SECED

THE SOCIETY FOR EARTHQUAKE AND CIVIL ENGINEERING DYNAMICS

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T K HSIEH AWARD 1987

The Council of the Institution of Civil Engineers had given the T K Hsieh Award for 1987 to Dr S K Sarma and Mr M R Barbosa for the paper "Seismic analyses for rockfill dams with clay cores" which was published in Geotechnique. The award will be presented at the Awards Ceremony on Tuesday, 3 November 1987 at 6.00 p.m.

The Award was established in 1979 in memory of Dr Tso Kung Hsieh and a premium of £50.00 is made annually to the author(s) of the best paper published by the Institution in the field of structural vibration caused by mechanical plant, wind, waves or seismic effects.

A TELEVISION PROGRAMME - EARTHQUAKE COUNTRY

Predicting the next devastating earthquake in California is the major challenge now facing seismologists in the United States. San Francisco was destroyed in 1906. Today most experts agree that a major earthquake in Los Angeles is imminent. How soon exactly, and how big? With a natural phenomenon as complex as earthquakes, the experts hesitate to announce precise dates and magnitudes.

Earthquake Country is a journey of discovery - in the film we travel down the San Andreas Fault from San Francisco Bay to Los Angeles and Southern California examining the characteristics of past earthquakes and the evidence for where the next significant earthquake will occur.

All kinds of approaches are being tried out to identify precursor events - events which may act as signals before the big shock. New instruments register the slightest changes in and around the San Andreas Fault, and geologists are gaining confidence in defining the frequency of prehistoric earthquakes. But meanwhile, people living in the danger area have somehow to be prepared. The city services estimate that up to 20,000 people could be killed and sixty-nine billion dollars lost in property damage alone. The 1985 earthquake in Mexico suggests that the calamity could be even greater.

Will the experts predict the earthquake in time for lives to be saved?

CHANNEL FOUR THURSDAY 5th NOVEMBER 1987 8.00 p.m.

The SECED Newsletter is published four times a year by the SOCIETY FOR EARTHQUAKE AND CIVIL ENGINEERING DYNAMICS and is available to all members of the society. Articles for inclusion should be sent to The Editor, SECED Newsletter, Mr. D.A. Howells at The Institution of Civil Engineers, Great George Street, London SW1P 3AA.

DAMPING VALUES USED IN THE NUCLEAR INDUSTRY

Structural damping values used by the nuclear industry in design are often those quoted in U.S. Nuclear Regulatory Guide 1.61 and U.S. NUREG - CR/1161. These values are typically in the range 2 - 7% of critical for steel and 3 - 10% for concrete. These two documents were produced in 1973 and 1980 respectively, and therefore do not take account of subsequent full-scale measurements. If we consider recent measurements from steel suspension bridges, concrete arch dams, steel offshore structures and concrete chimneys, we can construct the following table:

Structure Name	Fundamental Mode Damping (%)	Other Mode Damping (%)
Humber Bridge = Steel	(Vertical) 3.92	0.59 - 3.98
Ohnaruto Bridge = Steel	(Vertical) 0.53	
Emosson Dam = Concrete	(Forced) 2.10	1.77 - 3.51
Emosson Dam = Concrete	(Ambient) 0.84	0.39 - 0.97
Offshore = Steel	(Minimum) 0.30	-
Tall Chimneys = Concrete	(Ambient) 0.48 - 1.20	-

Comparing the table values with the U.S. nuclear values:

	Nuclear Industry	Recent observations of other structures
Steel	(av.) 4.5%	(av.) 1.6%
Concrete	(av.) 6.5%	(av.) 1.2%

Although this comparison is somewhat limited, it may be seen that nuclear designs may be using non-conservative damping values. It is noted that the nuclear values are estimated at earthquake (high strain) levels, and that the other industry values are from ambient (low to medium strain level) tests, but nonetheless it is felt that the nuclear industry values may be significantly non-conservative. Dr John R Maguire of W S Atkins Engineering Sciences asks, should we review the damping values commonly used for design in the nuclear industry? Your views would be appreciated.

CONFERENCE

EARTHQUAKE HAZARDS AND THE DESIGN OF CONSTRUCTED FACILITIES IN THE EASTERN UNITED STATES 24-26 February 1988. Sheraton Centre, New York City.

Seismologists, earth scientists, design engineers and representatives of various private and public organizations will view the scientific basis for assessing earthquake hazards in the eastern United States, develop a realistic estimate of the extent of such hazards, and assess alternative policies for the engineering design community and related regulatory agencies in response to these risks.

Conference Chairmen:

Klaus H Jacob, PhD, Lamont-Doherty Geological Observatory and
Carl J Turkstra, Eng, PhD, Polytechnic University.

For programme and registration information:

Conference Department, The New York Academy of Sciences, 2 East 63rd Street, New York NY10021.

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