City and County of San Francisco
Department of Building Inspection
1660 Mission Street, San Francisco, CA 94103

# Structural Bulletin

## SB 02-08

Subject: **One-sided (Single Shear) Tiedown Anchor**

Date: April 22, 2008
Revised: January 7, 2009

Tiedown anchors (such as KC Metal Anchor Downs, Simpson Strong-Tie HD/HDA Holdowns, United Steel Products TD/TDX Holdowns) are typically used to resist overturning forces at the ends of light, wood framed shear walls, or as tension ties between wood members designed as tension elements.

Where tiedown anchors are used in a one-sided, single shear application to resist overturning forces at the ends of plywood or OSB sheathed shear wall, the eccentricity between the line of action of the holdown's anchor rod and the centerline of the wood member will induce bending stresses in the wood member. Where the holdowns are large (such as Simpson HD10A, HD14A, HD15, HHDQ11, HHDQ14, or HDU11) the project designer shall submit structural calculations showing that the wood member has been designed for combined bending and tensile stresses at its net section. Where tiedowns are used on both sides of the wood member in a double shear application, the eccentricity and resulting bending of the wood member is eliminated. In this case, the wood member should be checked for tensile stresses at its net section.

Where tiedown anchors of any size are used in a one-sided, single shear application where the wood member is not part of a plywood or OSB sheathed shear wall, such as a free standing post or a post located in something other than a shear wall, the wood member will experience combined bending and axial stresses due to the eccentricity between the anchor and wood member as described above. The project designer shall submit structural calculations showing that the wood member has been designed for combined bending and tensile stresses at its net section.

The foregoing is consistent with the conditions and findings of ICC-ES Evaluation Reports for these tiedown anchors. These guidelines do not apply to light-framed shear walls framed with cold formed steel studs.

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