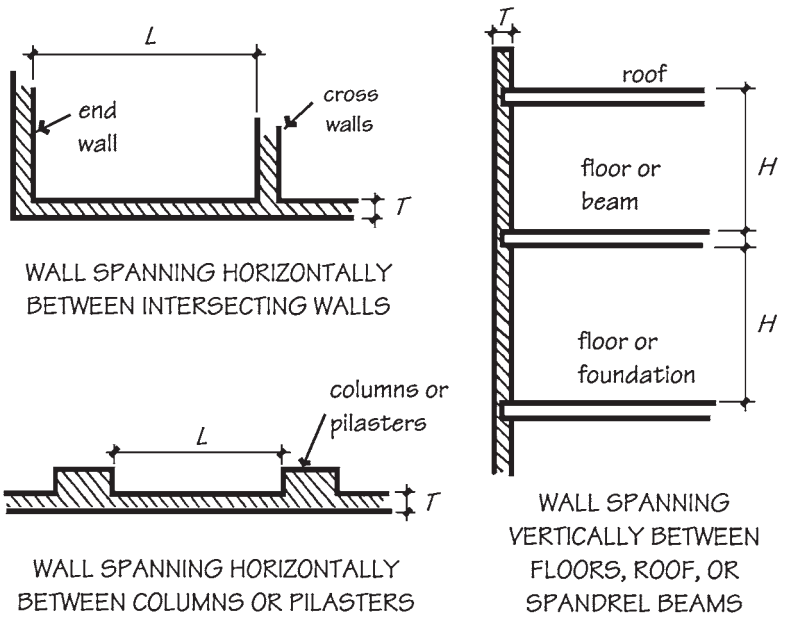
10
MASONRY WALLS AND VENEERS

The term "non-loadbearing" as it is used in masonry design means that the wall or element referred to does not carry the vertical compressive load of the structure. It may, however, be self-supporting and carry other applied loads from wind and seismic forces. Such non-loadbearing elements include partition walls, garden walls, shaft enclosures, fire walls, curtain walls, and veneers.

Code requirements for non-loadbearing walls are based on standards originally developed by the National Institute of Standards and Technology (NIST), the American National Standards Institute (ANSI), the Brick Industry Associations (BIA), and the National Concrete Masonry Association (NCMA). The design of unreinforced non-loadbearing masonry walls and partitions is governed by empirical lateral support requirements expressed as length- or height-to-thickness (h/t) ratios. The Masonry Standards Joint Committee (MSJC) *Building Code Requirements for Masonry Structures,* ACI 530/ASCE 6/TMS 402, and the *International Building Code* (IBC) both prescribe a maximum h/t of 36 for interior non-bearing walls and a maximum h/t of 18 for exterior non-bearing walls (*see Fig. 10-1*). Span limitations for bearing walls are discussed in Chapter 12.

Lateral support can be provided by cross walls, columns, pilasters, or buttresses, where the limiting span is measured horizontally, or by floors, roofs, spandrel beams, clips, angles or anchors, where the limiting span is measured vertically. Anchorage between walls and supports must be able to resist wind loads and other lateral forces acting either inward or outward. All lateral support members must have sufficient strength and stability to transfer these lateral forces to adjacent structural members or to the foundation. Arbitrary span limitations, of course, do not apply if the walls are designed by engineering analysis.



Empirical Span-to-Thickness Ratios for Lateral Support of Masonry Walls

Wall or Element	Maximum Unsupported Height or Length to Nominal Thickness (*L*/*T* or *H*/*T*)
Non-bearing walls	
exterior	18
interior	36

(*Based on requirements of the MSJC* Building Code Requirements for Masonry Structures ACI 530/ASCE 5/TMS 402, *and* International Building Code 2003)

Figure 10-1 Lateral support requirements for empirically designed non-loadbearing masonry walls and partitions.

10.1 INTERIOR PARTITIONS

Partitions are interior, non-loadbearing walls one story or less in height, which support no vertical load other than their own weight. They may be separating elements between spaces, as well as fire, smoke, or sound barriers.

Based on an *h*/*t* ratio of 36 as prescribed in the IBC and MSJC codes, a single-wythe, 4-in. brick partition without reinforcing steel is limited to a 12-ft span, while a 6-in. brick partition can span 18 ft between supports, and an 8-in. hollow brick partition 24 ft. If the partition is securely anchored against lateral movement at the floor and ceiling, and if the height does not exceed these limits, there is no requirement for intermediate walls, piers, or pilasters along the length of the partition. If additional height is required, the 8-in. hollow brick can be reinforced every 24 ft, or pilasters can be added at 12- or 18-ft intervals for the 4-in. and 6-in. walls, respectively. Lateral support is required in only one direction and can be either floor and ceiling anchorage (*see Fig. 10-2*) or cross walls, piers, or pilasters, but need not be both.