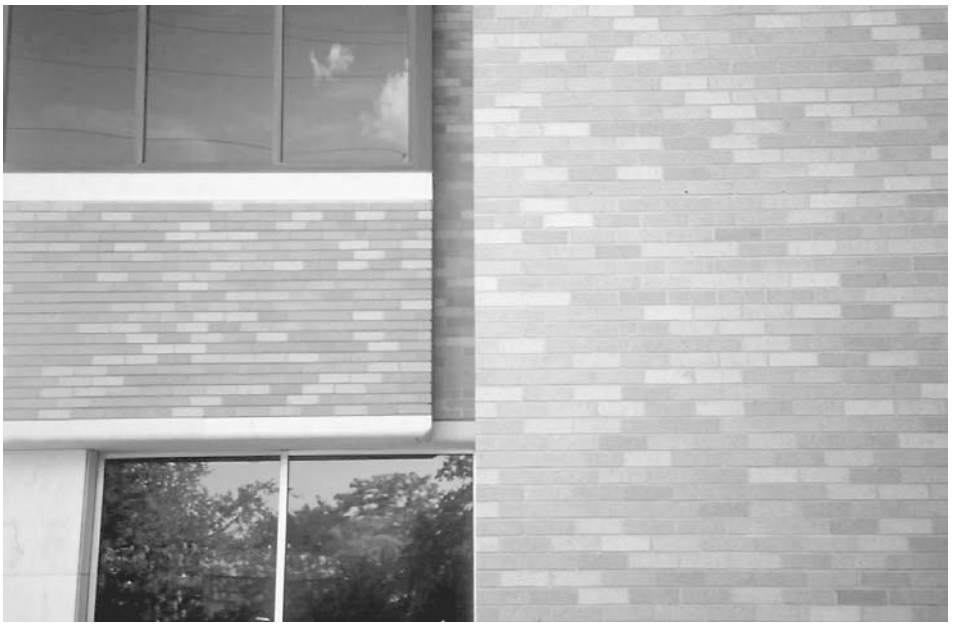

Figure 15-22 Raked horizontal joints in the wall panel on the left give the masonry a darker appearance than the concave tooled joints in the wall panel on the right.

ments may be used in mild to moderate exposures (refer to Chapter 9) *if* the workmanship is good, the bond between units and mortar is complete and intimate, and the flashing and weep-hole system is properly designed and installed.

Horizontal joints should be tooled before vertical joints, using a jointer that is at least 22 in. long and upturned on one end to prevent gouging. Jointers for vertical tooling are small and S-shaped. Although the material most commonly used for these tools is steel, plastic jointers are used to avoid darkening or staining white or light-colored mortars. After the joints have been tooled, mortar burrs or ridges should be trimmed off flush with the face of the unit with a trowel edge, or by rubbing with a burlap bag, a brush, or a piece of carpet.

It is important that the moisture content of the mortar be consistent at the time of tooling, or color variations may create a blotchy appearance in the wall (*see Fig. 15-25*). Drier mortar tools darker than that with a higher moisture content. Along with time and weather conditions, unit suction affects the rate at which the mortar loses its mixing water. Units that have not been protected from accidental wetting at the construction site will have inconsistent suction, as those at the top and sides of pallets absorb rain or melting snow. When placed in the wall, units with varying suction will cause inconsistent mortar drying rates and inconsistent color in the finished joints. Keeping the units covered will help prevent variations in the color of the tooled mortar joints.

Even with high-quality workmanship, some patching or repair of mortar joints may be expected. In addition, any holes left by nails or line pins must be filled with fresh mortar before tooling. The troweling of mortar into joints after the units are laid is known as *pointing*. It is preferable that pointing and patching be done while the mortar is still fresh and plastic, and

Figure 15-23 Concave tooling when the mortar is "thumbprint hard" should produce joints of uniform color and appearance that are well compacted at the bond line to maximize resistance to water penetration. (*Photos courtesy BIA.*)

before final tooling of the joints is performed. If, however, the repairs must be made after the mortar has hardened, the joint must be raked or chiseled out to a depth of about $^1/_2$ in., thoroughly wetted, and repointed with fresh mortar.

15.3.2 Flashing and Weep Holes

Flashing must be installed in continuous runs, with all seams and joints lapped 4 to 6 in. and sealed. Metal flashing laps sealed with a non-hardening butyl tape or caulk can accommodate thermal expansion and contraction while preventing lateral moisture flow. Unsealed lap joints will allow water to flow around the end of the flashing and penetrate the wall (*see Fig. 15-26*). Inside and outside corners can be fabricated of metal, or preformed rubber corner boots can be used, even with metal flashing systems (*see Fig. 15-27*). At lateral terminations where the flashing abuts other construction elements, and at terminations on each side of door and window lintels and window sills, flashing must be turned up to form an end dam. Metal flashing can be cut, folded, and soldered or sealed with mastic to form a watertight pan, and flexible flashing can be folded into place. Without end dams, water that collects on the flashing is free to run off the ends and into the wall, or into adjacent door jambs, windows, curtain walls, or other cladding systems (*see Fig. 15-28*).

Flashing should never be stopped short of the face of the wall, or water may flow around the front edge, under the flashing, and back into the wall (*see Fig. 15-29*). Metal flashing should be brought out beyond the wall face and turned down to form a drip. A hemmed edge will give the best appearance. Flexible flashing cannot be formed in the same way, but should be extended beyond the face of the wall and later trimmed flush with the joint (*see Fig. 15-30*). Some designs may call for flexible membrane flashing such as EPDM or rubberized asphalt to be lapped and sealed over the top of a separate metal drip edge (*see Fig. 15-31*). Two-piece flashing can also be used, even with all-metal flashing systems, to accommodate construction tolerances in the necessary length of the horizontal leg. The vertical leg of the flashing should be turned up 8 in. to form a back dam and be placed in a mortar joint in the backing wythe, in a reglet on concrete walls, or behind the felt or building wrap on stud walls (*see Fig. 15-32*).