CAEE/ACGP prize student papers
Article lauréat de la compétition étudiante CAEE/ACGP

CAEE/ACGP in 1997 established an annual competition to select the best student paper in earthquake engineering, based on either a master's or doctoral thesis, that has been published in a refereed journal. The winners are invited to the next Canadian Conference on Earthquake Engineering to present their papers. The two winners leading up to this Conference are Majid Sarraf and Gael Bondenet.

Since the papers have already been published they are not printed in these Proceedings. The references and abstracts for the papers are given below.

Cyclic testing of existing and retrofitted stiffened seat angle connections
Sarraf, Majid, and Bruneau, Michel
Journal of Structural Engineering, ASCE, Vol. 122, No. 7, July 1996.

Abstract: A typical riveted stiffened seat angle connection taken from an 83-year old building was tested to investigate its actual hysteretic behavior and potential moment resistance. Results show that such existing connections can develop a considerable moment resistance, but pinched hysteretic curves indicate they have a relatively low energy dissipation capability. Analytical models for prediction of the moment capacity of these connections are also developed and predicted results based on these models are found to be in good agreement with the test results. Then, two retrofitting schemes are proposed to improve the connections's hysteretic behavior, and the adequacy of the suggested retrofits is verified experimentally. First, the addition of ductile knee-braces is investigated. A "selective welding" approach is developed as a second retrofitting technique. The design philosophy of each retrofitting scheme is explained, and analytical procedures to predict the moment capacity of retrofitted connections are presented. Experimentally obtained hysteretic curves are presented, improvements in the behavior of connections are noted, and comparison with analytical predictions are made.

Frictional response of PTFE sliding bearings
Bondenet, Gael, and Filitatrault, A.
Journal of Bridge Engineering, ASCE, Vol. 2, No. 4, November 1997.

Abstract: Dynamic tests were done on polytetrafluoroethylene (PTFE) sliding bridge bearings to evaluate their frictional characteristics at frequencies above 1 Hz. High frequency seismic responses of PTFE bearings are expected to occur in bridge structures in eastern North America, where the estimated ground motion is well above 1 Hz. Three different PTFE-steel interfaces were tested at frequencies ranging from 0.02 Hz to 5 Hz., with displacement amplitudes of up to ± 70 mm and under confining pressures ranging from 5 MPa to 45 MPa. The experimental results showed a significant initial transient frictional response at frequencies above 1 Hz before the dynamic, steady-state, frictional behavior was achieved. This transient response is characterized by an initial high static coefficient of friction that slowly decreases to a dynamic steady-state coefficient of friction after several response cycles. Modifications to an existing mathematical friction model are proposed to take into account this initial transient frictional response.