



STRUCTURAL ENGINEERS ASSOCIATION OF CALIFORNIA SEISMOLOGY AND STRUCTURAL STANDARDS COMMITTEE Position Statement – June 2001

Tilt-up Wall Connection to Footings

In some applications of concrete tilt-up construction, buildings have been designed such that the tilt-up panels are not attached to the spread footing foundations that provide bearing support for the panels themselves. In these buildings, wall panels are vertically supported on foundation pads and shear reinforcing is provided only into the narrow pour-strip of the slab-on-grade.

Engineers and plan checkers who believe a direct connection is not required rely upon an exception in 1997 UBC Section 1915.8, Transfer of Force at Base of Column, Wall or Reinforced Pedestal. Much of Section 1915.8 specifically indicates that direct foundation connection is required for cast-in-place concrete construction. However the Section 1915.8.3.2 exception states:

1915.8.3.2...Exception In tilt-up construction, this connection may be to an adjacent floor slab...

Engineers and plan checkers who advocate requiring a direct connection between the tilt-up wall and the foundation generally rely upon the following UBC Sections addressing general concepts:

1633.2.5 All parts of a structure shall be interconnected and the connections shall be capable of transmitting the seismic force induced by the parts being connected.

1809.3 The connection of superstructure elements to the foundation shall be adequate to transmit to the foundation the forces for which the elements were required to be designed.

1914.2.6 Walls shall be anchored to intersecting elements such as floors or roofs or to columns, pilasters, buttresses, and intersecting walls and footings.

It is in theory possible to provide an exclusive connection to the slab-on-grade based on the specific language of 1997 UBC 1915.8.3.2, provided that a "rational load path" is established to transfer the in-plane and out-of-plane forces through the slab-on-grade and to the supporting soil. However, slab-sliding resistance is difficult to predict, especially where a moisture/vapor retarder such as Visqueen is provided. Also, unreinforced or jointed floor slabs are unlikely to provide a rational load path. For these reasons, as well as the desirability of being able to mobilize the lateral sliding strength of foundations, the SEAOC Seismology Committee strongly recommends that designs in seismically active areas always include either a direct or indirect connection to the foundation footings. An indirect connection might consist of extending rebar from the wall panel to the pour-strip, plus additional rebar to connect the pour-strip to the footings.