

Fearless Engineers PLLC



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RE: **Washer Substitution**

September 19, 2005

Dear Steve,

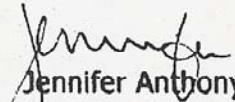
As requested, I have calculated the required spacing based on equivalent area to substitute a 3/16" X 2" X 2" plate washer for a 1/4" X 3" X 3" plate washer, as required by the IRC for construction in seismic design category D. The following is a summary of my findings.

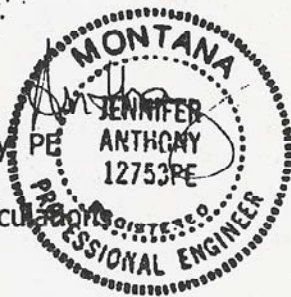
For residential construction two stories or less: use 3/16" X 2" X 2" plate washers on minimum 1/2" diameter anchor bolts @ 2'-8" o.c.

For residential construction greater than two stories: use 3/16" X 2" X 2" plate washers on minimum 1/2" diameter anchor bolts @ 1'-9" o.c.

Please call if you have any questions.

Sincerely,


Jennifer Anthony, PE



Attachment- calculations

IRC SECTION R403.1.6 FOUNDATION ANCHORAGE

SEISMIC DESIGN CATEGORIES D₁ & D₂

ANCHOR BOLTS MAX 6' OC 12" FROM ENDS

SECTION R403.1.6.1 FOUNDATION ANCHORAGE IN SEISMIC DESIGN CATEGORIES C, D₁ & D₂

1. PLATE WASHERS CONFORMING TO SECTION R602.11.1 SHALL BE USED ON EA. BOLT

4. THE MAXIMUM ANCHOR BOLT SPACING SHALL BE 4 FEET FOR BUILDINGS > TWO STORIES IN HEIGHT

SECTION R 602.11.1 FOR ALL BUILDINGS IN SEISMIC DESIGN CATEGORIES D₁ & D₂, PLATE WASHERS, A MINIMUM OF 1/4" X 3" X 3" IN SIZE, SHALL BE PROVIDED BETWEEN THE FOUNDATION SILL PLATE AND THE NUT.

EQUIVALENT SPACING FOR TWO STORIES OR LESS USING 3/16" X 2" X 2" WASHERS

$$\frac{2 \times 2}{3 \times 3} \times 6' \text{ OC} = \underline{2'-8" \text{ O.C.}}$$

EQUIVALENT SPACING FOR GREATER THAN TWO STORIES USING 1/4" X 2" X 2" WASHERS

$$\frac{2 \times 2}{3 \times 3} \times 4' \text{ OC} = \underline{1'-9" \text{ O.C.}}$$

CONVERTING THICKNESS 1/4"/3x3 = ?/2x2 ? = .11 MIN → 3/16" = .1875" OK ✓
REV 9/19/05