

Form Pressures Generated by Self-Consolidating Concrete

Peter Billberg, Johan Silfwerbrand, and Thomas Österberg

Since its development, it has been generally assumed that self-consolidating concrete (SCC) would generate hydrostatic formwork pressure due to the rate at which it can be cast and the long time before it starts to set. In 1998, however, when the first bridges were cast using SCC in Sweden, measured form pressures were even lower than the design values for conventional concrete. To investigate the need for special formwork design considerations when using SCC, a series of eight wall specimens were cast, and the resulting form pressures were monitored.

Concrete International, V. 27, No. 10, October 2005, pp. 35–42.

Repair of Bridge Girders with Composites: Experimental and Analytical Validation

Marco Di Ludovico, Antonio Nanni, Andrea Prota, and Edoardo Cosenza

This paper deals with a laboratory study that investigated the flexural behavior of full-scale, damaged, prestressed concrete bridge girders upgraded with externally bonded carbon fiber-reinforced polymer (CFRP) laminates. The experiments described in the paper concern tests on three beams: one was used as the control beam and the other two, damaged by removing the concrete cover and by cutting two and four strands, respectively, were repaired with CFRP laminates. Analytical predictions compared to test results in terms of flexural capacity, deflections, strains, and failure modes are discussed. The results indicate that the used upgrade technique is structur-

ally efficient in providing the damaged beams with stiffness and strength very close to that of the original undamaged beam.

ACI Structural Journal, V. 102, No. 5, September–October 2005, pp. 639–648.

Ned H. Burns Symposium on Historic Innovations in Prestressed Concrete

Ed. Bruce Russell and Shawn Gross

This special publication of the American Concrete Institute (ACI) consists of papers accepted for the Ned H. Burns Symposium on Historic Innovations in Prestressed Concrete. The papers were presented in two sessions sponsored by ACI and the American Society of Civil Engineers (ASCE) Joint ACI/ASCE Committee 423 at the ACI Fall 2005 Convention. In accordance with standard ACI review procedures, all papers were peer reviewed by at least two experts on the subject area.

The collection of papers in this volume presents a range of topics describing historic innovations in prestressed concrete over the past 50 years. Topics include early uses of prestressed concrete by industry pioneers in Europe and the United States, development of construction techniques and design standards for several different prestressed concrete applications, and the use of innovative, modern materials such as self-consolidating concrete and fiber-reinforced polymers.

Although the prestressed concrete industry is less than a century old, there have been several true pioneers who have helped develop and promote the use of prestressed concrete through research and teaching. Dr. Ned H. Burns has certainly earned his place in this group by making extensive contributions to

the industry over the past five decades. Burns has completed extensive research on a number of topics related to prestressed concrete—design of unbonded tendons, bond of prestressing strand, prestressed concrete pavement, and the use of high-strength concrete among them. He is the coauthor of a widely used text on prestressed concrete with T. Y. Lin.

The symposium included papers from industry experts, such as “Contributions of Gustave Mangel to the Development of Prestressed Concrete” by L. R. Taerwe; “Early Applications of Prestressed Concrete in the United Kingdom” by C. Burgoyne; “The Development of Unbonded Post-Tensioning Tendons used in Parking Structures in Deicing Salt Regions” by C. Walker; and “Rational Determination of Friction Losses in Post-Tensioned Construction” by P. R. Gupta.

American Concrete Institute, “SP231: Ned H. Burns Symposium on Historic Innovations in Prestressed Concrete,” ed. Bruce W. Russell and Shawn P. Gross, American Concrete Institute, Farmington Hills, MI, 2005, 288 pp.

DISCUSSION NOTE

The Editors welcome discussion of reports, articles, and problems and solutions published in the *PCI Journal*. The comments must be confined to the scope of the article being discussed. Please note that discussion of papers appearing in this issue must be received at PCI headquarters by April 1, 2006.