

# STRUCTURAL DESIGN OF *mortarless* MASONRY to IS 456:2000

## DESIGN MANUAL - Part 1

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For the purposes of this design manual, the term mortarless 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* refers specifically to wall construction in which masonry units manufactured under license from Mortarless Pty Ltd are utilized. In *mortarless* wall 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.

*Mortarless* masonry load bearing walls use specially shaped hollow concrete blocks to construct solid concrete walls. The blocks are used as permanent shuttering and they contribute just a little to the strength of the finished wall. All *mortarless* walls are reinforced and are core filled with concrete.

There is no Indian Standard for reinforced masonry however an appropriate design code for *mortarless* is IS 456:2000 Plain and Reinforced Concrete – Code of Practice

Part 1 of the design manual summarises the provisions of IS 456:2000 that apply to the design of *mortarless* walls, outlines how the Code has been applied to the design of *mortarless* walls when preparing the design aids, and provides guidance on all aspects of the structural design.

Parts 2 and 3 of the design manual contain design tables and charts for each of the products in the *mortarless* range. The design aids have been specifically prepared for the *mortarless* masonry system manufactured under license from Mortarless Pty Ltd and they are not generally applicable to the design of walls constructed with alternative products.

### DISCLAIMER:

This *mortarless* design manual has been compiled to assist structural engineers quickly and efficiently prepare designs and details of load-bearing *mortarless* wall structures and elements. Numerous design aids are 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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