



CONNECT

Latest news, technical support
& events from SCI

NEWS | TECHNICAL UPDATES | EDUCATION | SOCIAL | MEMBER NEWS

OCTOBER 2025



NEWS

A ROUND UP OF THE LATEST NEWS

SCI TECHNICAL EVENT 2026: YOU'RE INVITED!

Our next full-day technical event will be hosted by [BRE](#) in Watford, which will give attendees the exciting opportunity to visit some of BRE's facilities including a burn hall (used for fire tests), structural and acoustic labs, and a wind tunnel. The day will be technically focused, aimed at active practitioners. The main theme for the day will be the performance of steel structures in fire, including how that performance is regulated, how it is achieved through protection and detailing, and how it can be demonstrated. We will present on a number of different types of steel structure, including the hot topics of light steel framing and car parks.

We will also consider how as an industry we might do better to save money and materials, by moving away from the current norm of the structural designer only considering ambient temperature material, then elements being identified as in need of protection to ensure that behaviour at elevated temperature will not be critical. Elevated temperature structural design could offer significant benefits. We will also consider the risks and indeed impracticalities of an overreliance on standard fire tests – you don't need

to satisfy Approved Document B to satisfy the Building Regulations, and in some cases it isn't even an acceptable way of doing so.

SCI and BRE presentations will include case studies showing how the two organisations collaborate to get the best out of a combination of numerical modelling and physical testing to validate often unusual details, either in fire or structurally. Attendees will also get an overview of other SCI and BRE activities, products and services, to keep them up-to-date with what is happening in the sector and what help is available.

Registration for this event is currently only open to SCI Members, public registration will open on **Tuesday 4th November at 10am**, via this [link](#). The event is free-of-charge to both members and non-members, however due to there being limited places available, no-shows will be invoiced £50+VAT.

If you are interested in sponsoring this event, please contact marketing@steel-sci.com

DUPLEX STAINLESS STEEL COMPOSITE BRIDGES

This Design Guide gives provisions which extend and modify the application of the Eurocode design rules for carbon steel to cover I-girder composite bridges in which the steelwork is made of duplex stainless steel and the concrete deck slab is reinforced using austenitic, duplex or carbon steel reinforcing bars. The provisions given in this Design Guide are focused on the multi-girder and ladder deck forms of construction, but the principles can be extended to other forms of bridge construction.

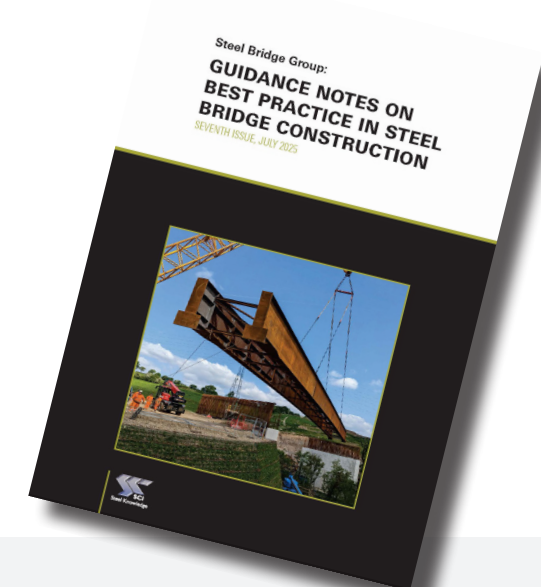
P453 FREE DOWNLOAD



STEEL BRIDGE GROUP: GUIDANCE NOTES ON BEST PRACTICE IN STEEL BRIDGE CONSTRUCTION

This is the 7th issue of the Guidance Notes produced by [The Steel Bridge Group \(SBG\)](#), a technical forum established to consider matters of high-priority interest to the steel bridge construction industry. The 64 Notes contained in this publication offer guidance on best practice in steel bridge construction, explaining many construction processes and their influence on design and specification. Although aimed at bridge designers, many of the Notes offer general information that will be helpful to all designers of structural steelwork.

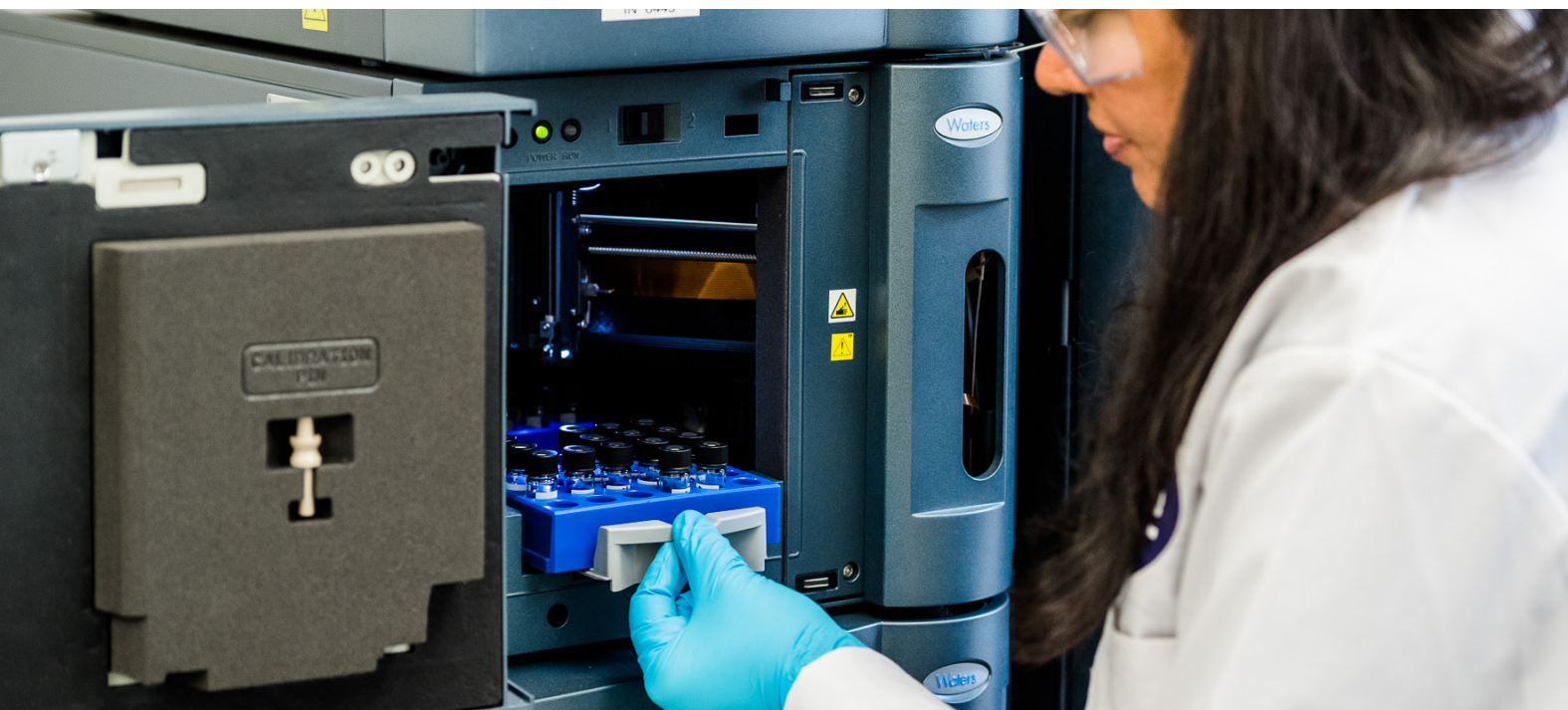
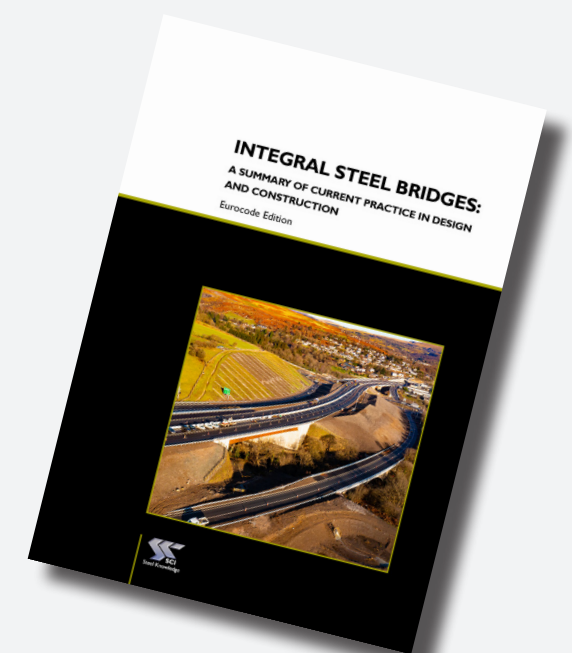
P185/7 FREE DOWNLOAD



INTEGRAL STEEL BRIDGES: A SUMMARY OF CURRENT PRACTICE IN DESIGN AND CONSTRUCTION - EUROCODE EDITION

This publication presents an updated overview of integral bridge design principles, extending the guidance provided in SCI publication [P340](#) in accordance with PD 6694-1. A summary of current practice is presented, identifying the principal configurations and connection details that are generally adopted for integral bridge construction in the UK. In addition, guidance is provided on commonly used analysis methods, the effects of skew, and choices for intermediate supports.

DOWNLOAD P450



365 DAYS OF STEEL (BY BRUNO DURSIN)

Robert Stephenson (16 October 1803 – 12 October 1859) was an English civil engineer and designer of locomotives, tunnels and bridges. The only son of George Stephenson, the ‘Father of Railways’, he built on the achievements of his father. Robert has been called the greatest engineer of the 19th century. One of his major achievements was the invention of tubular bridges.

A tubular bridge is a bridge built as a rigid box girder section within which the traffic is carried. Famous examples include the original Britannia Bridge and the Conwy railway bridge, which were designed and tested by William Fairbairn and built by Robert Stephenson between 1846 and 1850. To support the weight of a train the big tubes needed to be reinforcement by rows of small tubes, along the top and bottom. This form of construction makes the bridge at Conwy the ancestor of countless ‘box girder’ bridges worldwide. The main tubes were constructed on the shore, floated into position on

pontoons and then jacked up to the correct height.

The Conwy railway bridge in North Wales is a wrought-iron tubular bridge. Being the first tubular bridge to be built, the design needed much testing of prototypes to confirm that it would be capable of carrying heavy locomotives. This testing was carried out by Fairbairn. The successful result enabled the much larger Britannia bridge to be built. The current Conwy bridge has been reinforced by extra columns under the bridge deck into the river but is otherwise virtually unchanged since it was built. Since the destruction, by fire, of the Britannia Bridge in 1970, the Conwy railway bridge remains the only surviving example of this means of construction undertaken by Stephenson.

365 Days of Steel is exclusively available to SCI customers in the UK. You can order your copy (£51.00+p&p), by emailing sales@steel-sci.com



© Wikimedia commons

SCI MEMBERSHIP

We offer specific benefits tailored to different organisations, business types and their respective needs.
Did you know SCI Members can enjoy 20% discount on SCI Courses? Get in touch to find out more.

CONTACT MEMBERSHIP

INDEPENDENT CERTIFICATION OF VOLUMETRIC MODULES - IS IT NEEDED?

According to the [CROSS report 1378](#) of August 2025, the answer is a resounding “yes”. The CROSS report highlights a number of issues relation to certification scope, including:

- A modular system being used without an appropriate scope of certification;
- BBA approval which only applied to specific wall and roof applications, not the specific use;
- Insufficient performance evidence.

The good news is that there is a comprehensive [certification scheme](#) for volumetric modules, operated by the Steel Construction Institute, and that we are accredited by [UKAS](#) to operate the certification scheme. The CROSS report is a timely reminder that Clients and warranty providers are looking for third party independent certification – and the SCI scheme is exactly that.

The SCI certification scheme conforms to ISO 17065, which covers product certification (the product is the module that leaves the manufacturer’s facility). Because the scheme conforms to ISO 17065, it demands evidence that extensive product requirements are met – there is no “grey area” or “opinion” because the product requirements are “pass” or “fail”. The

SCI certificates states the product performance against these requirements (including structural resistance, fire resistance, thermal and acoustic performance and durability), so purchasers of modules from a manufacturer certified by SCI can have every confidence that the module meets the stated performance. The SCI documentation also clearly records the module types, uses and scope – another of the CROSS comments.

SCI are accredited by UKAS to operate two schemes—one covers volumetric modules and the second covers prefabricated steel panels as used in walls, floors, roofs etc. For each scheme, SCI will rigorously examine the manufacturer’s evidence presented to fulfil the performance requirements stated in SCI’s scheme document, and undertake an audit of the manufacturing facility at least annually.

SCI have recently been audited itself, by UKAS, who conduct an equally rigorous review of the full scope of SCI’s operation of the schemes. SCI had one “finding” – the UKAS auditors wished to see that the actions identified by SCI’s own internal audit had been signed off as completed by the internal auditor. In the heat of the moment, SCI showed the UKAS team an unsigned document – when the signed copy was the very next file. That “finding” has been “closed” after submitting the correct signed copy, so SCI are delighted to continue to operate the schemes.

The logo for SCI Product Certification, featuring the text 'SCI | PRODUCT CERTIFICATION' in bold, black and green fonts, accompanied by a green checkmark icon. To the right is the UKAS Product Certification logo, which includes a crown, a checkmark inside a circle, and the text 'UKAS PRODUCT CERTIFICATION 10414'.

SCI Product Certification provides assurance that a product meets all relevant and current requirements

SCI are proud to be UKAS accredited in accordance with ISO/IEC 17065:2012 to provide product conformity certification.

SCI’s accreditation covers prefabricated steel panels and self-supporting modular building units (modules) comprising walls, floors and ceilings.

SCI’s certification scheme is recognised by warranty providers as partially satisfying their technical requirements, meaning assessment does not need to be duplicated.

SCI operate a further assessment scheme, not accredited by UKAS, covering the design of complete buildings constructed using modular units of panel.



ERRIGAL FAÇADES WINS GOLD

Last month, we enjoyed an evening celebrating the people, innovations, and projects pushing boundaries in offsite construction, at the [Offsite Awards 2025](#).

Once again, we proudly sponsored The Best Use of Steel category and we are pleased to say that [Errigal Façades](#) took the crown for their project in Elephant and Castle town centre.

Our CEO, Dr Graham Couchman, returned to the judging

panel, joining fellow industry experts to combine their knowledge and experience to select the very best projects.

The evening is part of [Offsite Construction Week](#), in which our team enjoyed seeing lots of familiar and also new faces. Our Associate Director, Andrew Way, was selected again to be part of the Advisory Group for this event, which ensured a highly focused, factual overview of the sector and the challenges it faces.



SCIPHYRWEB: WIND ANALYSIS MADE SIMPLE

Wind actions are important in the design of all buildings, especially for relatively lightweight structures such as single-storey buildings. Wind actions are critical for the design of secondary elements such as façades, signboards, infill panels, purlins and siderails. Numerous topographic influences, with directional variation, are factored into a wind calculation. For the UK, designers must follow either BS 6399-2 or BS EN 1991-1-4 with the UK National Annex.

Wind loading is site and building specific due to the many factors influencing wind speeds at any given location, such as building height, distance from the sea and type of terrain. One of the key aspects that is often overlooked by designers due to its complexity is the influence of orography. The ground profile can increase the wind speeds, especially in the immediate vicinity of cliffs and other pronounced hills, ridges, and escarpments. For these scenarios it is necessary to investigate whether orography is, or may be, 'significant'. The air flow is accelerated by rising ground on its approach to the building. With gentle slopes over long distances the effect is small, but it becomes significant where there is a local and relatively abrupt level change. In an 'orographic' situation, the more involved directional approach given in BS EN 1991-1-4 may be used.

Accurately calculating wind loading following the design codes is a complex task. To reduce conservatism and calculate an accurate value allowing for all the topographic influences, the use of software is recommended.

SCI embarked on the development of a brand-new web-based tool, **SCIPHYRWEB** (pronounced "Zephyr") when it became apparent that the construction industry was looking for a solution to replace BREVe, which has long been unsupported and relies on outdated data. SCIPHYR Web offers a solution developed, tested and maintained by SCI, a leading technical authority within the construction sector.

With minimal inputs related to site location (e.g.: postcode, GPS coordinates, etc.) and building geometry, users can obtain accurate calculations of peak velocity pressures for any site in the UK and Ireland, including the effects of significant orography where applicable, in accordance with either BS 6399-2 or BS EN 1991-1-4. The tool is built on the latest geographic database and is designed to remain current over time.

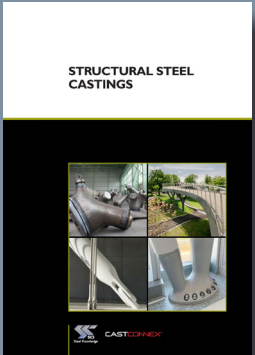
Developed, tested, and maintained by the SCI, the tool provides a hassle-free experience with an intuitive interface and without the need for installation or downloads. Users simply access the software via their web browser, making it compatible with any device. Whether working independently or as part of a larger design team, **SCIPHYRWEB** integrates smoothly into any workflow, delivering speed, flexibility and professional-grade reliability.

To explore **SCIPHYRWEB** for yourself, enjoy a [free trial](#). For more information, visit our [website](#) or contact software@steel-sci.com.

PUBLICATIONS

719 SCI publications have been purchased/
downloaded from the SCI Shop so far this year.

The current bestselling publication is:
P441: Structural Steel Castings

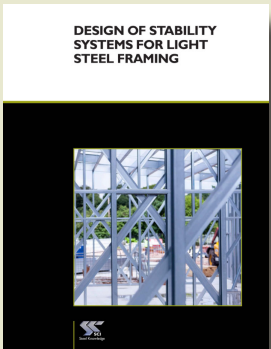


SCI SHOP

STEELBIZ

17,319 resources have been viewed/
downloaded by SCI members so far this year.

The most popular resource currently is:
P437: Design of Stability Systems for Light Steel Framing



STEELBIZ

TECHNICAL UPDATES

View the latest technical information on steel in buildings and construction, through our own technical information website.

STEELBIZ

EUROCODE NUGGET

Deflection of composite beams with partial shear connection

prEN 1994-1-1 – 9.3.1 (5)

Current standard – No equivalent clause exists in BS EN 1994-1-1:2004. Rules are given in BS 5950-3.1.

Subclause 7.3.1 (4) of BS EN 1994-1-1:2004 allows the effects of partial shear connection on the deflection of composite beam to be neglected when certain criteria are satisfied. If these criteria are not satisfied, the influence of shear connection on the deflection is considered significant; however, BS EN 1994-1-1:2004 provides no guidance for calculating deflection considering the influence of partial shear connection.

New rules have been added to prEN 1994-1-1 to calculate the deflection of composite beams considering partial shear connection. This Eurocode Nugget examines the new rules and compares the results for typical composite beams with existing guidance provided in BS 5950-3.1.

SCI Members can view the full Eurocode Nugget [here](#)

CALCULATION OF α_{cr} FOR UNBRACED FRAMES

In accordance with BS EN 1993-1-1 [1] Clause 5.2.1, either a first-order or second-order analysis can be used to determine internal forces and moments, provided that the criteria for the chosen method are satisfied. For first-order elastic analysis, the criterion requires that the factor, α_{cr} , be greater than or equal to 10. This factor represents the multiplier by which the design loading would need to be increased to cause elastic instability in a global mode (see Equation (1)). If α_{cr} falls between 3 and 10, second-order effects may be considered using an approximate second-order analysis. However, for structures where α_{cr} is less than 3, a rigorous second-order analysis is required.

$$\alpha_{cr} = \frac{F_{cr}}{F_{Ed}}$$

(1)

where:

F_{Ed} is the design loading on the structure

F_{cr} is the elastic critical buckling load for global instability mode based on initial elastic stiffness

To calculate F_{cr} (and α_{cr}) precisely, a linear buckling analysis is normally needed; however, BS EN 1993-1-1 [1] introduces an approximate method to estimate α_{cr} on a storey-by-storey basis within a building:

$$\alpha_{cr} = \left(\frac{H_{Ed}}{V_{Ed}} \right) \left(\frac{h}{\delta_{H,Ed}} \right)$$

(2)

where:

H_{Ed} is the total design horizontal load transferred by the storey

V_{Ed} is the total design vertical load on the frame transferred by the storey

$\delta_{H,Ed}$ is the horizontal displacement at the top of storey relative to the bottom of the storey when the frame is loaded with horizontal loads

h is the storey height

Similar to the linear buckling analysis, the approximate method also requires the use of structural analysis software

to calculate horizontal displacements at storey levels. While such software is indispensable in modern engineering practice, a lack of understanding of its underlying assumptions can lead to erroneous results. Therefore, performing hand calculations remains a valuable practice to verify software output. In this article, a simple hand method based on first principles is introduced to calculate α_{cr} for unbraced frames.

Background on elastic critical buckling load

The elastic critical buckling load, N_{cr} , is defined as the compressive load at which an elastic column will suddenly bend and buckle.

$$N_{cr} = \frac{\pi^2 E I}{L^2}$$

(3)

where:

E is the modulus of elasticity

I is the second moment of area

L is the length

Equation (3) was derived by Leonhard Euler in 1744, writing the equations of equilibrium of a pin-ended column in the deformed configuration and using the Euler-Bernoulli beam theory, which describes the relationship between deflection and applied load.

The effective length factor, K , commonly referred to as the K -factor, is a multiplier that enables the calculation of an artificial column length that allows the use of Euler's equation to evaluate the elastic critical buckling load of a column with relatively general support conditions (Figure 1). This leads to the general form of Euler's formula:

$$N_{cr} = \frac{\pi^2 E I}{(KL)^2}$$

(4)

K -factors were determined for idealised end conditions such as pinned–pinned, fixed–fixed, pinned–fixed, and fixed–free, and are widely available in literature. However, these ideal cases have limited practical value in real-world applications, where support conditions and stiffness distributions are more complex.

For braced frames, a conservative design approach typically assumes $K=1$ for most situations. In practice, $K<1.0$ can be achieved in systems with very high lateral stiffness, but using unity is often recommended for simplicity and safety.

In contrast, determining appropriate K -factors for unbraced frames is more complex. In such cases, the K -factor can theoretically vary from 1.0 up to infinity, depending on the degree of rotational restraint provided by the surrounding

frame. As a result, no universally applicable approach exists.

One approach to determining K -factors is the alignment chart that is a well-established graphical tool widely used by engineers. There are two nomographs available – one for braced frames and one for unbraced frames. The nomograph applicable to unbraced frames is shown in Figure 2.

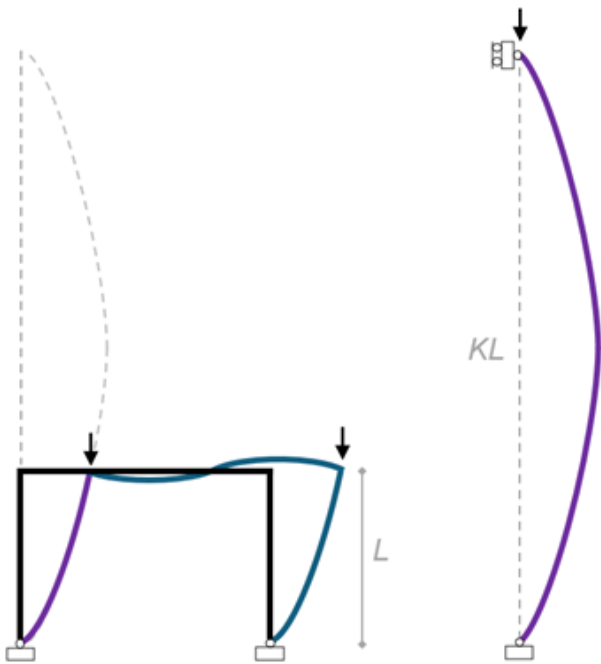


Figure 1 Column length (L) vs column effective buckling length (KL)

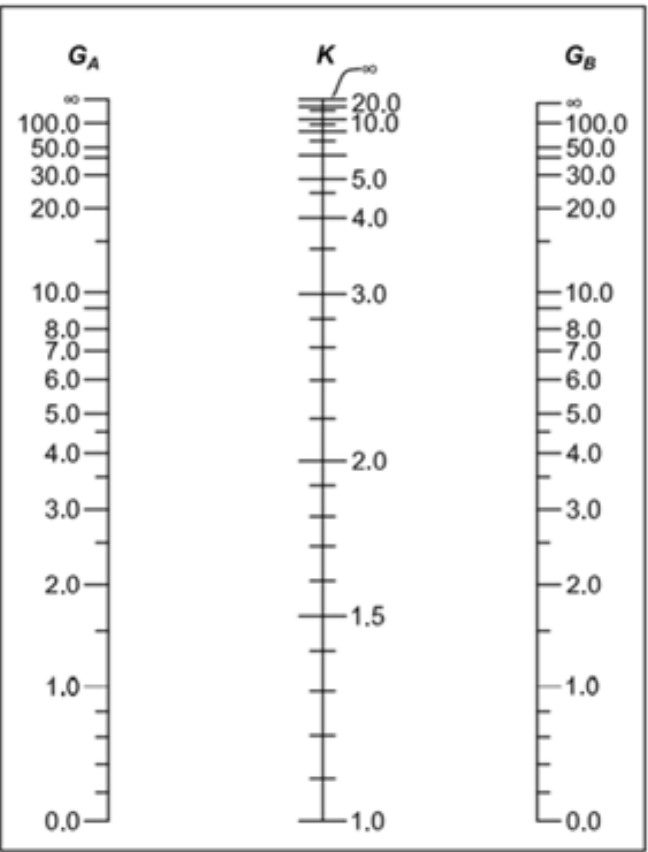


Figure 2 Alignment chat - unbraced frames

To use the nomograph, the degree of restraint at both ends of a column – denoted as G – must first be calculated using Equation (5):

$$G = \frac{\sum(I_c/L_c)}{\sum I_b/L_b}$$

(5)

where:

$\sum(I_c/L_c)$ is the sum of the ratio of the second moment of area to the length of all columns connected to the joint

$\sum(I_b/L_b)$ is the sum of the same ratio for all beams connected to the joint

As an alternative to the graphical nomograph, the following closed-formed equation may be used to calculate K -factors for unbraced frames:

$$\frac{G_A G_B \left(\frac{\pi}{K}\right)^2 - 36}{6 (G_A + G_B)} - \frac{\left(\frac{\pi}{K}\right)}{\tan\left(\frac{\pi}{K}\right)} = 0$$

(6)

where:

G_A is the degree of restraint at one end of the column (see Equation (5))

G_B is the degree of restraint at the other end of the column (see Equation (5))

It is important to recognise that the alignment chart is derived from an elastic sidesway stability analysis of a highly

idealised frame under simplified loading conditions. These assumptions, along with the modifications to the alignment chart, for unbraced frames will be explored in a forthcoming article by SCI.

Worked example 1

In this example, an unbraced frame subjected to two equal vertical point loads acting at beam-column joints was evaluated to determine the critical vertical load, N , that leads to instability of the frame.

The degree of restraint for Column AB at Point B, G_B , is:

$$G_B = \left(\frac{\sum I_c/L_c}{\sum I_b/L_b}\right)_B = \frac{175 \times 10^6 \text{ mm}^4/8 \text{ m}}{1500 \times 10^6 \text{ mm}^4/12 \text{ m}} = 0.175$$

(7)

where:

I_c is the second moment of area of Column AB

L_c is the length of Column AB

I_b is the second moment of area of Beam BD

L_b is the length of Beam BD

Due to the pinned base, the degree of restraint for Column AB at the column base (Point A), G_A , is infinity.

Entering G_A and G_B into the alignment chart, the effective length factor for Column AB, K_{AB} , is 2.058.

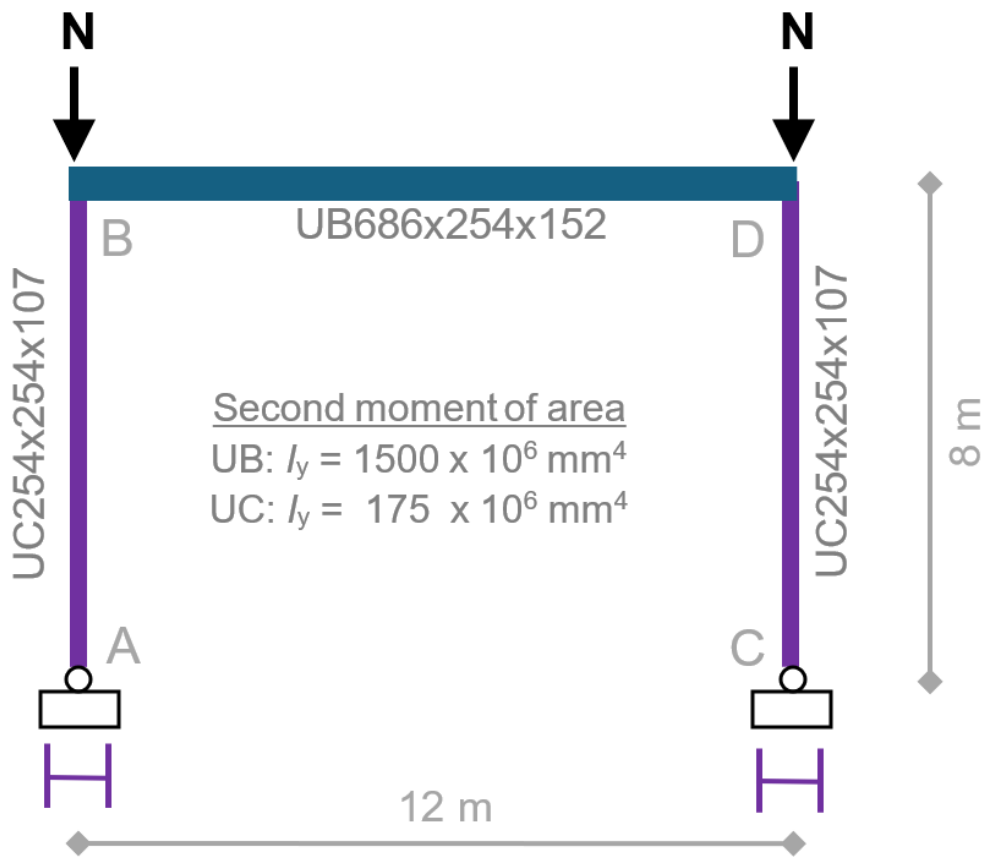


Figure 3 Worked example 1

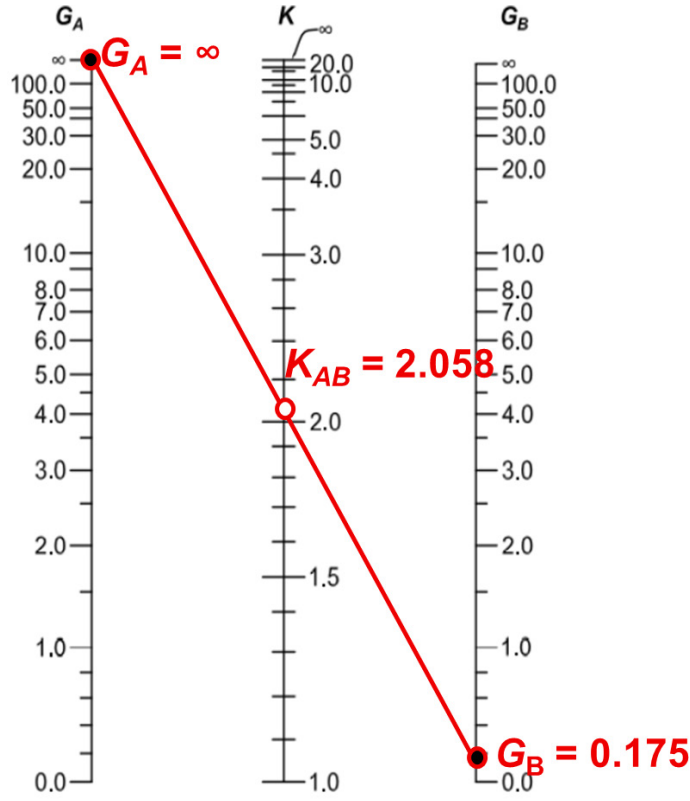


Figure 4 Effective length factor for Column AB

Using Equation (4), the elastic critical buckling load for Column AB, $N_{cr,AB}$ is:

$$N_{cr,AB} = \frac{\pi^2 E I_c}{(K_{AB} L_c)^2} = \frac{\pi^2 (210 \text{ kN/mm}^2) (175 \times 10^6 \text{ mm}^4)}{(2.058 \times 8000 \text{ mm})^2} = 1338 \text{ kN}$$

(8)

Accordingly, $N=1338 \text{ kN}$.

The unbraced frame was also analysed using MASTAN [2] , a free structural analysis program capable of performing linear buckling analysis. The results of the analysis yielded a critical vertical load of $N = 1335 \text{ kN}$, which suggests the simple hand calculation provided an accurate prediction of the critical load, closely matching the numerical results.

Worked example 2

In this example, the unbraced frame considered in the Worked Example 1 was slightly modified such that the load distribution among the columns is different while the total load acting on the frame remains the same.

Since the alignment chart used to determine the K -factor does not account for individual column loads, the K -factor remains unchanged. Consequently, $N_{cr,AB} = 1338 \text{ kN}$ also remains unchanged.

Given that the elastic critical buckling load for Column CD calculated using the alignment chart, $N_{cr,CD}$, is equal to $N_{cr,AB}$, one might argue that Column CD would buckle first as it is subjected to a larger vertical load than Column AB. This would suggest that N should be lower than in the Worked Example 1. However, the linear buckling analysis of the frame with modified

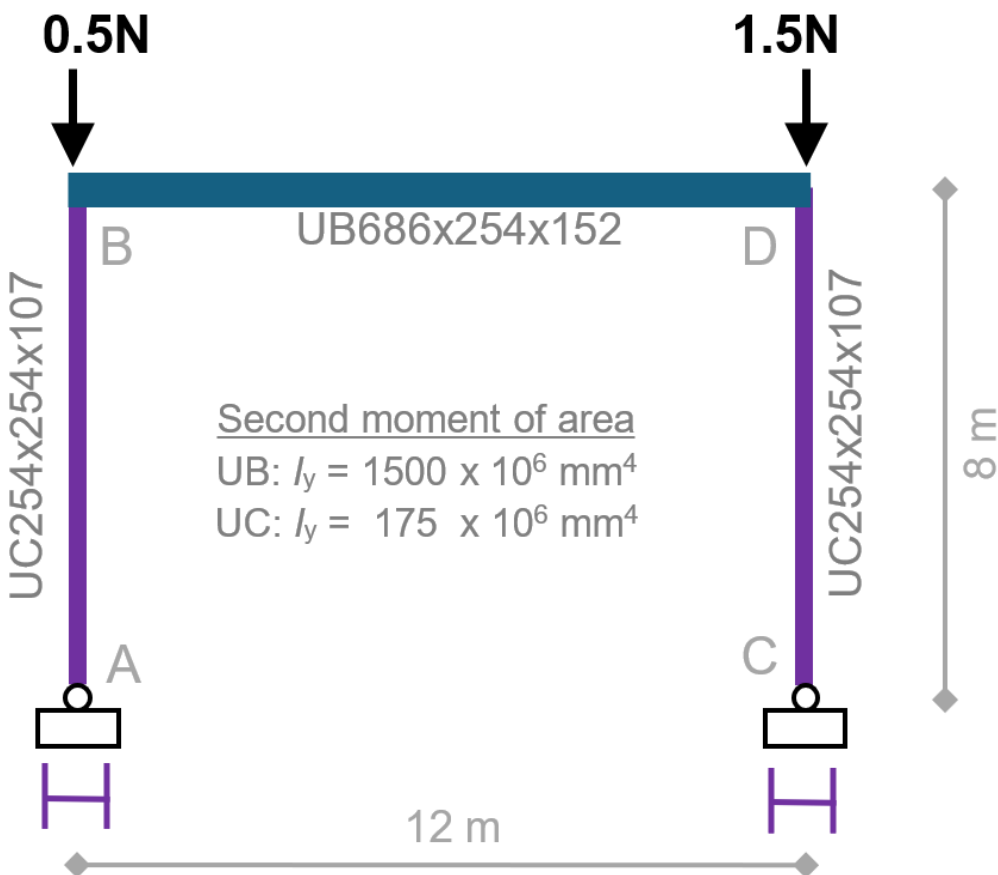


Figure 4 Worked example 2

loads yielded the same critical vertical load: $N = 1335$ kN.

This outcome can be explained by the fact that, when Column CD is onset of buckling, Column AB – being subjected to a smaller vertical load – still has reserve load-carrying capacity. This reserve capacity contributes to the overall stability of the frame by effectively *helping* Column CD to resist a larger load than its $N_{cr,CD}$ value. This phenomenon is known as the ΣP Concept [3], which describes how, in sway buckling, *some* columns help others while others reduce the capacity of some, until all columns buckle together in a global sway mode. Therefore, it is not suitable to assess the sideways stability of columns in isolation; rather, the stability of the entire storey in the sway mode must be evaluated.

According to the results of the linear buckling analysis, the critical vertical load of the frame (or storey) is $2N = 2670$ kN. Using this value, the effective length factors of Column AB and Column CD, (K_{AB} and K_{CD} , respectively) were back-calculated:

$$K_{AB} = \sqrt{\frac{\pi^2 E I_c}{0.5N I_c^2}} = \sqrt{\frac{\pi^2 (210 \text{ kN/mm}^2) (175 \times 10^6 \text{ mm}^4)}{(0.5 \times 1335 \text{ kN}) (8000 \text{ mm})^2}} = 2.914 \tag{9}$$

$$K_{CD} = \sqrt{\frac{\pi^2 E I_c}{1.5N I_c^2}} = \sqrt{\frac{\pi^2 (210 \text{ kN/mm}^2) (175 \times 10^6 \text{ mm}^4)}{(1.5 \times 1335 \text{ kN}) (8000 \text{ mm})^2}} = 1.618 \tag{10}$$

Notably, the K -factor determined from the alignment chart in the Worked Example 1 differs significantly from the values obtained in Equations (9) and (10). However, the elastic critical buckling load of the frame (or storey), $N_{cr,storey}$ – calculated as the sum of the elastic critical buckling load of each column estimated using the alignment chart according to the ΣP Concept – matches the result from the linear buckling analysis. This leads to an important conclusion: The elastic buckling load of an individual column in an unbraced frame determined using an alignment chart K -factor, should be interpreted not as the maximum load that column can support, but rather as its contribution to the overall storey's buckling stiffness. Hence, $N_{cr,storey}$ can be accurately estimated using the alignment charts even if the K -factors for individual columns are not accurate:

$$N_{cr,storey} = \sum N_{cr,i} \tag{11}$$

where:

$N_{cr,i}$ is the elastic critical buckling load of Column i using the alignment chart K -factor

However, it is important to note that the restraint (or help) provided by *some* columns to others is limited by the elastic buckling resistance of other columns in the no-sway mode – that is, assuming $K = 1.0$. In other words, each column must be able to support its own vertical load in isolation in the no-sway mode,

without relying on the *help*. It is worth mentioning that elastic buckling of a column (which is part of a stability system) in the no-sway mode is quite unlikely for orthodox frame configurations.

Similar to the approximate method given in BS EN 1993-1-1 [1] (see Equation (2)), α_{cr} can be calculated on a storey-by-storey basis within a building:

$$\alpha_{cr} = \frac{N_{cr,storey}}{V_{Ed}} \tag{12}$$

Conclusion

In this article a simple hand method is presented for calculating the global stability parameter, α_{cr} , of unbraced frames based on the fundamentals of the stability theory and effective length factors obtained from the alignment chart. The method allows engineers to estimate α_{cr} without relying on structural analysis software.

Through two worked examples, it was shown that the elastic critical buckling load of a storey for global instability mode – and therefore the calculated α_{cr} – remains accurate despite observing that the elastic critical buckling load of individual columns of the storey calculated using the alignment chart might be incorrect.

The method enables accurate estimation of α_{cr} and offers a valuable verification tool for engineers.

References

[1] British Standards Institution. (2005). BS EN 1993-1-1:2005 - Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings. BSI.

[2] [Ziemian, R. D., McGuire, W., & Liu, S. \(2015\). MASTAN2: Interactive structural analysis program.](#)

[3] [Yura, J. \(2011\). Five useful stability concepts \[PDF\]. American Institute of Steel Construction.](#)

Yigit Ozelik, Principal Engineer, SCI
[Connect with Yigit on LinkedIn](#)



Peak velocity pressure results according to BS EN 1991-1-4 and UK National Annex

Location Information

Coordinates
Latitude: 51.415476
Longitude: -0.761144

Address
Berners-Lee House, Easthampstead Road, Western Industrial Area, Easthampstead, Bracknell, Bracknell Forest, England, RG12 1FB, United Kingdom

Maximum peak velocity pressure - Sector S9 (240°)

Maximum peak velocity pressure
0.758 kN/m²

Basic wind velocity
22.9 m/s

Terrain type
Town

Zone for size factor
C

Effective height
15.0 m

Significant orography
No

Site altitude
67 m

Distance from shoreline
100.0 km

Distance into town
2.2 km

Directional results

	S1 0°	S2 30°	S3 60°	S4 90°	S5 120°	S6 150°	S7 180°
Peak velocity pressure (kN/m²)	0.464	0.400	0.389	0.390	0.394	0.476	0.540
Basic wind velocity (m/s)	17.8	16.7	16.7	16.9	16.7	18.3	19.4
Terrain category	Town	Town	Town	Town	Town	Town	Town
Distance from sea (km)	100.0	100.0	100.0	100.0	100.0	73.6	70.9
Distance into town (km)	2.0	2.5	4.0	6.1	3.2	3.3	3.1
Altitude factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07

Peak velocity pressure calculation according to BS EN 1991-1-4 and UK National Annex.

Select the location for which you wish to calculate the peak velocity pressure.

Location

Selected coordinates: 51.415476, -0.761144
Address: Berners-Lee House, Easthampstead Road, Western Industrial Area, Easthampstead, Bracknell, Bracknell Forest, England, RG12 1FB, United Kingdom

Calculation inputs

Site details

Building height (m)
15

Site range (m)
100

Wind design code

Design code
BS EN 1991-1-4

Calculation factors

Return period (years)
50

Use directional factor
☒ Consider sheltering effect ☐

Consider influence of orography
☒

SCI
Steel Knowledge

WWW.STEEL-SCI.COM

SCIPHYRWEB

The smart and simple way to perform wind analysis

Easily accessible from any device via your web browser, **SCIPHYRWEB** provides users with accurate peak velocity pressure calculations within seconds for any site across the UK and Ireland without the need for downloads or installations. Whether designing façades, roofs, or entire buildings, **SCIPHYRWEB** delivers accurate wind pressure calculations specific for your site location.

SPEED

Making the most of cloud-based technologies to ensure high-performance

COMPREHENSIVE

Cover of the UK and Ireland for BS-6399 and BS-EN-1991-1-4 UK NA

INTUITIVE

A user-friendly interface designed for optimal usability

PRECISE

Up-to-date and high-resolution terrain database

HOLISTIC

From location specific data to complete peak velocity pressure in twelve directions

YEARLY

Updates and licensing period

RELIABLE

Developed, tested, and maintained by SCI

SCIPHYRWEB is available to license from SCI. Visit our website or contact us for a **FREE** trial.

SCI is committed to helping the steel construction industry meet design, manufacture, installation and commercial objectives.

Click or scan
for more info

+44 (0)1344 636525
software@steel-sci.com

GENERATION 2 EUROCODES – A ONCE IN A LIFETIME OPPORTUNITY?

The title of this article is not strictly correct – I for one was involved in studies, and indeed real designs, related to the first generation Eurocode 4 and its predecessors. But it gives me a tie-in to an old Talking Heads' song that I will pick up on in the section headings!

At SCI we have been considering, for some time, what our view and positioning is regarding Generation 2 EN 1993 and EN 1994. Internally there is much alignment between my views and those of my colleagues, although which code/part we have been involved in does change things. The views expressed below, as well as being very high level, are best taken as my personal views informed by over a decade chairing the Eurocode 4 committee and longer involvement in its BSI equivalent. After much reflection I think they are objective.

You may ask yourself, how did we get here?

Work to update the full set of Eurocodes, and extend their scope to cover new materials such as FRP, glass and membrane structures began over twenty years ago, funded by the European Commission. Tackling the full set in one go made sense but may have been over-ambitious, although that's a question for another time. Despite the efforts of bodies such as BSI, the code writing process inevitably attracts input from academics, and does not attract input from practitioners. At its most obvious level that bias comes about because of the time needed to create and validate new rules, and the time that will then elapse before those rules impact on practice. Academics also have easier access to funding that can help them undertake any new research work needed to develop and calibrate rules.

Academics tend to focus on narrow areas of interest, and go very deep in their interest to study it thoroughly. I know – I spent five years at a Swiss university studying the behaviour of continuous composite beams (which I now know nobody ever builds). Also relevant when we compare Generations 1 and 2 Eurocodes may be that academics today have access to powerful numerical modelling tools, which their predecessors did not. The latter were more reliant on physical testing, experience, and engineering judgement.

You may say to yourself, what have we done?

The route taken to get here has resulted in various new rules that cover a broader scope of application than those in Generation 1 (my detailed personal knowledge is limited to Eurocode 4, for which this is certainly true). The numerical modelling referred to above has made it possible to consider more variables. These new rules are not incorrect, although in numerous cases they will give a 'worse answer' than Generation 1 equivalents. That does not mean that the rules in Generation 1 should now be considered incorrect. This is a

very important point – the beam designed 'yesterday' should not be considered inadequate simply because it would fail 'today's' design checks.

So as a very sweeping statement, the change from Generation 1 to 2 has resulted in some new rules that have a broader scope, but by covering extreme (perhaps of no practical significance) cases they are more conservative than the old rules. Generation 1 rules still apply very well (but only) to practical/typical cases.

Conclusion

There are many things that have changed between Generation 1 and Generation 2 of the Eurocodes. Some are good, some not so good. But a key issue I want to emphasise is that because a new rule may suggest a structure designed to the old rule would fail, that should absolutely not be interpreted as meaning there was a problem with Generation 1. There were not lots of errors in the old documents that needed to be addressed for safety reasons, nor a history of failures. The only unconservative error I can think of in Eurocode 4 was shear stud resistance with double studs in transverse trapezoidal decking, which resulted from a change in the form of decking products and which we spotted over ten years ago and addressed by issuing SCI guidance to cover it.

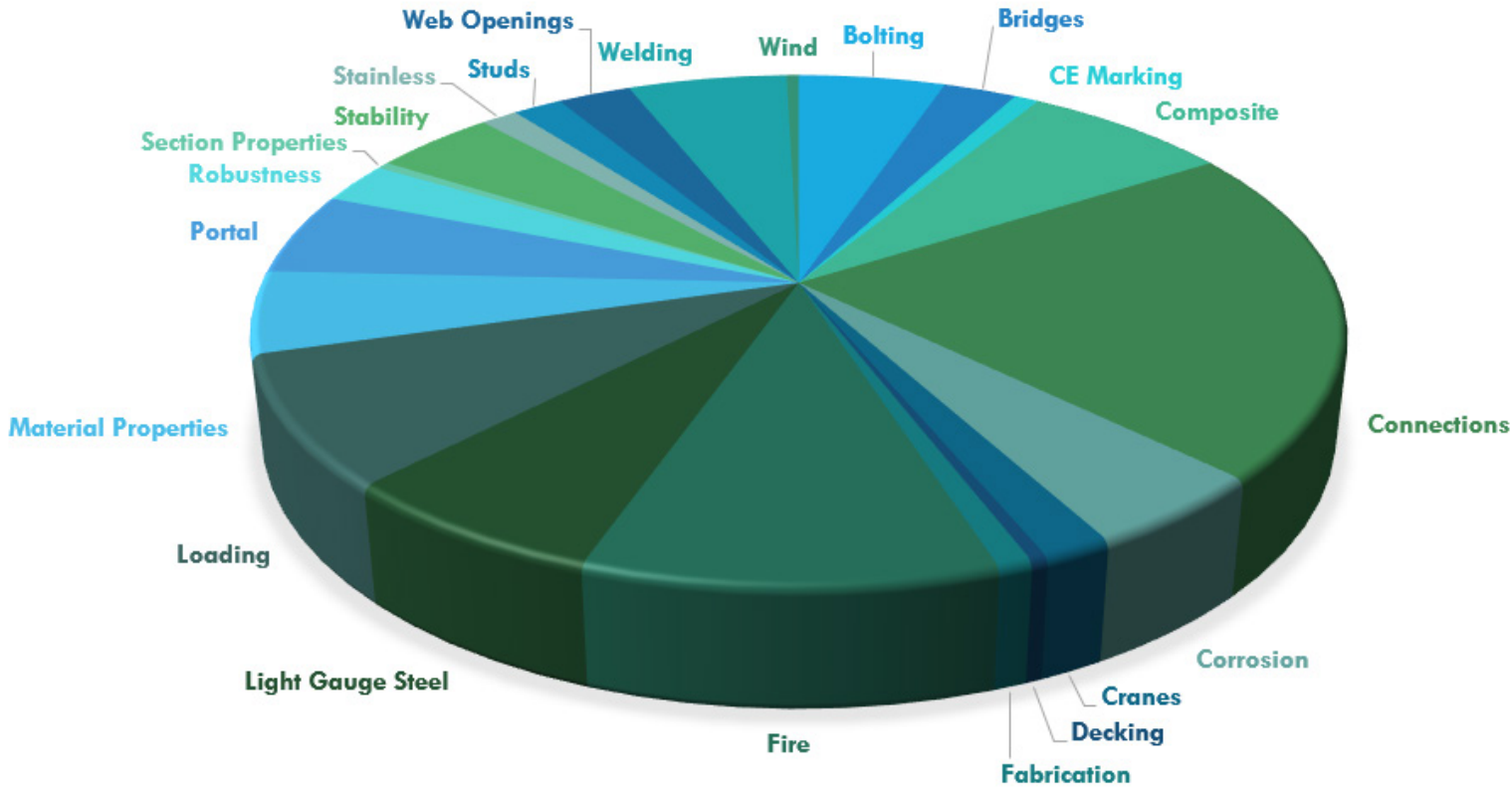
I'm sure in the coming months and years we will all have more to say on Generation 2!

Dr Graham Couchman, CEO, SCI
[Connect with Graham on LinkedIn](#)



ADVISORY STATISTICS

A category breakdown of the queries our advisory team have received in the last quarter:



SCI SPECIAL INTEREST GROUPS

Explore our range of Special Interest Groups and see how these specialised divisions can support your company

SPECIAL INTEREST GROUPS

MEMBERS ADVISORY DESK SERVICE

SCI Sole Trader and Corporate Members are able to read technical articles and updates in their entirety on Steelbiz, our Information Portal.

STEELBIZ

AD 545:

Limitations of method for calculating slenderness using PD 6695-2

The guidance in PD 6695-2:2008 for calculating the non-dimensional slenderness of steel beams is intended for the design of members with simple end conditions. Recent questions addressed to SCI's advisory desk have highlighted that applying this method to beams that are continuous over supports or have end restraint can lead to unconservative results. The purpose of this note is to clarify the scope of the PD 6695-2 method and direct designers to alternative guidance for these more complex support conditions.

Members can view the full Advisory Desk Note content [here](#).

AD 547:

Fire protection of angles, channels and T-sections

Fire protection materials are tested and assessed in accordance with BS EN 13381. The assessment is expressed by manufacturers as tables of minimum thickness, according to section factor, period of fire resistance and steel temperature, known as the assessment temperature. Questions have arisen as to whether assessment temperatures established from testing hot rolled I-sections with fire protection can be used to determine the thickness of fire protection material for angles and channels. The purpose of this AD Note is to provide clarification.

Members can view the full Advisory Desk Note content [here](#).

THE FOLLOWING ADVISORY DESK NOTES ARE WRITTEN BY SCI AND PUBLISHED IN NSC

Advisory Desk Note AD 546 - Critical temperatures for compression members in the UK NA to BS EN 1993-1-2

Read the full Advisory Desk Note [here](#)

Advisory Desk Note AD 548 – High shear regions for large web openings as defined in [SCI P355](#)

Read the full Advisory Desk Note [here](#)

TECHNICAL EXPERTISE

SCI provides its specialist expertise to companies working in steel from manufacture and design, to components and fabrication.

We help SCI members and clients design and improve their products and assist in differentiating them in a crowded marketplace through product innovation and independent assessment.

CONSULTANCY

EDUCATION

Our public courses and webinars keep engineers updated with the latest developments within steel design and equip them to design competently, efficiently and safely.

VIEW ALL TRAINING

PUBLIC COURSE

FIRE RESISTANT DESIGN OF STEEL STRUCTURES

Delivered in 2 Sessions:

Pt 1: 28 Oct | Pt 2: 30 Oct

Time: 10:00am-12:00pm (UK)

This short course will cover the essentials of structural fire design of steelwork, from the Building Regulations to the resistance of beams and columns at elevated temperatures. It will cover only the so-called simple calculation models (which are complicated enough!), involving the calculation of reduced design loads, the time-temperature curve and modified material properties. An introduction to the protection of members with web openings and the special rules for portal frames in boundary conditions will also be presented.

This course has been designed for those engineers who wish to understand the verification of members at elevated temperatures, including the determination of the critical temperature so that protection systems can be specified correctly. The course primarily addresses steelwork protected by intumescent coating.

BOOK YOUR PLACE

PUBLIC COURSE

STEEL BUILDING DESIGN TO EC3

Delivered in 5 Sessions:

Pt 1: 17 Nov | Pt 2: 19 Nov

Pt 3: 21 Nov | Pt 4: 25 Nov | Pt 5: 27 Nov

Time: 10:00am-12:00pm (UK)

As the experts in steel design, the SCI have prepared this course as an overview of the Eurocode provisions for steel building design. The course focuses on orthodox construction, covering the primary design issues for practicing engineers. The course follows the process of determining actions, considering combinations of actions, frame analysis and the assessment of second order effects. The course will then demonstrate how the resistance of members are calculated, but also how they can be extracted immediately from resources such as the 'Blue Book'.

Every delegate will receive a pdf copy of [The Blue Book – Steel building design: Design data "Eurocode Blue Book" \(P363\)](#) and [The Concise Guide – Steel building design: Concise Eurocodes \(P362\)](#).

BOOK YOUR PLACE

PUBLIC COURSE

DESIGN OF STABILITY SYSTEMS FOR LIGHT STEEL FRAMING

Delivered in 3 Sessions:

Pt 1: 08 Dec | Pt 2: 09 Dec

Pt 3: 11 Dec

Time: 10:00am-12:00pm (UK)

The SCI has prepared this 3 part course following the publication of the P437 guidance on the design for stability of light steel framed buildings. The course focuses on the design issues related to vertical stability provided by X-braced wall panels, integral bracing, or diaphragm action of sheathing boards. The course follows the process of addressing horizontal loading, including Equivalent Horizontal Forces (EHF), structural analysis of stability systems, and proposed test regimes. Every delegate will receive a PDF copy of ["P437 - Design of Stability Systems for Light Steel Framing"](#)

The course is aimed at structural designers, architects, and engineers involved with the conceptual design, detailed design, or stability assessment of light steel framed buildings.

BOOK YOUR PLACE

FREE-TO-ALL WEBINAR

INTEGRAL STEEL BRIDGES

Date: 05 Dec
Time: 12:30-13:30pm (UK)

With their significant whole-life cost savings and minimal maintenance requirements, integral bridges have become a default choice for a large proportion of modern highway structures in the UK. Published earlier this year by SCI's Steel Bridge Group, Integral Steel Bridges (P450) presents an up-to-date overview of integral bridge design principles based on the experience of designers and constructors actively involved in their construction.

BOOK YOUR PLACE

SCI MEMBER WEBINAR

NSSS & EN1090-2

Date: 18 Nov
Time: 12:30-13:30pm (UK)

The NSSS is a complete “execution specification” and should be the default specification for building structures. In a concise way, the NSSS contains the requirements of BS EN 1090-2 covering such things as fabrication and erection tolerances, but includes much additional information on topics such as materials, workmanship, welding and the flow of information between designers and steelwork contractors. This webinar will cover the key content, with helpful background to the specification clauses.

BOOK YOUR PLACE

SCI MEMBER WEBINAR

CONNECTION STIFFNESS

Date: 02 Dec
Time: 12:30-13:30pm (UK)

Common UK practice has been to use intuition and experience to assess the stiffness of a connection – nominally pinned or nominally rigid. Previous satisfactory experience is one approach permitted in the Eurocode, but calculation processes are presented and software often has the facility to calculate connection stiffness. The webinar will look at the principles, the calculations and some software to draw comparisons.

BOOK YOUR PLACE



 IN-HOUSE COURSES

.....

Did you know that we also run all of our courses in-house, both online or in-person?

- These can cover:
- standard course content;
 - be tailored to your company specific requirements or;
 - be created totally bespoke.

A flat rate is chargeable, regardless of the number of delegates.

EDUCATION@STEEL-SCI.COM

SCI Courses

SCI Webinars

2025
October

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7 Generation 2 Composite Design	8	9	10	11
12	13	14 Vibrations & Floor Dynamics	15	16 Vibrations & Floor Dynamics	17	18
19	20	21 Buckling Analysis	22	23	24	25
26	27	28 Fire Resistant Design of Steel Structures	29	30 Fire Resistant Design of Steel Structures	31	

2025
November

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5 Integral Steel Bridges	6	7	8
9	10	11	12	13	14	15
16	17 Steel Building Design to EC3	18 NSSS & EN1090-2	19 Steel Building Design to EC3	20	21 Steel Building Design to EC3	22
23 30	24	25 Steel Building Design to EC3	26	27 Steel Building Design to EC3	28	29

BE THE FIRST TO HEAR ABOUT OUR COURSES & WEBINARS

Did you know, you can be notified of the different courses we offer, via email? Simply:

Log into our [portal](#) (anyone can register for FREE!)

Under **MY PROFILE > PROFILE > NOTIFICATIONS/ALERTS** select what you would like to receive

SAVE CHANGES and that's it!

December

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 Connection Stiffness	3	4	5	6
7	8 Design of Stability Systems for Light Steel Framing	9 Design of Stability Systems for Light Steel Framing	10 Structural Steel Castings	11 Design of Stability Systems for Light Steel Framing	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

January

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14 Cold Formed Steel	15	16	17
18	19	20 Steel Connection Design	21	22 SCI Technical Event	23 Steel Connection Design	24
25	26	27 Steel Connection Design	28 P452 Launch	29 Steel Connection Design	30	31

SCI BOOKSHOP

SCI's high quality publications continue to be used as the definitive guidance within the sector. SCI is focussed on providing the latest and best information to ensure best practice is maintained across every aspect of steel

VISIT OUR SHOP

SOCIAL

Check out our upcoming events and keep in touch with us on our social media channels.

X

LINKEDIN

INSTAGRAM

YOUTUBE

MEET THE TEAM: REBECCA PRESSWOOD

Rebecca Presswood has recently completed her PhD at the [University of Southampton](#) studying stainless steel shear connectors in composite bridges and joins SCI for a placement while awaiting her PhD viva. She currently lives in Basingstoke with her husband and likes houseplants, cycling and cats.

What drew you to SCI?

RP: After the PhD, I would like to work in industry rather than staying in academia but would love to still use my research skills; SCI bridges the gap between the two nicely, and this placement gives me the perfect opportunity to try out this type of work.

What does your placement involve?

RP: I am working with Nancy and Francisco on stainless steel hollow sections. they were very involved in designing the push-out tests during my PhD, and co-authored a journal paper with me. Additionally, I am currently working with Graham on some Eurocode 4 Generation 2 material. Everyone here is very friendly and welcoming and I am enjoying it so far!

What is your favourite bridge?

RP: It's difficult to choose - the tables at our wedding were named after famous bridges! - but I think it is the Millau Viaduct.



Rebecca Presswood, Senior Engineer, SCI

[Connect with Rebecca on LinkedIn](#)

MEET THE INTERN: ESA MITCHELL

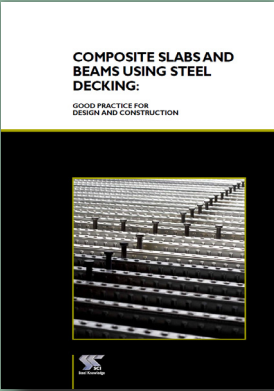
EM: I've just completed a 10-week summer internship at the steel construction institute (SCI), in Bracknell. The past few months have been an insightful experience in applying my knowledge to real world projects that have challenged me and expanded my knowledge and understanding of the structural engineering field. I feel I have a better understanding of how the industry is evolving and how engineers need to adapt to the everchanging workplace environment. As an intern, everything is an opportunity to learn, and every day brings new opportunities. Opportunities such as dramatically increasing my experience with excel in making databases for various resources and increasing my comprehension of the difficulties of building sufficiently fire-resistant structures. As my first summer internship, I was nervous, but the team at SCI was very welcoming and made me feel at home. Having the chance to work with the team has really made me appreciate the mixture of nationalities and cultures as everyone has a unique expertise or experience to offer.I'd like to thank the whole team at SCI for giving me a chance and making me feel welcome.



ADVERTISING OPPORTUNITIES

Promote your company in partnership with our trusted, global brand and target thousands of new readers.

FIND OUT MORE



SCI AROUND THE GLOBE

It has been a busy few months for the team, attending events worldwide.

10th International Conference on Composite Construction in Steel and Concrete

In **July**, SCI Principal Engineer, Dr Francisco Meza, presented a paper entitled “Derivation of Plastic Bending Resistance Reduction Factor for Stainless Steel Composite Beams” at the [10th International Conference on Composite Construction in Steel and Concrete \(CCX\)](#) held in **Blaine, Washington, U.S.**, This is the leading conference on composite construction for buildings and bridges and attracts delegates from around the world. SCI's Graham Couchman was a member of the Scientific Committee.

Francisco's work on stainless steel composite beams has been included in the new SCI publication [P453 Duplex Stainless Steel Composite Bridges](#), which gives recommendations that extend the design rules in Eurocode 4 Part 2 to cover duplex stainless steel composite bridges. The work is in direct response to the growing interest in the design of bridges using duplex stainless steel for the bridge girder in corrosive environments or when access for maintenance is limited or costly. Under these circumstances avoiding

the need for re-coating the steelwork can lead to significant life cycle cost savings. The work was supported by [Team Stainless](#) and involved collaboration with Dr Sheida Afshan and Rebecca Presswood at the University of Southampton. P453 is available to download free of charge [here](#).

IStructE Scotland Regional Group Seminar

SCI's Graham Couchman was one of three speakers at a recent [Institution of Structural Engineers Scotland](#) event, held at the [University of Strathclyde](#) on **8 October 2025** in **Glasgow**. The event was a sell-out, with over 80 people attending. Graham spoke on design recommendations for low embodied carbon steel buildings, referring to the recent SCI guide P449. This complemented the two other presentations very well – Willie Crowe (IStructE) gave wise guidance on scheme design based on his many years of experience, and Stephen Kelly (BHC) presented a steelwork contractor's view, including a fascinating case study of a particularly challenging project they had undertaken in Birmingham. Some interesting questions from the floor proved that the message had got through – in order to reduce the embodied carbon associated with steel buildings we will need to reconsider age-old assumptions about 'good design' that are entirely focused on producing lowest (financial) cost designs.



Attendees at 10th International Conference on Composite Construction in Blaine, U.S.



KEPIC Week 2025

KEPIC Week 2025

SCI's Director, Bassam Burgan, participated in several meetings and workshops during [Korea Electric Power Industry Code \(KEPIC\) Week 2025](#), which took place between **11-15 August 2025** in **Busan, South Korea**. The meetings discussed the construction of small modular reactors (SMR) using steel plate composite (SC) construction.

FABIG Technical Meeting

SCI's [Fire And Blast Information Group \(FABIG\)](#) recently held a very successful 2-day Technical Meeting covering 'From Hydrocarbons to Hydrogen: Innovations in Fire & Explosion Safety' on **15th & 16th October 2025**. The face-to-face event was fully booked with more than 70 delegates attending in person, and more than 150 delegates following the event remotely via live Webcast. FABIG Technical Meetings are normally held in the UK, but this event was organised in partnership with [Ineris](#), who have fire and explosion testing facilities located near **Paris, France**. Delegates who attended the event in person were therefore able to visit Ineris' facilities and witness live fire and explosion demonstrations, including lithium-ion battery thermal runaway and a hydrogen explosion in a blast-resistant container. The FABIG audience typically consists of safety practitioners involved in the design of industrial facilities against fire and explosion hazards, and experiencing such hazards first-hand proved to be a unique and invaluable experience for them. The event programme also included 10 technical presentations from industry experts covering the management of hazards from new energy carriers - a key technical topic in the context of the

current energy transition - including hydrogen, ammonia and batteries, as well as new risk management approaches.

International Process Safety Day

Following the success of last year's inaugural International Process Safety Week (IPSW), FABIG will be collaborating once again with the [Centre for Chemical Process Safety \(CCPS\)](#), the [European Process Safety Centre \(EPSC\)](#), the [IChemE Safety Centre \(ISC\)](#), and the [Mary Kay O'Connor Process Safety Centre \(MKOPSC\)](#) to organise the [International Process Safety Day \(IPSD\)](#) to be held on **Tuesday 2nd December 2025**. This will be a full-day virtual event providing delegates with circa. 8 hours of technical content, which will be replayed over 24h to cover all time zones. The programme will include interviews with senior industry leaders and technical presentations covering a range of process safety topics. More than 4,500 delegates from over 100 countries attended the IPSW last year, and the co-organisers are hoping that this year's IPSD will attract even more delegates thanks to the revised 1-day format. The objective of the IPSD, which we plan to organise on a yearly basis, is to raise awareness of the importance of process safety worldwide for the prevention of industrial accidents. We are pleased to advise that registration is now open if you would like to attend this full-day virtual event, click [here](#).

Did you know that members of both SCI and FABIG enjoy a discounted membership rate? [Contact us](#) for more information and prices.



FABIG Technical Meeting, in partnership with INERIS

THREE DECADES OF DEDICATION

Last week, marked a staggering 30 years of service for SCI's Graham Couchman. He now joins our Finance Officer, Sarah Cooper, and associate director, Nancy Baddoo, in this exclusive club, with several members of the team following shortly behind.

Graham has led SCI through some significant world and UK steel sector events, ensuring it remains a robust company

that makes a difference and creating a culture where people are happy to work, feel positively challenged and know their work-life balance is respected.

Our low staff churn rate is testament to the positive working environment Graham has created. Did you know, on average, our team have been employed by SCI for an incredible 15 years?



MEMBER NEWS

View all SCI Member News on our News and Media website.

NEWS & MEDIA

WELCOME TO OUR NEW MEMBERS

A warm welcome to our newest members:

LAING O'ROURKE



DALE



DESIMONE



SCI MEMBERSHIP

We offer specific benefits tailored to different organisations, business types and their respective needs.

Did you know SCI Members can enjoy 20% discount on SCI Courses? Get in touch to find out more.

CONTACT MEMBERSHIP

ENHANCING EFFICIENCY: TERBERG SHUNTER UNITS A VALUABLE ADDITION TO CAUNTON ENGINEERING'S FLEET

'[Caunton Engineering](#)'s continuous improvement is part of their DNA, which is why they are excited to announce the arrival of three brand new Terberg Shunter Units to support our transport and dispatch operations.

As a leading steelwork fabricator, operational efficiency and safe, reliable material handling are critical to meeting tight project deadlines and maintaining the high standards our clients expect. The introduction of the Terberg Shunter Units represents a significant upgrade to our internal vehicle movements, particularly in supporting the transport of fabricated steel from our production facilities to our trailer park and onward logistics.

One of their drivers shared: "I feel like the king of the road, well at least down to the Cut Shack!" he added with a grin. "The cab's a dream, everything smoother, and I can focus more on what matters: doing the job right."

These state-of-the-art vehicles are already making a big impact. Since their introduction, the Terberg Shunter Units have developed improvements in several areas:

- Increased Yard Efficiency: Faster trailer switchovers and reduced delays are already being noticed across our dispatch area.

- Improved Safety: With improved visibility, braking systems, and modern safety features, our drivers are better protected than ever.
- Driver Satisfaction: Spacious, ergonomic cabs mean our team can work in comfort, even during long shifts.
- Improved Fuel Efficiency

With demand for structural steelwork continuing to grow, the efficiency of their yard and fleet operations is more important than ever. The addition of these specialised vehicles ensures we remain responsive, flexible and competitive – key qualities that set us apart in a fast-paced industry.

As they continue to grow and take on more complex and demanding projects, the new Terberg shunters ensure we're not just keeping pace we're leading the way.

Caunton Engineering are proud to continue investing in equipment that supports our people, streamlines operations and helps us deliver excellence from factory to site.'

For more information, visit www.caunton.co.uk





SCI, Unit 2, The E Centre, Bracknell, RG12 1NF

Reception: +44 (0)1344 636525

Email: hello@steel-sci.com

Web: www.steel-sci.com

Membership: +44 (0)1344 636525

Advisory: +44 (0)1344 636555

Publications: +44 (0)1344 636505

Courses: +44 (0)1344 636500

ONLINE RESOURCES

Steelbiz: portal.steel-sci.com

SCI Shop: portal.steel-sci.com/shop.html