Factors Affecting the Use of Hardwood Flooring in Urban Rehabilitation

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ABSTRACT

The continued use of hardwood flooring in urban rehabilitation is being threatened. A study of the influences that determine the choice of flooring indicates that economic, physical, or technological factors dominate. Most factors affecting the use of hardwood flooring are related to cost, availability, and compatibility. Of these factors, time and cost of installation are considered to be most limiting. Product modification, changes in the distribution and supply system, and a well-rounded marketing and merchandising program by the wood flooring industry are recommended.

BACKGROUND

THE URBAN REHABILITATION FLOORING MARKET

In the past, flooring has been marketed for new residential construction more than for the rehabilitation of urban housing.[1] Little attention and few flooring products were directed toward this relatively small segment of the residential construction market.

During the last 10 years, many steps have been taken to improve the quality and quantity of urban housing. Housing rehabilitation has become an integral part of the urban renewal programs of all major cities, and because of this, the rehabilitation flooring market has become larger and more complex.

The largest and most competitive urban rehabilitation market for flooring materials is in housing for low and moderate income families. Based on 1968 estimates of housing construction needs (1), I determined the potential market for flooring in these projects to be as much as 8 billion square feet over the next 8 years. With satisfactory materials available for use, this market will become even larger, more complex, and more competitive as more and larger projects are undertaken.

[1]Urban rehabilitation is the renovation of existing housing units and the demolition of existing units and the construction of new units in their place.

A PRELIMINARY EVALUATION

To gain a deeper insight into the flooring market in urban rehabilitation and to determine the relative position of hardwood flooring in this market, I conducted a preliminary investigation. Conferences were held with urban rehabilitation personnel and contractors in Boston, New York City, Pittsburgh, Washington, D. C., and New Haven, Connecticut. Various rehabilitation projects were visited and observed; and discussions were held with officials of various Federal and private organizations concerned with building materials and urban rehabilitation.

The investigation showed that floor surfaces in rehabilitated housing have traditionally been wood. In particular, hardwood floors have been considered the most practical and have been used extensively in both new and renovated units throughout the Northeast. In addition, recent studies have shown that wood

flooring is preferred in American housing whenever conditions are suited to its use (*2, 3, 4*).

In spite of this preference for wood flooring and its record of residential service. I found the use of hardwood flooring in urban rehabilitation decreasing. This decline is occurring even though the construction of urban housing for low and moderate income families has continued to increase over the last decade. At the same time, the use of nonwood floor coverings in urban rehabilitation has increased.

I concluded (1) that further study was needed on factors that affect the use of hardwood flooring in urban rehabilitation; and (2) that emphasis should be placed on the flooring market in housing for low and moderate income families.

THE NEW HAVEN CASE STUDY

SCOPE, OBJECTIVES, AND METHODS

After the preliminary investigation, I conducted a study of flooring use patterns in urban rehabilitation in New Haven, Connecticut. An intensive evaluation of one city was preferred to a more extensive survey of several cities.

It was judged that an in-depth study of a representative city would be more practical; and that such a study would produce useful and reliable findings. My investigations indicated that urban rehabilitation construction methods, regulations, funding, and other requirements are fairly uniform throughout the country from city to city.[2]

New Haven was selected because it was considered to be representative of most cities in the United States that carry out housing rehabilitation in their urban renewal programs. It is a mediun sized city comprised of industrial, government, business, and academic elements and one where considerable experience and expertise in urban rehabilitation can be found.

The objectives of the study were: (1) to determine the factors that influence the use of hardwood flooring in urban rehabilitation; (2) to determine which problem areas were most critical and where improvement would be most likely; and then, on the basis of these findings, (3) to suggest possible solutions.

Data and information were obtained through personal interview, through review of the city's files and publications, and by visits to rehabilitation sites.

THE INTERVIEWS

Interviews were held with the New Haven Redevelopment Agency, the City Plan Department, two nonprofit housing development corporations, two private housing construction firms, and one private architectural firm. Thirty-five executive personnel, construction supervisors, inspectors, and architects participated in the interviews.

During the interviews the participants were asked to respond to 48 questions contained in a structured, open-ended questionnaire. The questions covered such topics as the agency's function and experience in urban rehabilitation, the construction and renovation of low and moderate income family housing, the use of hardwood flooring and other wood products in the construction and renovation, wood flooring and other wood products trends, desirable attributes of flooring materials, the advantages and disadvantages of various types of surface flooring, and the flooring selection process.

With the exception of the City Plan Department and the private architectural firm, all of the agencies and firms that were interviewed sponsor or construct housing for low and moderate income families. The Redevelopment Agency sponsors most of the city's housing rehabilitation. The agency, through its neighborhood improvement offices and city field offices, is responsible for urban rehabilitation specifications and quality. The City Plan Department examines and approves the plans for all housing constructed in the city.

One of the private construction firms interviewed is the largest building contractor en-

[2]More detailed information pertaining to the preliminary investigation and the case study may be obtained from the author or his USDA Forest Service unpublished manuscript "Urban Rehabilitation, Characteristics, Methods, and Requirements and Their Effect Upon the Use of Hardwood Flooring and Other Building Materials."

gaged in rehabilitation within the city. It performs both turn-key and contract work. The two nonprofit housing development corporations are the city's largest and oldest. The architectural firm has designed all types of housing for both public and private concerns, including much housing for the low and moderate income families.

Most of the people participating in the interviews had from 5 to 10 years of experience in urban rehabilitation and their organizations had been involved in urban redevelopment and rehabilitation for at least 10 years.

THE RESULTS

THE FLOORING DECISIONS AND THE DECISION MAKERS

The organizations interviewed were the four groups most closely involved in materials specification and selection. The decisions that these groups make about which flooring materials to use are made when the rehabilitation plans are drafted and when the budget is set. Their decisions are based on: (1) the quality, specifications, and cost of the materials; (2) the types of materials; (3) the brands; and (4) the sources of supply.

The owners and the builders are the most influential in flooring materials selection. They exercise considerable control in most of the decisions (table 1). In addition, they have the greatest influence in the decision areas that are most important in determining which flooring is used—decisions concerning cost, type, and supply source.

The determination of type of material is the most important decision and it is often affected by decisions concerning costs. Decisions regarding type and cost are made jointly by the contractor and the owner early in the materials-selection process. The selection of the supply sources is made primarily by the contractors and often influences type and cost decisions.

The rehabilitation officials and the architects have little influence on the selection of specific flooring materials. Their responsibilities involve primarily materials specifications and quality standards which must be met by all flooring materials. With respect to flooring selection, their functions are mainly advisory.

FACTORS THAT DETERMINE THE TYPE OF FINISH FLOORING MATERIALS

Many factors, such as product characteristics, act and interact to determine the type of flooring used. The building contractor and the housing owner give prime emphasis to those product characteristics that affect approval, acceptance, and financing of their units. The contractor is likely to choose a product that he can procure and install easily and cheaply and that he can sell.

Overall, the most important influences are: (1) the availability of the product to the contractor; (2) the cost of the product and associated costs to the contractor and the owner; (3) the compatibility of the product with the construction plan and schedules of the builder and owner; and (4) intangible factors, such as

Table 1.—The relative amount of influence that the people responsible for specifying flooring have on various flooring decisions[a]

Item	Quality	Specifications	Cost	Type	Supply source	Brand	Purchasing
Housing owners[b]	+	−	+	+	−	+	0
Building contractors	0	−	+	+	+	+	+
Rehabilitation officials	+	+	0	0	−	0	0
Architects	0	0	−	0	−	0	0

[a] + considerable influence
0 influence, usually in an advisory capacity
− little or no influence

[b] In some instances, a group may be multifunctional, assuming the role and responsibilities of two or more decision makers, such as builder and owner. Often the contractor and the owner are the same.

user preference, image, or product information.

Product Availability

The urban rehabilitation market needs building materials that are consistently and readily obtainable. If a flooring product is not to be had when and where it is needed, then the other factors affecting its use need not be considered.

The interviewees expressed the opinion that the traditional distribution channels of hardwood flooring are not as satisfactory as those of substitute products. Hardwood flooring was considered more difficult for the builders to obtain than competitive products. Those interviewed indicated that hardwood flooring was handled by fewer suppliers; delayed more often in arrival; and more often in short supply or unavailable in the quality, quantity, and variety needed.

Flooring materials should be provided for urban rehabilitation at a constant rate and at relatively predictable and competitive prices. Unlike conventional residential construction, urban rehabilitation has very little seasonal fluctuaton; the planning is completed well ahead of construction and the construction is on a year-round basis.

In addition, job time and costs are designed and contracted for within given price ranges of products. Changes in the supply or price of any component of the complex upset schedules and budgets for the entire project.

The respondents felt that the supply and prices of nonwood products remain relatively more constant than those of hardwood from season to season and with fluctuations in the cost and supply of raw materials. Additionally, the interviewees felt that hardwood prices rise when the market and economy are good or improving; and often when the market is poor, hardwood flooring is not available at prices that would make it competitive.

Cost Factors

Next to availability, the building contractor and the housing owner are concerned primarily with factors that affect costs. In most cases, they must bear the initial cost of rehabilitation, and the contractor must absorb any loss on the construction phase of the project.

In comparing flooring materials, the builders and owners consider the total cost. The cost of flooring to them is the combined total of all costs, long and short term, connected with it. While total product cost and long-term cost are important; cost factors that require expenditures of money in the short run, such as purchasing and installation, are even more important.

Installation Factors.—Installation includes the actual laying of the flooring and cleaning, surfacing, and finishing. Factors that make the cost of installing a product greater than the cost of installing competing materials place that product at a distinct competitive disadvantage in urban rehabilitation.

Installation time and labor cost are very important in the selection of finish flooring. Because the urban rehabilitation market is highly competitive and because the construction is usually contracted for on a fixed cost basis, installation time and labor costs must be controlled as carefully as possible. It is in these areas that the interviewees found the most serious problems for hardwood flooring.

In its present form, hardwood flooring cannot compete in speed of installation. Contractors felt that a maximum of 2 to 2½ days for a two- to three-man crew was sufficient to install or to renovate 1,000 square feet of flooring. Most resilient sheet flooring and carpet is delivered in 12-foot wide rolls and can be laid in the average dwelling unit within 1 day. Vinyl asbestos tile takes a little longer; but very seldom as long as 2 days. Hardwood strip flooring laid directly on joists or over a subfloor usually requires more than 2 days. Then additional time is needed for sanding, cleaning, applying sealer and finish, and for drying.

In addition to the time difference, the interviewees felt that the installation and finishing of hardwood flooring requires highly skilled labor.[3] Such labor was considered expensive

[3]It is doubtful that more skilled labor is required for wood or that the actual laying of hardwood flooring is any more difficult or critical than the laying of carpet or resilient flooring. More likely, installation problems associated with the use of hardwood are due to such things as faulty installation procedures, improper finishing and finishes, unfamiliarity with the product, and failure to allow for dimensional changes in the wood.

and hard to obtain for hardwood, especially strip flooring.

The interviewees felt that thinner and larger hardwood flooring units, panelized and prefinished, were needed to reduce both the time and the labor required to install hardwood floors. The flooring units should be of a size that two men could handle readily. On this basis, they felt that panelized hardwood flooring, both strip and block, could compete with nonwood flooring in installation time[4] and labor costs.

Installed Cost.—An installed cost between 30 and 75 cents per square foot is preferred for finish flooring materials. I found that the installed cost—the costs of acquisition and installation—of hardwood was acceptable and that it compared favorably with the installed costs of other flooring materials commonly used in urban rehabilitation (table 2). Installed costs were considered to be lower for resilient products because of lower distribution costs, because of "deal" purchase prices available to the contractors, and because fewer operations are required to install resilient flooring and prepare it for use.

Table 2.—Interviewees' opinions of installed costs for flooring materials commonly used in urban rehabilitation

Flooring material	Installed cost (per square foot)
Asphalt tile	$0.35 - .45
Vinyl asbestos tile	.40 - .50
Composition sheet	.45 - .55
Hardwood	.55 - .65
Wall-to-wall carpet	.65 - .75
Ceramic tile	1.00 - 1.60

In general, hardwood floors fared well in most cost comparisons with substitute products. However, some of the difficulties and inconveniences that the builder and owner encounter impair hardwood's overall comparative position.

Delays in receiving orders were often cited as a cost disadvantage of hardwood flooring; not so much as a direct cost but as a cost in the disruption of timetables and the rescheduling of work. Quite often hardwood flooring must be purchased from two or more suppliers; this results in loss of time and inconvenience for the contractor.

Hardwood flooring was felt to be more difficult and expensive to protect from moisture. Precautions must be taken to keep it dry and dimensionally stable in storage, enroute to the site, and on the job.

The respondents felt that, during and after installation, hardwood floors are more susceptible to damage than competitive materials. If damaged, they are more difficult and expensive to repair or replace.

Product Compatibility

If a flooring material is available and the price is acceptable, the product must also be compatible with the construction plan and schedules of the builder to maximize efficiency and minimize time and cost.

The floor construction of the typical new or renovated unit differs little from its conventional counterpart. The finish flooring is installed, replaced, or repaired as close to the end of the construction job as possible, but before interior partitions are erected or finish wall materials applied.

For most hardwood flooring products, the workers must return later to complete the finishing. When speed is essential, nonwood flooring materials that lend themselves to faster installation and that do not interrupt the work flow are used. In addition, most substitute flooring materials are considered easier and less expensive to repair or replace in buildings undergoing renovation.

Intangible Factors

In addition to availability, cost, and compatibility, the decision as to which type of flooring material will be used is affected by the user's image and associations and by product information. However, none of these intangi-

[4]Although rapid installation is characteristic of carpet and resilient floor coverings, the time required to install both the subfloor and the finish floor covering is the correct time to use for comparison with wood flooring.

ble influences is strong enough to dictate the type of flooring chosen.

Associations and image include user preferences, opinions, tradition, prestige value, ability to blend with decor and furnishings, warmth, acoustical properties, and the way the flooring reacts to grease, solvents, stains, and the like.

Wood flooring products are preferred by people living in the Northeast. Hardwood has an image of being traditional, high in quality, durable, practical, and prestigious. Many architects and rehabilitation officials associate it with higher quality construction.

However, carpet and resilient flooring are often preferred as more modern, fashionable, and versatile. Related to this image are aesthetic appeal, ease of maintenance, the feeling of luxury and of having the latest in luxury products, attractiveness of color and design, and underfoot comfort.

Another factor is the ability of the flooring to blend with the decor of the room, apartment, or project. This factor especially affects the choices of architects and building owners. Most of the interviewees felt that wood flooring was limited in designs and patterns at practical prices; that it was not versatile enough to adapt to the decor of living areas designed with more modern materials.

In addition, it was felt that children and hardwood floors are not compatible—the floors mar and scratch too easily, they are slippery, they are not as resilient as other floors, and they do not absorb shock and sound as well.

One intangible factor that also appears to have a strong influence is the amount and quality of information available on finish flooring materials. The interviewees indicated that the contractor and owner prefer a product that is advertised as new, modern, and up to date; that is adequately guaranteed by the manufacturers; and that is backed by technical assistance from the manufacturer. All those interviewed noted the general lack of unbiased technical information about the various flooring materials.

Most of the people interviewed felt that hardwood flooring is not advertised or promoted as heavily as carpet or tile. The interviewees would like to see flooring producers use more appeals to the senses, more glamorous advertising, wider dissemination of all types of information, more sales aids, more point-of-sale promotion, more representation, and installation training programs.

Generally, governmental and labor union rules impose few restrictions on the choice and use of most finish flooring in new or renovated units. Occasionally, local housing standards restrict the use of hardwood flooring in certain areas such as bathrooms and kitchens. Building trade unions may influence flooring selection through practices that affect time and cost of installation.

The Federal Housing Administration and the Department of Housing and Urban Development impose few restrictions that limit the use of hardwood flooring. Federal regulations generally relate to long-term financing, as do the recently established minimum standards for carpeting in homes with Federally-insured mortgages.

Maintenance, wear life, and other factors can play a governing role in the selection of flooring materials in some residential construction. These factors generally caused no problems in the choice and use of finish flooring in the study area, however.

SUMMARY AND CONCLUSIONS

Compared to carpeting and resilient flooring, hardwood flooring is a traditional building material with natural beauty. It is identified with ideas of quality, durability, and the like. Hardwood flooring has traditionally been used to a greater extent in urban rehabilitation construction than any other type of finish flooring.

Yet, in spite of its current use, tradition, and people's love of wood, the position of hardwood flooring in the rehabilitation of urban housing is being threatened. Hardwood will not continue to be used in urban rehabilitation unless it becomes more competitive with other materials.

Recognition of and response to the factors that affect the choice of flooring for use in urban rehabilitation will serve to strengthen the hardwood flooring industry's position in this market. Vigorous action taken now can

give the industry a good market for years to come.

Results of the study indicate that in the urban rehabilitation market, it is the economic, physical, or technological factors that dominate product selection. Most factors restricting or preventing the use of wood flooring are related to cost, availability, compatibility, and efficiency.

The attitudes of the housing owners and the building contractors—the two groups most responsible for specifying flooring materials—are based primarily on cost. Most of the cost in time and money associated with hardwood flooring is related directly or indirectly to its methods of installation.

The industry should aim at reducing initial cost, reducing installation time, and reducing the amount of labor and skill required in the installation of its products. The production of prefinished, panelized flooring appears to be a desirable and promising solution. Product modification, changes in distribution and supply, and other reductions in cost can be accomplished with present technology.

The hardwood flooring industry should also be attentive to those influences that might be termed home environment factors. In addition, a well-rounded marketing and merchandising program by the wood flooring industry is considered essential. More vigorous, efficient, and appealing promotion, as well as more adequate technical assistance would definitely be helpful.

Beside the direct benefits that members of the industry would receive from continued or increased attention to the urban rehabilitation market, products and techniques developed for this market should be applicable to other residential and nonresidential construction.

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