

**Report on 1 – day seminar on seismic assessment and retrofitting of existing RC structures**

by Ir. Chong Chee Meng

Ir. Chong Chee Meng is currently the Deputy Chairman in the Civil and Structural Engineering Technical Division (CSETD).

The Civil and Structural Engineering Technical Division (CSETD) in collaboration with Wellingford Consultancy Services (M) and Seismosolf Ltd (Italy) have organized a 1-day seminar on 'Seismic assessment and retrofitting of existing RC structures'. The 1 day seminar was held on 11th May 2018 at Armada Hotel. The speaker was Dr Stelios T Antoniou, who is the co-founder and the Managing Director of Seismosoft Ltd. He has several publications in scientific journals, European and World Conferences on various subjects related to earthquake engineering.

This seminar was chaired by Ir Dr Ng Soon Ching, the Chairman of (CSETD) and was attended by 108 participants. The 108 participants included engineers from engineering consultants, contracting firms, government agencies and local authorities as well as faculty members from local institutions of higher learning.

The seminar was divided into 4 sessions. In session 1, Dr. Stelios commenced his talk with a brief overview of Eurocode 8 on design and assessment. He explained the Eurocode structures and basic information on the Eurocodes to the participants. He elaborated further on the fundamental requirements, limit state design, ground conditions and seismic action, importance classes and importance factors in Eurocode 8. Dr Stelios also introduced the basic principles and seismic design philosophy, analysis methods, safety verifications for ULS and SLS, energy dissipation capacity and ductility classes and capacity design to the participants.



Dr. Stelios delivering the talk

After a short morning tea break, Dr Stelios continued with Session 2 which is on analytical techniques and modelling of RC structures. He shared with the participants the methods of analyses for the assessment procedures, advantages and disadvantages for each method, guidelines on how to select method of analysis and finally the limitations imposed by the Codes. He then proceeded to explain on general issues on the modelling of RC structures. He also taught the participants ways of modelling different structural members such as walls, core walls, slabs, stairs, infill beams, column joints and foundations. He ended session 2 with brief explanation on classification of structural members and classification of actions.

Session 3 started after the lunch break. In this session, Dr Stelios talked about analytical techniques for seismic assessment and retrofit of RC structures. He commenced his talk by introducing 2 commonly use analytical techniques which are nonlinear static pushover analysis and nonlinear dynamic time-history analysis. He further elaborated on load combinations, target displacement, limitations and things to pay attention to for each method.

After a short afternoon tea break, Dr Stelios continued with the last session of the day which is on strengthening and retrofitting of RC structures. In this session, he talked about the main strengthening techniques frequently adopted in the construction industry such as RC jackets, new RC walls, steel bracing, FRP wrapping, FRP laminates, steel plates and seismic isolation. He also shared with the participants the real strengthening projects adopted abovementioned techniques.

At the end of the talk, there were questions raised by the audience which Dr. Stelios answered and clarified in more detail. At the end of the event, the Session Chair, Ir Dr Ng invited Chairman of Technical Committee on Earthquake, Adjunct Prof Ir. MC Hee to present a token of appreciation to Dr Stelios.



Presentation of memento by Ir. MC Hee to Dr. Stelios