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# EDITORIAL

# BACKGROUND TO PROPOSED CHANGES TO NZS 1170.5:2004

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## INTRODUCTION

In February 2024, Standards New Zealand (SNZ) released Draft Technical Specification DZ TS1170.5:2024 [1] for public consultation. The Draft TS looks to provide updated engineering guidance to determine earthquake loadings when designing new buildings. The Draft TS was developed based on the currently cited standard, NZS 1170.5:2004 [2], with consideration of aspects from NZS 1170.5:2004 Amendment 1 [3] deemed valid to include. The Draft TS was principally developed at this time to respond to the new knowledge about seismic hazard in New Zealand resulting from the publication of the 2022 National Seismic Hazard Model (NSHM). The Draft TS also includes an update to the provisions for parts and components as well as new provisions for rocking foundations for simple structures. Furthermore, geotechnical considerations are now referenced in performance requirements and geotechnical loading parameters are provided.

The SNZ Committee P1170.5 established by Standards New Zealand have considered all the public comments received during the public consultation. At the time of publication, the TS Committee was nearing completion of its deliberations on any possible changes needed to address the public comments. Publication of the TS is anticipated in mid-2025.

The papers of this NZSEE Bulletin issue provide detailed technical background on several of the key proposed changes, including insights on options considered during the development of the TS. The purpose of these papers is to provide engineers with the technical basis for the provisions of the TS beyond that which can be readily included in a Commentary to the TS. The papers may also be of value to the authors of future design standards on earthquake actions, as the continued evolution of our understanding of earthquakes and the performance of buildings is inevitably going to require updating of earthquake loading standards in the future.

The topics covered in papers in this issue include:

1. Consideration of deterministic limits on earthquake loading used in design [4];
2. Site classification [5];
3. Rocking foundations for simple structures [6];
4. Seismic design of parts and components [7].

Further papers related to the development of the TS are expected to be published in June 2025 issue of NZSEE Bulletin, covering the following topics:

1. Shape of the elastic design spectrum [8];
2. Assessment of life-safety risk [9];
3. Modification of elastic spectrum for inelastic response [10];
4. Modification of PGA to account for nonlinear site response [11].

## REGULATORY CONTEXT

NZS 1170.5:2004 [2] remains the referenced standard used to show compliance with the New Zealand Building Code, even after publication of the TS. Changing of this reference is not being considered at this time. Use of the TS, once published, for new building design will only be allowed by an alternative solutions compliance pathway. Experience from use of the use of the TS via alternative solutions will inform an impact analysis required prior to further public consultation on possible citing of the TS in future.

Publishing of the TS will not change the requirements of the earthquake-prone building (EPB) system in New Zealand. *All* seismic assessments, including voluntary seismic assessments for non-EPB purposes, should follow the same approach as for the national earthquake-prone building system and use the current standard NZS 1170.5:2004 [2].

## NEXT STEPS

The papers in this issue and the next issue, describe work done in Stage 1 of the Seismic Risk Work Programme. While Stage 1 was largely focused on the seismic hazard used for design, Stage 2 will take a broader look at the seismic design provisions in New Zealand to seek to provide better outcomes for society from our built environment in earthquakes, recognising cost and sustainability.

Key issues with the current seismic design approach to be addressed in Stage 2 include:

- Design process does not facilitate a focus on controlling damage in buildings.
- Importance Level structure confuses amenity and life safety performance objectives.
- Critical role of irregularities in driving building damage is not fully recognised.
- Analysis provisions are out of date leading to uncertainty in estimated local demands and global response.
- Inconsistent alignment between NZS1170.5 and external standards, including capacity design requirements.
- Compliance framework does not adequately address geotechnical considerations.

Stage 2 is expected to lead to further proposed updates to TS 1170.5 and a report on other recommendations beyond the scope of TS 1170.5.

## REFERENCES

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