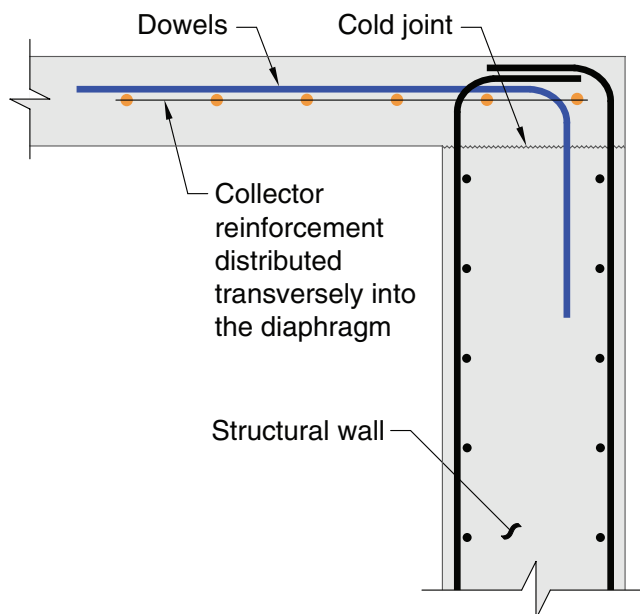


## CODE

- (a) Where shear is transferred through concrete, the shear-friction provisions of 22.9 shall be satisfied.
- (b) Where shear is transferred through mechanical connectors or dowels, effects of uplift and rotation of the vertical element of the lateral-force-resisting system shall be considered.

## COMMENTARY

system. In diaphragms that are entirely cast-in-place, reinforcement provided for other purposes usually is adequate to transfer force from the diaphragm into the collectors through shear-friction. However, additional reinforcement may be required to transfer diaphragm or collector shear into vertical elements of the lateral-force-resisting system through shear-friction. Figure R12.5.3.7 illustrates a common detail of dowels provided for this purpose.



**Fig. R12.5.3.7**—Typical detail showing dowels provided for shear transfer to a structural wall through shear-friction.

### 12.5.4 Collectors

**12.5.4.1** Collectors shall extend from the vertical elements of the lateral-force-resisting system across all or part of the diaphragm depth as required to transfer shear from the diaphragm to the vertical element. It shall be permitted to discontinue a collector along lengths of vertical elements of the lateral-force-resisting system where transfer of design collector forces is not required.

### R12.5.4 Collectors

A collector is a region of a diaphragm that transfers forces between the diaphragm and a vertical element of the lateral-force-resisting system. A collector can extend transversely into the diaphragm to reduce nominal stresses and reinforcement congestion, as shown in Fig. R12.5.3.7. Where a collector width extends into the slab, the collector width on each side of the vertical element should not exceed approximately one-half the contact length between the collector and the vertical element.

**R12.5.4.1** The design procedure in 12.5.1.3(a) models the diaphragm as a full-depth beam with uniform shear flow. If vertical elements of the lateral-force-resisting system do not extend the full depth of the diaphragm, then collectors are required to transfer shear acting along the remaining portions of the diaphragm depth to the vertical element, as shown in Fig. R12.5.4.1. Partial-depth collectors can also be considered, but a complete force path should be designed that is capable of transmitting all forces from the diaphragm to the collector and into the vertical elements (Moeble et al. 2010).