



**Professor Nicholas Snowden Trahair**

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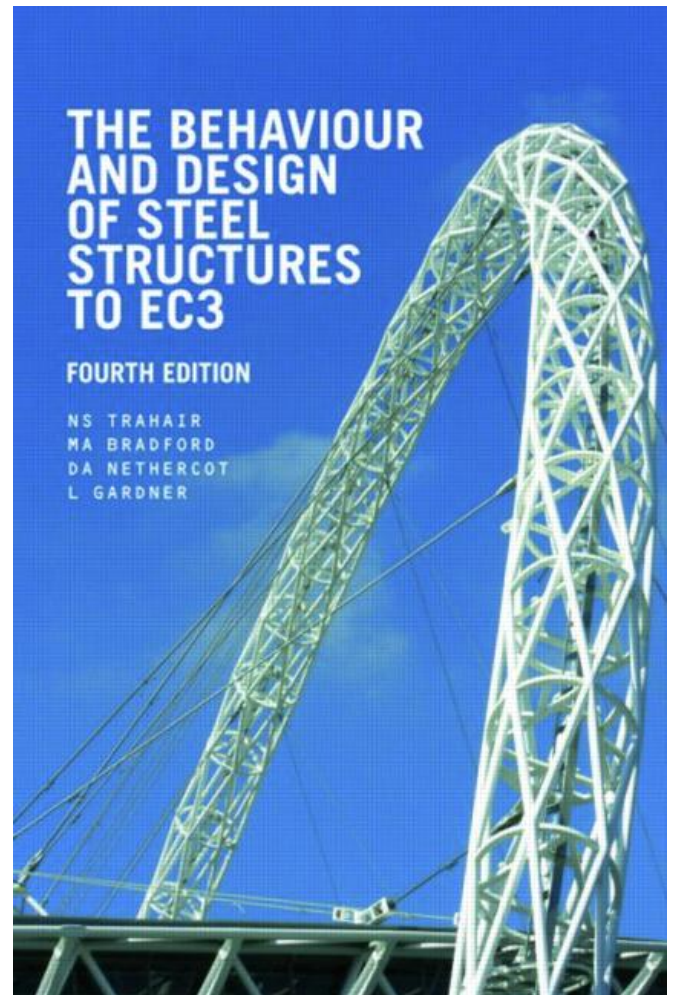
<http://sydney.edu.au/news/civil/318.html?newsstoryid=7114>

<http://sydney.edu.au/engineering/people/prof.trahair.php>

[http://www.researchgate.net/profile/N\\_Trahair](http://www.researchgate.net/profile/N_Trahair)

Emeritus of Department of Civil Engineering  
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**Tribute by Profs. Mark A. Bradford and Gregory J. Hancock to Prof. Trahair on his retirement in 1998:**  
December 1998 marked the retirement of one of the world's foremost structural engineers, Professor Nicholas S. Trahair, who was Challis Professor of Civil Engineering at the University of Sydney. Professor Trahair joined the Department of Civil Engineering at Sydney in 1960, after graduating with a Bachelor of Science in 1954 and a Bachelor of Engineering with First Class Honours in 1956, and a Master of Engineering Science in 1959. Prior to joining the academic staff at Sydney, he spent three years with the Department of Works in Canberra. He gained a PhD in 1968, and a Doctorate in Engineering in 1994, both for his work on flexural-torsional



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buckling. Over a period of 38 years at Sydney, Nick held the positions of Lecturer, Senior Lecturer, Associate Professor, Challis Professor, Head of Department, Director of the Postgraduate Civil Engineering Foundation and was the Founding Chairman of the Centre for Advanced Structural Engineering. He held visiting appointments at Washington University, The University of Sheffield, The Japanese Society for the Promotion of Science, The University of Alberta and Imperial College of Science and Technology, as well as delivering lectures in the USA, England, Germany, Belgium, Switzerland, France, New Zealand, Scotland, Canada, Japan, Thailand, Singapore, India, South Africa and Hong Kong.

Professor Trahair's contributions to research, design and teaching in steel structures are enormous, and at the forefront of this area worldwide. He was a member of the Steel Structures Committee of Standards Australia which produced the steel design codes AS-CA1 1968, AS 1250 1972, 1975, 1981, and was a major contributor to and co-chairman of the committee which developed the Limit States Steel Structures Standard AS 4100 1990, which is regarded internationally as one of the world's leading steel design standards. He has been heavily involved in numerous high-level consultancies, and recently in the development of the LIMSTEEL computer software design package which is almost universally used throughout Australia and New Zealand for the routine design of steel structures. His books on The Behaviour and Design of Steel Structures (now in its third edition), and Flexural-Torsional Buckling of Structures, are of world renown.

It is Nick's research into the lateral buckling of steel structures that has gained him international standing in structural stability, with his contributions in this area being considered by many as unrivalled. His publications in the discipline, both in leading international journals and symposia, are in the hundreds. This work earned Nick numerous awards, the most recent of which is the ASCE's Shortridge Hardesty Award in 1998 for "his research on the lateral-torsional stability of beams and active participation in the development of several standards that are of significant value to the profession". In 1995, an international conference was held in Sydney to honour his achievements in structural stability and in the design of steel structures, with representatives from most major economies attending. Amongst these were the chairmen of the British, German, Canadian and New Zealand steel structures committees, and members of national steel structures committees from the USA, Italy, Singapore, Japan and South Africa.

Those who know Nick would all attest, not only to his outstanding achievements in structural engineering, but to his humility, dedication to his family and to his friendship and mentoring of colleagues and students. Those with whom he has worked, including the writers of this article, owe him much. The well-known saying "a gentleman and a scholar" is a most apt description of Nick. We all wish him well in his retirement, and envy the many leisurely activities he is now pursuing, but hope that he will maintain contact with his former department and with the structural engineering fraternity.

### **Award and Biography:**

The Structural Stability Research Council (SSRC) has awarded the Lynn S Beedle Award to Nick Trahair. The award has been established in honor of the late Lynn S. Beedle, an international authority on stability and the development of code criteria for steel and composite structures. He was a leader and outstanding contributor to the work of the Structural Stability Research Council for a period of more than 50 years, establishing the council as the pre-eminent organization worldwide in the area of structural stability.

Prof Trahair was recognised as a worldwide leading stability researcher or designer of structures with significant stability issues.

The 2011 award citation reads:

Nick Trahair is an Emeritus Professor of Civil Engineering at the University of Sydney. He has also held appointments at Washington University, the University of Sheffield, and the University of Alberta.

His research and teaching fields are in structural stability, especially the lateral buckling of steel beams, and the design of steel structures. He has published more than 220 papers in these fields. His book Flexural-Torsional

Buckling of Structures provides a major resource for researchers and designers, while his book *The Behaviour and Design of Steel Structures* (in 6 editions) provided advice on the steel design codes of Australia, USA, UK, and Europe.

He was a member and co-chairman for 35 years of the committee which developed the Australian steel design codes. The 1990 code AS4100 was groundbreaking, with many innovations which have subsequently been adopted by other countries. He is the principal developer of the computer program LIMSTEEL used by most Australian steel designers. He gave many presentations around Australia and developed many short courses to assist practicing engineers in the use of AS4100.

He was the recipient of 6 medals, prizes, or awards of the Institution of Engineers, Australia, and of the Shortridge Hardesty Award of the American Society of Civil Engineers.

He has served on the editorial boards of a number of international journals, and have assisted many of them by reviewing papers submitted for publication. He has also represented Australia on a number of committees of the Structural Stability Research Council.

### **Selected Publications:**

#### **Books:**

N.S. Trahair, *Flexural-torsional buckling of structures*, CRC Press, 1993, 360 pages

N.S. Trahair, M.A. Bradford, D. Nethercod, L. Gardner, *The Behaviour and Design of Steel Structures to EC3*, Fourth Edition, CRC Press, 2007, ISBN 9780415418669

#### **Journal Articles, etc.:**

Trahair, N.S., "Deformations of geometrically imperfect beams", *Journal of the Structural Division ASCE*, vol. 95, 7, 1969, p.1475-1496

N.S. Trahair, S.T. Woolcock, Effect of major axis curvature on I-beam stability, *J. Eng. Mech. Div. ASCE* 99 (1) (1973) 85–98

Kitipornchai, S.; Trahair, N. S.: Buckling properties of monosymmetric I-beams. *Proc. ASCE: ST. J. Struct. Div.* 106 (1980) 941–959

Kitipornchai S, Wang CM, Trahair NS. Buckling of monosymmetric I-beams under moment gradient. *J Struct Eng, ASCE* 1986;112(4):781–99.

N. S. Trahair. "Buckling Analysis Design of Steel Frames." *Journal of Constructional Steel Research*, 65(7), 1459-1463

Trahair, N.S., Abel, A., Ansourian, P., Irvine, H.M. and Rotter, J.M. (1983) *Structural Design of Steel Bins for Bulk Solids*, Australian Institute of Steel Construction, Sydney.

Bradford, M.; Cuk, P.; Gizejowski, M.; Trahair, N.: Inelastic lateral buckling of beam-columns *J. Struct. Engng.* 113 (1987) 2259–2277

Pi Y. L., Trahair N. S., Rajasekaran S. 1992 Energy equation for beam lateral buckling *J. Struct. Eng. ASCE* 118 1462 1479  
doi:10.1061/(ASCE)0733-9445(1992)118:6(1462)

Put B. M., Pi Y.-L., Trahair N. S. Lateral buckling tests on cold-formed channel beams // *Journal of Structural Engineering*. — 125, No 5. — P. 532-539.

Pi Y.L., Trahair N.S.: Non-linear buckling and postbuckling of elastic arches. *Eng. Struct.* 20(7), 571–579 (1998)

Pi Y-L., Trahair N. S. Distortion and warping at beam supports // *Journal of Structural Engineering*. — 2000. — 126 (11). — P. 1279-1287.

Trahair N. S. and Hancock G. J. Steel member strength by inelastic lateral buckling // Journal of Structural Engineering. — 2004. — 130 (1). — P. 64–69.