

# SESSION VII, Papers 1–6a

## VII–1. The Economics of Packaged Brick: A Manufacturer's Marketing Tool

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### ABSTRACT

*Each manufacturer has his own set of conditions that has or should govern which is the most suitable method to package his particular product. With this thought in mind, the contents in this paper will focus on important facts such as cost, package designs, production requirements, packaging methods, shipping and handling which a brick manufacturer should research before adopting a packaging program.*

*In addition, the paper will define various jobsite conditions and material handling requirements which could determine to what extent and by what method their product should be packaged.*

In the everyday concerns of operating a business, manufacturers sometimes forget how important each customer is. Just as brick can't be made without clay, sales aren't made—and companies don't grow and prosper—without customers.

An old marketing maxim sums up this idea: "If the cash register doesn't ring, the factory whistle won't blow."

Quite simply, this means that a brick manufacturer must constantly be aware of what the customer wants in terms of brick quality, packaging, price and service. The customer is unconcerned about what is easiest or most convenient for the manufacturer to supply. In the area of brick packaging, for instance, the customer will buy from the manufacturer who sells brick packaged for the *customer's convenience*, not for the manufacturer's convenience.

The successful manufacturer recognizes this and is familiar with how the *customer does business*. This assists the manufacturer in helping the customer save money, do business more efficiently and better than before. This is how the best businessmen get and keep, the customer business that is so vitally important to the strength of their own companies.

Why familiarize yourself with a customer's business? Just look around. The construction marketplace is becoming more competitive and cost-conscious. Homeowners, architects and builders are looking at each brick manufacturer's price and quality compared to other brick manufacturers. But more significantly, they are looking at brick compared to other building materials like glass, steel and concrete. Although brick has long enjoyed homeowner preference in many countries of the world, manufacturer's competition is not the brick manufacturer down the road, but the manufacturer of other building materials.

### SELL THE WALL

Familiarity with the mason contractor's business begins and ends with the bottom line—his profits and expenses on the jobsite. And the key to the bottom line is how much it costs him to build the wall. After all, the bid a contractor submits for a job is what he estimates it will cost him to put up the wall.

The "in-wall" cost is made up of raw materials, plus labor, materials handling and jobsite equipment. The brick itself accounts for just one-third of the total cost of the wall.

As a brick manufacturer, it isn't enough to sell brick—in order to compete successfully in today's construction market, the manufacturer must *sell the wall*.

What can the brick manufacturer offer the mason contractor? Where, and how can the manufacturer help him save money?

One way is to discount brick, selling it for 50¢ less than another brick plant. But in the long run, this is a self-defeating move, and one that won't significantly help the contractor.

Although a brick manufacturer can't influence wages, it can help a contractor cut *labor costs* by reducing the number of workers needed on a job.

Labor costs may account for 50 percent of the cost of a brick wall—one-third of which is directly related to material handling. Cost-efficient material handling by a mason contractor can be influenced by how effectively the brick is packaged, and brick packaging is something the manufacturer can control. The manufacturer who packages brick so as to enable contractors to save labor and money has a powerful marketing tool at his disposal.

To see how jobsite material handling can be improved, examine what happens to brick once it is delivered to the contractor.

### THE JOBSITE: BRICK TO WALL

In reviewing what happens to brick at the jobsite, the manufacturer must think in terms of contractor material handling problems and opportunities for the manufacturer to solve these problems (see Figure 1).

Brick arrives at the site and is unloaded. If it is loose, it must be restacked by hand; if broken or chipped, it must be sorted. The arrival condition of the brick, and whether or not it is packaged also influences the speed and ease with which it can be unloaded.

There is an opportunity for the brick manufacturer to package brick in such a way as to increase the speed of unloading, and eliminate the need for restacking. Good packaging can also provide protection to reduce brick damage.

Then, brick is distributed by laborers to the masons building the wall. How the brick is distributed profoundly affects jobsite material handling cost-efficiency. Loose brick must be placed in wheelbarrows and taken to the masons, unloaded and stacked for convenient access.

Sometimes brick is packaged in such a way that it must be broken down and transported to the mason just as loose brick is. How long does this take? How many bricks can one laborer move per trip?

There is an opportunity here for the manufacturer to improve the efficiency of handling by packaging in such a way that enables laborers to move more brick in a shorter period of time.

Clearly, the key to solving the mason contractor's problems is to improve brick handling on the jobsite. The way to improve materials handling is to package brick for mechanical handling.

### THE IDEAL PACKAGE

The Mason Contractors' Association of America (MCAA) surveyed its members over a decade ago to solicit comments on requirements for the ideal brick package. The responses show that even at that time, masons recognized the importance of efficient materials handling on jobsites.

This is what the masons said:

1. The unit must be maneuverable and so constructed that standard fork and crane lifting equipment can transport the package on the jobsite.
2. The unit must be compatible with 32 in. × 24 in. (813 × 610 mm) dimension—not necessarily exactly those dimensions, but at least within those dimensions.
3. The unit must not be constructed in any way to allow or encourage concealed damage within the unit, such as internal chippage.
4. It must be of size to be handled by one man under normal working conditions; that is, transportable by hand buggy or similar device.
5. It may or may not be palletized.
6. It must be stable when placed on a scaffold.
7. It must fit through most doorways on a construction job.
8. The package or the combination thereof, should contain sufficient number of brick to satisfy the working stage of one brick mason. (The average working stage is equal to approximately 40 sq. ft., or 3.72 sq. meters.)

One type of brick package developed in response to these requirements is known as the "Breakaway Package." Because it meets MCAA requirements, it has become the standard technique for packaging brick in the United States. Over 9 billion eight-inch brick equivalents were packaged in this manner last year (see Figure 2).

The breakaway package consists of 525 standard U.S. size brick which can be separated into five individual packs each containing 105 brick. Each individual pack is held with a ½-in. steel strap, and the five packs are held into a cube by four common strips of corner protection. Manufacturers have also found that the cube is unitized more tightly and securely if a sixth cross strap or "belly band" is applied.

Cube dimensions are 24 in. × 36 in. × 40 in. (610 mm × 914 mm × 1016 mm), and it breaks into packs measuring 24 in. × 36 in. × 8 in. The dimensions of the cube

and of the individual packs conform to masons' requirements of size and working stage.

The cube is made with two voids in the third course for convenient handling by lifting equipment. Individual 105-brick packages can be handled quickly and easily on the jobsite with fork lifting equipment or manual hand carts. An entire 105-brick pack, still strapped, can be "broken away" and delivered as is to the mason. In contrast, loose brick and some packaged brick—such as randomly stacked cubes covered with shrink film—have to be manually unstacked, loaded into a wheelbarrow and then restacked at the mason's side.

Breakaway packages are typically vibrated and compressed to presettle them just prior to strapping. This produces a tight, neat package that minimizes chipping and breaking.

### THE DOLLAR-AND-SENSE DIFFERENCE

To get an idea of the difference between loose and properly packaged brick on the jobsite in terms of the contractor's actual costs, follow a loose brick and a packaged brick from delivery into the wall. Begin with delivery of the brick to the construction site.

Assume the brick is distributed immediately to the masons by laborers. To compare the cost of handling loose versus packaged brick, compute the *cycle time*, that is, the time it takes a laborer to bring brick to the mason, drop it off and return for more brick.

The cycle time is always an average, and includes allowances for fatigue and unavoidable delays. Fifteen percent is typically added to the stopwatch time.

In a study conducted by North Carolina State University, researchers found that a laborer could stack 73 loose bricks in a wheelbarrow, take it to a mason, unload and restack the brick and return in 6.46 min. In the course of a standard eight-hour day, 74 cycles can be completed to move a total of 5,402 brick.

To determine the cost of handling per 1,000 (M) brick, divide daily labor and equipment costs for the laborer by the number of brick moved. Assuming a laborer earns \$10.00 an hour, the calculation is:

$$\frac{\$80 \text{ (wages)}}{5,402 \text{ (brick)}} \times 1,000 = \$14.80$$

Thus, this is the cost-per-1,000 brick of handling on the jobsite.

Compare this \$14.80 jobsite handling cost with that for handling properly packaged brick.

When a breakaway package is used, it is practical to use a hand buggy to transport brick to the mason. The North Carolina State researchers discovered that a laborer could transport 105 brick by hand buggy—a 137 percent increase over wheelbarrow capacity. And, it was found that the laborer could complete a cycle in just 1.24 minutes—roughly one-fifth the time!

In an eight-hour day, the laborer transports 38,700 brick to the masons, making the cost per 1,000 brick \$2.06.

Thus, material handling costs for packaged brick are less than one-seventh that of loose brick (see Figure 3).



What does properly-packaged brick versus loose brick mean to a mason contractor?

- 137 percent more brick can be handled;
- It can be handled in one-fifth the time;
- One laborer can handle seven times more brick in a day; and
- The cost to handle brick is one-seventh as much for the contractor.

To the contractor, demonstrable savings in actual jobsite handling and costs translate into lower, more competitive bids and increased profits. The advantages of properly-packaged brick as a marketing tool for the manufacturer should not be overlooked.

### MANUFACTURER BENEFITS

Packaged brick offers the manufacturer measureable benefits, as well. The most significant of these are savings in materials handling at the manufacturing plant and increased saleability to brick distributors.

A packaged cube of brick, such as one packaged in a breakaway cube, can be handled by lift truck at the manufacturing plant. This improves the speed and efficiency of materials handling, shifting labor away from profitable handling and rehandling.

A breakaway cube is strapped tightly enough to enable the manufacturer to stack it four or five packages high in the yard, improving use of existing space. The straps hold the cube securely, reducing the chance for brick to chip or be damaged in handling.

Tightly unitized cubes of brick make keeping accurate inventory records easy for the manufacturer. And, breakaway packages can be broken down into smaller units to complete part or small orders.

What about cost? To strap breakaway cubes costs about \$2.30/M (two 525-brick cubes). It costs more per thousand brick to package cubes with shrink film, another dominant packaging method in the industry worldwide.

That properly-packaged brick is more saleable to brick transporters and distributors can be demonstrated by the savings they pass on to their mason contractor customers.

A typical example follows. A brick manufacturer sells brick for \$100/M (U.S. dollars) to a distributor. The same price is charged for loose and packaged brick. The distributor contracts a hauler who charges \$15.70/M to haul loose brick for the first three miles, and \$1.10/M for the next three miles.

The same hauler charges just \$10.75/M per mile to haul packaged brick three miles and 75¢/M for the next three miles—a saving of 46 percent.

Thus, the mason contractor's purchase price for packaged brick hauled six miles is \$111.50/M versus \$116.80/M for loose brick. It is reasonable to assume that the contractor will continue to buy from the distributor that offers packaged brick at this five percent price differential. And the contractor's demand for packaged brick will contribute to increased sales for the manufacturer who packages brick to contractor specifications.

Clearly, properly packaged brick is of benefit to both the brick manufacturer and the mason contractor. But are there any brick manufacturers who should not consider packaging brick?

### MANUFACTURER GUIDELINES

Figures on the economics of packaging brick presuppose some degree of production control and efficiency at the manufacturing level. The major benefits of packaging brick simply cannot be realized by a manufacturer who has antiquated stacking material handling and production techniques.

Conversely, the same is true of a manufacturer with highly advanced or mechanized material handling equipment who is unable to control product quality, for instance. If one percent or more of a manufacturer's production is broken or cracked, the labor and time to remove damaged brick from a mechanically-stacked cube will exceed any potential saving. A manufacturer who experiences one percent or more damaged brick from the kiln, should invest in improving the plant's mill room and dryer before even considering the purchase of additional stacking or packaging equipment.

Many manufacturers use simple mechanical jigs for building breakaway cubes. Monorail stacking systems are also used successfully. Selection of the proper equipment depends on considerations such as the manufacturer's size, volume and available labor.

### IF THE CASH REGISTER DOESN'T RING . . .

In summary, today's successful brick manufacturer must recognize the changing nature of the construction business and adapt his business to accommodate it.

Significant changes include the emergence of alternate building materials to compete with brick, and increasing cost-consciousness on the part of contractors, architects and homeowners alike.

One way to respond to these new competitive pressures is to adopt a customer-oriented marketing approach that recognizes that "If the cash register doesn't ring, the factory whistle won't blow." A major area in which the manufacturer can assist the customer—and in turn enhance his own business—is in brick packaging *for the customer's convenience*.

A quick analysis of mason contractor jobsite costs reveals that the forward-thinking manufacturer can make a significant contribution. To take advantage of this opportunity, the manufacturer must first implement the packaging procedures described here and then market this cost advantage to contractor customers.

### EVERY PACKAGING NEED UNIQUE

The information in this article is intended to be a general overview of brick packaging and the economics of construction jobsite handling. Signode Corporation has made every effort to cover the state-of-the-art as it applies to the materials and techniques used in brick packaging and handling. However, the needs of a brick manufacturer or

mason contractor may vary from the applications described here. Signode suggests that manufacturers investigating brick packaging consult a reputable supplier familiar with

all types of packaging techniques and application equipment, and thus able to evaluate customer needs from start to finish.

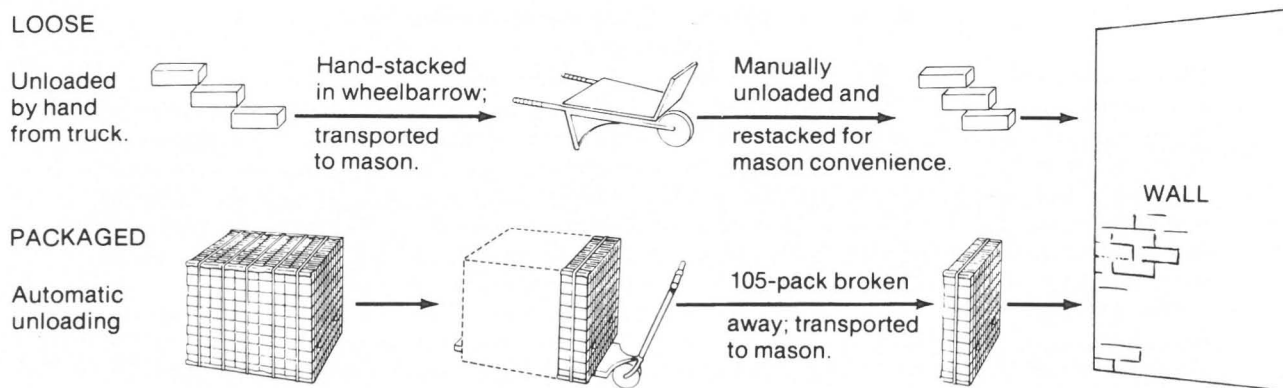


Figure 1.

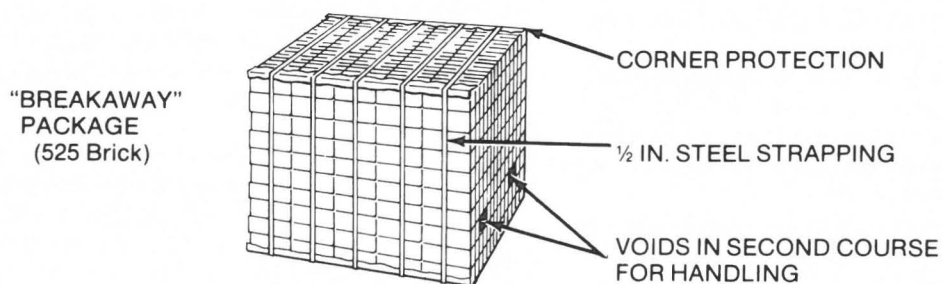


Figure 2.

#### MATERIALS HANDLING COSTS

	Loose	Packaged	%Difference (Loose-Packaged)
No. per cycle	73	105	137%
Cycle time	6.46 min.	1.25 min.	19%
Cost/M	\$14.80	\$2.06	14%

Figure 3.