Maximum Spacing of Horizontal Reinforcement to Meet Criteria of 0.025 in² per Foot of Wall Height	
Reinforcement Size	Maximum Vertical Spacing (in.)
W1.7 (9 gauge) two wire§	16
W2.8 (3/16 in.) two wire§	24
W1.7 (9 gauge) four wire†	32
W2.8 (3/16 in.) four wire†	48
No. 3 bars	48
No. 4 bars	96
No. 5 bars or larger	144

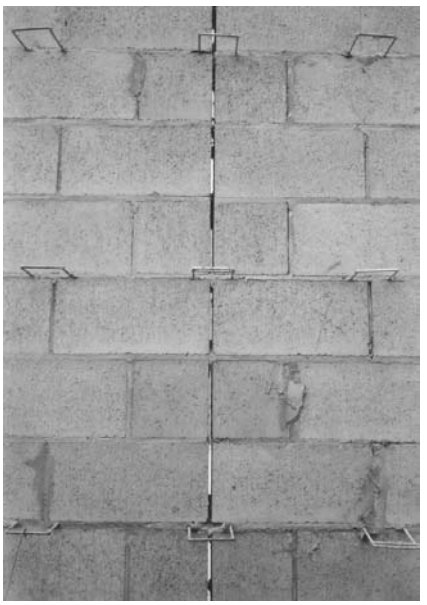
§ Two-wire joint reinforcement = one wire per face shell.
† Four-wire joint reinforcement = two wires per face shell.

Recommended Control Joint Spacing For Above Grade Exposed Concrete Masonry Walls§±*	
Length to Height Ratio	Spacing Between Joints (ft.)
1-1/2	25

§ Table based on horizontal reinforcement with equivalent area of at least 0.025 in² per foot of wall height to keep random cracks closed. See table above.
± Spacing based on experience over wide geographical area. Adjust spacing where local experience justifies, but not to exceed 25 ft. on center.
* Applies to all concrete masonry units.

Figure 9-23 Control joint spacing for concrete masonry construction. (*From National Concrete Masonry Association,* TEK Bulleting 10-2B, *NCMA, Herndon, VA.*)

The location of window and door openings often governs movement joint placement because of the frequency of their occurrence. In general, joints should be located at one side of openings less than 6 ft wide and at both sides of openings wider than 6 ft. When the masonry above an opening is supported by a precast concrete, cast stone, or reinforced CMU lintel, the adjacent movement joint must be located at the ends of the lintel as shown in *Fig. 9-18.* This creates an odd-looking pattern that is not very attractive. As an alternative, movement joints can be located at the midpoint between windows. If the spacing is relatively wide (or simply as an added measure of safety), joint reinforcement can be added in the courses immediately above and below the openings to strengthen the panel (*see Fig. 9-26*). When the masonry is supported on a loose steel lintel that simply spans between the masonry on each side, special detailing can be used to avoid offsetting the joint to the end of the lintel. A piece of flashing placed under the lintel bearing area creates a slip plane so that the end of the lintel can move with the masonry over the window. With this detailing, the movement joint can then be placed adjacent to the window and



continuous joint reinforcement interferes with proper functioning of control joints

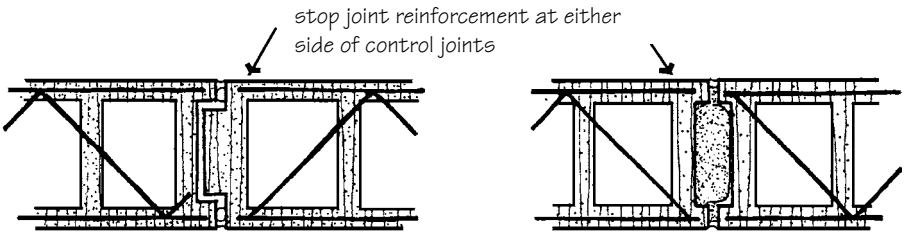


Figure 9-24 Joint reinforcement should *not* be continuous across control joints.

run in a continuous vertical line (*see Fig. 9-27*). When the masonry above an opening is supported on shelf angles that are attached to the structure, a control or expansion joint can be located immediately adjacent to the opening and continue straight up the wall past the horizontal support.

Joint reinforcement can also be used to group closely spaced windows into larger panels so that the movement joints can be spread farther apart. The joints on either side of such a grouping must be sized large enough to accommodate the movement of the larger panel. In the elevation shown in *Fig. 9-28,* the two bed joints immediately above and below the groups of windows are reinforced with two-wire, truss-type joint reinforcement. Oversized movement joints can then be placed at either end of the window groupings. Because the joints are large, an offset or pilaster can be created in the wall at the joint locations to make them less noticeable. Calculating the expected movement in the masonry panels in a situation like this is very important, to be sure the joints are wide enough. An extra ⅛ in. should also be added to the planned joint width to allow for construction tolerances.

Choosing the right color of sealant can also affect the appearance of movement joints. Sealant color may be selected similar to either the units or the mortar color, but should be slightly darker than the unit or mortar whenever possible. Different sealant colors can blend with different bands of unit colors alternating through the height of the facade. Sand can also be rubbed