

LESSONS FROM SEISMIC ASSESSMENTS IN WELLINGTON REGION

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As a country with high seismicity, New Zealand (NZ) has a history of continuously upgrading building codes and standards to take into account these naturally occurring forces. Many buildings in NZ have recently been assessed against the current building standard seismic loadings to evaluate their capacities. When earthquakes occur, Engineers have an opportunity to review and reflect on actual performance of buildings compared to their assessed models.

The paper discusses the lessons learnt from seismic assessments that have been carried out by the authors especially after the moderate earthquakes in Wellington region in 2013. The discussion focuses on comparing the desktop study based on the NZ standards and NZSEE seismic assessment guide with actual site inspections following these seismic events. We have found that damage observed in some buildings is not so much caused by insufficient structural capacity, but issues with pounding and the lack of building element integration. These issues are elaborated in this paper with case studies of building investigations in the Wellington region.

The paper then discusses several potential solutions to address these issues. The discussion looks to other countries, how they design their buildings and their building regulation. Several points are recommended for consideration in the building design for NZ standards.

References:

- NZS (2004), "NZS 1170.5 Structural Design Actions Part 5: Earthquake actions – New Zealand" New Zealand Standard
- NZS (2009), "NZS 4219 Seismic Performance of Engineering Systems in Buildings" New Zealand Standard
- NZSEE (2006), "Assessment and Improvement of the Structural Performance of Buildings in Earthquakes" New Zealand Society for Earthquake Engineering

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