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Main contractor: McLaughlin & Harvey
Structural engineer: Arup
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Steel tonnage: 12,500

NSC

MAY 2026
Vol 34 No 5

These and other steelwork articles can be downloaded from the New Steel Construction website at www.newsteelconstruction.com

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BCSA

STEEL for life

New addition to world-leading steel reuse guidance released

Nick Barrett
Editor-in-Chief

Reuse of steel has been identified as a key way of reducing the embodied carbon content of our buildings and other structures, and is one of the many carbon reducing tactics that the BCSA and its members have long been supporting with technical guidance, promotional literature and marketing campaigns.

The latest in a long line of sustainability and circular economy benefiting publications is being distributed with this issue of NSC, and supported by an extensive media Electronic Direct Mail campaign with leading construction publications read by architects, engineers and contractors across the industry. *Steel Construction Design for reuse and adaptive reuse* is also available for free download at *www.SteelConstruction.info*.

This new publication informs construction professionals about some of the key issues that can be faced when structural steel is being reused. None of them have proven to be insurmountable or prohibitively expensive or time-consuming. Case studies on actual, successful projects show how architects and engineers have responded positively to overcome challenges that can arise as they strive to inject new life into existing steel-framed buildings, delivering commercial and environmental benefits.

Planning departments view reusing existing steel frames as an environmentally-friendly alternative to demolition programmes, which anecdotally has itself aroused at least some developer interest. Developers can also learn a lot about reuse from the publication. For a start, it confirms that existing steel-framed buildings are easily reusable. It shows that minimal interventions can allow extra floors to be added to the structure.

It shows steelwork being easily disassembled from one project, refabricated as necessary and then reused on another scheme. Steel reuse is confirmed as a viable, cost-effective and sustainable alternative to traditional recycling methods. The relevant certification and compliance processes are expected to evolve in the near future, which will allow for even more efficient reuse of steelwork.

Findings from completed projects indicate that reuse is far easier when components consist of standard section sizes and steel grades. A key learning from the publication is that speaking to steelwork contractors as early in the project planning phase as possible is the best way to make sure that optimal section sizes and steel grades are chosen.

Other discoveries from experience include that to make steel structures easier to disassemble for reuse they should be constructed using accessible bolted connections, something else that benefits from early contractor involvement as the BCSA always urges on construction teams. With specialist advice in the early stages, reconfiguring an existing steel frame structure can be efficiently and economically achieved with minimal steel strengthening works.

Construction teams are proving to be adept at developing new and innovative reuse approaches, as we see in the recent projects in this document. Reusing steel requires additional close collaboration with reclamation and deconstruction experts, such as those showcased in the case studies.

The steel sector has been at the forefront of the circular economy and reuse agendas for many years and has developed unrivalled guidance and standards on steel reclamation and reuse. Guidance and practice developed in the UK is world-leading and is being adopted within Europe and internationally. The BCSA aims to keep the supply chain abreast of important developments in this field with initiatives like *Steel Construction Design for reuse and adaptive reuse*.

Steel-framed V&A East opens to the public

After nearly 10 years in the planning, the V&A East Museum, which forms the centrepiece of the East Bank cultural quarter in Stratford, London, has officially opened.

Built as a legacy to the 2012 London Olympics, the museum features two free permanent *Why We Make* galleries with more than 500 objects on display, which highlight global art, architecture, design and fashion.

Working on behalf of main contractor Mace, Bourne Steel erected 1,500t of steelwork for the building's main frame.

The structure's façade is the most striking element of the building and is inspired by Nick Veasey's X-ray of a 1955 silk taffeta evening dress by Cristóbal Balenciaga, which is in the V&A's collection.

The pleated façade accommodates the vertical circulation between floors, reminiscent of the boning which supports the sculptural dress.

A series of seven steel nodes, weighing up to 12t each, were erected to support the unique exterior precast and glazed cladding.

Eden Project Morecambe appoints main contractor

The completion of the Eden Project Morecambe has moved a step closer as VINCI Building has been appointed as main contractor for the world-class scheme.

The announcement adds significant momentum to what is set to be a transformative year for the highly anticipated project. The appointment follows the granting of planning approval last month and keeps the scheme firmly on track for opening the first phase – 1.5 acres of landscaped gardens – in early 2027, ahead of fully opening in 2028.

John Pye, Project Director for Eden Project Morecambe, said: "VINCI's technical capability, deep roots in the North West and strong commitment to sustainability and social value make them a powerful partner as we move towards breaking ground later this year."

Eden Project Morecambe is being delivered in partnership with Lancaster City Council, Lancashire County Council and Lancaster University and is supported by UK Government investment.

Councillor Caroline Jackson, Leader of Lancaster City Council, said: "This project will bring pivotal opportunities for the future economy of Lancaster district, creating new jobs, supporting skills development and generating long-term prosperity."

New secondary school for Wallasey

Willmott Dixon has been appointed by the Department for Education (DfE), on behalf of The Mosslands School in Wallasey, to deliver a £61 million programme of works to create a new, state-of-the-art secondary school.

Designed by Ellis Williams Architects, the 19-acre redevelopment will accommodate 1,500 pupils, providing modern and flexible learning environments.

The new three-storey steel-framed building will support high-quality education and enhanced opportunities in science, technology, engineering, art and mathematics. Hambleton Steel will fabricate, supply and erect the steelwork.

The redevelopment will also include improved external facilities, featuring two sports halls, a replacement all-weather sports pitch, a multi-use games area, a new car park and cycle parking.

Mike Poole-Sutherland, North West Director at Willmott Dixon, said: "We are delighted to be working in partnership with the DfE and The Mosslands School on this landmark new school.

"This new campus will benefit students, staff and the wider community for years to come and we're pleased to be playing our part in making this happen."

Dominic Williams, Project Director at Ellis Williams Architects, added: "We are delighted that our design for Mosslands will be realised for both the school and the community. We hope the wide range of exciting spaces, including a dramatic central atrium, flexible theatre, sports halls and a design technology zone will provide an aspiration to all users."

Go ahead for major Leeds data centre

Developer Harworth and Microsoft have been given the green light for a hyperscale data centre at Skelton Grange in Leeds.

To be built on a former power station site, the plans include three data centre halls (comprising 46,450m²) as well as auxiliary buildings.

Power connections, back-up generators and cooling chimneys are also set to be installed as part of the development.

The government has classified data centres as critical national infrastructure, placing them on an equal footing with water, energy and emergency services systems.

Lynda Shillaw, Chief Executive of Harworth, commented: "Obtaining the resolution to grant planning consent is demonstrable progress towards the completion of the scheme and reflects our close and effective collaboration with Microsoft.

"At Skelton, the 16 acres of adjoining land and our adjacent Gateway 45 site provide capacity for further development."

Export orders drive increased production at British Steel

British Steel is increasing production after securing one of its largest ever export orders, a £70 million contract for port redevelopments in Nigeria.

The agreement, with Hitech Construction Africa, will see British Steel supply 120,000 tonnes of steel to help modernise the Tin Can Island and Lagos Apapa port complexes.

It is one of the company's largest orders for billet – semi-finished steel which will be used for construction materials – and its largest order backed by UK Export Finance. To meet demand, the company is increasing steel production in Scunthorpe.

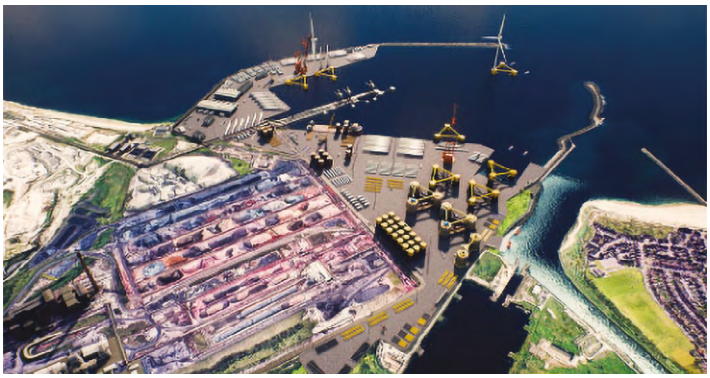
British Steel CEO Allan Bell said: "This is a record-breaking contract for British Steel and a major boost to our 4,000 employees and many more people in our supply chains.

"After government intervention last April, everyone at British Steel has worked hard to stabilise the company. This deal represents us moving from stabilisation to building long-term sustainability for the business."

Peter Kyle, Business and Trade Secretary, said: "Hot on the heels of our landmark Steel Strategy, this is a major win for British Steel made possible by UK Export Finance, which is testament to the quality of UK-made steel and the booming UK-Nigeria relationship.

"Through our new Strategy we're backing British steelmakers for long-term success at home and abroad, and this contract will reinforce British Steel's world-class expertise while supporting jobs and growth in Scunthorpe."

Government agrees support for Port Talbot floating offshore wind hub



The UK Government and Associated British Ports (ABP) have agreed to develop infrastructure at Port Talbot for a floating offshore wind farm in the Celtic Sea, subject to final clearance by the Competition and Markets Authority.

Providing high-quality jobs for the region, the plans will transform Port Talbot into a strategic industrial hub for floating offshore wind, providing the large-scale manufacturing, assembly and marshalling capacity required to deliver the projects.

Henrik L. Pedersen, Chief Executive Officer of ABP said: "Agreeing terms on government support is a critical step towards further ABP investment at Port Talbot and establishing the port as a cornerstone of the Celtic Sea floating offshore wind industry."

Energy Secretary, Ed Miliband said: "From floating offshore wind in Port Talbot to a new generation of small modular reactors at Wylfa – this Government is putting Wales at the heart of our clean energy superpower mission.

"With its deep waters and strong winds, we are supporting Wales to storm ahead in floating offshore wind."

Secretary of State for Wales Jo Stevens added: "This is a significant moment for Port Talbot and a major step forward for the growing clean energy industry in Wales. This investment will further cement Port Talbot as a hub of the industries of the future and heralds the next chapter of jobs and investment in the area.

"The UK Government has backed steelworkers and the community in Port Talbot with £100 million in direct support and £500 million for the construction of a new Electric Arc Furnace, ensuring that the town will manufacture clean steel into the future."

NEWS IN BRIEF

Working on behalf of Newcastle City Council, **Morgan Sindall** Construction North East has started work on the Outer West Leisure Centre. Procured via the Pagabo framework, it will consist of two swimming pools with movable floors, a competition pool, a splash pad, training pools, sauna and steam room, sports hall, library, gym, and offices.

Plans to regenerate the former **Gillingham Gas Works** have received unanimous approval from Medway Council's Planning Committee. The scheme will transform the heavily contaminated brownfield site into a new waterfront neighbourhood, delivering up to 500 new homes and a range of commercial, community and retail units.

Main contractor **Henry Brothers** has officially started work on the expansion of Queen's University Belfast's Momentum One Zero building. The £70 million development will provide purpose-built laboratories, co-location space for industry partners, secure computing and testing environments, and collaborative zones designed to accelerate product development, skills growth and commercialisation.

A planning application for phase one of **Mix Manchester,** the UK's first airport-based science, innovation, and manufacturing campus, has been submitted. It will include over 6,500m² of flexible mid-tech workspace aimed at pioneering businesses and a 1,500-space multi-storey mobility hub with cycle facilities and ground-floor commercial units.

Caddick Construction is set to build a new room2 hotel in Leeds city centre following joint developers, Marrico and Helios Real Estate, securing £46 million of forward funding. The 16-storey, fully electric powered scheme will comprise 200 hotel rooms, including a mix of studio and suite accommodation designed to cater for both short and extended-stay guests.

PRESIDENT'S COLUMN

A burning issue.

Chris Durand
BCSA President

It has been a busy few months with much going on that could adversely impact our industry and requiring comment from the BCSA. At the same time, we must not forget the ongoing technical issues that impact all our members. For a long time, fire protection has been uppermost in many members' minds, with intumescent paint systems becoming more expensive than the steelwork they are protecting. In the aftermath of Grenfell and the Luton Airport car park fire, both the required fire resistance periods and the protection systems themselves have come under added scrutiny. Much of the guidance that we are working with dates from the development of BS 5950-8 which in reality, was written a generation ago and probably overdue for some re-examination.

Many of the accepted truths from the past are now under question with a new generation requiring detailed analysis and computational proof rather than an acceptance of satisfactory past performance. One example of this is the behaviour of boundary walls in portal frames and the associated design of the capable member supporting the cladding in a fire event with new guidance published by the SCI last year. The BCSA has also set up a Fire Group acting under the P & T Committee to investigate numerous other issues, including protection of joints and requirements for coat-back on secondary members where they meet fire protected steelwork.

The basis of all this analysis is the standard fire curve, which is derived from the measured temperature of samples within a furnace over time. These furnaces are usually gas fired with a continual source of combustible fuel to maintain the intensity of the fire which is often not the case in real-world situations. In the past, this lack of correlation with real structures has allowed Building Regulations to permit some relaxation of fire ratings. The most notable example in our industry being to specify 15 minutes' fire resistance for open-sided car parks, which in turn allows the use of unprotected steelwork. This limit is currently under review and even a slight increase in the resistance period will prevent the use of unprotected steelwork with major cost implications for this market sector.

There is also a tendency at the current time for all involved with specifying fire resistance and protective systems to play it safe. We are frequently required to justify details and situations which in the past would not have caused any concern. I had a recent example where an external platform supporting PV panels on the roof of a building was deemed to require 30 minutes' fire resistance. A fire engineering exercise had shown that by increasing the weight of the supporting members this level of resistance could be achieved without added protection. This all looked good, however, the actual depth of the supporting members could not be increased due to planning restrictions resulting in a support structure formed from heavy column sections. The connection design was never considered during this exercise as this was a sub-contractor designed element.

However, the connection design proved to be the big issue. When considering the standard fire curve, it is found that after 30 minutes, the steel has potentially reached a temperature of 834°C with a resulting massive reduction in the bolt and weld capacities. The beams were designed as shallow depth and there is simply no space for the required number of bolts. The result is a major design problem for all involved but if we take a step back there are two basic questions. Why does the platform need a 30 minute fire rating and what is there to actually catch light and burn up there?

There is an undoubted need to update our guidance on the fire protection of structural steelwork but we should always be mindful of real-world practicality. We appear to be in a time where analysis governs all, with common sense completely forgotten and this could be the real burning issue for the future.

Contractor appointed for Sizewell C

Sizewell C nuclear power station has appointed McLaren Construction as its construction management partner in a three-year deal.

Under the construction management framework agreement, McLaren will supervise and coordinate the construction of Sizewell C's permanent post-16 college, temporary accommodation campus and amenity building, a project office, and an emergency response building.

The project's steelwork package is being undertaken by William Hare.

The campus and amenity buildings will play a vital role in supporting Sizewell C's workforce (there are already 2,000 people working onsite) during the construction of the new nuclear power plant on the Suffolk coast.

Vince Lydon, Managing Director for Construction Management and Specialist Projects at McLaren Construction, said: "Delivering construction management services for one of the most nationally significant infrastructure projects in the UK is testament to the track record and capability of our team.

"Through this framework appointment, we are creating long-term local employment opportunities, supporting the community during the construction timeline."

Damian Leydon, Site Delivery Director of Sizewell C, said: "Only two years after triggering our Development Consent Order, we're making significant progress onsite here in Suffolk. This contract marks another big step forward, as we look to deliver some key construction projects."

Work set to start on 12-storey Thurrock storage facility

Contractors are readying themselves to bid for a £30 million landmark 12-storey automated container storage facility at Thurrock, London Gateway.

Known as BOXBAY, the structure will deliver a next-generation, high-density storage system for empty containers.

Said to be one of the most technically ambitious industrial buildings of its kind in the UK, it will measure 55m-tall and have a footprint of approximately 323m x 159m.

The project presents a complex engineering challenge, combining heavy civil engineering works with a substantial groundworks package. More than 15,000t of steelwork will be required, alongside around 50,000m² of cladding and a 46,500m² roof.

BOXBAY CEO, Christoph Roth, said: "This scheme marks a pivotal moment for us, as we transition from concept to real-world application.

"For the first time, we will implement our system specifically for empty containers. We believe this sector holds enormous potential as almost every port in the world deals with vast quantities of containers."

Cinema complex to start Ashington regeneration scheme

Northumberland County Council has appointed Robertson Construction North East to deliver a five-screen cinema and leisure complex in Ashington.

The landmark design and build project forms part of a £36 million regeneration package, which will rejuvenate the town centre.

Helping to increase footfall, while extending the weekend and evening leisure offerings, the building will include two restaurants.

Councillor Richard Wearmouth, Cabinet Member for Business, Growth and Regeneration, said: "The cinema and leisure complex represents a significant investment, strengthening the town centre as a destination for entertainment, dining and socialising.

"It's a real vote of confidence for Ashington, building on the wider regeneration in the area, including a new rail station and college."

The project has been awarded through the Procure Partnerships Framework and is being funded by the Government's Ministry of Housing, Advance Northumberland and Northumberland County Council.

Neil Kennedy, Regional Managing Director, Robertson Construction North East, said: "Projects like this have the potential to transform a community, and we look forward to delivering meaningful local benefits that contribute to the town's long-term growth."

Steel up for Great Yarmouth college rebuild scheme

A steel signing event has been held at the East Coast College site in Great Yarmouth to celebrate the completion of the steelwork installation.

Main contractor Kier, working on behalf of the Department for Education, is building a new and improved education campus, replacing the existing facilities.

The campus will be equipped with a mock hospital ward for students hoping to pursue medical careers, a hair and beauty salon, sports facilities, and training kitchens and restaurants. In addition, there will also be a lecture hall and digital learning suites.

The new facilities will enable the introduction of new courses for 16 to 19-year-olds and adult learners, helping to meet the growing demand for education and addressing local skills gaps.

Designed with low-carbon operation at its core, the new campus will provide a sustainable and energy-efficient learning environment.

Paul Padda, Principal and Chief Executive Officer at East Coast College, said: "This is a once-in-a-generation opportunity to create an exciting and vibrant community asset. It will help thousands of students every year to study in the incredible new facilities on offer."

H Young Structures has fabricated,

supplied and erected 550t of steelwork for the project.

Two-storey leisure centre will provide much-needed facilities

Willmott Dixon has started construction on a new leisure centre and healthcare hub at Bransbury Park in Portsmouth, delivering modern swimming, fitness and primary care facilities for communities in the city.

The project, procured via the Southern Construction Framework (SCF), will see the company deliver a two-storey facility featuring a 25m four-lane swimming pool, learner pool, 65-station fitness suite and two group exercise studios, alongside new healthcare provision.

An improved artificial turf pitch and floodlit multi-use games area with free public access will also be created at the north of the site.

Richard Poulter, Managing Director for Willmott Dixon in the South, said: "We are delighted to be starting work on this important community facility for Portsmouth. Drawing on our experience of delivering more than 160 leisure centres nationwide – including over 100 swimming pools – we bring proven expertise in creating high-quality, accessible facilities that enhance local health and wellbeing."

Councillor Steve Pitt, Leader of Portsmouth City Council, said: "This is an exciting moment for the Bransbury Park project and for the communities who will benefit from this much-needed centre."

Scheduled for completion in winter 2027, the centre forms part of Portsmouth City Council's wider investment of more than £40 million in sport and leisure facilities over the past decade, reflecting its commitment to supporting the mental and physical wellbeing of residents.

Work starts on new teaching block for Birchington school

Morgan Sindall Construction's Southern Home Counties business has commenced work on a new teaching block at Birchington Church of England Primary School in East Kent.

Appointed by the Department for Education, the £13.4 million project will deliver a modern, two-storey teaching block offering 1,455m² of floor space.

Designed to enhance both learning and social interaction, the building will incorporate 10 classrooms, a library, an ICT suite, main reception, four group rooms, a kitchen and a hall.

Guy Hannell, Area Director at Morgan Sindall Construction in the Southern Home Counties, said: "This project represents a fantastic opportunity to create a modern, sustainable learning environment that will benefit pupils, staff, and the wider community for years to come.

"Working closely with the Department for Education, Birchington C of E Primary School, and our design team, we're focused on delivering a high-quality educational facility that prioritises wellbeing, energy efficiency, and long-term value. All while creating meaningful opportunities for local people throughout the construction process."

Diary

For SCI events, contact SCI Education, tel: 01344 636500 email: *education@steel-sci.com* web: *https://portal.steel-sci.com/trainingcalendar.html*
For BCSA events, visit: *https://bcsa.org.uk/events/*

Tue 9 & Thu 11 June 2026
Generation 2 Eurocodes: EN 1994-1-1 Steel-Concrete Composite Structures
Online course
Over the course of two 2-hour sessions we will present detailed design rules for composite beams and slabs in accordance with Generation 2 Eurocode 4. These will cover ULS, SLS and fire design, for beams and slabs used in buildings. We will 'walk through' a worked example on beam design taken from an upcoming SCI Generation 2 publication (supplemental to P359).

Wed 17 June 2026
Design Assisted by Finite Element Analysis - Introduction to the new Eurocode 3 Part 1-14
Webinar
Finite element software has long been used for the determination of the internal forces and moments in steel structures. This webinar will introduce the new Eurocode 3 Part 1-14 and outline how its provisions should be applied in practice, covering modelling requirements, analysis procedures, verification and validation steps, and their integration into the overall design process.

Wed 1 July 2026
Eurocode Load Combinations
Webinar - free to all
Eurocode load combinations can cause some confusion amongst building designers, so this webinar has been prepared to explain which combinations are appropriate, in which circumstances. In addition to the orthodox cases, the presentation will also cover specific provisions for roofs, the partial factors appropriate for crane actions, the combination when assessing brittle fracture, the variable action reduction factors and when they may be used, and serviceability.

Reduced carbon steel solution

Voestalpine Metsec has manufactured and supplied Steel Framing Systems (SFS) in its reduced carbon steel option, Metsec Decarb, for the construction of a new school.

Main contractor Galliford Try is undertaking a £17 million project to replace the existing Hill West Primary School in Sutton Coldfield, with a new, modern two-storey structure, which will be net zero carbon in operation through energy-efficient design and onsite renewable energy generation.

The environmental benefits of reduced carbon have also been used in the design and construction of the new school, with Galliford Try opting to showcase voestalpine Metsec Decarb, a reduced carbon steel solution for the SFS infill.

The 1,200m² of light gauge cold-rolled steel SFS will be installed by local steel framing specialists and approved Metsec framing installer, C G Reynolds.

Commenting on the project, Charlie Jones, Regional Sales Manager for Metsec SFS, says: "Metsec Decarb is a genuine low carbon steel option, offering true reductions in embodied carbon without greenwashing.

"Hill West is the first school project to use Metsec Decarb and we believe that it will be the first of many as government departments, such as the Department for Education, have now set embodied carbon limits into their construction specification frameworks.

"It also contributes towards Galliford Try's commitment to low-carbon construction and reducing their carbon footprint in both business operations and project delivery, which demands the adoption of innovative solutions.

Using SFS, combined with a steel frame, has proven to be a sustainable solution.

"The use of Metsec Decarb on the Hill West project serves as a strong demonstration of this commitment, aligning with Galliford Try's Net Zero Route Map, the Construction Leadership Council's Five Client Commitments and initiatives such as the 'One in a Million' programme, which focuses on lowering embodied carbon through measures like reduced carbon steel procurement.

"We at Metsec are delighted to support Galliford Try in achieving their carbon-saving strategies for this project, providing an alternative that contributes meaningfully to their sustainability goals."

Falling within band E (<1,200 $kgCO_2e/t$) of the steel scale contained within the Construction Leadership Council's Five Client Commitments, Metsec Decarb offers a significantly reduced carbon steel solution. Metsec is committed to achieving carbon neutrality throughout its operations by 2035.

As with all Metsec Decarb applications, voestalpine Metsec supplied project-specific Environmental Product Declarations (EPD) for the Hill West project, which included accurate calculations of savings in the steel's embodied carbon. The EPD for Hill West shows a 55% reduction in embodied CO_2 compared with standard steel.

The phased construction is currently underway, with SFS deliveries being made to site according to the construction schedule. ■

Metsec Decarb offers a reduced carbon steel solution for contractors and designers.

BCSA

Make sure your Steelwork Contractor is RQSC approved

Image courtesy of William Hare Limited

Specify an approved company from the Register of Qualified Steelwork Contractors for Buildings, to ensure your project meets the Building Safety Act requirements. As of October 3rd 2023 it became mandatory in the NSSS 7th edition, 1st Revision that all Steelwork Contractors are RQSC approved.

Tel: 020 7839 8566
Email: postroom@bcsa.org.uk
Web: www.bcsa.org.uk/buildings-directory

RQSC

The Register of Qualified Steelwork Contractor
Buildings

UK steel strategy

The constructional steelwork sector remains supportive of the UK Steel Strategy and a sustainable and financially viable steel production industry, but the ramifications of the proposed quotas and tariffs on our sector need to be urgently reviewed and amended, writes the BCSA's Michael Sansom.

Imports are important, as some grades of EAF steelwork are currently not produced in the UK.

Photos on this page courtesy of Barrett Steel Ltd

The long-delayed UK Steel Strategy was finally published in March. Although short on detail on the future of UK steelmaking, a central component is the introduction of new quotas and tariffs on steel imported into the UK after 1st July 2026.

UK steel quotas are not new. They were originally introduced in 2018 as EU safeguard measures in response to US tariffs. The UK then applied its own safeguard quotas from 2021 following Brexit.

Import quotas are currently in place for 15 steel product categories. Above these thresholds, a tariff of 25% is payable. The current safeguard quotas expire on 30th June.

UK steelwork contractors use open and hollow sections and plate to annually produce around one million tonnes of fabricated structural steelwork. The most significant product category is 17 (angles, shapes and sections). The current import quota for sections is 748kt annually, but this is set to be slashed by 83.5% on 1st July to just 123kt. The tariff on imports exceeding this quota will double to 50%.

The purpose of the new quotas is clearly stated in the Steel Strategy; that it is 'to protect domestic production'. Although laudable, this raises a number of challenges for downstream users of steel, including the constructional steelwork sector. These include:

1. The short-term pressure it puts on British Steel (the only UK producer of heavy sections) to supply the increased demand for open steel sections.
2. Availability of certain structural steel products (sizes and grades) not currently produced in the UK.
3. The impact of delays, uncertainty and cost increases on construction projects and on structural steelwork's competitiveness and the loss of market share relative to alternative structural materials.
4. The difficulty of meeting 'low-carbon' building targets using BF-BOF steel and the cost implications of doing so using imported EAF steel. Some UK Government policies promote low-carbon (EAF) steel at the same time as promoting British-made (BF-BOF) steel. Different Government departments need to be more aligned on this.

The UK currently produces under four million tonnes of steel per year, less than we produced in the 1930s and a 90% reduction since the peak in 1970. As production has reduced, manufacturers of finished steel products have, by necessity, sought alternative markets and suppliers, to the point where the UK currently imports around 70% of the steel it uses. The 50-year decline in British steelmaking cannot be reversed in a single day and steel-using sectors need time to adjust and therefore, the proposed quotas need to be relaxed and/or phased-in to allow downstream sectors to adapt.

There is a further glaring omission from the proposed quotas; the exclusion of fabricated steelwork. This means that although imported sections will attract a 50% tariff, fabricated steelwork can be imported tariff-free from anywhere in the World! Not only does this mean a loss of steelwork fabrication jobs, the steel used will not have been produced in the UK; which is the primary objective of the import quotas. This is already happening on numerous construction projects under the current quotas and is likely to get significantly worse under the proposals. Other countries, notably the US, have closed this loophole by introducing a 50% tariff on all imported structural steelwork and the BCSA and Steel for Life are actively engaged with the Government to include fabricated steelwork within the UK import quotas. ■

UK contractors annually produce around one million tonnes of fabricated steelwork.

Sourcing steelwork

The UK's ability to supply its own steel has diminished over recent decades, increasing the reliance on imports. NSC reports on where the nation's steel comes from, what government intends to do and the implications.

Helping to create everything from commercial buildings to major infrastructure projects, steel is an essential material for the UK construction sector. But where does it come from?

Understanding where the UK sources its steel, how this has changed, and what it means for construction is critical at a time of economic uncertainty and industrial transition.

According to trade association UK Steel, the total demand for steel in the UK typically fluctuates between nine and 11 million tonnes per year, depending on economic conditions and construction activity.

As domestic crude steel production has significantly fallen in recent times (government statistics report that it currently stands at just under four million tonnes per annum), imports make up around 60% of steel used in the UK.

The UK's reliance on imported steel is not new but has intensified. In the early 2000s, domestic production met a larger share of demand. However, factors such as plant closures, reduced investment, and high operating costs (UK steel producers must pay higher energy prices than their European competitors) have eroded capacity.

But where does the imported steel come from? Allowing for post-Brexit adjustments, the European Union (EU) remains the UK's largest source, due to its proximity, established supply chains, and the UK's alignment with EU standards.

Accounting for around 75% of imports, the key EU steel producing countries include Germany, France, Spain and the Benelux nations.

The remaining imports are primarily sourced from Asia, with key contributors being China, India, South Korea, Turkey and the UAE, while some specialist steel items are imported from Japan and the USA.

In order to redress the import imbalance, the Government recently unveiled its Steel Strategy (see article on opposite page), which sets a target for UK produced steel to meet 50% of domestic demand.

Alongside its Steel Strategy, the UK government has committed to supporting the nation's steel sector, most notably by taking control of British Steel last year.

British Steel plans to build two EAF steelmaking plants.

The majority of the UK's imported steelwork is sourced from EAF production sites.

As the Chinese owners, Jingye, had signalled an intent to close the Scunthorpe steelworks, the government's intervention has prevented the site's two blast furnaces from closing.

The government is also supportive of the transition to EAF steelmaking technology, which could also help reduce the UK's reliance on steel imports.

British Steel has plans to build two EAF's at its Scunthorpe and Teesside sites, while Tata Steel is currently constructing a similar production facility at Port Talbot. ■

Types of steel and their uses

Long products include beams and columns, reinforcement bar (rebar) and wire rod. They are used in construction, which is the largest consumer – by sector - of steel in the UK.

Barrett Steel, the UK's largest steel stockholder, estimates that approximately 80% of its long products are sourced from the UK and the EU, with the remainder imported from countries such as Turkey, South Korea, the UAE and Brazil.

"All of our suppliers are quality audited, but sourcing steel from production sites close to home makes economic sense," says Barrett Steel Chief Executive Guy Barrett.

"But with demand for EAF sections – which UK plants can't yet produce – rising, imports remain vital."

Flat steel accounts for a significant share of imports and includes sheet and plate steel as well as coated and galvanized products. They are used for cladding and roofing systems, automotive manufacturing, and appliances and industrial equipment. Much of this material is imported due to limited domestic production capacity.

Semi-finished products such as slabs and billets are often imported for further processing in UK mills. ■

Plate girders, positioned on the underside of the fifth floor, allow columns to be omitted from the lower levels of the Davies Street building.

West End offices in the frame

Transforming a large swathe of London's prestigious Mayfair district, the South Molton project is maximising the available floor space with a steel-framed solution for its two office buildings.

Adapting to the historic street pattern and fabric of Mayfair and covering two acres, South Molton is a wide-ranging scheme that will create a new destination in the heart of the capital's West End.

A stone's throw from Bond Street underground station, the project's site is bounded by South Molton Lane and Davies Street to the east and west, and Brook Street to the south.

Overall, the scheme will deliver new shops, cafés and restaurants, alongside two office blocks, residential properties, a restored pub and a boutique hotel.

According to Grosvenor, the opportunity to deliver this scale of new, world-class office space in Mayfair is exceptionally rare. Benefiting from the new amenities and public spaces they are creating at South Molton, the offices are set to be some of the capital's most prestigious addresses.

The project is being delivered in three separate phases, with the largest phase (the office blocks) being undertaken by Skanska.

Providing corporate HQ opportunities in one of the West End's most sought-after locations, the two steel-framed eight-storey office blocks at 60 Brook Street and 56 Davies Street, comprise 6,596m² and 7,246m² respectively.

The office buildings are separated by a small thoroughfare known as Davies Mews (closed throughout the construction programme) that bisects the site from east to west.

In the completed scheme, Davies Mews will become a lively street, served by some of the numerous retail outlets and restaurants, accommodated within the ground floor of both office buildings.

As well as retail, and food and beverage outlets, the ground floors in each building will also incorporate the main entrance lobbies for the offices floors, which occupy every floorplate from level one upwards.

Both steel frames start at ground floor slab and sit above concrete substructure basements. Because an Elizabeth Line underground tunnel runs beneath the north building, it has a single subterranean level, while the south building is able to have a deeper two-level basement.

"One of the reasons for choosing a steel-framed method for the project was the need for a lightweight solution, because we are building above important transport infrastructure," explains AKT II Associate Director Simone Colella.

Following a demolition programme, the basements were formed during the project's enabling works package. A piled secant wall was installed around a portion of the south building's footprint, as well as a raft foundation for each building.

In line with Grosvenor's sustainability commitments, the project is targeting net zero carbon in operation and construction, minimising embodied carbon and waste wherever possible, with offsetting strategies in place to ensure the development is carbon neutral at practical completion.

Helping the project achieve its sustainability targets (the offices are aiming for BREEAM 'Outstanding'), approximately 31t of reused steel has been incorporated into both buildings' steel frames.

A proportion of the reused material was sourced from steelwork contractor Severfield's own internal stock, with the remainder coming from stockist Cleveland Steel & Tubes.

Reusing materials also extends to the building's fabric, as both structures incorporate retained façades; a red brick two-storey façade wraps around the southern elevation of the Davies Street building,

FACT FILE
South Molton, London
Main client: **Grosvenor, Mitsui Fudosan**
Architect: **Hopkins Architects**
Main contractor: **Skanska**
Structural engineer: **AKT II**
Steelwork contractor: **Severfield**
Steel tonnage: **2,300t**

"One of the reasons for choosing a steel-framed method for the project was the need for a lightweight solution, because we are building above important transport infrastructure"

Careful design will allow the two office blocks to blend into the existing Mayfair environment.

while another four-storey (red brick and render) façade is retained on the Brook Street office.

Elsewhere, Portland Stone facades were carefully removed during the demolition works and taken away to be cleaned. Retaining the area's historic streetscape, the material will be reinstated to clad the new steel-framed buildings along their two main elevations.

Another aspect of local history, which is being retained as part of Skanska's package is the Running Horse pub. The refurbished establishment will sit next to the Davies Street building, while two neighbouring buildings have also been retained up to second-floor level and incorporated into the scheme as meeting rooms.

New steel floors sit above the retained buildings, with their columns sat on the existing party wall and also supported by an 8m-long cantilever Vierendeel truss.

Both steel framed blocks are arranged around centrally-positioned concrete cores that provide the majority of the structural stability.

Radiating out from the cores, long span cellular beams have been used to accommodate the building services within their depth. With minimal internal columns, the beams, which are up to 10.5m-long, also create the clear open-plan floorplates that modern offices require.

The beams support a composite metal decked flooring solution, which was a late addition to the project's design.

Skanska Project Director Paul Roberts explains: "Initially, the office block's design included precast flooring, supported on steel beams, but this was altered to Electric Arc Furnace (EAF) metal decking, which became available just before we started construction. This change gave the project a significant embodied carbon saving, and was 14 weeks quicker to install."

Providing plenty of outdoor breakout space for the office occupants, one of the standout design features is the numerous terraces that cascade down both buildings above level four.

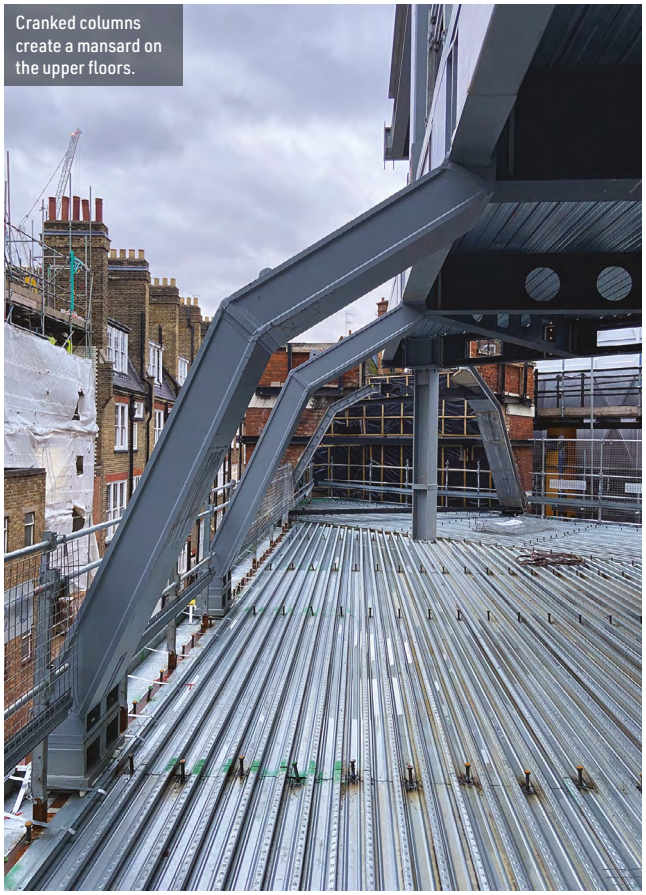
The terraces require a series of large transfer beams, to support the required set-backs (steps) in the building's steel-framed structure.

Some of the heaviest steel elements that Severfield has supplied to the scheme are four plate girders, located along the southern elevation of the Davies Street building (overlooking Davies Mews). The girders are 4m-long, 5.3m-long, 9.8m-long and 11.5m-long respectively, with the heaviest weighing 9.8t.

These large steel elements, positioned at the underside of the fifth floor, support the fourth and third-floors via hangers, thereby allowing two rows of columns to be omitted from the building's lowest floors. This creates some extra column-free space for the ground, first and second floors.

South Molton is due to complete in July 2027. ■

As the site is confined, logistical planning has been key for material deliveries.



Cranked columns create a mansard on the upper floors.

Gateway to learning

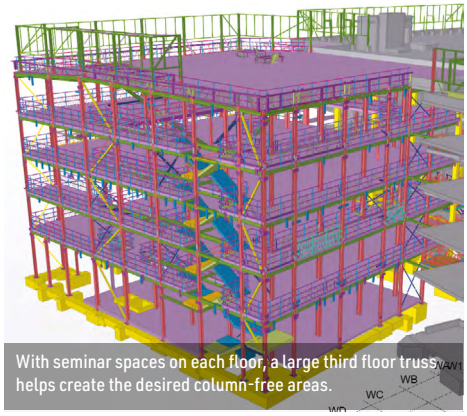
The completed scheme will provide a gateway to the redeveloped campus.

The University of Southampton's latest education building has utilised a hybrid framing solution, including two steel-framed blocks, satisfying its need for flexible teaching, lecture and seminar spaces.

Forming a new gateway to its Highfield Campus, construction work is underway on the North East Quadrant project at the University of Southampton.

Central to the ambitious scheme is the B75 building (named to celebrate 75 years since the University was granted a Royal Charter by HM Queen Elizabeth II). The five-storey 15,000m² building will include a range of lecture theatres, event teaching spaces and seminar rooms, alongside a café, nursing room and a variety of indoor and outdoor social spaces designed to create a bustling student environment.

Professor Mark E. Smith, Vice Chancellor of the University of Southampton, said: "The new building symbolises our dedication to fostering an innovative and inspiring learning environment for our students and faculties. This space will be a hub of creativity, collaboration and academic excellence, ensuring that the University of Southampton continues to be a sector leader in education."



With seminar spaces on each floor, a large third floor truss helps create the desired column-free areas.

John Boughton, Managing Director of Kier Construction Southern, says: "Our work at the University brings together leading supply chain partners, whose combined expertise is key to delivering this state of the art building for Southampton.

The impressive progress of the steel and concrete frames is a testament to the collaboration on the project – from design experts to experienced operatives – everyone is playing their part in bringing this flagship project to life."

Aiming to achieve a BREEAM 'Excellent' rating, the project is set to be the University's most sustainable building to date. The space has been designed with a fabric-first approach, maximising the use of natural ventilation where possible. The use of passive, energy saving materials throughout will reduce the operational energy demand by 40%, meaning cost and carbon savings throughout the building life cycle. Solar panels will be added to part of the roof, and an air source heat pump will heat the building.

To this end, the building's structural framing has used a hybrid approach, with different methods used throughout the scheme, depending on the area's intended function.

B75 has four distinct blocks, but with no movement joints separating them, each is interconnected, locked together and gains stability from the centrally-positioned core block.

The stability-giving core block is formed with in situ concrete and contains lifts, toilets, and the main atrium and circulation routes.

The west block has been constructed with post-tensioned concrete and will accommodate a student teaching hub. It has been designed with flexibility in mind and, with the addition of extra partitions, it could become a teaching space in the future.

The two remaining areas – the south block and the four-storey east block – have been designed as steel-framed structures supporting precast flooring planks.

Arup principal engineer Ben Woodward, says: "In keeping with the client's brief, we've used a hybrid design with different framing solutions to suit each particular area of the building.

"For the two blocks that need to have column-free floorplates, steelwork was the most efficient method of construction, while the use of precast planks provided a quick installation programme – alongside the steel – and gave us the required acoustics."

Working on the relatively confined site, situated within a 'live' university environment, logistics and planning have played a key role on the project.

FACT FILE
University of Southampton, North East Quadrant B75 Building
Main client: **University of Southampton**
Architect: **Sheppard Robson**
Main contractor: **Kier Construction**
Structural engineer: **Arup**
Steelwork contractor: **Bourne Steel**
Steel tonnage: **625t**

Following on from the groundworks and installation of foundations, the two concrete blocks were constructed first, with the steel erection package following on behind.

This initially gave the concrete team space in which to work, but once the first two blocks were up, they then provided the stability for the steel frames.

The steel-framed south block is the largest of the four areas. It features a stacked-up design, with a 120-person semi-circular lecture theatre at ground-floor, spanned-over by a 400-capacity seminar space at first-floor level.

The first-floor seminar space is a double-height zone, with a series of 21m-long plate girders forming the ceiling, as well as the floor of another double-height, column-free space (a 220-person lecture theatre) at the third floor.

Splitting the block in half and supporting around 60% of south block's floor space, a large 26m-long × 11m-deep truss is positioned at third floor.

"As the truss is so deep, it was fabricated and brought to site in two sections, which were individually lifted into place using a 400t-capacity mobile crane," explains Bourne Steel Project Director Duncan Wyatt.

The remainder of the steelwork, including the plate girders, has all been installed using the project's tower cranes.

On its western side, the truss supports the plate girders that form the third floor as well as the UB sections that create the block's roof. On the eastern side of the truss, there is another series of 12m-long beams, forming five floors of seminar spaces.

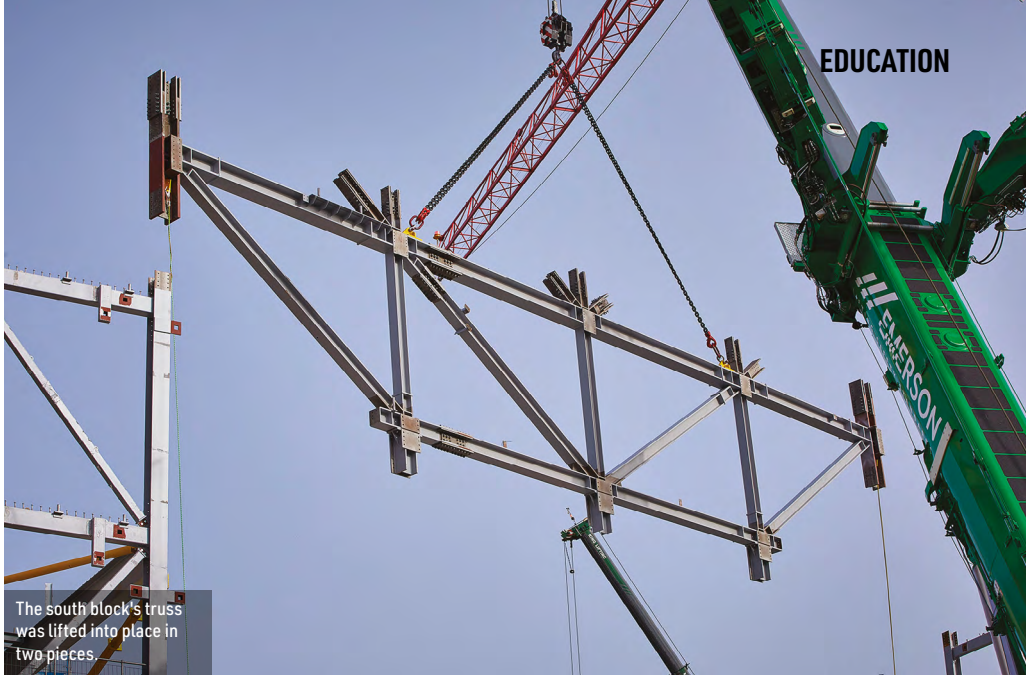
Where the south block connects to the core, a bespoke design feature has been used. During the steel erection sequence (temporary condition), the south block truss exerts some significant forces on the frame, pulling columns away from the core.

To counteract this, the steel connections to the concrete core, feature slotted holes within the base plates, allowing movement during the temporary condition. Once the building reached its permanent condition, whereby all of the steel frame was up and the precast planks had all been installed, a series of tension controlled bolts (TCBs) were installed to connect the steel framed south block to the core, locking the two areas together.

The smaller east block features floorplates with spans of up to 18m-long, with only one row of internal columns located along the elevation that connects to the core block.

Creating the desired multi-functional teaching zones, the first floor is a double-height space, with the second floor designed as a 7m-wide mezzanine, to be used for back-of-house storage.

B75 is scheduled for completion in Autumn 2027 ready for a new cohort of medical students to begin their studies in a state of the art learning environment. ■



The south block's truss was lifted into place in two pieces.

"For the two blocks that need to have column-free floorplates, steelwork was the most-efficient method of construction, while the use of precast planks provided a quick installation programme – alongside the steel – and gave us the required acoustics."


Visualisation of the completed B75 building.


Yellow temporary bracing steelwork remains in place until the floors are completed and the building has achieved permanent stability.

Forging ahead

A large steel-framed building, designed to accommodate nine overhead cranes, is providing the space for a new machine shop, part of a £1.3 billion recapitalisation programme at one of Sheffield's most historic steelmakers.

Helping to underpin UK defence manufacture, one of the world's most advanced, large-scale, machining facilities is under construction in Sheffield.

The New Machine Shop building (NMS), which is being built by Ministry of Defence-owned Sheffield Forgemasters (a company that can trace its history back 250 years) will, on completion, house 24 new machines including some of the world's largest vertical turning lathes.

Complementing the firm's existing facilities, this game-changing project is being carried on recently purchased land that was formerly occupied by Cammell Laird's Brightside Steel Works, once part of the Vickers empire which Sheffield Forgemasters inherited in 1983.

Commenting on the scheme, Craig Fisher, the company's Programme Director (Recapitalisation), says: "The scale of the building will make it an iconic landmark for the city, clearly seen from the M1 Motorway near to Meadowhall.

"We are delivering a facility of national significance, which will not only help support UK industries for generations to come but also support the local economy in South Yorkshire."

Befitting a project being undertaken in Steel City, the NMS requires the installation of a large-scale steel-framed superstructure. The frame will provide 30,000m² of floor space and is 273m-long × 109m-wide and 29.5m-tall to the eaves.

The requirement for large column-free spaces and a quick installation programme made a steel-framed structure the only viable solution.

As well as creating the necessary open-plan areas - the building has three internal spans of 34m, 36m and 38m, running the entire length of the structure – the steel frame needs to support nine overhead gantry cranes.

Servicing the machines with steel castings (which can be up to 360t in weight), each span will have three cranes, one 250t-capacity unit and two 150t-capacity units.

The crane movements will transmit significant loadings into the frame and consequently the supporting steelwork has been designed to be very stiff, rigid and able to absorb the forces and transfer them into the piled foundations.

The overhead cranes will operate along six rows of (crane) beams that run the full length of each span. They are supported on a series of 4.3m-deep trusses, which in turn are supported by 19m-tall lattice columns. In total, there are 84 × 20m-long truss sections, each weighing 27t.

As well as supporting the crane beams, the trusses also connect to a series of steel maintenance gantries and walkways.

The large lattice columns are 3m-wide along the building's perimeter and in the structure's two

Overall, the NMS building has three internal spans, providing the necessary column-free space.

valleys, where there are two adjacent rows of crane beams to support, they are 4m-wide.

There are 68 fully-welded lattice columns in the steel frame, weighing up to 30t each. They were brought to site as complete sections, before being installed using 135t-capacity crawler cranes.

"The lattice members are generally spaced at 20m centres, providing enough room for the numerous openings and access points along the building's perimeters," explains Arup Principal Structural Engineer, Adrian Bull.

"While internally, the column spacings create areas for storage and welfare hubs."

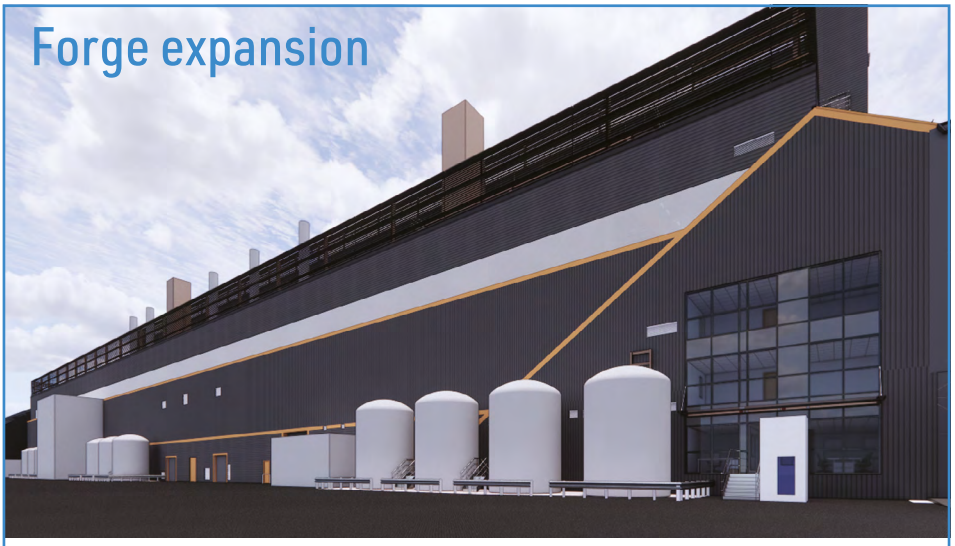
As the NMS is so long, it requires two movement joints, each running the full width of the structure and splitting it into three segments.

Positioned either side of the movement joints there are a series of 4m-wide × 23.7m-long fully-welded lattice bracings, that provide some extra stiffness to the columns. Along the perimeter positions, the bracings are slimmer UC sections.

Working alongside the lattice members and trusses, the roof of the building and its supporting steelwork has been designed as a traditional portal frame.

▸ 20

Forge expansion



Complementing the construction of the NMS, Sheffield Forgemasters is also constructing another steel-framed building that will house the UK's largest open-die forging-line.

The 12,700m² structure will sit adjacent to the existing forge building on the company's Brightside Lane site and as well as housing a new 13,000t press, it will include offices and a water pumping station.

Gareth Barker, Chief Operating Officer at Sheffield Forgemasters, says: "The new facility will significantly improve our throughput of large, complex forgings and will enable us to push the envelope in terms of forging techniques and processes, as well as improving accuracy and reducing downtime."

The project is being undertaken by main contractor VINCI, with Billington Structures fabricating, supplying and erecting the steelwork. ■

"We are delivering a facility of national significance, which will not only help support UK industries for generations to come but also support the local economy in South Yorkshire."

FACT FILE
Sheffield Forgemasters
New Machine Shop building
Main client: **Sheffield Forgemasters**
Architect: **Bond Bryan**
Main contractor: **McLaughlin & Harvey**
Structural engineer: **Arup**
Steelwork contractor: **BHC**
Steel tonnage: **12,500**

Supporting walkways and three gantry cranes in each span requires a robust steel frame.


A large lattice column waiting to be installed.


The lattice columns are connected to high-level crane supporting trusses.

▸20

The NMS roof is supported by a combination of 9m-tall portal sections, connected to the top of each lattice column and a series of 29.5m-tall 356mm × 406mm × 467kg/m and 356mm × 406mm × 551kg/m UC column sections, arranged at 7m centres along the building's perimeters.

Each span of the roof is formed with a series of rafters, which were brought to site in halves, lifted into place using two mobile cranes and bolted together in the air.

Along the internal valleys, the roof has a hit-and-miss configuration, with no intermediate UC columns for support, just the portal stubs on top of the lattice members.

Following on behind the installation of the steel frame, the NMS cladding and M&E packages will begin, alongside some extensive internal groundworks. As well as forming the ground floor slab, a number of pits – up to 8m-deep, have to be formed to accommodate machinery and conveyor systems.

Once areas are clad, BHC will begin to install eight external steel stair towers, which are 29m-high and 6.5m × 4m-wide.

Positioned along both main elevations, the free-standing, colour-galvanized black towers provide access to the cranes and gantry walkways, as well as the roof, via two bridges.

After the NMS steel erection programme, BHC will immediately start the erection of the adjacent SAW Building (which as the name indicates, will on completion accommodate large steel sawing machines).

Measuring 105m-long × 33m-wide and 27m-high to the eaves, this structure has a similar design to the NMS, with lattice columns supporting crane beam trusses and a portal-framed roof creating the building's single span.

Summing up, BHC Project Manager Bobby McCormick, says: "The work has presented a number of technical challenges, particularly around fatigue-driven connection design, which required careful engineering and attention to detail throughout.

"In total, 178 lattice columns and crane supporting trusses were fabricated across our two heavy-duty production bays, showcasing both our capacity and capability.

"Planning and coordination were critical during the logistics phase. We arranged the delivery of 178 abnormal loads, averaging around 10 per week, working closely with the relevant authorities to ensure each movement was carried out safely and efficiently. This joined-up approach was instrumental in maintaining programme certainty and achieving on-time delivery."

The NMS and SAW building are both due to be complete and operational by 2029. ■


Large diagonal bracings support the internal bays.

The BCSA's Responsible Coatings Professionals training course has been developed to improve industry standards of the specification, application and testing of protective and intumescent coatings for structural steelwork.

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Shopping for steel

Highlighting Avonmouth's strategic location, a new distribution centre being built on the site of a former pharmaceutical works, will form part of a major retailer's investment in its food supply chain.

Designed to the highest sustainability standards and due to be completed this summer, a 36,232m² high-spec warehouse is the latest logistics scheme to be built at Avonmouth.

Being developed by Stoford, with Winvic Construction as main contractor, the warehouse, which is targeting BREEAM 'Excellent', has been pre-let to Marks & Spencer (M&S) on a 20-year lease.

Strategically located within the Avonmouth-Severnside Enterprise Area, (which has hybrid consent to deliver circa 185,000m² of new industrial, warehouse and logistics space), the facility is in a key logistics hub, close to the M5 and M4 motorways as well as major port facilities.

Dan Gallagher, Joint Managing Director, Stoford, says: "This project demonstrates confidence in Avonmouth as one of the UK's most important distribution locations and will provide M&S with a facility that meets the highest standards of design and sustainability."

Sarah Stocken, Food Logistics Project Manager at M&S Food, adds: "This distribution centre will play a key role in modernising our supply chain to increase capacity in our network.

"Not only will it help us deliver for our customers but also provide a brilliant working environment for colleagues when it opens."

A steel-framed solution has been used to create the warehouse, as the material offers the most-efficient and quickest way of constructing a large open-plan structure.

Traditionally, steelwork has dominated the single-storey non-domestic building (warehouses) market and year-on-year it maintains more than a 90% market share, compared to other construction materials.

Caunton Engineering has fabricated, supplied and erected 1,945t of steelwork for the project (1,660t of hot-rolled and 285t of cold-rolled). Measuring 299.5m-long, the steel portal-frame includes four 27m-wide spans, each formed with a series of centrally spliced rafters.

Using two mobile cranes, the 13.5m-long rafters were lifted into place individually and bolted together mid-air, once they were in their final position.

The long spans are essential and will accommodate extensive temperature-controlled environments, comprising a 900m² freezer section operating at -18°C to -20°C, and 20,000m² of chiller chambers maintaining temperatures between +1°C and +3°C. Surrounded with insulated wall and roof panels, the freezer and chiller areas are designed as boxes within boxes.

The chiller is the largest area and is accommodated within two-thirds of the warehouse (approximately 200m-long). A steel-framed chiller wall separates this area from the freezer and ambient areas.

Sustainability takes centre stage as the warehouse will include rainwater harvesting, a roof-mounted PV system, LED lighting, Air Source Heat Pumps (ASHP), EV charging infrastructure and green roof cycle shelters, supporting M&S's long-term environmental objectives.

The facility will be equipped with temperature monitoring and control systems linked to a monitoring station, with data logging and alarm functions for compliance. Two on-site generators will provide backup power to protect stock during outages, while ventilation systems, rapid-rise doors, air curtains and pressure relief vents minimise frost ingress. Insulated docks, inflatable shelters, and overhead evaporator and condenser units will maintain the cold chain throughout loading and storage operations.

Much of the internal M&E and ventilation equipment is supported from the three rows of internal valley columns. Because of the increased loading on these members, the internal columns are 20m-tall fabricated plate girders, weighing up to 6.5t each.

With fewer imposed loadings to absorb, the 20m-tall perimeter columns are standard U/C sections weighing up to 2.5t each.

Running the entire length of the chiller zone, one row of valley columns supports a steel gantry, fabricated, supplied and erected by Caunton, along with its associated handrails, ladders and metal mesh flooring.

Winvic Construction Project Director Richard Black, says: "It was invaluable that Caunton were able and willing to pick up smaller items of work such as the CAT ladders, wall supports and gantry, items that would normally have been the design and installation responsibility of a metalworker.

"It helped with value engineering and was programme critical that we picked up these items at an early stage and as part of the main frame design and installation."

FACT FILE
M&S Distribution centre, Avonmouth
Main client: **Stoford**
Architect: **SGP**
Main contractor: **Winvic Construction**
Structural engineer: **Stantec**
Steelwork contractor: **Caunton Engineering**
Steel tonnage: **1,945t**

Spanning over a service road, a bridge connects the office block to the main warehouse.

Designed as boxes within boxes, the warehouse will consist of separate chiller and freezer zones.

As well as the main warehouse structure, the steelwork package has included an attached and integrated two-storey office block, two attached single-storey transport hubs, and a stand-alone two-storey vehicle maintenance unit (VMU).

Attached to one of the warehouse gable ends, the office block's first floor and roof (which supports a plant deck) are compositely formed with steel beams supporting metal decking and a concrete topping.

Providing access to the staff car park, a steel footbridge connects to the office first floor, spanning over a service road and linking to a steel-framed stair tower on the opposite side of the thoroughfare.

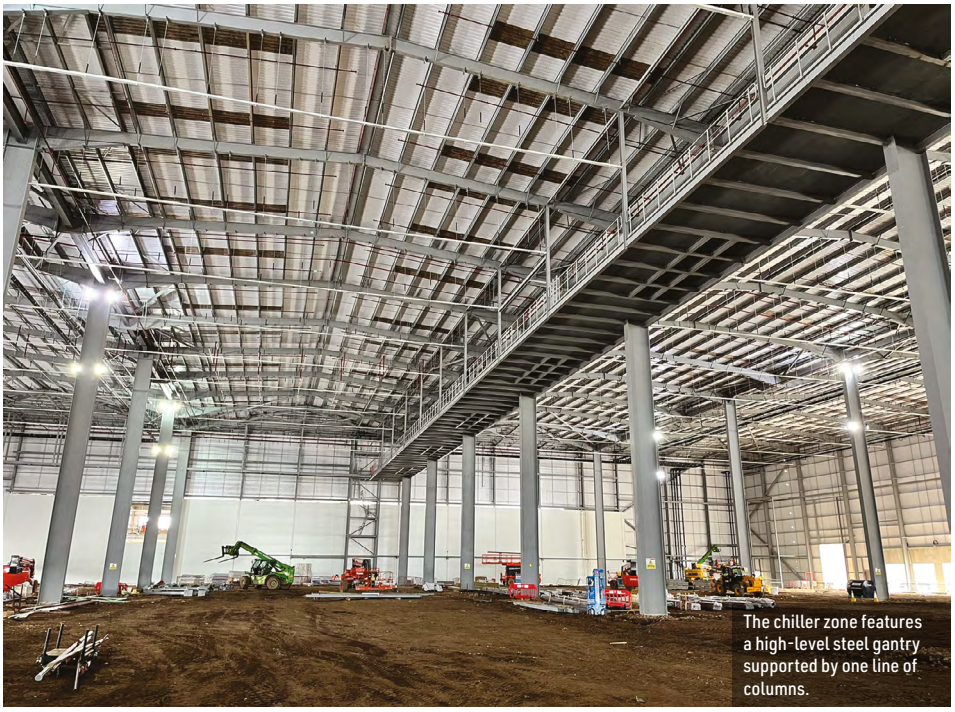
Prior to the steelwork erection programme starting, the site underwent some extensive pre-development works, including asset recovery and demolition of the former pharmaceutical manufacturing facility, upfilling (up to 3m-high), utilities installation, and new drainage infrastructure.

The project also incorporates the installation of three culverts to carry an existing drainage channel beneath a newly constructed access road.

Piled foundations were then installed, providing a robust working platform, which was utilised by the steelwork programme's cranes.

Summing up and highlighting the importance of health and safety on the construction site, Mr Black says: "More important than design interfaces and costs, was the attitude towards health and safety demonstrated by Caunton and its installation team.

"At no point in the delivery of the steelwork have we (Winvic) felt it necessary to address any issues on site, as they were fully on board with all of our standards and methods." ■



The chiller zone features a high-level steel gantry supported by one line of columns.

The development has been pre-let to M&S on a 20-year lease.

Down on the farm

The steel frame supports precast walls.

FACT FILE
Birchington Grain Store, Kent
Main client: **St Nicholas Court Farms**
Steelwork contractor & structural engineer: **Shufflebottom (part of Embrace Steel)**
Steel tonnage: **187t**

Providing proof that steel-framed structures are ideal for the agricultural sector; the material's numerous design and construction attributes have come to the fore on a recently completed grain store project in east Kent.

Durability, speed of construction and low maintenance are just three of the reasons why a steel-framed option is a popular framing solution for agricultural buildings across the UK and Ireland.

Clients like the material as steelwork is fabricated offsite and then supplied in erectable pieces, that often only require a single crane for the installation.

A small force can usually erect a steel-framed agricultural building in a matter of weeks, causing little or no disturbance to the surrounding farming operations.

In the past, timber was the dominant form of construction in the agricultural sector, but the material is susceptible to damp and rot. Alternatively, steel is more resistant to water and pests, while its components are bolted together, creating a secure and durable joining system, which is stronger than using nails.

Steelwork also efficiently creates long clear spans, allowing the structures to be designed for numerous uses, such as cattle sheds, barns, storage facilities for agricultural equipment and grain stores.

All of these attributes came to the fore on a recently completed scheme for St Nicholas Court Farms in Birchington, Kent, where Shufflebottom designed, fabricated, supplied and erected a new grain store.

St Nicholas Court Farms is a large third-generation family-owned business that farms more than 3,500 hectares in east Kent. Since its inception in 1959, it has grown and adapted positively to new technologies, such as renewables. It owns and runs two anaerobic digestion (AD) plants and has multiple solar installations, central to its production methods.

Alongside commercial crops such as milling wheat, oilseed rape, spring oats and peas, the farm also grows a mix of energy produce (maize, whole crop rye/triticale and grass silage) that support the AD plants. The natural oxygen-free process creates two products that help to reduce the farm's reliance on fossil fuels: biogas, used for electricity or heat generation, and/or digestate, a nutrient-rich residue used as a biofertiliser.

Shufflebottom Commercial & Technical Director Richard Wigley, says: "The farm required a large agricultural building, capable of handling a 9.25m level grain fill, allowing the product to be stored efficiently during harvests and then moved easily when required.

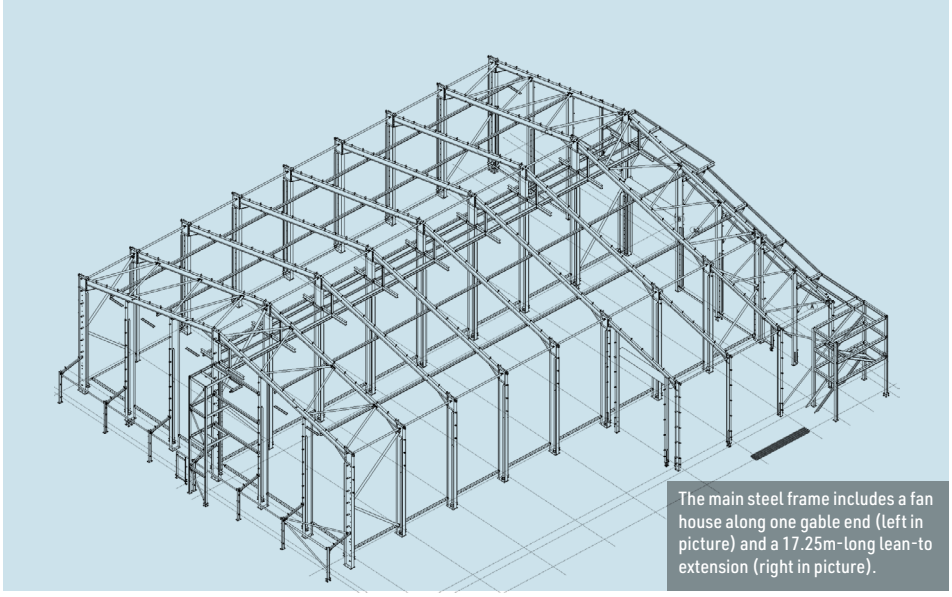
"The focus was on creating plenty of clear internal space, straightforward access and a layout that works for modern farming operations, while ensuring the building would stand up to long-term use."

Built to agricultural specification and CE marked to Execution Class 2, the grain store measures 46m-long × 33m-wide and 10.6m-high to the eaves.

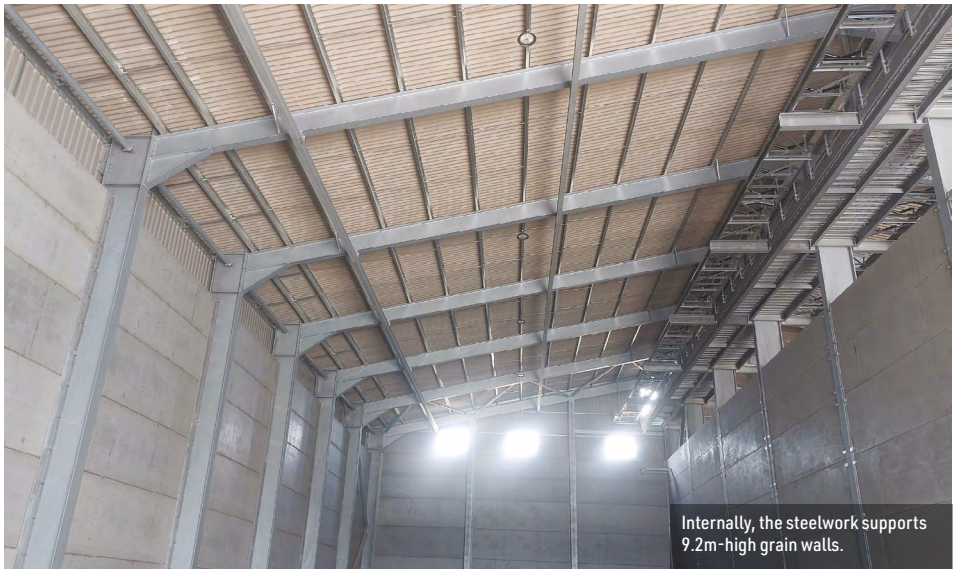
Attached to one elevation, the store also includes a 17.25m-long × 9m-wide lean-to extension (with a roof height varying from 10.6m to 8.6m), while along one gable end there is a connected 33m-long × 2.5m-wide fan house.

The steel-framed store was designed to accommodate 10,000t of grain in order to support busy harvest periods. Every part of the building was planned to suit bulk grain storage, with careful attention paid to loads, access and everyday practicality. By working closely with the farm team and grain equipment suppliers, the final design was tailored to suit the site and the way the building would be used throughout the year.

A project of this size requires good planning and coordination. Early discussions with the client helped ensure the required grain fill level and operational needs were fully understood



The main steel frame includes a fan house along one gable end (left in picture) and a 17.25m-long lean-to extension (right in picture).



Internally, the steelwork supports 9.2m-high grain walls.

The steel package also included the fabrication and installation of an external walkway.

"The focus was on creating plenty of clear internal space, straightforward access and a layout that works for modern farming operations, while ensuring the building would stand up to long-term use."

before work began.

Clear communication throughout the build helped keep the project running smoothly and allowed the structure to be completed on time and as planned.

Following on from the installation of the foundations, the steel portal frame was erected using a single mobile crane. Spaced at 5.7m centres, the main building's perimeter columns and its single row of internal members are 838mm x 292mm x 176mm UC sections.

The store's roof is formed with a series of 16.5m-long rafters that were individually lifted into place with bolted connections at either end, fixing them to the perimeter and central columns.

The project also demanded the incorporation of features such as ventilation, drying systems and concrete panels, that form the 9.2m-high grain walls, and provide added strength and flexibility to the building.

Shufflebottom also provided a cladding solution, which included fibre cement roofing sheets and single skin box profile sides.

To allow access to the building from an elevated area, a stair tower and an external walkway (also in Shufflebottom's package) were installed to the front of the building. In addition, the steel package also included a catwalk along the entire length of the building to provide access to the internal machinery, along with three ladders (two internal and one external).

Summing up St Nicholas Court Farms' Director Jim Pace, says: "Shufflebottom has been fantastic to work with on our new grain store. The quality of the steelwork is excellent, and the team has been professional and efficient throughout." ■

Agricultural buildings – a world of their own?

Agricultural buildings have their own design standard and require at least the same consideration as any other building – often with more challenging loading and design constraints, writes SCI's David Brown.

Agricultural buildings should be designed to BS 5502-22 + A1:2013, which specifies some very particular requirements for the design – slightly surprising for those who might think an agricultural building is somehow a poor cousin to a "normal" commercial single-storey building. BS 5502-22 requires that the structural design is completed to the Eurocodes – no permission here to continue to use BS 5950. Wind, snow and other variable actions are similarly to be taken from the relevant Eurocode.

One surprising feature of BS 5502-22 is the concept of design classification. Agricultural buildings may be Class 1 or 2, depending on the consequences of collapse. The standard says that agricultural buildings should generally be designed as Class 2, which means that all loads are to be multiplied by a factor of 0.9. There is no reduction applied to the design of Class 1 buildings. In principle, this is the same as the guidance in Table B3 of BS EN 1990 where a multiplication factor of 0.9 may be applied to the partial factors for Reliability Class 1 (Consequence Class 1 in Table B1) structures. This approach of reliability differentiation is generally not adopted in the UK.

Grain stores like the one constructed at Birchington are specified as Class 1, because grain stores have the additional complication of lateral loading from the stored product. BS 5502-22 helpfully gives densities and the angle of repose of many different stored materials, including different types of grain, so that the lateral loads can be calculated.

BS 5501-22 gives advice on Execution Class, recommending EXC 2 for Class 1 buildings and EXC 1 for Class 2 buildings. Selection of Execution Class is covered in the UK National Annex to BS EN 1993-1-1 where although specification of EXC 1 is not encouraged, it might be appropriate for Class 2 agricultural buildings, which have a shorter design life of 20 years and are entered infrequently.

Normal design and good practice detailing guidance obviously apply to agricultural buildings, despite often seeing older buildings still standing which appear to be missing essential components. Buildings must be braced longitudinally, by discrete bracing members or by elements such as concrete or blockwork built between columns. Inner flanges must be restrained where required by design and the lateral load at the tops of gable columns must be accommodated in the design. ■

Longitudinal and transverse material properties for cold-formed structural elements

Andrew Way of the SCI and Stephen Hall of Hadley Group examine the complexities of material properties for thin-gauge steel. The potential difficulties in the specification process are highlighted for certain steel grades which have designations based on their transverse material properties.

There are many steel grades, produced to several product standards that are used for cold-formed members and sheeting. BS EN 1993-1-3:2006 provides rules for the design of cold-formed members and sheeting, along with a list of steel grades which conform to the requirements of the standard. The steel grades that conform to the requirements are listed in Table 3.1a of the standard. However, note 2 of clause 3.1(3) highlights that there are additional steel grades that may conform to the requirements given in Table 3.1b of the standard. The UK National Annex to BS EN 1993-1-3:2006 states that materials listed in Table 3.1b may be used.

The 2nd Generation Eurocode, BS EN 1993-1-3:2024, provides Tables 5.1 and 5.2, which contain an expanded list of steel grades. The 2nd Generation standard states that it is applicable to the materials listed in both Tables. The difference between Tables 5.1 and 5.2 is that materials in Table 5.1 conform to harmonized product standards, while the materials in Table 5.2 conform to EN or ISO product standards.

Figure 1: Continuously hot-dip coated steel coil for cold-forming

The tables in the standards give the basic yield strength (f_{yb}) and ultimate tensile strength (f_u) for each grade listed. These properties are intended for use in design in accordance with both BS EN 1993-1-3:2006 and the 2nd Generation version. This all appears quite straightforward until the values are examined more closely.

For several of the steel grades listed, the values stated in the BS EN 1993-1-3 tables do not correspond to the nominal values stated in the specific steel product standards. This is because in some of the steel product standards it is stated that the nominal values are measured in the transverse direction and other product standards declare the nominal values in the longitudinal direction, see Figure 2.

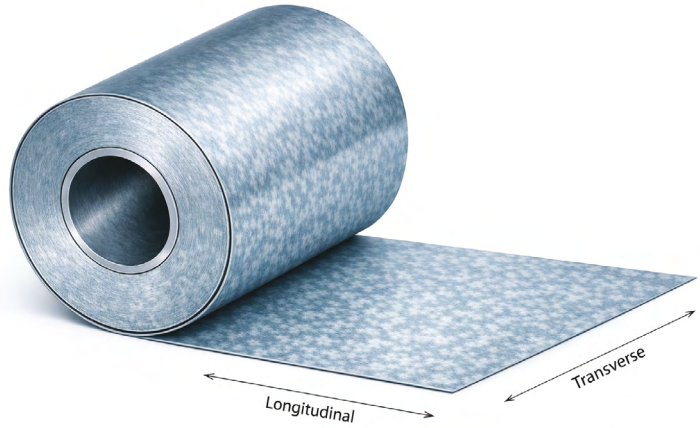


Figure 2: Steel coil with property measurement directions indicated

Further complexity exists as for some of the product standards the direction in which the nominal properties are to be measured depends on the width of plate, strip or wide flat being produced.

Anisotropy

Due to a phenomenon called anisotropy, material properties (e.g. strength and ductility) for rolled steel products are dependent on the direction of measurement relative to the processing direction. In other words, the properties measured longitudinally to the processing direction will be different to those measured transversely to the processing direction. For design purposes BS EN 1993-1-3 requires the longitudinal properties to be used and these are what are provided in Tables 5.1 and 5.2 for the 2nd Generation standard. In the Generation 1 version, only one set of grades which are designated in the transverse direction are published with altered values appropriate for the longitudinal direction. Designers should consider using the values published in the 2nd Generation standard to ensure properties are relevant to the longitudinal direction and referenced against current material standards.

Anisotropy is caused by the rolling process in the steel mill causing the grain sizes to become elongated in the longitudinal direction, see Figure 3. The Hall-Petch effect is a fundamental principle in materials science that explains how the yield strength of a steel increases as its average grain size decreases. The

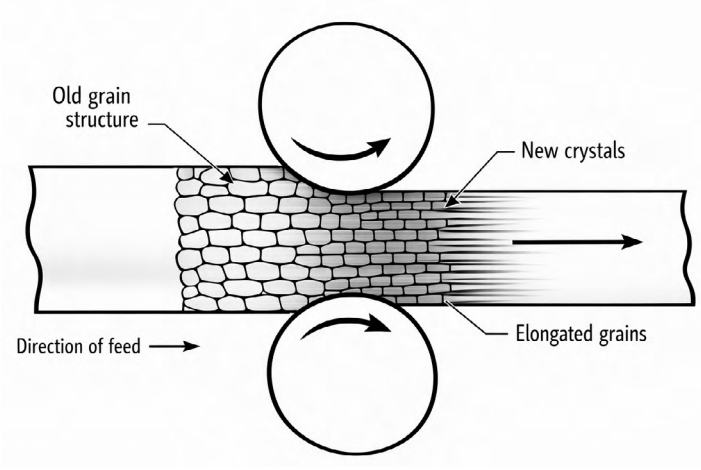


Figure 3: Steel grain size elongation in the rolling direction

detailed relationship goes beyond this, however it can be approximately described as the grain sizes being longer in the longitudinal direction resulting in the yield strength being lower compared to the transverse direction.

Steel grades suitable for cold-forming

The steel grades given in Table 1 are taken from Tables 5.1 and 5.2 of BS EN 1993-1-3:2024, and are the grades designated based upon mechanical properties measured in the transverse direction, or measured in the transverse direction subject to product width. It can be seen from Table 1 that in many cases the number in the grade designation is the same as the basic yield strength but this is not true for all grades and therefore the designer and specifier must be alert to this subtle distinction.

The steel grades given in Table 1 designated in their transverse directions are used within construction applications less frequently compared to those given within BS EN 1993-1-3 with designations based upon their longitudinal properties.

Typical applications

Those grades in accordance with EN 10025-2, EN 10025-3, EN 10025-4 and EN 10149-3 are produced without any surface coating. This can limit their suitability for cold-formed members and sheeting used in the built environment. For these grades, their designations are only relevant to the transverse direction once sheet widths exceed 600 mm and therefore might only be used for the largest or widest of cold-formed products, often requiring hot-dip galvanizing as a secondary operation once formed.

Grades of steel given by EN 10268 are also uncoated as standard and are more frequently used within other industries such as automotive. Unusually, this standard provides tables of mechanical properties for both the transverse and longitudinal directions, improving the feasibility of obtaining a mill test certificate for the required longitudinal direction and providing additional justification for the values given by BS EN 1993-1-3.

Steel grades in accordance with ISO 4997 are similarly supplied uncoated. Their use within Europe, including in construction applications, is less frequent.

The grades from EN 10346 given in Table 1 are arguably those most commonly used in construction applications. These grades are pre-coated and are particularly suited to cold-forming. Applications for high strength (HX) low alloy (LA) grades might include framing elements and profiled sheeting, especially where profiles are complex and require enhanced formability during production. The DX grades are described as deep drawing steels, and BS EN 1090-4:2018 does not permit their use for profiled sheeting. Of note is the fact that BS EN 10346 does not provide minimum values for yield strength or ultimate tensile strength for DX51D. To use DX51D in the design of cold-formed members, BS EN 1993-1-3 provides values for basic yield and ultimate tensile strength. The value differs between the 2006 and 2024 version, and this difference may be a result of the nuances of the measured direction. The values given in the 2024 version should be used. These DX deep drawing grades are often used in the built environment for non-structural applications which fall outside of the scope of BS EN 1993-1-3 and BS EN 1090-4. For example, drylining, cable management and drainage. Where they are used structurally, applications tend to be limited to accessories such as edge trims, timber

▸28

Table 1: Examples of materials with properties measured in the transverse direction

Type of steel	Product Standard	Grade	Basic yield strength (f_{yb}) N/mm²	Ultimate tensile strength (f_u) N/mm²
Non-alloy structural steels	EN 10025-2 [a]	S275	275	390
		S355	355	490
		S460	460	540
Normalized/normalized rolled weldable fine grain structural steels	EN 10025-3 [a]	S355N	355	470
		S460N	460	540
		S460NL	460	540
Thermomechanical rolled weldable fine grain structural steels	EN 10025-4 [a]	S355M	355	450
		S460M	460	530
		S460ML	460	530
Normalized rolled steels	EN 10149-3 [a]	S315NC	295	410
		S355NC	355	450
		S420NC	400	510
High yield strength micro-alloyed steels for cold-forming	EN 10268	HC260LA	240	340
		HC340LA	320	400
		HC420LA	390	460
Continuously hot-dip coated steel flat products of steel with high proof stress for cold-forming	EN 10346	HX260LAD	240	330
		HX340LAD	320	390
		HX460LAD	435	475
Continuously hot-dip coated steel flat products of low carbon steels for cold-forming	EN 10346	DX51D	120	250
		DX52D	120	250
		DX53D	120	250

Notes:
a) Designations for the materials given by these standards are typically based on mechanical properties in the longitudinal direction. For steel plate, strip and wide flats with widths ≥ 600mm, designations in accordance with these standards are based on mechanical properties in the transverse direction.

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For relevant products, the steel grades used in production will typically be stated on the manufacturer's BS EN 1090-1 Factory Production Control Schedule.

Mill test certificates

Justification for mechanical properties typically comes in the form of a mill test certificate (MTC), Type 3.1 in accordance with EN 10204. This is referenced within BS EN 1090-4:2018 as a requirement for declaring material characteristics. BS EN 1090 is the execution standard of steel structures and aluminium structures, with Part 4 being the technical requirements for cold-formed structural steel elements and cold-formed structures for roof, ceiling, floor and wall applications.

Mill test certificates will be issued based on the product standard requirements, therefore material properties will be tested based on the direction given by the product standard. For example, products designated based on their transverse properties will have mill test certificates issued with transverse material properties.

Supplementary testing

It has been observed that steel supplied to product standards based on transverse direction values may show some variation in properties when measured in the longitudinal direction, compared with those presented in BS EN 1993-1-3.

For materials designated based upon their transverse properties, it may not be possible for the manufacturer to obtain a MTC Type 3.1 for steel properties measured in the longitudinal direction. As such, specifiers of these material grades should use due diligence to justify the longitudinal properties used in design.

Where materials given within Table 1 are specified, the designer has several options for justifying the mechanical properties. These may include:

1. Completing coupon tests in accordance with BS EN 1993-1-3:2006 § 3.2.1 (or BS EN 1993-1-3:2024 Annex A.2)
2. Empirical experience, which may also include design assisted by testing
3. Engaging with the supplier to discuss the feasibility of a longitudinal MTC Type 3.1. (This may be unlikely since the transverse direction is designated by the standard. Where this is possible orders may be subject to other criteria, for example minimum quantities.)

The designer must satisfy themselves that the approach taken is compliant with the assumptions and rules given by the Eurocodes.

Regardless of the approach used, for any material procured from Table 1, a MTC Type 3.1 must still be provided in accordance with BS EN 1090-4:2018 and will typically give properties in the transverse direction only.

The UK National Annex for the 2nd Generation EN 1993-1-3 is expected to provide similar guidance to that presented here.

Conclusions

BS EN 1993-1-3 provides rules for the design of cold-formed members and sheeting and allows the use of a large number of steel grades.

Rolled steel sheet, strip and wide flats will have different material properties in the longitudinal and transverse directions.

The longitudinal properties should be used for structural design purposes.

Some steel grades have nominal properties designated based on their transverse properties, in these cases the designer must be satisfied that the longitudinal values used in design are achieved.

Supplementary testing may be required as mill test certificates provided as standard may not provide information on the longitudinal material properties. ■

AD 555:
Laser screed machines used during the construction of composite slabs

It has come to SCI's attention that some contractors are using large laser levelling machines when pouring composite slabs (as shown in Figure 1), and it is important to note that the weight of such machinery will not normally have been considered in the design. This note explains why such machines should not be used unless they have been specifically accounted for.

The temporary construction stage usually governs the choice of the steel sheeting. For typical composite slabs, the recommended construction imposed loading is 1.5 kN/m² over a 3m × 3m 'working area'. This loading value allows for a reasonable number of construction operatives, impact, the heaping of concrete during placing, hand tools, and small items of equipment and materials for immediate use.

Laser screed machines can be used to level wet concrete to a constant plane, with some weighing over 800kgs. The combined weight of the laser screed machine, the operatives and the ponding of concrete from the deflection of the steel sheeting may be larger than the allowable temporary construction loading considered in codified design. Additionally, the concentrated loads from the wheels may cause local damage to the ribs of the steel sheeting, which will decrease its stiffness, therefore leading to an increase in deflections and extra weight of concrete due to additional ponding. There is therefore a 'snow balling' effect.

Therefore, unless these machines have been specifically accounted for in the design of the steel sheeting, they should not be used during the construction of composite slabs.

It is worth reminding readers of another important consideration when the constant plane method of construction is used, namely that considerably more concrete will be needed and thicker slabs will result from combined deflections of the supporting steelwork and steel sheeting itself. These can far exceed recommended limits for deflection of the sheeting alone. Levelling to a fixed datum should not be adopted without first confirming with the designer that the extra weight of concrete 'ponding' has been allowed for in the design. A preferred alternative is to pour the concrete to a fixed thickness, recognising this may not lead to a level upper surface. Further information on composite slab pouring methods is given in AD 410.

Good practice guidance on the design and construction of composite slabs can be found in SCI's P300 and the Concrete Society's TR 75.

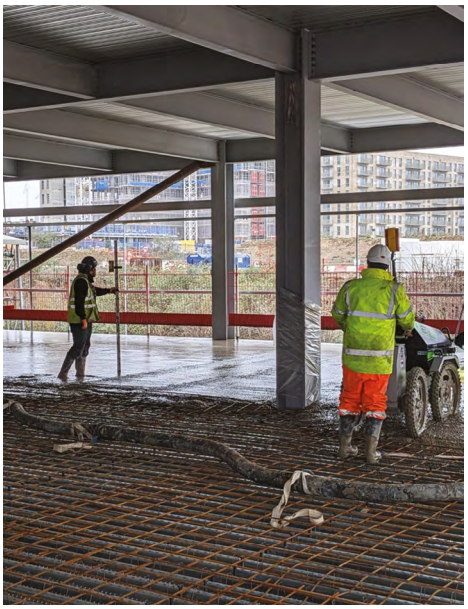


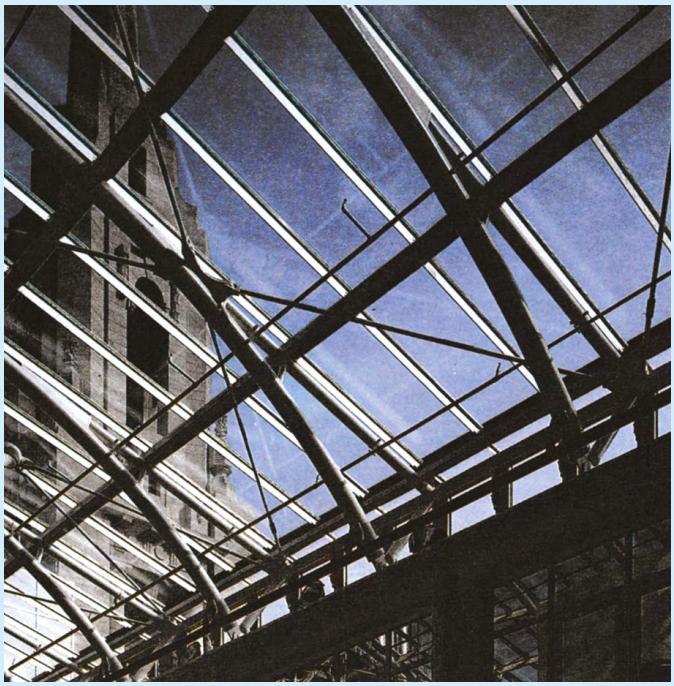
Figure 1: Laser screed machine used during the construction of a composite slab

Contact: **Liam Dougherty**
Telephone: **01344 636555**
Email: **advisory@steel-sci.com**

SSDA
1985

Triton Court, Finsbury Square, London EC2

For the Royal Mutual Insurance Society Ltd.



COMMENDATION

Architects:
Sheppard Robson Architects
Structural Engineers:
Ove Arup & Partners
Steelwork Contractors:
The Cleveland Bridge & Engineering Co Ltd.
Tubeworkers Ltd

Judges' Comments:
Restoration of this important site, facilitated by the adaptability of the original steel frame, has been skilfully carried out.

Triton Court was formerly Royal London House, the headquarters office building of the Royal London Mutual Assurance Society. The building comprised of three separate structures built around a central lightwell between 1901 and 1929 including the impressive tower building which for several years was the highest in London.

The brief aimed at restoring the building's former prestige to create an attractive office environment fit for technologically advanced occupants. To satisfy these aims, access was to be centralised to replace existing entrances and modern services including air conditioning installed. Two additional floors of offices were to be added at roof level to provide a total floor area of 28,000m^2

The scheme required the demolition of almost half of the existing floor space to make way for an enlarged central lightwell and new lift, staircase and service cores. The two additional floors were designed within a mansard arrangement and the lightwell was covered with a steel structure supporting a patent roof. This allowed the use of the atrium as a central circulation distribution space with access for all occupants of the three zones of offices, each having its own potentially separate reception area.

The atrium also gives access to the squash courts and viewing gallery, a sports centre, a cafe and a restaurant. Externally, new windows were added, existing stonework was repaired and cleaned and rooftop plant rooms were given a cladding of reflective glazing.

The structure of the existing buildings was of steel and tests carried out on the old steel frame indicated a low carbon content similar to Grade 43. The allowable design stress then used was about 30% lower than that allowed for mild steel today and advantage was taken of this by the addition of two floors without strengthening the existing frame. A special feature of the new building structure is the atrium roof, approximately 26m square in a stepped pitched roof form. The structural concept is that of a simple three pin arch. The break in the pitched profile that forms the step in one leg of the arch carries all vertical load by two principal beams. The thrust of the arch action is taken on the lower inclined plane which acts as a large girder, avoiding the use of a tie across the atrium space. The main longitudinal trusses were brought o site in two sections and welded at mid span.

The new steel frame construction of 950 tonnes provides about 50% of the volume. Construction commenced in June 1982 allowing a six month demolition period. Completion was achieved 24 months later in June 1984 at a total cost of about £30 million.

SSDA
1985

Nene Bridge, Peterborough

For Cambridgeshire County Council

COMMENDATION

Structural Engineers:
Peterborough Development Corporation
Steelwork Contractors:
Fairfield Mabey Ltd

The five spans of Nene Bridge carry the newest link in Peterborough's parkway system over the River Nene, a main railway track and sidings, a riverside walkway and small service road. Frank Perkins Parkway, which is carried on Nene Bridge, provides a dual carriageway link between the A 1, the City Centre and the Eastern Industrial Area.

The bridge is a continuous structure restrained at the south river pier, with movements joints at each abutment. The deck is curved in plan, 155m long and 25m wide made up of five spans 27m, 27m, 31m, 40m and 30m with skews at the supports of up to 15 degrees. The deck is made up of four steel box girder beams acting compositely with the deck slab. The box girders are 2m wide at the top with raking web plates tapering to the bottom flange, varying in depth from 2.5m to 1.2m, designed to the Merrison Rules and fabricated to BS 5400 Part 6. The fabricators skill in achieving the final form specified by the designers demonstrated ability to work to close tolerances and enthusiasm for the project.

By adopting steel for this bridge it was possible to work over the railway within the very restricted possessions available between trains, the time of construction being considerably shortened. The reduced weight of the bridge enabled more slender piers to be built and reduced the costs of the foundations. By working off the girders the temporary works were very small and there was little disruption to adjacent land users.

The substantial embankments required to raise the road and achieve the bridge clearances over the railway and river makes the bridge a dominant feature of the flat riverside scene and dictated a design that would enhance the otherwise featureless area with its distant view of the medieval Cathedral.

The curved soffit of the principal river span is reflected in the adjacent spans, blending into the horizontal soffit of the distant railway spans. In spite of the inner complexity of the box girders their external simplicity was essential to the whole design concept and the slender piers are many faceted to give changing views to users of the adjacent leisure facilities. The high, solid parapets were a requirement of British Rail. The value of the 750 tonnes of steel employed was £900,000. Work on the bridge stated in April 1983 and it opened for site traffic in May 1984.

Judges' Comments:
A pleasing design demonstrating the flexibility and capability of steel construction in meeting demanding geometric and site requirements.

Originally published in BCSA NEWS, February 1986

RQSC | The Register of Qualified Steelwork Contractors Scheme **Buildings**

Steelwork contractors for buildings

BCSA

The Register of Qualified Steelwork Contractors Scheme for Buildings (RQSC – Buildings) 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 Buildings category to undertake the fabrication and the responsibility for any design and erection of:

- **C** Heavy industrial platework 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.

BCSA steelwork contractor member	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 £6,500,000
Adey Steel Ltd	01509 556677			●	●	●	●	●	●	●	●		●		●	✔	3		●	Up to £5,000,000
Adstone Construction Ltd	01905 794561			●	●	●	●	●								✔	2	✔	●	Up to £3,400,000
AJ Engineering & Construction Services Ltd	01309 671919			●	●		●		●	●	●			●	●	✔	4		●	Up to £3,400,000
Angle Ring Company Ltd	0121 557 7241												●			✔	4			Up to £1,200,000
Arminhall Engineering Ltd	01799 524510	●			●	●		●		●	●			●	●	✔	2		●	Up to £2,400,000
Arromax Structures Ltd	01623 747466			●	●	●	●	●	●	●	●				●		2			Up to £1,200,000
ASD Westok Ltd	0113 205 5270	●	●	●	●	●	●			●	●	●	●		●	✔	4		●	Up to £6,500,000
ASME Engineering Ltd	020 8966 7150	●		●	●	●		●	●	●	●		●	●	●	✔	4		●	Up to £6,500,000
Atlasco Constructional Engineers Ltd	01782 564711			●	●	●	●			●	●			●	●	✔	2			Up to £1,200,000
BD Structures Ltd	01942 817770			●	●	●	●				●	●		●	●	✔	3	✔	●	Up to £2,400,000
Barnshaw Section Benders Ltd	0121 557 8261												●			✔	4			Up to £1,200,000
BHC Ltd	01555 840006	●	●	●	●	●	●	●	●	●	●	●		●	●	✔	4	✔	●	Above £10,000,000
Billington Structures Ltd	01226 340666		●	●	●	●	●	●		●		●	●	●		✔	4	✔	●	Above £10,000,000
Bourne Group Ltd	01202 746666		●	●	●	●	●	●	●	●	●	●	●	●	●	✔	4	✔	●	Above £10,000,000
Briton Fabricators Ltd	0115 963 2901	●		●	●	●	●	●	●	●	●		●	●	●	✔	4		●	Up to £6,500,000
Cairnhill Structures Ltd	01236 449393	●			●	●	●	●	●						●	✔	4		●	Up to £6,500,000
Caunton Engineering Ltd	01773 531111	●	●	●	●	●	●	●		●	●	●		●	●	✔	4	✔	●	Above £10,000,000
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 £2,400,000
D H Structures Ltd	01785 246269			●	●		●				●						2			Up to £600,000
Duggan Steel	00 353 29 70072		●	●	●	●	●	●			●					✔	4			Above £10,000,000
D Hughes Welding & Fabrication Ltd	01248 421104				●	●	●	●	●	●	●		●	●	●	✔	4			Up to £600,000
ECS Engineering Services Ltd	01773 860001	●		●	●	●	●	●	●	●	●			●	●	✔	4		●	Up to £3,400,000
Elland Steel Structures Ltd	01422 380262		●	●	●	●	●	●	●	●	●	●		●	●	✔	4	✔	●	Up to £10,000,000
Embrace Steel Group Ltd	01748 810598	●	●	●	●	●	●			●	●	●	●	●	●	✔	4			Up to £10,000,000
EvadX Ltd	01745 336413		●	●	●	●	●	●		●	●	●			●	✔	3		●	Up to £2,400,000
Four-Tees Engineers Ltd	01489 885899	●		●	●		●	●	●	●	●		●	●	●	✔	3		●	Up to £3,400,000
Fullpen Fabrications Ltd	0203 6335586	●		●	●	●	●			●	●				●		3			Up to £500,000
BCSA steelwork contractor member	**Tel**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**	**L**	**M**	**N**	**Q**	**R**	**S**	**QM**	**FPC**	**BIM**	**SCM**	**Guide Contract Value (1)**

BCSA steelwork contractor member	Tel	C	D	E	F	G	H	J	K	L	M	N	Q	R	S	QM	FPC	BIM	SCM	Guide Contract Value (1)
G & L Environmental Ltd	01634 252288									●	●			●	●	✔	3			Up to £500,000
G.R. Carr (Essex) Ltd	01286 535501	●		●	●			●			●			●	●	✔	4			Up to £1,200,000
Gorge Fabrications Ltd	0121 522 5770				●	●	●	●		●	●			●	●	✔	3			Up to £1,200,000
H Young Structures Ltd	01953 601881			●	●	●	●	●			●			●	●	✔	4	✔	●	Up to £5,000,000
Had Fab Ltd	01875 611711	●			●		●	●	●	●	●		●	●	●	✔	4			Up to £6,500,000
HBE Services Ltd	01525 854110				●	●				●				●	●	✔	3			Up to £1,200,000
Hescott Engineering Company Ltd	01324 556610			●	●	●	●	●		●					●	✔	2			Up to £3,400,000
Hillcrest Structural Steel Ltd	023 8064 1373			●	●	●	●	●		●	●			●	●	✔	3		●	Up to £3,400,000*
Intersteels Ltd	01322 337766	●			●	●	●	●	●				●	●	●	✔	3	✔		Up to £5,000,000
Jamestown Manufacturing Ltd	00 353 45 434 288		●	●	●	●	●	●	●	●		●	●			✔	4			Up to £10,000,000
Kiernan Structural Steel Ltd	00 353 43 334 1445		●	●	●	●	●	●		●	●	●	●	●	●	✔	4	✔	●	Above £10,000,000
Leach Structural Steelwork Ltd	01995 642000			●	●	●	●	●			●					✔	3		●	Up to £6,500,000
Legge Steel (Fabrications) Ltd	01592 205320			●	●					●	●			●	●		2			Up to £600,000
Littleton Steel Ltd	01934 311670			●	●	●	●	●		●	●			●	●	✔	3			Up to £1,200,000
Loaninghill Fabrication Company Ltd	01506 858466				●			●	●	●	●			●	●		3			Up to £600,000
M Hasson & Sons Ltd	028 2957 1281			●	●	●	●	●	●	●	●			●	●	✔	4		●	Up to £1,400,000
M.J. Patch Engineering Ltd	01275472279				●					●	●			●	●	✔	3			Up to £600,000
M&S Engineering Ltd	01461 40111				●		●		●	●	●		●		●	✔	3			Up to £2,400,000
Mackay Steelwork & Cladding Ltd	01862 843910			●	●		●			●	●			●	●	✔	4		●	Up to £2,400,000
Midland Structures Limited	01384 411201			●	●	●	●	●	●	●	●		●	●	●	✔	3			Up to £5,000,000
Murphy International Ltd	00 353 45 431384	●		●	●	●	●	●	●	●	●			●	●	✔	4		●	Up to £6,500,000
Nationwide Structures Ltd	01924365883			●	●	●	●				●			●		✔	4			Up to £10,000,000
Newbridge Engineering Ltd	01429 866722	●	●	●	●	●	●	●			●	●				✔	4		●	Up to £2,400,000
North Lincs Structures	01724 855512			●	●					●					●	✔	2			Up to £600,000
Painter Brothers Ltd	01432 374400				●				●	●	●			●	●		3			Up to £5,000,000*
Peter Marshall (Steel Stairs) Ltd	0113 307 6730				●	●				●	●				●	✔	3			Up to £2,400,000*
PMS Fabrications Ltd	01228 599090			●	●	●	●		●	●	●			●	●		3			Up to £3,400,000
REIDsteel	01202 483333			●	●	●	●	●	●	●	●	●	●		●	✔	4		●	Above £10,000,000
SAH Luton Ltd	01582 805741			●	●	●				●				●	●		2			Up to £600,000
Severfield plc	01845 577896	●	●	●	●	●	●	●	●	●	●	●	●	●	●	✔	4	✔	●	Above £10,000,000
Shaun Hodgson Engineering Ltd	01553 766499	●		●	●		●			●	●			●	●	✔	3			Up to £1,200,000
Shipley Structures Ltd	01400 251480		●	●	●	●	●		●	●	●			●	●	✔	3			Up to £2,400,000
Snashall Steel Fabrications Co Ltd	01300 345588			●	●	●	●	●			●			●	●	✔	3	✔	●	Up to £3,400,000
Southern Fabrications (Sussex) Ltd	01243 649000				●	●				●	●			●	●	✔	2			Up to £1,200,000
Stage One Creative Services Ltd	01423 358001				●		●	●	●	●	●		●			✔	2			Up to £6,500,000
Steel & Roofing Systems	00 353 56 444 1855	●		●	●	●	●	●	●	●	●	●		●	●	✔	4			Up to £10,000.000
TSI Structures Ltd	01603 720031			●	●	●	●	●			●			●			2	✔		Up to £3,400,000
W I G Engineering Ltd	01869 320515				●					●	●			●	●	✔	2		●	Up to £600,000
Walter Watson Ltd	028 4377 8711			●	●	●	●	●				●				✔	4		●	Above £10,000,000
Westbury Park Engineering Ltd	01373 825500	●		●	●	●	●	●	●	●	●				●	✔	4		●	Up to £1,200,000
William Haley Engineering Ltd	01278 760591			●	●	●	●				●		●			✔	4			Up to £6,500,000
William Hare Ltd	0161 609 0000	●	●	●	●	●	●	●	●	●	●	●	●	●	●	✔	4	✔	●	Above £10,000,000

Non BCSA member	Tel	C	D	E	F	G	H	J	K	L	M	N	Q	R	S	QM	FPC	BIM	SCM	Guide Contract Value (1)
Eden Fabrications	02825 821000			●	●	●	●	●		●	●		●		●	✔	3			Up to £1,200,000
Non BCSA member	**Tel**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**	**L**	**M**	**N**	**Q**	**R**	**S**	**QM**	**FPC**	**BIM**	**SCM**	Guide Contract Value (1)

RQSC | The Register of Qualified Steelwork Contractors Scheme **Bridgeworks**

Steelwork contractors for bridgeworks

BCSA

The Register of Qualified Steelwork Contractors Scheme for Bridgeworks (RQSC – Bridgeworks) 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 platework (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** Ancilliary 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	NHSS 20	SCM	Guide Contract Value (1)
Adey Steel Ltd	01509 556677	●	●	●	●	●	●			●	●	●	✓	3			✓	●	Up to £3,400,000
AJ Engineering & Construction Services Ltd	01309 671919	●		●	●	●	●	●	●	●	●	●	✓	4				●	Up to £3,400,000
ASD Westok Ltd	0113 205 5270	●		●	●							●	✓	4				●	Up to £6,500,000
Beaver Bridges Ltd	01204 668773	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓		Up to £6,500,000
BHC Ltd	01555 840006	●	●	●	●	●	●	●	●			●	✓	4	✓			●	Up to £3,400,000
Billington Structures Ltd	01226 340666	●		●	●	●	●	●	●			●	✓	4	✓	✓	✓	●	Above £10,000,000
Bourne Group Ltd	01202 746666	●		●	●	●				●		●	✓	4	✓		✓	●	Above £10,000,000
Briton Fabricators Ltd	0115 963 2901	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓	●	Up to £10,000,000
Cairnhill Structures Ltd	01236 449393	●	●	●	●	●	●	●		●	●	●	✓	4			✓	●	Up to £6,500,000
Cementation Fabrications	0300 105 0135	●	●	●	●	●	●	●	●	●	●	●	✓	3			✓	●	Up to £10,000,000
D Hughes Welding & Fabrication Ltd	01248 421104	●		●		●			●	●	●	●	✓	4			✓		Up to £600,000
ECS Engineering Services Ltd	01773 860001	●		●	●	●	●		●			●	✓	4					Up to £500,000
Four-Tees Engineers Ltd	01489 885899	●	●	●	●	●	●		●	●	●	●	✓	3			✓	●	Up to £3,400,000
Fullpen Fabrications	0203 6335586	●	●	●	●	●	●					●	✓	3			✓		Up to £600,000
Jamestown Manufacturing Ltd	00 353 45 434 288	●	●	●	●	●	●					●	✓	4			✓		Up to £10,000,000
Kiernan Structural Steel Ltd	00 353 43 334 1445	●		●	●	●			●			●	✓	4	✓		✓	●	Up to £1,200,000
M&S Engineering Ltd	01461 40111	●		●		●	●	●		●	●	●	✓	3					Up to £2,400,000
M Hasson & Sons Ltd	028 2957 1281	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓	●	Up to £2,400,000
Millar Callaghan Engineering Services Ltd	01294 217711	●	●	●	●	●	●	●	●	●	●	●	✓	4			✓		Up to £2,400,000
Murphy International Ltd	00 353 45 431384	●	●	●	●	●	●			●	●	●	✓	4			✓	●	Up to £6,500,000
Nusteel Structures Ltd	01303 268112	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Up to £6,500,000
REIDsteel	01202 483333	●			●	●	●		●			●	✓	4				●	Up to £10,000,000
Severfield plc	01845 577896	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	✓	✓	●	Above £10,000,000
William Hare Ltd	0161 609 0000	●	●	●	●	●	●	●	●	●	●	●	✓	4	✓	✓	✓	●	Above £10,000,000
Non-BCSA member																			
Allerton Steel Ltd	01609 774471	●	●	●	●	●	●	●				●	✓	4	✓		✓	●	Up to £5,000,000
AMCO Giffen	01226 243413	●	●	●	●	●	●		●	●	●	●	✓	4			✓		Up to £1,200,000
Carver Engineering Services Ltd	01302 751900	●		●	●	●	●		●	●	●	●	✓	4			✓		Up to £5,000,000
Centregreat Engineering Ltd	02920 226088	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓			Up to £3,400,000
Cimolai SpA	01223 836299	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Above £10,000,000
CTS Bridges Ltd	01484 606416	●	●	●	●	●	●	●	●		●	●	✓	4			✓		Up to 1,200,000
Donyal Engineering Ltd	01207 270909	●		●						●	●	●	✓	3		✓	✓		Up to £2,400,000
Harrisons Engineering (Lancashire) Ltd	01254 823993	●	●	●	●	●	●	●	●	●	●	●	✓	3		✓	✓		Up to £3,400,000
Hollandia Infra BV	+31 (0) 180 519956	●	●	●	●	●	●	●	●	●	●	●	✓	4					Above £10,000,000
HS Carlsteel Engineering Ltd	020 8312 1879									●	●	●	✓	3			✓		Up to £2,400,000
In-Spec Manufacturing Ltd	01642 210716			●						●	●	●	✓	4		✓	✓		Up to £2,400,000
J&D Pierce Contracts Ltd	01505 683724	●	●		●	●	●	●	●			●	✓	4		✓	✓		Above £10,000,000
Kelly's Welders & Blacksmiths Ltd	01383 512 517											●	✓	2			✓		Up to £350,000
Lanarkshire Welding	01698 264271	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Up to £5,000,000
Taziker Industrial Ltd	01204 468080	●	●	●	●	●	●	●	●	●	●	●	✓	3		✓	✓	●	Above £10,000,000
Total Steelwork & Fabrication Ltd	01925 234320	●		●		●				●	●	●	✓	4			✓		Up to £5,000,000
Victor Buyck Steel Construction	00 32 9 376 2211	●	●	●	●	●	●	●	●	●	●	●	✓	4		✓	✓	●	Above £10,000,000

BCSA

Stakeholder Members

Stakeholder 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
Griffiths & Armour	0151 236 5656
MMCEngineer Ltd	01423 855939
National Highways	0300 123 5000

Company name	Tel
Paul Hulme Engineering Ltd	07801 216858
Sandberg LLP	020 7565 7000
Solent Commercial Management Limited	07852 309104

Company name	Tel
Structural & Weld Testing Services Ltd	01795 420264
SUM ADR Ltd	07960 775772
Thames Welding Ltd	07912 691704

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.

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

NHSS National Highway Sector Scheme

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

SCM Steel Construction Sustainability Charter
● = Gold ● = Silver
● = Bronze ● = Certificate

SfL Steel for Life Sponsor

Steel for Life sponsors

Level	Company name	Sector	Tel	QM	CA	FPC	NHSS	SCM	Website	Email
Headline	Barrett Steel Limited	Steel producers and stockholders	01274 474314	✓	M	4	3B		https://www.barrettsteel.com	sales@barrettconstructional.com
Gold	Cleveland Steel & Tubes Ltd	Steel producers and stockholders	01845 577789	✓	M	3	3B		https://www.cleveland-steel.com	sales@cleveland-steel.com
Gold	National Tube Stockholders Ltd	Steel producers and stockholders	01845 577440	✓	D/I	4	3B		https://nationaltube.co.uk	sales@nationaltube.co.uk
Gold	voestalpine Metsec plc	Manufacturing and structural services	0121 601 6000	✓	M	4		●	https://www.metsec.com	metsec.plc@voestalpine.com
Gold	Wedge Group Galvanizing Ltd	Protective Coatings	01902 601944	✓	N/A				https://www.wedge-galv.co.uk	info@wedg-galv.co.uk
Silver	Barnshaw Section Benders	RQSC Buildings	0121 557 8261	✓	N/A	4		●	https://www.barnshaws.com	sectionbending@barnshaws.com
Silver	Behringer Ltd (Vernet Behringer)	Manufacturing and structural services	01296 668259		N/A				https://www.behringerltd.co.uk	info@behringerltd.co.uk
Silver	FICEP UK Ltd	Manufacturing and structural services	01924 223530		N/A				https://www.ficep.co.uk	info@ficep.co.uk
Silver	Hempel	Protective Coatings	01633 874024	✓	N/A				https://www.hempel.com	sales.uk@hempel.com
Silver	Joseph Ash Galvanizing	Protective Coatings	01246 854650	✓	N/A				https://www.josephash.co.uk	sales@josephash.co.uk
Silver	Sherwin Williams Ltd	Protective Coatings	01204 521771	✓	N/A				http://www.sherwin-williams.com	enquiries@sherwin.com
Silver	Voortman UK Ltd	Manufacturing and structural services	+31 (0)548 536 373		N/A				https://www.voortman.net/en	info@voortman.net

Manufacturing and Structural Services

Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Albion Sections Ltd	0121 553 1877	✓	M	4			
Behringer Ltd (Vernet Behringer)	01296 668259		N/A				
Cast Connex UK Ltd	01416 806 3521	✓	M				
Cellbeam Ltd	01937 840600	✓	M	4	20		
Construction Metal Forming Ltd	01495 761080	✓	M	3			
Duggan Profiles & Steel Service Centre Ltd	00 353 567722485	✓	M	4			
FICEP UK Ltd	01924 223530		N/A				
Farrat Isolevel	0161 924 1600	✓	N/A				
Hadley Industries Plc	0121 555 1342	✓	M	4		●	
Hi-Span Ltd	01953 603081	✓	M	4		●	
Kaltenbach Ltd	01234 213201		N/A				
Kingspan Limited	01944 712000	✓	M	4		●	
Lincoln Electric (UK) Ltd	0114 287 2401	✓	N/A				
Peddinghaus Corporation UK Ltd	01952 200377		N/A				
Tata Steel – ComFlor	01244 892199	✓	M	4			
Voestalpine Metsec	0121 601 6000	✓	M			●	✓
Voortman UK Ltd	+31 (0)548 536 373		N/A				✓

Software

Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Autodesk Ltd	01252456600		N/A				
Fabsec Ltd	01937 840641		N/A				
IDEA StatiCa UK Ltd	02035 799397		N/A				✓
StruMIS Ltd	01332 545800		N/A				
Trimble UK Limited	0113 887 9790		N/A				

Site services and installation

Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Composite Profiles UK Ltd	01202 659237		D/I				
Deconstruct UK Ltd	02035 799397	✓	N/A				
Easi-Edge Ltd	01777 870901	✓	N/A				
Keltbray Holdings Ltd	0207 643 1000	✓	N/A				
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				

Structural fasteners

Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Advanced Bolting Solutions Limited	0116 251 2251	✓					
Andrews Fasteners Limited	0113 246 9992	✓	M		3		
BAPP Group Ltd	01226 383824	✓	M		3		
Cooper & Turner Ltd	0114 256 0057	✓	M		3		
Howmet Fastening Systems Ltd	01952 290011	✓	M				
Lindapter International	01274 521444	✓	M				
Tension Control Bolts Ltd	01978 661122	✓	M		3		

Steel producers and stockholders

Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
AJN Steelstock Ltd	01638 555500	✓	M	4			
Arcelor Mittal Distribution - Scunthorpe	01724 810810	✓	D/I	4	3B		✓
ASD Metals UK	0113 254 0711	✓	D/I	4	3B	●	
Barrett Steel Limited	01274 474314	✓	M	4	3B		✓
British Steel Ltd	01724 404040	✓	M		3B		
Cleveland Steel & Tube Limited	01845 577789	✓	M	3	3B		✓
Daver Steels Ltd	0114 261 1999	✓	M	3	3B		
Dent Steel Services (Yorkshire) Ltd	01274 607070	✓	M	4	3B		
Murray Plate Group Ltd	0161 866 0266	✓	D/I	4	3B		
National Tube Stockholders Ltd	01845 577440	✓	D/I	4	3B		✓
Rainham Steel Co Ltd	01708 522311	✓	D/I	4	3B		
Tata Steel – Tubes	01536 402121	✓	M		3B		
The Alternative Steel Co Ltd	01942 826677	✓	D/I				

Protective coatings

Company name	Tel	QM	CA	FPC	NHSS	SCM	SfL
Forward Protective Coatings Ltd	01623 748323	✓	N/A				
Hempel	01633 874024	✓	N/A				✓
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				
Wedge Group Galvanizing Ltd	01902 601944	✓	N/A				✓

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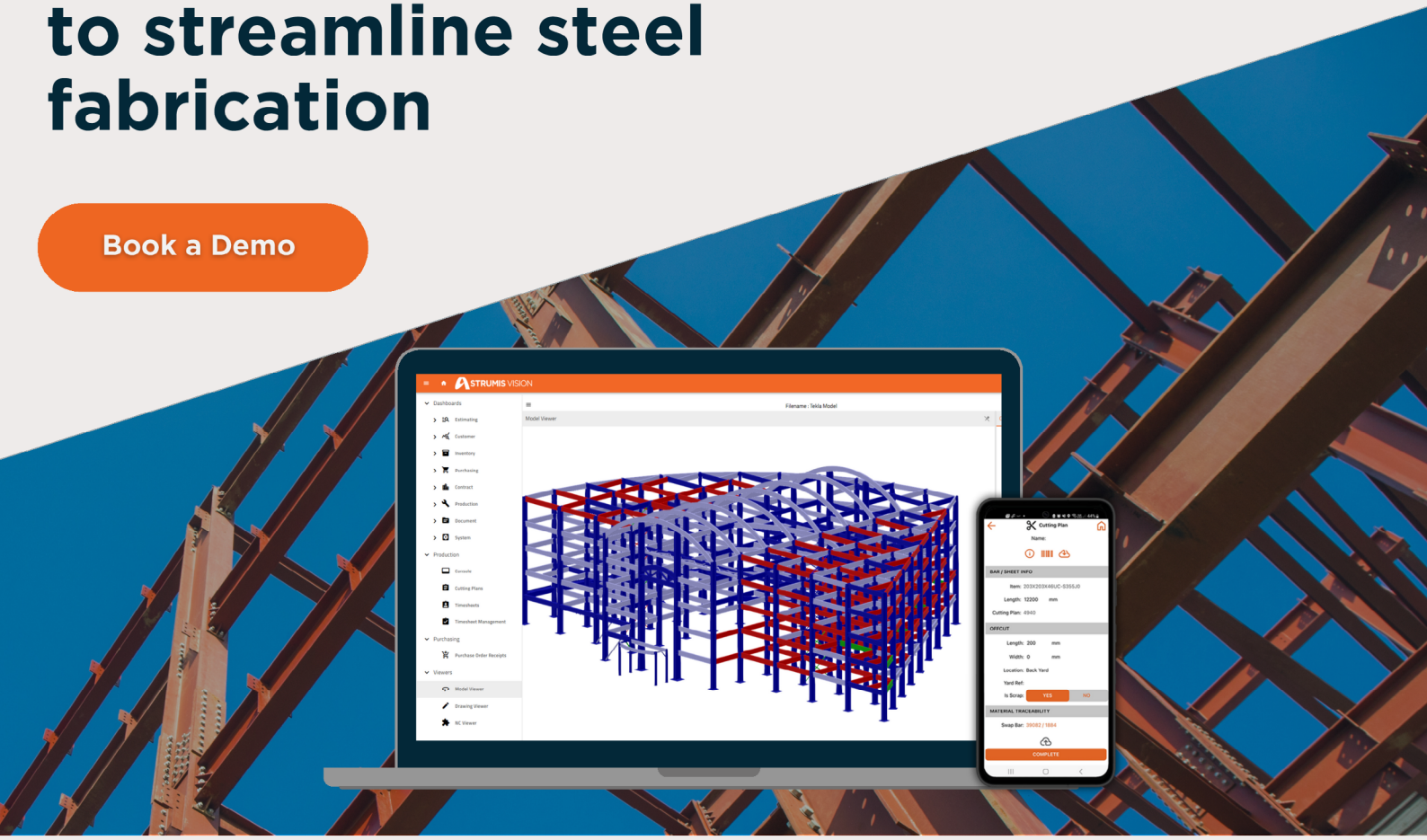

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