

NZS 1170.5:2004

Structural Design Actions

**Part 5: Earthquake actions-
New Zealand**

Previous document:

NZS 4203:1992 (part)

Seismic hazard coefficient

$$C(T_1) = C_h(T_1) Z R N(T_1, D)$$

where:

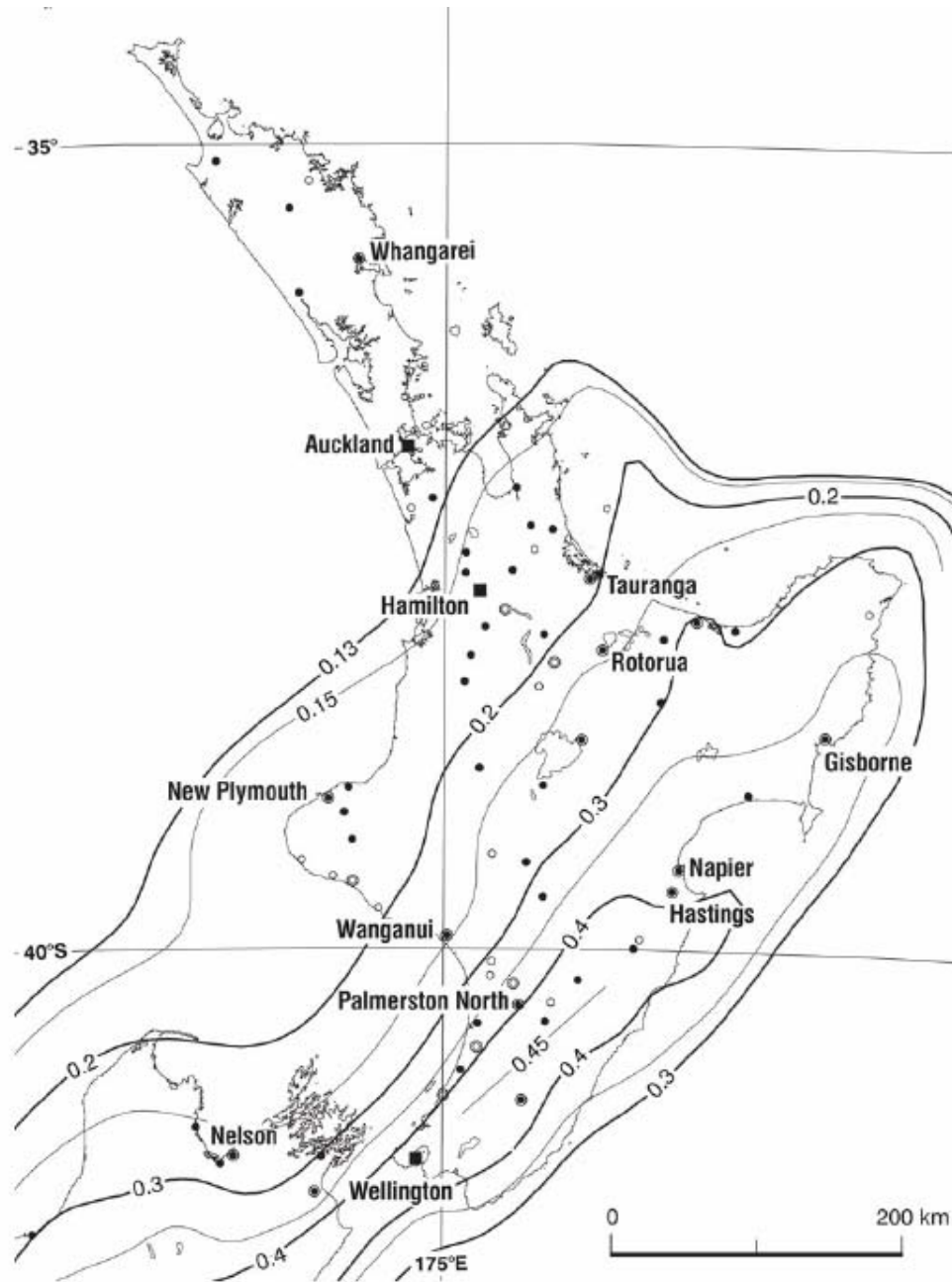
T_1 is the period,

$C_h(T_1)$ is the basic seismic hazard acceleration coefficient

Z is the hazard factor,

R is the return period factor,

$N(T_1, D)$ is the near fault factor (D is the distance to the fault).

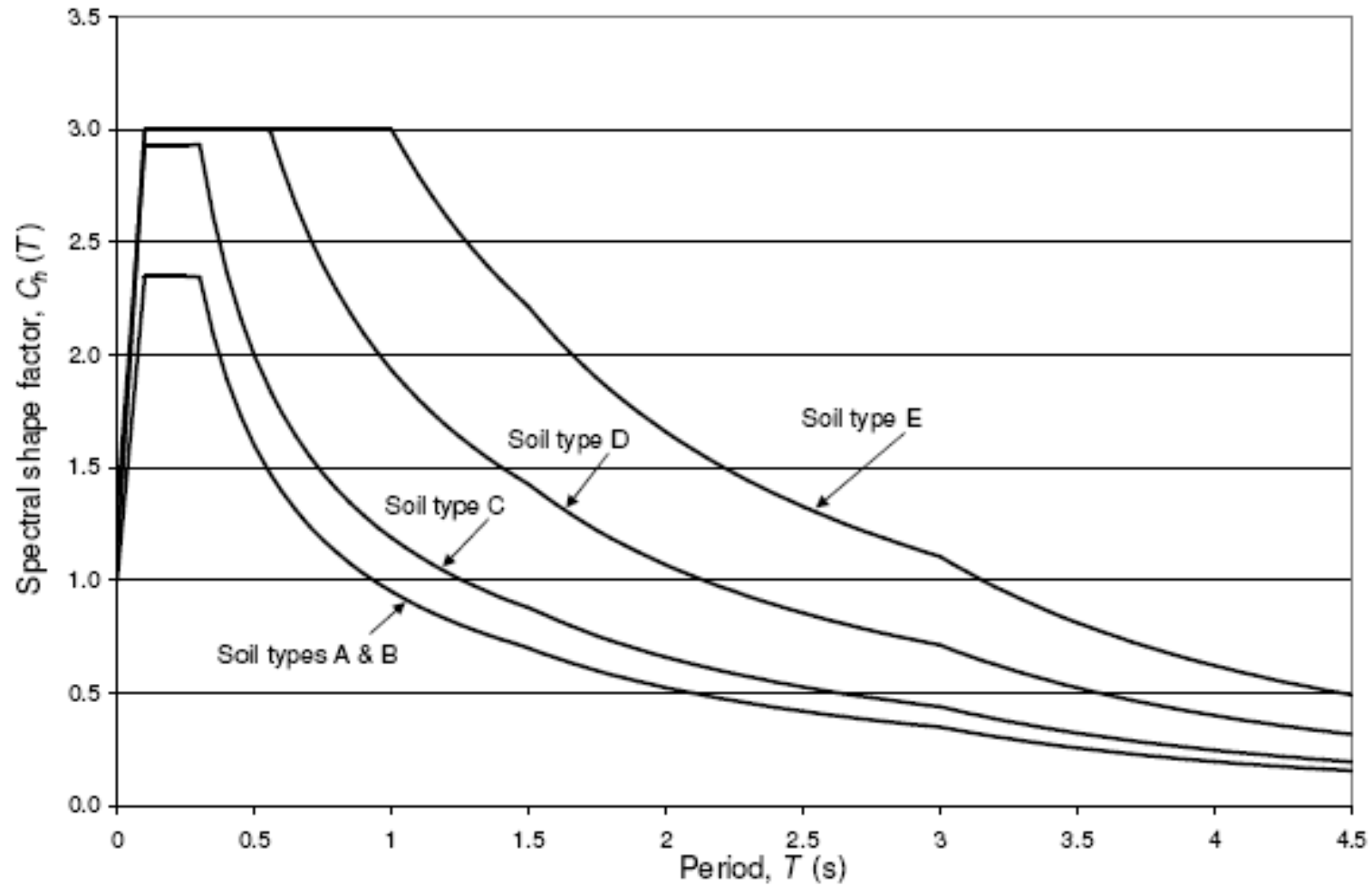


NOTE: Circles and squares correspond to towns and cities.

FIGURE 3.3 HAZARD FACTOR, Z , FOR THE NORTH ISLAND

Map of Z for NI

Fig. 1.2 Response spectrum



Class A strong rock

- $q_u > 50$ MPa
- average shear wave velocity of the the top 30 m greater than 1500m/sec
- not underlain by materials having $q_u < 18$ MPa or a shear wave velocity less than 600 m/sec

Class B rock

- $q_u > 1$ and < 50 MPa
- average shear wave velocity of the the top 30 m greater than 360m/sec
- not underlain by materials having $q_u < 18$ MPa or a shear wave velocity less than 600 m/sec

Class C shallow soil sites

- **Not A, B or E**
- **low amplitude period less than 0.6 secs**

Class D deep or soft soil sites

- **Not A, B or E**
- **low amplitude period less than 0.6 secs**

Class E very soft soil sites

- More than 10 m of soil with $s_u < 12.5$ kPa
- more than 10 m of soil with SPT N-value less than 6
- more than 10 m of soil with shear wave velocities less than 150 m/sec

NZ Geotechnical code?

- **The NZ geotechnical community has long resisted the introduction of a geotechnical code**
 - **perception is the geotechnical practice does not lend itself to codification**

Previous work

- **Introduction of LRFD procedures into geotechnical work**
 - **achieves compatibility with structural practice**

Current work

- Preparation of **guidelines** for geotechnical design
- project under the auspices of the the **NZ Geotechnical Society**
- **performance based**

Contents (draft)

- **PGA maps for the country**
 - **thought to be more appropriate for geotechnical works than spectra**
- **Liquefaction**
- **slopes**
- **retaining structures**
- **shallow and deep foundations**