

780 CMR: MASSACHUSETTS AMENDMENTS TO THE *INTERNATIONAL BUILDING CODE 2009*

**CHAPTER 21: MASONRY**

**2101.2.7 through 2101.2.9** Add subsections:

**2101.2.7 Lateral Load Resisting System.** The lateral load resisting system shall include all masonry walls that are not structurally isolated from imposed in-plane loads other than from their own mass. All such walls shall be considered to be shear walls.

**Exception.** Elements not isolated from in-plane shear, such as narrow masonry walls and masonry wall piers between openings or between openings and the ends of the wall, which each have an in-plane stiffness less than 5% of the total stiffness of the lateral load resisting system in the same direction, may be omitted from the lateral load resisting system in that direction provided that the sum of the stiffnesses of the omitted elements is not greater than 10% of the total stiffness of the lateral load resisting system in that direction.

**2101.2.8 Elements Omitted from Lateral Load Resisting System.** Elements not isolated from in-plane forces, but not considered part of the lateral load resisting system per Section 2101.2.7, shall have sufficient strength and ductility to maintain vertical load carrying capacity when subjected to the design story drift.

**2101.2.9 Walls Isolated from the Lateral Load Resisting System.** Walls that are isolated from the lateral load resisting system are to be designed to resist applicable out-of-plane forces defined in Chapter 16, and to transfer the out-of-plane forces to the primary structure or to intersecting walls.

**2106.2** Add subsection:

**2106.2 Amendments to 1.17 of TMS 402/ACI 530/ASCE 5** (*Numbers that follow are section numbers of TMS 402/ACI 530/ASCE 5*).

**1.17.3.2.5** At the end of the last sentence, add this text:

"or one third the length of the wall, whichever is less".

**1.17.3.2.5.1** Add subsection:

**1.17.3.2.5.1 Vertical Reinforcement at Openings.** Two adjacent cells shall be grouted solid at each side of each opening and continuous vertical reinforcement shall be located in either of these two cells. Bars in a grouted cell may be offset horizontally by one cell to mitigate interference due to lintels.

**1.17.3.2.5.2** Add subsection:

**1.17.3.2.5.2 Horizontal Shear Reinforcement.** Horizontal shear reinforcement shall be provided by horizontal deformed bars in grouted bond beams at a maximum vertical spacing of 48 inches on center. The vertical spacing of horizontal deformed bars in grouted bond beams may be increased to a maximum of 104 inches on center if all of the following conditions are met:

- a. Welded wire reinforcement (ladder or truss configuration) shall be provided at a maximum vertical spacing of eight inches on center and placed in a bed joint not less than  $\frac{3}{8}$  inch thick.
- b. The longitudinal side wires of the horizontal shear reinforcement shall be a minimum of  $\frac{3}{16}$  inch diameter with #9 cross or diagonal wire. Additional joint reinforcement or reinforcing bars in grouted bond courses shall be added to meet the design requirements.
- c. Joint reinforcement shall be lapped to develop the full capacity of the reinforcing in the plane of the wall, at corners, and at intersecting shear walls.
- d. Joint reinforcement wires shall be anchored with hooks or bends around the vertical jamb reinforcement at openings and ends of walls.

**1.17.3.2.11** Revise note (a) to read as follows:

- (a) Reinforcement shall be provided in accordance with sections 1.17.3.2.6(a), (b), and (f), except where prestressing tendons are located.

21.00: continued

**1.17.4** At the end of this section add this text:

Notwithstanding the requirements of section 1.17.4 to the contrary, non-participating elements (*i.e.* those isolated from in-plane force) shall be reinforced in accordance with section 1.17.4.3, except as follows:

1. Reinforcement shall be provided in both the horizontal and vertical directions, and spacing of vertical bars shall not exceed 72 inches for Seismic Design Categories B and C, and 48 inches for Seismic Design Category D.
2. For exterior walls, and for walls enclosing exits, exit discharges, and elevator shafts, the minimum cross-sectional area of reinforcement in the direction of the span shall be 0.0007 times the gross cross-sectional area of the wall, and shall consist of reinforcing steel bars in grouted cells, grouted bond courses, or grouted collar joints. The maximum spacing of the bars shall be the lesser of  $\frac{1}{3}$  of the span or 48 inches.