

CHANGE TYPE: Addition

CHANGE SUMMARY: An amendment to the diaphragm anchorage requirements of Section 12.11.2 of ASCE 7 clarifies that the 2.5-to-1 aspect ratio applies to wood, wood structural panel or untopped steel-deck-sheathed subdiaphragms.

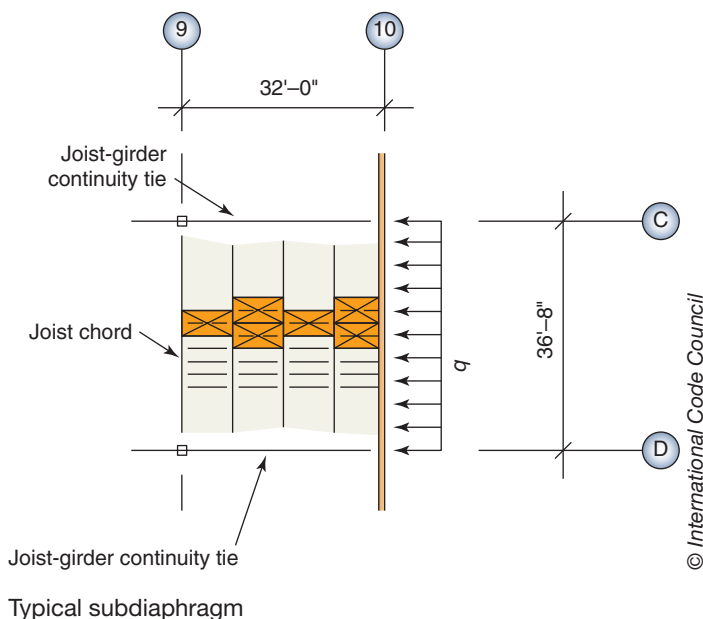
2015 CODE: **1613.5 Amendments to ASCE 7.** The provisions of Section 1613.5 shall be permitted as an amendment to the relevant provisions of ASCE 7.

1613.5.1 Transfer of Anchorage Forces into Diaphragm. Modify ASCE 7 Section 12.11.2.2.1 as follows:

12.11.2.2.1 Transfer of Anchorage Forces into Diaphragm. Diaphragms shall be provided with continuous ties or struts between diaphragm chords to distribute these anchorage forces into the diaphragms. Diaphragm connections shall be positive, mechanical or welded. Added chords are permitted to be used to form subdiaphragms to transmit the anchorage forces to the main continuous cross-ties. The maximum length-to-width ratio of a wood, wood structural panel or untopped steel deck sheathed structural subdiaphragm that serves as part of the continuous tie system shall be 2.5 to 1. Connections and anchorages capable of resisting the prescribed forces shall be provided between the diaphragm and the attached components. Connections shall extend into the diaphragm a sufficient distance to develop the force transferred into the diaphragm.

CHANGE SIGNIFICANCE: When limitations on subdiaphragms were first proposed for the 1997 UBC in the form of a limitation on allowable shear, the reasoning primarily focused on tilt-up buildings with nailed wood structural panel diaphragms after poor performance was observed in the aftermath of the 1971 San Fernando (Sylmar) Earthquake. When

1613.5 continues



1613.5

Amendments to ASCE 7

1613.5 continued approved for the 1997 UBC, the application of the aspect ratio limitation specifically applied only to wood structural subdiaphragms. In the subsequent process of being incorporated into the IBC and ASCE 7, the code text limiting the application only to wood subdiaphragms was apparently discontinued, making the requirement applicable to all subdiaphragms. This new amendment to the diaphragm anchorage requirements of ASCE 7 Section 12.11.2 reintroduces the limitation to wood subdiaphragms because they are the original systems of concern and observed poor performance. The provision includes untopped steel deck diaphragms due to their similarities in construction and perceived structural behavior. This aspect ratio limit is not necessary for good performance of other diaphragm types. With this aspect ratio limit removed for concrete, composite deck, and other diaphragm types, other diaphragm limitations within the referenced material standards govern their design. The language in the code section that differs from ASCE 7 Section 12.11.2 is shown here in italics: “The maximum length-to-width ratio of *a wood, wood structural panel, or untopped steel deck sheathed* structural subdiaphragm *that serves as part of the continuous tie system* shall be 2.5 to 1.”