

MARCH 2023

# NSC



**Steel rises and shines on Brent Cross**

**BT rings changes in Dundee**

**Long spans key for Wigan school**

**Steel puts Wakefield in different league**



# STRUMIS

## MRP SOFTWARE SOLUTION TO STREAMLINE STEEL FABRICATION

- ✔ INCREASE PRODUCTIVITY
- ✔ IMPROVE EFFICIENCY
- ✔ MAXIMISE PROFITABILITY



**STRUMIS** is a leading software solution, designed to make your steel fabrication shop processes more efficient, delivering significant cost and time savings.

**BAR CODING:** Helps you track and trace your steel assemblies from shop to site.

**EXECUTIVE DASHBOARD:** User-definable graphs and tables representing critical project and business data to empower Senior Executives.

**STRUMIS VISION:** Utilise a birds-eye-view of your business on the go, on any device, any time, anywhere.

**MOBILITY APP:** Turns your phone into a barcode scanner in the palm of your hand.

**FLEXIBLE INVESTMENT OPTIONS:** We have choices for the way you'd like to invest in the future of your business.

**eLEARNING:** Up skill existing staff knowledge, retaining critical knowledge and training new starters. Train to Retain with eLearning.

**SINCE WE IMPLEMENTED STRUMIS WE HAVE FOUND OUR DAY-TO-DAY OPERATIONS HAVE BEEN SIGNIFICANTLY MORE STREAMLINED. AND THE LINK WITH TEKLA PROVIDES ALMOST INSTANT IMPORTING OF OUR PROJECT DATA.**

HAD FAB LTD

BOOK IN A DEMO WITH ONE OF OUR TEAM BY FOLLOWING THE QR CODE HERE



[WWW.STRUMIS.COM](http://WWW.STRUMIS.COM)

TEL: 01332 545 800

EMAIL: [SALES@STRUMIS.COM](mailto:SALES@STRUMIS.COM)



**Cover Image**

**Brent Cross Town public artwork**  
Main client: Related Argent, Barnet Council  
Architect: IF DO  
Main contractor: Galdris  
Structural engineer: Arup  
Steelwork contractor: Bourne Group  
Steel tonnage: 100t  
Photo: Jason Hawkes

**EDITOR**

Nick Barrett Tel: 01323 422483  
[nick@newsteelconstruction.com](mailto:nick@newsteelconstruction.com)

**DEPUTY EDITOR**

Martin Cooper Tel: 01892 538191  
[martin@newsteelconstruction.com](mailto:martin@newsteelconstruction.com)

**PRODUCTION EDITOR**

Andrew Pilcher Tel: 01892 553147  
[admin@newsteelconstruction.com](mailto:admin@newsteelconstruction.com)

**PRODUCTION ASSISTANT**

Alastair Lloyd Tel: 01892 553145  
[alastair@barrett-byrd.com](mailto:alastair@barrett-byrd.com)

**COMMERCIAL MANAGER**

Kirsty Barrett Tel: 01892 553149  
[kirsty@newsteelconstruction.com](mailto:kirsty@newsteelconstruction.com)

**NSC IS PRODUCED BY BARRETT BYRD ASSOCIATES ON BEHALF OF THE BRITISH CONSTRUCTIONAL STEELWORK ASSOCIATION AND STEEL FOR LIFE IN ASSOCIATION WITH THE STEEL CONSTRUCTION INSTITUTE**

**The British Constructional Steelwork Association Ltd**  
4 Whitehall Court, Westminster, London SW1A 2ES  
Telephone 020 7839 8566  
Website [www.steelconstruction.org](http://www.steelconstruction.org)  
Email [postroom@steelconstruction.org](mailto:postroom@steelconstruction.org)

**Steel for Life Ltd**  
4 Whitehall Court, Westminster, London SW1A 2ES  
Telephone 020 7839 8566  
Website [www.steelforlife.org](http://www.steelforlife.org)  
Email [steelforlife@steelconstruction.org](mailto:steelforlife@steelconstruction.org)

**The Steel Construction Institute**  
Silwood Park, Ascot, Berkshire SL5 7QN  
Telephone 01344 636525 Fax 01344 636570  
Website [www.steel-sci.com](http://www.steel-sci.com)  
Email [reception@steel-sci.com](mailto:reception@steel-sci.com)

**CONTRACT PUBLISHER & ADVERTISING SALES**

**Barrett, Byrd Associates**  
7 Linden Close,  
Tunbridge Wells, Kent TN4 8HH  
Telephone 01892 524455  
Website [www.barrett-byrd.com](http://www.barrett-byrd.com)

**EDITORIAL ADVISORY BOARD**

Dr D Moore (Chair)  
Mr N Barrett; Mr G Couchman, SCI;  
Mr C Dolling, BCSA; Ms S Gentle, SCI;  
Ms N Ghetani, Mott MacDonald; Mr R Gordon;  
Mr A Baalham, Whitby Wood;  
Mr G H Taylor, Caunton Engineering;  
Mr A Palmer, Buro Happold;  
Mr O Tyler, WilkinsonEyre

The role of the Editorial Advisory Board is to advise on the overall style and content of the magazine.

New Steel Construction welcomes contributions on any suitable topics relating to steel construction. Publication is at the discretion of the Editor. Views expressed in this publication are not necessarily those of the BCSA, SCI, or the Contract Publisher. Although care has been taken to ensure that all information contained herein is accurate with relation to either matters of fact or accepted practice at the time of publication, the BCSA, SCI and the Editor assume no responsibility for any errors or misinterpretations of such information or any loss or damage arising from or related to its use. No part of this publication may be reproduced in any form without the permission of the publishers.

All rights reserved © 2023. ISSN 0968-0098

These and other steelwork articles can be downloaded from the New Steel Construction Website at [www.newsteelconstruction.com](http://www.newsteelconstruction.com)



MARCH 2023  
Vol 31 No 3



**5**

**EDITOR'S COMMENT**

Sustainability is a key concern of procurement professionals and a new publication from the BCSA/Steel for Life highlights the key issues they need to know about to specify sustainable steel construction.

**6**

**NEWS**

The steel sector's guide to sustainable procurement is now available, and Sellafield names its key delivery partners.

**10**

**STEEL FOR LIFE HEADLINE SPONSOR**

Steel producer ArcelorMittal is taking significant strides to achieve carbon neutrality by 2050.

**12**

**LEISURE**

Speed of delivery was one of the main reasons the project design team chose a steel-framed solution for a new leisure centre in West Drayton.

**14**

**ART**

Wrapping around and hiding an electrical substation, a colourful steel-framed artwork has become a new north London landmark.

**16**

**EDUCATION**

The Fred Longworth High School near Wigan is quickly taking shape and will provide modern and flexible teaching spaces alongside a four-court sports hall.

**18**

**MIXED-USE**

A new regional HQ for BT forms part of a wider multi-million-pound ongoing regeneration masterplan in Dundee.

**22**

**SPORT**

Structural steelwork is playing a leading role in the redevelopment of Wakefield Trinity's historic stadium.

**24**

**TECHNICAL**

SCI's Graham Couchman takes a look at how the behaviour of composite slabs changes depending on loading and other conditions.

**28**

**ADVISORY DESK**

AD 502 – Design to BS 5950 and other standards.

**28**

**CODES AND STANDARDS**

**30**

**50 YEARS AGO**

Our look back through the pages of *Building with Steel* features a car showroom and filling station in Darlington.

**32**

**BCSA MEMBERS**

**34**

**REGISTER OF QUALIFIED STEELWORK CONTRACTORS FOR BRIDGEWORKS**

# Stacker Packers Engineered Levelling Shims



## Trusted by Severfield

“We’ve already used thousands of them on a premier league football club development project and we intend to use them again on our forthcoming projects. Stacker Packers is a great product”.

Steve Burley, Senior Site Manager

- ✓ Made from certified material with UV stabilisers.
- ✓ High compressive strength – independently load tested up to 14.5 tonnes.
- ✓ Interlocking profiles ensure safe and stable structure during installation.
- ✓ Applications – steel frame buildings, precast concrete components, modular pods and buildings.

Used on Manchester Arena, La Sagrada Familia Basilica, Sandwell Aquatics, Anfield Main Stand, Lords Cricket Ground and Wimbledon Court One.



80mm shim stack under 143.8kN load



Shortlisted for innovation in the 2022 British Construction Industry Awards, Construction News Specialists Awards and Building Innovation awards.

To download our datasheet, please go to: [brilliantideasltd.co.uk/stacker-packers](http://brilliantideasltd.co.uk/stacker-packers)

## Get in touch to find out more

T. 01335 345111 E. [enquiries@brilliantideasltd.co.uk](mailto:enquiries@brilliantideasltd.co.uk) W. [brilliantideasltd.co.uk](http://brilliantideasltd.co.uk)

# ALIMATS® Load Spread Solutions for Cranes and Powered Access



## Used by:

Balfour Beatty, Kier,  
BAM, Willmott Dixon,  
Tilbury Douglas,  
Severfield, Elland Steel,  
BHC, Bourne Group,  
Snashall Steel Fabrications,  
Gorge Fabrications,  
and many more.



Mat modules manufactured from recycled certified extruded Aluminium.

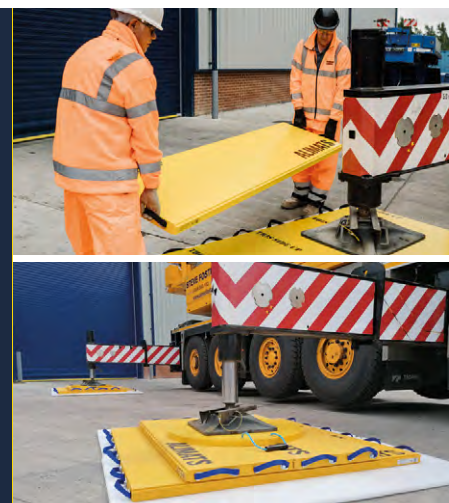


Interlocking modules enable easier set up and greater structural performance.



Sizes 1.34m<sup>2</sup> to 8.07m<sup>2</sup> - all handleable for two people to offload and position.

Available for sale and nationwide single day or weekly hire.



To view and download our specifications and drawings for Powered Access and Cranes, please go to: [brilliantideasltd.co.uk/alimats](http://brilliantideasltd.co.uk/alimats)

## Get in touch to find out more

T. 01335 345111 E. [enquiries@brilliantideasltd.co.uk](mailto:enquiries@brilliantideasltd.co.uk) W. [brilliantideasltd.co.uk](http://brilliantideasltd.co.uk)

# New publication provides sustainability guidance for procurement professionals



Nick Barrett - Editor

Procurement and sustainability will increasingly go hand in hand as the already high focus on climate change intensifies, with parties all along the supply chain looking to their suppliers as well as their own operations for carbon reducing ideas. Hard questions are going to be asked of everyone, and the most scrutinised answers will be those concerning proof of sustainability credentials.

Talking the talk is the easy bit, taking action is the hard part, and harder still could be proving that the correct strategies to achieve net zero carbon are being followed and delivered on. This won't be hard though for the steel construction part of supply chains, as a new publication from the BCSA and Steel for Life spells out (see News).

The steel construction sector has always been able to point to strong sustainability credentials, so was well prepared for the more recent heightened stress on combatting climate change. The new publication, 'Steel Construction - Sustainable Procurement', should give procurement professionals even greater confidence that specifying constructional steelwork from BCSA member companies will deliver as promised on sustainability claims.

The new publication is just one of a series of recent initiatives. Last month we wrote that the Steel for Life interactive Blue Book upgrade for S460 had just gone live – a key enabler for leaner designs using less steel to lower carbon. This is design efficiency in action, one of the key ways to reduce carbon mentioned in the steel sector's Roadmap to Net Zero Carbon. The use of high strength steel is also mentioned in the recently published NSSS Annex J Sustainability specification. The new publication highlights this wide range of initiatives that are underway as the steel sector continues its long-standing drive of continuous improvement.

It shows how BCSA is playing a collaborative role with other supply chain members through involvement in wider industry initiatives such as BES 6001, SteelZero from ResponsibleSteel, and CO<sub>2</sub>nstructZero. Some examples of what BCSA member companies are doing to measure and minimise their own carbon footprints are included and the publication concludes with a clear set of nine recommendations to ensure sustainable procurement.

These include using the NSSS and following the sustainability guidance in Annex J; selecting steelwork contractors that meet the requirements of the Register of Qualified Steelwork Contractors; and selecting companies with certified environmental management systems and certified responsible sourcing policies.

Procurement professionals reading the publication will learn why choosing steel as a modern method of construction delivers significant sustainability benefits to projects, and why using a BCSA member steelwork contractor in particular is advised. The newly enhanced BCSA Sustainability Charter which provides annual and independent audits of the sustainability practices of BCSA members provides comfort to procurement professionals that their steelwork contractor is doing more than just talking the talk, but is delivering solid sustainability benefits as promised. This new publication spells out why.



## HEADLINE SPONSORS



## GOLD SPONSORS



## SILVER SPONSORS

[Barnshaw Section Benders Limited](#) | [Ficpe UK Ltd](#) | [Hempel](#) | [IDEA StatiCa UK Ltd](#) | [Voortman Steel Machinery](#)



Produced by Steel for Life and the British Constructional Steelwork Association (BCSA), the *Steel Construction – Sustainable Procurement* supplement

## Steel sector's guide to sustainable procurement now available

has been published and is being widely distributed with the UK's construction press during the coming weeks.

The supplement is a guide that highlights the initiatives underway in the steel construction sector that support sustainable procurement as well as providing key recommendations for specifying and procuring sustainable structural steelwork.

As the effects of climate change become increasingly evident, sustainability is becoming a key objective and plans to tackle the carbon-related emergency are ongoing across

all industries.

*Steel Construction – Sustainable Procurement* aims to assist and encourage BCSA members and the entire steel construction supply chain on their journey to achieving net zero for their steel construction projects.

The initiatives covered within the guide include the *2050 Roadmap* that clearly signposts the way to net zero carbon for steel construction, the new *Annex J Sustainability Specification* to complement the National Structural Steelwork Specification for Building Construction (NSSS), and BCSA's

updated *Sustainability Charter*, which has an enhanced focus on carbon reduction.

It also illustrates BCSA's involvement in industry initiatives such as BES 6001, SteelZero from ResponsibleSteel, and CO<sub>2</sub>nstructZero, provides examples of what BCSA members are doing to minimise their own carbon footprints and concludes with a clear set of nine recommendations to ensure sustainable procurement.

*Steel Construction – Sustainable Procurement* can also be downloaded for free at: [www.steelconstruction.info](http://www.steelconstruction.info)

## Weathering steel footbridge spans Kidderminster main line and heritage railway

Working on behalf of Network Rail, Adey Steel has completed the fabrication, supply and installation of the new Severn Valley Footbridge at Kidderminster.

Replacing an old wooden bridge, the new footbridge is located to the south of Kidderminster railway station and spans both the main line railway and adjacent heritage Severn Valley Railway.

Weighing in 38t and spanning 34m, the weathering steel structure's natural patina



effect, is said to be in keeping with the historic site and the steam trains that pass beneath it. The bridge also provides better access to the stadium of the local football club, Kidderminster Harriers.

The completed bridge was delivered to site and installed, using a single mobile crane, during a weekend possession of the railway.

Adey Steel Project Manager Stuart Gray, said: "I am very proud to have overseen the project management and installation of the Severn Valley Footbridge as this was my first project since starting with Adey Steel in June 2022.

"Being able to deliver something that ties in perfectly to Severn Valley Railway's 160-year history, that also keeps the

community and visitors connected to Kidderminster's past, has been a fantastic experience, especially as I know it will be there for future generations to use and enjoy.

"Over all, the project went well, in particular the coordination of the rail possessions that minimised the impact on the historic site."



Working on behalf of BAM Construction, Elland Steel Structures has fabricated, supplied and erected 760t of steelwork

for the new North Brent School in London.

Due to the confined nature of the

inner-city site, the project design team has had to deviate away from a traditional three-storey building arrangement and stack all of the school's amenities into one large five-storey steel-framed structure.

The design includes fourth floor sixth form teaching spaces that are positioned in between a triple-height ground floor sports hall and a rooftop multi-use games area (MUGA).

The sports hall is spanned by a series of 18m-long x 3m-deep trusses that create column-free space and also support the smaller column grid pattern required for the teaching spaces above.

The main columns throughout the scheme are spliced at third floor slab level, and in this part of the structure the top members protrude above the

teaching floor and support a brick clad wall that surrounds the MUGA. A netting system will span across the top of the rooftop sports zone, allowing it to be an outdoor area open to the elements, but preventing balls from escaping.

Adjoining the sports hall/sixth form block, there is a bridge structure that connects it to the main L-shaped teaching building.

Further highlighting the scheme's efficient stacked-up design approach, the teaching block incorporates a double-height main hall at first floor. A series of 18m-long x 600mm-deep plate girders span the hall and support the columns for the third and fourth floor classrooms above.

North Brent School is scheduled to open in time for the autumn 2023 term.

# Sellafield names key steelwork delivery partners

Severfield Nuclear and Infrastructure and William Hare have been appointed key delivery partners with the Sellafield Programme and Project Partners.

The 17-year framework will see the Bolton and Bury based firms provide steelwork to major projects on the Cumbrian nuclear site.

Sellafield is one of the largest infrastructure projects in the north, supporting 60,000 jobs. The birthplace of the UK nuclear industry, the site is now focused on nuclear decommissioning and waste management.

The steelwork package is the 5th key delivery partner supplier framework to be awarded by Sellafield and includes structural steelwork, steel frames, general steelwork, secondary steelwork, structural metalwork, general metalwork, [metal decking](#), and metal walkways and [edge protection](#).

Stuart Mitchell, Director of Severfield said: "We're delighted to have been



awarded a place on the Programme and Project Partners framework to deliver structural steelwork major projects over the next 17 years.

"Severfield has been present on the Sellafield site for over 13 years having worked on multiple major projects.

"This secures Severfield's future on the Sellafield site and gives us the opportunity to bring the people, governance and innovation that has made us the largest structural steelwork contractor in the UK to

the partnership."

Craig Arnold, Director at William Hare, added: "We welcome this opportunity to consolidate 40 years' experience at the Sellafield site with the integration of our bespoke, optimised structural delivery process into the Programme and Project Partners strategy.

"This will bring both value and certainty of outcome into Sellafield projects as well as opportunity and support for the local community."

# New Galashiels Academy gets planning permission

Planning permission has been granted for the [construction](#) of a state-of-the-art campus in Galashiels, marking an important next step in the replacement of the outdated existing building.

Designed with involvement from the community, the campus will benefit the

wider community by providing an active landscape with opportunities for team sports, exercise classes, and routes for walking and running.

The plans detail the development of a transformational campus offering open-plan and modern [learning environments](#)

which will also provide a variety of versatile spaces for use by the wider community.

Internally, this modern learning space will see core teaching and community spaces arranged around a vibrant central spine through the building encouraging collaboration, creativity and socialising.

Construction is scheduled to begin next year with the new facility to be constructed while the existing school remains operational, avoiding significant disruption for pupils. The entire development is due to be completed in 2025.



# Plans revealed for Liverpool Street Station offices

A new 16-storey [office](#) and hotel development that will span over a transformed Liverpool Street Station in London has been revealed.

With an aim to start [construction](#) work in 2025, the scheme's developers – Sellar and Network Rail – are due to submit their plans to the City of London Corporation within the next couple of months.

The 16-storey structure will include 10 office floors, a six-storey [hotel](#) and a roof garden occupying the uppermost levels.

Sellar Chief Executive James Sellar, said: "Our proposals for a sustainably

developed office, hotel and [leisure scheme](#) above the station will enable the £450M vital station upgrades at no cost to passengers or the taxpayer.

At Liverpool Street, we aim for this to be one of the greenest destinations in the Square Mile with significant new spaces for the public. Our plans give Hope Square outside the station a new civic grandeur. The roof garden will have a swimming pool and sports courts, which we want to be used by the entire community, including local schools, and there will be new public cultural spaces in the former Great Eastern Hotel."



## NEWS IN BRIEF

**Willmott Dixon** has been selected as the preferred contractor by Thames Valley Police for a state-of-the-art forensics centre as part of a wider improvement programme. The purpose-built centre in Bicester will become the main forensics hub for the force, containing laboratories, new digital technologies and dedicated training facilities.

Main contractor **Speller Metcalfe** has been awarded an £18M project to build a combined police and fire services hub in Redditch. The building for West Mercia Police and Herefordshire and Worcestershire Fire and Rescue Service has gained planning approval to allow work to get underway in the coming months.

Angus-based property developer **DJ Laing**, has started work on Victoria Green, a multi-million-pound project on the western gateway to Carnoustie, which will provide modern business and [industrial units](#) on the initial 14-acre site. The new business park will provide an opportunity for new and existing businesses to locate within the popular coastal town and is adjacent to the A92 road network close to Dundee.

A planning application has been proposed to **Stoke-on-Trent** council for its two-phase Etruscan Square development. The regeneration scheme would deliver nearly 300 homes, a [hotel](#) and a 3,600-capacity [arena](#) in the Hanley area of the city centre.

Vauxhall's former aftersales warehouse in Luton, Bedfordshire, is to be transformed into a 111,500m<sup>2</sup> [industrial](#) and logistics park after developer **Goodman** secured outline planning permission for the scheme. The development is targeting a [BREEAM](#) 'Excellent' rating and A+ EPC, while planned [sustainability](#) features and investment in renewable energy technologies such as full rooftop solar photovoltaic panels (PV) will support customers in achieving their sustainability goals.

## PRESIDENT'S COLUMN

I think we can all agree that we've traded through a very difficult and unstable couple of years. One wonders how the next two years will pan out, especially if the analysts are using data from an unstable period to predict the future. Interpolation of data is easy, extrapolation of data is almost always inaccurate. The best advice I've read is to ignore all the data from the COVID-19 period and concentrate on the data pre-COVID-19. The excess money pumped into the global system to support the problems caused by COVID-19 was \$17 trillion. Some of this excess money is still in the system, but we should brace ourselves for some mild recessions before the global economy can rebalance by 2024.



We've all seen high inflation figures in recent years, and they would have been as high as 13% without the energy price guarantee being in place for homeowners, although I'm saddened to say there is no real effective help available for structural steelwork contractors (that have a production facility). I have been told however to expect inflation to reduce to between 3 to 5% in a year from now. Interest rates are expected to be around 4% for some time, so business' that have significant debt will be likely to suffer the most.

Unless you have been "off grid" for a number of years you'll know that the UK is short of 3.5 million workers. This hasn't helped with 600,000 fifty-five- to sixty-year-olds retiring early in the last nine months. The latter has shocked the government, but with a rethinking of the work life balance and a very generous low interest period since 2009, many of these people have worked hard and paid their mortgages off early. I'm not quite sure how you can incentivise people to work when they don't want to. After all successive governments haven't been able to do that with people having very little money, how are they going to do it when a couple has built up a nice little nest egg and can afford to retire. It is also thought that unemployment will rise by 500,000 in the next year, but it won't help the overheated job market.

UK investment is now 17.5% of GDP, which is 27% less than its immediate neighbours, as most of the leading countries have that figure in the low to mid-twenties. It's not surprising to me that investment is down in the [construction](#) industry. Most of us are struggling to make a decent return, competition is fierce and the standard forms of contract are so heavily modified to the detriment of the Tier 2 sub-contractor that if they were a public contract they would be deemed unfair. Retentions in the form of cash or retention bonds are as troublesome now as they have ever been. I've always thought that to remove retentions would need government intervention. It will be difficult to persuade government to act on retentions when you hear one leading MP being recently quoted as saying, "companies affected by retentions should just put that money onto their price". If only it was so simple!

**Mark Denham**  
BCSA President

Reference: Economic statistics from Economic Update December 2022, Roger Martin-Fagg

## Three over-station central London schemes planned by TfL

Transport for London (TfL)'s wholly-owned commercial property company, TTL Properties Ltd (TTLP), has announced it has selected Helical as its preferred investment partner for three over-station commercial developments.

The partnership will see the delivery of new high-quality and sustainable office space above or close to Bank, Paddington and Southwark stations. All three sites are said to have full planning permission to deliver [commercial office developments](#) that provide exceptional workplaces

and positively impact the local community.

Bank Over-Station Development (pictured) - located above the new station entrance on Cannon Street, will be an eight-storey development, along with a basement. A start on site is envisaged for next year.

Paddington Over-Station Development, located by Grand Union Canal and close to the new Elizabeth line station at Paddington, will be a 19-storey building incorporating both commercial and retail space. A start on site date is anticipated for 2026.



Southwark Over-Station Development - located above Southwark Tube station on the Jubilee line, will be another 17-storey building which is set to start in 2025.



## Work begins on Blackpool civil service office

Work has started on a new office building, which forms part of the £350M Talbot Gateway regeneration that is transforming the heart of Blackpool town centre.

VINCI Building, nationwide placemaker, Muse, and its partner, Blackpool Council, have started

work bringing forward a 20,000m<sup>2</sup> highly-sustainable [office building](#) for the civil service.

More than 3,000 public servants will relocate to the striking, seven-storey regional hub, when it completes in 2025.

The new offices will generate

significant new footfall to the area, boosting trade to local businesses, retailers, restaurants, cafes and [leisure facilities](#), alongside a wealth of new job opportunities for local people.

Leach Structural Steelwork are fabricating, supplying and erecting the steelwork for the project.

Alan McBride, Projects Director at Muse, said: "We're pleased to appoint VINCI Building and to start on site building this fantastic facility on behalf of Blackpool Council.

"As a business, we're committed to creating places with purpose for people that offer tangible environmental and social benefits to local communities and are looking forward to seeing the building progress."

## HS2 gets planning approval for Washwood Heath depot

Birmingham City Council has given approval for HS2's Washwood Heath Depot, north-east of Birmingham city centre.

The facility will be where HS2 trains will be maintained, serviced and stored when not in use, and includes the Maintenance Building, Network Integrated Control Centre (NICC) and Cleaners and Drivers Building.

All the buildings have been designed to celebrate engineering and provide sustainable working, as well as outdoor amenity spaces for staff.

The Maintenance Building will

be the primary hub of operations within the site, used to maintain the HS2 train fleet along with facilities to store materials and equipment. It includes office accommodation, workshops and staff welfare facilities.

The Network Integrated Control Centre will oversee the whole HS2 network and is located

centrally within the Washwood Heath depot site. This will be a standalone building, designed to accommodate the operational and management functions of the HS2 network.

The Cleaners and Drivers Building is located in the depot's western area and will host facilities for train servicing teams and driver training. This building will be linked to the stabling yard area, where trains will be cleaned and replenished, ready for passenger service.







## Thermal breaks prove to be vital in Claridge's redevelopment

Farrat, the global specialist in the design and manufacture of vibration control, thermal isolation and precision levelling solutions, has supplied its products to the redevelopment of the five-star Claridge's hotel, as featured in the BBC TV documentary series *The Mayfair Hotel Megabuild*.

Claridge's, one of London's most

luxurious hotels, which was originally opened in 1812, has completed a seven-year redevelopment project. The works have included 5-storey deep basement with a spa and pool, and a new four-storey roof top extension with 72 suites.

All of the construction work was carried out while the hotel remained open to guests and so noise had to be kept to a minimum. Farrat supported the project team with specialist technical advice,

resulting in the design and supply of a series of steelwork isolation pads and acoustic vibration solutions, specifically developed to prevent construction noise travelling through the structure.

The company's structural thermal break product TBK was also used within the construction of the swimming pool area to thermally separate structural connections, thereby preventing heat loss in the building envelope. Farrat also

worked on the new ballroom (pictured), supplying the specialist high-performance acoustic floating floor.

Neil Wilson Senior Project Delivery Manager at Farrat commented. "Claridge's is an institution within London, so we were delighted with the results from the work put in by our team ensuring the hotel could maintain its high standards through innovative acoustic and vibration isolation design."

## Somerset-based steelwork contractor welcomes MP as expansion plans begin

Littleton Steel has welcomed its local MP and former Secretary of State for Business, Jacob Rees-Mogg to its Chew Magna facility in Somerset.

During the visit, Mr Rees-Mogg was given a tour of the site, meeting all 16 members of staff and learnt about current projects and how the firm looks to expand its services in the near future.

Currently in rented premises, Littleton Steel has recently acquired its own manufacturing facility, located near to Junction 21, on the M5

motorway at Weston-super-Mare.

"We were delighted to welcome Mr Rees-Mogg MP to visit our workshop and to discuss the challenges and opportunities being faced, not only by our business but the steel and construction industry more widely.

"He was particularly impressed with the technical demonstration he received in the workshop and the insight he gained into the detailing process," said Andy Raines, Director of Littleton Steel.



## Plans in for pharmaceutical research HQ in Central London

Mace has been appointed as principal contractor by London-based developer

Precis Group to deliver pharmaceutical company MSD's UK headquarters and

discovery centre on Euston Road, central London.

The specialised life sciences centre will create over 1,000 construction jobs and, once complete, it will be used for breakthrough research focusing on diseases of ageing and human biology to discover new life-saving medicines.

Alongside the specialised life science space, it will also deliver meaningful benefits for the local community including an education and outreach centre, publicly accessible auditorium and a new step-free

entrance for King's Cross station.

Designed by architects Allford Hall Monaghan Morris (AHMM), the ten-storey development will deliver circa 16,700m<sup>2</sup> of net lettable space for MSD.

It has been designed using sustainable materials and includes an innovative double-skin facade to reduce solar gain. Carbon emissions generated through construction, operation and future fit-out will be reduced.

Construction will begin in April, with completion expected at the end of 2025.



## Diary

For SCI events contact Jane Burrell, tel: 01344 636500 email: [education@steel-sci.com](mailto:education@steel-sci.com) web: <https://portal.steel-sci.com/trainingcalendar.html>



Tue 18 April 2023

Design for Torsion

Webinar, SCI/BCSA Members only

This webinar covers the design steps, best practice and practical recommendations for members and connections when torsion must be accommodated in design. The examples and design charts in SCI publication P385 form the basis of the advice, together with simplified approaches which can be useful as a conservative assessment.



19, 20, 25, 26 & 27 April 2023

Steel Building Design to EC3

Online

An overview of the Eurocode provisions for steel building design. The course focuses on orthodox construction, covering the primary design issues. It follows the process of determining actions, considering combinations of actions, frame analysis and the assessment of second order effects. The course will demonstrate how the resistance of members are calculated, and how they can be extracted immediately from resources such as the 'Blue Book'.



Tue 2 & Tue 9 May 2023

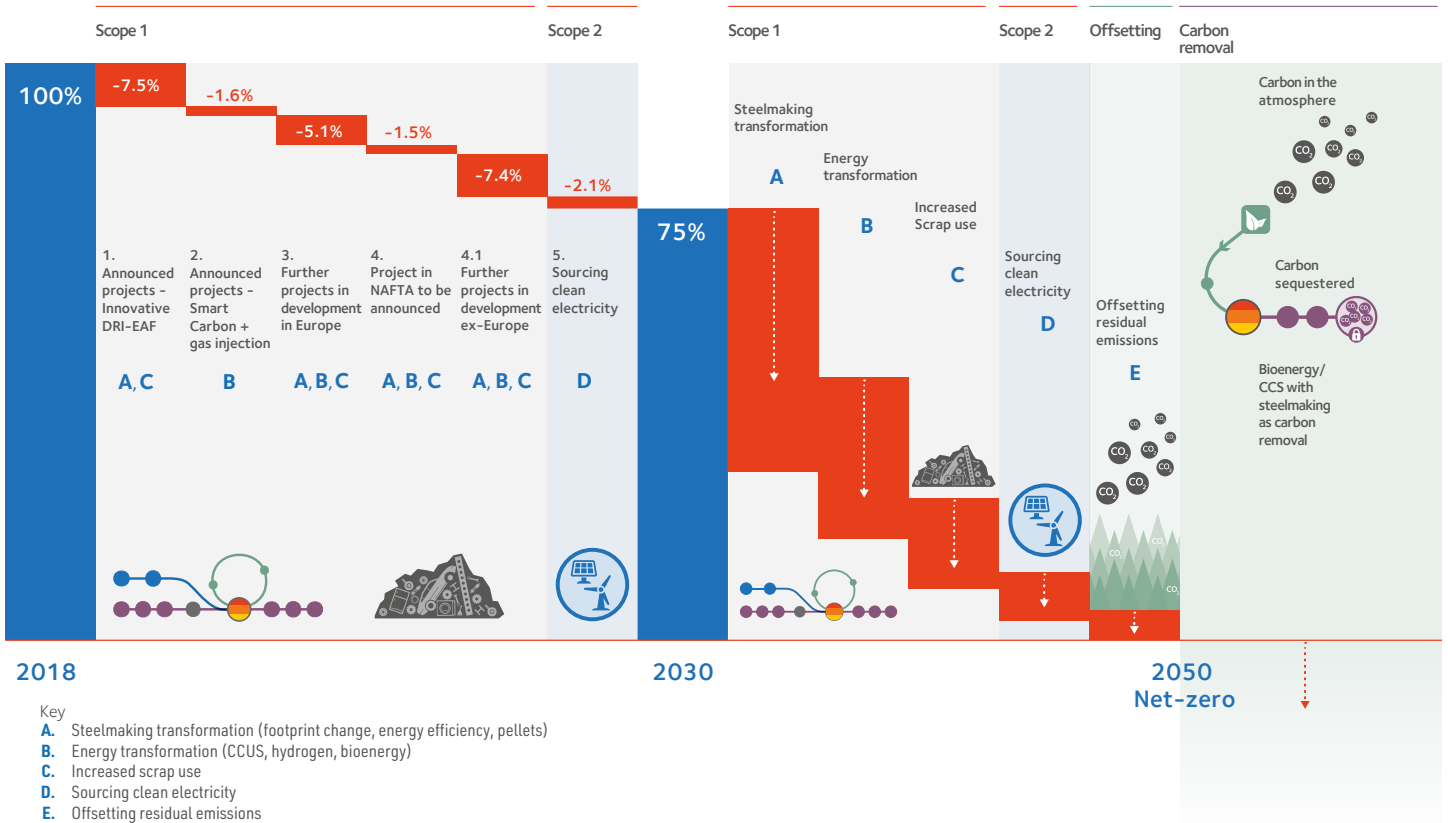
Design of Steel and Composite Bridges

Online

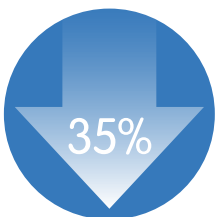
Part One outlines the design of steel and concrete composite I girder and box girder bridges according to the Eurocodes. It focuses on the cross-section verifications required for the ULS and the SLS, with consideration to both the temporary (construction) stage and the final condition. Part Two introduces fatigue and the methods used for the assessment of bridges. Examples will be used to discuss structural detailing and the fatigue verification of various bridge parts.

# Delivering on the promise: Progress towards 2030 carbon reduction targets

In ArcelorMittal's second climate action report published in July 2021, interim 2030 CO<sub>2</sub>e reduction targets of 25% globally and 35% in Europe were announced, together with a roadmap that will be used to deliver the savings in emissions, towards net zero in 2050.



New Group target of a 25% reduction in CO<sub>2</sub>e emissions intensity by 2030 (scope 1 and 2)



Europe target increased to 35% reduction in CO<sub>2</sub>e emissions intensity by 2030 (scopes 1 and 2)

Our roadmap features five levers – in essence, groupings of actions and initiatives – that act as stepping stones to achieving carbon neutrality by 2050. These are: **Steelmaking transformation (A)**, **Energy transformation (B)**, **Increased use of scrap (C)**, **Sourcing clean electricity (D)** and **Offsetting residual emissions (E)**.

We will now focus on the first four, for which significant progress has been made in 2022.

### Lever A | Steelmaking transformation

- Hot Briquetted Iron (HBI) plant acquired (Texas, US), securing high-quality metallics for low-carbon steelmaking;
- Ground broken at Dofasco, Canada on a \$1.8 billion decarbonisation project that will see the construction of a 2.5mtpa hydrogen ready DRI-EAF facility reducing site emissions by 3mtpa;
- Continued progress on planned key European DRI-EAF plants in Belgium, France, Germany and Spain, which will become operational between 2025 and 2030.

### Lever B | Energy transformation

- Inauguration of the €200 million carbon capture and utilisation (CCU) project in Ghent;
- Memorandum of Understanding signed with RWE to build and operate offshore wind farms and hydrogen facilities that will supply the renewable energy and green hydrogen required to produce low-emissions steel in Germany.

### Lever C | Increased use of scrap

- Acquisition of four specialist scrap metal recyclers in Germany, The Netherlands, Poland and the United Kingdom.

### Lever D | Sourcing clean electricity

- Launch of three new product offerings in the XCarb® recycled and renewably produced family.

### XCarb®, our programme aimed at carbon neutral steel by 2050

Launched in 2021, XCarb® is the name for ArcelorMittal's ongoing global programme of steelmaking innovation that supports our ambition to reach net zero by 2050. In the update

Over the course of the last two years ArcelorMittal has invested significant time and effort to roll out the ResponsibleSteel™ audit and certification process at its sites, so that specifiers and purchasers can be confident that the steel for their project has been responsibly sourced.

## Minimising embodied carbon in buildings: the outstanding impact of low CO<sub>2</sub> steel frames

The structure can account for more than 50% of the embodied carbon of a building. Reducing the frame footprint is key to delivering a low carbon project.

### XCarb® recycled and renewably produced

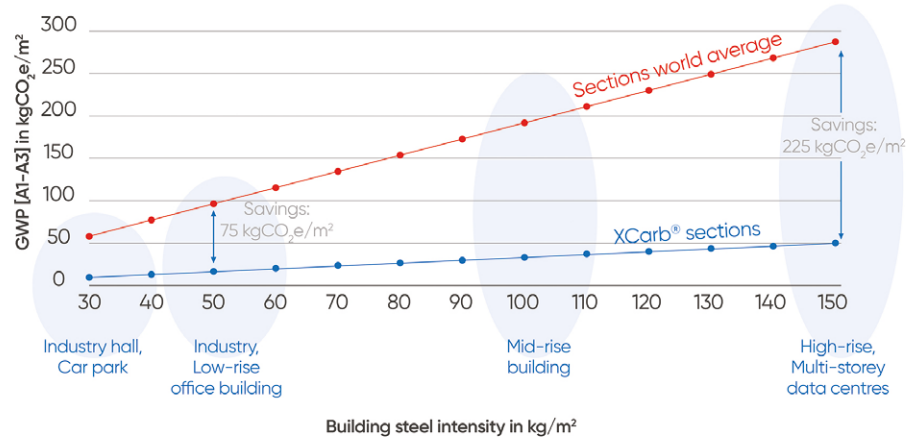
Sections are the most popular and versatile way to build steel frames all over the world. XCarb® recycled and renewably produced sections allow up to 83% CO<sub>2</sub>e reduction compared to the world average for sections or current plate products<sup>1</sup>.

#### Potential benefits

- Industrial building and low rise offices (steel intensity of 50 kg/m<sup>2</sup>)  
Saving : 75 kgCO<sub>2</sub>e/m<sup>2</sup>
- High rise and multi-storey data centres (steel intensity of 150 kg/m<sup>2</sup>)  
Saving : 225 kgCO<sub>2</sub>e/m<sup>2</sup>

### Capitalising on high strength steel: a further reduction in CO<sub>2</sub> footprint

Where axial compression or tension is dominant, high



strength steel can be a perfect opportunity to use less material, design out mass and reduce embodied carbon.

Due to the more favourable yield stress to thickness relationship compared to S460, HISTAR® 460 sections compound these savings particularly when flange thicknesses are 40mm or above. An

additional 15% reduction in mass is often possible. This benefit is now being recognised and understood by designers and used as an effective tool to reduce mass, carbon and cost. ■

1. <https://worldsteel.org/steel-topics/life-cycle-thinking/lca-eco-profiles/>

below we mark the progress made and the successes of the first three XCarb® initiatives in the second anniversary of the programme

### XCarb® Innovation Fund

During 2022, the XCarb® innovation fund continued to invest in companies developing breakthrough technologies that will accelerate the steel industry's transition to carbon neutral steelmaking. Further investments were made in carbon capture and re-use specialist Lanzatech and energy storage startup Form Energy. Most recently, the fund invested \$36 million in Boston Metal who are developing and commercialising a patented Molten Oxide Electrolysis (MOE) platform for decarbonising primary steelmaking.

### XCarb® Green Steel Certificates

They are a mechanism that allows companies to report reductions in their scope 3 emissions from the materials that they procure from us, in accordance with the GHG Protocol Corporate Accounting and Reporting Standard. In 2022, the volume of XCarb® green steel certificates offered to the market increased to 600 kt as a direct result of measured and audited (by DNV) emissions reductions made at the company's blast furnace sites.

### XCarb® Recycled and Renewably Produced

XCarb® recycled and renewably produced products are made in an electric arc furnace charged with up to 100% recycled steel and powered using 100% renewable electricity coming from wind and solar sources connected to the same grid as the ArcelorMittal plant that manufactures them.

ArcelorMittal Europe – Long Products was the first business within the company to offer this low-carbon emissions steel, starting with sections and merchant bars, followed by sheet piles and rebars. XCarb® recycled and renewably produced sections have featured in a number of UK projects including Worship Square and Canada Water, and are now available from stock or directly from the mill.

As of March 2022, ArcelorMittal Europe – Flat Products also started producing XCarb® recycled and renewably produced products including hot rolled coils, organic coated steels, Magnelis® and press hardenable steel (PHS) grades. Hot-dip galvanized steel with Magnelis® coating is the feedstock for composite metal decking and light gauge steel and has an [A1-A3] of 797 kgCO<sub>2</sub>e/t, as certified by an EPD. This new product offering opens up the possibility of reducing the embodied carbon in typical 150mm deep composite slabs by 40%

### ResponsibleSteel™

Specifiers and purchasers of steel need to have confidence in the provenance of the products procured and that appropriate standards of governance have been applied throughout the route to market. ResponsibleSteel™ sets standards appropriate and specific to steel manufacture (both primary and secondary) for a broad range of environmental, social and governance issues. It also requires, in principle 10, that companies and sites have a clear plan to decarbonise aligned with the Paris agreement and that this policy is publicly available, acted on, measured and audited.

Over the course of the last two years ArcelorMittal has invested significant time and effort to roll out the audit and certification process at its sites, so that specifiers and purchasers can be confident that the steel for their project has been responsibly sourced. ■

ArcelorMittal is a headline sponsor of Steel for Life



# Leisure in the frame

Speed of construction and the requirement for large column-free areas were the reasons for choosing a steel-framed solution for a new leisure centre in West Drayton.



Structural steelwork leads the way in the leisure centre construction sector. It's **speed of construction**, coupled with the ease and efficiency the material can create **column-free spaces**, which are always needed for leisure centre's sports halls and pool areas, makes the material the preferred framing solution.

Currently, the sector is buoyant, helped in part as a raft of 1970s and 80s built leisure centres, up and down the country, are being replaced. At the same time, local authorities are also investing in new sporting and **leisure facilities**, giving the sector an additional boost.

Highlighting the benefits of structural steelwork, the material is currently playing a vital role in the construction of a new leisure centre to serve the residents of Yiewsley and West Drayton in the London Borough of Hillingdon.

The Platinum Jubilee Leisure Centre will house a 25m-long swimming pool, training pool, splash-zone, four-court sports hall, gym and health suite, soft play area, climbing wall, youth zone, a café and terrace, and even a rooftop 3G turf football pitch.

Cllr Susan O'Brien, Hillingdon Council's Cabinet Member for Families, Education and Wellbeing, says: "It is fantastic news for residents that this brilliant new leisure centre is now one step closer.

"Once complete, Hillingdon will have an enviable offering of leisure facilities serving everyone, from elite sportspeople, to those just trying to lead a more active lifestyle."

Work onsite started in April 2022 with the demolition of some existing buildings that

included a youth centre and a family centre.

**Construction** for the new building was then able to commence during the summer. Preliminary works for main contractor Buckingham Group included the installation of foundations, which are a mix of pads and piles, and the excavation and concreting of the basement and main swimming pool.

Some of this work was still ongoing when Caunton Engineering started the steelwork programme. In total, the company is **fabricating**, supplying and erecting 650t of steel for the project.

"It's a tight site with very little space, so all of our work has been coordinated with other trades," explains Caunton Engineering Contracts Manager Kevin Meers.

"To help keep the site clear of obstructions, most of the steelwork was **brought to site** on a just-in-time basis."

The leisure centre is one large **braced steel frame**, but for design purposes it can be divided into three separate parts; the main swimming pool area, the changing rooms and sports hall, and the main entrance and office zone. **Stability** is provided by strategically-positioned cross bracing working in conjunction with the **diaphragm action** of the completed floors.

The main swimming pool frame was the initial steelwork area to be **erected**. Creating the required column-free space is a series of 25m-long x 1.2m-deep cellular beams. For ease of transport, the beams were fabricated and delivered in halves (each 12m-long) and assembled onsite, before being lifted into position.



There is a mixture of **flooring solutions** throughout the project and the cellular beams over the main pool support **precast planks**, which were chosen as they were considered as the best flooring option for the completed hall's corrosive atmosphere. **Cellular sections** were chosen as they will accommodate air ducts within their depth.

As well as forming the pool hall's column-free space, the roof of this part of the leisure centre also accommodates an outdoor multi-use games area (MUGA).

"When designing the roof beams, we had to take into account deflection and **vibration** that would be generated by the sports pitch during use, but surprisingly it will be less than a traditional office floorplate," explains Caunton Engineering Project Engineer Julian Harrold.

The columns around the pitch protrude above the pool hall's roof by 8m and will support **masonry cladding**. The columns also support a series of 12m-long roof beams that span the pitch and will support a netting system that will prevent any stray balls from leaving the zone.

Sat adjacent to the main pool area is another



The basement will accommodate the pool's water treatment plant.

large column-free zone that accommodates the training pool and splash zone. A series of 17m-long rafters creates this part of the Centre.

All of the pool's water treatment plant will be located inside a basement that is positioned below an area next to the wet zone. Sat above the basement level at ground floor are changing facilities, while on the first floor there is a double-height space for the four-court sports hall. The hall is spanned by a series of 20m-long rafters that were brought to site in halves.

The area, which sits atop the leisure centre's basement uses [metal decking](#) for its composite flooring solution. Because of its proximity to the corrosive environment of the pools, the decking has been coated.

The third distinct part of the leisure centre is the front portion, which is a two-storey area, incorporating the main entrance, offices, a gym, spinning studios and a café. The flooring solution for this part of the structure is [composite solution](#) utilising galvanized metal decking.

The Platinum Jubilee Leisure Centre is scheduled to open in 2024. ■



Structural steelwork was chosen as it offered the most efficient method to form the long span areas.



The MUGA under construction (left) and how it will look once complete (right).

## FACT FILE

### Platinum Jubilee Leisure Centre, West Drayton

Main client: Hillingdon Council

Architect: Hunters Architects

Main contractor: Buckingham Group Contracting

Structural engineer: Buro Happold

Steelwork contractor: Caunton Engineering

Steel tonnage: 650t





# It's a wrap

A steel-framed iconic public artwork that surrounds an electrical substation in north London has been unveiled.

Located adjacent to the busy A406 North Circular at the junction with the M1 motorway, a 21m-high and 52m-long permanent artwork has been unveiled as part of the Brent Cross Town urban regeneration project.

Created by artist Lakwena and architects IF\_DO, the steel-framed artwork that incorporates a colourful **façade**, wraps around an electrical substation creating a new landmark for north London. It is estimated that some six million people each year will see it from the road and the nearby rail links.

Brent Cross Town, which is being delivered in partnership by Related Argent and Barnet Council, is being designed to be a net zero carbon development by 2030, and investment in efficient

new infrastructure is a key part of this.

The substation will supply electricity to all of Brent Cross Town, including the 6,700 new homes, **offices** and new retail and **leisure spaces**, as well as to the low-carbon district heating/cooling networks.

The artwork is formed with a series of **CHS** columns, up to 21m in length that are linked by box section members, the steel frame supports digitally-printed lenticular aluminium panels that create a kaleidoscopic visual effect to emphasise the idea of movement as viewers move around the structure.

The **steel erection** programme had to be meticulously planned as the site is very constrained and sits between a busy road and one of the main railway lines serving central London.

Bourne Rail & Special Projects Divisional Director Craig Galway, says: "It took five weeks to erect the steel frame and then a further nine weeks to install the panels. Each panel is connected to the frame via bracketry. They measure 500mm x 4.5m and because of the colour sequence each one is unique."

The **design** team drew on influences as varied as Eadweard Muybridge's motion studies and historic forms of roadside structures, such as billboards, funfairs and industrial sites that make use of a skeletal frame supporting a brightly coloured skin.

Lakwena, who is known for her joyful technicolour murals and graphical text poetry, has applied her signature colour, pattern and language to the design. The inspirational statement "Here we come, Here we rise and shine" reflects the ambition to inspire and bring people together in the local community.

Lighting plays a key part in the design of the artwork and specialists Michael Grubb Studio

Watch videos of this project on the [newsteelconstruction.com](https://www.newsteelconstruction.com) website.

## FACT FILE

### Brent Cross Town public artwork

Main client: Related Argent, Barnet Council

Architect: IF\_DO

Main contractor: Galldris

Structural engineer: Arup

Steelwork contractor: Bourne Group

Steel tonnage: 100t



Each of the coloured panels are unique in order to complete artwork's colour sequence.



The steel frame is formed with a series of CHS columns tied together by box sections.

*"Combining architecture, infrastructure and art, it has been a wonderfully collaborative process from the start"*

Thousands of rail passengers and road users will see the artwork everyday.

Photos: John Sturrock

designed the lighting scheme to be discreet and attract attention to the artwork during the day and at night. The lighting creates a halo around the façade's wrap which filters down through the structure, allowing the light to fade away at lower level.

In addition to being a colourful and dynamic beacon for north London, the electrical substation and its wrap-around artwork are also notable for sustainable innovations. Project engineers, Arup, led the design team with a focus on minimising the environmental impact of the structures.

Putting **circular economy** principles into action, approximately 50% of the structural steelwork used for the artwork was salvaged from unused oil pipelines, reducing **embodied carbon** emissions by over 40%.

"As a founding member of the Climate Group SteelZero initiative, we are committed to minimising negative environmental impact and ensuring the projects we manage endorse our forward-thinking principles and practices. Steel

currently delivers to a truly circular economy with its unique re-purpose and near total **recyclability**. We believe that structural steel will maintain its foremost position as the economic and effective **construction** material of choice,' adds Mr Galway.

Nick Searl, Partner at Related Argent, says: "This amazing piece of public art, is set to become a great landmark for London in this highly visible location. It sets the tone for the wider Brent Cross Town neighbourhood and demonstrates our commitment to art, culture and low carbon development."

Mayor of London, Sadiq Khan says: "Lakwena has created an incredible artwork that brings together creativity and **sustainability** and will be enjoyed by millions of people. London is a world-class cultural capital and this major addition to our public realm in the heart of Brent Cross is another example of how we're working together to build a better London for everyone."

As well as creating a visually-pleasing landmark,

the project has also brought back to life a piece of brownfield, ex-industrial land with the creation of a landscaped embankment.

Recently planted trees and a wildflower meadow provides a naturalistic setting to the artwork, as well as increasing site biodiversity, enhancing local wildlife corridors and tying in with the wider network of green infrastructure within the masterplan and surrounding area.

Summing up, Sarah Castle, Director at IF\_DO, says: "It is rare to have the opportunity to work on a project of the scale and ambition of this, and to be able to realise it with such conceptual purity.

"Combining architecture, infrastructure and art, it has been a wonderfully collaborative process from the start, with IF\_DO manipulating form and shape, and Lakwena exploring colour and poetry. The structure is inspired by movement: it is designed to be viewed both in motion by the millions that pass the site by train and by road, and to convey a sense of motion as it is viewed from across the neighbourhood." ■

# Top marks for steel

Sustainability is top of the agenda for the project and the school will be net zero carbon in operation.

The use of structural steelwork has provided a school project in Wigan with the solution for a regular classroom column grid pattern and long spans for the sports and assembly halls.

One of the major priorities for the Department for Education (DfE) is its transformative School Rebuilding Programme, with 400 schools across England now provisionally confirmed for the programme.

The first 50 projects were announced in February 2021 and included four schools in the Wigan area (a further three Wigan schools were announced in December 2022). One of this quartet is Fred Longworth High School in Tyldesley, where the steel erection programme has recently been completed.

The £24M contract will see BAM Construction create a new steel-framed three-storey teaching block and adjoining sport hall, expected to be handed over in Autumn 2023. Positioned adjacent to the existing school, the new school buildings will be net zero carbon in operation and are being constructed with sustainability measures in place. A steel-framed solution was chosen for the project for its speed and quality of construction, which is a criterion that is always important on educational jobs.

Overall, the project has been split into two phases, with the initial works consisting of the construction of the new buildings, diverting a main sewer that runs across the site and the installation of new services.

“The site of the new school buildings is located on what were previously school football pitches,” says BAM Construction Project Manager Ewan Bell. “We are effectively flipping the campus, so once the new school is complete and handed over, we then demolish the old one and form new grass football pitches in its place.”

BAM’s programme also includes retaining two existing buildings, a Maths & Humanities block and an Arts block.

BAM has developed a co-ordinated traffic access and logistics plan to overcome restricted access to the site. The company has also taken steps to reduce deliveries and thereby carbon emissions by increasing the site’s storage solutions.

Once BAM had taken possession of the site, its early works included stripping the plot of its topsoil – which has been retained for future use on the scheme – and a cut and fill exercise

to level the ground.

A piling/crane mat was then installed, in preparation for a ground improvement programme and then the installation of shallow pad foundations for the project’s steel frame.

The steelwork erection programme, which was completed by EvadX in just over 11 weeks, was able to begin while some of the preliminary works were still being undertaken.

“We had to coordinate our work with other trades, as there were groundworks ongoing while we were erecting. Consequently, most of the steelwork had to be installed by a mobile crane positioned inside the building’s footprint,” explains EvadX Contracts Manager Kevin Thomas.

The majority of EvadX’s package was installed using a single 60t-capacity mobile crane, with the exception of one area containing one of the project’s three precast stairs, which required the use of a 90t-capacity unit with a longer reach.

Overall, the new school buildings form an L-shape, with the longest upright portion accommodating the three-storey teaching block, which measures approximately 80m-long × 20m-wide.

The steelwork creating the floors and roof for the teaching block consists of a series of secondary beams that span perpendicular to the perimeter walls, which are supported on primary beams and columns located along perimeter and corridor walls.

A series of 8m-long members spans the classrooms



"Great things already happen here and this rebuilding project will complete our property strategy to create a modern, efficient and engaging learning environment."

#### FACT FILE

**Fred Longworth High School, Tyldesley near Wigan**  
Main Client: Department for Education  
Architect: BAM Design  
Main contractor: BAM Construction  
Structural engineer: BAM Design  
Steelwork contractor: EvadX  
Steel tonnage: 520t

and shallow 4m-long sections spans the corridor facilitating adequate space for [service distribution](#).

The steel beams support a composite flooring solution, consisting of [metal decking](#) and a concrete topping, which has been used throughout the project, together with lightweight metal roof decking over the double-height sports hall.

The ground floor of the teaching block accommodates a dining hall, with a series of vocational training workshops on the other side of the central corridor, while above this, the first and second floors both consist of two rows of classrooms.

The entire new building is one large frame, without the need for any movement joints. [Structural stability](#) is derived from a combination of the composite floor's [diaphragm action](#) and roof bracing in areas of lightweight roofing and vertical bracing positioned around the building.

"The school has been designed with a stacked configuration and an efficient and regular column [grid pattern](#), whereby each floor is the same," says BAM Design Associate Naresh Tailor.

"Windows in the teaching block prevented any bracing being located in the external elevations, so the [vertical bracing](#) is primarily positioned in corridors and fixed architectural locations such as stair cores and toilet areas," adds Mr Tailor.

Adding some flexibility to the scheme, where possible, bracing in partition walls between classrooms has been avoided, allowing them to be



easily removed if larger teaching spaces were needed in the future.

One end of the teaching block connects to a two-storey area that houses the main entrance at ground floor and a library on the upper level. At the other end, the teaching block also connects to the horizontal part of the L-shaped building, which accommodates the school's sport, fitness and specialist community education area.

This part of the school will have its own entrance for public access outside of normal school opening times. It is a two-storey building, that also incorporates three large full-height halls along one elevation.

The largest of these full-height, column-free spaces is a four-court sports hall, which is formed

with a series of 20m-long [Westok beams](#). Adjacent to this space there is a smaller hall, which can be used as two separate spaces, for dance in one half and a [theatre](#) in the other portion. The latter area also contains [raking seating](#) that can be used for viewing performances in the theatre.

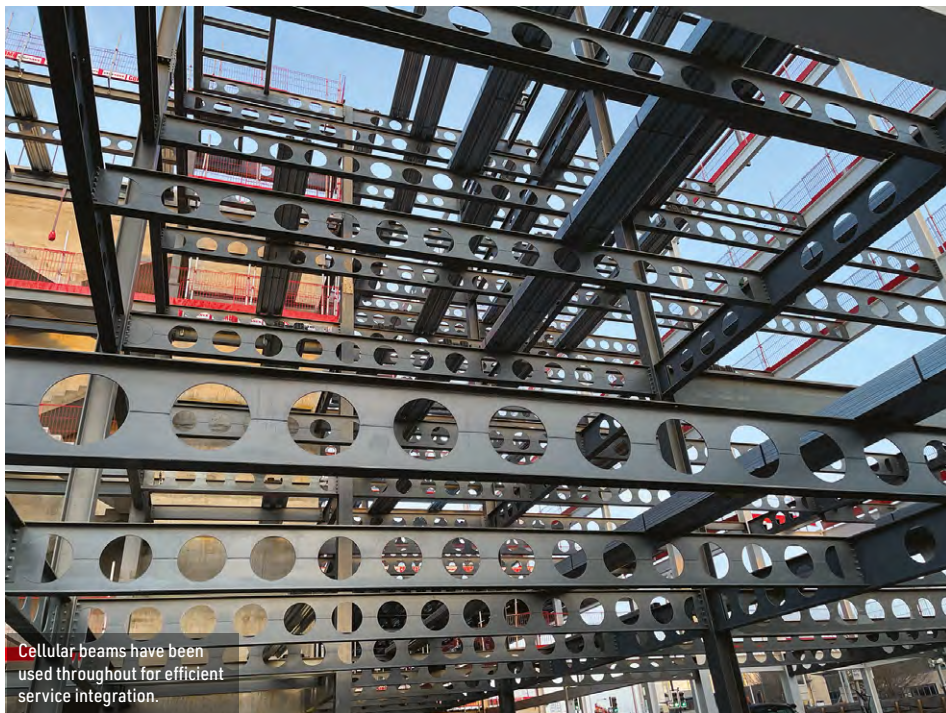
Along the opposite elevation, the two-storey building contains changing facilities and community evening classes on the ground floor, and three dance studios and computing classrooms on the upper level.

Summing up, Fred Longworth High School Headteacher Paul Davies, says: "Great things already happen here and this rebuilding project will complete our property strategy to create a modern, efficient and engaging learning environment." ■



# Dundee regeneration

A steel-framed solution has proven to be the right choice for a mixed-use project incorporating student accommodation, retail units and a new regional headquarters for BT.



Cellular beams have been used throughout for efficient service integration.



Dundee is transforming itself with the help of a 30-year masterplan.

## FACT FILE

### Greenmarket, Dundee

Main client: **Crucible Alba Group**

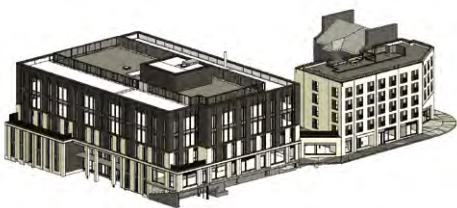
Architect: **Haus Architects**

Main contractor: **Ogilvie Construction**

Structural engineer: **Goodson Associates**

Steelwork contractor: **Hescott Engineering**

Steel tonnage: **650t**



Model showing the office building on the left, and the linked student accommodation on the right.

Once renowned for jute, jam and journalism, Dundee is today transforming its image with the help of £1.6bn of investment.

The city is in the middle of a 30-year regeneration masterplan, which encompasses 240 hectares of land stretching 8km along the River Tay. The scheme is said to be the third largest regeneration project in the UK and one of Europe's most extensive waterfront schemes.

The three J's are no longer so relevant as the jute industry has closed down and the city's famous jam and marmalade are today produced a few miles away in Arbroath, which just leaves journalism. Happily, the third J is still going strong, and DC Thomson, established in 1905, produces over 200 million magazines, newspapers and comics every year.

Aside, from journalism, the perception of the

city has changed, and today visitors are greeted with a new railway station and the award-winning V&A Dundee, both of which opened in 2018.

These are two of the most eye-catching developments of the city's regeneration, which aims to attract further investment and employment.

To this end, a number of **commercial buildings** have also been constructed, with more on the horizon.

Located a stone's throw from the station, a significant office project is currently underway. 2 Greenmarket is a prominent city centre steel-framed five-storey building that has been pre-let to telecoms giant BT as its new regional headquarters.

The office building, which aims to achieve a **BREEAM** 'Excellent' rating, is said to represent one of the largest letting deals to be completed in Dundee for a number of years.



As well as the office accommodation, the overall project includes a second building, which is also five-storeys high and will consist of 55 student studios.

Both buildings are being constructed on a brownfield plot that has been vacant for a number of years. However, historically it had had a number of uses as the main contractor discovered when they began their early works.

“When we started the groundworks and piling, we found a number of obstructions in the ground that had to be removed, including old railway infrastructure, cobbles, sea walls and various concrete foundations from previous roads and buildings,” explains Ogilvie Construction Senior Project Manager Nick Horn.

The buildings are both supported on piled foundations, which have been installed to a maximum depth of 19m. The office block’s steel

frame begins at ground floor, but as the plot sits on a slope, part of this level is basement.

The steel frame is erected around a centrally-positioned **concrete core**, which provides the stability to the building. Containing minimal internal columns for a **flexible open-plan design**, the steel frame creates spans of up to 18m.

Internal beams are all Westok **cellular beams** that support **metal decking** and concrete topping to create a composite flooring solution throughout.

“A steel frame was chosen as the material allowed the offices to be flexible with long spans, while cellular beams offered an efficient solution as they can **accommodate the services** within their depth,” says Goodson Associates Engineer Kalina Dimitrova.

“The choice of a **composite steel** frame also allows for ease of future adaptation, which maximises the lifespan of the building and

minimises its carbon impact.”

Overall, 250t of Westok cellular beams, as well as a large 5.5t transfer **plate girder** supplied by the company, have been used on this job.

Kloeckner Metals UK Westok Technical Advisory Engineer for Scotland, says: “It’s fantastic to see the benefits offered by the ribbon-cut Westok beam leveraged at the Greenmarket development.

“The lightweight and clear-span Westok solution provides a string of 400mm diameter cells. This optimum solution provides immediate flexibility and long-term adaptability to the team.”

The plate girder is positioned at first floor level and spans over a ground floor café area, allowing the space to have fewer columns and more open-plan space.

As well as steel **fabrication**, supply and **erection**, Hescott Engineering has also been responsible for supply of 76 cast-in plates for the office building’s ▶20

►19

cores, as well as the installation of precast stairs and four 10t L-shaped concrete beams that carry masonry along the main elevation.

A reoccurring challenge on many inner-city construction sites is the lack of space and this project is no different.

Hescott Engineering Director Chris Scott explains: “It is an extremely tight site. At one point, we had two 60t-capacity cranes, four MEWPs, and the tower crane working overhead to erect the office block.

“With a concrete core, positioned in the middle of the footprint, the work required some careful planning. To ensure it went well, all of the steelwork, precast concrete, decking and edge protection had to be delivered just-in-time to make sure we had sufficient material and the erectors had enough room to work.”

The confined site also made working on the adjacent student accommodation block equally challenging. A Sunday morning road closure was necessary to get the MEWPs on site for this part of the project and the steel erection was all undertaken with the site’s tower crane.

The student accommodation block (Building Two) has a hybrid design, using both steelwork and timber. The structure has a lower level steel-framed podium, which forms a basement and a ground floor that will be occupied by retail units. Above this, there are four levels of student accommodation, with a steel braced core and steel-framed central corridors.

This steel-framed central spine gives the building its stability and in conjunction with the timber framework, supports the composite flooring.

The Greenmarket scheme is due to complete by December. ■

*“A steel frame was chosen as the material allowed the offices to be flexible with long spans, while cellular beams offered an efficient solution as they can accommodate the services within their depth.”*



The offices have been pre-let to BT as a new regional HQ.



Cellular beams have created internal spans up to 18m long.

## Cast-in plates

Cast-in plates are an essential component in the common structural form of concrete core providing stability to a surrounding steel frame. Richard Henderson of the SCI considers some of the issues.

The connections between the steel frame and concrete core perform distinct functions in two separate load cases. If conventionally designed for simply supported beams, the cast-in plates carry a vertical reaction only and an eccentricity moment resulting from the offset of the reaction from the face of the concrete wall. The second function is to provide robustness to the structure by tying the beams to concrete core.

The principal parts in the component beside the plate itself are shear studs to transfer the vertical load and reinforcement to transfer the tie force into the concrete wall. The shear studs and reinforcement can be designed using existing codes BS EN 1992-1-1 and BS EN 1994-1-1.

The plates are installed during construction

of the concrete core as the name suggests and as a result are subject to the corresponding construction tolerances. Deviations in any of the six degrees of freedom are possible (although they don't have equal significance) and the effects of these must be taken into account in the design. The most significant deviations are sideways, resulting in the vertical reaction becoming eccentric to the group of shear studs, rotation about the axis of the incoming beam and in or out, resulting in a change to the eccentricity moment. The first two of these effects mean that the resistance to the vertical reaction is not evenly distributed between the shear studs in the group. The magnitude of the permitted deviations and the implications of their inevitable presence must be properly understood

by both designer and contractors.

Responsibility for the design of the cast-in plates properly lies with the designer of the concrete core because this organization is in control of the significant parameters affecting the design, such as core wall thickness, concrete strength, design and detailing of wall reinforcement. Passing the design to another party with no control over these issues would be a mistake. The design responsibility for the steelwork side of the connection should begin on the external face of the cast-in plate.

SCI produced publication P416: The design of cast-in plates in 2017 to provide a common basis for considering the design assumptions, division of responsibility and connection arrangement in the design and construction process. ■

# Sustainable Procurement supports drive to net zero

**STEEL CONSTRUCTION**  
Sustainable Procurement

STEEL for life  
BCSA



Plans to tackle the carbon-related climate emergency are in hand across industries and countries globally as the effects of climate change increasingly are evident, and sustainability is rightly becoming a key objective in any credible procurement strategy.

To assist and encourage its members and the entire supply chain on their journey to net zero for their steel construction projects, BCSA and Steel for Life have published a new guide on sustainable procurement. The aim of this publication is to highlight the numerous and varied initiatives underway in the steel construction sector that support sustainable procurement, and to provide key recommendations for specifying and procuring sustainable structural steelwork.

The initiatives covered include the 2050 Roadmap that clearly signposts the road to net zero carbon for steel construction, the new Annex J Sustainability Specification to complement the National Structural Steelwork Specification for Building Construction (NSSS) and BCSA's updated Sustainability Charter with an enhanced focus on carbon reduction.

It also illustrates BCSA's involvement in industry initiatives such as BES 6001, SteelZero from ResponsibleSteel, and CO<sub>2</sub>nstructZero, provides examples of what BCSA members are doing to minimise their own carbon footprints and concludes with a clear set of nine recommendations to ensure sustainable procurement.

Download Steel Construction Sustainable Procurement from:  
[www.steelconstruction.info](http://www.steelconstruction.info)

**STEEL**  
for life



# Stand up for Wakefield

Structural steelwork is playing a vital role in the redevelopment of Wakefield Trinity's stadium, helping to keep the project on schedule for completion during the club's 150th anniversary.



The new 2,600-capacity main stand is the central element of the stadium's redevelopment.

The Belle Vue Stadium, also known as the Be Well Support Stadium for sponsorship purposes, has been the home of Wakefield Trinity since 1879 and is one of the oldest rugby league grounds in the country.

With a long and varied history, it made the big screen in 1962's 'This Sporting Life' movie and hosted the 1922-23 Rugby Challenge Cup final. The stadium is now in the middle of a £12M redevelopment programme, which will bring it up to 21st Century standards.

Designed by AFL Architects, the plans consist of a new 2,600-capacity steel-framed east stand, the refurbishment of the north stand with new steel elements, floodlight upgrades to the latest LED technology and a hybrid grass pitch. Overall, the completion of the work will increase the stadium's capacity from its current 7,258 up to 8,866.

Measuring approximately 95m-long x 30m-wide, the new east stand forms the most important element of the redevelopment and replaces an old structure that was previously demolished as part of the scheme.

"We started on site in July 2022, which is in the middle of the rugby league season," says Morgan Sindall Project Manager Ben Steel. "As the stadium was in use during matchdays, we initially had to erect hoardings, separating our site from the pitch, before the demolition could take place."

Once the plot for the new stand had been cleared, including some asbestos removal, a platform was formed for the new structure, which

included the installation of pad foundations.

Once this work was complete, the steelwork erection programme for the new stand was able to begin. Topped with a 17m-deep cantilevering roof, the new single tiered stand is a steel-framed structure, formed with raking members that support precast units to form the seated terrace. Behind the seated area, steel beams support a metal decked composite floor to create a first-floor hospitality restaurant, kitchen and plant decks.

Commenting on the choice of structural steelwork for the stand's design, Nolan Associates Engineer Richard Williams says: "Steel offered a quicker construction programme, which is important to the client, while the material can be erected in conjunction with the precast elements, creating an efficient methodology."

Using a single mobile crane, Billington Structures initially erected the entire steel-framed stand, minus the roof. This allowed follow-on trades to begin the metal decking for the first floor, while Billington Structures began a second phase of their erection programme that included installing the stand's precast terrace units and completing the roof. This final steel erection phase was completed one bay at a time, using a crane positioned between the stand and the pitch.

Highlighting the flexibility of steelwork, the lowest part of the stand's rakers were all left off during the initial steelwork erection, in order to provide sufficient space for the crane. As the crane worked its way along the front of the stand, the lowest raker sections were progressively installed

## FACT FILE

### Belle Vue Stadium redevelopment, Wakefield

Main client: Wakefield Trinity

Architect: AFL Architects

Main contractor: Morgan Sindall

Structural engineer: Nolan Associates

Steelwork contractor:

Billington Structures

Steel tonnage: 248t



along with the precast terrace units.

The stand's main columns are mostly set out on a 7.6m x 4m grid pattern, with the back portion of the structure and part of the area below the terracing creating a ground floor fan concourse that will include two entrances, retail outlets and a ticket office. There will also be home and away team facilities; staff and matchday official's rooms; and a conference area.

The feature cantilevering roof of the east stand is formed with a series of 17m-long cellular beams, spaced at 8m centres. With space for a backspan limited to the rear of the structure, the beams are supported by high-level CHS members that connect to a series of CHS columns positioned behind the seating that protrude 5m above the roof structure. These columns connect to each cellular beam via two CHS sections, that splay backwards to the rear of the structure and forwards to the midpoint of each beam.

According to Morgan Sindall, the new east stand will become an impactful focal point for the redeveloped stadium, with exterior features such as a fan zone and a wrap-around concourse,



Steelwork was chosen as it provided a quick and efficient construction method.

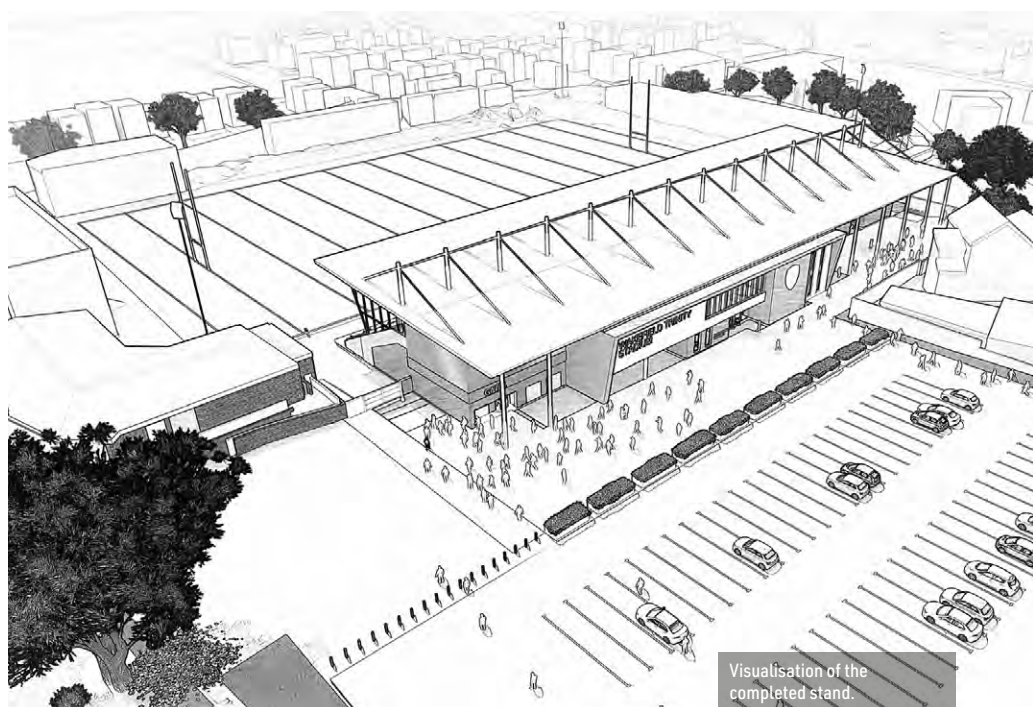
facilitating safe and fully accessible movement for all visitors. Adjacent to the stand, the existing car park will also be upgraded.

As well as erecting the steelwork for the east stand, Billington Structures has also installed eight tonnes of steelwork on the north stand. This large covered stand, situated behind one of the goals, has been re-terraced with new steelwork consisting of column studs that support steel rakers, which in turn support precast terrace units.

The work will provide the stand with a new terracing, covering much of its footprint, allowing this part of the stadium's capacity to rise from its previous restricted 1,500 up to 3,500 spectators.

“Over the years, this terrace had deteriorated, due to the poor ground conditions. It has been largely ripped up and new piled foundations installed to support the new steelwork,” says Mr Williams.

As the 2023 season is a significant milestone for Wakefield Trinity, the north stand and east stands are scheduled to be ready this summer. This will allow spectators to use the new facilities for part of this historic season. ■



Visualisation of the completed stand.

# The ever changing moods of composite slabs

There has been significant interest recently in the vertical shear resistance of composite slabs. This is partly due to different values offered by manufacturers of products that are physically very similar. It has also been of interest because of the work that has been undertaken to evolve EN 1994 into its Generation 2 version (SCI has produced a so-called Eurocode Nugget that presents the revised rules for vertical shear resistance of slabs). In this article Graham Couchman takes a broader look at the work that has been done, and raises some practical issues for designers to consider. Composite slabs are also discussed in a more general context, in particular how their behaviour apparently changes depending on loading and other conditions.

## Introduction

Various researchers, including those responsible for drafting the Generation 2 EN 1994 rules, are in agreement that the current Eurocode approach of only taking into account the vertical shear resistance of the concrete is conservative for composite slabs. It is worth noting that (one of) the reason(s) why EN 1994<sup>[1]</sup> only considers concrete resistance is because it refers 'back' to EN 1992<sup>[2]</sup> in order to comply with the Eurocode philosophy that content cannot be presented in more than one Eurocode, or Eurocode Part. Some researchers suggest the conservatism of the current EN 1994 approach is by a factor of four in some cases! A number of existing, non-European, national codes already add contribution from the decking. In France, designers adopt non-conflicting complementary information (NCCI)<sup>[3]</sup> that uses a clear first principles and apparently sensible approach, proven through use in practice over nearly a decade, to combine the:

- Concrete resistance (as given in the current EN 1994)
  - This takes into account the flanges of the decking as tensile reinforcement
- Shear buckling resistance of the decking webs (taken from EN 1993-1-3<sup>[4]</sup>)

For this approach to be valid it is important that the decking is sufficiently anchored to be able to provide the necessary level of force. When the decking is continuous it will be fully anchored at the face of the support, and when discontinuous it is traditionally assumed that thru-deck welded studs provide a 'deemed to satisfy' level of anchorage (alternatively sufficient contact area is needed between the deck and concrete). Alongside a significantly more complex alternative model for certain situations, the 2022 draft of prEN 1994-1-1<sup>[5]</sup> provides a simple alternative that is, unsurprisingly, very similar to the French approach:

$$V_{v,Rd} = V_{c,Rd} + k_v V_{b,e,Rd}$$

The difference is that a factor  $k_v$  has been introduced, potentially to down rate the contribution from the decking. Three notes in the prEN suggest what value should be used by a designer, and although not stated in the draft document they provide alternative ways of achieving the same end result. The easiest of the three options to understand, and the one advocated for use by SCI, is Note 2:

The value of  $k_v$  is to be taken as 0.5 when  $V_{b,e,Rd}$  (the effective resistance) is considered as the design value of vertical shear resistance of the profiled steel sheeting  $V_{b,e,Rd}$ , unless the National Annex gives a different value.

When we appreciate that the three notes are alternatives, then it can be understood that this reduction factor is intended to be a simple and presumably conservative way of allowing for the combined effect of shear and moment, which Note 3 explicitly states should be considered together. The origin of this 50% reduction, and why it may be deemed relevant, are explained below.

## The behaviour of composite slabs

Before looking in more depth at vertical shear resistance, it is worth considering how composite slabs are normally assumed to behave. The majority of such slabs are governed by the construction stage, namely the ability of the decking to support the wet weight of concrete and other construction loads. Deflection of the decking can be critical, to stop ponding of the concrete increasing self-weight. For this reason, decks are often designed to be continuous over at least one support, because of the resulting structural benefits (Figure 1).

At the 'normal stage' the concrete has hardened, and the decking acts as external tensile reinforcement when the slab is subject to sagging. This is achieved through the embossments and overall form of the deck, which assure structural interaction between concrete and steel by resisting interface slip (like the studs on a composite beam). The cross sectional area of the decking is large, and the lever arm large, so significant sagging resistance can be generated. The hogging resistance, where fabric typically provides the tensile component, is relatively much lower and in the interests of simplicity of design is neglected. The slabs are assumed to be simply supported, even when the decking and concrete are continuous at one or both ends.

►26



Figure 1: Decking continuous over several bays (courtesy SMD)



Be confident  
in your tender.  
Be certified  
with SCCS.

Image courtesy of  
William Hare Limited

## Improve your credibility and win more contracts

SCCS is the go-to certification body, dedicated to servicing the constructional steelwork industry. With over 30 years of industry knowledge and with the core objective to provide excellent and tailored quality services to our clients. SCCS can help you attain internationally-recognised Quality, Environmental and Health & Safety accreditations, to help you win more business.

[www.steelcertification.co.uk](http://www.steelcertification.co.uk) • [sccsinfo@steelconstruction.org](mailto:sccsinfo@steelconstruction.org)



Serving the steelwork  
industry since 1989



Understands your  
processes and operations



UKAS accredited -  
Accredited number (0021)



Both a UK Approved  
Body and a Notified Body



One-stop-shop for all  
your certification needs



UKCA or CE + UKNI  
Mark your products



Over 30 years  
experience in the sector

►24



Figure 2: A continuous floor plate awaiting concrete pouring. Rows of studs indicate the beam lines, and even with continuous concrete the slabs will be designed to be simply supported at these points (at ambient temperature)

The final ‘stage’ we consider is when the slab is **subject to fire** from below. The decking is totally exposed and loses much of its strength. To compensate for this strength loss, bars may be used in the troughs. Being insulated by a certain amount of concrete they remain cooler and so retain more strength. However, in the UK we normally avoid the use of bars, and despite its loss of strength do make an allowance for the decking. We also take into account the hogging resistance over continuous supports, which is

relatively much more important than at ambient temperature because in hogging the tensile component, the fabric, remains ‘cold’. The UK method is justified by a multitude of tests over many decades, as well as having a plausible mechanical model as described previously.

So the decking apparently goes from being continuous, to simple span, and back to continuous when we are considering the behaviour of the composite slab subject to fire. The concrete goes from having no continuity over internal supports to having full continuity. But nothing physical changes!

**A problem?**

Even though a slab may be assumed to be simply supported, if it is continuous over internal supports it will attract hogging moment. As noted above this condition applies to the majority of composite slabs constructed in the UK. That moment will certainly be lower than one determined assuming elastic behaviour and uniform stiffness, because the slab in hogging will be less stiff and therefore shed moment into the span. Drawing an analogy with beams and semi-continuous design, the slab in hogging will be ‘partial strength’, i.e. have a moment resistance that is significantly lower than that of the slab in sagging. It might therefore be sensible, and certainly not unconservative, to assume that the section in hogging reaches its ultimate resistance, the concrete is cracked, the deck plastified, we get rotation, and moment is shed. The slab in hogging is then rotating as a plastic hinge.

The moment resistance in hogging is a combination of:

- Compression in the lower parts of concrete acting as a couple with tensile reinforcement in the upper part of the slab
- The moment resistance of the decking

So, in theory at least, one might imagine that the decking is working at full capacity in bending, even if it is assumed in design to be acting like a pin.

If we then turn to EN 1993-1-3<sup>(4)</sup> to see how a deck behaves in combined bending and shear (and axial force) we find this:

$$\frac{N_{Ed}}{N_{Rd}} + \frac{M_{y,Ed}}{M_{y,Rd}} + \left(1 - \frac{M_{f,Rd}}{M_{pl,Rd}}\right) \left(\frac{2V_{Ed}}{V_{w,Rd}} - 1\right)^2 \leq 1.0$$

Nationwide delivery of all Structural Steel Sections

**RAINHAM**



Tel: 01708 522311 sales@rainhamsteel.co.uk

MULTI PRODUCTS ARRIVE ON ONE VEHICLE

Where:

- $N_{Ed}$  is the imposed axial force
- $N_{Rd}$  is the design resistance of the cross section for uniform tension or compression
- $M_{y,Ed}$  is the imposed moment
- $M_{y,Rd}$  is the design moment resistance of the cross-section
- $V_{Ed}$  is the imposed shear force
- $V_{w,Rd}$  is the design shear resistance of the web
- $M_{f,Rd}$  is the moment resistance of a cross section comprising the effective area of the flanges alone
- $M_{pl,Rd}$  is the plastic moment resistance of the cross-section

Already apparent from this formula, the same clause nevertheless emphasises that ‘no reduction due to shear force need not be done’ (sic) provided that (the applied shear is no more than 50% of the shear resistance). It is understood this clause is the origin of the 0.5 suggested in Note 2 of the prEN clause stated previously.

However, we are not interested in how much moment resistance remains in the presence of shear, we are interested in how much shear resistance remains in the presence of (unwanted, unneeded but nevertheless present) moment. It is informative to try some numbers in Equation 6.27:

- Assume that the flanges contribute 80% of the bending resistance of the complete deck
- Assume that the applied moment is 90% of the moment resistance
- Then to satisfy:  

$$0.9 + 0.2 \left( \frac{2V_{Ed}}{V_{w,Rd}} - 1 \right)^2 \leq 1.0$$
- Requires that  $V_{Ed} \leq 0.85 V_{w,Rd}$

So even when the moment is at 90% capacity, we still retain 85% of the shear resistance. This is reassuring, and suggests that the value of 0.5 for the factor  $k_v$  proposed by prEN 1994-1-1 may be conservative. What that value does do, however, is provide reassurance that no matter what the (unidentified) moment may be, the section will be able to support the

combination of actions. Moreover, using 0.5 will still lead to a significant increase in shear resistance compared to current practice, and avoid it governing in all but extremely unusual cases. Searching for a better result, that might be more difficult to justify, therefore seems rather pointless.

### Conclusions

UK practice for composite slab design is another of those methods where pragmatism and engineering judgement are adopted. We make assumptions that simplify the design process, and produce ‘the right end result’, even though they cannot be physically correct. But in order to exploit safely the benefits of the proposed new Eurocode rules for the shear resistance of composite slabs, it is necessary to revisit the traditional pragmatism. This article has shown that the traditional approach can be combined with the new rules, even though the latter may need to be conservatively applied through the use of a factor that reduces the shear resistance of the decking (as recommended by the new code itself). In many situations the extra resistance provided by the decking will not be needed, but it may be helpful when considering relatively narrow strips of slab supporting a concentrated load. ■

### References

1. BS EN 1994-1-1:2004. *Eurocode 4: Design of composite steel and concrete structures. General rules and rules for buildings* (incorporating corrigendum April 2009) BSI, 2004
2. BS EN 1992-1-1:2004. *Eurocode 2: Design of concrete structures. General rules and rules for buildings* (incorporating corrigendum January 2008 and November 2010) BSI, 2004
3. *Cahier des prescriptions techniques communes aux procédés de planchers collaborants*. Edition 3730 v2. Commission chargée de formuler des Avis Techniques, 2014
4. BS EN 1993-1-3:2006. *Eurocode 3: Design of steel structures. General rules Supplementary rules for cold formed members and sheeting* (incorporating corrigendum November 2009), BSI, 2006
5. prEN1994-1-1. April 2022 Project Team draft (not publicly available)

## GRADES S355JR/J0/J2

# STEEL

Head Office:  
01708 522311

Bury Office:  
01617 962889

Scunthorpe Office:  
01724 273282

Advanced steel sections available ex-stock

Beams • Columns  
Channel • Angle  
Flats • Uni Flats  
Saw Cutting  
Shot Blasting  
Painting • Drilling  
Hot & Cold Structural  
Hollow Sections

# AD 502: Design to BS 5950 and other standards

The Advisory Desk is regularly asked whether it is acceptable to carry out structural designs to standards other than the Eurocodes. This note draws attention to the statement in Approved Document A of the Building Regulations 2010, Structure, regarding the use of the guidance it contains.

Page 3 of Approved Document A, headed Use of Guidance states in the second paragraph that the document lists “all the documents that have been approved by the Secretary of State” for the purpose of providing practical guidance with respect to the requirements of the Building Regulations 2010 for England and Wales. The list includes Eurocodes BS EN 1090-2, BS EN 1990, BS EN 1991-1, BS EN 1993-1 and BS EN 1994-1 amongst others for the design of steel and composite steel and concrete

buildings. The Eurocodes listed contain the most up to date and coherent published guidance available for the design of steel structures.

The third paragraph states that there may well be alternative ways of achieving compliance with the requirements and continues “Thus there is no obligation to adopt any particular solution contained in an Approved Document if you prefer to meet the relevant requirement in some other way.”

It is therefore acceptable to use alternative standards to Eurocodes for structural design as long as the requirements of the Building Regulations are met. The Approved Document also includes the possibility of using withdrawn standards to demonstrate compliance, within the subsequent guidance under the heading ‘British

Standards’: “There may be alternative ways of achieving compliance with the requirements and there might be cases when it can be demonstrated that the use of withdrawn standards no longer maintained by the British Standards Institution continues to meet Part A requirements.”

Designers should however bear in mind that alternative or withdrawn standards such as BS 5950-1:2000 have not been updated with the most recent developments in the design of steel structures. In addition, there may be contractual requirements to use a particular set of standards for design.

Contact: **Richard Henderson**  
Telephone: **01344 636555**  
Email: **advisory@steel-sci.com**

## New and revised codes and standards

From BSI Updates February 2023

### BS EN PUBLICATIONS

#### BS EN 17632-1:2022

Building information modelling (BIM). Semantic modelling and linking (SML). Generic modelling patterns  
*no current standard is superseded*

#### BS EN ISO 25901-2:2022

Welding and allied processes. Vocabulary. Health and safety  
*no current standard is superseded*

### BS IMPLEMENTATIONS

#### BS ISO 6707-3:2022

Buildings and civil engineering works. Vocabulary. Sustainability terms  
*supersedes BS ISO 6707-3:2017*

### BRITISH STANDARDS REVIEWED AND CONFIRMED

#### BS EN 12155:2000

Curtain walling. Watertightness. Laboratory test under static pressure

#### BS EN 12179:2000

Curtain walling. Resistance to wind load. Test method

#### BS EN 13051:2001

Curtain walling. Watertightness. Site test

### NEW WORK STARTED

#### EN 12077-2

Cranes safety. Requirements for health and safety. Limiting and indicating devices  
*will supersede BS EN 12077-2:1998+A1:2008*

#### EN ISO 16834

Welding consumables. Wire electrodes, wires, rods and deposits for gas shielded arc welding of high strength steels. Classification  
*will supersede BS EN ISO 16834:2012*

### ISO 18953

Steel structures. Structural bolting. Test method to determine loss of pretension from faying surface coatings  
*will supersede None*

### BS 8460

Safe use of MEWPs. Code of practice  
*will supersede BS 8460:2017*

### DRAFT BRITISH STANDARDS FOR PUBLIC COMMENT – ADOPTIONS

#### 23/30442966 DC

BS ISO 12480-1 Cranes. Safe use. General  
*Comments for the above document were required by 25 February, 2023*

### ISO PUBLICATIONS

#### ISO 5173:2023

Destructive tests on welds in metallic materials. Bend tests  
*Will be implemented as an identical British Standard*



## Search for Advisory Desk articles on newsteelconstruction.com

Use the search bar at the top of every page of [newsteelconstruction.com](https://www.newsteelconstruction.com) to search out Advisory Desk articles by name, number or subject, or list them (most recent first) by hovering over Technical in the main menu and selecting Advisory Desk from the resulting pop-up menu.



# Visit [www.SteelConstruction.info](http://www.SteelConstruction.info)

## All you need to know about Steel Construction

Everything construction professionals need to know to optimise the design and construction of steel-framed buildings and bridges can be easily accessed in one place at [www.SteelConstruction.info](http://www.SteelConstruction.info), the largest and most comprehensive database of steel design guidance and advice available anywhere.

This online encyclopedia is an invaluable first stop for steel construction information. Produced and maintained by industry experts, detailed guidance is provided on a wide range of key topics including sustainability and cost as well as design and construction.

This is supported by some 250 freely downloadable PDF documents and over 500 case studies of real projects.

The site also provides a single portal, one-stop-shop access to key resources including:

- The Green Books
- The Blue Book
- Eurocode design guides
- Advisory Desk Notes
- Steel section tables
- Steel design tools

Explore the full content of [www.SteelConstruction.info](http://www.SteelConstruction.info) using the index of main articles in the quick links menu, or alternatively use the powerful search facility.





**Previous articles and one issue of *Building with Steel* (No. 6, Feb 1971) have shown how proprietary systems of construction can be adapted to many types of building. The car showroom and filling station featured in this article again demonstrate the flexibility possible within a catalogued system – this time Stran-Steel – which is well established in North America and now being increasingly employed in the UK.**

New premises for The Cleveland Car Company Ltd, built on a triangular site bounded by Croft Road and Bridge Road at Blackwell Corner, Darlington, Co. Durham, comprise a petrol filling station, Autorama, pump house, works department, offices, motorcar showroom and ancillary buildings.

The site is covered by two Authorities, the County Borough and Darlington Rural District Council, and in order to comply with planning requirements the vehicular access to Bridge Road (A66) had to be closed and the new access and exit on Croft Road (A 187) completed before demolition commenced.

Site works included demolition of existing buildings, removing all hedges

and trees, grubbing up old foundations, paths, concrete areas, old drains and a septic tank, to clear the site completely. Sufficient top soil then had to be spread over areas scheduled to be landscaped in due course with new trees and shrubs.

Concrete foundations were prepared for the new buildings, particular care being paid to the level of the workshop floor, and the showroom area where the level had to be built up. Extra excavation was required along the Croft Road boundary, where the levels of the land are low and additional subbase material was required to fill on to a solid bottom. Forecourt areas, including the Autorama, under canopies, etc, were finished with tarmac.

Once the foundations were complete,

the major part of the construction was carried out by Allerton Industries Ltd. Just over three years ago, Allerton Industries widened the scope of their steel fabrication by acquiring the licence to manufacture the Stran-Steel range of pre-engineered steel-framed metal-clad buildings, and they are sole UK manufacturers.

The erection of The Cleveland Car Company development followed the usual Stran-Steel pattern, meetings taking place at an early stage between engineers from Allerton's Stran-Steel Division and the architect.

Standardization of the Stran-Steel system means that agreement can be reached quickly on building dimensions and other standard features such as roof extensions, canopies, windows and doors, used in conjunction with Stran-Steel colour-coated cladding. When the primary decisions have been made, manufacture of the components in the factory progresses concurrently with the preparation of the site, thus saving time and money.

All the structures for the Cleveland development were of steel-framed construction, the main frames being plate-fabricated, jig-built at Stran-Steel's Northallerton Works. For the secondary members, extensive use was made of cold rolled sections. These two factors combine to give a building system with a high strength to weight ratio. Tapered rafter and column sections are designed to provide a pleasing visual appearance.

The standard Stran-Steel system offers a range of building spans and eaves heights, and building accessories specially designed for use with this type of building, including sliding windows, doors, ventilators, etc. Allerton Industries design, supply, deliver and erect complete building superstructures, including supplying and fixing all cladding materials, various types of insulation and building accessories. A chain of franchised builders throughout the country offer a complete building service with the Stran-Steel system in conjunction with Allerton Industries Ltd.

The standard building units used for the Cleveland complex were a double 60ft span



x 16ft eaves x 200ft long StranMaster unit for the main workshop and stores area, a 40ft span x 12ft eaves x 75ft long StranMaster unit for the used car preparation building, and a 120ft span x 16ft eaves x 50ft long low roof unit for the motor-car showroom. A mezzanine floor for storage and runway systems for parts handling and maintenance purposes was constructed over part of the workshop area, with access from a metal staircase.

Cladding materials used were from the standard range of Stran-Steel colour-coated panels, Stran rib profile being used on the roofs and Stran architectural profile panels for the side and end walls. Plastic-faced insulation was fixed in conjunction with the cladding panels to all sheeted areas. The roofs were extended at the ends of the building, using standard 3ft 6in and 1ft 6in extensions with white colour-coated steel soffits. Standard horizontal sliding windows and standard plastic coated steel personnel doors were incorporated in the side and end walls. Steel roller shutter doors give access to the sales and service areas. The front and sides of the motor-car showroom are glazed and incorporate glazed sliding-door units.

The floor of the motor-car showroom is of 3mm Forester Green Speckled Plasik polyester resin on a cement and sand, screed over a Treetol dpc membrane.

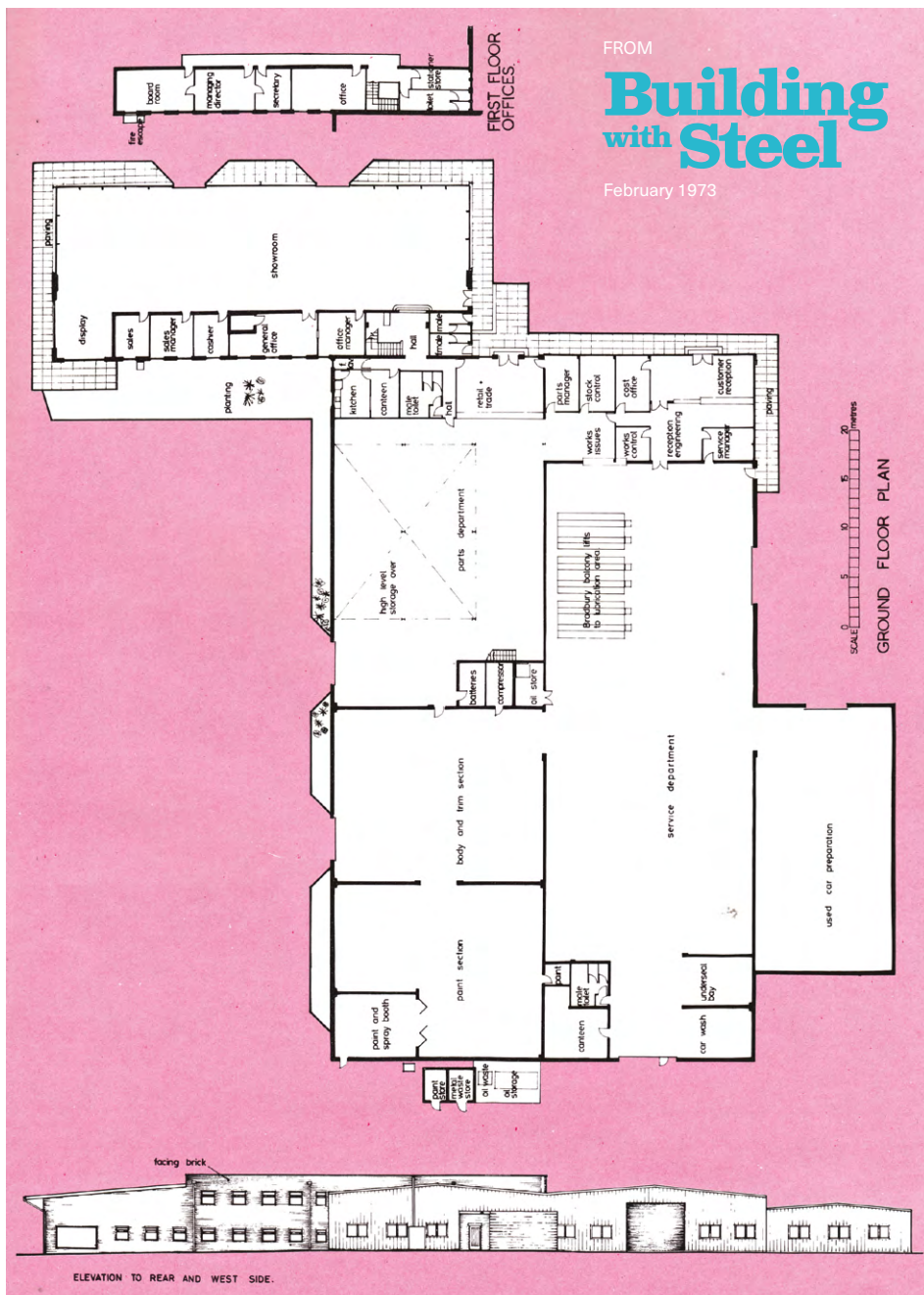
Roofs are insulated with 3/4in thick plasterboard, Plastic faced and foil backed, fixed over purlins. A total of 96 glass-fibre reinforced polyester rooflight panels were fixed over the workshop area.

Work on the petrol filling station included the provision of a kiosk, night watchman's building, pump island, concrete apron, tanker unloading bay and underground petrol storage tanks. Other facilities provided in the complex include a kitchen, canteen, and staff and public toilets.

The Cleveland complex is situated in an area of considerable natural beauty, with a heavily wooded area on one side of the site and open countryside on the other. The colour chosen for the steel cladding in this case was therefore Mist Green (Stran Satin). Roofs are finished in white (Vinyl Stran Satin 262). For this contract a small amount of stonework and brickwork was introduced in the external finishes. Stonework cladding has been used at the rear of the showroom where the wall faces the forecourt. Facing brickwork has been used to the rear wall of the showroom building, where the first-floor office suite has been constructed.

Wooden windows and reinforced concrete lintels to door and window openings have been used in conjunction with the brickwork and stonework instead of the standard Stran-Steel metal components used elsewhere.

Flat roofs were specified over the first-floor office construction, the metal waste



store, the kiosk and the night watchman's building, finished with 3/4in limestone chips over 3-ply built-up Ruberoid roofing felt over chipboard and glass-fibre insulation over joists. Two Cordar pvc skydomes have been fitted over the staircase and the office area.

First-floor office areas are covered with Burmatex non-woven nylon carpet laid on chipboard. Other floors in public and office staff areas are finished with vinyl asbestos tiles.

Walls of the board room and the managing director's office are decorated with vinyl wallpaper. Walls and ceilings of other areas generally are finished with emulsion, gloss or eggshell paint.

Suspended ceilings have been installed in the motor-car showroom and in the board room; with 4ft x 2ft Celotex FRI flame-resistant boards in the showroom and 12in x 12in Treetex Glacier acoustic tiles with concealed suspension in the board room.

Other ceilings throughout are constructed with 1in ICI purlboard, polyurethane rigid foam laminate, K value 0.16.

Central heating is by warm blown air feed to all areas in the building from four Powrmatic oil-fired boilers.

The site is enclosed by a 6ft high close boarded boundary fence. Corral-type fencing has been erected round the oil and metal waste stores areas.

Stran-Steel's contract included the design, supply and erection of all primary and secondary steelwork, wall and roof cladding, insulation, rainwater goods and all other building accessories, together with internal catwalks, platforms and walkways for storage purposes. The external canopies and used car Autorama were specially fabricated by Allertons to suit the architect's design.

The building was erected last year over a period of six months.



# Steelwork contractors for buildings

Membership of BCSA is open to any Steelwork Contractor who has a fabrication facility within the United Kingdom or Republic of Ireland. Details of BCSA membership and services can be obtained from

Lorraine MacKinder, Membership Manager

The British Constructional Steelwork Association Limited, Unit 4 Hayfield Business Park, Field Lane, Auckley, Doncaster DN9 3FL

Tel: 020 7747 8121 Email: [lorraine.mackinder@steelconstruction.org](mailto:lorraine.mackinder@steelconstruction.org)

Applicants may be registered in one or more Buildings category to undertake the fabrication and the responsibility for any design and erection of:

- C** Heavy industrial platemwork for plant structures, bunkers, hoppers, silos etc
- D** High rise buildings (offices etc over 15 storeys)
- E** Large span portals (over 30m)
- F** Medium/small span portals (up to 30m) and low rise buildings (up to 4 storeys)
- G** Medium rise buildings (from 5 to 15 storeys)
- H** Large span trusswork (over 20m)
- J** Tubular steelwork where tubular construction forms a major part of the structure
- K** Towers and masts
- L** Architectural steelwork for staircases, balconies, canopies etc
- M** Frames for machinery, supports for plant and conveyors
- N** Large grandstands and stadia (over 5000 persons)
- Q** Specialist fabrication services (eg bending, cellular/castellated beams, plate girders)
- R** Refurbishment
- S** Lighter fabrications including fire escapes, ladders and catwalks
- FPC** Factory Production Control certification to BS EN 1090-1  
1 - Execution Class 1      2 - Execution Class 2  
3 - Execution Class 3      4 - Execution Class 4
- BIM** BIM Level 2 assessed
- QM** Quality management certification to ISO 9001
- SCM** Steel Construction Sustainability Charter  
● = Gold   ● = Silver, ● = Bronze, ● = Certificate

Notes  
(1) Contracts which are primarily steelwork but which may include associated works. The steelwork contract value for which a company is pre-qualified under the Scheme is intended to give guidance on the size of steelwork contract that can be undertaken; where a project lasts longer than a year, the value is the proportion of the steelwork contract to be undertaken within a 12 month period.

Where an asterisk (\*) appears against any company's classification number, this indicates that the assets required for this classification level are those of the parent company.

Company name	Tel	C	D	E	F	G	H	J	K	L	M	N	Q	R	S	QM	FPC	BIM	SCM	Guide Contract Value (1)
A C Bacon Engineering Ltd	01953 850611			●	●	●	●				●				✓		2			Up to £3,000,000
Adey Steel Ltd	01509 556677	●		●	●	●	●	●	●	●	●			●	●	✓	3		●	Up to £3,000,000
Adstone Construction Ltd	01905 794561			●	●	●	●							●		✓	2	✓	●	Up to £3,000,000
AJ Engineering & Construction Services Ltd	01309 671919			●	●		●		●	●	●			●	●	✓	4		●	Up to £3,400,000
Angle Ring Company Ltd	0121 557 7241													●		✓	4			Up to £1,400,000*
Arminhall Engineering Ltd	01799 524510	●			●	●		●		●	●			●	●	✓	2		●	Up to £2,400,000
Arromax Structures Ltd	01623 747466			●	●	●	●	●	●	●	●				●		2			Up to £800,000
ASME Engineering Ltd	020 8966 7150			●	●	●		●	●	●	●		●	●	●	✓	4		●	Up to £5,000,000
Atlasco Constructional Engineers Ltd	01782 564711			●	●	●	●			●	●			●	●	✓	2			Up to £1,400,000
B D Structures Ltd	01942 817770			●	●	●	●				●	●		●	●	✓	2	✓	●	Up to £2,400,000
Ballykine Structural Engineers Ltd	028 9756 2560			●	●	●	●	●				●			●	✓	4	✓	●	Up to £2,400,000
Barnshaw Section Benders Ltd	0121 557 8261												●			✓	4			Up to £1,400,000
BHC Ltd	01555 840006	●	●	●	●	●	●	●		●	●	●		●	●	✓	4	✓	●	Above £6,000,000
Billington Structures Ltd	01226 340666	●	●	●	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	●	Above £6,000,000
Border Steelwork Structures Ltd	01228 548744			●	●	●	●			●	●						4			Up to £3,000,000
Bourne Group Ltd	01202 746666		●	●	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	●	Above £6,000,000
Briton Fabricators Ltd	0115 963 2901	●		●	●	●	●	●	●	●	●		●	●	●	✓	4		●	Up to £6,000,000
Cairnhill Structures Ltd	01236 449393	●		●	●	●	●	●	●						●	✓	4		●	Up to £6,000,000
Caunton Engineering Ltd	01773 531111	●	●	●	●	●	●	●		●	●	●		●	●	✓	4	✓	●	Above £6,000,000
Cementation Fabrications	0300 105 0135	●		●	●	●	●	●	●	●	●		●	●	●	✓	3		●	Up to £10,000,000
CMF Ltd	020 8844 0940				●		●	●		●	●				●	✓	4			Up to £6,500,000
Coventry Construction Ltd	024 7646 4484			●	●	●	●		●	●	●			●	●	✓	4			Up to £1,200,000
D H Structures Ltd	01785 246269			●	●		●				●						2			Up to £400,000
D Hughes Welding & Fabrication Ltd	01248 421104				●	●	●	●	●	●	●		●	●	●	✓	4			Up to £800,000
Duggan Steel	00 353 29 70072	●	●	●	●	●	●	●	●		●				●	✓	4			Up to £10,000,000
ECS Engineering Services Ltd	01773 860001	●		●	●	●	●	●	●	●	●			●	●	✓	4		●	Up to £3,000,000
Elland Steel Structures Ltd	01422 380262		●	●	●	●	●	●	●	●	●	●		●	●	✓	4	✓	●	Above £6,000,000
EvadX Ltd	01745 336413		●	●	●	●	●	●		●	●	●			●	✓	3		●	Up to £3,400,000
Four Bay Structures Ltd	01603 758141			●	●	●	●	●		●	●			●			2			Up to £1,400,000
Four-Tees Engineers Ltd	01489 885899	●		●		●	●	●	●	●	●		●	●	●	✓	3		●	Up to £2,000,000
Gorge Fabrications Ltd	0121 522 5770			●	●	●	●			●				●	●	✓	3			Up to £1,400,000



Company name	Tel	C	D	E	F	G	H	J	K	L	M	N	Q	R	S	QM	FPC	BIM	SCM	Guide Contract Value (1)
G.R. Carr (Essex) Ltd	01286 535501	●		●	●			●			●			●	●	✓	4			Up to £800,000
H Young Structures Ltd	01953 601881			●	●	●	●	●			●			●	●	✓	4	✓	●	Up to £3,000,000
Had Fab Ltd	01875 611711				●				●	●	●				●	✓	4			Up to £4,000,000
HBE Services Ltd	01525 854110				●	●				●				●	●	✓	2			Up to £800,000
Hescott Engineering Company Ltd	01324 556610			●	●	●	●			●				●	●	✓	2			Up to £3,000,000
Hillcrest Structural Steel Ltd	023 8064 1373			●	●	●	●	●		●	●			●	●	✓	3		●	Up to £3,000,000
Intersteels Ltd	01322 337766	●			●	●	●	●	●	●			●	●	●	✓	3	✓		Up to £5,000,000
J & A Plant Ltd	01942 713511				●	●									●		4			Up to £40,000
James Killelea & Co Ltd	01706 229411		●	●	●	●	●				●	●					4			Up to £6,500,000
Kiernan Structural Steel Ltd	00 353 43 334 1445	●		●	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	●	Above £10,000,000
Kloekner Metals UK Westok	0113 205 5270												●			✓	4		●	Up to £6,000,000
Leach Structural Steelwork Ltd	01995 642000			●	●	●	●	●			●					✓	2		●	Up to £6,000,000
Legge Steel (Fabrications) Ltd	01592 205320			●	●					●	●			●	●		2			Up to £600,000
Littleton Steel Ltd	01275 333431				●					●	●			●	●	✓	3			Up to £1,400,000
Loaninghill Fabrications Ltd	01506 858466				●				●	●	●			●	●		3			Up to £400,000
M Hasson & Sons Ltd	028 2957 1281			●	●	●	●	●	●	●	●			●	●	✓	4		●	Up to £1,400,000
M&S Engineering Ltd	01461 40111				●				●	●	●			●	●	✓	3			Up to £2,000,000
Mackay Steelwork & Cladding Ltd	01862 843910			●	●		●			●	●			●	●	✓	4			Up to £1,400,000
Maldon Marine Ltd	01621 859000				●	●			●	●	●			●	✓	3				Up to £1,400,000
Murphy International Ltd	00 353 45 431384	●			●		●	●	●		●			●	✓	4				Up to £5,000,000
Newbridge Engineering Ltd	01429 866722	●	●	●	●	●	●	●			●	●				✓	4		●	Up to £2,000,000
North Lincs Structures	01724 855512			●	●					●	●			●			2			Up to £600,000
Nusteel Structures Ltd	01303 268112						●	●	●	●				●		✓	4		●	Up to £6,000,000
Painter Brothers Ltd	01432 374400	●			●				●	●	●			●	✓	3				Up to £6,000,000*
Peter Marshall (Steel Stairs) Ltd	0113 307 6730				●	●				●	●			●	✓	3				Up to £2,000,000
PMS Fabrications Ltd	01228 599090			●	●	●	●		●	●	●			●	●		3			Up to £2,400,000
REIDsteel	01202 483333			●	●	●	●	●	●	●	●	●	●	●	✓	4			●	Up to £6,000,000
SAH Luton Ltd	01582 805741			●	●	●				●	●			●	●		2			Up to £400,000
S H Structures Ltd	01977 681931	●		●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	●		Up to £3,000,000
SDM Fabrication Ltd	01354 660895	●	●	●	●	●	●			●	●			●	●	✓	4			Up to £2,000,000
Severfield plc	01845 577896	●	●	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	●		Above £6,000,000
Shaun Hodgson Engineering Ltd	01553 766499	●		●	●		●			●				●	●	✓	3			Up to £800,000
Shiplely Structures Ltd	01400 251480			●	●	●	●		●	●	●			●	●	✓	2			Up to £3,000,000
Snashall Steel Fabrications Co Ltd	01300 345588			●	●	●	●	●			●			●			2	✓		Up to £2,000,000
Southern Fabrications (Sussex) Ltd	01243 649000				●	●				●	●			●	●	✓	2			Up to £1,400,000
Steel & Roofing Systems	00 353 56 444 1855	●		●	●	●	●			●	●	●	●	●	✓	4				Up to £5,000,000
Taziker Industrial Ltd	01204 468080	●		●	●		●	●		●	●		●	●	✓	3			●	Above £6,000,000
Temple Mill Fabrications Ltd	01623 741720			●	●					●	●			●	✓	2				Up to £400,000
TSI Structures Ltd	01603 720031			●	●	●	●	●			●			●			2	✓		Up to £2,000,000
W I G Engineering Ltd	01869 320515				●					●	●			●	●	✓	2		●	Up to £400,000
Walter Watson Ltd	028 4377 8711			●	●	●	●	●				●			✓	4				Above £10,000,000
Westbury Park Engineering Ltd	01373 825500	●		●	●	●	●	●	●	●	●			●	✓	4			●	Up to £2,400,000
William Hare Ltd	0161 609 0000	●	●	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	●		Above £6,000,000



# Steelwork contractors for bridgeworks



The Register of Qualified Steelwork Contractors Scheme for Bridgeworks (RQSC) is open to any Steelwork Contractor who has a fabrication facility within the UK or European Union.

Applicants may be registered in one or more category to undertake the fabrication and the responsibility for any design and erection of:

- FB** Footbridges
- CF** Complex footbridges
- SG** Sign gantries
- PG** Bridges made principally from plate girders
- TW** Bridges made principally from trusswork
- BA** Bridges with stiffened complex platemwork (eg in decks, box girders or arch boxes)
- CM** Cable-supported bridges (eg cable-stayed or suspension) and other major structures (eg 100 metre span)
- MB** Moving bridges
- SRF** Site-based bridge refurbishment
- FRF** Factory-based bridge refurbishment
- AS** Ancillary structures in steel associated with bridges, footbridges or sign gantries (eg grillages, purpose-made temporary works)
- QM** Quality management certification to ISO 9001
- FPC** Factory Production Control certification to BS EN 1090-1  
1 - Execution Class 1    2 - Execution Class 2  
3 - Execution Class 3    4 - Execution Class 4
- BIM** BIM Level 2 compliant
- SCM** Steel Construction Sustainability Charter  
● = Gold    ● = Silver    ● = Bronze    ● = Certificate

**Notes**

(1) Contracts which are primarily steelwork but which may include associated works. The steelwork contract value for which a company is pre-qualified under the Scheme is intended to give guidance on the size of steelwork contract that can be undertaken; where a project lasts longer than a year, the value is the proportion of the steelwork contract to be undertaken within a 12 month period.

Where an asterisk (\*) appears against any company's classification number, this indicates that the assets required for this classification level are those of the parent company.

BCSA steelwork contractor member	Tel	FB	CF	SG	PG	TW	BA	CM	MB	SRF	FRF	AS	QM	FPC	BIM	NHSS 19A	20	SCM	Guide Contract Value (1)
Adey Steel Ltd	01509 556677	●		●	●	●	●				●	●	✓	3			✓	●	Up to £3,000,000
AJ Engineering & Construction Services Ltd	01309 671919	●		●	●	●	●	●	●	●	●	●	✓	4				●	Up to £3,400,000
Billington Structures Ltd	01226 340666	●		●	●	●	●					●	✓	4	✓	✓	✓	●	Above £6,000,000
Bourne Group Ltd	01202 746666	●		●	●	●	●					●	✓	4	✓		✓	●	Above £6,000,000
Briton Fabricators Ltd	0115 963 2901	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓	●	Up to £6,000,000
Cairnhill Structures Ltd	01236 449393	●	●	●	●	●	●	●			●	●	✓	4			✓	●	Up to £6,000,000
Cementation Fabrications	0300 105 0135	●	●	●	●	●	●	●	●	●	●	●	✓	3			✓	●	Up to £10,000,000
D Hughes Welding & Fabrication Ltd	01248 421104	●		●		●			●	●	●	●	✓	4			✓		Up to £800,000
ECS Engineering Services Ltd	01773 860001	●		●	●	●	●	●	●	●	●	●	✓	4				●	Up to £3,000,000
Four-Tees Engineers Ltd	01489 885899	●	●	●	●	●	●			●	●	●	✓	3			✓	●	Up to £2,000,000
Kiernan Structural Steel Ltd	00 353 43 334 1445	●			●	●				●	●	●	✓	4	✓		✓	●	Above £10,000,000
M&S Engineering Ltd	01461 40111	●	●	●	●	●	●	●			●	●	✓	3					Up to £2,000,000
M Hasson & Sons Ltd	028 2957 1281	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓	●	Up to £1,400,000
Millar Callaghan Engineering Services Ltd	01294 217711	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓		Up to £1,400,000
Murphy International Ltd	00 353 45 431384	●	●	●	●	●	●					●	✓	4			✓		Up to £5,000,000
Nusteel Structures Ltd	01303 268112	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Up to £6,000,000
REIDsteel	01202 483333	●		●		●	●					●	✓	4				●	Up to £6,000,000
S H Structures Ltd	01977 681931	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓		✓	●	Up to £3,000,000
Severfield plc	01204 699999	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	✓	✓	●	Above £6,000,000
Shaun Hodgson Engineering Ltd	01553 766499											●	✓	3					Up to £800,000
Taziker Industrial Ltd	01204 468080	●	●	●	●	●	●	●	●	●	●	●	✓	3		✓	✓	●	Above £6,000,000
William Hare Ltd	0161 609 0000	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	✓	✓	●	Above £6,000,000
<b>Non-BCSA member</b>																			
Allerton Steel Ltd	01609 774471	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓		✓	●	Up to £3,400,000
Beaver Bridges Ltd	01204 668773	●		●	●	●	●	●	●	●	●	●	✓	4					Up to £3,000,000
Carver Engineering Services Ltd	01302 751900	●		●	●	●	●	●	●	●	●	●	✓	4			✓		Up to £3,000,000
Centregreat Engineering Ltd	029 2046 5683	●		●	●	●	●	●	●	●	●	●	✓	4					Up to £3,400,000
Cimolai SpA	01223 836299	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Above £6,000,000
CTS Bridges Ltd	01484 606416	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓	●	Up to £1,400,000
Eiffage Metal	00 33 388 946 856	●	●	●	●	●	●	●	●	●	●	●	✓	4					Above £6,000,000
Harrisons Engineering (Lancashire) Ltd	01254 823993			●	●	●	●	●	●	●	●	●	✓	3		✓			Up to £3,000,000
Hollandia Infra BV	00 31 180 540 540	●	●	●	●	●	●	●	●	●	●	●	✓	4					Above £6,000,000*
HS Carlsteel Engineering Ltd	020 8312 1879										●	●	✓	3			✓		Up to £800,000
J&D Pierce Contracts Ltd	01505 683724	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓		Above £10,000,000
Kelly's Welders & Blacksmiths Ltd	01383 512 517											●	✓	2			✓		Up to £200,000
Lanarkshire Welding Company Ltd	01698 264271	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Up to £3,000,000
Malin Group	0141 370 5467	●			●	●	●				●	●	✓	4			✓		Up to £4,000,000
North View Engineering Solutions Ltd	01325 464558											●	✓	3					Up to £800,000
Shaw Manufacturing Ltd	01642 210716										●	●	✓	4			✓		Up to £800,000
Smulders Projects UK Ltd	0191 295 8700	●	●	●	●	●	●	●	●	●	●	●	✓	4					Above £6,000,000
Tecade S.A.U.	00 34 955 833 811		●	●	●	●	●	●	●			●	✓	4		✓	✓		Up to £6,000,000
Total Steelwork & Fabrication Ltd	01925 234320	●		●		●					●	●	✓	3			✓		Up to £3,000,000
Victor Buyck Steel Construction	00 32 9 376 2211	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Above £6,000,000



## Corporate Members

Corporate Members are clients, professional offices, educational establishments etc which support the development of national specifications, quality, fabrication and erection techniques, overall industry efficiency and good practice.

Company name	Tel	Company name	Tel	Company name	Tel
Gene Mathers	0115 974 7831	MMCEngineer Ltd	01423 855939	Structural & Weld Testing Services Ltd	01795 420264
Griffiths & Armour	0151 236 5656	Paul Hulme Engineering Ltd	07801 216858	SUM ADR Ltd	07960 775772
Highways England Company Ltd	0300 123 5000	QHSE-Interspect Ltd	07438 413849		
Keiths Welding Limited	07791 432 078	Sandberg LLP	020 7565 7000		



# Industry Members

Industry Members are those principal companies involved in the direct supply to all or some Steelwork Contractor Members of components, materials or products. Industry member companies must have a registered office within the United Kingdom or Republic of Ireland.

<b>QM</b>	Quality management certification to ISO 9001			
<b>FPC</b>	Factory Production Control certification to BS EN 1090-1			
	1 Execution class 1	2 Execution class 2		
	3 Execution class 3	4 Execution class 4		
<b>NHSS</b>	National Highway Sector Scheme			

<b>CA</b>	Conformity Assessment	
	UKCA and/or CE Marking compliant, where relevant:	
<b>M</b>	manufacturer (products UKCA and/or CE Marked)	
<b>D/I</b>	distributor/importer (systems comply with the CPR)	
<b>N/A</b>	CPR not applicable	

<b>SCM</b>	Steel Construction Sustainability Charter	
● = Gold	● = Silver	
● = Bronze	● = Certificate	

<b>SfL</b>	Steel for Life Sponsor
------------	------------------------

Structural components							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Albion Sections Ltd	0121 553 1877	✓	M	4			
BW Industries Ltd	01262 400088	✓	M	3			
Cellbeam Ltd	01937 840600	✓	M	4	20		
Composite Profiles UK Ltd	01202 659237		D/I				
Construction Metal Forming Ltd	01495 761080	✓	M	3			
Daver Steels Ltd	0114 261 1999	✓	M	3			
Farrat Isolevel	0161 924 1600	✓	N/A				
Hadley Industries Plc	0121 555 1342	✓	M	4		●	
Hi-Span Ltd	01953 603081	✓	M	4		●	
<b>Jamestown Manufacturing Ltd</b>	<b>00 353 45 434288</b>	✓	<b>M</b>	4	20		<b>Gold</b>
Kingspan Structural Products	01944 712000	✓	M	4		●	
MSW UK Ltd	0115 946 2316		D/I				
Prodeck-Fixing Ltd	01278 780586	✓	D/I				
Structural Metal Decks Ltd	01202 718898	✓	M	4			
Stud-Deck Services Ltd	01335 390069		D/I				
Tata Steel - ComFlor	01244 892199	✓	M	4			
<b>voestalpine Metsec plc</b>	<b>0121 601 6000</b>	✓	<b>M</b>	4		●	<b>Gold</b>

Computer software							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Autodesk Ltd	01252456600		N/A				
Fabsec Ltd	01937 840641		N/A				
<b>IDEA StatiCa UK Ltd</b>	<b>02035 799397</b>		<b>N/A</b>				<b>Silver</b>
StruMIS Ltd	01332 545800		N/A				
Trimble Solutions (UK) Ltd	0113 887 9790		N/A				

Steel producers							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
British Steel Ltd	01724 404040	✓	M		3B		
Tata Steel - Tubes	01536 402121	✓	M		3B		

Manufacturing equipment							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Behringer Ltd	01296 668259		N/A				
<b>Cutmaster Machines (UK) Ltd</b>	<b>07799 740191</b>		<b>N/A</b>				<b>Silver</b>
<b>Ficep (UK) Ltd</b>	<b>01924 223530</b>		<b>N/A</b>				<b>Silver</b>
Kaltenbach Ltd	01234 213201		N/A				
Lincoln Electric (UK) Ltd	0114 287 2401	✓	N/A				
Peddinghaus Corporation UK Ltd	01952 200377		N/A				

Membership services							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Deconstruct UK Ltd	02035 799397	✓	N/A				

Protective systems							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Forward Protective Coatings Ltd	01623 748323	✓	N/A				
<b>Hempel UK Ltd</b>	<b>01633 874024</b>	✓	<b>N/A</b>				<b>Silver</b>
Highland Metals Ltd	01343 548855	✓	N/A				
International Paint Ltd	0191 469 6111	✓	N/A				
Jack Tighe Ltd	01302 880360	✓	N/A		19A		
Joseph Ash Galvanizing	01246 854650	✓	N/A				
PPG Architectural Coatings UK & Ireland	01924 354233	✓	N/A				
Sherwin-Williams UK Ltd	01204 521771	✓	N/A			●	
Vale Protective Coatings Ltd	01949 869784		N/A				
<b>Wedge Group Galvanizing Ltd</b>	<b>01902 601944</b>	✓	<b>N/A</b>				<b>Gold</b>

Safety systems							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
easi-edge Ltd	01777 870901	✓	N/A				
TRAD Hire & Sales Ltd	01614 304666	✓	N/A				

Steel stockholders							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
AJN Steelstock Ltd	01638 555500	✓	M	4			
<b>Arcelor Mittal Distribution - Scunthorpe</b>	<b>01724 810810</b>	✓	<b>D/I</b>	4	<b>3B</b>		<b>Headline</b>
<b>Barrett Steel Services Limited</b>	<b>01274 682281</b>	✓	<b>M</b>	4	<b>3B</b>		<b>Headline</b>
British Steel Distribution	01642 405040	✓	D/I	4	3B		
<b>Cleveland Steel &amp; Tubes Ltd</b>	<b>01845 577789</b>	✓	<b>M</b>	3	<b>3B</b>		<b>Gold</b>
Dent Steel Services (Yorkshire) Ltd	01274 607070	✓	M	4	3B		
Dillinger Hutte U.K. Limited	01724 231176	✓	D/I	4		●	
Duggan Profiles & Steel Service Centre Ltd	00 353 567722485	✓	M	4			
Kloekner Metals UK	0113 254 0711	✓	D/I	4	3B	●	
Murray Plate Group Ltd	0161 866 0266	✓	D/I	4	3B		
<b>NationalTube Stockholders Ltd</b>	<b>01845 577440</b>	✓	<b>D/I</b>	4	<b>3B</b>		<b>Gold</b>
Rainham Steel Co Ltd	01708 522311	✓	D/I	4	3B		
The Alternative Steel Co Ltd	01942 826677	✓	D/I				

Structural fasteners							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
BAPP Group Ltd	01226 383824	✓	M		3		
Cooper & Turner Ltd	0114 256 0057	✓	M		3		
Lindapter International	01274 521444	✓	M				

Welding equipment and consumables							
Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Air Products PLC	01270 614167		N/A				

## Become an SCI member

SCI is the leading independent provider of technical expertise and disseminator of best practice to the steel construction sector.

- Access to Expert advisors
- Access to technical resources, including publications
- Free monthly technical training

The SCI is committed to helping members meet their design, manufacture, construction and commercial objectives.



Find out more...  
[membership@steel-sci.com](mailto:membership@steel-sci.com)

+44 (0)1344 636525

[steel-sci.com/sci-membership.html](http://steel-sci.com/sci-membership.html)





ArcelorMittal

XCarb®

Towards carbon neutral steel



Worship Square features a low carbon steel frame comprising 850t of XCarb® recycled and renewably produced rolled sections.

## The synergy of scrap and renewable electricity

In making XCarb® recycled and renewably produced steel, ArcelorMittal uses up to 100 percent scrap and all of the electricity needed to transform the scrap comes from renewable sources such as solar and wind power.

This combination allows ArcelorMittal to offer steel with very low embodied carbon.



100%  
green  
electricity

Up to  
100%  
recycled  
scrap



## At ArcelorMittal Distribution Solutions, we can deliver!

We hold a stock of XCarb® recycled and renewably produced sections in S355 J0 to EN 10025-2 for immediate dispatch.

### Are your needs more sophisticated?

For specific projects, We offer XCarb® recycled and renewably produced sections directly from our mills in

- HISTAR® 355
- HISTAR® 460
- S355 & S460 M & ML to EN 10025-4
- all weathering steel grades (S355 and S460 J0W, J2W and K2W to EN 10025-5).

All XCarb® recycled and renewably produced sections are supported by an environmental product declaration (EPD) with an [A1-A3] GWP of 333 kgCO<sub>2</sub>e/t.

## 90% reduction with two complementary carbon partners

When lean design using high strength HISTAR® 460 sections is combined with XCarb® recycled and renewably produced steel, designers can deliver very low carbon solutions. Pairing a low embodied carbon manufacturing process with high strength steel can deliver carbon reductions of up to 90%.

Scan for more information



XCarb®



HISTAR®