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1. Introduction

This is one of a series of topics dealing with the guidance provided by *Approved Document A, Structure*, which applies in England and Wales, regarding the potential impact on building stability caused by the installation of building services passing through walls.

Approved Document A, Structure, 2004 Edition (ADA) can be downloaded from the Communities and Local Government website at www.planningportal.gov.uk.

Other topics in this series are Topic **A50-1** (ADA: Recommendations for building stability) and Topic **A50-2** (ADA: Services in walls).

General information on the requirements of the *Building Regulations 2000* (BR 2000 for short) for England and Wales is given in Topic **B50-3**.

2. Service installations

The installation of building services, such as electrical, gas or water services, through the walls of a building is generally permitted by the BR 2000. However, the designer and installer of such services must, amongst other things, take account of the requirement not to impair the stability of the wall. The removal of material from a wall for the passage of services can weaken a wall and may lead to structural movement of the wall and/or building.

3. Openings in walls

To reduce the risk of structural movement of a wall and/or building, ADA recommends that openings in particular walls are restricted in number, size and position (paragraph 2C28 of ADA refers). For example, a wall may require openings for a window, door and the passage of service ducts. In such circumstances, the restrictions of such openings can be determined from the dimensional criteria from Diagram 14 and Table 8 of ADA.

The dimensional criteria for determining number, size and position of openings apply to walls above ground floor constructed of masonry units, such as bricks or blocks, forming part of a residential building of up to three storeys, where such walls are parapet* or extend to the full storey height and the walls are:

- external walls,
- internal load-bearing walls,
- compartment walls, or
- separating walls.

The dimensional criteria of openings in above-ground floor walls apply equally to parapet walls, and external and internal load-bearing walls that extend to the full storey height, where such walls form part of:

- small single-storey non-residential buildings, or
- small buildings forming annexes to residential buildings (including garages and outbuildings).

Restrictions are also placed on openings in walls below ground floor. ADA recommends an opening should be limited to a maximum area of 0.1 m^2 . Furthermore, where an opening is made in a wall below ground floor, such as for the passage of an incoming service cable, other openings are permitted; an opening for a water service, for example. However, openings must be at not less than 2 m centres as illustrated in Fig 1 (paragraph 2C29 of ADA refers).

Holes through walls

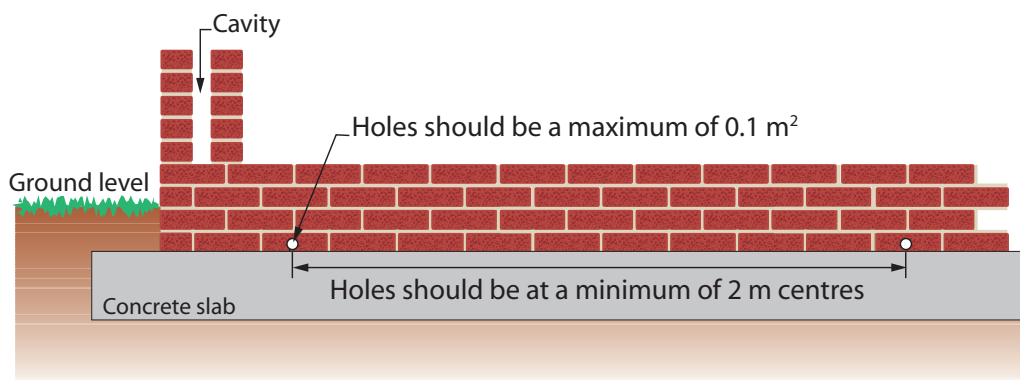


Fig 1

Building materials that aid stability, such as wall ties or wall straps may be encountered where openings are made in walls. Where this is the case, to prevent weakening the building structure such materials should not be damaged or removed.

* Parapet wall – a low or breast-high wall

Where an opening is made through a wall that acts as a fire barrier, the opening should be appropriately sealed in line with the recommendations of *Approved Document B Fire Safety* or similar authoritative guidance. Information on *Approved Document B* is given in Topics **A50-5** and **A50-6**.

Where electrical equipment is installed through walls the requirements of *BS 7671* apply. In such circumstances, Regulation 527.1.2 requires a wiring system to be installed such that the general building structural performance and fire safety performance are not reduced.



Topics referred to in this text:

A50-1	APPROVED DOCUMENT A STRUCTURE: Recommendations for building stability
A50-2	APPROVED DOCUMENT A STRUCTURE: Services in walls
A50-5	APPROVED DOCUMENT B FIRE SAFETY: Volume 1 dwellinghouses
A50-6	APPROVED DOCUMENT B FIRE SAFETY: Volume 2 buildings other than dwellinghouses
B50-3	BUILDING REGULATIONS 2000: Meeting the requirements



Topics not referred to in this text, which are related and may be of interest:

E157-5	EXTERNAL INFLUENCES: Building design (CB)
C5-45	CABLES: In walls, wet plastered



BS 7671 (Requirements for electrical installations)

Some of the most important requirements are found in:

Impact (AG)	Regulation Group 522.6
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