



# Spacing control joints in concrete masonry

By Clayford T. Grimm  
Consulting Architectural Engineer  
Austin, Texas

The maximum horizontal spacing between vertical control joints in concrete masonry walls is determined by:

- The local average annual relative humidity
- Whether the concrete masonry units are moisture controlled or nonmoisture controlled, as defined by ASTM C 90 (Ref. 1)
- The vertical spacing of bed joint reinforcement
- Exposure to weather

The table shown here recommends spacings for control joints based on these four criteria as presented in *Masonry Structural Design for Buildings* (Ref. 2).

Control joints also should be placed at:

- Changes in wall height or thickness
- At pilasters, recesses, and chases
- At one side of all wall openings
- At wall intersections

Bed joint reinforcement referred to in the table is two #9, cold drawn, steel wires, one in each face shell bed. Bed joint reinforcement may be replaced by bond beams reinforced with two #9 continuous reinforcing rods. The vertical spacing of the bond beams can be four times the vertical

spacing required for joint reinforcement. If used, bond beams should be placed at the top and base of the wall, and below windows.

The map provides approximate average annual relative humidities in the United States, but local weather records will provide better data.

**References**

1. Specification for Hollow Load-bearing Concrete Masonry Units, ASTM C 90, ASTM, 1916 Race Street, Philadelphia, Pennsylvania 19103.
2. Masonry Structural Design for Buildings, Army TM 5-809-3, Department of the Army, Navy, and Air Force, August 1982, pages 3-1 ff. National Technical Information Services, 5285 Port Royal Road, Springfield, Virginia 22161.

MAXIMUM HORIZONTAL SPACING OF VERTICAL CONTROL JOINTS IN CONCRETE MASONRY WALLS (feet)				
Average Annual Relative Humidity	Wall Location	Vertical Spacing of Bed Joint Reinforcement, (Inches)	Type of Concrete Masonry <sup>1</sup>	
			I Moisture Controlled	II Nonmoisture Controlled
Greater than 75%	exterior	none 16 8	12 18 24	6 10 14
	interior	none 16 8	16.5 24 31.6	9 14 19
Between 50% and 75%	exterior	none 16 8	18 24 37.6	12 16 25
	interior	none 16 8	22.5 30 37.6	15 20 25
Less than 50%	exterior	none 16 8	24 30 36	18 22 26
	interior	none 16 8	28.5 36 43.6	21 26 31

<sup>1</sup> As defined in ASTM C 90 (Ref.1).