



POLITECNICO DI TORINO



EARTHQUAKE ENGINEERING
RESEARCH INSTITUTE
STUDENT CHAPTER
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SHEAR DESIGN OF PRESTRESSED CONCRETE BRIDGE GIRDERS

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Abstract

The current shear design provisions for prestressed concrete I-girders in the ACI Code and AASHTO Specifications are based on empirical and complicated formulas. In this seminar, a new method is presented that is much simpler, more accurate, and more rational. The new shear design method was developed based on the girder tests conducted at the University of Houston, as well as those available in literature. The shear strength is a function of only four variables: the shear-span-to-depth ratio (a/d), the strength of concrete, the web area, and the transverse steel ratio (ρ_w). Although the ACI and AASHTO shear provisions include two other variables, namely, the prestressing force and the angle of failure planes, this study showed that these two variables had no significant effect on the shear capacity.

BIOGRAPHICAL SKETCH

Thomas T. C. Hsu is Moore's Professor in the Civil and Environmental Engineering Department, Cullen College of Engineering, University of Houston. Dr. Hsu served as chair of the Department of Civil and Environmental Engineering from 1980 to 1984, and the founding director of Thomas T. C. Hsu Structural Research Laboratory from 1982 to 2003. He obtained his M. S. and Ph. D. degrees from Cornell University, and is the author of many publications and two books: "Unified Theory of Reinforced Concrete (1993)" and "Torsion of Reinforced Concrete (1984)." His national awards include: ACI's Boase Award in 2007, Anderson Award for Research in 1990 and Wason Medal for Materials Research in 1965, ASCE's Huber Civil Engineering Research Prize in 1974, and ASEE's Research Award in 1969.

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LOCATION: AULA ALBENGA 2nd floor, Department of Structural and Geotechnical Engineering (DISTR), Polytechnic of Torino

Faculty, graduate students, and all others are invited to attend.

Gian Paolo Cimellaro

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