



INFORMATION SHEET

NO. S-03

DATE : December 18, 2013
CATEGORY : **Structural**
SUBJECT : **Tension Anchors in UMBs**

PURPOSE : The purpose of this Information Sheet is to establish guidelines for reviewing tension anchors in UMBs

REFERENCE : 2013 San Francisco Building Code
Chapter 16C Seismic strengthening provisions for Unreinforced Masonry Bearing Wall Buildings
Section 1705.19 Bolts Installed in Existing Masonry or Concrete
AB-046 Special Inspection and Structural Observation Documentation

DISCUSSION :

PROCEDURE IN REVIEWING UNREINFORCED MASONRY BUILDING PERTAINING TO TENSION ANCHORS:

When reviewing Unreinforced Masonry Building projects covered under Chapter 16C of the San Francisco Building Code, the following guidelines outlined below should be adhered to:

Tension Bolts, as specified in section 4.b. of Table 16C-E of the current San Francisco Building Code, are specified as "extending to the exterior face of the wall". The allowable load for these bolts is listed as 1,200 pounds. It was recommended that inclined tension anchors need to extend within 1 inch of the exterior face of the masonry wall.

Although some epoxies and/or resins available would be able to develop the 1200 pounds of tension in a shorter length, it is imperative that all inclined tension anchors used to satisfy section 4.b. of Table 16C-E of the current San Francisco Building Code are embedded as required, to within 1 inch of the exterior face of the masonry wall. These anchors not only need to transfer this minimum amount of tension, they also act to tie the multiple wythes of an unreinforced masonry wall together into a single unit. Embedments shorter than that specified in the code may lead to

delamination of the outer wythes of an unreinforced masonry wall. This delamination can lead to falling hazards and can also result in overloading the remaining wythes of masonry, resulting in a possible compression failure of the masonry wall.

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12/20/13

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