

All new embedded bolts resisting tension forces or a combination of tension and shear forces shall be subject to periodic special inspection in accordance with the building code, prior to placement of the bolt and grout or adhesive in the drilled hole. Five percent of all bolts resisting tension forces shall be subject to a direct-tension test, and an additional 20 percent shall be tested using a calibrated torque wrench. Testing shall be performed in accordance with UBC Standard 21-7. New through-bolts need not be tested.

SECTION A108 DESIGN STRENGTHS

A108.1 Values.

1. Strength values for existing materials are given in Table A1-D and for new materials in Table A1-E.
2. Capacity reduction factors need not be used.
3. The use of new materials not specified herein shall be based on substantiating research data or engineering judgment, with the approval of the building official.

A108.2 Masonry shear strength. The unreinforced masonry shear strength, v_m , shall be determined for each masonry class from one of the following equations:

1. The unreinforced masonry shear strength, v_m , shall be determined by Equation (A1-4) when the mortar shear strength has been determined by Section A106.3.3.1.

$$v_m = 0.56v_t + \frac{0.75P_D}{A} \quad \text{(Equation A1-4)}$$

The mortar shear strength values, v_t , shall be determined in accordance with Section 106.3.3.5 and shall not exceed 100 pounds per square inch (689.5 kPa) for the determination of v_m .

2. The unreinforced masonry shear, v_m , shall be determined by Equation (A1-5) when tensile-splitting strength has been determined in accordance with Section A106.3.3.2, Item 1 or 2.

$$v_m = 0.8f_{sp} + 0.5 \frac{P_D}{A} \quad \text{(Equation A1-5)}$$

3. When f'_m has been estimated by categorization of the units and mortar in accordance with Section 2105.2.2.1 of the *California Building Code*, the unreinforced masonry shear strength, v_m , shall not exceed 200 pounds per square inch (1380 kPa) or the lesser of the following:

a) $2.5\sqrt{f'_m}$ or

b) 200 psi or

c) $v + 0.75 \frac{P_D}{A}$ (Equation A1-6)

For SI: 1 psi = 6.895 kPa.

where:

v = 62.5 psi (430 kPa) for running bond masonry not grouted solid.

v = 100 psi (690 kPa) for running bond masonry grouted solid.

v = 25 psi (170 kPa) for stack bond grouted solid.

A108.3 Masonry compression. Where any increase in dead plus live compression stress occurs, the compression stress in unreinforced masonry shall not exceed 300 pounds per square inch (2070 kPa).

A108.4 Masonry tension. Unreinforced masonry shall be assumed to have no tensile capacity.

A108.5 Existing tension anchors. The resistance values of the existing anchors shall be the average of the tension tests of existing anchors having the same wall thickness and joist orientation.

A108.6 Foundations. For existing foundations, new total dead loads may be increased over the existing dead load by 25 percent. New total dead load plus live load plus seismic forces may be increased over the existing dead load plus live load by 50 percent. Higher values may be justified only in conjunction with a geotechnical investigation.

SECTION A109 ANALYSIS AND DESIGN PROCEDURE

A109.1 General. The elements of buildings hereby required to be analyzed are specified in Table A1-A.

A109.2 Selection of procedure. Buildings with rigid diaphragms shall be analyzed by the general procedure of Section A110, which is based on the building code. Buildings with flexible diaphragms shall be analyzed by the general procedure or, when applicable, may be analyzed by the special procedure of Section A111.

SECTION A110 GENERAL PROCEDURE

A110.1 Minimum design lateral forces. Buildings shall be analyzed to resist minimum lateral forces assumed to act non-concurrently in the direction of each of the main axes of the structure in accordance with the following:

$$V = \frac{0.75 S_{DS} W}{R} \quad \text{(Equation A1-7)}$$

A110.2 Lateral forces on elements of structures. Parts and portions of a structure not covered in Sections A110.3 shall be analyzed and designed per the current building code, using force levels defined in Section A110.1.

Exceptions:

1. Unreinforced masonry walls for which height-to-thickness ratios do not exceed ratios set forth in Table A1-B need not be analyzed for out-of-plane loading. Unreinforced masonry walls that exceed the allowable h/t ratios of Table A1-B shall be braced according to Section A113.5.
2. Parapets complying with Section A113.6 need not be analyzed for out-of-plane loading.