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The Economic Feasibility of
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Using the Tenn-Tom and Other Inland Waterways

Mississippi possesses a wide range of clays suitable for brick manufacture, a resource matched by few other states. Not only do the Mississippi clays make bricks of high quality, but also the bricks range in color from black through gray to white and red. The quality of the bricks enable them to meet building codes everywhere while the color range lends appeal to virtually all potential buyers. Consequently, Mississippi's bricks are marketed throughout much of the United States ranging from the East Coast to the West Coast, the deep South and the northern tier of states in the Mid-West o Among the southern states, Florida currently imports a modest quantity of Mississippi brick but has considerable potential for market expansiono

Because some of Mississippi's best brick clays are in the eastern part of the state, the opening of the Tennessee-Tombigbee waterway has aroused interest in the possibility of using this new traffic artery to reduce transport costs to distant markets and perhaps enhance exports of brick from the state. One of the two largest brick firms in Mississippi is located near the city of Macon, not far from the river system in the east central part of the state. This firm already has established markets for brick that embrace much of the United States including both the East and West Coasts. Sales of their brick to Florida are considerable. To date neither the foregoing firm nor any other Mississippi brick manufacturer has shipped bricks by barge on the inland waterway system; they use instead trucks as the means of haulage to most markets within a radius of 400-500 miles. Railroads are rarely used for nearby markets but are of more importance in the longer hauls. While rail rates per ton mile typically are lower than truck rates, trucks have the advantage of delivery to the construction site or brickyard, thus lowering handling costs at the destination point.

Barge transport rates for brick to markets that can be reached by the inland water system are lower than rail and truck. However, water transport has other problems that partially or totally offset the ton-mile rate advantages of barges. The most formidable obstacle to barge use is the volume of bricks required to optimize ton-mile costs. Where trucks haul 35-40 tons, rail cars carry about 75 tons of bricks with the latter's ton-mile rates being correspondingly less. A barge, however, will carry 1,000-1,400 tons with lower ton-mile rates than truck or rail, the difference depending on such a factor as distance of haul. Barges, with their great volume, require delivery to brickyards or other storage points as the volume delivered far exceeds the demand at most construction sites. This creates the problem of off-loading of the barge for transshipment.. Subsequently, the bricks have to be reloaded on trucks for shipment to the point of use.

There would be considerable storage cost for brick since the inventory could be expected to last for a number of months. In addition to the inventory costs in the yard, barge traffic moves slower. For example, barges require two to three weeks to travel from the Tennessee-Tombigbee near Corinth up the inland waterway to Chicago. Trucks would complete the trip in a day or two and rail shipments would involve some six to nine days. The time involved in barge transit has some impact on inventory costs. While all forms of transport can be adversely affected by weather, inland water traffic is especially vulnerable in the northern reaches of the system when all traffic may cease for months during the winter. Demand can, of course, be met then from inventory, but again this means carrying costs are involved.

A comparison of delivered cost of bricks produced at a hypothetical brick plant located on the Tennessee-Tombigbee Waterway north of Columbus, Mississippi, and shipped to Tampa, Florida, will form the basis of the cost analysis that follows. The Tampa-St. Petersburg market is an existing market for Mississippi bricks

with considerable potential for expansion if costs can be lowered. It can be easily reached by barge, rail and truck.

Florida is experiencing considerable population growth in the Tampa-St o Petersburg region and the areas lying east of these cities. Cement brick and cement block houses are popular in Florida, but there is a sizeable and growing demand for brick buildings o As a deficit producer of bricks, Florida relies heavily on out-of-state supplies. Major outside sources of bricks include Alabama, Georgia, and the Carolinas. Mississippi's share of the market is small and has been limited mainly by product price. All bricks must compete with cement bricks and blocks selling for $140/1000 or less. Carolina bricks sell for $160-$180/1000, while at the upper range Mississippi bricks are priced around $215/1000. Carolina, Alabama, and Georgia bricks are of good quality but lack the color variety of Mississippi bricks. Despite the appeal of a range of colors Mississippi prices need to be reduced if they are to be competitive. Mississippi bricks can always expect to bring a premium but reduction in price of $15-$20/1000 would be needed to significantly stimulate demando

If prices of Mississippi brick are to be lowered, the adjustment will have to be in marketing rather than production costs. Transport alone represents about one-third of the total price of Mississippi brick in Florida. In general, trucks charge about $75/1000 bricks and railroads about $50/1000 bricks. Truck tariffs, while higher than rail, typically reflect transport to the construction sites, whereas railroad shipments normally require transshipment from the point of unloading to the construction site, thus adding to destination handling costs. The additional handling charges incurred depend on distance to the site.

Because railroad cars carry 75 tons, or double the volume of trucks, offloading and temporary storage in brickyards can pose more of a cost problem for rail consignments than for truck shipments. While costs may remain marginally lower by rail, the time factor is overwhelmingly to the trucks advantage₀ Since most bricks shipped

to Florida from Mississippi travel by trucks, Florida dealers must
feel that any cost advantage of rail transport is offset by the
problem and cost of storage and rehandling of the bricks, plus the
convenience of timely on-site delivery possible with trucks.

Barge shipments of bricks using the Tennessee-Tombigbee
Waterway represent an unused transportation mode to date. The
obstacles to water transport are apparent and considerable, although
actual transport would be quite inexpensive. Problems abound at
the outset beginning with handling equipment needed to load and
unload» The enormous quantity of bricks carried by barge represents
another formidable problem. Market prices would have to be sub-
stantially lowered if sufficient demand were to be generated to
move barge load quantities. Actual costs of barge transport are
as follows under different assumptions.

TABLE I

	Dock Warehousing	Brickyard Warehousing
Loading Costs at Origin	$ 5,000	$ 5,000
Transport Costs-Water	11,000	11,000
Unloading Costs-Dock	5,000	5,000
Dockage Charges-5 days	1,400	1,400
Warehouse Costs at Dock Area	30,000	
Warehouse Costs Brickyard		10,500
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	$ 52,400	$ 32,900

in assessing charges for barge haulage of bricks a major cost
is loading and unloading. These high costs stem partly from the
special and expensive equipment required. The costs imputed include
use of the loading and unloading equipment for handling of bricks
for other markets such as Chicago, Minneapolis, and Cincinnati.
It will be noted that loading and unloading costs are assumed equal.
In fact, because of low usage at the port of destination, the unloading

costs would probably be higher. Transport costs are essentially barge rates for the Florida market. Dockage costs are conventional port dockage fees, as are warehouse costs at the port. The cheaper warehouse rate assumes transfer via truck to brickyards of several distributors. In computing the warehousing costs, the figures for the separate approaches include haulage, inventory charges, and an assumption of straight-line usage for four months once the bricks are at the warehouse. This assumption postulates that 1,400 tons of bricks will be sold, an assumption that requires a sharply lower price than currently prevails. The total handling costs via barge, assuming warehousing the bricks at the dock, would be $74.85/1000 and $47/1000 assuming warehousing at various dealers. The former cost is totally prohibitive, whereas the latter, or $47/1000, would be comparable to the $50/1000 for rail.

The fact that the two figures are essentially comparable would suggest that even with a demand of 1,400 tons per four months barge transport does not represent a viable alternative at the moment to either rail or truck. This condition could only change if loading and unloading costs could be reduced by Mississippi bricks servicing a larger and broader based market, thus making greater use of the handling equipment. Also, a network of dealers in the market might be developed that will reduce warehousing costs. It should be noted that the competitive position of barge shipments is roughly similar for Minneapolis and Chicago to the Florida analysis. Major cities such as St. Louis have little market potential for the barge transport of bricks.

As a rule of thumb, barge costs will need to be at least $15-$20/1000 below rail costs if a price reduction for delivered bricks of a size necessary to stimulate consumption is to be realized. In conclusion, barge transport of bricks does not seem to be a feasible alternative at the moment.

INLAND WATERWAYS

WATERWAY

HIGHWAY