

project because they are typically fired in a different run. The variations are usually minor but can be particularly noticeable at building corners and other vertical elements, where lighter and darker colors create a “zipper” look. Horizontal courses of special units blend into a wall better or, at worst, create a banding effect. Job-cut shapes must often be made for corners or other locations where a full brick length may not fit. These job-cut units are called half or bat, three-quarter closure, quarter closure, queen closure, king closure, and split.

The most unusual examples of customized masonry are sculptured pieces handcrafted from the green clayware before firing. The unburned units are firm enough to allow the artist to work freely without damage to the brick body, but sufficiently soft for carving, scraping, and cutting. After execution of the design, the units are returned to the plant for firing and the relief is permanently set in the brick face (see *Fig. 3-9*).

### 3.1.2 Hollow Brick

One of the traditional distinctions made between different clay masonry products is based on the definition of brick as “solid” (core area of less than 25%) and clay tile as “hollow” (more than 25% cored area). However, during the 1970s, new standards were developed for “hollow brick” with a greater core area than that previously permitted for brick, but less than that allowed for tile.



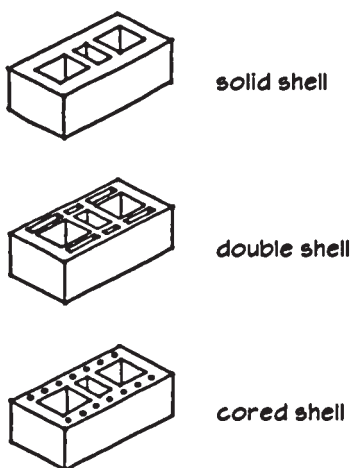
**Figure 3-9** Sculptured brick is carved by the artist before the brick is fired.  
(*Photo courtesy BIA.*)

The trend toward larger unit sizes led to production of jumbo brick in  $8 \times 4 \times 12$ -in. dimensions as early as the 1920s. In the southeastern United States, this prompted experimentation with greater coring as an effective means of reducing the weight and production costs of such large units. Originally made and marketed under a number of different proprietary names and specifications, these hollow bricks are now classified in ASTM C652, *Standard Specification for Hollow Brick* (see Fig. 3-10). Sometimes referred to as through-the-wall units, hollow bricks may be laid with opposite faces exposed. They offer considerable economy in speed and construction of masonry walls while maintaining the aesthetic appeal of conventional multi-wythe systems.

ASTM C652 covers hollow brick with core areas between 25 and 40% (Class H40V) and between 40 and 60% (Class H60V) of the gross cross-sectional area in the bearing plane. The two grades listed correspond to the same measure of durability as that used for building brick and face brick: Grade SW (severe weathering) and Grade MW (moderate weathering). Types HBX (Select), HBS (Standard), and HBA (Architectural) are identical to face brick Types FBX, FBS, and FBA. Another type, HBB, is for general use in walls and partitions where color and texture are not a consideration and greater variation in size is permissible (as for building brick or common brick). Hollow brick is used for both interior and exterior construction in much the same way as solid brick. Sizes range from  $4 \times 2\frac{1}{4} \times 12$  in. to  $8 \times 4 \times 16$  in.

### 3.1.3 Special-Purpose Bricks

Special-purpose bricks serve many functions in architecture and industry. Refractory bricks or *fire bricks*, for instance, are used in furnaces, chimney stacks, fireboxes, and ovens. The fire clay from which they are made has a much higher fusing point than that of ordinary clay or shale. Once the initial kiln firing has been accomplished, fire bricks are extremely resistant to high temperatures without cracking, decomposition, or distortion. Fire bricks are normally heavier and softer than other units and are produced in a slightly



- Class H40V—Hollow brick with voids 25 to 40%
- Class H60V—Hollow brick with voids 40 to 60%

Class H60V Hollow Brick Minimum Thickness of Face Shells and Webs (in.)			
Nominal Width of Units	Face Shell Thickness		End Shells or End Webs
	Solid	Cored or Double Shell	
3 and 4	3/4	—	3/4
6	1	1-1/2	1
8	1-1/4	1-1/2	1
10	1-3/8	1-5/8	1-1/8
12	1-1/2	2	1-1/8

**Figure 3-10** ASTM C652 hollow brick coring and shell variations. (Copyright ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428. Reprinted with permission.)