

Design of concrete masonry diaphragm walls

Report of a Concrete Society Working Party

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Foreword

Over the past ten to twenty years there has been a revival in the use of loadbearing masonry. This has been particularly noteworthy in the case of tall, single-storey structures, such as factories, warehouses, supermarkets and sports halls, which account for a large number of the buildings constructed in this country and abroad.

Prior to this revival the traditional masonry design solution for dealing with large vertical and horizontal loads was to increase the thickness of the masonry. This was wasteful of material, uneconomic in construction and ultimately led to the demise of the material as a structural medium and its replacement by concrete and steel. However, the introduction and development of the masonry diaphragm wall with its greatly improved slenderness ratio and section modulus has awakened the interest of a new generation of designers in the use of the system and a significant number of single-storey structures have been designed and built. Research, which has been underway for a number of years, is yielding valuable data for use where a conservative design approach has hitherto been necessary.

This guide provides the information which structural engineers need to design masonry diaphragm walls and includes two fully worked examples. It supplements BS 5628 *Code of Practice for the use of masonry: Part 1 Structural use of unreinforced masonry* which does not yet cover all aspects of the problem. The guide is based on the experience of the authors and will be of considerable help to designers seeking advantageous applications of a proven technique.