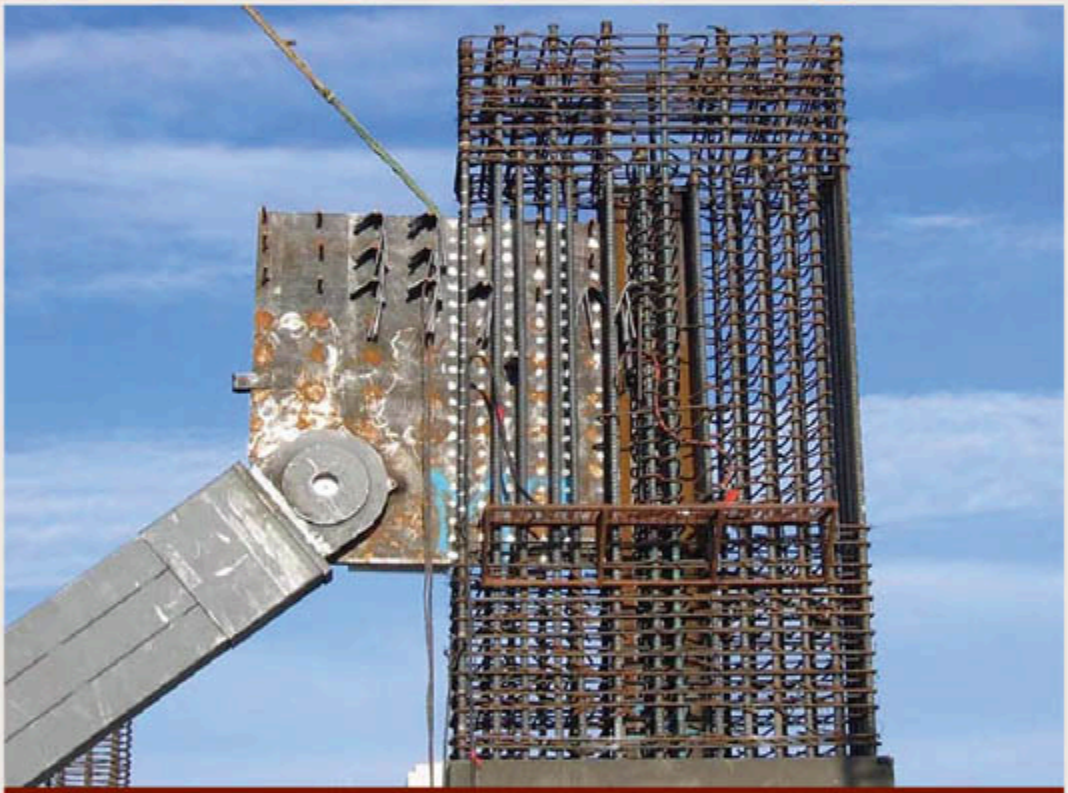
Composite Construction in Steel and Concrete VI



Proceedings of the
2008 Composite Construction
in Steel and Concrete Conference VI

Edited by
Roberto T. Leon
Tiziano Perea
Gian Andrea Rassati
Jörg Lange

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Composite Construction in Steel and Concrete VI

PROCEEDINGS OF THE 2008 CONFERENCE

July 20–24, 2008
Devil's Thumb Ranch, Tabernash, Colorado

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Dedication

Ivan M. Viest

These proceedings are dedicated to Dr. Ivan M. Viest, whose pioneering efforts in research led to the extensive utilization of composite structures in the USA and whose initiative led to the development of this series of conferences.

Dr. Ivan M. Viest was born in Bratislava (now in Slovakia) in 1922. He graduated from the Slovak Technical University with the degree of Inžinier (engineer) in 1946. After participating in several resistance movements against the German invasion during WWII and a short engineering career in Slovakia, he came to the USA in 1947, and enrolled at Georgia Tech, where he earned an MS degree. He transferred to the University of Illinois in 1948, and began his work on composite construction under the mentorship of Dr. Nathan Newmark. Dr. Viest's doctoral work, completed in 1951, contained pioneering experimental and analytical work on shear connectors and composite beams. After graduation, he remained as a faculty member, working in the areas of concrete columns and shear in reinforced concrete. In 1953, he began investigating the use of shear studs in bridges, work that he continued when he took over the AASHO Road Test studies in 1957. His numerous publications from his work in the 1950's led to the development of composite construction design provisions for both buildings and bridges at the end of that decade. Dr. Viest then joined Bethlehem Steel Corp. in 1961 where he worked to promote and improve the use of steel both through his technical expertise and service in national technical committees. Amongst his many contributions are his leadership of AISC TC5 – Composite Construction and his work on the development of the LRFD specification. Dr. Viest retired in 1982 and continues to enjoy his retirement. More details on Dr. Viest can be found in his autobiography: *An Immigrant's Story* (http://www.Xlibris.com)

Conference Participants

Preface

These proceedings summarize the state-of-the-art in composite construction worldwide, as presented at the an international conference on Composite Construction in Steel and Concrete held at the Devil's Thumb Ranch in Tabernash, Colorado (USA) in July 2008. This is the sixth in a series of conferences on this topic organized by the United Engineering Foundation (and now Engineering Conferences International) aimed at assessing and synthesizing the most recent advances in research and practice in the area of composite steel-concrete construction. This conference was preceded by those held in Henniker, New Hampshire, USA (1987), Potosi, Missouri, USA (1992), Irsee, Germany (1996), Banff, Canada (2000), and Kruger National Park, South Africa (2008).

The papers contained in this volume cover a wide variety of topics, including composite bridges, composite slabs, shear connectors, composite columns, innovative composite structural systems, fire and seismic resistance of composite structural systems and practical applications. Seventy-six participants from seventeen countries participated in four days of presentations, panel and informal discussions dealing with all aspects of composite construction. The conference was organized and chaired by Dr. Roberto Leon, Georgia Institute of Technology, U.S.A. and Dr. Jörg Lange, Technische Universität Darmstadt, Germany, with the assistance of Dr. Gian Andrea Rassati (University of Cincinnati), Dr. Jerome Hajjar (Northeastern University), and Dr. W. Samuel Easterling (Virginia Tech). The conference was generously supported by the AISC and NUCOR Corporation.

The papers in the proceedings were peer reviewed as per the guidelines used for the *Journal of Structural Engineering*, ASCE and are eligible for all ASCE awards and are open for discussion in the *Journal of Structural Engineering*, ASCE. The review process was administered by the proceeding editors, who would like to thank all the reviewers for their prompt and useful responses. The publication of the proceedings was supported by the Technical Activities Division of the Structural Engineering Institute, ASCE.

The editors will like to thank the staff of Engineering Conferences International, and particularly Ms. Antoinette L. Chartier, for all their help in organizing and coordinating the conference.

The financial support of the American Institute of Steel Construction and the Vulcraft Division of NUCOR Corporation is also gratefully acknowledged. This conference would not have been possible without that funding.

Finally, the senior editor will like to thank Mr. Tiziano Perea for all his work in preparing the final draft of the proceedings. Without his contributions these proceedings would not have been possible.

Roberto T. Leon, Tiziano Perea, Jörg Lange, and Gian Andrea Rassati
Atlanta, July 2010

Acknowledgments

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