



An Engineer's Guide to Fabricating Steel Structures

Volume 1: Fabrication Methods



by John Taylor BSc, Sen.MWeldI

AUSTRALIAN INSTITUTE OF STEEL CONSTRUCTION

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VOLUME 1 - FABRICATION METHODS**

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Forward

This book has been written to provide concise and relevant information on fabrication for engineers involved in steel structural design, but it may also be of assistance to others. It was written originally as notes for a short course for structural engineers in welding and NDT practice put on at The Advanced Manufacturing Training Centre at Subiaco, Western Australia. The course was presented in association with the Australian Institute of Steel Construction, The Institution of Engineers Australia and the Welding Technology Institute of Australia. This course proved to be very successful. It was oversubscribed many times over when first introduced.

The aim of this publication is to provide sufficient information to enable the engineer to appreciate fabrication and welding from a fabricator's viewpoint, so that he or she can understand some of the practical problems.

A large portion of this book concerns welding. Welding appears to be a topic that is underestimated by educators of engineers, and yet is a highly complex topic that is critical to steel structures. The time allotted in a 4-year degree course is usually less than 5 hours. Few engineers have seen welding, even less have tried it, yet many are called upon for expert advice and direction. Many involved in the design process fail to appreciate the impact design for welding has on fabrication cost and structural performance. This lack of knowledge can result in a lack of understanding between designer and fabricator. Although the book was written for design engineers, the information is useful for those in fabrication management, particularly those from a non-workshop background.

The information comes partly from the author's experience as a Welding Engineer over 30 years. However, no work such as this is undertaken in isolation. Acknowledgments must go to the many previous works included in the reference list at the end of each section. All of these references are more detailed than this slim volume, and should be consulted for further information.

Thanks are particularly due to Rupert Grayston of AISC who encouraged the author to produce this work, and who is responsible for presenting a number of case histories to the class. Thanks also to AISC, who provided the cover photo and Photographs 1 to 7. They own the copyright to these photos. I must also thank the Lincoln Electric Company for Photographs 6, 7 and 8, who own their copyright.

Acronyms

Today it is fashionable to use copious numbers of acronyms throughout publications, mostly to impress the reader with the writer's prowess rather than to help communication. The author has tried to use the minimum number, restricting the use to already accepted abbreviations. Each has been defined the first time it is used. If the reader finds an acronym that is not understood, a look at the index should find its first use and the definition.

About the Author

John Taylor is an honours graduate in metallurgy from the United Kingdom. Now a naturalised Australian (who barracks passionately for Australia even in the Ashes series tests), John has a 29 year career in the welding industry. His first experience was working for the major welding consumable supplier in the UK. In 1981, John migrated to Australia, having an earlier taste of the lucky country because of a two-year secondment to CIGWELD in Melbourne. Since migrating John has worked as welding engineer for a number of organisations: building processing and storage tanks and vessels, piping, and Woodside's load-out jetty at the Burrup. His major career accomplishment was to establish and manage welding on the submarine project.

John currently is director of Qualmet Services; a company based in Mandurah providing welding engineering and metallurgy consult services.

John is a supporter of AAAAA, the Australian Association against Acronym Abuse Anonymous.