DSA Structural Amendments under review are highlighted in GRAY

Template 23-06

2001 CBC - Chapter 23A
WOOD

Section - 2315A - WOOD SHEAR WALLS AND DIAPHRAGMS

Subsection(s) - 2315A.1

2315A.1 General. * * * Lumber and *plywood* horizontal and vertical diaphragms may be used to resist horizontal forces in horizontal and vertical distributing or resisting elements, provided the deflection in the plane of the diaphragm, as determined by calculations, tests or analogies drawn there from, does not exceed the permissible deflection of attached distributing or resisting elements. See UBC Standard 23-2 for a method of calculating the deflection of a blocked *plywood* diaphragm.

Permissible deflection shall be that deflection up to which the diaphragm and any attached distributing or resisting element will maintain its structural integrity under assumed load conditions, i.e., continue to support assumed loads without danger to occupants of the structure.

Connections and anchorages capable of resisting the design forces shall be provided between the diaphragms and the resisting elements. Openings in diaphragms that materially affect their strength shall be fully detailed on the plans and shall have their edges adequately reinforced to transfer all shearing stresses.

Size and shape of each horizontal diaphragm and shear wall shall be limited as set forth in Table *16A-V*. The height of a shear wall shall be defined as:

1. The maximum clear height from foundation to bottom of diaphragm framing above, or

2. The maximum clear height from top of diaphragm to bottom of diaphragm framing above.

The width of a shear wall shall be defined as the width of sheath-

ing. See Figure 23-II-1, Section (a).

Where shear walls with openings are designed for force transfer around the openings, the limitations of Table *16A-V* shall apply to the overall shear wall including openings and to each wall pier at the side of an opening. The height of a wall pier shall be defined as the clear height of the pier at the side of an opening. The width of a wall pier shall be defined as the sheathed width of the pier at the side of an opening. Design for force transfer shall be based on a rational analysis. Detailing of boundary members around the opening shall be provided in accordance with Section 2315A. See Figure 23-II-1, Section (b).

Size and shape of diaphragms shall be limited as set forth in Table 16A-R. The ratio of height to width of vertical plywood diaphragms used to brace buildings with structural masonry or concrete walls shall not exceed 1.

Diaphragms shall be designed according to principles that have been confirmed by tests. Tes tmethods and test results shall be subject to the approval of the enforcement agency.

In buildings of wood-frame construction where rotation is provided for, the *dimension* of the diaphragm normal to the open side shall not exceed 25 feet (7620 mm) *nor* two thirds the diaphragm *dimension parallel to the open side,* whichever is the smaller *dimension*. Straight sheathing shall not be permitted to resist shears in diaphragms acting in rotation.

EXCEPTIONS: 1. One-story, wood-framed structures with the *dimension* normal to the open side not greater than 25 feet (7620 mm) may have a *dimension* equal to the *dimension parallel to the open side.*

2. Where calculations show that diaphragm deflections can be tolerated, the *dimension* normal to the open end may be increased to a ratio *of the dimensional normal to the open side to the dimension parallel to the open side of* not greater than *1.5:1* for diagonal sheathing or 2:1 for special diagonal sheathed or *plywood* diaphragms.

In masonry or concrete buildings, lumber and *plywood* diaphragms shall not be considered as transmitting lateral forces by rotation.

Diaphragm sheathing nails or other approved sheathing connectors shall be driven so that their head or crown is flush with the surface of the sheathing.