



## Pay attention to the basics! Structural concepts and load paths

### Issues of concern

Designs carried out and information supplied for building consent should show sufficient consideration of the basic structural concepts and load paths.

Inadequately defined structural concepts and poor selection of load paths can lead to the as-built structure performing below expectations.

### Background

Sound structural concepts are recognised as critical to the performance of structures, particularly in earthquakes. Reports such as the Hunn Report, and the Department of Building and Housing report on the Scarry letter, indicated that some designs and drawings did not adequately demonstrate the designer's intentions in a clear and concise manner that enabled accurate checking at building consent stage.

**Note that this Practice Advisory is issued as guidance information in accordance with section 175 of the Building Act 2004 and, if used, does not relieve any person of the obligation to consider any matter to which the information relates according to the circumstances of the particular case.**

### Don't

- ✗ **Don't** assume the structural concepts are always sound and well defined, especially in unique or complicated structures.

### Do

- ✓ **Do** insist that a brief Design Features Report (DFR) (ie, a clear statement of structural concepts, load paths and loading assumptions) is included at the start of all design calculations.
- ✓ **Do** have an independent check done by an experienced designer on the basic structural concepts at concept design stage, developed design stage and on completion of construction documentation.
- ✓ **Do** submit a formal Design Features Report summarising all key design parameters and describing the structural design concept with all building consent applications.

**Figure 1** Example of building with highly eccentric layout of lateral bracing elements, requiring careful design for seismic torsion response.  
Source: Seismic Conceptual Design of Buildings, Bachmann H



**Figure 2** Plan of buildings with eccentric horizontal bracing layout for resisting lateral loads

