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STRUCTURAL STEEL DESIGN AWARDS 2011

TATA STEEL BCSA
In association with
The British Constructional Steelwork Association
and Tata Steel

Quality shines through in a range of winning steel projects

From a crouching man in the Dutch landscape to an office scheme at a busy London rail station, the SSDA's top steel designs are impressive in their diversity

Text by Pamela Buxton

A giant Antony Gormley sculpture of a crouching man and a huge warehouse for M&S are among the diverse winners of this year's Structural Steel Design Awards, given for excellence in structural and architectural use of steel.

Eleven successful projects, announced earlier this month at a presentation in London's Kings Place, were chosen from 18 shortlisted entries. Four won top awards: Gormley's Exposure sculpture in Lelystad, the Netherlands; Foggo Associates' Cannon Place office development in the City of London; the American Express Community Stadium in Brighton designed by KSS Group; and the M&S warehouse on ProLogis Park in Bradford, designed by Stephen George & Partners.

Five more won commendations: the St Botolph Building and ExCel Phase 2 in London, the River Suir Bridge in Waterford, Ireland, the Rose Bowl cricket ground in Southampton and the Hauser Forum in Cambridge.

Two were awarded merits: Gerry Judah's Goodwood Festival of Speed sculpture and the New Cross Gate flyover for the East London Line.

"These are extremely good projects. The quality that has been achieved is remarkable and particularly praiseworthy in such a tough year for the whole industry," says David Lazenby, chairman of the jury. "The can-do attitude has been superb on these projects. People have gone out of their way beyond the call of duty to get the work done well."

Exposure is the first skeletal sculpture to win a top SSDA prize. "It makes something very beautiful and thought-provoking out of something very simple and lightweight," says judge Bill Taylor, who with Oliver Tyler represented the RIBA on the judging panel.

The awards scheme, launched in 1969, is administered by The British Constructional Steelwork Association (BCSA) and Tata Steel.

2011 JUDGING PANEL

- **Chairman David Lazenby, CBE** representing the Institution of Civil Engineers
- **Gerry Hayter** representing the Highways Agency
- **Joe Locke** representing the Steelwork Contracting Industry
- **Martin Manning, Arup Fellow** representing the Institution of Structural Engineers
- **Bill Taylor, architect** representing the RIBA
- **Oliver Tyler** director of Wilkinson Eyre, representing the RIBA

Judge Oliver Tyler (left) of Wilkinson Eyre with Antony Gormley at his studio during the SSDA judging process.

HOW TO ENTER NEXT YEAR'S AWARDS

Entry is open for next year's Structural Steel Design Awards. Projects must be steel-based structures and can be situated either in the UK or overseas provided they have been built by UK or Republic of Ireland steelwork contractors using steel predominantly sourced from Tata Steel.

They must have been completed and be ready for occupation or use during the calendar years 2010-2011. Previous entries are not eligible.

Projects can be submitted by anyone in the project team. The deadline for entries is 2 December 2011.

FOR DETAILS AND ENTRY FORM
go to www.steelconstruction.org

PHOTOS: DEREK IRVINE PHOTOGRAPHY / HAD FAB LTD

Gormley's 60-tonne Exposure sculpture in Lelystad is constructed from 5,000 steel members.

AWARD

EXPOSURE SCULPTURE
Lelystad, the Netherlands

Client
Municipality of Lelystad
Artist
Antony Gormley Studio
Structural engineer
Haskoning Nederland BV
Steelwork/main contractor
Had-Fab Ltd

Five thousand steel members and 17,000 nuts and bolts were used to create Exposure, Antony Gormley's 25.6m-high sculpture of a crouching man. Located on the headland of a polder in Lelystad, the Netherlands, the sculpture was built by Had-Fab, a steelwork contractor more used to constructing transmission towers.

Gormley won the sixth Land Art Project in Flevoland competition to create a piece of public art on the site with a design based on his own body. He contacted East Lothian-based Had-Fab in 2005 to fabricate the structure, which involved cutting steel members so that they intersected snugly at the junctions. This avoided the use of bulky ball joints that would detract from the form of the structure. The members were then bolted and welded together into position in junctions that involved up to 29 pieces coming together.

"The interesting thing about exposure is that from the outset Gormley had this notion of using steel angles. It works very well and is quite dynamic in the landscape," says Wilkinson Eyre director Oliver Tyler, one of the judges who visited the sculpture.

"The whole process was developed with the steelwork contractor, who was used to producing the most functional structures but had to develop ways of using steel in a different way," he says.

"It was a labour of love — absolutely extraordinary. The fabrication was quite exceptionally challenging and it has been done very well," adds jury chairman David Lazenby. "It looks incredibly dramatic and really intriguing from a distance, and gets more and more interesting as you get nearer."

The sculpture was first trial built at Had-Fab.

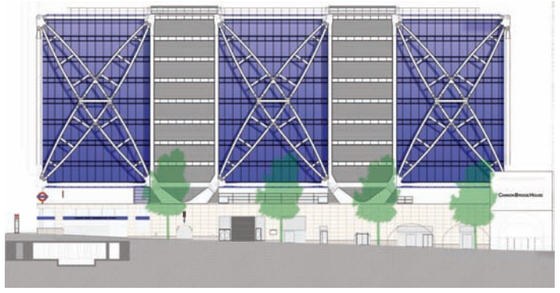
Development of one of the 547 nodes, which bring together up to 29 steel members.

Gormley's design was digitalised and then developed in collaboration with Cambridge University and Dutch engineer Royal Haskoning. Had-Fab then detailed the design in a process taking 12 months, using a web viewer tool, which helped ascertain the true positions of members as they met at the nodes. All the steel angle members were sheared to different lengths as required from steel sections ranging from 60mm x 60mm to 200mm x 200mm.

The sculpture has 547 nodes. The largest is the 2.5m diameter heart node, which weighs 280kg and the brain node, weighing 56kg, which required some of the most complex shaping. Fabrication was carried out directly from the computer model as conventional 2D drawings were insufficient for the complexity of the task. In all, 32,000 holes were punched or drilled in the angle profiles to create the 60-tonne structure.

The sculpture was first trial built in Had-Fab's fabrication yard before being assembled in its final position in Lelystad. Exposure has no plinth — if sea levels rise and the dyke has to be raised, Gormley anticipates that the sculpture will become partially submerged.

Had-Fab, which ended up subsidising the Exposure steel, is now working with Gormley on a project for an even larger steel sculpture.



Cannon Place elevation showing the use of box section "X" frames, a structural solution that became the architectural language.

AWARD

CANNON PLACE OFFICE BUILDING
Cannon Street, City of London

Client
Hines
Architect/structural engineer Foggo Associates
Steelwork contractor
Watson Steel Structures Ltd (Severfield-Rowen PLC)
Main contractor
Laing O'Rourke

Judges were impressed with the "heroic" way that the Cannon Place team tackled the highly constrained site. The building, a 37,000sq m air-rights office development above Cannon Street station in the City of London, had to contend with its proximity to the busy railway terminal plus an underground station, extensive archaeology and closely surrounding buildings.

The rectangular site measured 67.5m x 87m. Because of protected views of St Paul's Cathedral and the need to allow 5.1m above the tracks of the mainline station, designers had a height of just 32m to incorporate the eight floors of office space needed to make the scheme commercially viable. At the same time, site constraints meant there were very limited points for any vertical supporting structure.

"The constraints below the site drove the solution above it," said Foggo Associates director David Warrender. "We couldn't put any columns on the north elevation because of the underground tunnels and there were similar constraints on the south because of the railway tracks."

The solution used a facade-deep transfer structure to balance a cantilevered 21m-deep strip of offices to the north with the equivalent accommodation in the south. This removed the need for columns and provided a structure that doesn't eat into the development zone. This steel structure is fully expressed by placing the curtain walling inside the structural frame.

"With such a big structural idea, it was inevitable, if we could, to use the structural language of the solution to become the architectural language of the scheme," says Warrender.

This impressed the judges. "The structural concept and the challenge of erecting the building gets it the award," says chairman David Lazenby. "The structural solution is heroic. There were only four points where the engineers could get major support down. The challenge for the steel people to build it was remarkable as they had a functioning railway terminus under the site and the constraints of thousands of people walking around it the whole time."

Each floorplate is divided into five strips of accommodation — three 21m deep separated by two of 12m. A fire escape and service core is at the end of each 12m strip and in the centre of these is an atrium with lifts. Only columns in the 12m strips continue to the foundations.

The steel structure, fabricated by Watson Steel Structures, consists of 67.5m-long deep trusses on the north and south facade with horizontal and vertical circular hollow sections and diagonal ties that pick up the 21m secondary beams. These trusses are supported by cantilever, box section "X" frames along the east and west facades. These are in turn supported by four 12m x 14m x 1.3m steel and concrete structures that distribute the load to the foundations. Working over a railway station made temporary support towers for the X frames impossible. Instead, Watson devised a system of cables and jacks tied back diagonally to the central tower.

"It's an enormous engineering achievement that they've sought to express in the frame of the building," says judge Oliver Tyler.

PHOTO: MATTHEW BOOTH

The steel structure is fully expressed, with curtain walling inside the structural frame.

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PHOTO: DEREK CHAPMAN

The east and west roofs are supported by 170m-long arched and leaning roof trusses.

The stadium nestles harmoniously into the South Downs landscape.

PHOTO: PAUL HAZELWOOD

AWARD

AMERICAN EXPRESS COMMUNITY STADIUM

Brighton & Hove

Client
Brighton & Hove Albion Football Club
Architect
KSS Group
Steelwork contractor
Watson Steel Structures Ltd (Severfield-Rowen PLC)
Main contractor
Buckingham Group Contracting Ltd
Structural engineer
SKM (Europe) Ltd

Building a 22,500-seater stadium in an Area of Outstanding Natural Beauty is always going to be challenging. In the case of Brighton & Hove Albion Football Club's new American Express Community Stadium, the planning and development process took 13 years, with the Falmer site chosen out of 15 options around Brighton.

The result, despite the 4,200 tonnes of structural steel and distinctive arched roof, impressed judges with the way it nestles harmoniously in the South Downs landscape.

"It has been done carefully and sits in the landscape very well. It is very neat and done with an eye to how it looks as well as how it functions," says judge David Lazenby.

The form of the stadium was a direct response to the topography of the site, with the curve and tilt of the roof effectively replacing the ground that was excavated to form the pitch and stands. Visual and acoustic impact is reduced by the partial sinking of the stadium into the landscape.

The roof is the main event. The four grandstands are conventional beam-and-column steel frame structures with metal decking and composite slabs. The architect challenged engineer SKM and steelwork contractor Watson to achieve an exceptionally low profile, flat-arched roof to achieve the appropriate effect on the sensitive site.

Both the 43m-wide east roof and the 55m-wide west roof are supported by 170m-long arched and leaning roof trusses each weighing around 350 tonnes. The smaller north and south roofs have more conventional cantilever roofs. To allow the roofs to continually "flex", all four sides of the roof are interconnected, incorporating more than 1,000 sliding bolted connections.

Lateral movement of the rafters is restrained by a catenary member in the plane of the roof that transfers the tension back to bracing and foundations. Double-pinned tubular struts prevent the lateral loads being transferred into the terrace. Bearings transfer the thrust at the end of each roof truss to the permanent concrete thrust walls. The total weight of the roof is 101kg/sq m, which is exceptionally low for such a structure, according to the design team.

The project is also noteworthy for its construction method, which was to pre-assemble as much as possible on the ground and minimise temporary works. The roof trusses were first assembled into three 15m-deep x 60m-long subsections which were lifted on to 20m-high temporary trestles. Only when the entire roof structure was completed could these trestles be removed, allowing the thrust blocks to take up the load.

The £92 million stadium will be operational in time for the start of the 2011/12 football season next month.

"This is an enormous structure but they've cut it into the hillside. It has a very elegant, curved steel roof," says judge Oliver Tyler.

AWARD

MARKS & SPENCER DISTRIBUTION CENTRE

ProLogis Park, Bradford

Client
ProLogis Developments Ltd
Architect
Stephen George & Partners
Structural engineer
BWB Consulting
Main contractor
Winvic Construction
Steelwork contractor
Barrett Steel Buildings Ltd

Distribution centres aren't usually eulogised but this 100,000sq m structure at ProLogis Park in Bradford wowed judges with its slender, highly economical use of steel. Measuring 512m x 176m, the 3,000tonne building is occupied by M&S and is one of the largest distribution centres ever built in the UK.

"People will look at it and say, 'why did it win an award?'" says judge Bill Taylor. "When you're outside, that might be a valid question. It's not a refined architectural piece. But what's very good and interesting is inside.

"The steelwork contractor ingeniously designed an elegant, efficient, lightweight structure. They refined and refined it to get the leanest and meanest they could get. Inside it's marvellous. Your spirits are lifted. It looks so delicate for an industrial warehouse."

The roof installation took just 12 weeks, using seven monopitch portal rafters, 178m-long roof sheets, and 50 different purlin cleat designs. To avoid confusion, steelwork contractor Barrett used scribe technology to identify each purlin cleat and purlin location, enabling more than 7,000 purlin cleats and over 56km of roof purlins to be provided without a single instance of rectification.

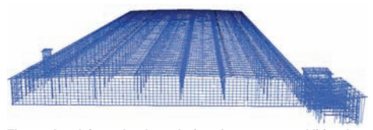
As the client wanted to maximise internal space, no internal cross bracing was allowed. Instead, Barrett designed a complex system of roof bracings that allowed the wind loads to be distributed to a series of side bracings, strategically positioned to miss doors, offices and windows. A thermal movement joint has also been positioned halfway along the length of the building.

Judges were impressed with the efficiency and flexibility of the structure, and the role that the steelwork contractor played in realising the project. By using a curved roof without any valley gutters, for example, the steelwork contractor was able to standardise more components. Its honest, no-frills approach was also applauded.

"It hasn't been architected. It is what it is," says Taylor. "It might not win any architectural awards but structurally, it's magnificent."

No internal cross bracing was allowed in order to maximise space inside the new M&S warehouse.

The warehouse at ProLogis Park in Bradford.



The steelwork frame has been designed to accept an additional three levels of mezzanine to allow future expansion by M&S.

COMMENDATION

THE ROSE BOWL

Eastleigh, South Hampshire

Client The Rose Bowl PLC
Architects The Miller Partnership/EPR Architects
Structural engineer
Ian Black Consulting Ltd
Main contractor
Andrew Scott Ltd
Steelwork contractor
Rowecord Engineering Ltd

Judges admired the creation of two new stands at the Rose Bowl cricket ground near Southampton and were particularly impressed at how suitably the structures fitted in with the well-known Hopkins pavilion. The stands, designed by the Miller Partnership and EPR, provide an additional 5,000 permanent seats, making the 25,000-seat cricket ground one of the largest in the country.

The rear elevation has a timber louvred facade.

The new stands follow the curve of existing terracing to maintain a bowl concept. A "sickle" roof structure was devised that visually separates the roof to the permanent seating from the back-of-house structure.

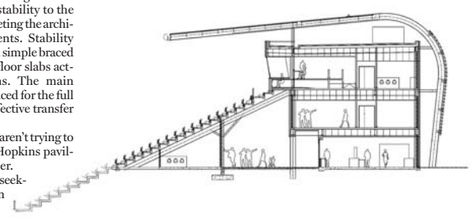
Each main frame comprises the central accommodation structure, which consists of 2 floors plus roof. This is 12.2m wide and formed of a regular grid of steel beams acting compositely with a 130mm in-situ slab on a profiled metal deck.

The sickle rafter forms the main structural member of the canopy roof. The main challenge was to provide sufficient stability to the structure, while meeting the architectural requirements. Stability was achieved with a simple braced structure with the floor slabs acting as diaphragms. The main (canopy) roof is braced for the full length to ensure effective transfer of lateral loads.

"The new stands aren't trying to compete with the Hopkins pavilion," says Oliver Tyler.

"For what it was seeking to do, it has been done well."

Section
The sickle columns are discretely connected at each floor level and at the roof to the accommodation block to give the required architectural illusion of independence.



COMMENDATION

THE HAUSER FORUM

University of Cambridge

Client
Turnstone Estates Ltd
Concept architect
Wilkinson Eyre
Production architect
Archial
Structural engineer
Mott MacDonald
Main contractor
Willmott Dixon
Steelwork contractor
Midland Steel Structures

A steel structure helped Wilkinson Eyre achieve its architectural aspirations and a tight construction programme for the £16 million Hauser Forum, a mixed-use development at the University of Cambridge.

Located at the university's West Cambridge site, the Forum consists of the Broers Building 4,000sq m lettable office development, and the Cambridge Enterprise Building (CEB) for the commercialisation of the University's research. This also includes the campus café, which cantilevers 11m from the southern facade of the building. The Forum is part of the University's science and technology campus.

Both buildings demonstrate a large amount of exposed architectural steelwork in canopies and edge detailing. They are connected visually by a high-level steel canopy that covers a new landscaped forum and provides solar shading to the buildings. The main structural challenge was the CEB's cantilever, which projects over a pool. This could only be practically achieved in steel, and uses large trusses in the elevation to form the cantilever with Macalloy tension rods. The building frame was modelled using non-linear dynamic analysis to determine the dynamic performance of the cantilever and the effect of movements of people in the café.

The cantilever was erected on temporary props with a pre-camber of 35mm to counter overall dead-load movements and give an aesthetically pleasing slight upward camber. Once the floor slab had been poured, the Macalloy rods in each elevation were stressed to lift the structure off its temporary seating and the props removed.

Both buildings have achieved a Breeam Very Good rating and incorporate ground-source heat pumps installed integrally with the structural piles. These provide approximately 7% of the buildings' energy demand. Additional energy savings on heating and cooling were achieved by the inclusion of thermal "labyrinths" in the basement of each building. These lower the air temperature during summer by up to 5°C, and provide a more stable temperature throughout the day, reducing the amount of energy expended on air-conditioning.

Steelwork totalled 720 tonnes in the Forum at a value of £1.36 million.

"It's a good, workmanlike steel building and they've used steel appropriately as part of a hybrid system — a steel frame with exposed concrete floorplates for thermal mass, and a steel-framed loggia," says judge Bill Taylor.

A high-level steel canopy shades Wilkinson Eyre's Hauser Forum at Cambridge University.

HAUSER: PHOTO: STEVE BICKLEY

40 YEARS OF STEEL DESIGN

From Gibberd to Hadid, the Structural Steel Design Awards have been celebrating excellence in the use of steel for more than 40 years. Winners also reflect the changing architectural landscape over the decades from hi-tech to icon.

1969-1979

■ The inaugural awards had eight winners including Gibberd's Terminal One at Heathrow and Winterton House on Watney Market Estate, designed by the GLC's in-house architects at a time when local authority architects were a force to be reckoned with.

■ Supersheds were rewarded throughout the decade. In 1976 SOM and YRM's factory, the Hartcliffe Project for WD & HO Wills in Bristol, won an award, and Edward D Mills' NEC was also commended. Farrell Grimshaw Partnership's Herman Miller Factory in Bath was given an award in 1977.

■ By 1979, the mega shopping centre had arrived in the form of Derek Walker, Stuart Mosscrop and Christopher Woodward's Miesian Central Milton Keynes building (right), which was recently listed.

1980-1989

■ In the eighties, the commercial office came into its own. Foster & Partners won in 1986 for the Hong Kong Shanghai Bank (pictured right), and Arup Associates won in both 1985 and 1988 for its work at 1 Finsbury Square and Broadgate Phases 1-4 as well as for the Liverpool International Garden Festival (1984) and the Imperial War Museum Extension (1989).

■ Other award-winning business facilities included the 1981 Birmingham International Arena (pictured right) by Edward Mills, and Greater Manchester Exhibition and Event Centre (1987) designed by EGS.

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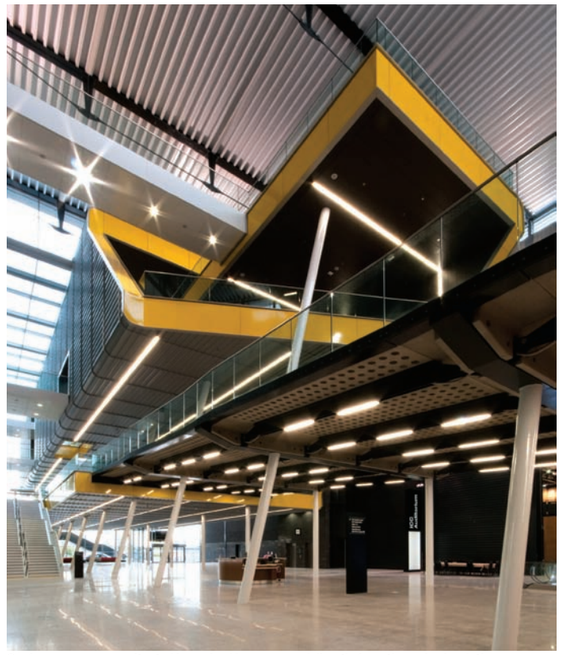


Conference areas are situated in a raised box accessed directly from the main circulation area.

COMMENDATION

EXCEL PHASE 2
Royal Victoria Dock, London

Client ExCel London
Architect
Grimshaw Architects
Structural engineer
McAlpine Design Group
Main contractor
Sir Robert McAlpine Ltd
Steelwork contractor
Severfield-Reeve Structures Ltd

Grimshaw's extension of ExCel in London's Docklands was commended for raising design standards at the exhibition centre and greatly improving the visitor experience.

"The architect has tried to do much more and better in the second phase, achieving 50% more height in some areas, says judge David Lazenby. "There is no doubt that the ambience is much better — the architectural handling of the space and public areas definitely raises the game a lot. The central aisle is much improved, with large roof lights covered in delicate membranes."

Phase 2 creates a total capacity of 93,000sq m of flexible space including a 15m-high hall, plus a new bespoke conference facility.

Grimshaw also created a strong sense of external identity, a sense of arrival and an intuitive sense of movement through the building.

Conference areas are situated in a raised conference box that is accessed directly from the main circulation area. Spaces are flexible, up to a maximum 1,300sq m.

The Phase 1 building suffers from disconnection with its environment because it is constructed 5.5m above grade. Phase 2 drops the exhibition halls and central boulevard at its eastern end to the dockside level. Likewise, a better link with the DLR station is achieved by extending the boulevard to the north under the conference box to give an at-grade front door to the Prince Regent station.

Steel was the only viable solution to achieve the column-free halls, which have a clear span of 87m. The structural solution was adapted from the Phase 1 building and improved with steelwork contractor Severfield-Reeve.

Phase 2 was fully constructed in 22 months.

EXCEL: PHOTOS: MARK KAMPHUIS

Grimshaw has created a strong sense of external identity for ExCel.

COMMENDATION

ST BOTOLPH BUILDING
City of London

Client Minerva PLC
Architect
Grimshaw Architects
Structural engineer
Ove Arup & Partners
Main contractor
Skanska Construction UK Ltd
Steelwork contractor
Severfield-Reeve Structures Ltd; CMF Ltd

The 14-storey St Botolph building near Liverpool Street.

Judges praised the high quality of building at the St Botolph office development in the City of London. In particular, the exceptional degree of detailing in the atrium won the project a commendation.

"Here was a developer who wanted to achieve a really fine job. They really did take trouble. The care and attention to detail is outstanding," says judge David Lazenby.

Designed by Grimshaw Architects, the St Botolph building is a 14-storey commercial building close to Liverpool Street. It provides 51,000sq m of rental space including 11 floors of hi-spec offices above two dealing floors and retail and multi-functional space on the lowe- ground floors.

The building has four perimeter cores and a stepped central atrium, which includes a ThyssenKrupp TWIN lift system where two independent lift cars run in the same shaft at the same time. The floor layout allows floors to be divided into two, three or four sub-tenancies, each with direct access to the lifts and cores via steel bridges across the 18m-wide atrium.

Steelwork is articulated to clearly show its structural function. Externally, the perimeter service cores are expressed. These include perimeter stairs designed as prefabricated steel assemblies, capable of spanning between framing members and bracing the perimeter core structures. The steelwork contractor, Severfield-Reeve, was able to reduce the number of site processes required so that site drilling of steelwork was almost entirely omitted.

But it was the "stylish" detail in the atrium, the atrium bridges and the glass lift structure that attracted the judges' attention. These form the sculptural centrepiece of the building, with the engineering of the structure clearly displayed.

"The elegance of St Botolph was in the atrium and lift and glazed bridging," says judge Oliver Tyler. "It is very confidently expressed and detailed."

The "elegance" of the interior was praised by the judges.

ST BOTOLPH PHOTOS: HUFTON & CROW

The 465m Suir bridge was designed by Yee Associates.

COMMENDATION

RIVER SUIR BRIDGE
Waterford, Ireland

Client
CRG Waterford Ltd
Architect
Yee Associates
Lead engineer
Ove Arup & Partners Ltd
Structural engineer
Carlos Fernández Casado
Main contractor
Bam-Dragados JV
Steelwork contractor
Mabey Bridge Ltd

For more than 40 years, Waterford City Council deliberated on whether and where to build a second bridge over the river Suir.

The final result, a 465m cable-stayed bridge designed with London-based Yee Associates, is the longest span bridge in Ireland and opened 10 months ahead of schedule in October 2009.

Judges praised the perseverance and pursuit of practicality in the detail design and construction. This resulted in a "beautiful bridge which satisfies client and user".

The contract was awarded in 2006. The design team opted for a cable-stayed rather than a girder bridge so that there would be no need for piers. This allowed slimmer decks that gave an extra 2m of clearance for river traffic compared with a girder option. The design uses an inverted Y-shaped tower on the west bank of the river to support the asymmetrical twin fan of cables that in turn supports the main deck.

The structure, fabricated by Mabey Bridge, was erected in two main stages. First the back span was erected from ground level with mobile cranes on trestles up to the central pylon.

The deck was then completed with a precast concrete slab up to the pylon which enabled the front span to be erected in cantilever from the pylon.

This was done in modules, each comprising two main girder sections and cross girders. Over a seven-day cycle, each module was erected and the cables installed, pre-stressed and the precast concrete deck positioned.

In conjunction with the modular build, a supported section of the front span would be erected. The largest components were the box sections at the north abutment, which were lifted into position using a large floating crane.

To protect the 2,800 tonnes of steel required for the decks, Mabey Bridge recommended using a durable glass flake epoxy treatment that required special permission from the National Road Authority (NRA).

The completed project has alleviated congestion in and around the busy port of Rosslare by 30% and it is hoped will contribute to a rejuvenation of Waterford and commercial development in its quays.

CERTIFICATE OF MERIT

2010 FESTIVAL OF SPEED SCULPTURE
Goodwood

Client
Gerry Judah for Alfa Romeo
Sculptor Gerry Judah
Structural engineer
Capita Symonds
Steelwork/main contractor
Littlehampton Welding Ltd

Gerry Judah's sculpture was created for Alfa Romeo to mark the company's centenary and was on show for just three days at the Goodwood Festival of Speed. It was then dismantled and relocated in an adapted form at the nearby Goodwood Sculpture Park, where it is a permanent installation — without its cars.

Created with steelwork contractor Littlehampton Welding, the original structure referred to the red livery of Alfa Romeo's racing cars and incorporated two cars — the P2 and a 2003 8C Competizione — on special cradles.

The sculpture, which was inspired by the Alfa Romeo Quadrifoglio, is made from 12 tonnes of steel and stands 18.5m high and 25m across. Designed to look like a continuous tube, it actually consists of 32 connecting sections of 323.9mm-diameter steel.

These were put together using an adjustable bracket devised by the steelwork contractor that provided alignment, structural integrity, and allowed three-axis adjustment before the sections were welded.

In addition, there were eight concealed connections where the two loops touch. From final design approval, the structure took less than three months to complete.

"It is a very expressive monument to speed, very elegantly done," says judge Oliver Tyler.

Gerry Judah's sculpture at the Goodwood Festival of Speed.

CERTIFICATE OF MERIT

NEW CROSS GATE FLYOVER
East London Line

Client Transport for London
Structural engineer
Scott Wilson
Main contractor
Balfour Beatty-Carillion JV
Steelwork contractor
Mabey Bridge Ltd

The £1.7 million New Cross Gate flyover forms part of the new East London Overground Line.

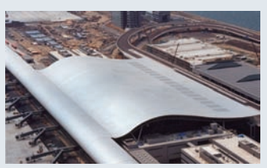
Designed by Scott Wilson with 690 tonnes of steelwork, the flyover allows trains to run through to West Croydon by crossing over the Network Rail London to Brighton Line. The structure carries a single rail line and is 75m long and 8m deep. It is made from eight longitudinal main girder sections, each 20m long and weighing between 20 and 25 tonnes and 37 crossbeams, 10m long and each weighing three tonnes.

"It expresses the structure and hasn't been beautified but is still quite elegant," says judge Bill Taylor. "The issues with these sorts of structures is how do you get them in place, and this one had an interesting story — they erected it to one side of the track and then swung it round and into place."

The steelwork was first erected at Mabey Bridge's fabrication works and the deck crossbeams were machined to length ensuring the correct fit. The steelwork was delivered to the site and assembly took place adjacent to the tracks before being rolled across the covered tracks and lowered into position over the bridge abutments.

The New Cross Gate flyover.

Grimshaw has created a strong sense of external identity for ExCel.



Renzo Piano's Kansai Airport terminal.

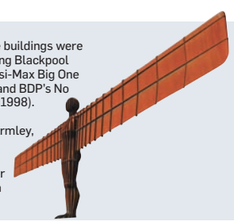
1990-1999

■ Transport buildings featured highly among the 1990s award winners. Two Foster & Partners' airports gained the top SSDA awards: Stansted (1992) and Hong Kong airport (1999).

■ Other winners recognised in 1994 included Renzo Piano's passenger terminal at Kansai International Airport, Japan, and Grimshaw's now-obsolete Eurostar terminus Waterloo International.

■ A number of leisure buildings were also rewarded including Blackpool Pleasure Beach's Pepsi-Max Big One roller coaster (1995) and BDP's No 1 Roof at Wimbledon (1998).

■ Sculptor Antony Gormley, one of this year's winners, also won an award back in 1998 for the Angel of the North (pictured right).



Grimshaw's International Terminus at Waterloo Station.

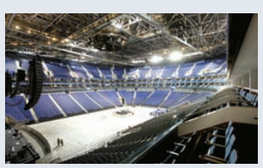
2000-2010

■ Winners in the first decade of the new millennium included examples of the "iconic" architecture that peppered this time. Grimshaw's Eden Project (pictured right) in Cornwall was among the winners in 2001.

■ In 2004, Future Systems won an award for its Selfridges store in Birmingham (pictured right), which helped to reinvent the Bullring shopping centre.

■ 2008's winners included HOK's O2 arena, a successful intervention within the once derided Millennium Dome.

■ Zaha Hadid's Aquatics Centre, one of the many landmark buildings on the 2012 Olympics site, was among recipients of the top award last year.



HOK's O2 arena.

SELFRIDGES & O2: MORLEY VON STERNBERG