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Chapter 16

Excessive Deflections and Cracking in the Reinforced Concrete Floor Slabs of the Silverton Building in Canberra

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This chapter presents a case study of a multistorey reinforced concrete building, the Silverton Building, constructed in Canberra (Australia) in 1983, evacuated in 1989 due to concerns regarding its structural integrity, and demolished in 1994. The events, associated with the evacuation of the building, initiated court proceedings that ran between 1989 and 1997. In the description presented in this chapter of the structural issues affecting the integrity of the building, particular attention has been placed to avoid allocating blame to specific parties involved in the project and to utilise this case study as an opportunity to revisit the risks and responsibilities of engineers associated with structural engineering design and assessment. Personal remarks of the authors are also provided and clearly highlighted.

16.1 Overview of the Silverton Building

The case study deals with a seven-storey building designed in 1982 and built in 1983 in Canberra, Australia. This structure is widely known as the Silverton Building. A typical floor layout of the building is depicted in Figure 16.1 to highlight key dimensions and column arrangements based on the information provided in references [1-3]. The typical slab thickness specified for the floors was 210 mm.

After completion, the building was sold to a large corporate fund at the end of 1983. Following the standard practice of the fund, consulting engineers were appointed to perform a pre-purchase inspection of the building in September 1983.

Soon after, the building was tenanted in 1984. Some defects were reported by the tenants in early 1984. It appears that these included excessive deflections of the floor slabs, some concrete cracking in the structure, and leakage of the curtain wall [1]. In this building, an aluminium frame was used to carry the aluminium panels and glass windows of the curtain wall that was then supported by the reinforced concrete frame. The reporting of these defects initiated an investigation that was performed in the same year.