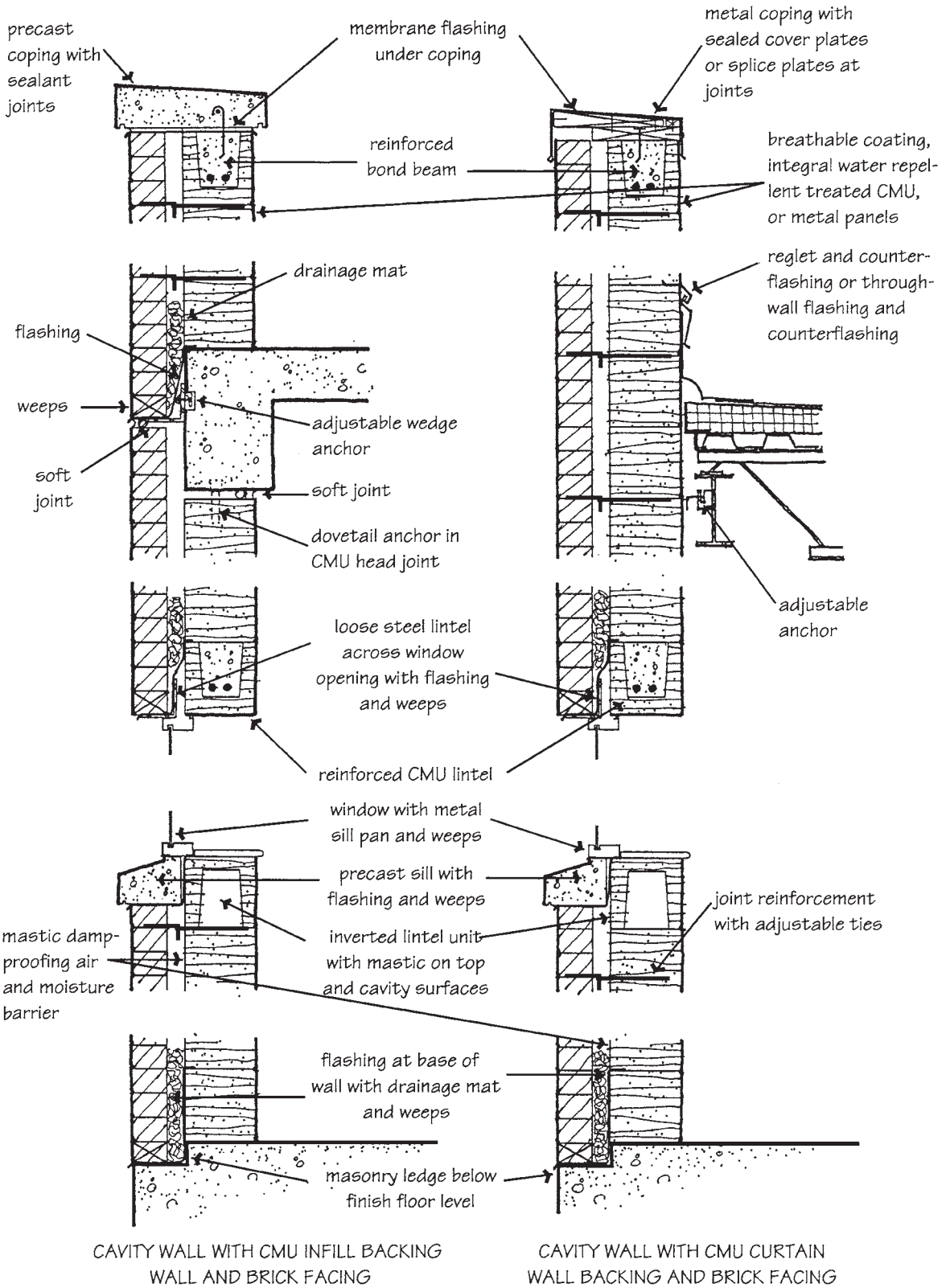

Figure 10-37 Basic cavity wall detailing.

mum face dimension, and 5 sq ft in area. The bond of an adhered veneer to the supporting element must be designed to withstand a shearing stress of 50 psi. Differential thermal and moisture movement characteristics should be considered in selecting backing and facing materials. An expanding clay masonry facing and a contracting concrete backup are not compatible when relying exclusively on an adhesive bond.

For fully adhered applications, a paste of portland cement and water is brushed on the moistened surfaces of the backing and the veneer unit. Type S mortar is then applied to the backing and to the unit, resulting in a mortar thickness of not less than $^1/_2$ in. or more than 1¼ in. If the surfaces are clean and properly moistened, the neat cement paste provides good bond to both surfaces, but a mechanical key formed by ribs or flanges on the back of the masonry helps support heavier units. Adhesion attachment is not common on wood or metal stud framing, but can be accomplished by first applying a scratch coat of cement plaster on metal lath over the studs.

Code requirements do not limit the length or height of adhered veneer except as necessary to control expansion and contraction. Any movement joints that occur in the backing or the frame must be carried through the bedding mortar and the veneer as well.

10.6.2 Anchored Veneer

Codes regulate the design of anchored veneers by prescriptive requirements based on empirical data. The veneer chapter of the MSJC Code limits use of the prescriptive design to walls subject to design wind pressures of 25 psf or less. Higher wind pressures require analytical design. Noncombustible, noncorrosive lintels of masonry, concrete, stone, or steel must be provided over openings, with deflections limited to $L/600$ of the span. Although codes require only a 1-in. clear cavity between the veneer and backing, the minimum recommended width of the open cavity between wythes of a cavity wall or between a veneer and its backing wall is 2 in. A narrower cavity is difficult for a mason to keep clear of mortar protrusions during construction (refer to Chapter 15). A 2-in. cavity width requires the use of wire anchors rather than the light-gauge corrugated sheet metal anchors typically used for residential construction. Corrugated anchors are not strong enough to span a cavity wider than 1 in. When rigid board insulation is to be installed in the cavity, the clear distance between the face of the insulation and the back of the facing wythe should also be 2 in. Codes limit the maximum distance between backing and facing to $4^1/_2$ in. This limitation is based on the stiffness and load transfer capability of wire ties and anchors. With a 2-in. open cavity, this would permit a maximum insulation thickness of $2^1/_2$ in.

Empirical requirements limit the height permitted for anchored veneer. The MSJC Code has prescriptive requirements for every aspect of veneer design and construction (*see Fig. 10-38*), as well as special requirements for seismic areas (*see Fig. 10-39*).

The Brick Industry Association recommends, and some municipal building codes permit, anchored masonry veneer over concrete or masonry backing walls to be designed without shelf angles for heights of 100 ft. or more. Flexible anchorage to the backing walls permits differential movement and transfers wind loads to the structure throughout the height of the building. Proper detailing at parapets and other building elements is required to allow differential movement between the veneer and frame.