

ADVANCED STEEL CONSTRUCTION

an International Journal

Volume 1 Number 1 June 2005



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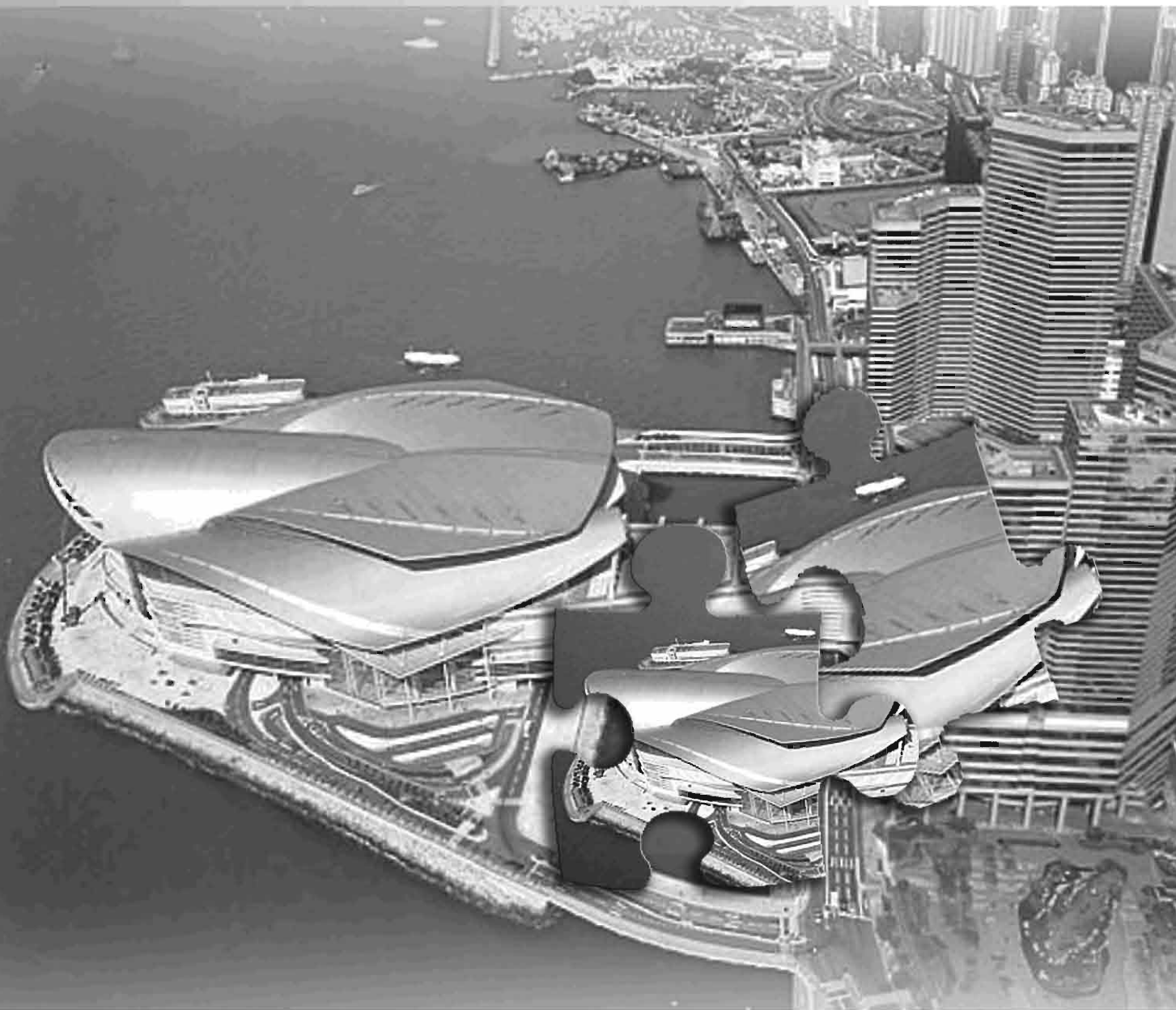
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General Information

Advanced Steel Construction, an international journal

Aims and scope

The International Journal of Advanced Steel Construction provides a platform for the publication and rapid dissemination of original and up-to-date research and technological developments in steel construction, design and analysis. Scope of research papers published in this journal includes but is not limited to theoretical and experimental research on elements, assemblages, systems, material, design philosophy and codification, standards, fabrication, projects of innovative nature and computer techniques. The journal is specifically tailored to channel the exchange of technological know-how between researchers and practitioners. Contributions from all aspects related to the recent developments of advanced steel construction are welcome.

Instructions to authors

Submission of the manuscript. Authors may submit three double-spaced hard copies of manuscripts together with an electronic copy on a diskette or cd-rom in an editable format (MS Word is preferred). Manuscripts should be submitted to the regional editors as follows for arrangement of review.

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All manuscripts submitted to the journal are highly recommended to accompany with a list of four potential reviewers suggested by the author(s). This list should include the complete name, address, telephone and fax numbers, email address, and at least five keywords that identify the expertise of each reviewer. This scheme will improve the process of review.

Style of manuscript

General. Author(s) should provide full postal and email addresses and fax number for correspondence. The manuscript including abstract, keywords, references, figures and tables should be in English with pages numbered and typed with double line spacing on single side of A4 or letter-sized paper. The front page of the article should contain:

- a) a short title (reflecting the content of the paper);
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- d) 5 to 8 keywords.

The paper must contain an introduction and a conclusion. The length of paper should not exceed 25 journal pages (approximately 15,000 words equivalents).

Tables and figures. Tables and figures including photographs should be typed, numbered consecutively in Arabic numerals and with short titles. They should be referred in the text as Figure 1, Table 2, etc. Originally drawn figures and photographs should be provided in a form suitable for photographic reproduction and reduction in the journal.

Mathematical expressions and units. The Systeme Internationale (SI) should be followed whenever possible. The numbers identifying the displayed mathematical expression should be referred to in the text as Eq. (1), Eq. (2).

References. References to published literature should be referred in the text, in the order of citation with Arabic numerals, by the last name(s) of the author(s) (e.g. Zandonini, R.). References should be in English with occasional allowance of 1-2 exceptional references in local languages and reflect the current state-of-technology. Journal titles should be abbreviated in the style of the Word List of Scientific Periodicals. References should be cited in the following style.

Journal: Chen, W.F. and Kishi, N., "Semi-rigid steel beam-to-column connections, data base and modeling", Journal of Structural Engineering, ASCE, 1989, 115(1), pp.105-119.

Book: Chan, S.L. and Chui, P.P.T., "Non-linear static and cyclic analysis of semi-rigid steel frames", Elsevier Science, 2000, pp.336.

Proceedings: Zandonini, R. and Zanon, P., "Experimental analysis of steel beams with semi-rigid joints", Proceedings of International Conference on Advances in Steel Structures, Hong Kong, 1996, vol. 1, pp.356-364.

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Foreword for the Inaugurate Issue of the International Journal of Advanced Steel Construction

The International Journal of Advanced Steel Construction is dedicated to the advancement of structural engineering and steel construction by innovation and creativity for the engineers in the regions of Greater China. The Journal provides a platform for the publication and rapid dissemination of original and up-to-date research and technological developments in steel construction, design and analysis worldwide.

China is a rising power in the 21st century and has had an annual growth rate of greater than 8 percent for more than a decade. It consumes a large quantity of natural resources including cement, steel and oil, among many others. Innovation and technology transfer in a timely manner for engineers in the Greater China regions are critical for efficiency, economy and sustainability for further growth.

In structural engineering and steel construction, true innovation is more than just a new design concept or a new construction technology. The more efficient use of materials in construction frequently involves more complicated computation with more exotic theories. Simplifications are necessary for engineers to maintain a “feel” for their design. Simplification will always lead to better structures that require less materials, labor and construction time. Generally speaking, simplicity leads to a wider and faster adoption of innovation.

In my career spanning over the last 40 years, I have had first-hand experience of such a transformation in the development of simple solutions from complex but well founded theories of mechanics and materials. From my first work at Lehigh University on the development of a simple plastic theory for steel frame design, to the development of simple limit analysis techniques for geotechnical engineering applications, to my most current work on the development of practical advanced analysis methods for the 2005 AISC code for steel building design, I have witnessed and operated on one basic principle: make complex theories work in engineering practice by keeping the solutions simple and practical.

The impact of these advances on the steel construction industry is tremendous as evidenced by the release of different versions of the AISC specifications over the last 80 years: from Allowable Stress Design, to Plastic Design, to Load and Resistance Factor Design, to the most recent Performance-Based Design. Today, we are again on the cusp of releasing the next generation of the 2005 AISC specifications that will bring safety, economy and simplicity for generations to come.

To this end, I would like to share with you, the reader, my three simple cardinal rules for a good practice of structural engineering:

Cardinal Rule One: Ductility can be forgiving of one's mistakes.

Be wary when you deal with a new environment with a familiar material but with possibly a much less ductility due to size effect, temperature change, damage due to cold work or the new way of making steels. For example, structural steel is considered to be a homogeneous, isotropic, and ductile material, but none of these properties is true at a fully welded beam-to-column joint with thick flange plates.

Cardinal Rule Two: Connection detailing is everything.

Most structural failures initiated from the connections as a result of some poor detailing in joints. Structural members seldom fail in a sudden manner but joints fail frequently in brittle fracture. Extensive computation and modeling may not be helpful because in-situ material properties and residual stresses are not known at these joints. Simple design rules developed on the basis of full scale tests are more relevant and result in safer joints with lower labor and material costs.

Cardinal Rule Three: Redundancies are the best defense against unexpected failures.

Good structural engineers need to look ahead and anticipate unexpected events to guard against such progressive failures as witnessed in the World Trade Center collapse. Redundancies can also compensate for some undetected quality control problems that may occur during construction.

In summary, the true fulfillment for the authors of this Journal is to see their work find its way into engineering practice. That is to be “*a place in practice*”. To achieve this goal, one must always keep in mind: *make things simple*.

W. F. Chen

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