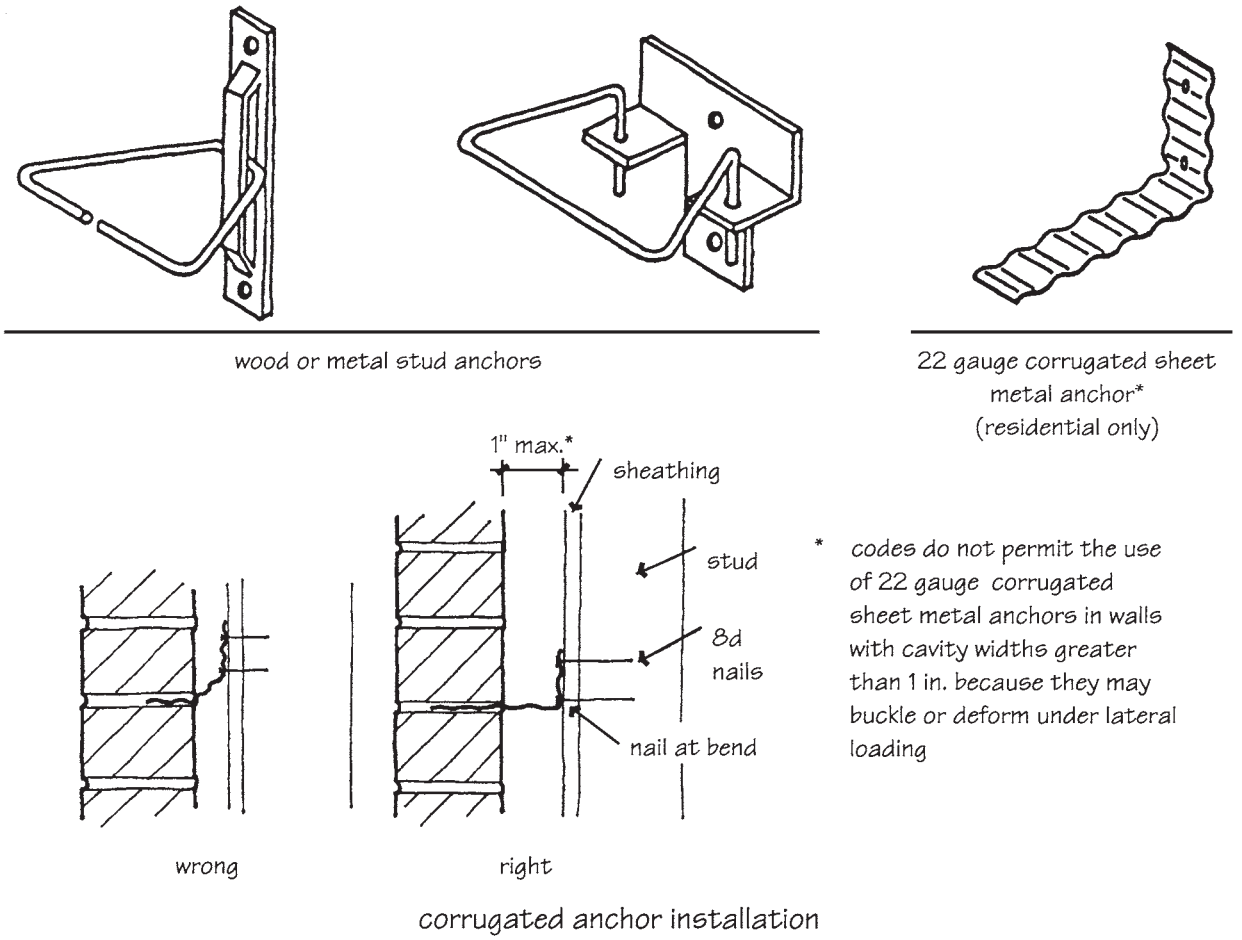

Figure 7-15 Masonry-to-stud veneer anchors.

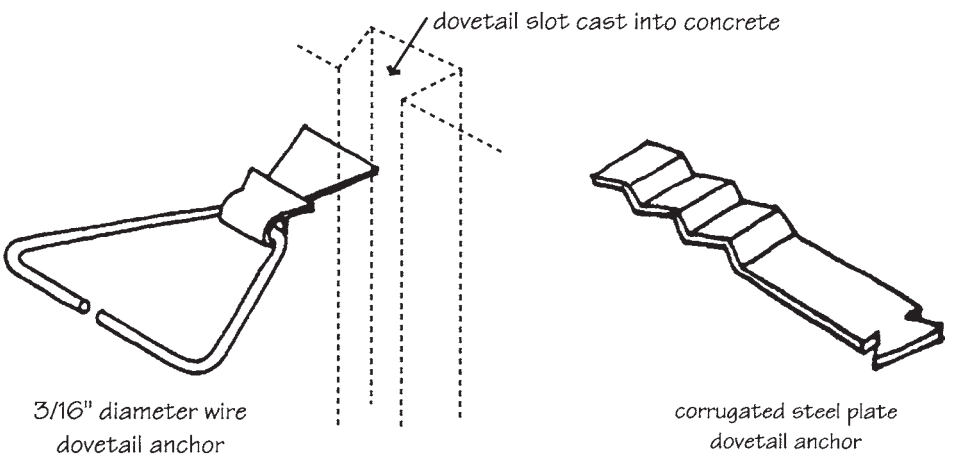

Figure 7-16 Masonry-to-concrete veneer anchors.

Building codes require special anchorage of masonry veneers in seismic areas. *Seismic anchors* typically consist of a single or double continuous reinforcing wire attached to a plate for connection to different types of backing walls (*see Fig. 7-17*).

Several types of proprietary anchors have also been introduced for seismic retrofitting of unreinforced masonry and for reanchoring masonry veneer. Retrofit veneer anchors are designed to

- Provide anchors in areas where they were not installed in the original construction
- Replace failed existing anchors
- Replace failed existing header bond units
- Upgrade older wall systems to current code, including seismic retrofitting of older buildings
- Attach new veneers over existing facades

The three general types are a mechanical expansion system, a screw system, and an epoxy adhesive system (*see Fig. 7-18*). Seismic retrofit anchors are designed to anchor existing masonry walls to existing floor and roof diaphragms for combined action under load. Seismic forces can thus be transferred from walls perpendicular to acceleration to walls parallel to acceleration, which are more capable of dissipating the force.

Figure 7-19 shows some typical anchors used to attach stone slab veneer or thin stone cladding to various structural frames. ASTM C1242, *Standard Guide for Design, Selection, and Installation of Exterior Dimension Stone Anchors and Anchoring Systems,* provides recommended guidelines for these complex anchoring systems. The standard defines several different generic types of anchors and discusses the design principles which must be considered in resisting both lateral and gravity loads. An appendix also provides information on safety factors. Stone anchors are almost exclusively made of stainless steel (ASTM A167, Type 304) to minimize corrosion and staining. Anchors for unit masonry are typically of galvanized steel or stainless steel (*see Fig. 7-4*).

Anchor bolts are used in masonry construction to connect sill plates and other elements for structural load transfer. Codes generally recognize plate,

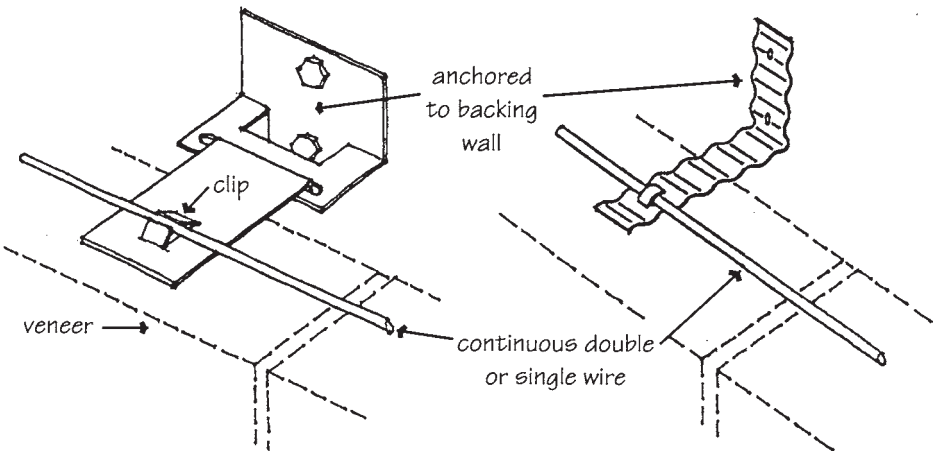

Figure 7-17 Seismic veneer anchors.