupants the option to easily reduce solar gain during summer.

A key requirement on Fen Court was to keep an existing high street bank on the site in operation, whilst demolition and construction works took place. So, the previous building was demolished around the existing bank, and their new premises had to be constructed in advance of the rest of the structure.

The challenging build of the high street bank premises involved a top-down construction sequence for a small portion of the site, in which plunge columns were driven into the ground and a small area of the B1 slab was cast. Excavation down to B3 level could then be done underneath the B1 slab, while steelwork was being erected above. Steelwork and metal decking were installed at ground floor and mezzanine levels for the south west corner of the site, where the new bank was situated. This was then made watertight, and handed over to the bank for fit-out and, finally, occupation.

To achieve the tight programme of 23 weeks for the erection of 6,500 tonnes of steel, a series of welded frames around the perimeter, comprising two two-storey columns and two perimeter floor beams, were used. Effectively, this turned four lifts into only one lift, saving precious time.

The project's design and environmental requirements were successfully met, helping Fen Court to achieve a BREEAM 'Excellent' rating.

## Judges' comment

Fen Court is a 15-storey commercial and retail development that includes a public roof garden offering 360-degree views of London's Square Mile and a public right of way passage through the centre of the site. A challenging construction sequence was required to accommodate the relocation of a high street bank that was operational on site throughout the works.

# Commendation

Structural Steel Design Awards 2019

# Chiswick Park Footbridge

## PROJECT TEAM

Architect: **Useful Studio**
Structural Engineer: **Expedition Engineering**
Steelwork Contractor: **Severfield**
Main Contractor: **Lendlease**
Client: **Blackstone**

© Jill Tate

© Expedition Engineering

Chiswick Park Footbridge is a three-span arched structure providing a new pedestrian link between a successful business park and an underground station, both called Chiswick Park. Providing a safer route than the current railway level crossing, the footbridge spans landscaping, a bus route, and railway lines.

The challenging site posed numerous constraints including a 45m span over Network Rail lines, a restricted landing site at one end including a 4.5m drop in level, a minimum road height clearance for buses in the central span, a set podium launch level at Chiswick Park, and a curved horizontal alignment, all set within a complex urban environment hemmed in by railway lines, roads, residences, a business park and a nature reserve.

A key feature of the structural design was minimum self-weight, so the 45m Network Rail span could be lifted from Chiswick Park while fully fitted out. As such, the use of steel was instrumental in the successful delivery of this bridge, not only for the main arches, but also for the deck itself. The arch was designed as a network arch with close-centred crossed cables, which act as a stiff mesh to control pedestrian dynamic effects.

Durability and minimum maintenance requirements led to the use of weathering steel for the primary structure and stainless steel for the hanger cables and architectural metalwork.

The curved geometry of the deck and arches required parametric modelling to create geometry and analysis models. These were used to create the geometric definition of every steel plate in a format suitable for the steelwork contractor's fabrication model, which avoided the need for 2D fabrication drawings and potential errors. These geometry models were also used to perform checks against the as-built 3D site surveyed data. A series of bespoke error checking tools were developed to assess the deviation from perfect form, which facilitated rapid geometry agreement on site for the critical arch sections.

An ambitious construction programme was based around a 'kit of parts', maximising offsite fabrication and minimising the extent of complex on-site works. Each span was assembled in a separate compound and the three spans were then lifted into place during 2 weekends with road closures and a rail possession.

The construction of the UK's first network arch footbridge built around a curve, in a challenging urban site, using bespoke surveying and control processes and an innovative cable stressing sequence, to budget and programme was a stunning success.

## Judges' comment

The mutual resolution of architectural form and innovative structural design conceals the complexity of the technical and geometrical constraints these bridges had to address. Brilliantly conceived, beautifully made and ingeniously erected, this project provides not only a much-needed physical link for the community, but also a remarkable local landmark.

# Commendation

Structural Steel Design Awards 2019

# Ingenuity House, Birmingham

## PROJECT TEAM

Architect: **Sheppard Robson**
Structural Engineer: **Arup**
Steelwork Contractor: **Billington Structures Ltd**
Main Contractor: **Interserve Construction Ltd**
Client: **Interserve Construction Ltd**

© Jack Hobhouse

© Arup

Ingenuity House is a new 5-storey regional headquarters for the support services and construction firm, Interserve. Located next to Birmingham International Airport, Birmingham International Railway Station and the proposed HS2 Interchange Station, it is a key element of 'UK Central' which forms a catalyst for the regeneration strategy of the area.

The 12,000m$^2$ energy-efficient building will bring together circa 1,200 Interserve and RMD Kwikform staff, who are currently spread across five regional offices. The intention is for staff to benefit from modern and flexible ways of working, to promote enhanced open communication and collaboration.

The building layout has been designed to optimise the space planning, orientation and form to reduce energy consumption, minimise overheating and maximise natural daylighting, thus achieving a BREEAM 'Excellent' rating. The stepped façade creates shelter to glazed elevations, with narrow floorplates and a terraced internal atrium enabling maximum daylight penetration into the space. The terraces promote enhanced interaction of staff through visible connections, and provide vibrant collaboration spaces arranged around the atrium. The atrium roof itself is an elegant and stunning centrepiece to crown a building designed to inspire.

The architectural form presented some distinct structural challenges, each requiring creative solutions from the stepped floorplates and column-free entrance to the 38m spanning atrium roof. Raking columns with external cantilevers and internal transfer beams supporting stepped vertical columns, were found to provide the optimal balance of structural efficiency and spatial planning.

The stepping floorplates are all constructed using cellular beams allowing the horizontal distribution of services within the depth of structure, which delivers a clean ceiling plane and maximises clear height.

A scheme to hang the perimeter curtain walling from a support beam above, closer to the root of the floor beam cantilever, was developed to ensure compatibility of movements between the primary frame and cladding system. Significant lateral forces were induced into the floorplates to restrain each wing of the building as it tries to 'lean' out.

One of Interserve's principle requirements was for a building that could adapt and flex over time in response to changing business needs, with each floorplate having the ability to accommodate a variety of working modes. Whilst being primarily a bespoke building for Interserve, the design does allow for potential future subdivision both vertically and horizontally with services in each core serving particular areas of floorplate.

A collaborative approach throughout design and construction was key to the overall success of this project.

## Judges' comment

The central location for this regional hub ideally connects and consolidates previously dispersed departments under one roof. Efficient offices surround a grand central social space which greatly benefits departmental collaboration. Intelligent use of steel has delivered a triangular building, reflecting site constraints, stepped to give environmental benefits to the offices within and a cohesive grandeur to the whole.

# Commendation

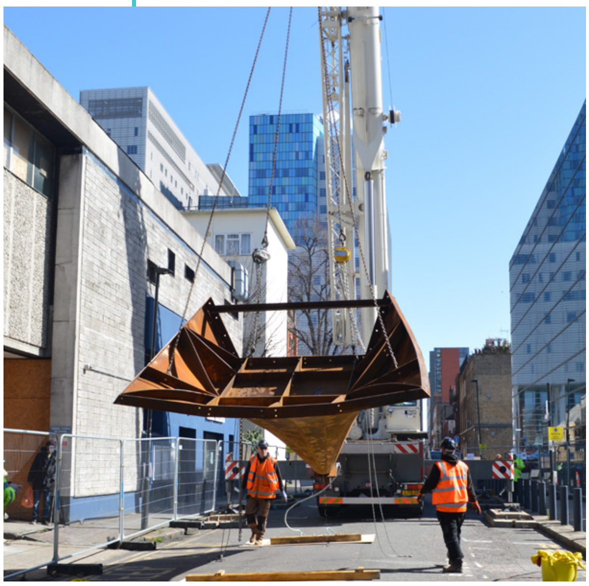
Structural Steel Design Awards 2019

# Neuron Pod, London

## PROJECT TEAM

Architect: **aLL Design**
Structural Engineer: **AKT II**
Main Contractor: **Total Construction**
Client: **Queen Mary University of London**

© Jonathan Cole



The Neuron Pod is a new addition to Centre of the Cell, an award-winning science education centre at Queen Mary University of London's Whitechapel campus. To address ever-increasing demand, the Neuron Pod will help increase visitor numbers and provide a multi-functional space for live science shows, hands-on workshops, experiments, debates, films and exhibitions.

Made out of weathering steel, the Pod consists of an external structural skin stiffened by internal steel ribs. These internal ribs run in both directions to provide stiffness and rigidity to the structural skin. Inspired by a Zeppelin shape, both in plan and elevations, it is supported by three legs. The overall shape presents a curved surface, resembling the central part of a neuron, while the dendrites are shaped in the form of numerous spikes scattered along the external surface of the Pod.

Constructed following a process similar to the construction of a ship's hull, the structure comprises 8mm thick precise laser-cut flat metal sheets, curved in place using the vertical ribs as an embedded structural formwork and then welded.

This project was designed, analysed and produced using a bespoke workflow to generate the surface, implement the structural ribbing and splicing following the overall stress patterns, and then produce a full set of construction drawings. The smooth surface obtained with a computer-generated algorithm was envisaged as a starting point. A subsequent step was to study a subdivision pattern to discretise the overall shape into developable strips. This allowed a quick generation of various options for the ribs, and once the loading criteria were set, it allowed fine-tuning of the pattern to balance the target of limiting the self-weight (and therefore material) with the needs of strength and stiffness.

The workflow output was then used by the steelwork contractor to cut, assemble and weld the pieces. The various pieces were temporarily bolted together on-site in order to minimise the temporary props required. Once the jigsaw was complete, the bolted interfaces were welded to create the final structural continuity, allowing the temporary props to be removed.

With a weathering steel Pod and galvanized steel connecting bridge, the materials used provide a lasting durability to the structure, whilst retaining the aesthetic quality the architect envisioned and providing the 'wow' factor the client wanted. Without adding to the structural elements, this piece provides an art installation as well as a functional teaching space increasing the capacity of facilities available in the university.

## Judges' comment

The Neuron Pod, the latest addition to Queen Mary University of London Cell Education Centre, surprises in its animal form, is fun and colourful. These qualities meet the brief of inspiring and hopefully attracting future scientists. This contemporary work of craftsmanship in weathering steel succeeds in striking a whimsical note with serious scientific educational intent.

# Commendation

Structural Steel Design Awards 2019

# Royal Academy of Music, London

## PROJECT TEAM

Architect: **Ian Ritchie Architects**
Structural Engineer: **WSP**
Main Contractor: **Geoffrey Osborne Ltd**
Client: **Royal Academy of Music**

© Adam Scott

© Adam Scott

This redevelopment of the world-renowned Royal Academy of Music (RAM) has totally transformed its existing theatre and back-of-house facilities.

Structural interventions in the historic Grade II listed buildings included the demolition and replacement of the existing theatre superstructure, the addition of new cantilevered balcony seating, two substantial box frames through significant masonry walls, the introduction of a flytower (with main plant room above), an enlarged orchestra pit, insertion of new vertical circulation routes, and a box-in-box rooftop recital hall with its own glazed foyer.

All of this was achieved during a three-year demolition and construction period without significant disruption to the life of the Academy which completely surrounds the site.

The ill-equipped and badly shaped existing auditorium theatre has been remodelled to provide a 40% increase in seating capacity in a contemporary, warm and inviting space optimised for musical and opera acoustics.

A slender cantilevered horseshoe 100-seat balcony has been introduced into the theatre, the structure of which mainly consists of an ingenious system of steel beams cantilevering off hidden two-storey steel columns which, in turn, sit on the existing stalls concrete bowl slab and are only laterally restrained at roof level to avoid overloading the slab below.

A striking feature 'Mercator' auditorium ceiling has been introduced to provide a visual focus and to maximise the acoustic volume of the theatre.

The Mercator roof and flytower are supported by a deep upstand plate girder to the rear of the balcony, and two novel hybrid storey-height combined steel trusses and plate girders. These give space at the edges of the spans at rooftop level for the circulation space and a plant room.

Above the redeveloped theatre, the opportunity was taken to add a new, partially exposed, steel-framed 100-seat flexible recital hall, entirely isolated acoustically from the surrounding structure. An attractive and unique system of exposed tension cables connected to steel moment frames are joined together at a torsionally stiff central round oculus, which transfers moment from one side of the centre of the roof to the other. The lateral thrusts of this semi-arching roof structure are resisted by 400mm SHS beams around the perimeter at eaves level.

The final piece of this complex structural jigsaw at roof level is the glazed-roof circulation space adjacent to the recital hall and flytower. Elegant tapered twin steel fins are supported by closely spaced stainless steel cables inspired by the aesthetics of string instruments.

## Judges' comment

A remarkably collaborative team of client, designers and contractors has delivered a spectacular new auditorium theatre in the heart of the listed campus building, and within the most constrained of live sites. A highly integrated design of the steel roof trusses has allowed the team to squeeze in a rooftop recital space without compromise to the auditorium below.

# Merit

Structural Steel Design Awards 2019

## The Macallan Distillery

Set into the landscape of the 18th Century Easter Elchies manor estate in Speyside Scotland, The Macallan Distillery and Visitor Experience is an advanced manufacturing facility which shares the same roof as a busy visitor centre. It is an exemplar of integrated design that remains sensitive to the beautiful surrounding countryside.

Steel is an integral part of the building. Steel ring beams and columns support the timber roof, curved steel process tables support the copper stills and discrete steel trusses bridge over the delivery road to provide fire egress and an incoming route for the primary materials used in production.

### PROJECT TEAM

Architect: **Rogers Stirk Harbour + Partners**

Structural Engineer: **Arup**

Steelwork Contractor: **S H Structures Ltd**

Main Contractor: **Robertson Construction**

Client: **The Macallan**

### Judges' comment

A portalised arrangement of steel ring beams and V-shaped columns supports the undulating roof, while the open mesh steel mezzanine floor wraps around the production plant, and is supported on a series of steel portals arranged on a circular grid. This demanded very close integration between steel erection and plant installation, yet was executed to a very high standard.

# Merit

Structural Steel Design Awards 2019

## Greatham Creek Seal Hide, Middlesbrough

© Vicky Matthers

As part of a wider flood alleviation scheme in an area renowned for its wildlife, new seal and bird viewing structures enhance the project and encourage better and more frequent use of the area by the local community as well as other visitors.

A design competition working collaboratively with Leeds Beckett University graduates resulted in an innovative design using weathering steel to provide long lasting and low maintenance structures that would complement the industrial surroundings of the creek and the newly created intertidal habitat area whilst withstanding the harsh coastal environment. Perforated panels create dappled shadows inspired by seal markings.

### PROJECT TEAM

Architect: **Abstract Machine (Leeds Beckett University)**

Structural Engineer: **BMMJV (BAM Nuttall/ Mott MacDonald Joint Venture)**

Steelwork Contractor: **S H Structures Ltd**

Main Contractor: **BMMJV (BAM Nuttall/ Mott MacDonald Joint Venture)**

Client: **Environment Agency**

### Judges' comment

An enlightened client, and an innovative response from architecture students at Leeds Beckett University, has resulted in two truly unique hide structures. The existing conventional wood hides had to be removed as part of a flood alleviation scheme. Their replacements are formed from sculpted weathering steel and provide a legacy to be enjoyed by visitors to this vibrant wildlife area.

# Merit

Structural Steel Design Awards 2019

## G W Annenberg Performing Arts Centre

This new prestigious theatre at Wellington College, one of the UK's leading independent schools, is a stand-out project; one which has delivered a building that has become part of its natural surroundings, whilst providing an education space with the design and acoustics of a top UK theatre.

Seating 900 and forming the heart of the new 'cultural quarter' of the college, this unique theatre is circular and built into the gently sloping site. Inside, the 33m diameter roof spans over the auditorium where the curved plan of the building complements the arrangement of seating and structure around the focus of the stage.

### PROJECT TEAM

Architect: **Studio Seilern Architects**

Structural Engineer: **PBA now part of Stantec**

Steelwork Contractor: **Advanced Fabrications Poyle Ltd**

Main Contractor: **Beard Construction**

Client: **Wellington College**

### Judges' comment

This quietly assured and successful project is a credit to all involved. Resolution of the circular building form with the functional and acoustic requirements of the auditorium was impressive. The engineer and steelwork contractor have rationalised the project into a very economic steel solution, enabling the architectural intent to be realised.

# Merit

Structural Steel Design Awards 2019

## Telford Central Footbridges

© Stuart Brown

Linking the railway station and town centre, a pair of new footbridges provide a unique 'gateway' to Telford.

The overhead structure of the tied arch/trusses allows the suspended deck to be extremely thin. Glazed sides and an internal GRP soffit complete the clean uncluttered feeling. A stretched tensile fabric roof covering tapers down to a fish tail detail at each end, giving the bridges their distinctive appearance.

A complex and challenging project built on a small and restricted site crossing an important rail link and two busy inner ring roads has delivered an outstanding piece of functional urban architecture.

### PROJECT TEAM

Architect: **Nicoll Russell Studios**

Structural Engineer: **Jacobs**

Steelwork Contractor: **S H Structures Ltd**

Main Contractor: **Balfour Beatty**

Client: **Telford & Wrekin Council**

### Judges' comment

These new footbridges provide a modern sleek welcome to visitors arriving from the railway station. Crossing busy roads and a railway line on a tight site presented major challenges, but disruption was kept to a minimum and the judges were impressed with the team's efforts to engage and involve the public, resulting in a proud sense of ownership by the local community.

# National Finalist

Structural Steel Design Awards 2019

## 160 Old Street, London

### PROJECT TEAM

Architect: **Orms**

Structural Engineer: **Heyne Tillett Steel**

Steelwork Contractor: **Bourne Steel Ltd**

Main Contractor: **Wates Construction**

Client: **Great Portland Estates plc**


160 Old Street is a project which does more with less in every respect. The conversion a 1970s-built office building into a modern commercial scheme fit for the 21st Century involved the addition of 3 floors, infilling lightwells and extending all elevations to significantly increase the lettable floor area.

Using a lightweight steel composite solution to form the new upper floors, and internal zone, minimised the load increase on the existing frame and foundations.

Exposed soffits throughout create an attractive modern industrial warehouse environment. The building has been widely applauded as a thoughtful, intelligent, sustainable and efficient re-modelling of an existing site.

### Judges' comment

Lightweight steel solutions have maximised the value of this mid-20th Century commercial building with additions of up to three new storeys. The team devised creative framing details for extension of the floorplates integrated with the new façade systems. The designers actively engaged with academic experts to develop details and ensure the vibration performance of new lightweight floors.

# National Finalist

Structural Steel Design Awards 2019

## Aga Khan Centre, London

### PROJECT TEAM

Architects: **Maki & Associates, Allies and Morrison**

Structural Engineer: **Expedition Engineering**

Steelwork Contractor: **Severfield**

Main Contractor: **BAM Construct UK Ltd**

Clients: **AKDN, Argent**

© Edmund Sumner

The Aga Khan Centre is a place for education, knowledge and insight into Muslim civilisations. The structure therefore houses an unusual blend of education and office spaces, research, administrative and representational spaces, with six Islamic inspired gardens interwoven over the height of the building.

The architectural vision was for the monolithic stone-clad body of the building containing the main educational and office spaces to cantilever out over the glazed ground floor spaces that interface with the public realm. Steel was instrumental is realising this vision.

The Aga Khan Centre is a special building in use, appearance, and construction.

### Judges' comment

This self-effacing ten-storey building in the King's Cross redevelopment is constructed to the highest quality with the greatest attention paid to fine detailing and materials. Passers-by will be forgiven for remaining unaware of this store of treasures of Islamic art and literature, and the variety of internal and external spaces contained within this London centre for the Aga Khan Foundation.

# National Finalist

Structural Steel Design Awards 2019

# Ely Southern Bypass

## PROJECT TEAM

Architect: **Knight Architects**

Structural Engineer: **Tony Gee & Partners**

Steelwork Contractor: **Severfield**

Main Contractor: **VolkerFitzpatrick Ltd**

Client: **Cambridgeshire County Council**

The new bypass removes a significant amount of traffic from the station area, allowing better access to Ely's historic city centre, business areas and the railway station itself.

The project includes a 100m-long two-span half-through bridge over a railway and a 300m-long geometrically complex, curved twin trapezoidal box girder viaduct over the River Great Ouse. Weathering steel was used for both structures to minimize future maintenance and to blend into the rural setting.

A cantilever walkway with viewing platform on the north side of the viaduct links two footpaths providing visitors and residents of Ely with a circular route and improved social connectivity.

## Judges' comment

The low-profile design of the two bridges sits comfortably within the fenland landscape. The palette of weathering steel and fair-faced concrete integrates the scheme well into its rural context. The inclusion of a public footway with the river crossing provides welcomed connectivity between the foot and cycle path network either side of the river.

# National Finalist

Structural Steel Design Awards 2019

# Project Mint at The O2

## PROJECT TEAM

Architect: **CallisonRTKL**

Structural Engineer: **BuroHappold Engineering**

Steelwork Contractor: **Bourne Steel Ltd**

Main Contractor: **ISG**

Clients: **AEG, Crosstree**

Project Mint, so-called because of the scheme's likeness in shape to a Polo Mint, was the construction of a premium-focused outlet village around The O2 Arena, comprising 80-plus retail units arranged either side of a central street.

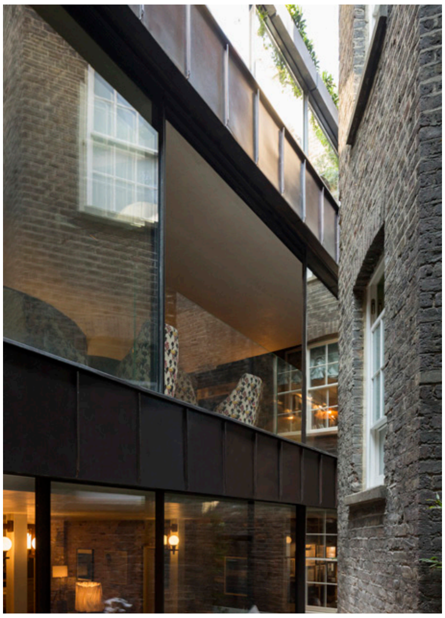
Requiring over 1,800 tonnes of steel in total, a two-storey element and a single storey element are separated by a movement joint with a row of double columns. The two steel-framed retail elements are stand-alone structures deriving no stability from the original steelwork malls, roof or arena, but instead relying on new concrete lift and stair cores. Both are nominally based around 7.5m column spacings.

## Judges' comment

Project Mint completes the ring of tenant units surrounding The O2 Arena and was designed and installed around the steel masts and tie wires that support the tented dome structure. The project utilises a steel structure originally constructed in 2006 for a super-casino, demonstrating the versatility of steelwork and minimising waste.

Structural Steel Design Awards 2019

# Kettner's Townhouse & Soho House Greek Street



A mixture of refurbishment and new-build construction, the original Soho House on Greek Street has been expanded and remodelled, while simultaneously revitalising the iconic Kettner's Restaurant with the addition of a new 33-bedroom boutique hotel above.

The scheme began with renovating an entire block of existing Georgian townhouses. The central courtyard area was cleared, and a two-storey basement created prior to the construction of a new-build, steel-framed pavilion.

Access into the courtyard for steel erection was challenging, with only a single ground floor opening of 2.5m x 2.8m and road closures for crane use severely limited due to the central Soho location.

## PROJECT TEAM

Architect: **Studio of Design & Architecture (SODA)**

Structural Engineer: **EngineersHRW**

Main Contractor: **In House Design & Build Ltd**

Client: **Soho Estates Ltd**

## Judges' comment

The project remodels an entire block within the Soho Conservation area, including no less than 11 listed buildings. At the centre of the development is a bronze clad steel pavilion that creates visual and physical links, whilst providing extensive opening to maximise natural light. Construction sequencing was vital due to the confined nature of the site.

# 2020 Entry Criteria

# The Structural Steel Design Awards Scheme

The British Constructional Steelwork Association Ltd and Trimble Solutions (UK) Ltd have pleasure in inviting entries for the 2020 Structural Steel Design Awards Scheme.

The objective is to celebrate the excellence of the United Kingdom and the Republic of Ireland in the field of steel construction, particularly demonstrating its potential in terms of efficiency, cost-effectiveness, aesthetics and innovation.

**1. Operation of The Awards**
The Awards are open to steel-based structures situated in the United Kingdom or overseas that have been built by UK or Irish steelwork contractors. They must have been completed and be ready for occupation or use during the calendar years 2018-2019; previous entries are not eligible.

**2. The Panel of Judges**
A panel of independent judges who are leading representatives of Architecture, Structural Engineering and Civil Engineering assess the entries. The judging panel selects award winners after assessing all entries against the following key criteria:

**Planning and Architecture**
- Satisfaction of client's brief, particularly cost-effectiveness
- Environmental impact
- Architectural excellence
- Durability
- Adaptability for changing requirements through its life
- Efficiency of the use and provision of services
- Conservation of energy

**Structural Engineering**
- Benefits achieved by using steel construction
- Efficiency of design, fabrication and erection
- Skill and workmanship
- Integration of structure and services to meet architectural requirements
- Efficiency and effectiveness of fire and corrosion protection
- Innovation of design, build and manufacturing technique

**3. Submission of Entries**
Entries, exhibiting a predominant use of steel and satisfying the conditions above, may be submitted by any member of the design team using the appropriate form. The declaration of compliance with the award requirements must be completed by the entrant. Entrants should ensure that all parties of the design team have been informed of the entry.

**4. General**
The structures entered must be made available for inspection by the judges if they so request. All entrants will be bound by the decision of the judges, whose discretion to make or withhold any award or awards is absolute. No discussion or correspondence regarding their decision will be entered into by the judges or by the sponsors. The decision of the sponsors in all matters relating to the Scheme is final.

A shortlist of projects will be announced and the project teams notified directly. The results of the Scheme will be announced in the autumn – no advance notification will be given to the project teams as to which structures will receive Awards.

**5. Awards**
Each firm of architects and structural engineers responsible for the design receive an award as do the steelwork contractor (see note 7 below), main contractor and client.

**6. Publicity**
The sponsors assume the right to publish the drawings, photographs, design information and descriptive matter submitted with the entry to publicise the award-winning structures in relation to the Structural Steel Design Awards Scheme.

Any party involved in a project that is no longer in business for whatever reason will not receive any recognition in the Structural Steel Design Awards.

**7. Membership of BCSA Ltd**
Where the steelwork contractor on any project entered into the Structural Steel Design Awards is a not a member of BCSA Ltd as at the closing date for entries, the steelwork contractor shall not receive any award or public recognition whether at the Awards event, in any promotional literature before the event nor in any booklet or other communication published after or in support of the Structural Steel Design Awards.

**Closing date for entries - Friday 21st February 2020**

**Further Details**
All correspondence regarding the submission of entries should be addressed to:
Chris Dolling, BCSA, Unit 4 Hayfield Business Park,
Field Lane, Auckley, Doncaster DN9 3FL
Tel: 020 7747 8133 Email: chris.dolling@steelconstruction.org

Sponsored by
The British Constructional Steelwork Association Ltd and Trimble Solutions (UK) Ltd.

# 2020 Entry Form

Structural Steel Design Awards

**PLEASE COMPLETE ALL SECTIONS BELOW IN FULL (including email addresses)**

Name of building/structure: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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Programme of construction: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Completion date: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Total tonnage: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Approximate total cost (£): . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Cost of steelwork (£): . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Declaration of Eligibility**
As the representative of the organisation entering this structure in the Structural Steel Design Awards 2020, I declare that this steelbased structure has been fabricated by a UK or Irish steelwork contractor. It was completed during the calendar years 2018-2019. It has not been previously entered for this Awards Scheme.

Signed: . . . . . . . . . . . . . . . . . . . . . . . . . . . . Date: . . . . . . . . . . . . . . . . .

On behalf of:. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Person Submitting this Entry**

Name: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Tel: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Email:. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Submission Material**
The submission material which should be hard copies, should include:

- Completed entry form
- Description of the outstanding features of the structure (c 1,000 words), addressing the key criteria listed overleaf, together with the relevant cost data if available
- Architectural site plan
- Not more than six unmounted drawings (eg. plans, sections, elevations, isometrics) illustrating the essential features of significance in relation to the use of steel
- Eight different unmounted colour photographs which should include both construction phase and finished images
- Memory stick containing the images submitted as digital JPEG files at 300dpi A5 size minimum and an electronic copy of description text in Word (not pdf format)

**Architect**

Company Name: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Address: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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Contact: . . . . . . . . . . . . . . . . . . . . . . . . . . . . Tel: . . . . . . . . . . . . . . . . .

Email: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Structural Engineer responsible for design**

Company Name: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Address: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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Contact: . . . . . . . . . . . . . . . . . . . . . . . . . . . . Tel: . . . . . . . . . . . . . . . . .

Email: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Steelwork Contractor (see note 7 overleaf)**

Company Name: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Address: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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Contact: . . . . . . . . . . . . . . . . . . . . . . . . . . . . Tel: . . . . . . . . . . . . . . . . .

Email: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Main Contractor**

Company Name: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Address: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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Contact: . . . . . . . . . . . . . . . . . . . . . . . . . . . . Tel: . . . . . . . . . . . . . . . . .

Email: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Client**

Company Name: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

Address: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

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Contact: . . . . . . . . . . . . . . . . . . . . . . . . . . . . Tel: . . . . . . . . . . . . . . . . .

Email: . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .

**Entry material should be posted to:**
Chris Dolling, BCSA, Unit 4 Hayfield Business Park, Field Lane, Auckley, Doncaster DN9 3FL to arrive by not later than 21st February 2020

# About BCSA

BCSA Limited is the national organisation for the steel construction industry. Its Member companies undertake the design, fabrication and erection of steelwork for all forms of construction in building and civil engineering. Industry Members are those principal companies involved in the direct supply to all or some Members of components, materials or products. Corporate Members are clients, main contractors, professional offices, educational establishments etc. which support the development of national specifications, quality, fabrication and erection techniques, overall industry efficiency and good practice.

The principal objectives of the Association are to promote the use of structural steelwork; to assist specifiers and clients; to ensure that the capabilities and activities of the industry are widely understood and to provide members with professional services in technical, commercial, contractual, certification and health and safety matters.


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# About Trimble Solutions (UK) Ltd

Trimble is transforming the way the world works by delivering products and services that connect the physical and digital worlds. Core technologies in positioning, modeling, connectivity and data analytics enable customers to improve productivity, quality, safety and sustainability. From purpose-built products to enterprise lifecycle solutions, Trimble software, hardware and services are transforming a broad range of industries such as agriculture, construction, geospatial and transportation and logistics.

Tekla software solutions for advanced BIM and structural engineering are produced by Trimble. Trimble's construction offering ranges from total stations to advanced software, giving the industry tools to transform planning, design, construction and operation of buildings. Tekla software is at the heart of the design and construction workflow, building on the free flow of information, constructible models and collaboration. Information on Tekla software can be found at www.tekla.com/uk


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