

STRUCTURAL DESIGN OF *mortarless* MASONRY to AS 3700:2011

DESIGN MANUAL - Part 1

Warwick Colefax BE(Hons) DipTechEng(Struct) MIEAust CPEng RPEQ

For the purposes of this design manual, the term dry-stack masonry refers to concrete block construction in which the concrete blocks are laid without the use of mortar in either the bed joints or the perpends. The term *mortarless* masonry refers to dry-stack masonry construction utilising the system manufactured under license from Mortarless Pty Ltd, an Australian company that holds the worldwide license for the system. In *mortarless* masonry construction hollow concrete blocks are interconnected by means of plastic connectors that have the following functions:

- they firmly secure blocks to each other end to end,
- they help correctly position the blocks in the overlying courses, and
- they accurately support horizontal and vertical reinforcement in its correct location.

There are quite a number of dry-stack masonry systems on the market however they all vary in the way the blocks interlock and in the way (if any) reinforcement is located and held in position. Not all systems make use of plastic connectors and most systems do not have a means of accurately positioning and supporting reinforcement. Most systems also don't have any means of ensuring proper cover to reinforcement, particularly at the perpends. *Mortarless* masonry is an exception.

Part 1 of the design manual establishes the applicability of using AS 3700 for design of *mortarless*, and it provides guidance on all aspects of the structural design of *mortarless* masonry in accordance with AS 3700. It also summarises the Code provisions used in the generation of the design tables in the subsequent parts of the manual.

Part 2 of the design manual contains comprehensive sets of design tables and diagrams for the 200 *mortarless* products. Part 3 contains comprehensive sets of design tables and diagrams for the 140 *mortarless* products.

The design aids have been specifically prepared for the *mortarless* masonry system manufactured under license from Mortarless Pty Ltd. The values given in the numerous design tables and diagrams have been calculated using the design recommendations provided in AS 3700:2011 as outlined in Part 1. Use of this manual for other than *mortarless* is not valid and could lead to serious design inadequacies.

Disclaimer: This *mortarless* masonry design manual has been compiled to assist structural engineers quickly and efficiently prepare designs and details of load-bearing *mortarless* masonry structures and elements. Numerous design tables have been provided and these cover a broad range of typical design applications. While every care has been taken to ensure the information provided is accurate and complete for the design situations and actions covered, the information should only be used by experienced practising structural engineers, and all engineers should familiarise themselves with the full contents of the applicable Standards to ensure no requirement is overlooked. Mortarless Pty Ltd, its licensees and the author accept no liability whatsoever arising out of the use or misuse of the information provided in this design manual.

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