CONTRACTOR'S ALERT – 2017.8

PLACEMENT OF VERTICAL REINFORCEMENT

Structural masonry depends on reinforcing steel to resist tension imposed on the wall by external forces such as seismic, wind, or other loads. The location of reinforcement is critical since when external forces are applied, part of the wall will be in tension and part of the wall will be in compression. To be sure, reinforcement does much more than simply hold the wall together.

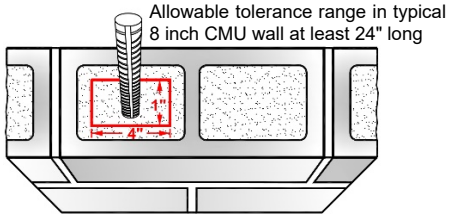
Section 2104 of the 2015 International Building Code and 2016 California Building Code incorporate by reference 2013 TMS 602, *Specification for Masonry Structures*, for construction requirements. Specifically, TMS 602, Article 3.4 contains requirements for placing reinforcement, including:

> **3.4 B.** *Reinforcement*
> 1. Support reinforcement to prevent displacement caused by construction loads or by placement of grout or mortar, beyond allowable tolerances.

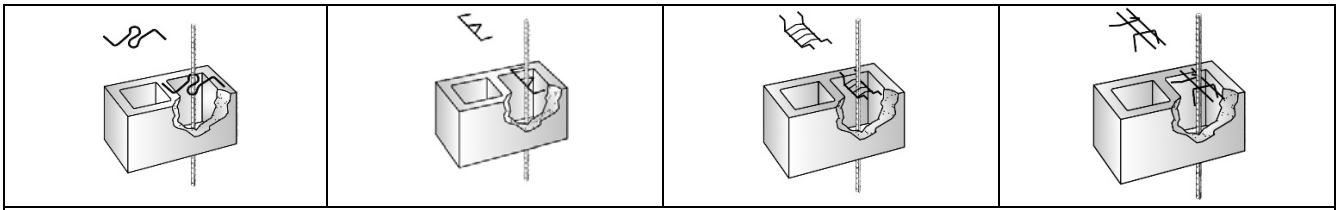
Note: *To be effective, vertical reinforcement must be restrained in at least two places along the reinforcement, typically near the ends, so that the entire length of reinforcement is within the specified tolerance.*

The reinforcement does not need to be tied, or locked, into place, but within tolerance of the position the designer specifies. What are the tolerances? TMS 602, Article 3.4 B.11.a contains requirements for tolerances based on a '*d*' distance, but simply stated, for an 8 inch masonry wall, the vertical reinforcement must be placed within 1/2 inch from the specified location in perpendicular orientation (that is, from face of wall to face of wall). There is an additional provision that vertical reinforcement is to be within 2 inches of the specified location along the length of the wall for walls that are at least 24 inches in length and within 1 inch for walls not more than 24 inches long.

> **3.4 B.** *Reinforcement*
> 11. *Placement tolerances*
> a. Place reinforcing bars in walls and flexural elements within a tolerance of ± ½ in. (12.7 mm) when the distance from the centerline of reinforcing bars to the opposite face of masonry, *d*, is equal to 8 in. (203 mm) or less, ± 1 in. (25.4 mm) for *d* equal to 24 in. (610 mm) or less but greater than 8 in. (203 mm), and ± 1 ¼ in. (31.8 mm) for *d* greater than 24 in. (610 mm).



Historically, codes required bars to be held in place at specific intervals such as 192 or 200 bar diameters, but that is no longer the case. The Code does not direct the contractor on how to maintain the reinforcement within tolerances, but states that it must be done. There are a number of manufacturers producing various types of reinforcement positioners for this purpose. Some typical configurations of reinforcement positioners are shown here:



Typical examples of masonry reinforcement positioners

Note: *The above information is based on Code requirements. Be sure to read the project documents which may be more stringent than Code requirements*

Placement of vertical reinforcement is an easy thing to do as long as you plan ahead and have rebar positioners available if you plan to use them.

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