Figure 9-16 Expansion joint at change in brick wall height.

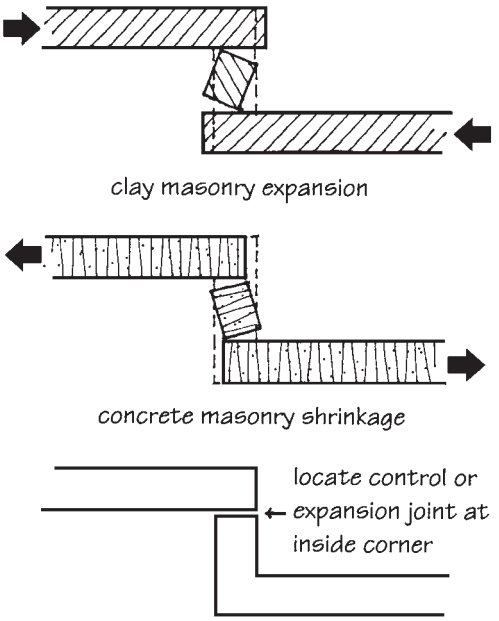

Figure 9-17 Movement at offsets in parallel walls requires placement of control or expansion joints to prevent cracking.

differences, cracking, slippage, and separation often occur at or near the roof line. Extra expansion joints can be located in the parapet to accommodate movement. Masonry walls and parapets can also be reinforced with bond beams to increase resistance to shrinkage and expansion (*see Fig. 9-22* and Chapter 10).

The joint reinforcement used to control shrinkage in concrete masonry walls affects the required location of control joints. The National Concrete Masonry Association (NCMA) provides tables to determine control joint spacing

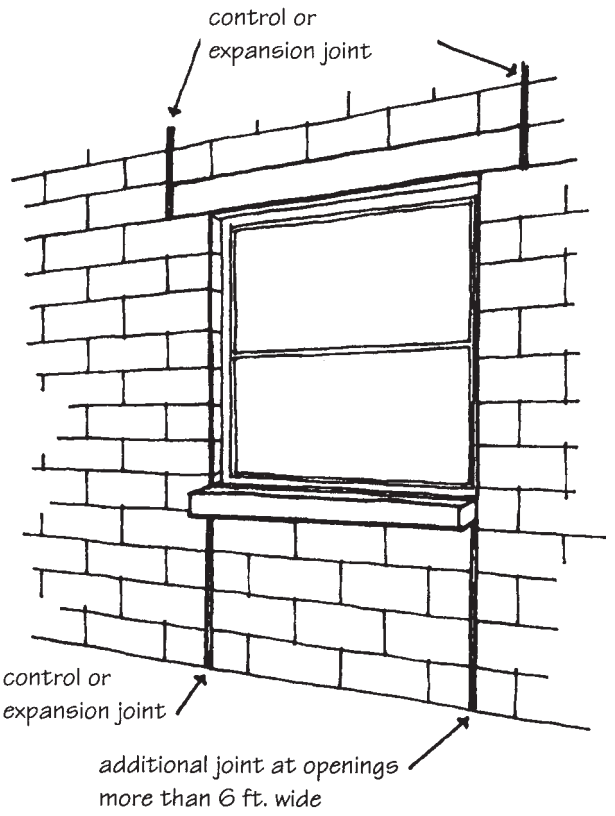

Figure 9-18 Movement joints at openings.

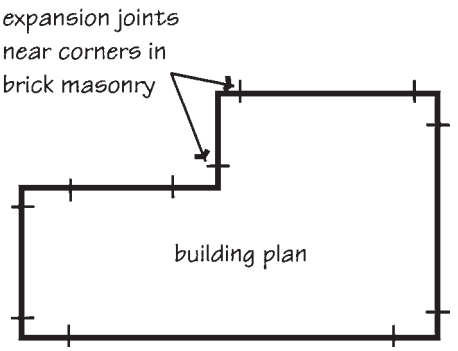

Figure 9-19 Locate expansion joints near corners in brick masonry.

based on joint reinforcement size and spacing (*see Fig. 9-23*). Joint reinforcement should not continue across control joints (*see Fig. 9-24*). The details in *Fig. 9-25* show how to combine brick and CMU in the same wall with minimal risk of cracking.

9.3.3 Accommodating Movement Joints in Design

Requirements for the location of movement joints in masonry are dictated by the expansion and contraction characteristics of the materials, but designers can also exercise some control over joint location and the aesthetic impact of