

STRUCTURAL ASSESSMENT OF EXISTING LARGE PANEL SYSTEM (LPS) DWELLING BLOCKS FOR ACCIDENTAL LOADS

Stuart Matthews and Barry Reeves

This Digest provides an overview of the advice given in BRE Report 511 entitled *Handbook for the structural assessment of large panel system (LPS) dwelling blocks for accidental loading*. It gives guidance to professional engineers and owners on the structural assessment of an existing LPS dwelling block for accidental loads. It explains the fundamental aspects of undertaking such a structural assessment, describing the technical requirements, the objectives, and the sequence of technical activities involved.

INTRODUCTION

There are still hundreds of high-rise LPS dwelling blocks in the UK, which potentially contain about 50,000 dwellings. These generally comprise flats, but in some cases the accommodation is in the form of maisonettes. In addition, it is estimated that there are in excess of 1000 low- and medium-rise LPS dwelling blocks in the UK.

In essence, most LPS dwelling blocks are gravity structures, as are traditional masonry-constructed buildings, which rely on their self-weight to maintain their stability when subject to lateral loads, such as those created by the wind. They typically comprise precast reinforced concrete floor and roof components spanning onto storey-height structural precast (plain) concrete wall panels. The vertical loads associated with the self-weight of the building and the imposed loads applied to the floors and the roof are carried to the ground through the structural wall panels, which also provide stability against lateral loads.

Block owners have an ongoing responsibility for their safety, which requires periodic inspection and structural assessment of such buildings. The UK requirements for this particular class of building stem from the 1968 collapse of the south-east corner of Ronan Point, a 22-storey LPS dwelling block⁽¹⁾.



Examples of the large panel system (LPS) built dwelling blocks load-tested by BRE: (a) a Bison LPS dwelling block, (b) a Reema Conclad LPS dwelling block