

THE MANUFACTURED HOUSING INSTITUTE'S

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PROJECT

Many of America's cities are facing an unprecedented housing

affordability crisis, with the cost of an average home beyond the

financial reach of most inner-city dwellers. With few exceptions,

HUD-Code manufactured homes have traditionally been

excluded from many infill lots in city neighborhoods where

affordable housing is desperately needed. As a result of this

exclusion, an important source of non-subsidized, affordable

housing has been unavailable to those who need it most.

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ADEMONISTRATION PROJECT?

To illustrate that today's manufactured homes can meet the need for affordable housing and can be aesthetically compatible within existing urban neighborhoods, the Manufactured Housing Institute (MHI) launched the Urban Design Project. This program was structured as a public/private initiative that would include the design, development, and construction of a series of manufactured homes on urban infill sites in selected cities around the country.

The Urban Design Project grew out of the work conducted by a subcommittee of MHI's Site Development Committee. This small group, eventually called the Urban Design Subcommittee, was co-chaired by MHI members Steve Hullibarger and Don Westphal. Subcommittee members included David Alley, Ray Broderick, Elliot Fabri, Harry Gautsche, Roderick Knoll, and Craig White. The group received further guidance and input from Steve Zamiara and Bev Aplikowski, respective chair and vice-chair of the Site Development Committee.

In the Fall of 1995, the subcommittee selected the Philadelphia-based architecture firm of Susan Maxman & Partners, Ltd. to oversee the focus group process in the chosen neighborhoods, begin design work and prepare construction documents for the individual sites, ensuring the houses compatibility with existing neighborhood architecture. Maxman was chosen because of her national reputation within the architecture and design communities, her position as pastpresident of the American Institute of Architects, and her proven track record of bringing together national and local constituencies with divergent interests into a position of project ownership through effective focus group management.

MHI then sent out a request through its membership to solicit development and construction proposals from teams of builders, developers, and municipal governments. Initially, six cities were selected to participate in the program: Wilkinsburg, Penn.; Washington, D.C.; Louisville, Ky.; Birmingham, Ala.; Milwaukee, Wis.; and Denver, Colo. Unfortunately, problems developed in the relationship between the for-profit and non-profit developers involved in the Denver project at a very early stage, taking the project in Colorado off the table. The pilot cities were chosen because they exhibited potential to overcome zoning restrictions against HUD-Code manufactured homes within a reasonable time and could serve as a model for other communities.

MHI worked closely with local government officials, neighborhood groups, and residential developers in each of the participating cities. Each of the urban pilots were to demonstrate a workable financial strategy; a strong commitment from the local community, municipal agencies, the developer, and other team members; and to have the potential for broad application of the home design beyond the prototype stage. In addition, an effort was made to select project cities that provided diversity in terms of geography, unit size, community type, sales price, and architectural affinity to the community. Installation and sale of the homes would be handled by the local project team participants, not by MHI. To date houses have been completed in three of the five pilot cities. It is significant that several cities not formally affiliated with MHI's efforts have undertaken their own urban infill pilots, with the help of MHI's affiliated state associations, based upon the potential of the MHI Urban Design Project.

PROJECT GOALS & STRUCTURE

Through the Urban Design Project, MHI hoped to demonstrate how manufactured homes can be used in applications that, in some cases, made other types of construction unfeasible because of construction time, design, cost, security of the worksite, and a variety of other reasons. The demonstration projects would show how manufactured housing – using advanced technology and superior performance – is uniquely positioned to solve many of the traditional problems that have hindered construction in some urban areas. The project would also begin to break down zoning and regulatory barriers that have kept HUD-Code manufactured housing from being built in these same areas. A key objective was to produce manufactured homes that were compatible with existing neighborhoods and could be sold at prevailing market prices, either eliminating or greatly reducing the need for subsidy.

It was not the intent of the Urban Design Project to change the basic manner in which homes were produced in a factory, and it was anticipated that home interiors would not undergo any major changes. Ideally, the manufacturer for each project would work closely with the architect to ensure that the product could be easily manufactured on existing production lines. The relationship between the architect and the MHI member manufacturer turned out to be absolutely critical to the success of the project. Local leaders would select the sites for the homes from the stock of the participating city's infill sites. The developer would work hand-in-hand with the architect to guarantee respect for the neighborhood's existing character. It was also hoped that local banks and mortgage lenders would act upon these opportunities to participate in strengthening neighborhoods in their communities.

Washington, DC and Birmingham, Alabama were to enjoy the benefit of another project partner. To gauge how well the homes performed from an energy standpoint, the Electric Power Research Institute (EPRI), a consortium of local utility partners interested in improving the energy-efficiency of homes and businesses and in encouraging responsible use of energy resources, would monitor appliance use and wholehouse energy performance for a year to demonstrate the efficiency of these manufactured homes.

To test the waters for reception to the idea of a demonstration project, members of the subcommittee met with officials of Pittsburgh, Pennsylvania and surrounding boroughs to describe the project and assess their interest in using manufactured housing to satisfy their affordable housing needs. The interest was much greater than anticipated. All 20 municipal officials in attendance at the meeting agreed that their organizations would work with MHI to remove whatever barriers existed to the use of manufactured housing, assuming that the homes were designed to be compatible with the community.

SITE SELECTION

The prospect of the Urban Design Project prompted a great deal of inquiry on the part of manufacturers, state associations, and other municipal governments besides Pittsburgh. In order to identify the largest number of potential participants in the program, MHI's Urban Design Subcommittee determined that a Request for Proposal (RFP) should be written and distributed to all of MHI's state associations. The goal here was to have the associations focus on opportunities within their state for the project to work. In addition, the RFP was sent to the CEO of each of MHI's member manufacturers, was advertised in MHI's national newsletter, and was distributed to any party requesting a copy. Because one of the primary goals of the project was to help remove zoning and regulatory barriers to the use of manufactured housing in urban areas, the proposals were evaluated in part based upon the likelihood of helping to achieve this in the proposal city. Proposal partners also had to demonstrate a solid financial track record, a commitment from the various parties involved, and the potential for the project to spur further construction using manufactured housing.

The following criteria were used to evaluate the proposals:

- Developer Experience: What was the track record of the developer with similar types of projects?
- Financial Strategy: How sound were the finances of the team members, and did the financial plan seem realistic and likely to work?
- Funding: Was there project funding either committed or available?
- Community Involvement: How strong was the backing of the local community and municipal officials? Was there a commitment to help overcome zoning, building code, or other barriers for the project?
- Site Availability: Was the proposed site under the control of the developer, or readily available?
- Affordable Housing: Would the project likely deliver housing that was at or below the price of comparable housing in the community?

- Raising Awareness: What was the potential for positive public awareness and industry publicity through various media outlets?
- Repeatability: Was the proposal applicable as a "model" or prototype for other areas such as other cities in the region?
- Project Reverberation: What was the likelihood that a demonstration project would have an impact on further development, serving as a model to generate more manufactured housing solutions to urban infill in the community?
- Role of MHI affiliated state association was the state association willing to make a strong commitment to the project?

MHI's Urban Design Subcommittee reviewed the proposals they received, and developed a short list of projects to review in greater depth. In the summer of 1996, representatives from MHI and Susan Maxman & Partners Architects (SMA) visited the finalist communities, toured the proposed sites, and interviewed project team members. Based upon these visits, a list of communities was recommended to the entire Site Development Committee for final selection. In the fall of 1996, MHI made its final selection of five cities: Wilkinsburg, Pennsylvania; Louisville, Kentucky; Washington, D.C.; Birmingham, Alabama; and Milwaukee, Wisconsin.

DESIGN & DEVELOPMENT APPROACH

The approach to the design of the houses was calculated to be inclusive and participatory. Muscoe Martin, AIA, project manager for the Urban Design Project and partner at SMA, and Susan Maxman worked closely with the various manufacturers to ensure that the houses could be built efficiently and affordably. The municipalities, particularly the planning and zoning departments, were also an important key to ensuring that the designs were compatible with the communities in which they would be built. Input from local community groups and individual neighborhood residents was critical in determining the size, features, appearance, and price of the homes.

To engage the community residents, a series of focus groups and design review sessions was held in each city. The design and development team explained how manufactured housing is built and installed, and there was a discussion of the architectural character of the respective neighborhoods and what kind of house design would fit best in each context. According to the architects, the participants in each of the community design sessions exhibited a high level of awareness and sophistication when it came to urban design issues - such as the size and proportions of front porches and the appropriate roof pitches for their neighborhood. Overall, there was little resistance to the idea of placing manufactured homes in these areas - as long as the homes were aesthetically consistent with the surrounding houses. Designs were then refined with the manufacturer, construction documents were prepared, and the products of the Urban Design Project began to take shape on the factory assembly line.

The following pages present a snapshot of each of the five cities selected for the Urban Design Project. While the project has been successful in accomplishing the goals set forth by MHI, not all the cities have completed houses. Nevertheless, MHI believes that it is important to document all of the projects so that others can benefit from the lessons learned and as a means to increase the chances of success for those who will undoubtedly follow in the Urban Design Project's footsteps.

HOMESIGHT'S NOJI GARDENS

AFFORDABLE SEATTLE:

Manufactured Housing Can Help Tame the High Cost of Infill Housing by Steve Hullibarger

Rising prominently from their foundations in Seattle's Rainier Valley, eight HUD-Code homes are the first in Noji Gardens, a new 75-home develop ment by Seattle's premier nonprofit housing corpo ration, HomeSight.

Noji Gardens is 4 miles southeast of downtown Seattle and a mile and a half from Lake Washington. Nearby is Boeing's Renton plant, and Microsoft's corporate headquarters are only 10 miles away in Redmond.

Naturally, with these economic giants, and others, dri ving Seattle's economy, one would expect that housing costs would be extremely high and affordable housing would be in great demand, with a short supply.

According to The Seattle Times, King County's 1999 median price of a single-family home was \$234,000, representing a 9.9% increase over the \$213,000 recorded in 1998. These prices have put homeown ership beyond the reach of many people.

HomeSight's primary objective as a community development corporation is to address and serve the affordable bousing market. Where many non profits target rental bousing, HomeSight prefers to build bomes for sale to owners.

Dorothy Lengyel, HomeSight's executive director, had seen manufactured homes in King County

and nearby Snobomisb County used in developments built by their respective hous ing authorities. She was impressed with the savings in time and costs which were demonstrated, but she knew that architec turally, the homes would need to blend in comfortably with prevailing neighborhood house styles.

Dorothy had seen the design concepts for two-story manufactured homes being developed for the Urban Design Project. The two-story concept, once thought to be outside the realm of the HUD standards, was being addressed through the pilot program and in an innovative development on the east coast called New Colony Village. A trip to see the houses being built back east convinced Dorothy that manufactured homes could fill the bill.

Another obstacle, according to Joan Brown, executive director of the Washington Manufactured Housing Association, was that while Seattle had no specific ordinances prohibiting manufactured home placements within its city limits, there were numerous procedural and regulatory steps in place discouraging applicants from seeking the necessary permits for them.



PROJECT CASE STUDY

Location:	Corner of Kelly Street and Mifflin Avenue, Wilkinsburg, Penn.
Developer:	ACTION Housing, Inc., Pittsburgh, Penn.
Manufacturer:	New Era Building Systems, Strattanville, Penn.
Additional Partners:	Pennsylvania Manufactured Housing Association:Pennsylvania Department of Community & Economic Development
Project Cost:	\$105,000
Financing:	Private development with \$30,000 subsidy from the Pennsylvania Department of Community and Economic Development (DCED)

SITE

The kick-off project for MHI's effort was built in Wilkinsburg, which is a small borough of Pittsburgh. In many ways, Wilkinsburg was the perfect place for the demonstration program to begin. The neighborhood typified the areas in which the industry can potentially have its greatest impact: inner-city regions starved for new housing. A few years before, Wilkinsburg was designated a "distressed community" by the DCED, with high unemployment, rising crime, and troubled public schools. It also had high building costs, tattered infrastructure, and an aging housing stock. In fact, there had been no new single-family detached construction since the 1950s. Building a new house on a site in Wilkinsburg would not only open housing opportunity to a family, but might provide a noticeable boost to the town's general economy. The site is at the corner of Kelly Street and Mifflin Avenue in Wilkinsburg's Hill Avenue neighborhood, a high-profile location.

DESIGN

The design of the Wilkinsburg house was guided by input from the people in the Kelly & Mifflin and Hill Avenue neighborhoods. Public meetings and focus groups held on site were invaluable to collecting ideas on how the house design would best blend into the community. Communicating design concepts and ideas to the audience was accomplished through photographs of the neighborhood, models, large-scale site plans, and simple wood blocks that could be moved around to study different siting strategies. Some of the comments from these meetings were key. For instance, neighborhood residents recommended that there be only one house constructed on the proposed site instead of two; that the new house should take its cues from the neighborhood's older architecture; that it should be energy efficient; and that it have sufficient storage. One of the more important considerations that came out of the meetings was that the home design incorporate a room that could be used for a future master bedroom, providing an opportunity for residents to grow old in the home without the difficulty of stairs.

The most critical role of the meetings, however, was in helping to overcome an initial distrust of the project. The neighborhood had a bad experience with a non-profit developer constructing a single-story home in the predominantly two-story area, over the objections of the residents. The neighbors felt that the single-story house lacked any sensitivity to the existing homes, and that to a large degree the house had been shoved down their throats. After being assured that the goal of the Urban Design Project was to build a house that conformed to the prevailing style of the neighborhood, with the direct involvement of the neighbors, the residents were won over.

The Urban Design Project architectural firm Susan Maxman & Partners, Ltd., working with New Era Building Systems, the manufacturer, developed a design in keeping with the vernacular architecture of the community. Following the focus groups and work sessions a final design was presented to the borough council. The resulting 1475 square foot home has three bedrooms and two baths, and is distinguished by a large, welcoming, L-shaped covered porch. The first floor contains a living room and dining room, a galley kitchen, a bath, and a den/study/master bedroom. The second story is devoted to two bedrooms and a full bath. The 5/12 pitched roof helps the building to further fit into the neighborhood. The site and home were greatly enhanced by the implementation of a landscaping plan developed to commemorate the initial project by Urban Design Project Subcommittee Co-Chairman Donald Westphal, a landscape architect and MHI member.

CONSTRUCTION

The house was designed to be constructed in three sections. Two sections (one 12 feet wide by 34 feet long, the other 14 feet wide by 38 feet long) make up the first floor, with dining and kitchen spaces in one section and living/bath/bedroom space in the second section. A staircase and storage closet are located on the marriage wall. The second story is 14 feet wide by 38 feet long.

Structurally, the sections use a floor design with perimeter girders, which eliminate the need for interior supports except at the marriage wall. The house was transported to the site from New Era's factory in Strattanville, Penn., about 60 miles away, and installed within a few hours over a slab-on-grade crawlspace. The lot also had a poured concrete driveway for off-street parking with no garage. The single story section containing the kitchen/dining spaces has a 4/12 shed roof. The second story's hinged-truss tilt-up roof was unfolded and secured, giving the house the appearance of being site-built. The manufactured sections were watertight and secured within a matter of hours. In the following weeks, the wrap-around 4/12 shed-roofed porch was constructed and landscaping was finished. The cementitious siding, selected due to neighborhood preference for alternatives other than vinyl, was painted and other exterior finishes completed.



RECEPTION

Reception of the demonstration house was very favorable in the neighborhood. The design went a long way to change the perceptions of manufactured housing as poor quality construction. Before construction, a few residents were concerned that their own property values would go down after the "snapped-together" house went up.

The house went for several months without being sold. This was due in part because the borough council wanted to sell the home for \$70,000 – about \$10,000 more than appraisers recommended that this market could bear – thereby establishing a new appraisal benchmark. Affordable for a young family with two working spouses and children, the neighborhood was less attractive because of the poor school system. For an unmarried person or a retired couple on a fixed income in the area, for whom schools were not an issue, the price was simply too high. With some encouragement from ACTION housing, an adjustment in the subsidy allowed an ultimate selling price of \$65,000.

LESSONS LEARNED

One lesson learned is that gaining clear title to land in urban areas can take much longer to secure than expected. The tax structure, which combines real estate and school taxes for the borough and the county, held up closing on the property. The removal of tax liens on the property required the cooperation of multiple jurisdictions, and various state and local approvals delayed construction for nearly a year. This is a building environment very different from that experienced by most manufactured home producers, who build primarily for rural areas with few of the property complications experienced in Wilkinsburg. On the developer's end, the project had some shortcomings as well. Some of the challenges were drywall cracks during transport (a common and easily-remedied problem in factorybuilt homes, but new to the developer), a less-than-satisfactory HVAC system in terms of performance, and unanticipated rust stains from fasteners bleeding onto the cementitious siding (vinyl siding might have given the same appearance without the problem of rust stains). Callbacks for such items were an even greater challenge because of the lack of involvement by manufactured home retailer in the construction of this demonstration project. The developer, ACTION Housing, worked directly with the manufacturer, without the benefit of a retailer, who normally handles callback problems. Thus, the developer had to engage a contractor to respond to requests such as repairing carpet and fixing trim. These repairs took longer to complete because they were minor - not serious enough for the contractor to make them a priority. The fact that the house did not have a basement was a drawback for some potential buyers. In fact, the developer elected to exclude it even though it was mentioned during the focus group meetings as a major asset. In retrospect, the developer determined that a basement would have made the house significantly more marketable without adding significantly to construction costs.



Tony To, HomeSight's deputy director, took charge of the project and began a series of coordinating sessions involving the plant, the City of Seattle, the State of Washington Department of Labor and Industry, and local contractors.

"At first, the contractors were concerned for their lack of comprehension as to what their jobs and responsibilities would be related to this totally new construction process," To said. "However, I was able to carefully work through their bid proposals and weed out the excess costs which I determined to be strictly the result of fear of the unknown. The con tingencies got eliminated, and the contractors placed a lot of faith in my assurances."

To's planning and estimating abilities paid off. The on-site construction has moved ahead smoothly, and his contractors are happy with the revised bids. To's primary contractor has now assumed the added position of Noji Gardens Construction Manager. In early January 2000, during the beight of new home arrivals and installations, he called Tony To a "visionary".

HomeSight is expecting to benefit from their use of manufactured housing in two major ways: savings in hard costs and savings in time. Even before com -

pleting their first eight homes, HomeSight has seen ample evidence that these hoped-for virtues will materialize.

In reviewing bis construction costs, To esti mates that HomeSight will save 10% to 15% on this first phase, compared to "conven tional" building costs. "Even with the mis takes we made and with our learning curve, we are coming out abead", To said, "and I expect to eventually achieve a cost

saving of 25% to 30% after we ramp up our speed and learn from our initial mistakes."

Since HomeSight's costs for site preparation and for the foundations are roughly equal to its sitebuilt home construction, To credits this savings factor to the home itself, from the top of the foun dation sill up to the roof. None of the savings are a result of lowered standards, To insists. "We're shooting for the same standards of quality in material and workmanship as we require in our site-built homes."

These savings are a salvation to HomeSight. In recent years, HomeSight had squeezed every penny out of its site-construction costs through efficiencies,







PROJECT CASE STUDY

Location:	1014 (single-story) and 903
	(two-story) 44th Street, NE
Developer:	Marshall Heights Community
	Development Organization, Inc.
	(MHCDO)
Manufacturer:	Schult Homes, Crest Division,
	Milford, Penn.
Additional Partners:	Potomac Electric Power Co., Electric
	Power Research Institute (EPRI)
Project Cost:	\$115,000 selling price (single-story)
	\$125,000 selling price (two-story)
Financing:	The Community Development Fund
	(CDF) is Marshall Heights
	Community Development
	Organization's internal funding
	source for housing and economic
	development activities. It is financed
	by low-interest loans and investments
	from the Franklin National Bank

Financing (cont'd)

CDC, the Fannie Mae Foundation, and First Union Bank, which in turn establishes the interest rate and any restrictions on financing. MHCDO uses the funds in the CDF to finance development activities, including land acquisition and construction, at no interest expense to the project.

SITE

The second round of project homes was targeted on two lots in Washington, DC – one 37' by 100' and the other 50' x 100' – in a moderate-income neighborhood on 44th Street in the city's Northeast section. The demographic data for these two sites painted a picture of a neighborhood in dire need of an infusion of new housing ideas. The existing housing stock was deteriorating, and the MHI Urban Design Demonstration project was viewed as another potential tool to help reverse this trend. The two sites were chosen for three reasons: 1) the designs already developed by MHI for the Wilkinsburg and Birmingham projects appeared most readily to blend into the surrounding environment; 2) the sites were in an area in which the developer had recently completed projects and where the effects of new homes would have the most synergistic effect on the community; and 3) the developer had control of the two home sites. The comparatively small lots indicated that on at least one lot a two-story structure might provide the best solution. Site access was also a concern, as transportation of the modules was hindered by traffic and permitting constraints, and installation was affected due to the physical constraints of the streets and lots. In the end, both a single-story and two-story unit were constructed.

The Washington, D.C. zoning ordinance made no reference to manufactured homes, leaving the decision to approve or reject the project solely in the hands of the building codes department. As a result, time and energy that might otherwise have been spent on obtaining zoning approvals could be redirected towards raising the building codes department's familiarity and comfort with HUD-Code manufactured housing.

DESIGN

Marshall Heights CDO elected to verify the design appropriateness of the two homes without the use of focus groups, due to the fact the MHCDO had long been involved in the community and the fact that it had its hand on the pulse of the residents. The bungalow style one-story home can be considered affordable, but was not priced significantly lower than other homes on the market - MHCDO avoids selling significantly below market as a strategy to protect existing property equity and build value in the neighborhood. A premium was placed on the "long-term affordability" of the new homes, particularly through reduced energy costs, and as a result specification of R-19 walls, R-30 ceilings, and R-30 floors all exceeded HUD minimum insulation values. All windows used low-e glazing, which limits the transmittance of light to the visible band. This helps block out harmful UV light and results in a cooler house during the summer months. Heating is provided by the "Insider" heat

pump (10 SEER, 7.0 HSPF), a self-contained heating and cooling system that fits into a 2' x 3' closet space and accesses outside air through a semi-conditioned crawl space. A front loading washing machine and an energy efficient refrigerator were provided by Potomac Electric Power Company (PEPCO) and the Electric Power Research Institute (EPRI) monitored energy consumption for the first year of occupancy.

The specification of highly efficient mechanical systems and enhanced insulation R-values are helping to make the National Capital Region's UDP a more energy efficient, environmentally sound project. The inclusion of high performance windows and energy-saving appliances will help reduce operating costs, making the home more affordable over time. Vinyl siding and window frames will also help minimize maintenance and associated costs.

The 1,440 square foot floor plan makes good use of available space while minimizing first cost expenditures. To save on material costs, interior partitions are kept to a minimum in the living, dining and kitchen areas of the house. This lends to an open, airy feel to the home, making it seem larger than it actually is.

The second home, a two-story model, was based on the design used in Wilkinsburg, Pennsylvania – but with some slight changes. The kitchen and stairwell areas were tweaked to make them more efficient. Instead of a concrete slab foundation, the Washington version has a full walkout basement, which is also conditioned – providing greater storage space and the option of expanding the available living area in the future. And, with the basement came the need for a set of interior stairs leading down from the main level. Like the single-story home, the second home has an impressive list of similar energy performance specifications.



CONSTRUCTION

The single-story house was built by joining two 14' x 52' sections side-by-side on a concrete block foundation. Due to lot constraints and the modest width of the streets in the neighborhood, the home had to be set with a crane, which is not typically necessary with single-story manufactured homes. Once in place, the hinged roof was raised to its full 7/12 pitch. Total installation time from delivery to the home being watertight and secure was eight hours. The house itself was, of course, factory-built to the HUD Code and erected on the lot using conventional set-up methods. The front porch, constructed on site, adheres to BOCA standards. As the architect suggested, the porch was built with concrete and dressed with brick, helping integrate the house with existing houses on the street. The bungalow-style design blends in very well with its neighbors. The two-story house was similarly constructed, although the larger lot and stacking arrangement of the sections on this small site allowed a bit more room for construction equipment to maneuver around the house.

RECEPTION

Initial reaction to the proposed project from the public was guarded and less than enthusiastic. Once the single-story house was finished and open for view, however, there was a sea of change in public attitudes toward the project to the positive. The single-story house sold within a few days of its erection on site and prior to its actual completion, and led to excited anticipation of the subsequently constructed two-story home. In fact, the two-story house actually sold prior to the commencement of site work. Marshall Heights CDO actually fielded several calls from community residents wanting similar houses constructed on their privately owned lots – a service that is outside MHCDO's mission, but nonetheless indicative of the favorable response to the houses once they were in place.

LESSONS LEARNED

While zoning in the District of Columbia was not an issue, it took a great deal of time to educate city building codes officials about the HUD-Code product. Technical drawings typically prepared by manufacturers for permitting purposes had to be revised several times to raise the level of knowledge and comfort of these officials. All of this added up to extreme delays in the building code department's ultimate approval of the first home. Such delays were virtually nonexistent in approval of the second home, as the officials' familiarity with manufactured housing had been enhanced by the first project.

Advance notice of 48 hours and a permit was required to close the street for setting the first home. However, none of the project partners knew of this requirement and the permit was not obtained. This resulted in overtime expenses and delayed installation time. Although contingency expenses were allocated at 5.0 percent of the construction costs, actual cost overrun was closer to 7.5 percent. On future projects, it may be advisable to prepare a more detailed listing as to the manufacturer's and developer's responsibilities, so as to avoid any confusion as the project proceeds. Stipulations as to timing of factory representative, crane operator, and other parties' site visit(s) and sufficient advance notice of delivery should be included. It would also be worthwhile to review the checklist upon delivery, to ensure that all items indicated as having been shipped are received at the site.

Furthermore, an admirable desire to rely on local labor for trim, carpeting and other finish work on the part of the developer meant that many of the time and hard cost savings gained from using a HUD-Code product were offset by increased costs at the back-end of the project. The developer felt, however, that the benefits to the community's economy were well worth the tradeoff.



Nonetheless, the use of a HUD Code product for the two-story home helped avert a potential financial disaster on its lot. Originally purchased at market rate with an existing home, the lot was intended to be divided in two. The existing home was to have been rehabilitated and the other lot was going to be used for a new home. However, the existing structure was beyond rehabilitation and had to be demolished, and access constraints meant that the lot could not be subdivided. The HUD Code home helped gain back much of the financial ground lost due to the difficulties associated with the lot.

Overall, it is imperative that all parties work from identical plans, as it became apparent as the construction date neared that some variation may have existed among the plans circulated in support of the project, resulting in the need for additional site work. Getting everyone on the same page from the outset (either contractually or by some other means) should be given a high priority during the planning stages of future projects.

What many of these lessons represent is the need for clear and consistent communication. During the course of the project, MHCDO had three project managers overseeing the project and Schult Homes had several points of contact for MHCDO to communicate through. Many of the problems encountered could have been handled more efficiently or avoided entirely had there been one point of contact at both the developer and manufacturer throughout the project. Both project participants have acknowledged this and have adjusted their approach to future projects accordingly. which, To says, had pulled \$15,000 to \$20,000 out of the cost of building each home. But those savings were negated in the late 1990's by escalating land, construction and regulatory costs. "We were right back where we started", To said. "Then we started considering manufactured housing. And it's paying off."

Community development corporations like HomeSigbt must constantly find ways to build more effectively, if they are to provide owner-occupied bousing. Many government subsidies currently go toward rentals. Even though HomeSight does much of the work with its own employees, it has "maxed out," utilizing every efficiency it could possibly adopt. Using manufactured bousing allows it to bring the factory's built-in efficiencies to the site.

The second major benefit now helping HomeSight in its program is a large savings in time. Prior to beginning Noji Gardens, To was allowing four to five months for the complete construction cycle per home. With labor becoming increasingly scarce, the outlook for recovering some of this time was grim.

HomeSight's first eight homes are being completed in 2 to 3 months, already a dramatic improvement. To figures to have that time down to 30 days per home when he has all of his systems optimized and ratcheted into the manufactured home cycle.

Noji Gardens was named by HomeSight in honor of the Noji family, who operated a nursery, Columbia Greenhouse, on the land beginning in 1918. In 1996, the fourth generation of the family moved



Columbia Greenbouse to south King County. Shortly after, HomeSight began negotiating for the purchase of the Noji property and two adjacent parcels to combine into the 6.5-acre Noji Gardens development.

As is HomeSight's customary practice, neigh borbood councils were enrolled in the design and planning stages for the property. While desiring to keep the homes affordable for area residents, the groups also expressed an

emphasis on good design to complement the blend of existing bomes and Seattle's urban forest setting.

Homes at Noji Gardens will sell for \$155,000 to \$225,000, for 3 and 4 bedroom, 2 bath models con taining 1,300 to 1,400 square feet, plus attached garage. Well below King County's median prices, the bomes represent excellent value to bome buyers of modest means. Washington still does not enjoy statewide permitted use of manufactured homes in residentially zoned areas. But as pioneering devel opments like Noji Gardens begin to have their effect on public opinion, the other big cities are certain to follow suit and relax the longstanding regulatory barriers to these bomes.



PROJECT CASE STUDY

Location:	516 East St. Catherine Street,
	Louisville, Ky.
Developer:	A partnership of the Neighborhood
	Development Corporation (NDC)
	acting as developer and Louisville
	Economic Opportunity Corporation
	(LEO), which provided the sites
Manufacturer:	New Era Building Systems,
	Strattanville, Penn.
Additional Partners:	Kentucky Manufactured Housing
	Institute (KMHI)
Project Cost:	\$66,000 selling price
	\$52,000 development price
Financing:	Special financing is available to
	qualified buyers with gross household
	income lower than 80% of the area
	median income

SITE

Former Louisville Mayor Jerry Abramson's

homeownership/inner city revitalization policy helped set the stage for the American Planning Association's regional conference, which fortuitously would be hosted that year by Louisville and would feature a workshop sponsored by MHI and the Kentucky Manufactured Housing Institute on urban applications of manufactured housing. In this setting, the Louisville Economic Opportunity Corporation (LEO) proposed a site in the Shelby Park neighborhood to serve as the fourth home site in the Urban Design Demonstration Project. LEO, whose keen interest in the Shelby Park neighborhood and in the potential benefits of using HUD Code homes sparked their participation, was a very active and aggressive partner that kept the project moving forward. It was also very knowledgeable about what kinds of housing designs and home features would work best on the sites under consideration.

Louisville had a wealth of sites. The city's land bank included 1,900 lots acquired or in the process of being acquired. Most of these were narrow lots, 25' to 50' in width, and thus suitable for such an infill project. Fortunately, the City of Louisville had previously changed its zoning ordinance to permit the installation of manufactured homes in all residential districts, provided they adhere to aesthetic guidelines in place for all new residential construction. The city was helpful in the approval



process, which also helped keep the project on schedule. It was clear from the outset that

the Neighborhood Development Corporation would have to propose a two-story design solution due to the extremely narrow lots and prevalence of multiple stories in existing homes. The Shelby Park neighborhood is dominated by a design developed over 100 years ago and known locally as a "camelback," which employs a generous first story topped by a second story set back from the street. Interestingly, the design was born as a way to skirt property tax laws of the time, which taxed homeowners based on the number of stories at the street front. The site proposed by LEO was a 21-foot-wide lot, flanked by existing homes with similar designs. The home site was ideal as an urban infill location but posed extreme challenges from the standpoint of installation.

DESIGN

Two house designs were initially considered – one single-story and a two-story design developed by Susan Maxman & Partners. To maintain visual and architectural consistency with other homes in the Shelby Park neighborhood, Maxman refined its design for a 1½-story "camelback" model by stacking two single-section modules. In keeping with the neighborhood's predominant architectural style, the second story is smaller than the first and is set back about 15' from the front. The 5/12 roof pitch is steeper than that on a traditional manufactured home, and fits in well with the surrounding homes. Extremely tight lots and close proximity of one house to another meant that the home had to be constructed with a firewall on one side. Because the firewall has no windows, the house could be sited in a partial zero-lot line configuration. The exterior design process was made easier by the existence of a "design palette" developed by the city for the Shelby Park neighborhood. All new construction must draw its visual cues from this design palette, ensuring that additions to the community will be consistent with and enhance the existing neighborhood character.

CONSTRUCTION

Installing a 16-foot-wide, 11/2-story home on a 21-foot-wide site with overhead power lines at the lot front, existing houses on each side, and access possible only through a narrow alleyway at the rear earned the project the "Most Difficult Home to Site" award. In fact, the installation itself became as important a part of the story as the use of manufactured housing. At the outset, manufacturer New Era Building Systems wondered if it was even possible. New Era saved the day by hitting upon an inventive method of installing multiple-story home on this type of lot by reversing the conventional procedure. The second story would be rolled into position at street level, then hoisted by a crane positioned in the backyard. The first floor unit would then be rolled in underneath, secured, and the second story lowered into position on the first. On the day of installation, the crane held the second story in place for five hours while the first was put into position and prepared to accept the second story. With the units in place, the roofs were tilted into their full 5/12 pitch. This unique method helped avoid the danger that the power lines presented. The house, including the front porch, was built entirely in the factory with the exception of a small stoop at the side of the house. It took a full day to install the house, and a month to complete the finish work, landscaping, and interior decoration.



RECEPTION

The arrival of the units to the homesite on a crisp spring Saturday morning brought the neighbors out to watch the installation process, and their excitement was clear both before and after the home was installed. City officials have been favorably disposed toward the project, and local residents regard the home as emblematic of neighborhood improvement. One longtime neighbor was quoted in the local paper as saying, "I think this project is going to bring the neighborhood up. I think it's absolutely beautiful." As can often be the case, transportation (distance from the factory to the site) had a noticeable impact on total project cost. In addition, using crews that are well-versed in performing turnkey operations and having a retailer intimately involved in the installation and finish phases of the project can reduce overall construction time and cost. Though the logistics of installing a home on a narrow, difficult site presented numerous challenges, the procedures and techniques developed to support this type of installation can now be replicated on other projects, where greater efficiencies can contribute to improved profitability.

LESSONS LEARNED

While unlike the other Urban Design Projects the Louisville project involved a retailer, however communication between parties not accustomed to working together (manufacturers, architects, city agencies, focus groups, and multiple non-profit developers) resulted in lapses and delays. The retailer, who might otherwise have helped greatly speed the finish process, was based in a different city, and was not involved in the project on a day-to-day basis as the project was being completed. As an unfortunate result, the homes took significantly longer than normal to finish, meaning that time saved at the front end by using manufactured units was lost at the back end. On the positive side, the active participation by the non-profit groups proved highly effective at negotiating the terrain of funding, regulations, and local politics.

Setting the home in this situation by preparing the second story first followed by the first story was a new experience for New Era. While the home was installed, watertight and secured with a "silent sentry" system within ten hours, the manufacturer feels that they learned enough from this initial experience that on future projects installation could be accomplished in half the time.







NCMHI RALEIGH PROJECT:

Demonstrating Urban Uses for Manufactured Housing

NCMHI RALEIGH PROJECT

In yet another sign of a burgeoning interest in using manufactured bomes in urban areas, an attractive three bedroom, two bath, 1500 squarefoot bome was dedicated in the shadows of the North Carolina statehouse in downtown Raleigh on June 14, 2000.

Designed complete with a factor y-constructed front porch, the house blends in with the 1920s bunga low-style architecture of the neighborhood in the southwestern part of the city.

The manufactured bome, located at 125 Prospect Avenue, is priced at \$120,000 – about 40 percent less than what a comparable site-built bouse would have cost on the same lot. The gable-end entry bome fits well on its relatively narrow lot. Joan Troy of Troy Enterprises, who co-developed the project along with the innovative non-profit Downtown Housing Improvement Corporation, had a great deal of experience with HUD-Code manufactured bomes across the state.

On hand for the grand opening ceremony were Raleigh Mayor Paul Coble, members of the city



PROJECT CASE STUDY

Location:	Midtown Triangle Neighborhood,
	Milwaukee, Wis.
Developer:	Community Development
	Corporation of Wisconsin,
	Milwaukee, Wis.
Manufacturer:	Schult Homes, Crest Division,
	Milford, Penn.
Additional Partners:	Wisconsin Manufactured Housing
	Association
Project Cost:	Houses would be offered for \$50,000
	to \$70,000
Financing:	Community Development Block
	Grant; Fannie Mae; low-interest
	mortgages from the Wisconsin
	Housing and Economic
	Development Authority

SITE

A large neighborhood in downtown Milwaukee, known as the Midtown Triangle, was selected as the pilot neighborhood because of its numerous sites. This 63-block area, close to the heart of Milwaukee, has been the site of other revitalization efforts. International housing non-profit Habitat for Humanity has built a number of single-family houses in the community, and the City of Milwaukee has recently undertaken an ambitious project: CityHomes. This project comprised 43 units built for middle-income families and proved quite successful. The Urban Design Project site bordered on the CityHomes development, which would impact what the manufactured housing would need to look like.

The Milwaukee Urban Design Project was ambitious in its own right. The plan was to start with two prototypes, which would eventually spur the development of 15 to 18 more houses. Rather than scatter development over a large area, it was decided to concentrate on one of the several blocks within the Midtown Triangle neighborhood that had mostly vacant lots. Most of the lots in the designated block were owned by the city, and thus were readily available for development.



DESIGN

As was the pattern in other Urban Design Project cities, the architects worked closely with community groups and the local developer to ensure the designs responded to the local context. A series of design meetings were held which involved residents of the Midtown Triangle neighborhood, city and state officials, representatives of neighborhood organizations, lenders, realtors, and other parties with a stake in the project. With this input, the architect developed a number of designs – one of them a duplex with tremendous future potential in other urban applications. The two selected to be built initially were both two-story homes with three bedrooms, one with a single bath and the other with a bath-and-a-half. The larger house was 1,536 square feet, while the smaller home was 1,464 square feet. Both models were comprised of four sections, with porches to be built on site.

CONSTRUCTION

The homes were constructed and the full-basement foundations prepared. Unfortunately, the installation of the homes was derailed when the non-profit encountered financial difficulties associated with other projects, resulting in its bankruptcy. With the original home sites now under the cloud of the bankruptcy, the project has been postponed indefinitely. Both MHI and the City of Milwaukee remain committed to pursuing a pilot project in the Midtown Triangle neighborhood in the future.

RECEPTION

The City of Milwaukee was one of the most receptive to the idea of manufactured homes for infill. While the Urban Design Project was derailed at the last minute due to fiscal circumstances outside the program, the Wisconsin Housing and Economic

Development Authority (WHEDA) had already proceeded to use manufactured homes in another project in the Lindsay Heights neighborhood. The WHEDA experiment, which included homes built by New Era Building Systems, Inc., proved that manufactured homes could successfully blend into the fabric of Milwaukee's established urban neighborhoods. Once again, the neighbors concerns focused on design appropriateness of the homes, not on code or where they were built.

LESSONS LEARNED

Obviously, without the successful placement of the intended homes in Milwaukee, the lessons learned are limited.





PROJECT CASE STUDY

Location:	Smithfield Neighborhood, Birmingham, Ala.
Developer:	Smithfield Neighborhood, Inc.
Manufacturer:	Cavalier Homes, Inc., Addison, Ala.
Additional Partners:	The Enterprise Community (City of Birmingham), Alabama Power Company, Alabama Manufactured Housing Institute
Project Cost:	\$40,000 to \$50,000 est.
Financing:	First Commercial Bank, Freddie Mae Low Income Housing Fund

SITE

Birmingham presented many potential sites for the construction of the Urban Design Project homes. Birmingham has an aging housing stock and is forced to demolish hundreds of dilapidated units every year. Birmingham's Smithfield neighborhood was in need of new housing, and new construction in the community had been dormant for some time. The City of Birmingham had targeted this area as an "enterprise community" with incentives to encourage innovative development programs. Smithfield Neighborhood, Inc. (a nonprofit advocacy group representing the concerns of local residents) identified 26 vacant lots suitable for single-family houses. The sites chosen on Second Street North, at 50' x 100', were generous compared to other nearby lots.

Due in part to the dearth of new construction in the area in the last several years, and the small size of the non-profit, the agency experienced difficulty in acquiring construction financing for the project. As a result, the Birmingham project was to become the first beneficiary of a unique partnership between MHI, Freddie Mac, and the Low Income Housing Fund (LIHF) to help spur the development of single-family housing in urban neighborhoods. In brief, in the partnership MHI would help coordinate the partners and provide industry resources and support, LIHF would provide gap financing to help get a project "off the ground," and Freddie Mac would provide mortgage financing to the ultimate homeowner.

Freddie Mac also suggested an innovative approach in the Smithfield neighborhood to help spur rapid residential revitalization. Based on their experiences with

purchase/rehab efforts in other cities, Freddie suggested that the first two homes placed in the community serve as model homes. Working with Smithfield Neighborhood, Inc., they were to identify other available infill lots in the community. Current residents interested in the new housing and newcomers alike would be pre-qualified for purchase through homeownership counseling and other homeownership classes and would then be able to make offers on the home and lot combination of their choice. By being able to tour the models and by having seen the homes during their installation, these potential homebuyers would gain better insight into the homes they were buying. In addition, this strategy would have helped create interest and excitement in the neighborhood, and create the potential for a speedy positive impact brought on by the infusion of new residents.

DESIGN & CONSTRUCTION

After a series of design meetings with the neighborhood group and other team members, the architect presented designs for two units: one a three-bedroom, two-bath house of 1,248 square feet, and the other a three-bedroom, two-bath house of 1,041 square feet. Both were single-story homes in the bungalow style, with generous front porches. Each model is comprised of two sections. Construction details called for 8-foothigh ceilings, six-panel interior doors, hardwood entry foyer, a 5/12 pitched roof, R-11 insulation in the floor, R-15 in the walls, and R-30 in the roof. The homes were to feature thermopane windows and an electric heat pump for the mechanical system with fiberglass perimeter heat ducts. While the homes were never built, their installation would have been similar to the Washington, D.C. single-story home. Plans were for the homes to be placed on a non-loadbearing perimeter crawlspace, with the houses resting on grouted piers or transverse beams. Unlike the D.C. house, the porches on the Birmingham homes would have been built largely in the factory as an integral part of the structure.

RECEPTION

The community's reception of the idea of manufactured housing emphasized the importance of the inclusionary design process. While residents were not opposed to the idea of manufactured housing in their neighborhood, they reacted very negatively to the idea of the initial design proposals, which were based on the "shotgun" designs scattered throughout Smithfield and the rest of Birmingham. The stated perception in the focus groups was that shotgun houses in Birmingham imply poverty. The community wanted an affordable design that would not perpetuate this perception in the neighborhood. This was significantly different from the architect's experience in other project cities, especially Louisville, where shotgun houses were extremely popular and did not carry any stigma.

As a result, the neighbors settled on a bungalow style also prevalent in Smithfield and more in keeping with their own preferences. Susan Maxman & Partners included other features, such as front porches, that the residents had specifically asked for – but always with an eye toward final cost.

According to T. R. Patton, president of Smithfield Neighborhood, Inc., "the design team paid particular attention to the consistent demand from the neighborhood that the homes not incorporate excessive and expensive options which would ultimately make them less affordable to the very people who want to live in the Smithfield neighborhood. We feel that the final designs reflect the input of the focus group members and will be both beautiful and affordable."

LESSONS LEARNED

While it cannot be disputed that the residents of the Smithfield neighborhood supported the project, that the industry enthusiastically embraced it, and the developer genuinely wanted to get it done, the simple fact of the matter is that the non-profit lacked the manpower and the capital to get the project off the ground. If the developer-partner's good intentions had been enough, the Birmingham initiative would have been a rousing success. Throughout the process the non-profit indicated that the uncertainty of the availability of financing sources for the ultimate homebuyers was the major barrier to the project. After Freddie Mac's introduction as a partner, however, it became quickly apparent that the marketing and financing of the finished product was not the impediment to getting the project moving. Problems with titling the lots, project permitting and with getting the first spades of dirt turned were the causes of failure. As in the case of Milwaukee, the Alabama Manufactured Housing Institute remains committed to pursuing with the project elsewhere in the state, and continues to look for opportunities to undertake an urban infill initiative.

council, and representatives from local govern ments in North and South Carolina that were inter ested in learning more about the use of manufac tured homes on urban infill lots. Dozens of neigh borhood residents were also able to tour their newest neighbor.

"The whole block could go this way and things would be much better than they are right now. We're very, very pleased," said long-time

Prospect Avenue resi dent and community leader Mildred Flynn.

The project was under -

taken by the North Carolina Manufactured Housing Institute (NCMHI) to demonstrate that manufactured homes can be architecturally compatible with existing bomes in urban settings and also be a solution to the affordable housing crisis facing many of the state's urban and inner suburban areas. Yet despite its affordability and quality, manufac tured housing continues to face opposition from some political forces around the state.

The new home on Prospect Avenue was allowed under an exception to the Raleigh City Ordinance, which currently prohibits manufactured housing within the city. NCMHI is seeking a permanent change in the Raleigh Ordinance, as well as others like it around the state, in order to bring an afford able, safe, and attractive housing alternative to the market.

In an editorial on the placement of the bouse, the Raleigh News and Observer stated, "When the aver age bouse is selling for more than \$200,000 in Wake County, \$120,000 looks good. Without the extras, the Prospect Avenue bome could be selling for less than six figures. Scores of modestly paid people who are badly needed in this county would welcome a new comer like that."

LIRBARIAN

PROJECT ACHIEVEMENTS

The Urban Design Project was distinguished by a number of unqualified successes, but at the same time revealed a number of issues to keep in mind in future urban infill projects. The achievements of the program certainly supported MHI's assertion that manufactured housing is a viable and important choice in providing affordable inner-city housing. "There were valuable lessons for...industry participants," notes Steve Hullibarger, Urban Design Project Subcommittee co-chairman. "Working in urban markets is new to most of us and, while it can be a minefield for the unaware, it is also a vast market opportunity because our homes can make unutilized and unwanted lots profitable." Ultimately, the purpose of the Urban Design Project has been to test the viability of manufactured housing in urban infill situations, and to identify the challenges and impediments to its further use in urban markets. To that end, here are the program achievements:

• The Urban Design Project was a useful program in identifying and expanding new markets.

The challenge to the Urban Design Project Subcommittee was to convince manufacturers that it was appropriate for a trade association to become involved in research that some initially believed was best left to individual manufacturers. This challenge was met. A welcomed revelation was that the urban infill market is not only ready for the industry but may be riper than was previously thought. Very little work was needed in most cases to sell the idea of manufactured housing to the cities, and negative erroneous perceptions about "mobile homes" were quickly overcome.

• Innovations were tested in a very public arena.

The project also allowed the testing of several innovations in manufactured housing on difficult urban sites. Although not new in themselves, two-story units have not penetrated the market much outside of California. The program allowed twostory units to be constructed successfully on a number of sites. In Louisville, a smaller crane was used to accommodate a narrow, 21-foot-wide site, where a camelback unit was built.

• A model of architect/manufacturer collaboration was tested.

The work of Susan Maxman & Partners, which was hired to design houses that were sensitive to surrounding houses, was roundly praised by developers, manufacturers, and trade organizations. Maxman showed that a firm with no prior experience with manufactured housing could work with manufacturers to develop attractive units. The firm also demonstrated that simple architectural models of the houses could be used as a powerful tool to teach the principles of HUD-Code construction to community groups, neighborhood organizations, and local officials.

• Focus groups helped change public perceptions.

A series of meetings with community leaders, neighborhood groups and local officials was a powerful force in explaining the nature of manufactured housing and generated community "buy-in" for the program. Such meetings, and the use of models and renderings of the houses in place, had a major impact in changing attitudes about manufactured housing. "The defenses dropped and the prejudices just went away," remarked Andy Scholz, former vice president of site development for MHI. According to Scholz, in the community meetings "the mindsets were really changed. You could see the scales drop from peoples eyes." The disappearance of negative perceptions boosted the credibility of manufactured housing as an alternative. "We expected that to happen after the houses were built, not before," notes Scholz. Such reactions revealed that "city officials and the public are more concerned with appearance issues than with the differences between the HUD Code and model building codes," observes Steve Hullibarger.

LESSONS LEARNED

The lessons learned on the part of the program's participants were numerous and will go a long way toward helping see future projects run through to completion more smoothly. Several areas have resulted in lessons learned that will improve future programs undertaken by the manufactured housing industry and the clients for urban infill housing.

• Requests for proposals should focus on nonprofit community housing developers.

The RFP developed by MHI was wide open in solicitation. Those closely involved in the RFP process remarked that time and resources would have been better applied by focusing directly on the type of organizations most likely to be involved in developing urban infill housing, namely nonprofit community development organizations. While the development time for nonprofit versus for-profit developers is generally longer, their established political connections and savvy regarding urban development regulations can help projects to "get off the ground" faster.

• Nonprofit community housing developers should be thoroughly screened for management talent and construction financing sources.

Generally, the projects that ran the smoothest in the program were those undertaken by developers that had strong project management skills in-house, a track record of development experience, and the financial resources to get the project going. Particular attention should be paid to the team assembled by the developer to determine whether members have the background and experience to get the job done.

• The team should include a dedicated project manager on both the developer and manufacturer side.

Another critical element in the success or failure of projects was the commitment of experienced project managers who could see the project through from start to finish. The manufacturer should designate a "go-to" person overseeing the project to resolve problems, and avoid situations where several persons are talking with the developer partner. Some of the nonprofits changed project managers frequently as well, and as a result the flow of communication was disrupted and inconsistent. According to MHI's Eric Alexander, "roles must be clearly defined, and each partner should have one person who knows who to talk to within each project team to resolve problems and where to get information." In this way, communication between the developer and the manufacturer is always clear and timely.

• Project funding should be in place.

As part of the screening process, it is critical that funding be in place before the project starts. The involvement of Freddie Mac, the Low Income Housing Fund (LIHF), and other funding sources for the development of urban infill housing should be explored and commitments should be in hand.

• Verify that the developer has control of the land.

Also as part of the screening process, the developer's control of suitable building sites should be verified. According to several project participants this issue can make or break a project (they can be delayed for months, or cancelled entirely). Even if the nonprofit developer is a city agency and the land is city owned, it should be verified that the lots are free and clear for development.

• The culture and language of manufactured housing should be communicated.

Here, keeping the lines of communication open is critical so that the development team understands the nature of manufactured housing, and what is and is not possible in a HUD-Code house. Specifically, the manufacturer or the state manufactured housing association should communicate to the developer how manufactured houses are different than site-built houses, and the differences in the construction process. They should understand the limits on the size of the units (such as typical section widths) and the materials normally used. The developer should know that the commitments between manufacturers and clients are often less formal than what they may be used to, and that the cost savings over traditional site-building will probably not be dramatic on the first few houses.

• Local building departments should be educated about the documentation of manufactured homes.

Officials in the building department may be unfamiliar with HUD-Code homes. Again, education is the key. Drawings for manufactured homes are often less detailed than those for site-built houses, and the technical elements of drawings are not what local building inspectors may be used to seeing. This is part of the language and culture of manufactured housing that should be communicated to help the project proceed smoothly. Because manufactured housing is unfamiliar in many jurisdictions, there is still a certain level of discomfort on the part of building officials, who may view such closed construction as a threat to their positions.

• Manufacturers should communicate the technical performance of their product.

Because manufactured housing is an unknown quantity to developers and building departments, there may be a tendency to overbuild elements, such as foundations. This was the case in the Wilkinsburg, Penn. and Washington, D.C. (singlestory) projects, where foundations exceeded the engineering needs. Relying more on the manufacturer for technical information and performance can save money on site elements that should be appropriate for manufactured housing.

• Developers should visit the factor y.

Developers unfamiliar with the product should be encouraged to visit the factory for the most obvious of reasons – to see how the homes are produced. Visiting a manufactured housing factory can go a long way toward explaining the culture, language, and technical characteristics of HUD-Code homes. Developers should also "walk the line" as their first units are being constructed and periodically thereafter to help cultivate their level of comfort with their chosen manufacturer and its processes. Just as in a visit to the construction of a site-built house, walking the line will give the developer greater control over their house and will ensure that it is built according to their expectations.

• Developers should have a realistic understanding about the amount of site work involved.

Although far less than that of conventional construction or even modular housing, the manufacturer should communicate and the developer should understand that manufactured housing will require a certain degree of site work. This is especially true with the two-story HUD Code homes that played an important part in the Urban Design Project. "There was a lot more site work than we had anticipated," says Bill Friedlander of the Neighborhood Development Corporation, the group that built the Louisville home. Sparky Keyes, who was involved in manufacturing the Washington, D.C. homes notes that many developers have the misconception that HUD Code housing needs no site work. In fact, five to ten percent of the house's construction is completed after delivery. Understanding the site work involved will give the developer a better grasp of construction costs, timetables, and what needs to be completed on site both before and after the delivery and installation of the home.

• Setting and finishing crews experienced with manufactured homes should complete the work.

By far, this was the biggest weakness exposed by the Urban Design Project. Each of the sites experienced delays and cost increases to varying degrees based on the inexperience or disinterest of the finishing crews. The developer needs to understand that much of the time- and cost-savings of HUD Code housing depends on an efficient, well-trained crew that will set and finish the house. The set of skills for accomplishing this work is different than those possessed by the average contractor on site-built projects. Finishing crews for manufactured homes need to be "jacks of all trades," capable of performing a variety of tasks that are rather small but nonetheless essential. Such tasks are often viewed by conventional contractors as too small to bother with, so that these jobs are not given the attention they deserve in a timely fashion. The modest nature of these jobs also drives up their costs when contracted out separately. "when you hire all the subs to do these little jobs," explains Elliot Fabri, President of New Era Building Systems, "they will charge a days worth of time to do a few hours worth of work." Manufacturers should also understand, however, that non-profit community developers usually want to create as many jobs as possible locally, and they have a stable of site-built contractors that they work with on a regular basis. The problem is that most urban areas do not have experienced setting and finishing crews because this has not been a traditional market for manufactured housing. For a number of years, California has granted licenses for "installer crews" that allow a variety of jobs to be performed by a single contractor. This model may be a good one for other states to adopt to encourage development of urban-based installation crews. This is an area where state manufactured housing organizations can be more instrumental in encouraging such licensure. Developers and manufacturers might work together to train such crews as a mutual benefit, as the existence of such crews stimulate infill work for the manufacturer and save time and money for the developer.

• Plan on longer setting times with cranes.

The nature of setting two-story infill homes, or even single story homes on difficult sites, will have on impact on overall project cost. Some infill sites are very tight, with narrow lots and existing houses on either side. This means greater coordination between the various players on setting day is necessary, and that crane rental periods will be longer, adding cost to the project. Manufacturers and developers should realize that setting a house on an infill lot may mean more time and cost than setting the same house on a rural or suburban lot. Coordination of crew and longer crane rental periods should be anticipated well in advance.

• Developers should be prepared for a learning curve with manufactured housing.

Because HUD-Code housing is unlike site-built construction in many notable respects, the first few projects undertaken should be considered learning experiences that may not benefit from the hard cost savings that subsequent projects will enjoy. "It is hard to see hard cost savings in just one house," says Eric Alexander of MHI. "It's as if the developer is learning how houses are built all over again." Alexander estimates that in most cases the third house should be the real "breakthrough" project in terms of cost. Developers need to recognize that in a sense they are "paying to learn" and that savings will accrue in later projects. Most importantly, non-profit developers should not become discouraged by the learning curve and give up on future HUD-Code homes because the first was not profitable. Developers who do so squander the knowledge they have gained that will help on future projects.

• Manufacturers should cultivate ongoing relationships with developers.

As do nonprofit developers, manufacturers will experience their own learning curve working on urban infill sites. Building upon their mutual experiences, they should establish ongoing partnerships with nonprofit community housing developers to tap this market and to capitalize on the lessons learned. One way to do this, points out Elliot Fabri, is to invite area nonprofit developers to completed infill housing projects so that they can see firsthand what is possible with manufactured housing.

On the strength of the pilot project's successes in three cities -Wilkinsburg, Penn.; Washington, D.C.; and Louisville, Ky. others have undertaken their own urban infill initiatives. Homes have been successfully placed in Raleigh, North Carolina, and HomeSight, a non-profit developer in Seattle, Washington is undertaking a 75 home development called Noji Gardens utilizing two-story HUD-Code manufactured homes.

• State trade association involvement is critical.

Several of the projects gained from the involvement of state manufactured housing trade associations, which helped to coordinate the work of developers, manufacturers, finishing crews, and funding agencies. They also helped to smooth the way over code barriers to HUD Code housing. "We've been involved in educating city officials about HUD Code homes," says Sherry Norris of the Alabama Manufactured Housing Institute. Educating the real estate community has also been part of the association's role.