REINFORCE

JOURNAL OF THE BRITISH ASSOCIATION OF REINFORCEMENT

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BAR
BRITISH ASSOCIATION OF REINFORCEMENT

www.**uk-bar**.org

REINFORCE 25

Welcome

Investment matters. It transforms the lives of people. It forwards sustainability. It delivers economic growth. This issue of Reinforce highlights the investment being made by and into the UK reinforcement sector. From national investment in new plant and new reinforcement products to major international investment by Sev.en Global. From investment in helping ex-prisoners to turn their lives around to being part of the investment into more sustainable energy solutions.

For its part, the British Association of Reinforcement is also investing in the future. It has developed the BAR Cirrus app, a new digital data platform for steel reinforcement. The app provides a digital route offering full and easy access to the necessary data to ensure reinforcement and rebar accessory products are fully traceable, fit for purpose, adhere to all relevant standards and certification and are sustainably and ethically manufactured and fabricated. Crucially, the specific project data held and accessed by BAR Cirrus is owned by the customer and supplier. It will not be held by, used by or charged for by a commercial third party. Investment is also being made to ensure that industry technical guidance is reviewed and updated so that it reflects the evolving needs of a modern industry. To this end, BAR member CONSTRUCT has recently published its 5th edition of the National Structural Concrete Specification which brings together enhanced technical guidance, a stronger emphasis on sustainability and a renewed focus on collaboration between designers and contractors.

Investment is all about moving forward to ensure that current and future challenges are met with better understanding and better solutions. BAR and it members are fully invested in delivering those solutions for today's and tomorrow's UK reinforcement sector.

Steve Elliott
Chairman, British Association of Reinforcement

The British Association of Reinforcement (BAR) is the industry association for UK manufacturers and fabricators of steel reinforcement products including cut-and-bent and mesh.

BAR aims to add value to the reinforcement industry via market and product development, the promotion of health and safety as well as social value and environmental best practice and providing a forum to help forward the reinforced concrete industry as a whole.

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7 STEEL UK ACQUIRES CELSA STEEL

Sev.en Global Investments has acquired Celsa Steel UK which has been rebranded as 7 Steel UK.

Formerly Allied Steel and Wire, then Celsa Group since 2003, the acquisition and investment by Sev.en GI will enable 7 Steel UK to continue Cardiff's steelmaking legacy, representing the next generation of British steelmaking and leading the transition to a low-carbon, circular steel economy.

In addition, Sev.en Global Investment has acquired Celsa Nordic. The combined operations offer an overall production capacity of two million tonnes of construction steel each year. The steel mills produce bars, sections, mesh and wires, with products used in the construction, shipbuilding, railway, and wind energy generation sectors.

7 Steel has also announced its intentions to bring environmental responsibility and circular economy principles to the centre of its business model. Key to this approach is the use of electric arc furnaces for steel production, which primarily uses scrap steel as their feedstock. By recycling steel rather than producing it from raw materials, the group significantly reduces carbon emissions compared to traditional steel manufacturing processes.

"We will support growth, development, further innovation, and the green transition. We look forward to promising business strategies and establishing a strong market presence, leveraging our combined strengths to drive innovation and growth. Together, we will build a resilient business ready to face future challenges and unlock new opportunities," commented Alan Svoboda, CEO of Sev.en Global Investments.

7 Steel UK is the UK's leading producer of low-carbon, circular steel, transforming UK-sourced scrap into high-quality steel reinforcement and long section products. It currently has an annual production capacity of 1.2 million tonnes. At the heart of its operations is its Electric Arc Furnace (EAF), which is the cleanest and most energy-efficient steel production technology available, delivering up to 80% lower CO_2 emissions compared to traditional blast furnace methods.

The company operates four processing scrap yards across the UK which are strategically located to serve regional suppliers and national industrial partners. In July 2024, state-of-the-art scrap shredder at was installed at the Cardiff facility. This advanced plant enables the recovery of more material from mixed, complex waste streams, improving scrap quality and reducing contamination before it enters the EAF. Together with its group fabricators BRC, ROM and Express, 7 Steel has contributed to some of the UK's most iconic projects, including Wembley Stadium, London's Olympic Park, Crossrail, Heads of the Valleys, and HS2.

Discussing the circular goals of the company, Cales Rovira, CEO of 7 Steel UK, said: "As 7 Steel UK, we remain deeply committed to serving the UK construction sector with sustainable, high-quality steel. Backed by Sev. en Global Investments, we are poised to accelerate innovation and strengthen our leadership in the circular economy."

As global supply chains become increasingly volatile, localised recycling and supporting our UK circular economies has never been more important. By investing in domestic infrastructure and processing, 7 Steel UK is reinforcing the sustainable resilience of the UK's steel supply and reducing dependence on imported materials.

For more info, visit: **www.7-steeluk.com**

LAUNCH OF 7 STEEL SERVICE

Steel reinforcement specialists, BRC Reinforcement, Express Reinforcements and ROM, have joined forces to create 7 Steel Service – a nationwide partner for steel reinforcement solutions.

Delivering low-carbon steel reinforcement for construction projects across the UK, the united business combines the strength of a circular, sustainable supply chain with the support of experienced teams. This puts 7 Steel Service in a unique position to support customers in responding to the challenges of today's construction landscape.

Elevating levels of sustainability, traceability and compliance for construction projects, all reinforcement products are manufactured using low-carbon steel produced in the UK using Electric Arc Furnace techniques which produces 98% recycled steel. This process sees UK-sourced scrap transformed into UK-made steel for projects across the country.

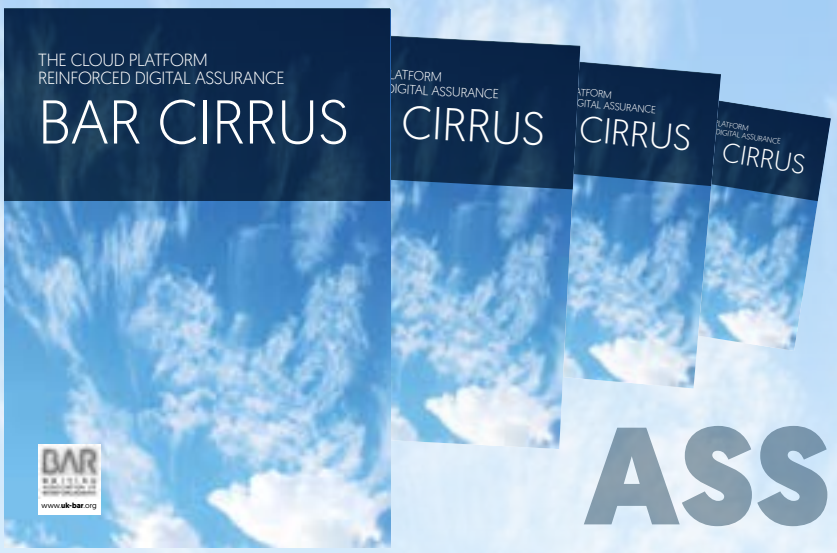
Tony Stumpf, Managing Director at 7 Steel Service, says: "Uniting ROM, BRC Reinforcement and Express Reinforcements under the 7 Steel Service brand puts us in a unique position to support the UK construction industry with market leading reinforcement solutions made using low-carbon steel. Independently, we've been working with customers for decades on projects big and small, but combining forces under one brand broadens our capabilities and gives us the nationwide coverage that many of our customers need.

"Besides the strength that comes from bringing these three businesses together, we are also leveraging our position as part of 7 Steel. This allows us to elevate circularity, traceability and sustainability in steel supply, all of which are crucial factors for modern construction and infrastructure projects. Using only UK-made steel produced by the 7 Steel Mill for our reinforcement products also allows us build greater resilience in the supply chain, so customers can enjoy greater levels of support and quality alongside shorter, reliable lead times."

7 Steel Service is part of 7 Steel, the UK's specialist producer of low carbon, circular steel. Through its unique end-to-end process, the steel manufacturer transforms UK-sourced scrap steel into high-quality long steel products, with its Cardiff-based production processes centred around an Electric Arc Furnace which substantially reduces carbon emissions when compared to traditional methods of production.

7 Steel Service delivers complete steel reinforcement solutions for construction projects, including rebar, mesh and prefabrication alongside critical accessories. With nationwide locations, customers can access complete project support which underpins quality, innovation and compliance, with all products independently verified to industry certifications.

To find out more, visit **www.7-steelservice.co.uk**



REINFORCED DIGITAL ASSURANCE

A new digital data platform for steel reinforcement and accessories has been developed by the British Association of Reinforcement (BAR). The BAR Cirrus app provides a digital route offering full and easy access to the necessary data to ensure reinforcement and rebar accessory products are fully traceable, fit for purpose, adhere to all relevant standards and certification and are sustainably and ethically manufactured and fabricated.

A crucial feature of the app is that the specific project data held and accessed by BAR Cirrus is owned by the customer and supplier. It is not held by, used by or charged for by a commercial third party.

BAR Cirrus has been developed against a background of the construction industry increasingly recognising the need for enhanced product traceability and reporting. This facilitates an improved and informed procurement choice and better supply chain management. As such it embraces the 'Golden Thread' that was recommended by Dame Judith Hackitt in her report 'Building a Safer Future' which was published in the wake of the Grenfell Tower fire disaster.

The Golden Thread refers to the vital flow of digital information that should be present throughout a building's lifespan from design and construction through to occupation and maintenance. It encompasses key information including design intent, materials used, construction methods and maintenance requirements.

The recent Building Safety Act 2022 mandates the Golden Thread requirement for construction, emphasising the importance of this concept in providing safer buildings. It means that building owners, regulators and other stakeholders can make informed decisions, identify safety risks and that necessary actions to prevent incidents.

The BAR Cirrus app fully supports the Golden Thread concept by providing a digital tool that builds upon the comprehensive traceability information already provided by reinforcement suppliers. Its development has been fully reviewed by customers and suppliers to ensure relevance, functionality and safeguards against the data being compromised. It allows for productivity and efficiency improvements by providing real-time tracking and traceability of delivered reinforcement orders in addition to identification of product conformity and certification approvals.

A key objective of the BAR Cirrus app development was to prioritise ease of use and functionality, ensuring the dashboard remained intuitive and straightforward. Reinforcement customers follow a step-by-step process: starting with signing into the app, selecting a reinforcement supplier to view a list of orders, choosing a specific order, and then tapping on the desired product to access all associated bar marks. From there, they can select a specific cast and certificate. Alternatively, customers can scan the barcode on a rebar label to instantly view bar mark and cast information.

Equally important is that customers and BAR members could use the app without any annual subscription fees. For BAR reinforcement customers there are no fees. For BAR members there is only a set-up and maintenance fee. Non-BAR members have to pay an annual subscription fee plus the set-up and maintenance fee.

Steve Elliott, BAR Chairman, said: "The development of BAR Cirrus is an exciting development for the UK reinforcement sector. It will simplify the supply chain, digitalise traceability, and provide quality assurance and product provenance. BAR Cirrus has been developed by the industry for the industry with no cost to reinforcement customers. The data will not be held by a commercial third party. Rather, the specific project data will be inputted, accessed and owned by the customer and supplier."

The *BAR Cirrus* app can be downloaded from the Google Play store or Apple store.

THE BENEFITS OF REINFORCEMENT PREFABRICATION

Reinforcement prefabrication has a lot offer, not least of which are greater cost efficiencies and increased sustainability. A new BAR guide outlines the benefits of this modern method of construction (MMC).

The traditional method of placing reinforcement involves using cranes to move bundles of bars close to the fixing location and then tying individual bars into position using falsework and formwork for support. This can pose safety concerns when steel fixers are working on elevated platforms. It also leads to longer construction times as workers are required to offload bundles of cut and bent reinforcement from a trailer into a storage area, read drawings and schedules, then identify bundles of bars before moving them to the required location, then tying and fixing the reinforcement.

There is a better way: reinforcement prefabrication. Reinforcement prefabrication provides a quality controlled, factory-manufactured product that benefits from simplified detailing, and is delivered to site on a just-in-time basis where it can be fixed simply and quickly. The result is reduced construction time, reduced on-site labour requirements and increased buildability with improved site planning and organisation.

There is also the sustainability benefit of reducing waste that comes from the full involvement of the reinforcement fabricator at the design stage. All reinforcing steel used by BAR fabricators is produced using recycled material via the Electric Arc Furnace (EAF) method, giving a 97% recycled content to the finished product. Producing steel by the EAF method currently reduces the carbon footprint by nine times when compared to the Basic Oxygen Furnace (BOF) method. The prefabricated reinforcement produced is itself 100% recyclable.

Armed with factory assured quality, the site contractor and client benefit from increased site productivity with prefabricated units being delivered just-in-time for installation using streamlined processes. Prefabrication allows reinforcement items to be taken direct from the delivery vehicle straight to installation, therefore reducing site congestion. The use of prefabrication also means that site programmes are not affected by poor weather that can delay traditional construction.

Furthermore, prefabricated reinforcement offers improvements in on-site health and safety resulting from the removal of reinforcement tie bars, stray bars and surplus tying wire provides a tidier, and therefore safer, site. It also means reduced onsite labour requirements. With the construction industry facing a skills shortage this is increasingly important.

Prefabricated reinforcement is suitable for a wide range of applications. In addition to the traditional and accepted forms of prefabricated reinforcement such as pile cages and diaphragm wall panels, it can also be used for a wide range of structural and civil elements including rafts, pile-caps, bases, slabs, columns, beams and walls that accordingly come in a multitude of shapes and sizes.

Early involvement and meaningful engagement with the reinforcement fabricator means that the full benefits of repetitive prefabrication with all the advantages of rationalisation and economies of scale are realised. It means that the most efficient prefabricated unit is designed, manufactured and delivered to site ready for fast installation. All BAR member prefabricated assemblies are subject to the requirements of industry best practice, quality and sustainability certifications schemes and all the relevant UK and international standards.

To download a free copy of the BAR brochure *The Benefits of Prefabricated Reinforcement,* visit: **https://bit.ly/40H4UaA**

REINVENTING REINFORCEMENT FIXINGS

Reinforcement cages are essential to the structural integrity of concrete elements, yet the methods traditionally used to fix reinforcement, tie wire and welding, can present limitations. Unstable cages, site safety risks, and delays caused by hot works are all-too-common issues. Responding to these challenges, Ischebeck TITAN developed the RECO Clamp: a mechanical, engineered solution that company believes transforms how reinforcement cages are built and handled.

Steel tie wires are the most common method for holding rebar in place, but they serve only as a temporary fixing. They contribute little to the structural strength and are prone to loosening, twisting, or snapping, especially when cages are lifted or disturbed. Numerous incidents of cage collapse during lifting or transportation have been attributed to the weak links formed by tie wires. Despite industry guidance from the Temporary Works Forum (TwF), such assemblies are less likely given proper design consideration.

On-site welding, although stronger in principle, introduces a host of safety, quality and programme issues. Some types of rebar are not readily weldable, and brittle failures from poor welds are a known risk. Welding requires skilled operatives, permits, safety precautions, and cannot be done in wet weather, which is a challenge for UK construction. It's also expensive and disruptive, pausing works for inspection, and quality checks. Both methods reduce efficiency at a time when the industry demands faster, safer construction.

The Engineered Alternative: RECO Clamps

The RECO Clamp system addresses these issues by providing a repeatable, structural connection around ribbed bars using a simple mechanical assembly. Each clamp consists of a high-strength Grade 8.8 bolt, cover plates, and flange or serrated nuts tightened to a known torque. This creates a consistent clamping force and a known structural performance.

Different clamp models accommodate most reinforcement configurations:

- CB & DBP clamps for perpendicular bars
- PB and PB3 clamps for parallel bars
- CBL, PBL and DBP clamps mostly used in lifting applications but all clamp types can be used.

Each clamp's Safe Working Load (SWL) is determined using comprehensive safety factors in line with current TwF guidance. Independent UKAS-accredited testing confirms their capacity. Standard tightening torques are 28 N·m for M10 bolts and 45 N·m for M12, ensuring consistent and safe installation.

Reco 'CBL' Clamp (as used on Hinkley Point C) – a lifting clamp for connecting 'Cross Bar' perpendicular reinforcement

In terms of performance, RECO Clamps outperform tie wires by a significant margin. A small number of clamps can replace dozens of wire ties while delivering proven structural fixity. Unlike welds that can crack, RECO Clamps retain a degree of elasticity, allowing them to absorb movement without failure. Installation is faster and more reliable, in some applications, switching to RECO will massively cut installation time.

RECO Clamps offer numerous advantages:

- Enhanced Safety: No hot works, no fumes, no fire hazards
- All-Weather Installation: Continue work in rain, wind or cold
- Speed and Efficiency: Quick bolt-tightening—no specialist labour required
- Structural Reliability: Independently tested with known capacity
- Versatility: Compatible with most bar orientations
- Ease of Installation: Only a torque wrench is needed
- Cost Savings: Reduces costs by more than 50% compared to on-site welding

Used across major UK infrastructure projects including Hinkley Point C and HS2, RECO Clamps are a proven step change in how reinforcement cages are stabilised and lifted. With certified performance, proven site success, and ongoing innovation, RECO is setting a new benchmark for safer, faster, and more efficient rebar connection.

To learn more, contact Ischebeck Inform UK at **enquiries@informuk.co.uk** or call **01223 862230**.

REINFORCED **INVESTMENT**

With rebar demand climbing and project scopes growing in complexity, ArcelorMittal Construction Solutions (AMCS) is making serious moves to stay ahead. The company has invested in a Schnell Opera 16, a strategic addition to support what it describes as its "largest single project to date", the delivery of a large number of prefabricated cages for Phase 1 of the HS2 project.

For AMCS, investment in the new plant is not just about adding another machine to the shop floor. It is about preparing for scale without compromising on precision, safety, or workflow. The Opera 16, a high-speed, high-precision bending and shaping machine, will be part of their Chatham operation with immediate effect.

The new machine arrives at a time when AMCS is experiencing both a growth in workload and increasing expectations from clients. With more projects specifying complex shapes, tighter turnaround times, and superb quality standards, the ability to produce high volumes of consistent and accurate rebar components is essential.

One major factor in AMCS's decision was the reduction in manual handling. The Opera 16 uses joystick controlled straightening and fully automated coil feeding which is key when producing at scale while still prioritising safety on the shop floor.

AMCS will be using the Opera 16 not only for standard shapes, but also for 3D shapes and more bespoke elements. The machine's ability to switch between two wire sizes and bend multiple forms at speed was seen as essential for adapting to a variety of contractor needs without slowing production. This will allow AMCS to deliver larger, more complex projects with confidence, as they prepare to deliver on their biggest project to date, this investment signals a clear intent of growth within the company.

Why AMCS chose the Opera 16:

- Reliability and performance - built for continuous, heavy-duty use, supporting high throughput with minimal downtime,
- Precision and safety - accurate bending and feeding operations paired with joystick control ensure operator safety and reduced handling,
- Operational efficiency - automated features including coil feed, straightening, and cutting that minimize manual tasks and increase output,
- Maintenance simplicity- electric servomotors and a touchscreen interface simplify upkeep.
- Web teleassistance aids troubleshooting,
- Versatility - two-wire handling, 3D shaping capability, and disk bending provide flexibility to meet diverse project needs.

Meeting these requirements means that the Opera 16 clearly aligns with AMCS's priorities: top-tier quality, operational efficiency, and enhanced safety. All essential as AMCS aims to scale-up their project tonnage and volume.

AMCS has invested in a new Schnell Opera 16

The Opera 16 is a high-speed, high-precision bending and shaping machine.

ArcelorMittal Construction Solutions (AMCS) has been awarded a significant contract by PACADAR U.K. LIMITED for the delivery of a large number of prefabricated rebar cages for Pahe 1 of the HS2 project. Over the next 3 years, AMCS will supply prefabricated rebar cages for the 384km of precast concrete PORR (PORR Group) Slab Track Austria (STA) system forming a key part of HS2 Phase 1. This project will also create 40 plus local jobs, reaffirming AMCS's commitment to local community investment and economic growth, whilst serving a major project of national importance. For info on AMCS, visit: **www.amcs.uk.net**

CELEBRATING PROGRESS: THE LAUNCH OF THE NSCS 5TH EDITION

The National Structural Concrete Specification (NSCS) has long served as a benchmark for best practice in UK concrete construction. Now in its 5th Edition, the NSCS reflects the evolving needs of a modern industry, bringing together enhanced technical guidance, a stronger emphasis on sustainability, and a renewed focus on collaboration between designers and contractors.

Launched by Jenny Burridge, Head of Education and Training at the Concrete Centre, the new edition was introduced at a well-attended industry event that celebrated its role in driving quality and consistency in building concrete structures. The launch featured speakers from the editorial group, including Paul Toplis, Editor and Consultant at Price & Myers; Tilly Langley, Associate at Arup; and Paul McNamara, Preconstruction Manager at Getjar; each sharing perspectives on the specification's real-world application and its impact on design, delivery, and innovation.

Developed by CONSTRUCT in close collaboration with contractors, designers, suppliers, and clients, the 5th Edition builds on the strong foundation of previous versions while introducing updates that respond to today's challenges. Its development involved extensive industry consultation, reinforcing the NSCS's status as a living document shaped by those who use it.

One of the most notable enhancements is its clearer guidance on sustainability. With the UK construction sector under increasing pressure to reduce embodied carbon, the NSCS now includes standard references to low-carbon concrete options, responsible sourcing, and waste reduction strategies. These updates align the specification with the sector's broader net-zero goals and support project teams in making informed, environmentally conscious decisions.

Another important update is its recognition of digital construction and modern methods of working. The 5th Edition acknowledges the growing role of BIM (Building Information Modelling) and digital workflows in delivering concrete structures, encouraging greater integration, coordination, and data sharing across the supply chain. This digital awareness ensures the specification remains relevant in an increasingly technology-driven environment.

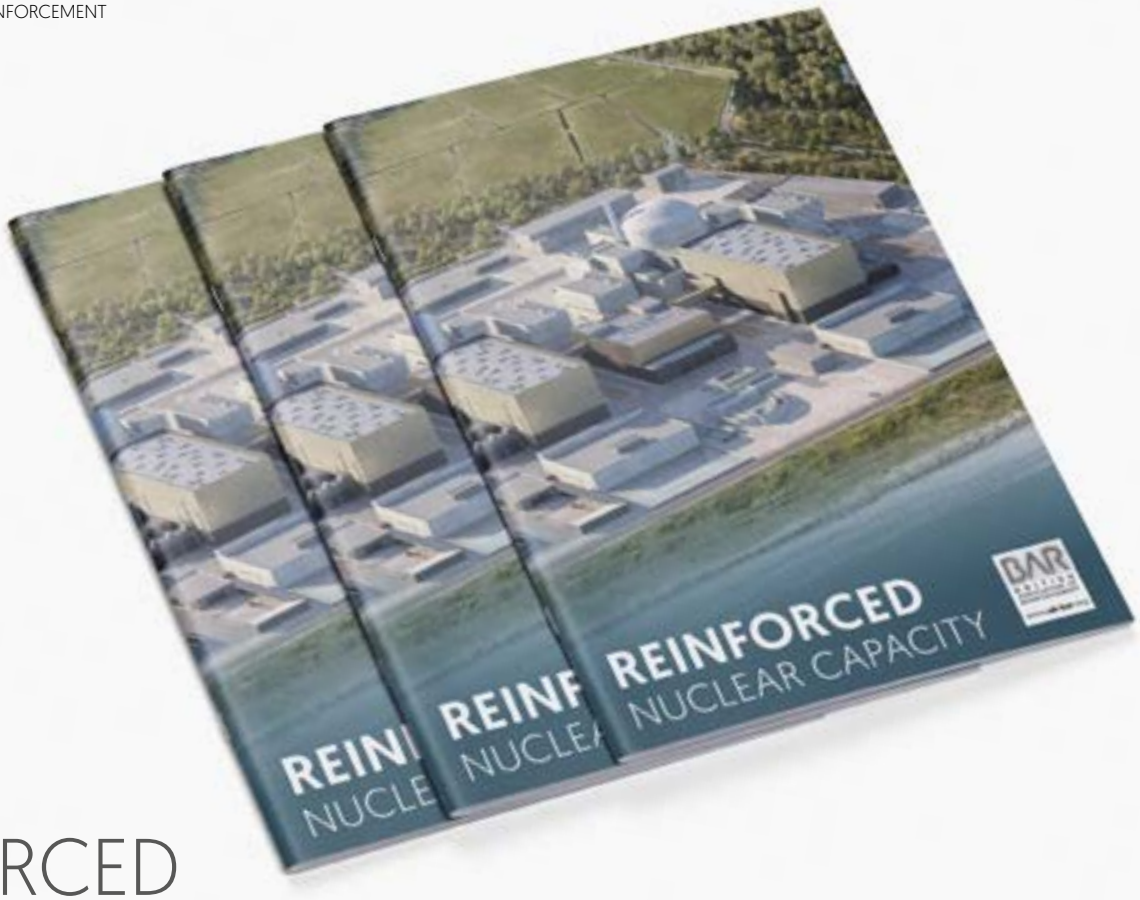
At its core, the NSCS remains a vital bridge between design and delivery, providing a shared language and expectations for all parties. The latest edition offers improved layout, clearer definitions, and updated references to current standards and codes, helping to reduce ambiguity and ensure consistency on site.

For contractors, it is a practical tool that supports efficient, high-quality construction. For clients and designers, it offers reassurance that work is being delivered to a respected industry standard. And for the wider sector, it signals continued progress, innovation, and shared responsibility.

The 5th Edition is more than just a specification update—it's a reflection of an industry that's growing, adapting, and working together. As Paul Toplis remarked at the launch, "The NSCS sets out not just how we build, but how we collaborate to deliver better outcomes."

The NSCS 5th Edition is now available through an easy-to-use online portal, providing digital access to the latest guidance anytime, anywhere. To explore the new edition and learn more, visit the CONSTRUCT website, **www.construct.org.uk** or contact the team directly.

The Salvation Army HQ, London; one of the visual concrete example projects for NSCS v5



REINFORCED NUCLEAR CAPACITY

A new brochure, 'Reinforced Nuclear Capacity' explains why BAR members are well -placed to help deliver the next generation of nuclear energy.

The UK urgently needs new investment in energy infrastructure to replace old and polluting electricity generation sources. Since 2010, 26 power stations have closed. This represents 20% of the UK's electricity generation capacity. By 2030, a further 35% of existing generation capacity will close down.

To address this, the UK government has announced an ambitious programme to invest in nuclear energy with the objective being that it provides 24GW - 25% - of electricity production by 2050. Hinkley Point C in Somerset, currently under construction, will provide 7% of UK demand when it opens in 2030. In addition to this, the government has announced investment of £14.2 billion to build the Sizewell C plant is Suffolk and a £2.5 billion programme for smaller modular reactors.

The construction of nuclear plants that are safe and durable demands high quality concrete structures that have a high level of structural integrity. This calls for construction that goes beyond the requirements of conventional reinforced concrete requiring the assurance that both the concrete and steel reinforcement are of the highest assured quality and meet all the relevant standards and specifications that take full account of the additional stringent requirements for nuclear construction.

In the same way that nuclear construction contractors and materials must go beyond the conventional, so must the suppliers and contractors. Here, members of the British Association of Reinforcement 'raise the bar' when it comes to the specification and supply of rebar and reinforcement accessories. They do that in a number of ways:

Early Engagement

The ordering and placement of steel reinforcement is often on the critical path of the concrete construction process. Early engagement with the BAR manufacturer provides the client with a correct understanding of overall manufacturing capacity and of the ready availability of reinforcement items. Early engagement with the BAR fabricator capitalises on their experience and expertise of rationalised design for possible cost reductions, increased material efficiencies and the realisation of the potential for prefabricated repetition for faster and less labour-intensive installation.

Prefabrication

Reinforcement prefabrication incorporates all of the benefits of Modern Methods of Construction (MMC) by providing a quality controlled, factory manufactured product that benefits from simplified detailing, is delivered to site on a just-in-time basis where it can

be fixed simply and quickly. The result is reduced construction time, reduced on-site labour requirements, reduced material waste and increased buildability with improved site planning and organisation.

Welding

Competent and high quality welding is an absolute essential for prefabricated reinforcement. All BAR members provide assurance that their prefabricated reinforcement is fully certified to CARES Technical Appendices 11 and 12 which cover welding to the International Standard ISO 1766 and British Standard BS 8548-2017 'Guidance for the arc welding of reinforcing steel'. BAR fabricators have made considerable investment in welding training and procedures to ensure that the meet the requirements of the relevant standards.

Trust

Trust is fundamental to successful business relationships. There must be trust that a service or product meets the right standards and delivers the necessary quality. All BAR members are committed to ensuring that their customers can have the utmost trust in the steel reinforcement products and services being provided.

BAR MEMBER CASE STUDIES

Express Reinforcements

BAR member Express Reinforcements is supplying over 230,000 tonnes of cut and bent reinforcing steel for the Hinkley Point C nuclear power station in Somerset. All the steel reinforcement is responsibly sourced and meets the high quality sustainability standards of Eco-Reinforcement and BES 6001. The contract is with the mains civils contractor BYLOR, a joint venture between Bouygues TP and Laing O'Rourke.

To date (July 2025), the company has supplied 30,758,00 reinforcement bars and has had 80,000 Quality Release Certificates issued. The 2025 Contract KPI is equally impressive meeting the 'on time and in full' criteria with 99.3% and 99.8% respectively.

Express Reinforcements has been a supplier for a wide range of key infrastructure projects including Crossrail and Heathrow Terminal 5. This proven track record of experience and expertise has allowed the company to demonstrate its ability to be a key supplier for the construction of nuclear plants in terms of the delivery a high quality building material that meets international standards, is fabricated offsite by a skilled, certified workforce and delivered as-and-when required.

Dextra Group

The Hinkley Point C project integrates advanced reinforcement technologies from BAR member Dextra, under contract with Express Reinforcements, including the high-performance Griptec rebar coupler system and Pressed Connection (PC) Headed Bars the use of which allowed for a significant reduction of steel usage, rebar fixing time and rebar congestion. This supports the project's cost-efficiency and sustainability goals.

- **Griptec** is a mechanical rebar splicing system recognized for its 100% proof-load testing, ensuring every connection is verified for quality and performance. The system is quick and easy to install, helping reduce construction time and labour while maintaining strict safety and quality standards.
- **Pressed Connection Headed Bars (Headed Bar PC)** provide an effective solution for reinforcement anchorage in heavily congested concrete zones. By eliminating the need for hooked bars, they improve buildability and optimize structural performance while reducing raw material wastage.

Both Griptec and Headed Bars PC are independently certified to CARES TA1-C (Class A), confirming that the bar will fail outside the influence of the connection — a critical requirement in nuclear design. In addition, Griptec meets the requirements of ISO 15835 Classes F (fatigue) and S (seismic), and Headed Bars PC meets the requirements of ISO 15698 for categories B3 and S (seismic).

Dextra's commitment to the nuclear sector is demonstrated by its certifications to both ISO 19443 and the ASME Boiler and Pressure Vessel Code (BPVC), Section III, Division 2, which governs materials and components used in nuclear construction. Furthermore:

- **ISO 19443:** Dextra is the only rebar coupler manufacturer certified to ISO 19443. This nuclear-specific standard builds on ISO 9001 and applies to suppliers of items and services important to nuclear safety (ITNS). It includes enhanced traceability, process control, and risk management tailored to nuclear requirements.
- **ASME BPVC III Div. 2:** This globally recognized code outlines strict rules for the design and construction of nuclear facility components, reinforcing Dextra's capability to deliver safe, high-integrity reinforcement solutions.

Together, these certifications ensure a comprehensive nuclear-quality assurance framework, offering customers the highest levels of confidence in safety, performance, and regulatory compliance.

To download *Reinforced Nuclear Capacity* visit:
www.uk-bar.org/publications


Dextra
GRIP//TEC
The only 100%-proofed splicing system
Green Steel
Coming soon: Griptec's new eco-friendly option slashes CO_2 emissions by 45% — a bold step toward a greener future
Quality Assurance
World-first: The only coupler manufacturer on the planet to achieve this elite nuclear certification
CERTIFIED
ISO 19443
reliable
connections

REINFORCED COLLABORATION

A useful benefit of BAR membership is that it forwards collaboration between members that result in better reinforcement solutions. An example of this is the collaboration between fabricator 7 Steel Service and supplier nVent and the development of the Lenton Ultimate mechanical rebar splicing system..

7 STEEL UK + nVent

The nVent Ultimate has been designed to maximise reinforcement performance and efficiency whilst minimizing installation requirements. It features self-aligning taper-threaded couplers that are attached to reinforcing steel using friction forging technology (commonly called friction welding) which — combined with the product design — allows for the inherent variability of rebar whilst maximizing the performance of the coupler connections.

The Lenton Ultimate

The innovative splicing system is not only CARES TA1-A and TA1-B approved, but it also boasts impressive fatigue performance data that enhances design efficiency and material savings. Additionally, the system can reduce installation time by up to 50% compared to other coupler systems, resulting in significant time and labour savings on construction sites.

Because of its high fatigue performance, nVent LENTON Ultimate brings benefits to design teams, allowing for a more efficient use of reinforcing steel. Table E.1 of the second generation BS EN 1992-1-1:2023 (Eurocode 2) suggests an assumed coupler performance at 10 million load cycles of 35MPa. However, Note C of Table E.1 allows the use of even more accurate SN curve results, which, for nVent LENTON Ultimate, indicate a resistance of 66MPa at 10 million load cycles. This represents an 89% higher resistance rate compared to the assumed value, potentially resulting in savings in the number and/or size of nVent LENTON Ultimate couplers needed compared to other systems.

Due to being manufactured in the Netherlands, nVent LENTON products typically take 3-4 days to ship to the United Kingdom. However, contractors who work closely with their reinforcement fabricators benefit from optimal production-delivery schedules. It also enables the realization of the potential benefits of using Vent LENTON Ultimate couplers for prefabricated rebar assemblies such as pile cages, diaphragm wall cages, beam sections, wall sections and pre-casting that forward faster onsite installation.

Tristan Hemsley, nVent LENTON Sales Manager, said: "The fostering of valuable partnerships with UK fabricators and their contractor clients forward synergies that benefit all concerned in the both the supply chain and the construction process."

This was echoed by Gary Smith, 7 Steel Service Operations Manager, who said: "The long-term partnership between 7 Steel Service and nVent has enhanced the delivery performance to project sites over many years. The introduction of the LENTON Ultimate coupling system to our product range has allowed 7 Steel Service to offer robust high performance couplers with fully automated quality control processes. These couplers combined with speed of production have been beneficial to both 7 Steel Service as a supplier and the end-user at site in terms of ease of installation and quality assurance."

For further information visit: **http://bit.ly/3JORh3r**

A SECOND CHANCE

Total Construction Supplies Ltd (TCS) believes that everyone deserves a second chance and so has developed a partnership programme with the HM Prison Service in the West Midlands to offer training and job opportunities to inmates and ex-offenders.

In the first instance, TCS have developed and equipped a total of 3 workshops within HMP Oakwood where inmates can be trained in the skills required to assemble reinforcement by welding and given paid work to assemble simple fabrications and sub-assemblies for incorporation into fabricated elements supplied by Total Companies.

Participating inmates, many of whom have never previously had a work opportunity, get to learn the basic skills. In developing these skills and making things which have a value, offenders develop a pride in these abilities, earn and save some money for when they are released and get to understand that they can play a role which enables them to become valuable contributors to society.

As a second phase, inmates approaching completion of their sentence can avail of the ROTL (Release on Temporary Licence) scheme which enables appropriate inmates to leave the prison in the morning, attend work for the day at TCS premises and return to the prison at night.

There, as well as utilising the skills they have learned within the prison, they can receive on the job training – depending on their interests and aptitudes to further enhance skills and generally partake as "normal" employees.

As well as fabrication skills, many of our ROTL workers have learned transferable skills in plant and motor maintenance, fork lift truck driving and overhead crane operation.

Upon completion of their sentence and subsequent release from HMP, TCS is pleased to offer many of these ex-offenders who have served their dues to society an opportunity to join our workforce as valued full time permanent employees.

For practical logistics reasons – mainly because most ex-offenders return to their home areas – TCS are unable to employ all those who have partaken of the scheme but have the satisfaction of knowing that the majority leave having gained skills and some money to enable them make a fresh start elsewhere. Total Construction Supplies takes great pride and satisfaction at observing the many positive outcomes that the scheme has had in offering these individuals a second chance.

Total Construction Supplies has developed a programme with HMP Oakwood to offer offenders a fresh start.

Supporting the Transition Beyond Work

TCS recognise that successful reintegration involves more than just employment which is why the company also provides a range of wraparound support services designed to help individuals adjust to life outside prison.

All ex-offenders joining our workforce have access to our Employee Assistance Programme, which includes confidential support for mental health, wellbeing, and money management. Also available are regular one-to-one sessions with trained Mental Health First Aiders, helping individuals navigate the emotional and psychological challenges of reintegration in a supportive, non-judgemental environment. To ease financial pressures, TCS covers travel costs for the first three months of employment—giving individuals time to get back on their feet without the stress of upfront expenses. Together, these measures help lay the groundwork for long-term success and stability, ensuring every individual has a real chance to thrive.

For more information on Total Construction Supplies, visit: **https://total-group.co.uk**

MAKING THE T-CONNECTION

Reinforcement Solutions Limited (a Total Group Company) have introduced a T-Connect cage splice system for the connection of multi- part steel reinforcement pile cages.

For many years, piling contractors and pile cage fabricators have struggled with various means for temporarily connecting pile cage sections during installation. In particular, they have wanted a cage connection which is safe, secure, tested, certified, easy, fast to apply and economical.

The T- Connect system, developed in collaboration with wire suspension specialist Zip-Clip Ltd, comprises two variants of a wire-based connection system (T-Connect and T-Connect Lite) and is the only pile connection system available in the UK that has been granted a third party assurance certificate (Cares Technical Approval TA15 5098.

The T-Connect system is:

- **Safe:** Prevents the need for hands or arms to be inside the cage whilst connecting and laboratory tested to certified safe working loads,
- **Easy to Use:** Employs the principles of a zip tie
- **Convenient:** Lightweight and conveniently packaged
- **Self-Contained:** No special tools or training required and no loose parts
- **Quick:** Installation time can be reduced to a matter of seconds
- **Economical**: Especially when considering the reduced installation times
- **Certified:** CARES Technical Approval TA15 5098

The T-Connect Lite is a simply applied wire tie that utilises a non-return cable grip device to complete a secure wire loop to secure together rolled bands or rings that have been welded in to the marrying sections of multi part pile cages. Deployed in an array of three, approximately equidistant around the circumference of the cage, the T-Connect Lite system is certified capable of supporting a load of 10 Kn (I tonne) with a factor of safety of 4:1

The T-Connect assembly utilises similar technology to the T-Connect Lite combined with a proprietary pressed metal bracket, a larger wire diameter and a purpose designed wire grip device to secure the rolled bands of the connecting cage elements. Again, deployed in an array of three devices equally spaced around the cage circumference, the T-Connect array is certified capable of supporting a load of 25Kn (2.5 tonnes) at a factor of Safety of 4:1

Both the T Connect and T-Connect Lite systems have undergone extensive laboratory testing in simulated site conditions to determine proof load capacity (and thus Safe Working Load). This testing has been carried out in a UKAS approved laboratory to a UKAS approved Test Methodology which has been observed by CARES as part of the Approval Process.

Both variants of the T-Connect are supplied conveniently packaged in threes and contain printed installation instructions together with a QR Code which, when scanned directs to a simple installation video. Application of the T-Connect system requires no special tools or specialist operator skills and provides a safe, secure cost-effective system for the temporary connection of pile cage sections during the installation process.

The T-Connect system is available exclusively from Reinforcement Solutions Limited and from selected fabricators duly licensed by Total for the application of the system.

For further information and details how the T-Connect system could be applied to your project, please contact the sales or technical teams at Reinforcement Solutions Limited or Total Construction Supplies.

Tel: **01902 624 220**

COOL CONCRETE

The summer of 2025 had a succession of heatwaves. For those living in lightweight timber apartment blocks this often meant uncomfortable overheated living conditions.

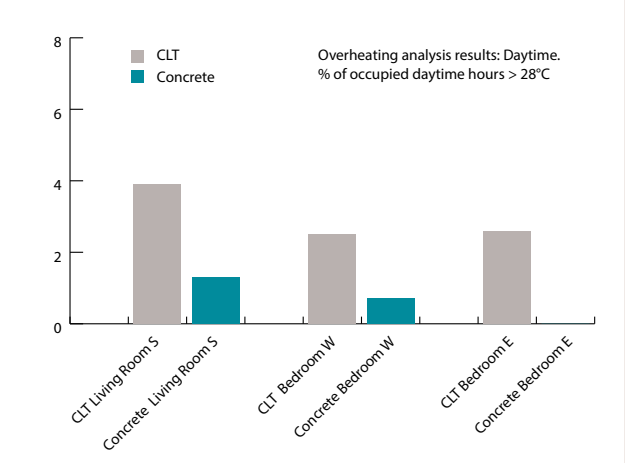
Unlike timber construction, heavyweight concrete construction with its innate thermal mass can do much to mitigate the impact of heatwaves. Thermal mass can absorb heat during the day and then release it at night. Often referred to as Fabric Energy Storage (FES), thermal mass especially effective when used as part of an integrated passive design solution that includes building orientation, shading and natural ventilation. FES can significantly reduce the need for air-conditioning which is expensive to run both financially and in terms of CO2 emissions.

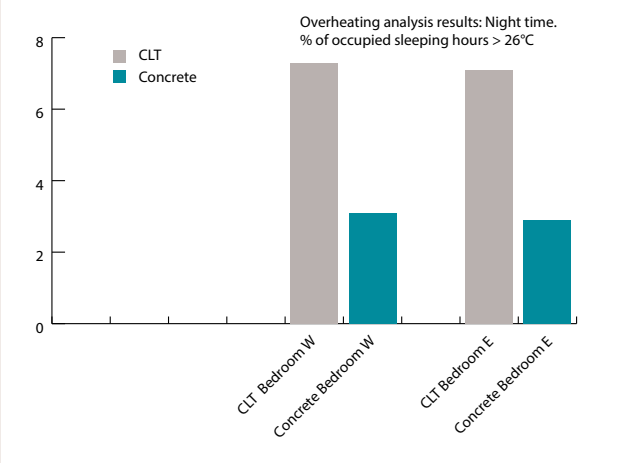
Admittedly, the use of concrete construction can raise questions concerning the level of construction embodied CO2 when compared to timber construction. However, if you have to mechanically ventilate and cool a timber building then the resulting operational CO2 emissions, over the lifetime of that timber building, will far outweigh any initial construction embodied CO2 savings. FES concrete buildings, due to reduced air conditioning requirements offer a reduced whole life long-term carbon solution.

This was proven by a life cycle carbon analysis of a typical six storey residential building in London carried out by MPA The Concrete Centre*. The study compared a concrete structure with equivalent cross-laminated timber structure.

To develop appropriate cooling strategies, both buildings underwent a full overheating analysis using dynamic thermal modelling and the CIBSE TM59 methodology, along with weather data that took account of the likely future climate. It was found that, for the period 2020-40, the concrete apartments could remain cool predominantly using its exposed thermal mass and night cooling with the addition of some very low-energy ceiling fans. The fans enabled the percentage of time spent above 26°C in the bedrooms to be shifted from around 3% to below 1% of the occupied period, which represents the CIBSE TM59 overheating threshold. In contrast, the lightweight CLT version of the apartment building required active cooling from the outset. See the figure below.

The concrete apartments were found to have an average peak space heating demand around 25% lower than the CLT option, which is a result of the concrete's thermal mass helping stabilise the internal temperature and smooth out the load profile. Reduced peak loads are beneficial from a plant sizing, cost and embodied carbon perspective, but of greater value is the carbon benefit to the national grid from a reduced peak electrical demand, helping to balance out supply and demand. This is set to become an important benefit of high thermal mass buildings, which can be actively controlled to store and release heat so their demand profile responds sympathetically to the peaks and troughs of the renewable energy feeding the grid. In this way, the building's energy demand can be shifted away from periods of high grid carbon intensity.





*Life cycle carbon analysis of a six-storey residential building, MPA The Concrete Centre, 2022.

CUTTING CARBON WITH CONCEPT*

Concept enables users to compare a wide range of concrete frame options, ranking them in terms of carbon, cost or construction time.

As its name suggests, Concept is intended to be used early in the design process, when there is the greatest scope to reduce embodied carbon by amending design criteria, reconsidering space planning and exploring different construction methods. At concept stage, it can be difficult to quantify the impact of changing grid spacing, loading or framing type, so the tool offers a simple way to compare different options. As Concept can quickly generate element sizes and comparison data, it can prove useful whenever there is an opportunity to consider alternative frame types, loads or spans.

Key to Concept is material optimisation. Optimising the amount of material in a concrete frame can make a significant difference to its embodied carbon.

Concrete frames can be designed in many different ways, and there are many parameters to consider when improving material efficiency:

- Smaller grid spacing

  Smaller grid spacing and corresponding shorter spans typically lead to reductions in the required structural depth, and therefore in material quantities. The aspect ratio of each bay also impacts efficiency.

- Square bays

  Square bays are typically more efficient for two-way spanning systems; for one-way systems, rectangular bays are usually more efficient.

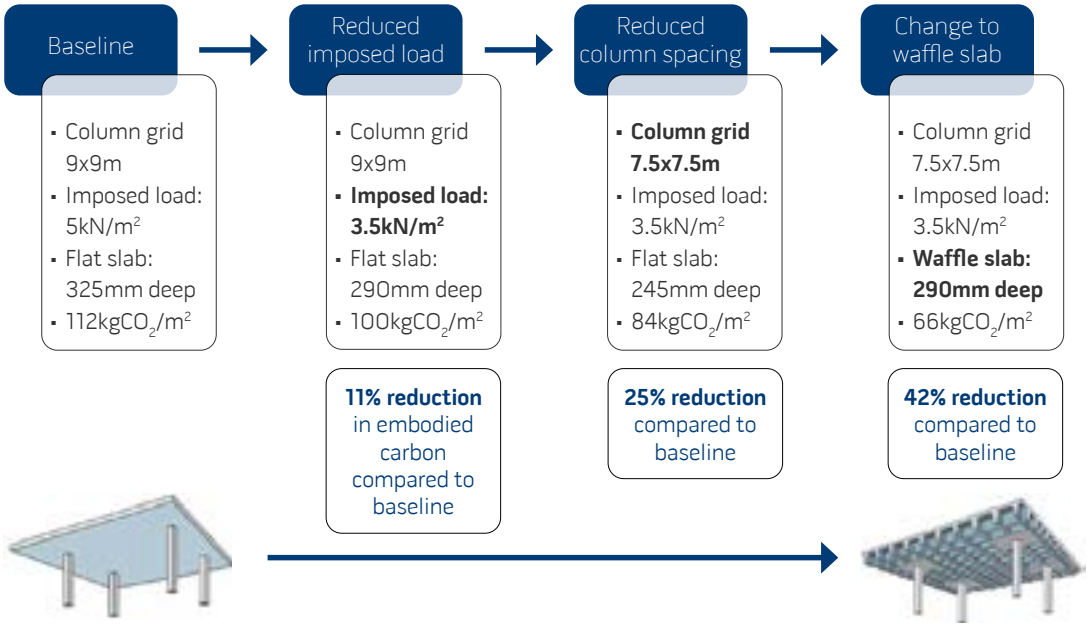
- Loading

  Reduced loading also leads to reductions in structural depth. For this reason, excessive or blanket allowances for loading associated with finishes and services should be avoided. For building services and plant rooms, they should ideally be based on the weight of the equipment that will be installed, using data from the manufacturer. Live load allowances should be discussed with clients, particularly where project requirements exceed those of the Eurocodes.

- Structural systems

  The best framing solution for each case depends on a number of factors, including building use, load and span.

Fig 1: Incremental changes make a big impact: worked example



Typically, deeper systems, such as ribbed slabs or slabs on beams, are more materially efficient than shallow systems, such as flat slabs. Where long spans, high loads or irregular layouts are necessary, it is important to select the optimal solution. For example, beams can be used to support large point loads or to accommodate irregular grids. Flat slabs are more appropriate for regular column grids, and are not suitable for large point loads. Structural systems that incorporate voids, such as ribbed and waffle slabs and precast hollowcore slabs, minimise the use of concrete where it is not required. Permanent void formers can also reduce the weight of the structure and the volume of material needed for the structure and foundations. However, the increased depth associated with some structural systems can have implications for overall building height and the distribution of services.

Post-tensioning should be considered wherever long spans are required, or structural depth is critical. This increases strength by adding pre-compression into concrete after it has been cast, which means slabs can be slimmer. Post-tensioning is often used in flat slabs, but is also applicable to ribbed and waffle slabs, enabling even greater embodied carbon reductions. Hollowcore planks typically use prestressing, along with cores or voids along their length, making them structurally and materially efficient.

Beyond the frame: what else do designers need to consider? The Concept tool only considers life cycle stages A1-A3, also known as cradle-to-gate emissions, because this is when the most significant reduction in the embodied carbon of concrete can be achieved. The embodied carbon associated with the remaining stages – construction, use and end of life – is likely to be fairly similar for every frame. The tool also only considers the structural frame itself – it does not consider cladding, finishes, fit-out or services. These can have a significant impact on embodied carbon, and so should not be overlooked when making comparisons. A whole-life carbon assessment is recommended to account for elements beyond, but impacted by, the structural frame, such as foundations, building height and service life, as well as the potential carbon savings from omitting finishes and using thermal mass for passive cooling and heating.

Designers may be reluctant to propose significant changes in loading to a client, or much shorter spans. But use of Concept demonstrates that small changes can add up to big carbon savings.

Concept Design Tool Version 5 can be downloaded from **www.concretecentre.com/concept**

Fig 2: Output from Concept comparing narrow and wide beam solutions

	One-way slab on narrow beams	One-way slab on wide beams
Building footprint (m)	24x32	24x32
Column grid spacing (m)	6x8	6x8
No. of storeys	1	1
Loading: Superimposed dead load (kN/m²)	1.5	1.5
Loading: Imposed (kN/m²)	2.5	2.5
Loading: Edge (kN/m)	10	10
Slab depth (mm)	170	140
Internal beam size (depth x width) (mm)	525 x 300 in Y	300 x 2400 in Y
Edge beam size (depth x width) (mm)	225 x 300 in X 450 x 300 in Y	225 x 450 in X 300 x 450 in Y
Overall floor depth (mm)	525	300
Reduction in floor depth	–	45%
Embodied carbon (tCO_2e)	50	52
$kgCO_2/m^2$	63	65
Increase in embodied carbon	–	3%

*This is an abridged version of the *'Cutting carbon with Concept'* article by Emily Halliwell, MPA The Concrete Centre, as featured in *Concrete Quarterly*, Winter/Spring 2025, issue number 289. For issues of Concrete Quarterly visit **www.concretecentre.com/cq**.

BAR: THE BUSINESS BENEFITS

In addition to forwarding the reinforcement sector via the provision of an industry forum, providing input to British Standards and regulations and the publication of best practices guidance, BAR membership provides specific business benefits. These include:

- Access to and liaison with key industry organisations such as UK Steel, the Mineral Products Association, CONSTRUCT, The Concrete Centre, British Board of Agrément. Such liaison is not limited to the UK but is being developed internationally, for example with the Steel Reinforcement Institution of Australia,
- Free editorial promotion of member projects, products and services and raising of business profile via the BAR Reinforce annual magazine which is disseminated widely to the construction industry as well as placement of member project and product case studies on its website and LinkedIn platforms,
- Opportunities to present at the BAR annual industry seminar specific to the UK reinforcement sector.

All of the above are aimed at providing BAR members with the platforms to help raise their business profiles with potential customers and employees.

To find out more and request a BAR membership form, use the BAR contact form at:
https://www.uk-bar.org/Contact-Us

BAR
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