

Project proposal template – Faculty studentships Summer 2014

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<i>Project title</i>	<input style="width: 95%;" type="text" value="Earthquake-resistant Design of Reinforced Concrete Flat Slab Framed Buildings"/>	<i>Director of Study</i>	<input style="width: 95%;" type="text" value="Professor Costas Georgopoulos"/>
<i>Second Supervisor</i>	<input style="width: 95%;" type="text" value="Dr Ted Donchev"/>	<i>School</i>	<input style="width: 95%;" type="text" value="Civil Engineering and Construction"/>
<i>Other members of supervisory team</i>	<input style="width: 95%;" type="text" value="Dr Dianna Petkova"/>	<i>Any requirements from applicant (eg degree in specific subject area)</i>	<input style="width: 95%;" type="text"/>
Project summary (max 1,000 characters)			
<p>Flat slabs are highly versatile elements providing minimum floor depth, fast construction, flexible arrangement of services and greater building energy efficiency via the thermal mass of their exposed soffits. As a result flat slab frames is the preferred method of multi-storey building construction in the UK. However the European Seismic Code EN1998 doesn't cover buildings in which flat slab frames are used in support of seismic loadings and flat slab frames are not generally used in earthquake-prone countries in Europe. Nevertheless flat slab frames have performed surprisingly well in all destructive earthquakes in Greece in the past 20 years, although they had not been designed or detailed for earthquake resistance. Should therefore the scope of EN1998 be extended to cover the seismic design of reinforced concrete flat slab framed buildings?</p> <p>Based on the performance of flat slab frames in past earthquakes and latest experimental and analytical work on flat slabs, it is proposed to develop a set of 'equivalent frame' lab models comprising flat slab strips and supporting columns with various dimensions / reinforcement and apply a series of gravity and seismic actions to them. The test results would be calibrated against existing test results and verified with analytical models in ANSYS FE software. In addition to the immediate benefit of this work to the EN1998 provisions the research outcomes would improve the economy, sustainability and seismic safety of reinforced concrete buildings.</p>			