DEPARTMENT OF CIVIL, ARCHITECTURAL AND ENVIRONMENTAL ENGINEERING

Engineering Aspects of the Canterbury Earthquake Sequence

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Abstract: The Canterbury earthquake sequence, which started in 2010, has including at least four major events producing strong motions in the central Christchurch city region. This sequence is unprecedented in a number of aspects including: (i) a high density of strong motion instruments in close proximity to the earthquake source; (ii) notably stronger ground shaking in a subsequent triggered earthquake (22 Feb 2011; Mw6.2) than the initial event (4 Sept 2010; Mw7.1) which is important from a building tagging perspective; (iii) an extreme severity and spatial extent of liquefaction in native soils; (iv) almost complete (~80%) demolition of the city's central business district, despite only 2 multi-storey building collapses. These novel features will be presented starting from the earthquakes themselves and proceeding through to the subsequent consequences.

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