

REVIEWS OF TECHNICAL PUBLICATIONS

Durability Survey of Segmental Concrete Bridges

Maurice D. Miller

The first American Segmental Bridge Institute (ASBI) inventory of concrete segmental bridges built in the United States and Canada was published in 1994. The 1994 survey identified 194 structures by type and age. The ASBI survey evaluated 96 of these bridges based on bridge inspection reports that rated the bridge conditions using the Federal Highway Administration (FHWA) guidelines. The 1994 report rated all bridges as fair or better with 98 percent of the bridges rating as satisfactory or better. Five years later, ASBI again solicited inspection reports from the owners to continue the evaluation of concrete segmental construction. Responses were obtained for 164 bridges, with inspection reports and condition ratings for 131 bridges. Again in 1999, all bridges were rated as "fair" or better. Of the 131 bridges, 99 percent had superstructure ratings of "satisfactory" or better, 79 percent had superstructure ratings of "good" or better, and 31 percent had superstructure ratings of "very good" or better. The findings of the survey again indicate that concrete segmental bridges are performing well with time. Three Appendices provide a list of segmental bridges, bridge condition ratings (1994 and 1999 surveys), and bridge wearing surface.

American Segmental Bridge Institute, 9201 N. 25th Avenue, Suite 150B, Phoenix, Arizona 85021-2721, 2000, 30 pp.

Excessive Strand End Slip in Prestressed Piles

Michael F. Petrou, Baolin Wan, Walter S. Joiner, Constantin G. Trezos, and Kent A. Harries

Presents the results of a research project that investigated excessive strand end slip observed recently in some prestressed concrete piles. From measurements taken in the field, it is apparent that the problem of excessive initial strand slip is independent of pile shape and size. Strand end slip is evident in piles of different states in the southeast

United States. Excessive strand end slip was found in both the top and bottom of the cross section of the piles, although the top portion of the section generally exhibited much higher initial slip. Several preventative measures can be adopted to reduce the excessive strand end slip: (a) proper concrete mixture proportioning to reduce top bar effect; (b) use of higher strength concrete with the lowest possible slump and setting time; (c) assessment of the condition of the strands prior to installation to ensure excellent bond characteristics; (d) gradual release of prestress, with an optimal release sequence; and (e) use of adequate vibration to ensure consolidation.

ACI Structural Journal, V. 97, No. 5, September-October 2000, pp. 774-782.

Super-T Bridges of the Southern Expressway

Harry Turner

The Southern Expressway in Adelaide, Australia, is one of the largest infrastructure projects ever undertaken in this country. A major ingredient of the superstructure of this bridge system is the so-called precast, prestressed Super-T girder. The principal advantage of Super-Ts is the immediate availability of soffit formwork, which allows a contractor to pour the composite deck slab far quicker than would be possible with a steel beam bridge. In addition, the thin-walled "box girder" shape of the Super-T provides stability in handling, good load distribution, low lifted weight and clean appearance.

Engineering Essentials, Cement Concrete Association of Australia, Sydney, Australia, V. 3, No. 1, September 2000, pp. 4-5.

High-Performance Fiber-Reinforced Concrete Thin Sheet Products

Alva Peled, Surendra P. Shah, and Nemkumar Banthia (Editors)

These proceedings are the results of the effort of ACI Committee 579, Ferrocement and Other Thin Reinforced Products. Original papers for this sym-

posium were presented at the ACI Convention in Chicago, Illinois, March 1999. The papers were reviewed in accordance with ACI policy. The proceedings deal with different aspects of high-performance fiber reinforced thin products: the extrusion process; the pultrusion technique for producing high-performance thin products; long-term durability of glass fibers; PVA fibers; long-term durability of nonwoven and woven glass fibers; integral formwork panels made of glass roving; permanent formwork with carbon fibers; hybrid laminate composites with various types of meshes and discontinued fibers; and the effect of low contractile admixture in glass fiber concrete.

American Concrete Institute, P.O. Box 9094, Farmington Hills, MI, 48333-9094, 2000, 216 pp.

Factors Affecting the Use of Precast Concrete Systems

David Arditi, Uluc Ergin and Suat Günhan

The reasons precast concrete systems are not used extensively in the United States were explored through four mail surveys that were sent to 100 contractors, 100 design firms, 100 precast concrete manufacturers and 100 local labor unions. The findings indicate that most of the prerequisite conditions for the extensive use of industrialized building systems already exist. The findings also indicate, however, that there is a major shortage of expert personnel capable of designing and organizing projects involving precast concrete systems and that almost half the contractors surveyed did not observe significant cost savings when they used precast concrete systems. Architects' and engineers' awareness of precast concrete systems and the number of competent precast concrete designers and erectors can be increased by providing adequate exposure of engineering and architecture students to these systems and by providing frequent and numerous continuous education programs for the benefit of active professionals.

Journal of Architectural Engineering, American Society of Civil Engineers, V. 6, No. 3, September 2000, pp. 79-86.