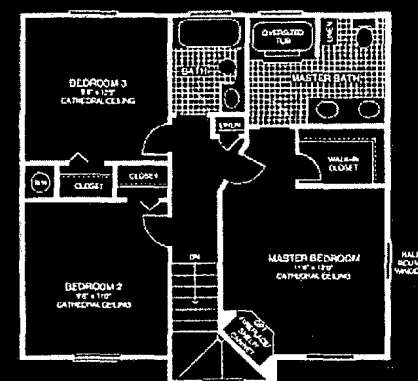


MANUFACTURED HOME PRODUCER'S GUIDE TO THE SITE-BUILT MARKET



PALM
Manufactured Home Division

hud

42

MANUFACTURED HOME PRODUCER'S GUIDE TO THE SITE-BUILT MARKET



MANUFACTURED HOME PRODUCER'S GUIDE TO THE SITE-BUILT MARKET



Prepared for:
U.S. Department of Housing and Urban Development
Office of Policy Development and Research

Prepared by:
Steven Winter Associates, Inc.
Norwalk, CT

May 2000



**STEVEN WINTER ASSOCIATES, INC. STAFF MEMBERS
WHO WERE INSTRUMENTAL IN THE DEVELOPMENT AND
PRODUCTION OF THIS BOOK INCLUDE:**

Steven Winter
Principal-in-charge

Christine Bruncati
Project Manager

Michael J. Crosbie, Ph.D., RA
Editor

Gordon Tully
Co-Author

Masaki Furukawa
Chief Illustrator

Chela Hardy
Administrative support

GUIDEBOOK CO-AUTHOR

Steven Hullibarger, The Home Team

**U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
OFFICE OF POLICY DEVELOPMENT AND RESEARCH, AFFORDABLE
HOUSING RESEARCH AND TECHNOLOGY DIVISION**

David Engel
Director

Bill Freeborne
Project Engineer

GUIDEBOOK DESIGN

Andrew P. Kner
Art Director

Michele L. Trombley
Assistant Art Director



PATH (Partnership for Advancing Technology in Housing) is a private/public effort to develop, demonstrate, and gain widespread market acceptance for the next generation of American housing. Through the use of new or innovative technologies the goal of PATH is to improve the quality, durability, environmental efficiency, and affordability of tomorrow's homes.

Initiated at the request of the White House, PATH is managed and supported by the U.S. Department of Housing and Urban Development (HUD). In addition, all Federal Agencies that engage in housing research and technology development are PATH partners including the Departments of Energy and Commerce, as well as the Environmental Protection Agency (EPA) and the Federal Emergency Management Agency (FEMA). State and local governments and other participants from the public sector are also partners in PATH. Product manufacturers, home builders, insurance companies, and lenders represent private industry in the PATH partnership.

To learn more about PATH, please contact:

PATH
Suite B133
451 Seventh Street., SW
Washington, DC 20410
202-708-4250 (fax)
e-mail: pathnet@pathnet.org

- 6** FOREWORD
- 8** Chapter 1. INTRODUCTION
Opportunities for Manufactured Homes in the Site-Built Market
- 10** Chapter 2. KEY NEGOTIATING ISSUES
Design and Construction Issues
Financing
Dealer Involvement
- 34** Chapter 3. CONSTRUCTION AND PRODUCTION DETAILS
Division of Work Between Site and Factory
Design Documents and Approval Arrangements
Field Inspection of Manufactured Homes
Warranty Issues
- 41** Chapter 4. BECOMING INVOLVED IN A PROJECT
Builder/Developer Contacts Manufacturer
Manufacturer Approaches Builder/Developer
Manufacturer Responds to an RFP
Key Considerations
- 49** Chapter 5. MANUFACTURER AND BUILDER/DEVELOPER AGREEMENT
Important Issues to be Addressed as Part of a Manufacturer and Builder/Developer Agreement
- 56** Chapter 6. CASE STUDIES
•Lexington Communities •New Colony Village •MHI Urban Design Project •Pine Ridge •NextGen
- 71** Chapter 7. APPENDICES
•Utility Planning for Residential Development Projects •Excerpts from the Pine Ridge Building Summit Criteria
- 77** RESOURCES
•Selected List of Interview Participants •Sources Consulted

CONTENTS

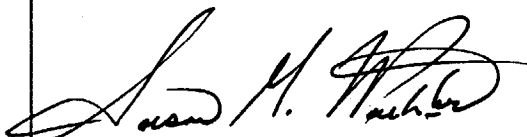


FORWARD

Bringing new ideas and innovations to the residential construction industry is critical if America is to meet its affordable housing needs. The working partnership between the Department of Housing and Urban Development (HUD) and the manufactured housing industry encourages innovation in housing design, construction, and delivery. Manufactured housing is one of our nation's primary sources of affordable housing, and HUD supports research and education that advance both quality and affordability in this rapidly evolving industry.

For the past five years, HUD and the manufactured housing industry have taken a comprehensive look at new markets, products, and systems. In 1999, HUD published *Innovations at the Cutting Edge: New Ideas in Manufactured Housing*, which covered a broad range of innovative manufactured housing projects and products. A compelling innovation common to many of the featured projects was the combination of manufactured homes with site-built components. This synthesis of on-site and off-site construction provided high-quality, affordable housing.

This publication focuses on the potential for that synthesis and demonstrates how manufacturers can provide homes for the site-built market. There is a ripe opportunity for manufacturers to expand their market share by working with site builders, and doing so will promote HUD's goal to provide quality, affordable housing to more American families.

A handwritten signature in black ink, appearing to read "Susan M. Wachter". The signature is stylized with a large, flowing "S" and "W".

Susan M. Wachter

Assistant Secretary for Policy Development and Research



1

INTRODUCTION

The goal of this guidebook is to encourage partnerships between manufactured housing producers (MHPs) and site builder/developers to construct affordable homes that combine the best of both. The more immediate goal is to help manufacturers to work effectively with home builders and developers and to familiarize manufacturers with the market needs of the conventional residential site developer. The guide covers key negotiating points for collaboration between manufactured home producers and builder/developers, including design and construction issues, financing arrangements and dealer involvement. There is also a discussion of construction and production details unique to manufactured homes in residential developments. The guide closes with a series of case studies from around the country that feature manufactured homes for residential developments.

This guide includes projects that combine manufactured housing with site-built elements, as well as simple "land-home" deals. The projects that use manufactured and site-built elements range from simple single-story units with site-built decks to fairly complex two-story manufactured units with site-built garages and porches. To work in the marketplace, manufactured homes with site-built elements must be affordable relative to comparable homes built exclusively with modular or site-built technologies. Modifying typical manufactured homes to meet the needs of site builder/developers is desirable for a variety of reasons: to increase sales, overcome consumer resistance to manufactured homes, meet local zoning or subdivision restrictions, fit onto small infill sites, or satisfy the finish and appearance standards in a market familiar with site-built amenities. Manufactured homes with site-built elements have been routine in California for many years. Today, there is intense interest all over the U.S. in "pushing the envelope" of manufactured homes, most recently in the eastern half of the country, where a great opportunity exists to provide infill housing in decaying older cities.

OPPORTUNITIES FOR MANUFACTURED HOMES IN THE SITE-BUILT MARKET

Providing manufactured homes for the site-built market presents the potential for significantly increased sales to manufacturers. It also opens an entirely new way of doing business to the manufacturer. The builder/developer is your customer. Your best strategy for appealing to this market is to *reduce the builder/developer's perceived risk of using your product*. The more closely your manufactured home resembles a site-built home, and/or provides the features of a site-built home, the more likely a builder/developer will use your product. This requires flexibility on your part to accommodate the builder/developer's needs.

Secondly, with open space at a premium and stringent zoning in many suburban areas, land for the development of new manufactured home communities is disappearing. Site-enhanced projects may help gain approval of new high-density land-lease communities in areas with restrictive zoning.

Finally, site modifications of HUD-Code homes help to blend them into existing neighborhoods. Infill sites can take full advantage of factory construction, since it makes little difference to a manufacturer where a home ends up.

By contrast, site builder/developers pay a premium for infill construction because of repeated set-ups, parking and access difficulties, scattered site locations, and the difficulty of scheduling trades and material deliveries. Because HUD-Code houses are built in a factory, expensive on-site modifications to satisfy local concerns and site conditions are minimal. (The Manufactured Housing Institute's (MHI) Urban Design Project (profiled in the case studies) is an example of manufactured housing infill development. The increasing acceptance of subdivisions of manufactured homes on fee-simple lots is also an opportunity for MHPs. Lexington Communities, in Apex, NC, a fee-simple subdivision of manufactured homes, is discussed as a case study. The emerging popularity of traditional neighborhood development (TND), with greater densities and a mix of housing types and socioeconomic groups, is another potential market for manufactured homes. New Colony Village is an example of such a TND and is profiled in the case studies.



New Colony Village, Elkridge, MD.



Urban Design Project, Washington, DC.

2

KEY NEGOTIATING ISSUES

As a manufacturer negotiating with a builder/developer on a project, certain issues must be carefully considered. You should understand the needs of the builder/developer, which of those needs are negotiable, and how to create a project that is mutually beneficial. Design and construction issues, financing, and dealer involvement are all negotiating points.

DESIGN AND CONSTRUCTION ISSUES

Unit Design

In most cases, builder/developers want manufactured home designs that are aesthetically and spatially similar to site-built homes. While some residential development manufactured home projects are quite elaborate and clearly high-end, the focus of this guidebook is to foster the use of manufactured housing to fill the needs of most home buyers. The market niche most developers are looking to fill with manufactured units is buyers looking for a home under \$100,000 that meets the aesthetic, durability, and spatial criteria expected by home buyers familiar with site-built homes. The MHP has not historically dealt with this client base, but instead with one that is familiar with traditionally-designed manufactured housing.

Adapting the Product to the Market

In most cases builder/developers will want to make changes to your standard product to satisfy the wants of the first-time home buyer in the site-built market. Typically, manufactured homes may require some redesign. Extensive surveys of site-built home buyers are conducted by trade associations and trade journals. Their findings are carefully considered by many site builder/developers and (along with the builder/developer's own market research) dictate everything from whether there is a pantry in the kitchen to whether steel studs are preferred to wood. Much of this information is relevant to the MHP interested in working with a site builder/developer. MHPs who can provide units that address the perceived needs of the site-built home buyer can expand their market for affordable housing under \$100,000.

An important tool to keep the base price of homes low while addressing consumer wish-lists

is the option package. Moving some of the features expected by site-built customers into an option package allows more of the standard HUD-Code details to be part of a base-case home, lowering its price. An option package has the additional advantage of covering the cost to the MHP of stocking and tooling up for features such as all-wood trim, rabbeted door hinges, etc.

Design Development

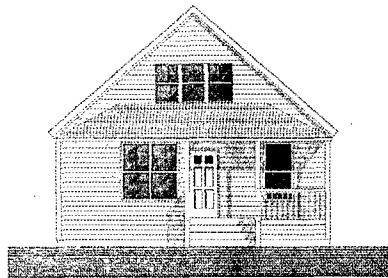
Responsibility for the re-design of manufactured homes for this new market often lies with the builder/developer. The more familiar they are with the manufacturing process, the smoother the design will proceed. The manufacturer should familiarize the builder/developer with the capabilities and limitations of the plant before designs are developed. The builder/developer may use a manufacturer's existing design as a point of departure, working within design and manufacturing constraints inherent to HUD-Code homes. Coordination between the builder/developer's designer and the manufacturer is crucial. Educating the builder/developer's architect about HUD-Code construction may be necessary. An architect already familiar with HUD-Code construction will move the project forward faster than a novice.

In projects that will use site-built components, the manufacturer should ask about any structural loads on, and construction junctions with, the manufactured unit. The manufacturer can also indicate which components of the home are efficiently produced in the plant and which should be built on site.

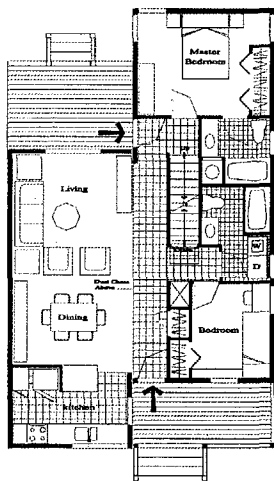
A good strategy for a manufacturer entering the site-built market is to become familiar with cost-saving measures widely used by large site builder/developers. Educating a potential builder/developer partner to proven cost-saving measures used by his or her competitors can help establish rapport during a negotiation.

Floor Plan Flexibility

Because site-built homes have fewer structural and dimensional constraints than manufactured homes, a wider range of plans is commonly available. A builder/developer is likely to have particular floor plans in mind. It is crucial to address the consequences of floor plan decisions



Gable-end entry design.



early in the negotiations, since many plan arrangements can be difficult for MHPs to accommodate. HUD-Code plans may differ from typical site-built plans in several ways:

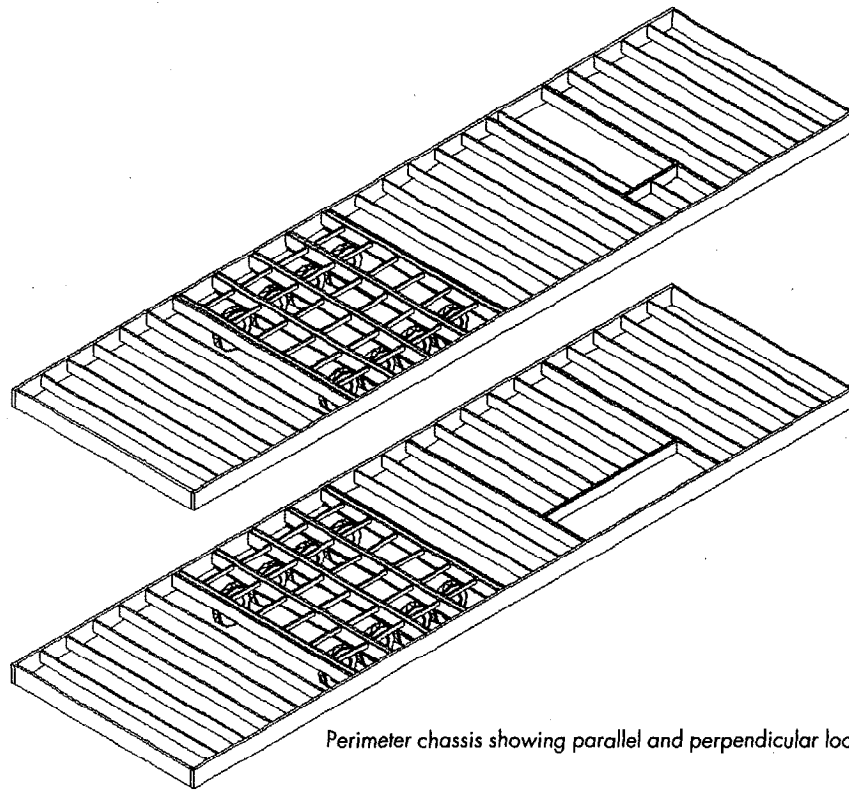
- *A basement stair cuts across the chassis beam.* Only perimeter-supported floor structures, such as the proprietary Lindsay floor system, allow a transverse stair opening. The vast majority of MHPs use longitudinal interior chassis beams, which require that stair openings run parallel with the beams. If the plan cannot be changed and you do not have (or cannot readily develop) a perimeter chassis design, you may lose a potential project.

- *The master bath is located at the end of the floor, at the far end of the master bedroom.* This is an unfamiliar pattern in site-built homes, but is a space-saver commonly used in HUD-Code homes. This concept may be a good sales tool in the manufactured home market, but it might be a "turn-off" for the builder/developer's customers, who expect the master bedroom to have windows on two walls.

- *Gable end entry.* Many infill projects on narrow lots require an entry on the short side of the home. This can be seen in the Urban Design Project case studies. More manufacturers are adding gable-end entry plans to their lines. If you do not have such a design, it may be worthwhile developing one. Combining a gable-end entry with a steep roof pitch creates the archetypal image of a "home" often desired. This configuration also allows you to provide a front porch as part of a section, or as a site-built add-on.

- *Unit size and standard doors may be inadequate.* Compared to the model codes, the HUD Code allows narrower doors and corridors, smaller rooms, and lower ceilings. These are likely to be undesirable for customers used to site-built homes. But widening corridors and doors can cause many plans to "blow up," because crucial dimension strings no longer work. For example, it may be possible to squeeze two baths and a narrow corridor side-by-side into a nominal 14' floor with 6" exterior walls; widening the corridor may make the configuration impossible.

- *The garage may need to be closely integrated with the plan.* Most site-built houses have an attached two- or three-car garage, typically placed at the front, (but increasingly moved to the side or back for aesthetic reasons). Unfortunately, few HUD-Code plans make provisions for an attached garage. In some very tight infill situations, or in low-cost housing, it may be



Perimeter chassis showing parallel and perpendicular location of stair opening.

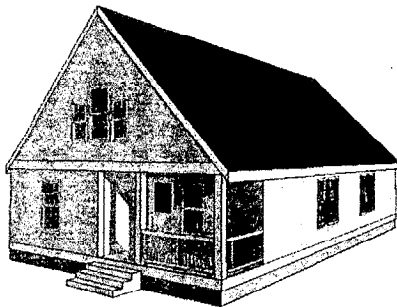
acceptable to omit the garage.

Although a number of changes to your product may be required to meet the needs of a builder/developer, the payoff can be significant. Along with increased market share, there may be fewer zoning limitations and more seamless integration within existing neighborhoods. In addition, differentiating your product gives you a competitive edge.

Basic Construction

Some of the standard construction HUD-Code practices and materials that may require modification include:

- *Particle-board floor deck.* Most site builder/developers would not consider using anything



NextGen House, Danbury, CT
Steven Winter Associates, Inc.

but OSB or plywood, and may not accept particle-board out of concern for potential damage under leaky fixtures.

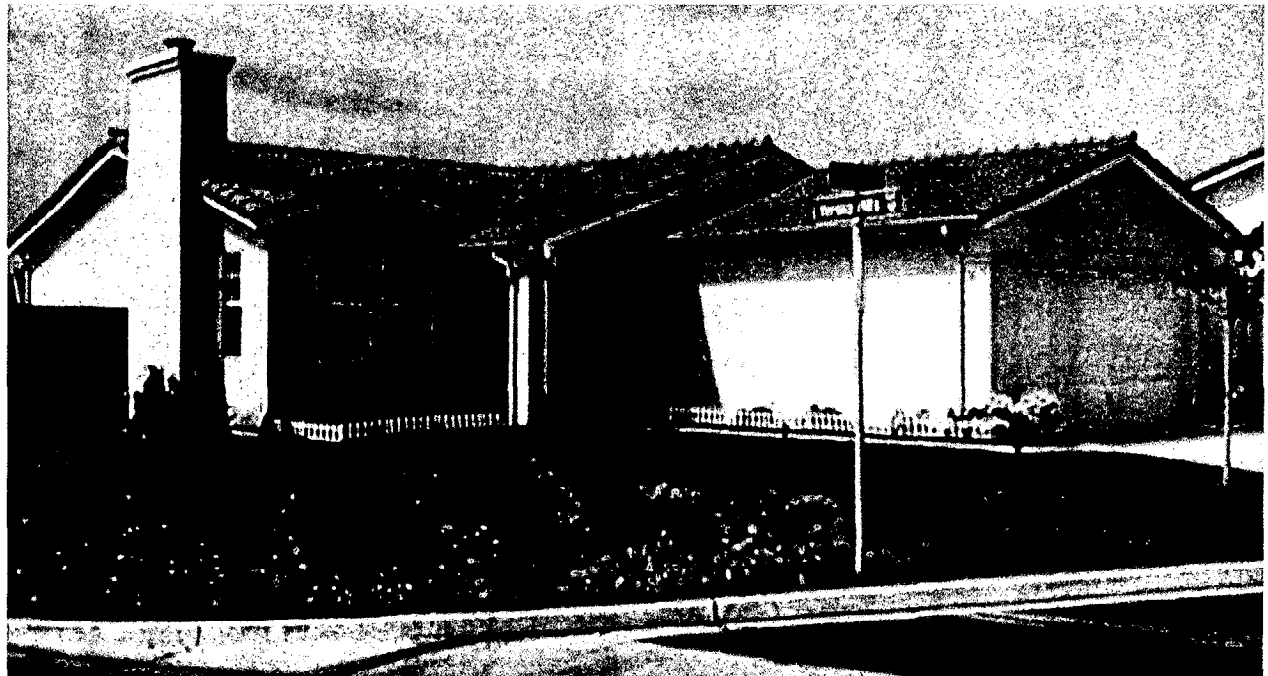
- *2x3 walls.* This is probably negotiable if acoustics are acceptable, and might be a cost-saving measure of interest.

- *No sheathing on exterior walls.* Builder/developers who use plywood or OSB may accept 1/8" wood fiber sheathing, since it is widely used by larger builder/developers. Omission of the sheathing altogether may be more of a challenge.

Steeply Pitched Roofs

Nothing says "house" more than a pitched roof. The low roof pitch typical of HUD-Code homes is probably their single most objectional feature, as reflected by the many jurisdictions that require minimum roof pitches. Assuming the potential builder/developer customer insists on roof pitches steeper than you normally provide, there are still many avenues open for negotiation.

Many site-built homes have a 5-in-12 roof pitch, although steeper roofs are characteristic of many older urban neighborhoods (and will likely be required for infill housing in such areas).

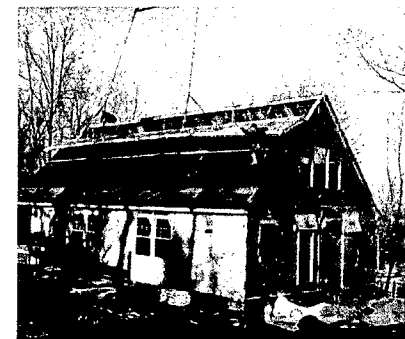


Here the garage is incorporated with the home plan and provides a sheltering wall for the building entry.
Steve Hullibarger, The Home Team

A 5-in-12 pitch can often be accommodated with a tilt-up or folded roof. The builder/developer may be sensitive to apparent breaks in the roof at fold joints, and may expect continuous underlayment at these joints. This might require a change in hinge details and on-site construction to avoid waviness. Hip roofs are very popular with consumers. Development of a hip roof may improve an MHP's hold in the builder/developer market, although potential complexities of installation and finishing should be carefully considered. A hip roof must be shipped with sheathing and a temporary weatherproof membrane. The entire hip area would be shingled on site. Further, the match of sheathing from side to side should be flawless, to avoid a telltale ridge or bump at the roof marriage line.

Truss construction is widely acceptable, and usable attic space is not a high priority for most builder/developers except in markets where expansion space is desired enough to justify the extra cost. However, as the roof becomes steeper, up to 12-in-12, a large, potentially valuable, space results. If unused, there will be large, windowless gables. A blind window can be installed (blind dormers are commonplace in contemporary townhouses in the Mid-Atlantic region) as long as some effort is made to obscure the view of roof trusses through the window. In most cases creating an occupied second floor totally changes the structure of a HUD-Code home to that typical of modular construction. MHPs who build convertible modular/HUD-Code designs will be able to accommodate a usable second floor, but at a price.

You may want to compare the cost of building expansion space in the basement, along with a steeply-pitched trussed roof, versus building over a conventional basement, crawl space, or slab, and creating expansion space under the roof. Note that an enclosed stair to the basement can be inconspicuously included almost anywhere in a plan, whereas a stair to a second floor creates a substantial element that occupies space and blocks views. Light wells can provide light and required egress to a basement. If a project with a basement is built within the jurisdiction of the Uniform Building Code, it is required to have window wells, windows, ventilation, and egress for habitable space (although this provision is absent from the International Code that will soon replace all the model codes).



Tilt-up roof on NextGen House
in Danbury, CT.
Steven Winter Associates, Inc.



Two story design in New Colony Village, Elkridge, MD.

Two-Story Homes

The most radical departure from conventional HUD-Code construction is a full two-story home, built by stacking crane-set units. Few MHPs are set up to build such designs, and they are likely not to be cost-competitive with site-built or modular homes of the same design. However, if one or more of the other advantages of HUD-Code construction are driving the project, a full two-story design may be a market asset. For very narrow infill lots, a two-story single-wide design may be required. Two-story designs have been used in higher-end projects (such as New Colony Village) and on urban infill lots (such as the MHI Louisville Urban Design Project).

Foundations

For the most part builder/developers require that homes be set on perimeter foundations. According to the Bureau of the Census, Manufacturing and Construction Division, 21% of double-section units were placed on permanent masonry foundations in 1997. This is typically done by reinforcing the outriggers and fastenings so the floor will span the width, and holding the outriggers back from the outside to allow a perimeter foundation. This may not be cost-effective for a crawlspace, where piers can be poured or stacked at low cost, but may make sense for homes set on basements, as an alternative to a heavier floor with a perimeter frame. In a basement set, few if any builder/developers want a forest of supports under the interior chassis beams, or will assume the extra cost of carrying the chassis beams on transverse structural members. The more efficient solution is to provide a perimeter load-bearing chassis.

Conventional concrete block piers and strap tie-downs mounted on a full concrete slab provide an excellent and economical foundation. If properly drained and reinforced, the slab can float, avoiding costly frost walls and accommodating expansive clay soils. For shallow frost depths, the edges of the slab can be turned down below the frost line. Anchors can easily be cast into the slab to receive strap tie-downs. The anchors need to be properly embedded and reinforced, and the slab must be heavy enough to resist uplift loads applied through the tie-down straps. The slab can be made in transverse strips to cut costs. More economical longitudinal strip slabs do not work well, as they seldom provide the necessary anchorage for the tie-downs that are required for HUD-Code homes. It is not possible to set the home directly on the

slab, as this does not allow access under the home for maintenance and utility connections.

With a conventional pier and tie-down set (whether on a slab or not), the traditional vinyl or metal skirting enclosing the crawl space can be replaced by brick, masonry, or precast concrete skirting, at a substantial cost. However, for only a small additional amount, a permanent perimeter foundation can be built, using a frost wall with footings below the frost line.

Permanent foundations provide major advantages:

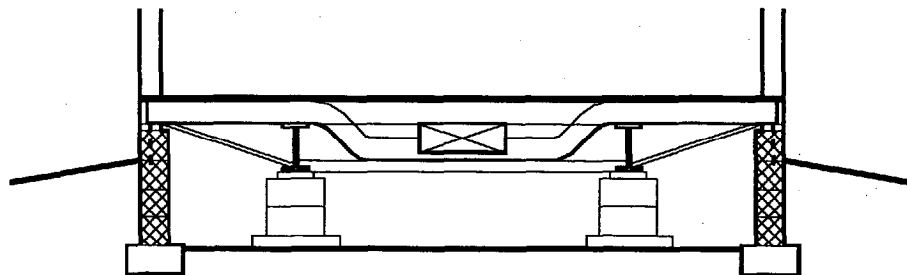
- Wind and earthquake bracing are possible without the use of strap ties.
- The home can qualify for a conventional mortgage and FEMA flood insurance.
- The appearance of the foundation is more like that of a site-built home.
- All loads from the roof and outside walls pass directly into the foundation, instead of resting on cantilevered floor joists and outriggers.
- No additional perimeter piers are necessary to carry loads across large door openings.

Interior piers can either be eliminated or can be set directly on footings at grade level, as in conventional construction.

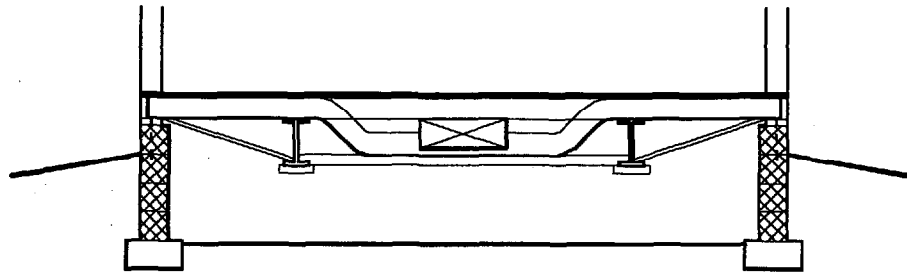
- The cost to warrant homes on permanent foundations may actually be less, as compared to units set on stacked blocks.

For further assistance in the design of permanent foundations for manufactured homes, HUD's *Permanent Foundation Guide for Manufactured Housing* software is available on line at <http://www.huduser.org/publications/destech/permfound.html>.

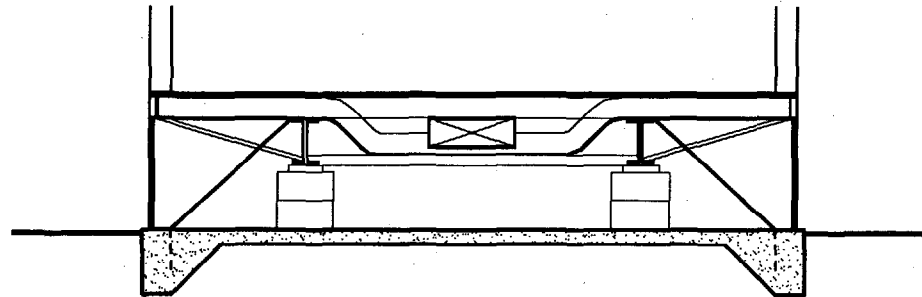
It is very important to explain to the builder/developer that the foundation for a manufactured unit must be precise. When stick-building a house, it is relatively easy for carpenters to adjust for errors in the foundation. You would not want to run the risk of having a HUD-Code unit



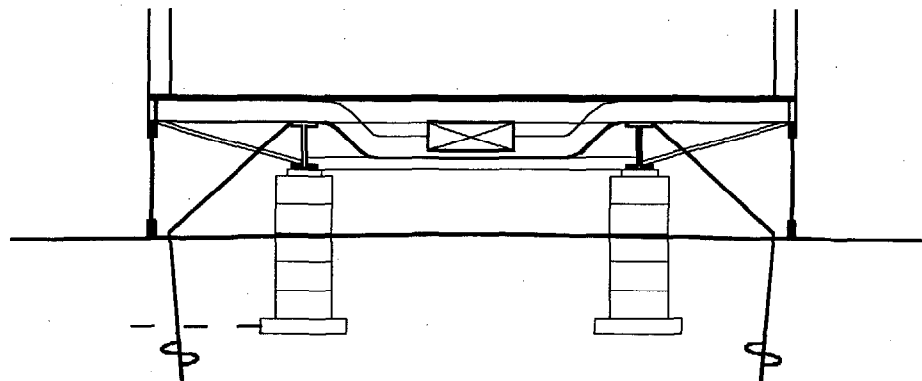
Permanent perimeter foundation with interior piers.



Permanent perimeter foundation without interior posts.



Pier and tie-down foundation on full concrete slab or transverse strip slabs.



Conventional pier and tie-down foundation.

perform poorly because it is set on an inaccurate foundation. To achieve an accurate foundation, you should suggest the following to the builder/developer:

- Stake out and measure the foundation precisely.
- Use a laser or a water level to make sure that the top of the concrete forms or blocks rep-

resents a flat, level surface around the perimeter.

- Build the foundation exactly to the outside dimensions of the manufacturer's floor joists, disregarding the thickness of the exterior siding.
- Brace the forms adequately to prevent movement.

Eaves and Gable-End Overhangs

Extended eaves are desired by most builder/developers. Some styles require substantial gable-end overhangs, which are not commonly provided in HUD-Code homes. Eaves attached on site or that fold down provide the depth associated with site-built homes. However, confirm that the standards of straightness for a fold-down eave are acceptable to the developer. It may be easier to site-build the eaves once the home is in place to insure the required level of true-ness. See the section in Chapter 3 on site-installed eaves for more on this subject.

Ceiling and Sidewall Height

Builder/developers are accustomed to 8'-0" sidewalls and many markets require 9'-0" walls. An increase from the standard 7'-6" for HUD-Code homes to 8'-0" is highly desirable to meet growing market demands for higher walls and to capture the builder/developer market.

The strongest incentive in favor of staying with lower sidewalls is to provide vaulted ceilings, which are attractive to most customers. This option is obviously not available with an occupied second floor, which typically has sidewalls and ceilings close to 8'-0".

Doors

Whether or not conventional HUD-Code doors will be acceptable to the buyers should be decided by the builder/developer. Providing documented evidence that HUD-Code doors with surface hinges are not a major source of consumer complaints might convince a builder/developer to try this cost-saving measure. Although many of the higher-end manufactured homes now have standard plate hinges, many are mortised into the jamb or the door, but not both. The MHP may need to add conventional doors to compete in the builder/developer market. Many other details concerning doors should be discussed with the builder/developer, includ-

ing undercutting versus transfer grilles for return air, finishes, and hardware.

Except on extremely stiff floors, doors and door frames tend to be out of plumb after the sections are set. It makes sense to consider shipping the doors and frames loose and installing them on site. This is discussed further in Chapter 3.

Exterior doors built-up in the factory are not likely to be accepted by the site-built market. Instead, be prepared to use one of the stock prefabricated door and frame packages, with integral flashing and weatherstripping. The builder/developer is likely to have strong opinions about the exterior door material.

Some affordable housing and regional styles (such as the Cape Cod) use 78"-high doors, but the majority of site-built homes use 80" doors. So, builder/developers are likely to be highly resistant to shorter doors.

If a manufacturer is using 76" doors to reduce costs, eventually the supplier may stop carrying standard 80" doors. There is often an unreasonable upcharge if a small quantity of 80" doors is needed for a special project. In this case, if a manufacturer is looking to compete with the site-built market, it may be worth using 80" doors throughout the line.



Detail of wider corner board on Washington, DC Urban Design Project home.

Exterior Finish

Vinyl, hardboard, and fiber-cement siding are the standards for most first-time buyer site-built homes. Wider corner boards than are typical for manufactured homes results in a more substantial looking home. This strategy was used effectively in MHI's Washington, D.C. Urban Design Project. This change has little impact on the manufacturing process and a modest increase in material cost.

Probably the key issue regarding exterior finishes is to establish an acceptable level of quality. An acceptable level of straightness and trueness for trim and eaves has to be agreed upon with the builder/developer.

Manufactured homes do not always have exterior wall sheathing, and this may be an issue for site builder/developers accustomed to using plywood or OSB. However, many of the large site builder/developers do not use OSB sheathing, relying instead on wood fiber products or rigid insulation with let-in bracing at the corners. As noted earlier, it may help nego-

tiations with a small builder/developer to inform him or her about cost savings used in the HUD-Code industry that are also widely used by large site builder/developers.

Windows

Window sizes and proportions differ between HUD-Code and most site-built housing. This can be an important cost issue, and is likely to be open for negotiation. To a builder/developer, windows are very important to the image and saleability of a home. Site builder/developers vary the appearance of home models with the type and composition of windows. Some of the most well-publicized neotraditional-design manufactured home projects have a strong street presence thanks to carefully sized and placed windows. Site-built homes typically have more windows than double-section manufactured homes, while the windows in homes of three or more sections are comparable to site-built.

One technique is to offer custom-designed window snap-ins to modify standard window proportions. Many window manufacturers provide special snap-in designs. Window trim surrounds are another crucial issue to make a home fit into traditional surroundings. It is unlikely that surface-applied aluminum windows will be considered. The negotiation should focus on how to provide the window composition a builder is looking for economically. The window specs will probably be similar between HUD-Code and site-built homes.

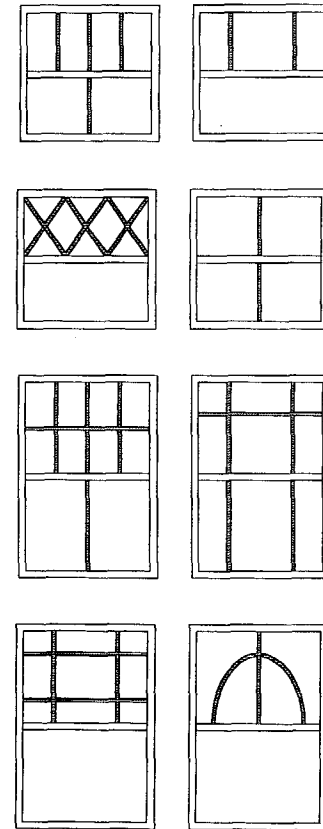
Interior Finishes and Trim

Most MHPs are responding to increased consumer demand for continuous wall surfaces by providing taped and textured gypsum board, with or without paint. The challenge of insuring that such finishes end up on site crack-free has been variously dealt with, either by stiffening the frame/shell of the home, absorbing the corrective costs, more careful delivery, or finishing the gypsum board on site.

The builder/developer will probably want taped, spackled, and painted wallboard. This should be a point of negotiation, as many consumers are willing to accept textured walls, just as textured ceilings have become common. However, if smooth surfaces are desired, it probably makes sense to include wallboard finishing as part of the site work, since this avoids some



A varied window pattern enhances the elevation of this New Colony Village home.



Various snap-in window mullion designs.

of the cracking problems during transport.

Because door and window trim could be out of plumb after setting the section, it might be better to install it on site in order to meet typical site-built standards. Trim material is another point of negotiation. Vinyl-coated wood-grain trim is used by site builder/developers, and might be the base-case spec, with other materials as an upgrade option.

Floor coverings should be negotiable, based in part on documented customer complaint records, if available. Most site builder/developers are likely to have strong opinions on this matter, as floor coverings are a prominent source of consumer complaints for the entire industry.

Fixtures and Fittings

In most cases, site builder/developers do not use all-plastic plumbing fixtures, low-cost tub and shower enclosures, or minimum-cost lavatories and kitchen sinks. Other than that, there is little to distinguish HUD-Code from site-built practice, except possibly the desire for name-brand plumbing fixtures available in conventional housing. If the builder/developer is willing to consider lower cost options in order to reach a price point, the issue can be revisited.

Kitchen cabinets, closet fittings, bathroom accessories, and other detailed items are likely to be subject to straightforward negotiation, as the two industries provide comparable products.

HVAC, Electrical, Plumbing

A standard high-pressure HUD-Code furnace may be perceived as having a higher noise level, making it a hard sell if the builder/developer is used to conventional site-built equipment. In addition, the builder/developer may prefer certain equipment because it can be serviced locally or has not received customer complaints. It may be necessary to consider conventional non-HUD-Code equipment along with the larger ducts necessary, providing the equipment can be used in a HUD-Code design. If the larger ducts do not fit within the confines of the floor, it may be necessary to finish the system on site, despite requirements for code approvals. It is good practice to incorporate the projected time needed for such Design Approval Primary Inspection Agency (DAPIA) approvals into your cost and schedule from the outset. The piping,

wiring, and lighting used by the MHP is likely to be similar to that used by the builder/developer: CPVC or copper water piping; PVC or ABS drainage piping; conventional wiring; and low-cost, incandescent light fixtures. Self-contained wiring devices are unfamiliar to site builder/developers and most code officials, but can be recommended as an advanced cost-saving measure, as can manifold water piping and flexible gas piping.

Utility Adaptability

Connecting the manufactured home to utilities on site should provide for convenient hookups. Most manufactured homes have their utility termination points at or near the rear third of the "A" half of the home. This is appropriate for standard manufactured home park utility pedestals. But if a home is placed on a permanent foundation, has a garage, and utilities come in underground, good utility planning is crucial. An example of how to plan for this and other configurations can be seen in the appendix: Utility Planning for Residential Development Projects.

Some general assumptions can be made about utilities that are applicable in most situations. Electric utility companies increasingly restrict meters from being installed behind fences or gates. The center of the electric meter glass must be between 60" and 72" above grade. The gas meter must be not closer than 30" to any operable window (slider portion), measured from any angle, or not closer than 36" to any foundation crawl-space vent. It is permissible to run gas, electric, and water in a common trench, but sewer is usually separate (or 24" deeper in the same trench). Typically, each utility lateral will be run in its own trench to avoid damaging one or more of the lines if they are excavated for servicing.

FINANCING

The two worlds of manufactured housing and traditional homebuilding come together at the point of paying for the home. Conflict arises between differing practices, customs, and terms of sale. As more manufactured homes are transformed into real property, standardized methods of payment and transfer of ownership become necessary.

"Traditional" Homebuilding Construction Financing

A traditional builder/developer can finance his or her building operations through standard lending programs. Construction financing has been provided primarily by commercial banks, with savings and loans playing a smaller role.

The lender approves a construction budget and a schedule of "draws" or periodic payments for completed items in the course of construction. Draws may be paid upon the completion of just about any agreed upon series of events, such as payment of permits, pouring the foundation, completion of rough framing, drywall finishing, installation of windows and doors, cabinets, etc. When each item is completed, the lender verifies that the materials and labor are complete and then either pays a draw to the general contractor (who then pays vendors and subs). Payments can be made directly to vendors and subs by the lender. The lender's loan is paid when the home is sold.

The amount of the loan is established by appraising both the building lot and the proposed completed structure(s); by the builder/developer's credit; by the lender's faith in the ability of the retail market to absorb the finished buildings; and by national, regional, and local money market conditions.

At the time the construction loan is approved, the builder/developer executes a note and deed of trust for the loan. The trust deed secures the note with the real property being improved. Lenders generally ask for personal guarantees from the builder/developer as well.

Important Differences Between Site-Built Financing and Manufactured Housing Financing (Flooring)

Manufactured housing flooring is designed to finance *personal* property. It does not contemplate securing the loan with real property. Deeds of trust (or mortgages) are not used.

Site-built construction financing is secured by *real* property. Modular housing construction financing is no different from that of site-built construction. Security agreements are not used, nor are they effective in securing the financing of real property.

The Transition from Personal to Real Property

In most states, when a manufactured home is placed on a permanent foundation it changes from personal property (personalty) to real property (realty). The home then has all the attributes of any other fixture or improvement on the land, and ownership of the home vests in the owner of the land. Separate sets of laws govern the ownership, encumbrance, and transfer of personal property and real property.

At the point when the form of property changes, one type of security (personal property security agreement) is extinguished, and the other (mortgage) becomes a more appropriate vehicle. If an unpaid financing interest still exists on the home when it transforms, the lender is exposed to risk. While there are other ways for the lender to collect, they are awkward and likely to push the lender out of this market.

Absent any satisfactory documentation that carries the manufacturer's security through the transformation into real property, most manufacturers want to be paid before the home becomes realty. Conversely, the lender is unprotected if it pays for goods that are unsecured because they are still personal property and unattached to the land that secures its loan.

Alternatives for Payment Terms

From the manufacturer's perspective, the payment terms below are listed in descending order of desirability. All of the following terms have been used in various agreements between manufacturers and developers. Bear in mind, the goal is to develop a trusting long-term relationship with the developer, so while some terms seem very desirable for the manufacturer in the short term, an arrangement that will benefit both organizations over time should be sought. This may involve more work for the manufacturer as compared to traditional wholesale inventory financing, but the opportunity to grow and diversify your client base can make these measures well worth the effort.

- *20% or greater deposit; balance due before shipment*

This arrangement is often used when a retailer has exceeded its flooring line limit. This option offers cash flow for the manufacturer; eliminates collection problems and has no repurchase liability. If the developer does not pick up the home, the price can be reduced by 20% with-

out a loss to the manufacturer. Although this is a clear winner for the manufacturer, this practice will not encourage the growth of business with developers.

In other instances, after the receipt of a 20% or greater deposit, the manufacturer ships the home to the site where a representative of the manufacturer and a representative of the lender are waiting. At the instant the home is placed upon the foundation, the lender gives the manufacturer the check for the balance of the home price.

● *Wholesale inventory financing*

This method is used for most dealer transactions, for homes being delivered into land-lease communities, where the homes will remain personal property. These arrangements are very flexible, and offer an advantage for the dealer or land-lease community developer. A key advantage of this strategy is that floored homes do not require a cash deposit.

Many dealers put homes on foundations while they are still on their flooring line as personal property. This may or may not be done with the knowledge of the lender. If the lender discovers the home has, without authorization, been converted to real property, it may be inclined to take steps to prevent it from happening again, or sever its relationship with the dealer. While this has not been a serious problem in the past, there is the potential for problems, including unknown implications for the manufacturer under its repurchase agreement with the lender.

● *C.O.D. – Driver picks up check*

This arrangement is not commonly used today, but could be helpful when combined with a cash deposit paid to the manufacturer before production. In this case the house is shipped to the developer or dealer with instructions for the driver to pick up a check for the balance of the home before it is left on site. If the payment is not made, the driver returns the house to the plant. The plant will always require that payment be in the form of a bank cashier's check. This is obviously a cumbersome arrangement, but it has worked successfully in the past, especially when the manufacturer is sure of the recipient and the recipient wants to see the house on the property before paying.

● *Irrevocable letter of credit*

Another financing technique is for the manufacturer to obtain an irrevocable letter of credit (ILC) from the developer's bank before producing the home. The amount is equal to or greater

than the invoice amount. The terms stated in the ILC permit the manufacturer to draw the full amount upon the delivery of a letter to the bank, signed by an officer of the manufacturer's corporation, stating that (a) the home has been delivered to the site, (b) 15 days have elapsed since delivery, and (c) the manufacturer has not been paid for the home. This protects the manufacturer and if the ILC is tendered prior to the start of production, no deposit is needed for the unit. While this arrangement is beneficial for the factory, it is very one-sided, and ILCs can be expensive for the developer.

● *Binding three-way contract*

In this scenario, the bank commits to pay within an agreed-upon number of days if all named conditions have been met. Binding three-way contracts are treated like any other contract and a manufacturer's only recourse is to sue for specific non-performance. In this situation, the manufacturer must monitor the status of the developer's finances and conditions at the job site to avoid loss due to the developer's failure.

● *Escrow demand*

Shortly after 1980, when the installation of homes on foundations began to substantially increase in California, the escrow demand procedure was tried. The manufacturer submitted its invoice and a payoff demand into the escrow, which covered the home sale. This was only attempted with pre-sold orders. When the illiquid nature of the escrow demand became obvious, and the unknown consequences if a sale collapsed became more real, this technique disappeared.

Some manufacturers have invoiced the builder/developer and filed materialman's liens to protect their interests. If the lien is perfected and properly done, it gives the manufacturer protection, but the situation is still uncontrollably illiquid. In order to collect money due for the home, the manufacturer must go through the process of foreclosing on the lien and selling the property in the case of non-payment.

● *Possible arrangements for transition from personal to real property*

A technique that may offer protection to a construction lender is the use of fixture filings. The lender can pay the manufacturer immediately upon delivery of the home, while the home is still personal property. This would satisfy the manufacturer's need to stay secure and be

promptly paid. The lender would have an interest in the fixtures (manufactured homes that were converted to real property), secured by the fixture filing. Not clear at this time is whether the lender who paid the invoice covered by a fixture filing would have a superior or inferior position in the property compared to the holder of a first (or any) deed of trust on the property. It is an area worthy of exploration.

Instead of trying to use unusual and non-conforming techniques, however, manufacturers should work with lenders to develop a uniform, mutually acceptable financing instrument and accompanying documents that meet the needs of the manufacturer, the lender, and the builder/developer. This instrument and all the accompanying documentation, procedures, and agreements may come about only after some compromise on the part of all three participants. The manufacturer may have to accept some delay in payment over what it has been accustomed to. It may have to spend legal time and effort to forge contract terminology that gives it protection. The lender may have to settle for a time limit under which the home is to be completed for securitization as realty. The builder/developer may find his or her construction costs a shade higher while the lenders adjust to new situations.

The advantages to all three parties are worth the effort. The factory will find it easier to serve large new markets without having to make quick decisions on terms based on the desirability of a client or project.

Generally, the manufacturer will be free of the contingent liabilities of repurchase agreements. The lenders, who know that the factory-produced house will inevitably increase its market share in the future, will enjoy new business. Lenders benefit because the short turnaround time on manufactured housing construction loans increases their yield on points charged. They also benefit because a large firm is warranting the home, instead of a variety of subcontractors. The builder/developer can do business with the factories without re-negotiating workable payment terms every time.

DEALER INVOLVEMENT

As a manufacturer, your traditional market is the dealer. If you attempt to sell directly to a builder/developer, you may be alienating your dealers or even violating franchise agreements.

In the past, some manufacturers have ameliorated the dealer's objections to what they may perceive as a territorial franchise violation by offering financial incentives for the dealer to "let" the deal proceed. These have included merchandise, flooring cost reimbursements, freight subsidies, trip points, and rebates. Once a developer becomes aware of such an arrangement, however, the risk of losing the developer increases. In other cases, the builder/developer has become the dealer.

Another option to avoid possible conflicts with dealers is to create definitions of market segments that you intend to serve. Once credible market partitions have been made, you can establish marketing policies and procedures for each. Major subjects might include:

- What are the segments?
- Who are the segments' customers?
- How do business practices differ between them?
- How can a manufacturer serve all and minimize the potential for competition between the dealer and developer?

What are the Segments?

● *Retail Sales*

This is the traditional distribution system for the manufactured housing industry. The fact that the industry is consolidating retailers and that manufacturers are establishing their own retail systems changes nothing as it pertains to this analysis.

● *Manufactured Home Communities*

Manufactured homes are sold in a turn-key community environment. These can be land-lease, planned unit development, or standard subdivision.

● *Infill*

Small entrepreneurs who purchase scattered lots, obtain homes from the industry, then combine the lot, the home, on-site visual enhancements, and list them for sale as real property.

● *Builder/Developers*

Those traditionally working with site-built homes that may use a mix of site-built and manufactured or exclusively manufactured homes for their development.

- *Government Markets*

Direct or indirect sales to redevelopment agencies, public housing authorities, or military housing providers for the creation of housing stock. This category may include Indian Housing Authorities.

Who Are the Segments' Customers?

- *Retail Sales*

The traditional dealer has concentrated on the lower end of the marketplace. Buyers are frequently unable to purchase any form of housing other than a manufactured home. Price, and monthly payments, are the determining purchase factor in a high percentage of the dealer's business.

- *Manufactured home community developers*

Community developers may also cater to the very low end of the market, but this distribution channel gives the buyer a complete home package, including the site. Developments that are all-inclusive can successfully serve clientele at almost all price levels. Because the land, whether leased or owned, is the unique value determinant, the market's acceptance of the homes may be less directly related to the factory invoice of the house.

- *Infill*

Generally infill developers are highly aware of block-by-block conditions in the cities in which they operate. Their customers may run the range of very low-end to quite wealthy.

- *Builder/Developers*

Their buyers are typically seeking affordable housing and are accustomed to the products of the site-built market.

- *Government Markets*

One should consider both the government agencies *and* the ultimate occupant/owners as their customers, because they are so intertwined. Owners/occupants may be recipients of rent or purchase subsidies, or, in the case of military housing, they may just be temporary residents with little or no stake in the dwelling.

How Do Business Practices Differ Between Them?

● Retail Sales (*Street dealers*)

The manufactured home is the sole object of the retailer's business and his or her primary objective is selling the home.

Since there is little difference between most manufactured homes offered by various manufacturers in a local market, consumers have many choices regarding the source of the home. Thus, the dealer who offers the lowest price usually makes the sale.

Very few dealers consider land as an inventory item, to combine with the home in an effort to create a more unique offering. Most dealers do not find it worth their while to bother with the capital requirements, illiquidity, and time frames inherent in purchasing land for resale.

Prices normally only include the home, delivery within a certain radius, installation, and sometimes air conditioning. Rarely are site preparation, foundation, garage, concrete flatwork, fencing, landscaping, or architectural modifications included.

● Manufactured Home Community Developers

To community developers, the final product is a home, on a lot, ready for occupancy. As opposed to retailers, community developers do not consider the manufactured homes as the end, but rather as one of several means.

Buyers are treated with less pressure, as community developers depend on the attractiveness of the location, and the appeal of the finished, decorated models to influence the buying decision. These developers rely on a lower percentage of a higher number of shoppers in order to create sales.

Prices include the complete turn-key package, and the separate components are almost never individually priced.

In most developments, lots are only sold with homes and homes are only sold affixed to the lots. Some developments will sell a home to be delivered to a buyer's own lot outside the project, but that is infrequent.

● Infill

Almost all infill efforts are speculative. Sometimes, the developer will list a property with a real estate broker and try to sell it as they do the installation and finishing. The greatest profit mar-

gins have occurred, however, when the home is offered for sale only after it is completely finished. Some infill profit margins have been large. Some resale price appreciation has been equally considerable.

- *Builder/Developer*

Potential buyers tour finished models usually within the development they are considering. These buyers are often unaware that the homes they are looking at are manufactured and would not typically be in the market for a conventionally sold manufactured home.

- *Government Markets*

The municipal housing provider is not generally in competition with the street dealer because its market is unique. Projects are typically developed completely, then occupancy begins. Subsidized buyers represent a pool that is exclusive from the street dealer's target market.

How Can a Manufacturer Serve All and Minimize the Potential for Competition Between the Dealer and Developer?

While some dealers feel that they serve all levels of the local marketplace, buyers who look for homes in a community environment (which is the bulk of the site-builder/developer's market) usually do not go to retailers.

Thus, the manufacturer should make written distinctions between these categories of home buyers, and define the way they will do business simultaneously with dealers and with developers. A fair policy would assure the street dealer that the developer is not going to siphon the dealer's customers away. A manufacturer would probably have no difficulty in executing a written statement of understanding with a developer which would give protection to the street dealer.

In summary, the manufacturer should address the emergence of these parallel markets and create firm company policies that will guide all personnel. The tendency to deal with new markets on a case-by-case basis has not worked in the past.

The following key stipulations may be part of an agreement between a builder/developer and a manufacturer. Each item should be viewed as a suggested way to strike a balance between the dealer's concerns and the developer's needs and plans. It may be appropriate to

add some items to the following list, or to delete some others.

- Stipulate whether it is required that your builder/developer obtain a dealer's license from the appropriate state authority
- Address whether the builder/developer is to construct each foundation and garage to your drawings and specifications, and whether the home will be installed on the foundation according to your instructions.
- Establish the length of the warranty the builder/developer will provide to the home purchaser for areas that you are responsible for.
- Address the importance of the builder/developer protecting the manufactured home(s) from inclement weather and other sources of damage while site work is in progress.
- Confirm that the builder/developer will inspect each home upon arrival from the factory to ascertain completeness and freedom from damage.
- Establish whether the builder/developer will administer local warranty service and how items the manufacturer is financially responsible for will be dealt with.
- Agree with the builder/developer on the Terms of Sale and state that any other Terms of Sale are to be mutually agreed upon in writing prior to placing any order.
- Establish what is included in the price per unit, and who is responsible for transportation and state sales tax charges.
- Address whether the homes sold to the builder/developer by your company will be placed upon permanent foundations on lots that are part of the project at hand.
- You may not want to have any brand identification other than the manufacturer's name as required by law on the homes sold to the builder/developer. Also, if the builder/developer elects to publicly display a manufactured home you have provided, it should be placed upon a permanent or quasi-permanent foundation, complete with garage and appropriate entry work. The purpose here is to avoid the look of a retail sales lot.

3

CONSTRUCTION & PRODUCTION DETAILS

DIVISION OF WORK BETWEEN SITE AND FACTORY

The essence of the projects being discussed in this guide is that site modifications and additions are necessary to the basic package shipped from the factory. Some of these modifications have been discussed in Chapter 2, including tilt-up roofs, site-installed doors and trim, site-finished wallboard, completion of HVAC work, and site constructed eaves and overhangs.

HUD regulations about the extent of on-site modification are under intense review. In general, more work is being allowed at the site, as long as an acceptable inspection process is developed to cover the HUD-Code work completed in the field (such as that instituted in California). Any field changes to a HUD-Code home generally require alternative construction letters (AC letters). If accessory elements can be more or less completed in the factory, they may fall under the HUD Code, which can be an advantage to the builder/developer. While it is typically the case that factory completion of such elements is not cost-effective, bringing them under the HUD Code might balance the extra cost.

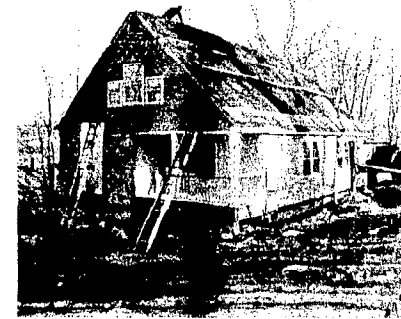
Consider, for example, a home shipped to the site with sidewalls as high as will fit within the prevailing road clearance, perhaps 11'-6" high, with a second floor above an 8'-0" ceiling. Unlike a Cape Cod design, where only a portion of the second floor is usable, (because of the short walls) nearly all the second floor can be used for living space or storage. The gable-end, side dormer, and roof pieces could be prefabricated and shipped loose for erection at the site. Since the product is fabricated under in-plant supervision, the roof plate can be designed as a structural diaphragm, economically transferring the side-thrust of the roof to the gable ends. The result would be a home common on the East Coast, known as a "story-and-a-half" house. Since the plant already has all of the tables, jigs, and tools to quickly frame perfectly square walls, and since all of the material needed is already located at the fabrication point, one would think that this is a workable solution. This example is a good illustration of new options open to MHPs and site builder/developers achieved by ingenious combination of the two technologies.

Garages

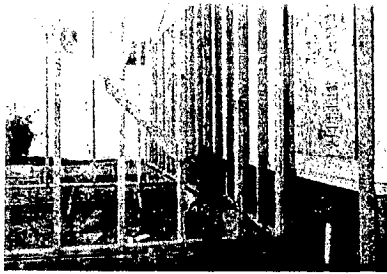
Efforts have been made to prefabricate garages. The goal is to utilize the same in-plant con-

struction tools and procedures that make framing the whole manufactured home so cost-effective and high quality. If the garage is panelized into small enough components, it can be shipped inside the manufactured home, virtually eliminating its transportation costs. There are several obstacles that have discouraged more factory fabrication:

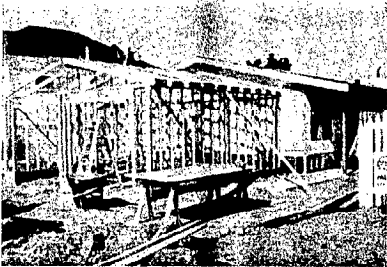
- Unless the garage is constructed by a utility crew, or after regular production ceases, it throws the factory line out of balance.
- In order for a prefabricated garage to fit the house properly, the foundations for the house and garage must be precise. Any mistake in sill heights, or in establishing a perfectly flat plane on which the panelized walls will rest, and the anticipated savings will be lost by making corrections.
- If the pieces that are built in the factory are small enough to fit inside the house with the weight evenly distributed, then they will sometimes require labor time to assemble and fit on site. If the pieces are too big, a forklift or other heavy lifting equipment will also be needed on site.
- After experimenting with all of these variables, it has become a universal assumption among those who build site-enhanced manufactured homes that it is better to construct the garage on site. However, there are numerous techniques that can be employed to keep the cost of the garage down and speed assembly, resulting in a better-looking and more functional garage.
- Wherever possible, plan for a three-wall garage. Potentially, \$500 to \$1,000 can be saved by not building the redundant wall abutting the manufactured home and not pouring the footing for the fourth wall. To accommodate this, the manufacturer should provide blocking for framing connections within the manufactured home's sidewall at the garage intersection point. This can be accomplished by placing an extra 2x4 turned flat at this location.
- The manufacturer should ship the house with the gypsum finish (required by the local code for fire-resistance) facing the garage.
- The manufacturer should provide the fire-rated door required by local code at the garage/house entry.
- The manufacturer should prepare the roof deck for the over-framing of the garage roof. The old practice of providing a garage dormer has caused more problems than it has solved. Only after the garage sidewalls are completed will the carpenter know where the garage ridge will



NextGen House, Danbury, CT
Steven Winter Associates, Inc.



Example of panelized garage built on site. Panelized garage walls set on foundation adjacent to a manufactured home.



Completed panel assembly.



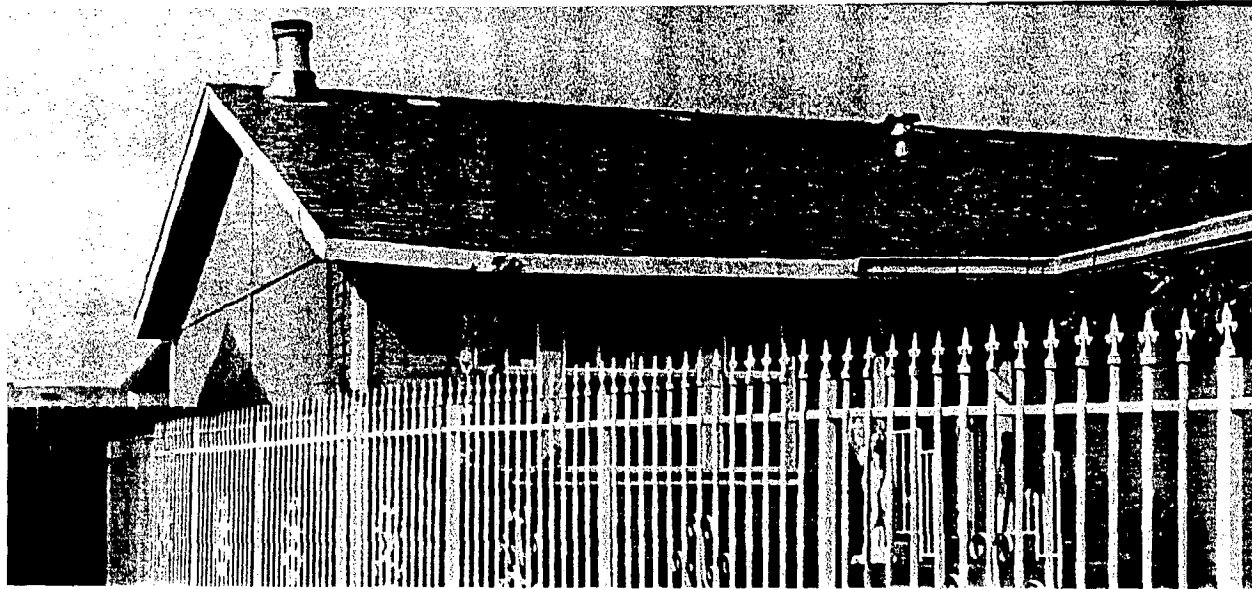
Sheathing, siding, eaves and fascia completed.

be, and only then can it intersect the house roof at a reasonable point, rather than trying to match to an existing ridge on a factory-built dormer. If possible, the manufacturer should leave a triangle-shaped area of the roof unshingled (with sheathing, felt or ply-dry, and temporary polyethylene only) so that the framers and roofers don't have to tear off existing shingles and risk leaks.

- The floor plan should be double checked so that a furnace flue or water heater jack does not end up in a garage valley or ridge.
- The manufacturer should ship appropriate quantities of shingles, vinyl siding, or paint from the same batches that were used on the house to avoid color shifts on garages or porches.
- Electrical hardware for lighting, power tools, and garage door openers should be mounted at the appropriate places on the garage firewall.
- In mild climate areas, mounting the water heater in the garage can add useful space to the house, and avoid a long-time headache (water heater compartments, exterior water heater doors, having to use electric water heaters to avoid flues, etc.).
- All of these techniques should be planned out by the manufacturer, who should obtain full DAPIA approvals.
- If these planning techniques are used, the cost savings gained by panelizing or precutting in the factory may end up being small. Despite this, the development of a flexible, reliable garage system by a manufacturer would be useful to the industry. The same approach applies to porches, decks, and other exterior elements.

Site-installed Eaves

In order to build and ship the widest possible house, and at the same time provide for full sidewall overhangs, a site-installed eave system was devised several years ago that prevents sagging, misalignment, irregular "bumps" in the roofing, and other ills inherent in the various types of "flip" or "hinge" eave systems. With this system, the eaves are fabricated in the factory and shipped loose with the home. The eave has integral sheathing that extends onto the roof when it is installed on site. The sheathing on the roof is held back from the edge to accept the eave sheathing and align the eave properly.



Example of a sagging eave.

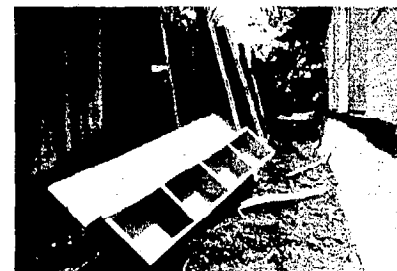
Doors

Because of potential shifting during shipment, it may be advisable to tack doors in a loose position to be fully installed in the field, or level the floors on the assembly line and set the doors for a flush and square fit. In homes with a very stiff floor system, doors parallel to the long axis of the home can be finished in the factory, but those that are perpendicular may still shift during transport. On these doors, it may be best to leave the casing off and tack the shims in place. If the door is out of square when the home is set, the shims can be adjusted and the casing installed on site.

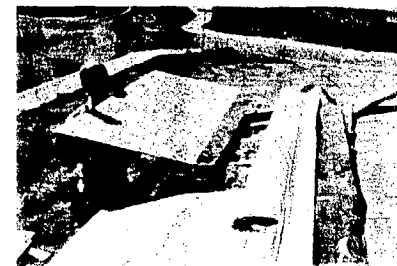
Site-installed Exterior Materials

Architectural compatibility of exterior materials will stimulate greater homebuyer interest of manufactured homes. The field installation of custom roofing materials (such as cedar shingles and shakes, Spanish tiles and concrete shakes) and custom exterior siding materials (such as stucco, lap siding, cultured stone, shingles, and masonry) helps tie the house, foundation, and garage together visually.

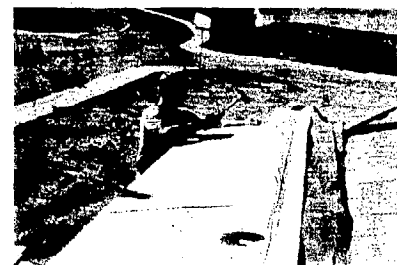
Some work has been done to eliminate redundancy costs, but more planning for incomplete structure shipments will make this work speedier, less costly, and more inviting to developers and builders.



Sequence of installation for site installed eaves.



The integral sheathing extends onto the roof for a smooth line without sagging.



The completed eave is ready for roofing.

Photos this page, Steve Hullbarger, The Home Team

The tile roof on this manufactured home brings a regional flavor to the design.
Steve Hullibarger, The Home Team



DESIGN DOCUMENTS AND APPROVAL ARRANGEMENTS

Once the design is developed, the construction documents are produced by the manufacturer. On residential development projects these drawings will require input from the entire project team, including the architect, the field engineer, the manufacturer's engineer, and the general manager of the plant. Site-built components to be attached to the manufactured unit are also shown in these drawings, to show DAPIA where connections are made. Once DAPIA approval is attained, the drawings are included with the building permit set for local officials. Some jurisdictions will allow the manufacturer's drawings for a permanent foundation, rather than requiring site-specific drawings. It is an asset to a developer if a manufacturer can provide such drawings.

FIELD INSPECTION OF MANUFACTURED HOMES

All manufactured homes need Production Inspection Primary Inspection Agency (IPIA) and DAPIA approval. Depending on the jurisdiction, those components that are site-built will also need local code approval. The coordination of inspections between the local code officials and the manufacturer's inspection process varies. Utility connections, foundations, and the final installation are usually inspected by the local building inspector, as well as any other site-built components, such as a garage or porch. In cases where the site-built structures modify the exterior envelope of the HUD-Code home the inspection can be performed by the local building inspector or the IPIA. This can include "three-wall garages," porches that bear on the

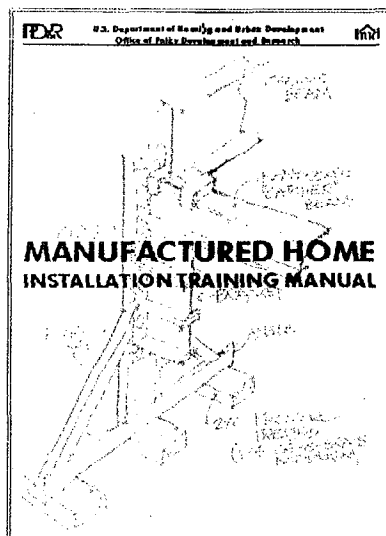
home, roof line modifications, etc. On-site inspections for alternative construction (AC) letters can also be completed by the IPIA or local building inspector.

HUD is in the process of developing a limited on-site completion rule that will allow certain changes to units to no longer require AC letters. It is also intended to speed up the process for approvals on those changes still requiring AC letters. The rule is now in draft form, but is expected to be finalized in the near future.

WARRANTY ISSUES

Manufacturers should be aware of what builder/developers will want for their own protection and what they typically offer their customers for site-built homes. The typical warranty policy may need to be revised for the site-built market. To clearly see where both parties stand, in the early stages of negotiation the manufacturer should take time to carefully review how his/her warranty works, and what procedures have been set up to administer it. Manufacturers and dealers are used to working together on warranty issues and each knows what constitutes a "dealer set-up" problem and what constitutes a "factory" problem. However, when dealing with a builder/developer who is using manufactured homes for the first time, it is the manufacturer's duty to thoroughly explain to the builder/developer what are often taken-for-granted manufactured housing industry practices, including who is responsible for various aspects of the work. Otherwise many builder/developers may repair problems as they are discovered, not realizing that those repairs may be the manufacturer's responsibility and are potentially reimbursable. This can lead to significant cost and frustration for the builder/developer. Conversely the builder/developer may assume the manufacturer is responsible for certain items that the producer is not aware of. Clearly written warranty policies should explain what items are covered by the warranty and establish areas of responsibility. The following are suggested issues to include in the warranty statement.

- It is suggested that the manufacturer warrants the factory-built portion of the home (including materials shipped loose from the factory) and the builder/developer warrants the site-built components and other site work (including on-site assembly of factory-shipped materials).
- It is highly advisable that the warranty include language requiring the foundation be level,



HUD's Manufactured Home Installation Training Manual.

square, and to the correct dimensions. Note that no construction detail can be expected to be 100% precise; therefore dimensions should include acceptable tolerances (e.g. foundation level to 1/8"). The builder/developer needs to understand that manufactured housing will require more precise foundations than stick building. Refer to the discussion of foundations in Chapter 2.

- The MHP should strongly suggest that the builder/developer inspect the home immediately upon its arrival and fax a report of its condition and any material shortages to the plant as soon as possible.

- The MHP should strongly suggest that the home be installed by an experienced set-up contractor. Some builders and developers believe that they can do this with their own crews, even if they have no experience setting up a manufactured home. This greatly increases the risk of damage to the house, and compromises the safety of personnel. The MHP should provide the builder/developer with a list of contractors known to be reliable installers. The manufacturer can also refer the builder/developer to the *Manufactured Home Installation Training Manual*, available from HUD.

- The MHP should establish whether warranty repairs will be undertaken by the developer, with the MHP reimbursing their costs upon prior authorization.

- Many disputes can be avoided if the manufacturer also commits to working within certain tolerances, primarily because the builder/developer does not know what to expect from a manufactured home versus a site-built home. Establishing tolerance levels for gypsum cracking, for example, is advised, since the cracking of gypsum during transportation is virtually unavoidable. The policy should establish the extent to which gypsum can crack without it being a warrantable item by the manufacturer. Parameters might include stress cracks appearing at window and door headers along the sidewalls, the repair of which should be borne by the builder/developer; cracks that open up along taped gypsum joints, or are large (open more than 1/8"), or in the middle of a wall should be the responsibility of the manufacturer; ceiling cracks or wall/ceiling joint cracks should be the manufacturer's responsibility.

- The manufacturer should address door installation standards, and whether they will be finished in the plant or require field adjustments to be properly square and flush. Consult the section on doors in Chapter 2 for different approaches to door installation.

When encountering a builder developer for the first time the MHP may be uncertain whether to wear a marketing hat and push the product, or exercise caution until it is certain that the project is worth the effort. **Most important to remember in all dealings with a builder/developer is that you are working to cultivate trust to foster a long-term relationship, potentially leading to many projects.** It will most likely require flexibility on your part and a willingness to investigate new options for your product.

Senior management interested in capturing a portion of the developer market should establish operating guidelines for plant personnel to follow when working with developers. This includes policies on dealer conflicts and on design variations. In the normal course of producing and distributing homes through the dealer system, every manufacturer knows every dealer in the market. Detailed statistical sales data is in the hands of all plants. In contrast, most developers who show up at the factory with a rolled-up set of plans are unknown to the factory people. Plant managers would benefit from the following:

- Guidelines on qualifying developers and prospective developments. Staff should receive instruction on how to determine whether the builder/developer is capable of carrying out the project, whether the project has insurmountable barriers (political or physical), and whether it appears to be economically feasible.
- Information on how to ask for and verify the financial structure of the prospect.
- Direction on judging whether the project will ever generate any orders for the plant and when it is likely to do so.

Based on this qualification and prioritization process, the plant can determine whether and when to devote company resources to a prospective development. Manufacturers who have not done their homework may find that a development evaporates after they have spent a significant amount of money and time on design and engineering for the project.

The manufacturer's engineering staff should be more involved with developer discussions at an early stage. Many of these staff members are aware of how HUD-Code homes are being used in conventional development and can provide early guidelines that will help set the breakpoint between what is to be built on line and what will be finished in the field.

Manufacturers can communicate better with the developer by creating a standard form that

the developer can use to express preferences for products. The document would offer guidelines on what can and cannot be done, limitations on specifications, and how to accurately describe the developer's envisioned product to the plant.

Manufacturers can gain greater insight into a developer's needs by visiting the developer's project during each phase of the work. This would help to confirm if certain specifications or finishing techniques typically used for manufactured homes are less appropriate for certain builder/developer projects.

Individual manufacturers can become pro-active and streamline their own alternative construction letter process and support further industry efforts to make it less cumbersome.

Taking some or all of these actions would help plant personnel to provide more direct and useful responses to developers when discussing potential projects.

BUILDER/DEVELOPER CONTACTS MANUFACTURER

When approached by a builder/developer about working on a project, try to determine if the customer is simply exploring, has decided to negotiate with you based on your reputation or a recommendation, or is contacting a number of potential suppliers (the usual case). In any case, do not assume that you have the job — selling is appropriate from the beginning.

When talking with a builder/developer, you should first discuss what their expectations are, and how they will bear on the specifics of the product you provide, as discussed in Chapter 2: Key Negotiating Issues. It is not wise to lecture site builder/developers on the merits of cost-saving measures commonly used in HUD-Code homes; rather, treat these for what they are: ways to save cost that may or may not appeal to the builder/developer's customers. In the end, you are selling to the builder/developer's customer through the builder/developer. He or she cannot do much about the desires of the customer, but you can help by providing options and new perspectives based on your own understanding of customer preferences. Make sure, however, that you are talking about similar customers, as different buyer groups often have radically different responses to cost-saving measures.

MANUFACTURER APPROACHES BUILDER/DEVELOPER

Using the information in this guidebook, plus your own experience and enthusiasm, you may wish to reach out to builders and developers to expand your market. Obviously, this is easier to do after you have at least one project under your belt as an example, especially if you have good publicity material describing the project. An informal approach to someone you know may be the easiest way to generate a customer, perhaps through a business group or social club. If broadcasting inquiries, it pays to hire a consultant familiar with the site-building industry, to insure that your approach hits the mark and reaches key decision-makers. Another alternative is to become involved in programs such as conferences, seminars, or demonstration projects through the Manufactured Housing Institute (MHI), the Manufactured Housing Association for Regulatory Reform (MHARR) and/or the National Association of Home Builders (NAHB).

MANUFACTURER RESPONDS TO AN RFP

Although this is not a common approach, on occasion a builder/developer, a non-profit or a government entity may circulate a request for proposal or RFP. An RFP asks for information about how a manufacturer will perform the work, complete the job in the time allotted, and the cost of the job. An RFP will also ask for a statement of qualifications for general performance, how long your company has been in business, your experience on comparable projects, your average unit sales, business references, and specific performance requirements. Care should be taken in preparing a proposal. If the project described in the RFP is feasible to you (the site is not too far, for example, and the plant has spare capacity), it should be examined in detail. Unless prepared by a seasoned professional, the RFP may "reach for the stars" in the belief that you don't get something you don't ask for. In these cases, many "requirements" turn out to be wishes that can be disposed of during negotiations. On the other hand, professionally drafted RFPs may be based on a clear understanding of the issues and express exactly what is required, with little room for negotiation.

Before responding, contact the agency or company that issued the RFP and tactfully attempt to find out to what extent the requirements are negotiable. In doing this, it is important to emphasize that you are not attempting to "get around" requirements, but simply wish to sub-

mit the most cost-effective response. If the project still seems worth pursuing, a good approach is to respond to the RFP completely, carefully noting all exceptions from the requirements you feel are necessary, and expressing enthusiasm about the project.

If the RFP requires a price quotation, be sure to have all the information you need before pricing. Typically, the developer issuing the RFP will want to avoid extensive communication with any particular bidder in order to guarantee an unbiased appraisal. Otherwise, the negotiations that can foster a truly cooperative and creative project will not happen. Instead, exceptions to the requirements will be needed. Each exception reduces your chances of winning the competition; yet if each exception is matched with a cost reduction, you may remain competitive. Rather than quoting the lowest cost and showing an add-on for not omitting your exceptions to the requirements, quote as close to the requirements as possible, then show the savings from adopting each exception you want. Make sure you do not quote for work that you cannot perform or that you cannot estimate accurately.

KEY CONSIDERATIONS

Do You Understand the Site-Built Industry?

In order to serve this market, you need to understand the way business is typically conducted by site builder/developers. Familiarity with the product needs, zoning issues, land-use strategies and risk levels typically encountered in site-built development will greatly help a manufacturer break into this market. There are many resources used by site builder/developers that may prove helpful in your research, including periodicals and web sites of the site-built industry, such as *Builder Magazine*, online at <http://www.builderonline.com> and *Professional Builder Magazine*, online at www.probuilder.com, and the National Association of Home Builders, on line at <http://www.nahbrc.com>

Does the Builder/Developer Understand the HUD Code and HUD-Code Homes?

The better a developer understands the process of producing and shipping manufactured homes, the more likely the project will run smoothly. A primer on the salient features of manufactured homes and the industry in general for the developer is strongly suggested. The accom-

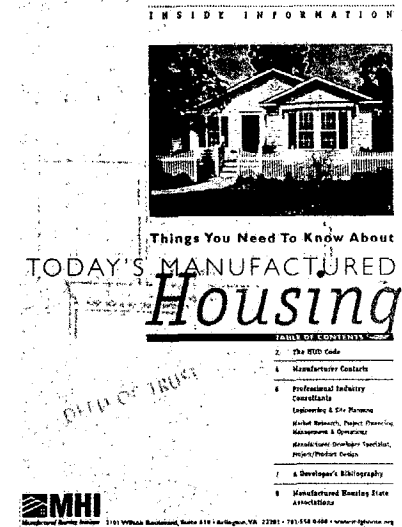
panying guide to this book, HUD's *Home Builder's Guide to Manufactured Housing* is an appropriate resource to start with, as well as MHI's booklet, *Today's Manufactured Housing: Inside Information, Things you Need to Know About Today's Manufactured Housing*. A plant tour should also be part of the builder/developer's education in HUD-Code housing. This will greatly enhance the developer's understanding of HUD-Code housing design, quality, flexibility and assembly processes. Key issues to cover with a builder/developer are:

- How a HUD-Code home is produced.
- How a HUD-Code home is inspected, and by whom.
- The administrative process and time frame involved in changing HUD-Code homes.
- Zoning issues associated with HUD-Code homes and communities.
- How a HUD-Code home is delivered and installed.

What Information Will the Builder/Developer Want from a Manufacturer?

The information sought by the builder/developer with respect to your business will include the following:

- Unit designs: What you are currently building and how flexible you might be.
- Plant capability: What mix of home sizes and configurations do you offer.
- Changes from standard designs: These can have an impact on three levels in descending order of disruption: changes to the structure and envelope; changes within the envelope to partition walls and spaces; and changes to finishes and materials. Often a developer will request finishes and fixtures that blend different specification levels. This mixing can cause delays on the production line and be cumulatively significant.
- Delivery radius: How close are you to the project site. Obviously, the closer your plant is to the potential project, the less the developer pays for transportation. By providing a product not available from other manufacturers, plant distance becomes less of a deciding factor.
- Financial and business information: This is especially important if the MHP is not one of the 12 public firms, from which such information can be easily obtained.
- Financing information: What are the payment terms. Options are discussed further in the financing section of Chapter 2.



MHI's booklet, *Today's Manufactured Housing*.

- Delivery times: Lead time between order placement and delivery.
- Capacity: Rate at which units for the project can be produced and delivered.
- Cost information: Breakdown of costs for options, for site verses plant-installed items, for custom designs, etc.

Why Is the Builder/Developer Interested in Manufactured Housing?

Developers have a variety of reasons for considering manufactured homes. Using HUD-Code construction should lower the builder/developer's costs, or in some other way promise a competitive advantage. Your prospective customer may approach you with one advantage in mind, unaware of the other advantages of HUD-Code construction. It is important that the prospective client understand all the possible reasons for incorporating HUD-Code elements in his or her homes, since one advantage can be traded against another. The builder/developer may be interested in offering the buyer a comparable product to site-built at a lower price, a better product at a similar price, or a less desirable product at a significantly lower price.

In the unlikely case where a manufactured housing product costs more than its site-built version, it may offer other compensating advantages: the use of factory-built components may solve a labor shortage or help the developer meet a tight deadline. Other advantages of using of manufactured homes may include:

- Hard cost savings
- Accelerated schedule
- Less labor needed on the job site
- Reduction of on-site theft
- Fewer on-site administration and management duties
- Fewer call-backs and warranty costs
- Increased density (if used in land lease)

Hard Cost Savings

This is often the least understood perceived advantage for using manufactured homes in lieu of stick building. Savings in hard costs are highly dependant on the cost of stick building in the

area where the homes are to be placed; on the number of homes being built; and on the design of the homes themselves. A good source for the comparative costs between site-built and HUD-Code homes is HUD's publication, *Factory and Site-Built Housing: A Comparative Analysis*.

The consistent application of best practices permitted under the HUD Code means that wholesale prices for similar HUD-Code homes built around the country will be very close to each other (after deducting the manufacturer's promotions, rebates, and capital costs). Minor differences will be caused by higher or lower factory overhead costs based on location (high in California, low in Texas), but since manufacturing overhead usually constitutes 10% or less of the manufacturer's wholesale selling price, its impact is low.

In contrast, stick building costs are highly variable, depending on the city in which the construction takes place. If a city has high housing or rent costs, labor must demand more for the cost of living. If local government imposes high business overhead costs, it will affect everything from supplies to fuel to telephone and security costs. Everything flows through to the cost of construction. In this comparison, land costs, permit fees, or local government mitigation charges are not included, which would be paid whether one is employing manufactured homes or site-built homes.

Some local on-site costs will affect the manufactured home (foundation, garage, etc.), but by a relatively small amount.

Therefore, using a manufactured home in a high-cost environment makes sense but in a low-cost environment great diligence and care must be exercised to meet cost-savings goals.

Accelerated Schedule

Shorter construction time is almost always a winning proposition. However, time cannot be saved on site if there are no schedule controls (this sometimes happens when the first home arrives at a project before a work routine is established). With a disciplined crew at the site, homes can be installed, garages and porches built, utilities finished, driveways poured, and fencing and landscaping completed in 15 to 20 days from the date of the manufactured home's delivery.

Less Labor Needed on the Job Site

Less labor is needed on the job site especially if the contractor defines tasks that can be

handled by multi-disciplinary personnel. A trend is growing, especially in regions where manufactured homes are being used more frequently in subdivisions, for contracting companies to hire and train people to perform several different tasks. For example, one person may be capable of cutting and threading black pipe for gas, hanging drywall, and seaming carpet. Another may do carpentry and electrical work, or paint walls and dress concrete.

In the mid-1980s in California, in recognition of the wide ranging but brief chores needed to place and finish a manufactured home, the Contractors State License Board created a new license category, the Manufactured Housing General Contractor (C-47). A holder of this license, and his or her employees, may pull permits for and perform all trades needed to set and finish a home. It is no longer necessary to subcontract to, for example, a licensed electrical contractor to make the necessary connections, or to wire a garage. Such licensing is likely to be adopted by other states.

Reduction in Risk of On-site Theft

Because the home can be closed in on the same day it is delivered, HUD-Code construction can be a great benefit in high-crime areas. Costs for fencing, guards, and other precautions can be reduced or eliminated.

Reduced Administrative Costs

Many builder/developers have the desire to reduce the size of their own companies by harnessing the factories to do many of the things they now must pay a work force to do. The consolidation of work in the manufactured housing plant essentially brings all of the builder/developers/subcontractors under one roof. This reduces administrative costs in the office and management tasks in the field.

If after evaluating a potential project, a manufacturer decides to provide units for that project, the written agreement between the builder/developer and the manufacturer must cover an array of issues, from pricing and installation to conflict resolution. A guiding principle during the development of any such agreement is that you are seeking a long-term, trusting relationship with the builder/developer. The agreement should be beneficial for both parties and help avoid legal, financial, or other conflicts throughout your collaboration.

IMPORTANT ISSUES TO BE ADDRESSED AS PART OF A MANUFACTURER AND BUILDER/DEVELOPER AGREEMENT

The items listed below are suggested issues to be considered for such an agreement.

- Involved parties

Name manufacturer and plant location.

Name developer; identify who is actually buying homes from the plant.

Name owner of land upon which the homes will be installed.

- Financial statements - initial and ongoing

If manufacturer is public, refer to annual reports, SEC filings.

If manufacturer is private, decide what to disclose to developer.

Full financial information on developer and land owner, audited if necessary.

- Licensing

Does each party have evidence that it is licensed to carry out its activities (if licenses are required in your state)?

- Identify the land

Include a legal description; assessor parcel number; number of lots.

● Request for Notice of Default

Will the manufacturer be notified if a default on any land financing has occurred?

● Specify the quantities

How many lots are there? In phases? How many lots are finished now?

● Statement of commitment

At some point, a mutually binding commitment must be made to justify further resource use.

● Exclusive purchase statement

Will there be an exclusive purchase agreement stating that the builder/developer will use only your manufactured homes in the proposed development?

● Payment of engineering fees

Who will pay the manufacturer's product development costs and engineering fees?

● Ownership of models

Who will own the resulting models?

● Control of plans, drawings, and elevations

Are the plans available for release to the manufacturer's retailers? Is the developer permitted to release the plans to other manufacturers?

● Production capacity allowance

Does the manufacturer need to make a certain capacity and delivery commitment? Is there an offsetting minimum periodic order commitment on the developer's part?

● Estimated time frame

What is the builder/developer's estimate of the marketing period for project?

- Date of initial orders

What is the builder/developer's estimate of the date the models will be ordered?

- Prototyping

If the required models are a significant departure from manufacturer's standard, this section should discuss the procedure for building prototypes.

- Deposits

Will the manufacturer require a deposit before engineering? Before prototype development? Before delivery of any home? How are deposits credited or forfeited?

- Payment terms

Which method will be used: C.O.D.? Flooring? Deposit? Payment before shipment? ILC? Escrow proceeds? Contract?

- Treatment of MCO

When does manufacturer send? To whom?

- Freight

Who will pay freight for the units?

- Passing of title

When will title be transferred from the manufacturer to the builder/developer?

- Insurance during transportation and before payment

Who are named as insured during transportation and before payments?

- Public liability insurance

Who are named as insured on the builder/developer's property loss-property damage (PL-PD) policy.

- Liens

Will there be any materialmen's liens or fixture filings?

- Sales taxes

Who will be responsible for any sales taxes?

- Shipment of homes from yard

Will there be a defined time period for delivery of each home from the date that the home is ready to ship?

- Risk of storage

If the builder/developer must make use of a temporary storage facility, risk during that storage must be addressed.

- Manufacturer's offer of inspection

The manufacturer should recommend that the developer inspect each house at the factory before shipment. The developer is to notify the manufacturer of its intention to inspect so the manufacturer can provide personnel and access.

- Manufacturer's commitment to thorough inspection, testing, check for correct specs, and completeness

The manufacturer should make a statement about quality control programs and its plan to assure high quality and complete homes. The manufacturer should also state how it will verify that the homes were built to correct specifications and options.

- Developer's inspection of homes

The builder/developer should be encouraged to inspect each home within 24 hours of arrival from the factory and if there is a problem, report its condition, including any shortages, at once.

- Damage claims to transporter

What items require claims to be made to the transporter?

- Repurchase agreement

Will there be repurchase agreements?

- Method of reporting material shortages and warranty claims should follow these guidelines

Timeliness - that reports should be submitted on current basis.

Accuracy - description of damage, defect, or shortage.

Written - provide manufacturer's form if available.

Supply cost estimate if reimbursement desired.

What is the time frame for factory response?

What is the time frame for factory work?

- Manufacturer's name in project

The manufacturer should determine whether he or she wants significant identification with project. Would it cause dealer friction?

- Conflict with dealers

Should the manufacturer sell only in the project? Any agreements which address dealer concerns should be in the text. Refer to the discussion on dealer involvement in Chapter 2.

- Resolution of disputes

Will disputes be settled through mediation or arbitration? A good way to minimize problems is to use wording such as: "No action shall be taken with respect to any default hereunder until written notice has been given and a reasonable time to cure the same has expired without a cure being effected."

- Purchase of material - terms of sale, transportation

Discuss the method by which the developer may purchase extra material from the manufacturer.

- Programs: marketing support, rebates, etc.

Any agreed rebates, subsidies, promotion allowances, assistance with models, decorating, advertising, etc. should be clearly described. Any allowances that are a function of performance should be accurately written.

- Participation in model center, display, etc.

Any agreed participation in the model center, display, etc. should be clearly described. Any allowances that are a function of performance should be accurately written.

- Method of ordering, confirming

The key purpose here is to distinguish between a quote, a sample price-out, and a firm order. Are purchase orders needed? How does the developer launch production?

- Change order process, deadlines

Describe how a change order is made, and what time constraints there are for change orders.

- Limitation on custom orders beyond original agreement

Will the manufacturer entertain additional customization beyond the initial designs? How is this requested, how much time is needed to respond, and how is pricing affected?

- Price increases

Unexpected rising prices can cause problems. There should be some statement about how many days written notice of increases are required.

- Material changes

After the initial specifications are agreed upon, what happens when the manufacturer wants to change material, or if an item becomes unavailable? The builder/developer's investment in

its model complex makes any changes difficult. This needs to be addressed.

- Foundation requirements

The agreement should express minimum foundation requirements.

- Attaching structures (garages, porches, etc.)

Prior approval - The developer, manufacturer, and code enforcement agencies should agree on all attaching structures.

Permits and inspections - No work can be done on the home without the required permits and inspections.

Hold harmless re: home integrity - Who will be responsible for home failure caused by site-added structures?

- Representations to consumer; presentation of manufacturer's warranty

How will the manufacturer's warranty be presented to the customer? Will the manufacturer's warranty be displayed at the sales office?

- Quality of installation & finish

Are licensed contractors required to perform work on the house(s)? Are written standards of workmanship for on-site work needed?

- Boilerplate: Force Majeure; governing law, severability, notice, termination, etc.

The manufacturer and builder/developer need to have all elements of the agreement approved by their legal advisors.



6

CASE STUDIES



Lexington Communities, Raleigh, NC.



LEXINGTON COMMUNITIES

In 1993, Pulte Home Corporation, then the nation's largest builder of site-constructed homes, decided that it could no longer overlook the growth of the manufactured home industry's share of the market. By then, HUD-Code manufactured homes claimed 25% of the new single family home market in the U.S.

After evaluating alternative opportunities within the industry, Pulte chose to merely substitute manufactured homes for site-built homes for this project. The selection of property, the development standards, the home designs, and the marketing and finance would all conform to Pulte's usual practices.

About two dozen metropolitan areas were evaluated for the first development, and Raleigh, North Carolina, was selected. The area satisfied more key requirements than any other, including market strength, availability of forward-thinking manufacturers, and Pulte's existing presence in the region. The property itself was chosen after a search of dozens of candidate parcels in Wake and Durham Counties. Located in Apex, a suburb of Raleigh, the land was within a very short commute of the area's famous Research Triangle Park. The influx of highly paid employees in the pharmaceutical, technical, medical, and environmental science industries had driven local home prices out of the reach of many area residents.

The first phase of the property was developed into 77 lots, averaging about 10,000 square feet each—standard for residential development in the Raleigh-Durham market. Street widths, grading, drainage, setbacks, and other criteria were the same as if site-built homes were to be constructed there.

In early 1994, R-Anell Custom Homes, Inc., of Denver, North Carolina, was selected to produce the homes for Pulte.

(In December 1998, R-Anell Custom Homes, Inc., was acquired by American Homestar Corp., of League City, Texas.)

A key minimum standard for Pulte was that the homes achieve architectural compatibility with site-built homes in the surrounding neighborhoods. This played a pivotal role in obtaining approvals from the Apex Town Council to develop the manufactured home community. North

Carolina still does not have favorable laws respecting the right to place visually harmonious manufactured homes in site-built home neighborhoods. For this development, a zoning ordinance was obtained that allowed manufactured housing within a specific residential zoning district if certain design requirements were met.

Extensive efforts were made to hide the "mobile home look" and blend the home, garage, foundation, and site together with materials, dimensions, and proportions that were common to site-built homes. Early specification choices included a hinged roof yielding a 5-in-12 roof pitch, integrated porch roof extensions, and the use of three-section homes ("triplewides"). The smallest details were reviewed and approved by Pulte.

For the interiors, Pulte chose R-Anell's top cabinet system and required that all interior surfaces be standard taped, textured, and painted dry-wall. Floor plans and construction elements were a hybrid of R-Anell's existing designs modified by Pulte's features, which had proven successful in its site-built subdivisions around the country.

Initially, four floor plans, each consisting of three sections, were developed. The square footages ranged from 1,815 to 2,166, with three and four bedrooms, and two baths. Especially unique for the manufactured housing industry were the entry foyers and dining rooms brought by Pulte, as well as unusual placement of the home sections themselves. By placing various sections in offsetting and perpendicular arrangements, privacy and interesting room relationships resulted.

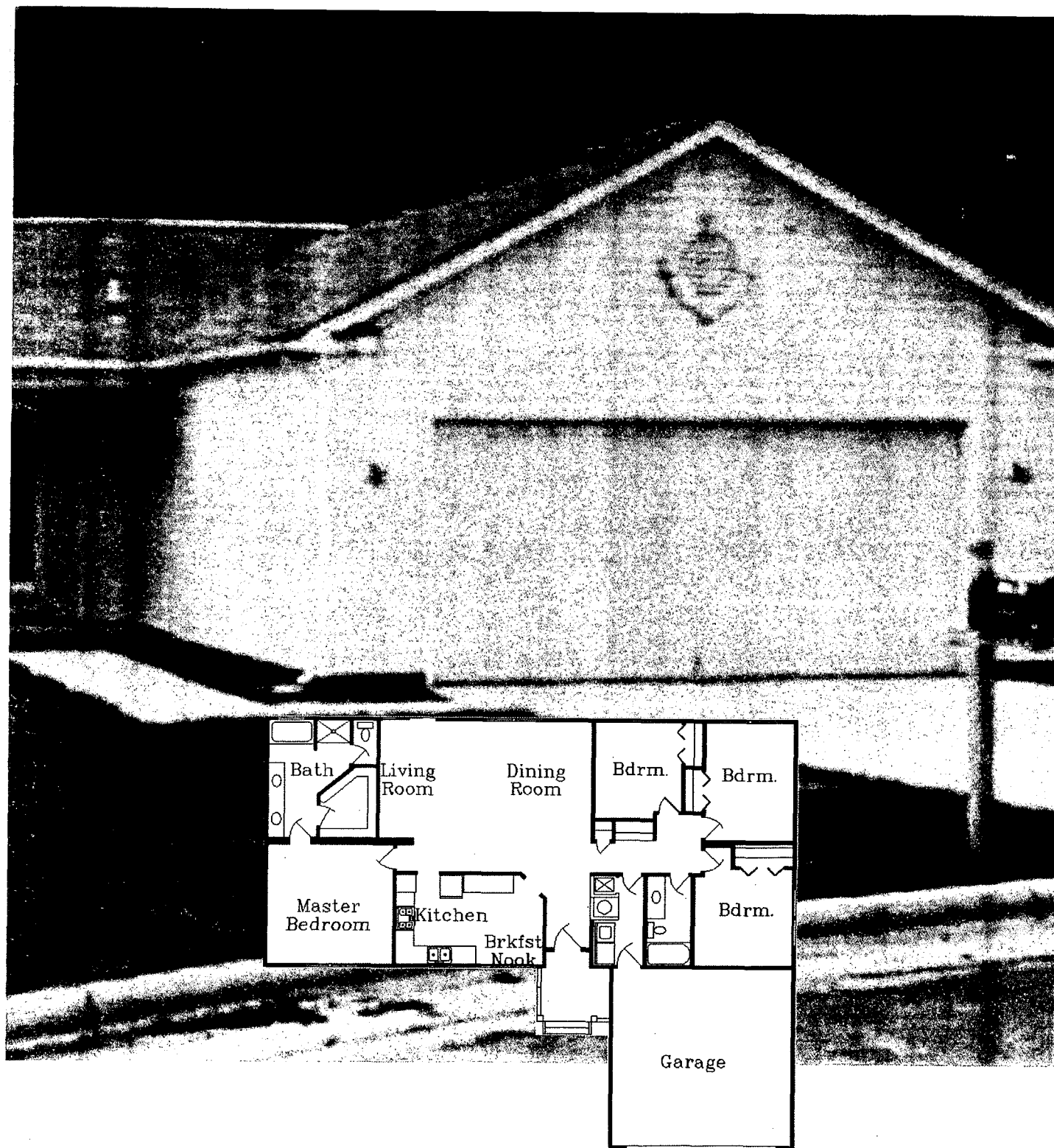
Smaller, two-section homes were added to the lineup. These are the more common, "doublewide" configurations in which each section is the same size and the home assumes a rectangular shape (excluding the garage).

Lexington opened in July 1995. Prices ranged from \$94,900 for a 1,439 square foot, two-section home with three bedrooms and two baths, to \$126,900 for the largest home—a four bedroom, two bath, three-section model with 2,166 square feet.

A supply agreement had been negotiated with R-Anell to deliver five homes per month, which the project was estimated to need. In its final pricing decisions, Pulte planned to stay slightly



Lexington Communities, Raleigh, NC. Photo by Steve Hullibarger, The Home Team



under the comparable site-built market. As a result, sales took off immediately, and the sales manager reported that the sold backlog had reached almost 50 within three months. By October, 1995, prices were raised \$6,000 to \$8,000 per model, and sales began to match the planned production, delivery, and finishing rates.

By October, 1996, the project was nearly completed, and was acclaimed during a tour by the attendees of the Manufactured Housing Institute's seminar, "Developing Residential Property with Manufactured Homes," held in Raleigh. Since then, developers from around the country have visited the subdivision to see what can be done when focused and flexible developers and manufacturers get together to push the envelope of manufactured housing.

Housing type

Single family detached homes.

Technology and Design

Manufactured Components

Double- and triple-section homes

On-site work

Perimeter foundations, attached one- and two-car garages, porches

Traditional home features

Trim detailing, porch design, steep roof pitch

Project size

77 lots

Zoning

Manufactured housing allowed by meeting certain design criteria

Inspection coordination:

Manufacturer's DAPIA and IPIA, Town of Apex, State of North Carolina

Housing Price

\$94,900 to \$126,900

Financing

Conventional mortgages

Developer

Canterbury Communities

A subsidiary of Pulte Home Corporation

Manufacturer

R-Anell Custom Homes, Inc.

Manufacturer's comment

We learned that buyers that would shop site-built housing and purchase manufactured housing in the same price range if it is properly designed and sited.

NEW COLONY VILLAGE

New Colony Village, slated to contain 416 units averaging 1,300 square feet, is designed to compete with conventional subdivisions. The designs match the architectural style prevalent in the mid-Atlantic region. The homes are one- and two-story HUD-Code units over basements, with porches and garages.

The 52-acre site is located about 25 miles from Washington, D.C. To preserve the open feeling of the site, while creating a density of approximately 10 homes per acre, the homes are grouped in "pods" along narrow streets, with common areas throughout. The narrow streets are less expensive to build than wide ones typically found in suburban developments, as are the shared sewer connections between two homes. In Howard County, Maryland, a typical 1,500-square foot, single-family detached home with three bedrooms and two baths averages around \$190,000. Homes at New Colony Village are \$109,000 to \$132,000 — prices more in line with area townhouses.

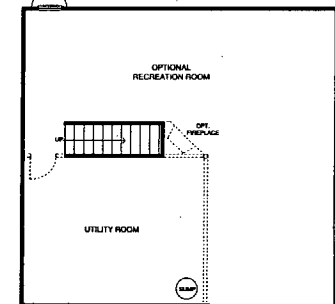
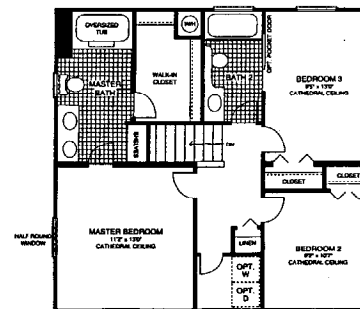
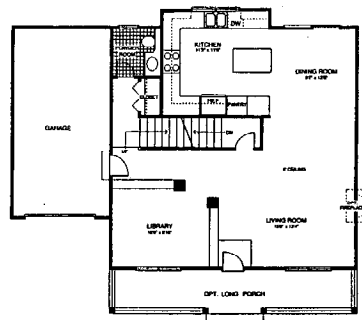
New Colony Village offers five floor plans: four two-story models and a one-story model marketed to the elderly and empty-nesters. Among the space configuration choices are roommate suites, ground floors with two-car garages or a one-car garage plus family room, a ground floor with two bedrooms, or one bedroom and a family room. A two-bedroom model has the option of a site-built third bedroom or family room above the garage. Because stairs are not covered by the HUD-Code, they are built to the local code, as are the attached garages and other on-site work.

Designers maximized all available space by using areas under stairwells for shelving or optional cabinetry. Homeowners can opt for in-wall media niches for TVs and stereo components that generally require space-consuming furniture. One model has an entry foyer that steps down to a Great Room, divided by a knee-wall that features a mini-bookcase. The developers held focus groups to determine what homeowners desired as standard features in the homes. As a result, such items as white cabinets, white-on-white appliances, garage door openers, and cabinet and vanity hardware are standard.

For privacy, the garage side of every home



New Colony Village, Elkridge, MD.





has limited window space, similar to the designs used in zero-lot line homes. To create privacy without blocking light, the builders used clerestory windows.

New Colony Village units use an integral chassis where the 2 x 10 floor joists are doubled at the perimeter, eliminating the typical steel chassis. Hitches, axle, and wheel assemblies are removable. When the module arrives on site, a crane lifts the home and detaches the axle, wheels, and hitch, and the module is ready to stack. Each two-story home is comprised of four modules. For maximum curb appeal, mate lines were disguised by incorporating connections into architectural elements. To free-up space on the main floors, the furnace is installed in the basement, a practice borrowed from modular home construction.

Neighborhood amenities include jogging trails and a large recreation center with a fireplace lounge area, a multi-sport court, and adult and children's pools.

Housing Type

Single-family detached

Technology and Design

Manufactured components

Two-story stacked HUD-Code units, some single-story units

On-site work

Perimeter foundation basements; porches and garages

Traditional home features

Varied window sizes and snap-in mullion patterns, steep roof pitch, gable-end entry

Project Size

416 units

Zoning

Manufactured home park

Inspection coordination

IPIA inspected the HVAC, local building inspection of foundation, porch and garages

Housing Price

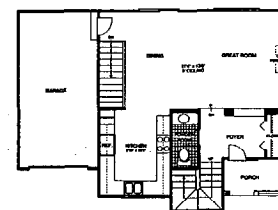
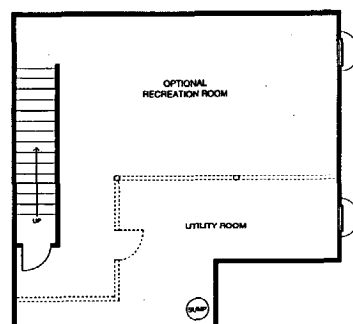
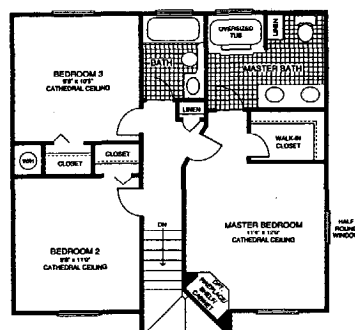
\$109,000 to \$132,000

Financing

50-year leases allow for conventional 30-year mortgages

Manufacturer

Schult Homes Corp.



Developer

Corridor 1 LLP

Designers

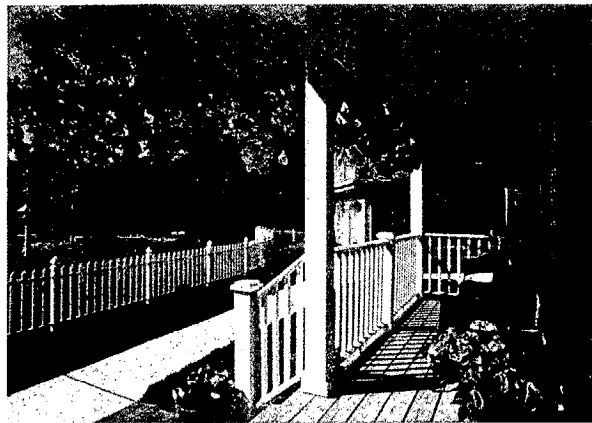
Hackworth Architecture-Planning

Manufacturer's Comments

Coordinate on design issues right from the beginning, bring all the technical and design people from the manufacturing and developing teams together at one table— it will save time and money in the end.

Developers Comments

The biggest difficulty encountered on this project was the limited options for financing available to the buyers. FHA Title 1 needs to have lower interest rates and a higher loan limit, or FHA Title 2 needs to be available for land-lease communities, for these types of developments to be more successful.



Front porches at New Colony Village.



Two-story home built in Wilkinsburg, PA as part of MHI's Urban Design Project.

MHI URBAN DESIGN PROJECT

The goal of this project is to display the potential for manufactured homes to provide affordable housing in an urban setting that is architecturally appropriate. Wilkinsburg, Pennsylvania, was the first demonstration site for MHI's Urban Design Project with other homes in Washington, D.C. and Louisville, Kentucky. The Wilkinsburg design is made up of three sections, providing main living areas and a kitchen on the ground floor and two bedrooms on the second floor for a total of 1,475 square feet. The second story has a 5-in-12 hinged roof, while the single story and porch have 4-in-12 shed roofs. The sections are supported at the perimeter and marriage wall. A site-built porch with decorative railing wraps the front corner of the home.

This home provided a model of how indistinguishable a manufactured home could be from a site-built dwelling. Initially there was concern about the impact a manufactured home would have on neighboring property values by some local residents in Wilkinsburg. Ultimately the home sold for about \$5,000 more than comparable local properties.

The second Urban Design Project was installed in Washington, D.C. on two lots, in a moderate-income urban neighborhood in the city's Northeast section. A two-story and a one-story unit were constructed.

The design appropriateness of these homes in this neighborhood was verified without the use of focus groups thanks to the active involvement of the Marshall Heights Community Development Organization, which had its hand on the pulse of the community, and gave valuable guidance as to what was best for these sites. The bungalow style one-story house can be considered affordable, but it was not priced significantly lower than neighboring homes in this market. Specification of R-19 walls, R-30 ceilings, and R-30 floors all exceed HUD minimum insulation values, and all windows included low-e glazing.

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 an open, airy feel to the home, making it seem larger than it actually is.

The two-story home built in Wilkinsburg became the model for the second home built in Washington. It was decided that instead of concrete slab construction (as was used in Wilkinsburg) this model would have a full walk-out basement, which would also be heated.

This single-story house was built by joining two 14' wide by 52' long units side by side on a concrete block foundation. Once the units were in place, the roof was hinged up to a 7-in-12 pitch. The bulk of the house was factory-built and erected on the lot with conventional set-up methods. Site-built construction (the front porch) adheres to BOCA standards. The two-story house was constructed in a similar way, although the stacking arrangement of the sections on this small site allowed a bit more room for maneuverability around the house.

Initial reaction from the community was less than enthusiastic. Once the house was finished and open for view, public response was far more favorable. In fact, the one-story house sold within a few days of completion.

Advance notice of 48 hours (and a permit) was required to close the street for setting the home, but was not obtained. This resulted in overtime expenses and delayed construction time. Although contingency expenses were allocated at 5% of construction costs, actual cost overrun was closer to 7.5%. On future projects, it may be advisable to provide a fairly detailed listing of the manufacturer's responsibilities, so as to avoid any confusion as the project proceeds. 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.

In Louisville, hard cost savings were anticipated, but not realized on the first home. The developer is confident that the four additional units planned will come in at a cost savings as compared to site-built. Three of those homes will be single story designs and a fourth will be two-story. This project required a change to the local zoning ordinance to define manufactured homes with permanent foundations, a minimum roof pitch of 4-in-12, and approved building materials as being eligible for placement in residential districts.

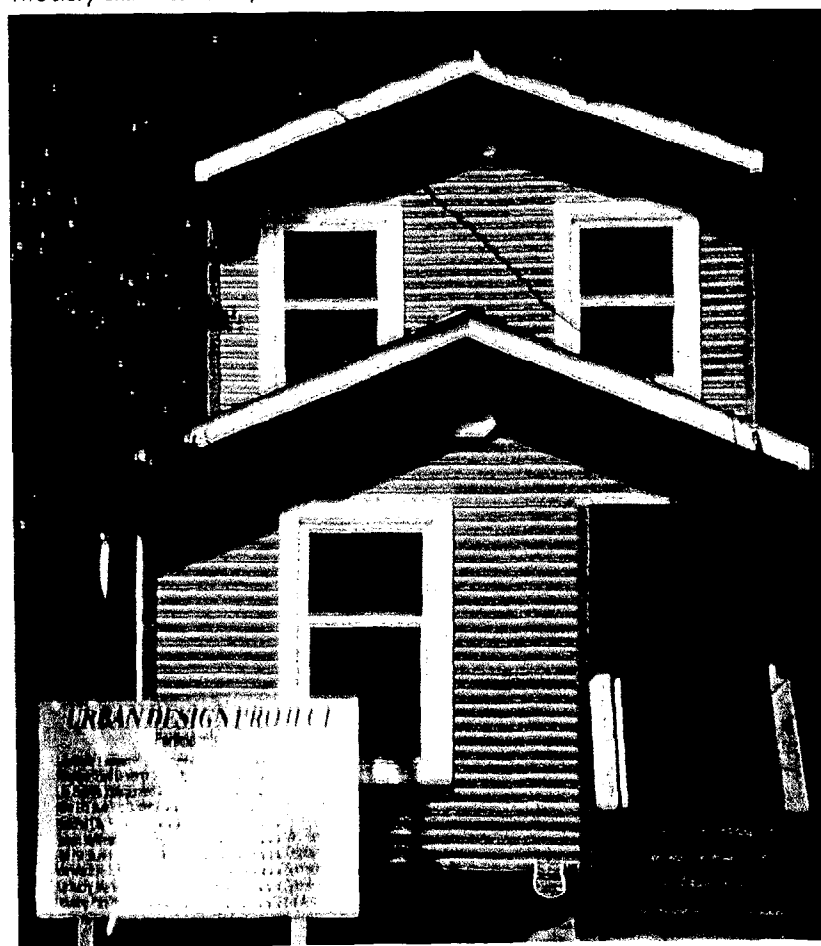


Bungalow-style home in its Washington, DC neighborhood.



Two-story home in Washington, DC.

Two-story unit in Louisville, KY.



Housing Type

Detached single family homes on infill urban lots

Technology and Design

Manufactured components

Single- and two-story HUD-Code homes

On-site work

Perimeter foundations of crawlspaces, basements, and porches

Traditional home features

Varied window size and trim, wide corner boards, decorative porches with contextual detailing, steep roof pitches

Project Size

Wilkinsburg, PA 4 homes

Washington, D.C. 2 homes

Louisville, KY 4 homes

Zoning

Wilkinsburg, PA

Single-family home

Washington, D.C.

Single-family home, factory-built housing is not addressed in local zoning

Louisville, KY

Single-family home, with change in zoning ordinance and prescribed elements of a design palette

Inspection coordination

Louisville, KY

Foundation, side porch, electrical and plumbing inspected by the city of Louisville

Financing

All

Conventional mortgages

Manufacturer

Wilkinsburg, PA

New Era Building Systems, Inc.

Washington, D.C.

Schult Homes Corporation

Louisville, KY

New Era Building Systems, Inc.

Developer

Wilkinsburg, PA

ACTION Housing, Inc.

Washington, D.C.

Marshall Heights Community Development Corporation

Louisville, KY

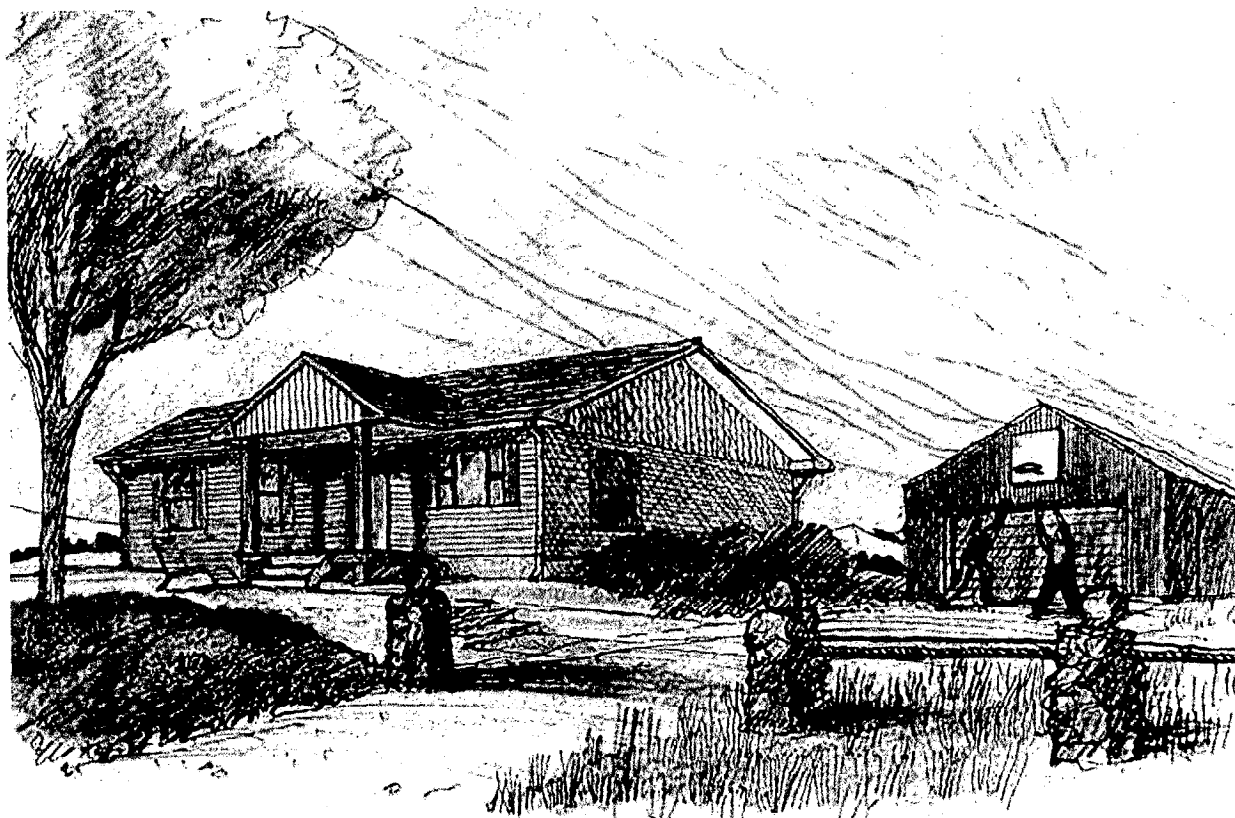
Neighborhood Development Corporation.

Designer

Susan Maxman and Partners, Ltd., Architects

PINE RIDGE

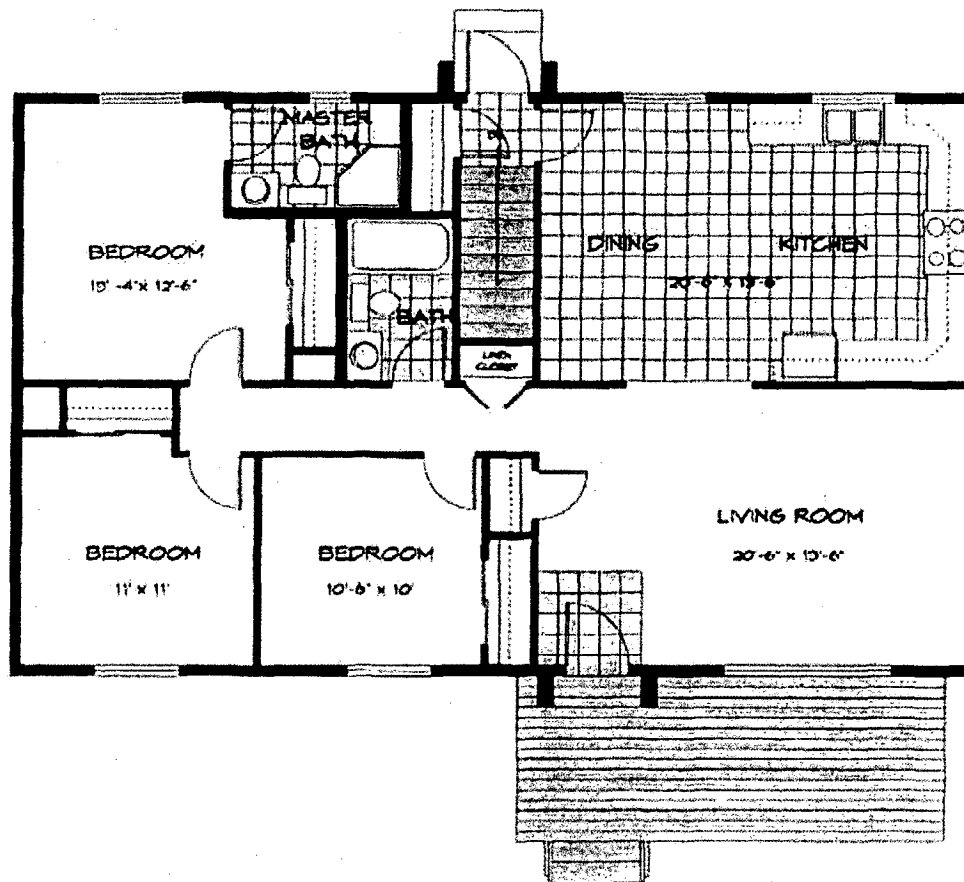
This Native American Reservation is located near Rapid City, South Dakota. Pine Ridge Reservation's remote location and severe need for affordable housing made manufactured homes a clear choice. Ultimately a mix of 300 new site-built, modular, and manufactured homes is expected to be constructed. This project came about through the Shared Visions initiative of HUD Secretary Andrew Cuomo, in close coordination with tribal leaders across the country, to develop a model for promoting home ownership among American Indians. At the Pine Ridge Indian Reservation, the Oglala Sioux Tribe Partnership for Housing, Inc., a non profit organization, was formed to act as the developer for the project. As part of HUD's efforts at Pine Ridge, a PATH (Partnership for Advancing Technology in Housing) program demonstration project, the houses will contain an assortment of PATH technologies, which can be found on the PATH website (www.pathnet.org). The plans were developed by Archambault & Company with assistance from Steven Winter Associates, Inc., on the design parameters of manufactured homes. The plans were fine tuned to work with the home manufacturing and delivery process. The developed designs are three- and four-bedroom, two-bath homes of approximately 1,288 square feet, with overall dimensions of 28'x48'. The homes were and will continue to be set on permanent foundations of either basements or crawlspaces and have the option of site-built decks and or detached garages. Initially the land for each unit will be leased from the tribe. Two manufacturers were selected from qualifications and proposals submitted to the Oglala Sioux Tribe Partnership, each meeting specification and performance criteria. At HUD's Shared Vision conference on July 7, 1999 President Clinton toured one of four manufactured homes installed at the Reservation.



Pine Ridge Building Summit

3-bedroom home with porch and garage option

Home Build 1999



Pine Ridge Building Summit

3-bedroom home with porch option

Home Build 1999

Housing Type

Detached single-family homes on suburban lots

Technology and Design

Manufactured components

Single-story HUD-Code homes; chassis accommodates basement stair perpendicular to long axis of home; chassis recessed to accommodate perimeter foundation; hinged roof

On-site work

Perimeter foundations of both crawlspaces and basements, decks and detached garages, insulated crawl spaces

Traditional home features

Overhangs of 12" at eaves and side walls; upgraded shingles, low-e windows; "residential" grade door casings, jambs and hardware; drywall; "residential" grade cabinets, sinks and plumbing.

Project Size

300 homes are proposed, the majority of which are to be manufactured.

Zoning

Tribal land, typical zoning issues did not apply.

Inspection coordination

The Oglala Sioux Tribe Partnership for Housing, Inc. coordinated with HUD on inspections.

Housing Price

In the range of \$60,000 to \$70,000 depending on features and options

Financing

Conventional mortgages with federal subsidies

Manufacturer

Champion Enterprises and Wick Building Systems

Developer

Oglala Sioux Tribe Partnership for Housing, Inc.

Designers

Archambault & Company (architect), Steven Winter Associates, Inc. (consultant)

Manufacturers Comments

The systemization of procedures offered by the manufactured home industry gives us the ability to serve a wider range of customers than what we as an industry realize.

NEXTGEN PROJECT

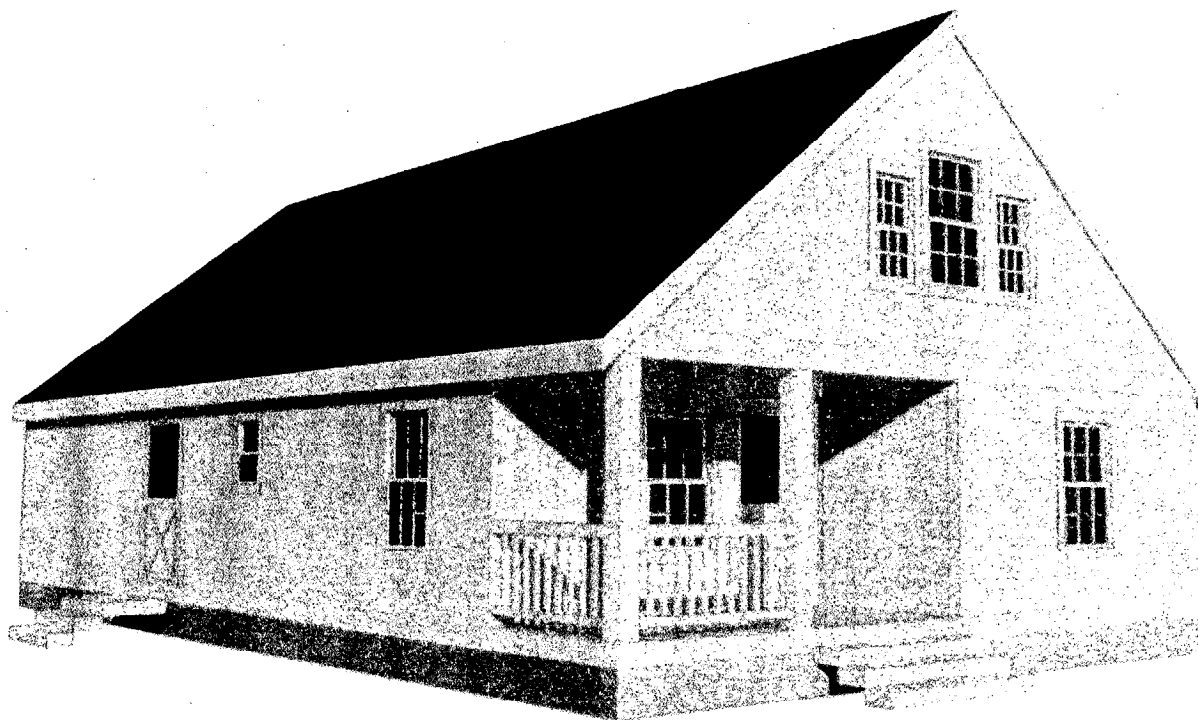
A factory-built house installed in Danbury, Connecticut, is a demonstration of what the future of affordable, manufactured housing can be. Dubbed NextGen, (Next Generation of Manufactured Housing) the house is a prototype model built by New Era Building Systems, Strattanville, Pennsylvania. It blends energy conserving techniques and equipment with interior space efficiency and an exterior steep-roof profile that sets it apart from traditional manufactured HUD-Code housing.

The idea for a NextGen house grew out of a Steven Winter Associates, Inc. (SWA) research project, funded by HUD, that explored ways to improve energy efficiency, affordability, and the design features of manufactured housing. The research resulted in a book *The Next Generation of Manufactured Housing: Design Phase* HUD, 1998 SWA, which is available from HUD USER, 800 245 2691. The owner, the Danbury Housing Authority, placed the home on a small lot in a mixed single- and multi-family Danbury neighborhood. The attractive, wooded site required tree grubbing and extensive grading before site development occurred.

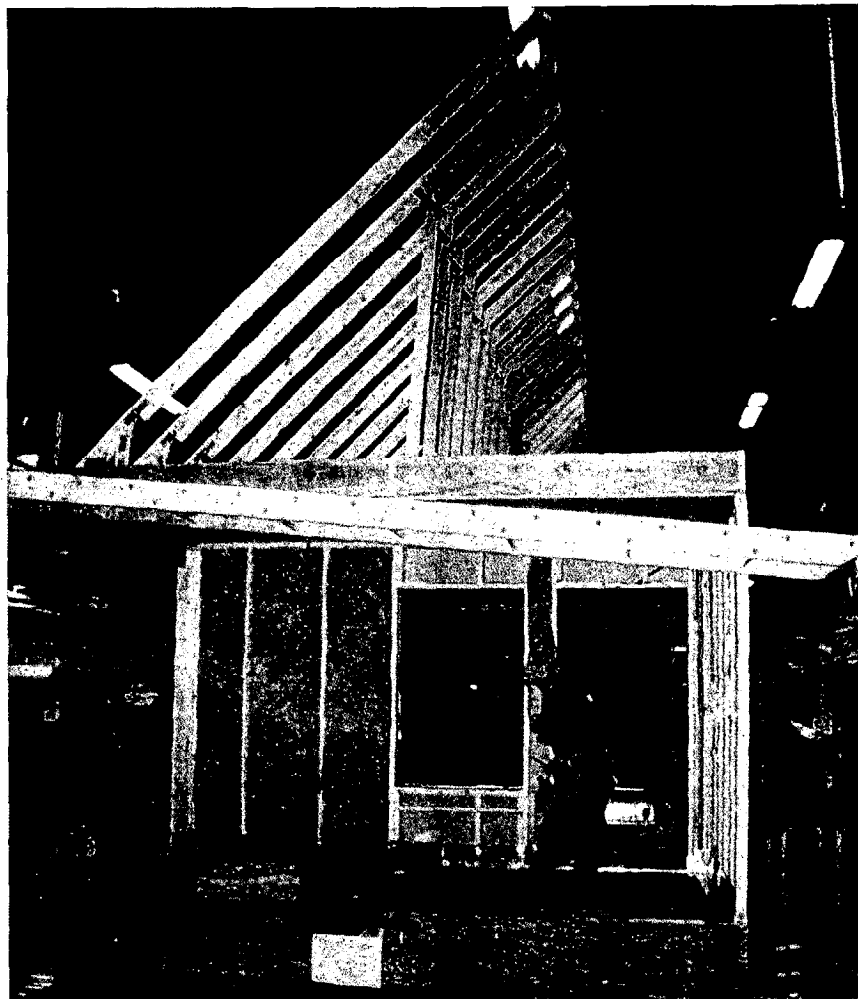
The NextGen house was designed by SWA with technical assistance from the New Era engineering staff. Product donations from Stanley, Owens Corning, and GE helped reduce costs. Also helping are HUD-Code specialists Fabwell, Tamarack, and LaSalle-Bristol. New Era's president, Elliot Fabri kept profit margins low, and Danbury Housing Authority's contribution of land helped to reduce the final cost of the home.

The 28' x 48' home is entered from the street-front porch. Side and rear doors provide access to more private outdoor yard areas. The plan has two bedrooms and two baths downstairs with a third bedroom and unfinished attic storage space on the second floor. The kitchen and dining room are separated from the large livingroom by an open stairway. Adding a bath and fourth bedroom on the second floor gives this house special appeal for the owner-occupant with a growing family.

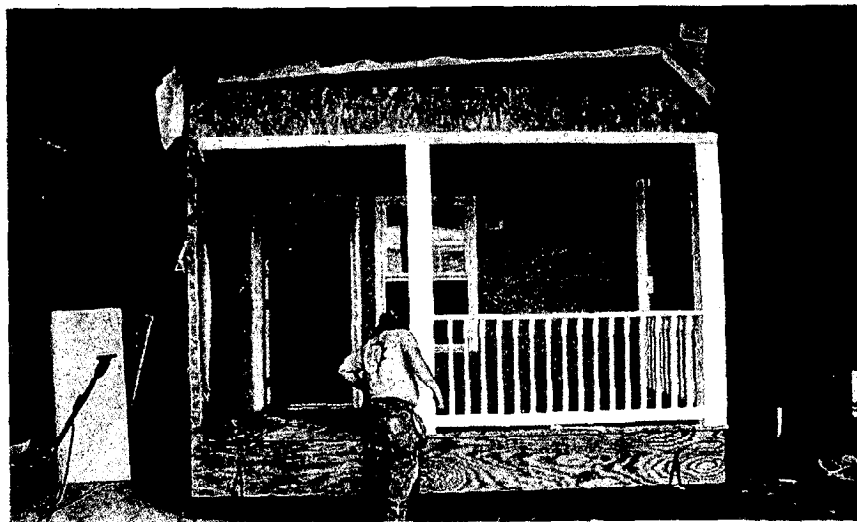
NextGen is built on a poured concrete stem wall, which provides a crawl space under the insulated floor. For additional dollars, the home buyer who wants more storage space can opt for



NextGen house, Danbury, CT.
Steven Winter Associates, Inc.



NextGen House fabrication in factory.
Steven Winter Associates, Inc.



a full basement. In both cases the exterior walls bear directly on the concrete foundations, which gives them greater wind and earthquake resistance and better resistance to pest infestation. This load-bearing exterior wall feature is gaining industry popularity for its overall durability, although it does carry a cost premium.

The NextGen home is comprised of two factory-built sections joined in the field. Energy-efficient appliances, lighting, windows, and high levels of insulation contribute energy saving that earn this home the EPA/DOE Energy Star label. The washing machine, refrigerator, and dishwasher appliances carry the Energy Star label for low energy use, and the front loading washing machine uses 40% less water than top loaders.

In this house, home heating comes from heat exchanged from the hot water heater instead of a furnace. Because the entire heating system, including ducts, is contained within the heated space of the dwelling, there are no duct losses to reduce operating efficiency. (A recent study by the Alternative Energy Corporation, *Air of Importance*, AEC, 1998, concluded that current HUD-Code homes had duct losses that average 40% of total heating costs.) Air quality is regulated by a mechanical ventilation system using continuous, low-velocity fans. Residents may boost ventilation levels when needed and the system returns to programmed levels once comfort is achieved.

The 12-in-12 roof pitch permits use of the second floor attic space for bedrooms and gives the home its traditional Cape appearance. The one-and-a-half-story profile distinguishes it from almost any other HUD-Code home being built today. (There are two-floor stacking models in production but they are less space- and cost-efficient than the NextGen.) Aside from the architectural character, the NextGen tilt-up Cape provides more usable space under a single roof than any comparable manufactured home.

Housing Type:

Detached single family homes

Technology and Design

Manufacturing components

One-and-a-half-story HUD-Code homes

On-site work

Perimeter foundations, stairs and landings.

Traditional home features

Conventional residential roof, siding, doors and windows, railings and landscaping.

Project size

Single-family house

Zoning:

Single-family detached

Inspection coordination

By local building code officials and project manager.

Housing price

Base price without Energy Star features: approximately \$52,000 delivered.

Financing

Internally funded; would qualify for conventional market financing if private venture.

Manufacturer

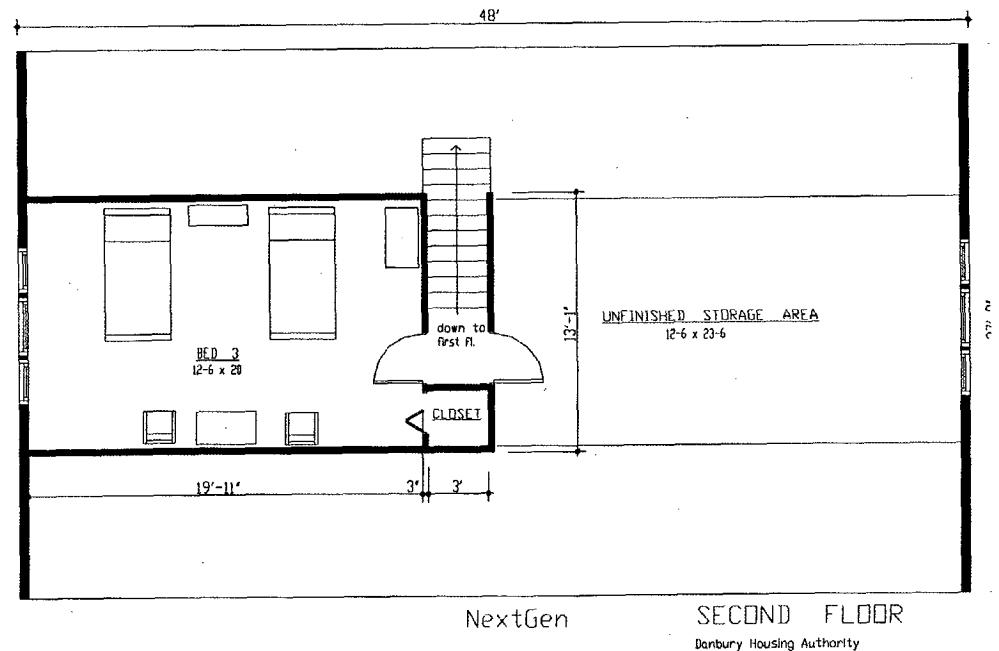
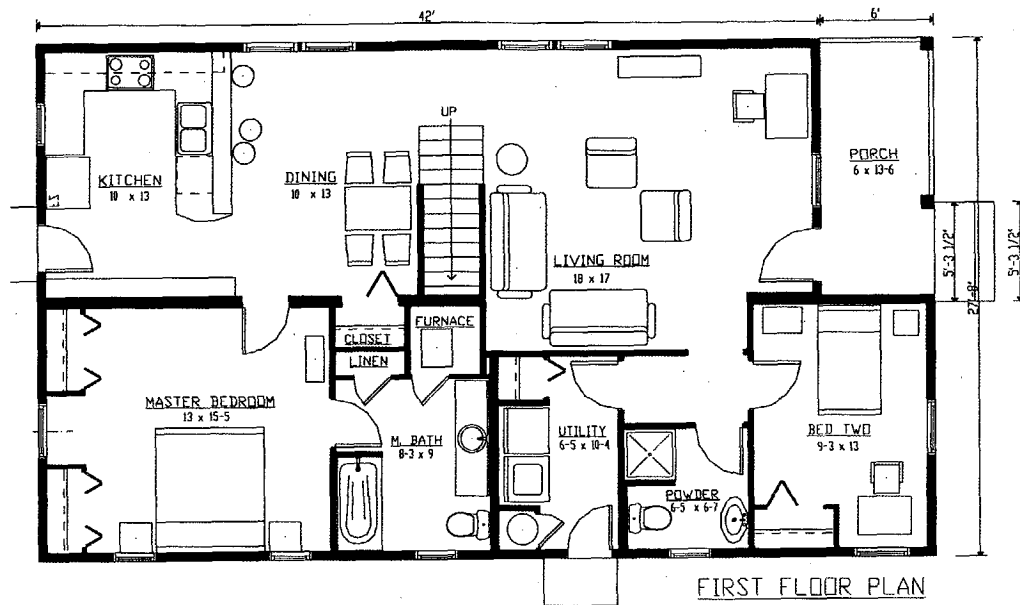
New Era Building Systems, Strattanville, PA

Developer

Danbury Housing Authority, City of Danbury, CT.

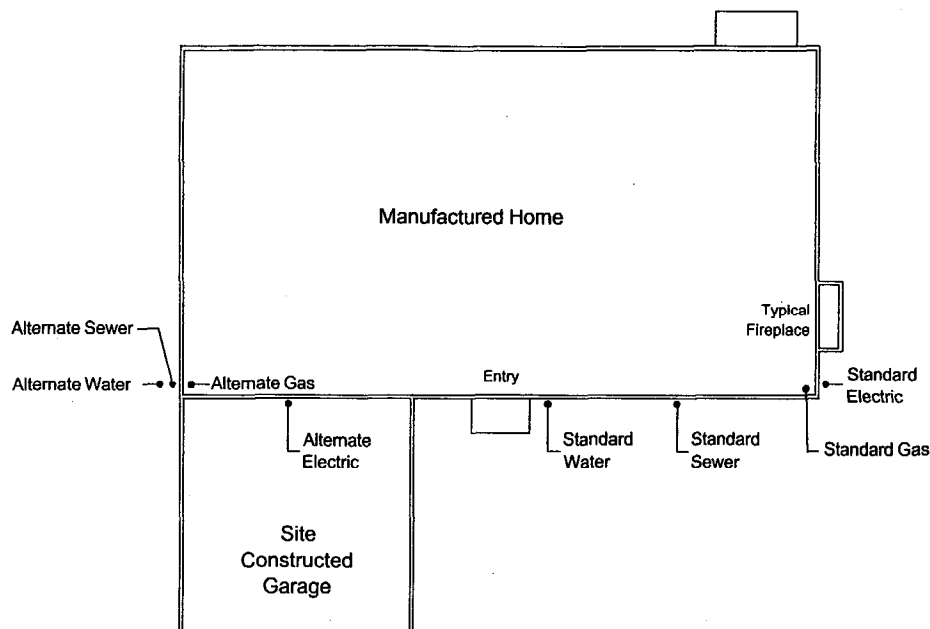
Designers

Steven Winter Associates, Inc.



UTILITY PLANNING FOR RESIDENTIAL DEVELOPMENT PROJECTS

Manufactured homes set in subdivisions or on infill lots may require relocating the electric, water, sewer, and gas lines going into the home. Options for different configurations are discussed below.



These suggestions assume utilities are located in the street. If utilities are along the rear or side lot lines, adjustments would be made. Also, frost protection measures would modify some of these set-ups

Item	Standard	Alternate
Electric	Combination meter base, main and branch breaker panel, recessed in endwall, near corner. Choice of underground or overhead feed, with raceway through floor or through roof (with masthead).	Main and branch panel only, mounted in garage firewall. Raceway and sweep through top of firewall to accommodate routing to isolated meter base.
Water	Inlet located between 24" and 48" from front entry, away from garage. Allows incoming riser, shutoff valve and hose bibb for front yard.	Inlet at rear endwall, 12" to 18" from sidewall. To permit direct lateral to street, avoid trench under driveway. Used when lateral is at side property line.
Sewer	Termination approximately half-way between front entry and endwall of house. Capped about 12" to 18" from edge of floor.	Termination rear endwall, 12" to 18" from sidewall, capped about 12" to 18" in from edge of floor.
Gas	Termination approximately 24" in from edge of floor near corner of house. Permits routing through endwall or sidewall to meter.	Termination approximately 24" in from edge of floor near corner of house behind garage. Permits plumbing to gas meter location on garage wall.



Exterior meter base installed after the home was installed, cluttering the side of the house.



Recessed combination meter base and panel box installed at the plant for a much cleaner look.

Electric

Standard - Factory should supply an installed combo meter base with main and branch breaker panel, recessed into endwall 12" to 18" from sidewall, set so that center of meter glass will be 45 7/8" above finished floor. Available for either underground or overhead feed. If underground, factory installs entry conduit down through floor. The site contractor is provided with the dimension of the distance from the sidewall where the conduit will penetrate the floor, so that a cavity for the conduit can be formed into the concrete foundation wall. If overhead, factory will run the conduit up through roof, terminated with a masthead. Terminals for telephone and cable television should be located in the vicinity of the electric meter.

Alternate - Factory installs the panel with the main and branch breakers on the garage firewall, adjacent to the fire door to the house, between the water heater and the fire door. The site contractor is provided the measurement of the distance from the endwall, so that an accommodation can be formed into the concrete foundation wall. The contractor then routes the main feeder conductors to the meter base, which will usually be located near the front end of the garage wall. The alternate method is applicable when there is no room at the standard location to mount the electric fixture (for example, when a bay window is located there), when the incoming terminus must be located on the opposite side of the house (to meet existing site situations), or when the meter must be located at the point nearest the street (to meet utility company requirements).

In either the standard or the alternate application, the factory provides no wiring beyond its installed main breakers.

Gas

The factory should terminate the gas line at a point approximately 24" inside either wall at the front corner opposite the garage. This will permit the site contractor to plumb and direct the line to the proper point at which the line exits the house. This point will vary, depending on the location of the electric meter, openable windows and crawl space vents.

Alternately, the factory would terminate the gas line at the same point on the other end of the sidewall. This permits the site contractor to plumb to the meter location on the garage wall.

The factory provides no additional materials beyond the end of its installed gas line.

Water

The factory should locate the water inlet at a point between 24" and 48" from the front entry, opposite the garage. This permits the site contractor to trench to this point, bring the riser out of the ground, install a gate valve (main shutoff) and a hose bibb, then enter the wall to tie in to the factory terminus.

Alternately, the factory will locate its inlet on the endwall 12" to 18" behind the garage to accommodate laterals located on that side of the lot. If so, the factory will provide a hose bibb between 24" and 48" from the front door.

In either case, the factory will provide one additional hose bibb in the back yard, between 24" and 48" from the rear yard door (typically a sliding glass door).

Drain Line

The factory should make every effort to keep the drain line as high as possible. The standard termination will be at a point 12" to 18" inside the edge of the floor, between 6' and 12' from the endwall opposite the garage.

Alternately, the termination point will be 12" to 18" behind the garage on the endwall.

Preparation for Washers, Dryers, and Water Heaters in the Garage.

In mild climates, much can be gained by setting up the house for this equipment to be located in the garage. This is acceptable in such climatic areas, and by doing so, a great deal of space can be made free for other uses in the house.

The manufacturer should provide a grade plan calling out the elevation of key items relative to the finished floor of the house. Especially critical is the location of the garage slab because the water heater, washer, and dryer will rest on the garage floor while being serviced by plumbing and electrical connections on the home sidewall.

Dryer electric outlet can be located within 6" of the finished floor of the house. The length and flexibility of the dryer cord allows vertical latitude.

Dryer vent is not a factory concern because the dryers will be vented through the garage wall. The manufacturer should plan for dryer locations to always be in the corner of the garage, next to the garage wall.

Washer water faucets need to be located so they are near the top of the washer, but not more than 6" above it.

Washer drain standpipe must also be located near the top of the washer. The standpipe must have at least 36" of vertical fall over the trap.

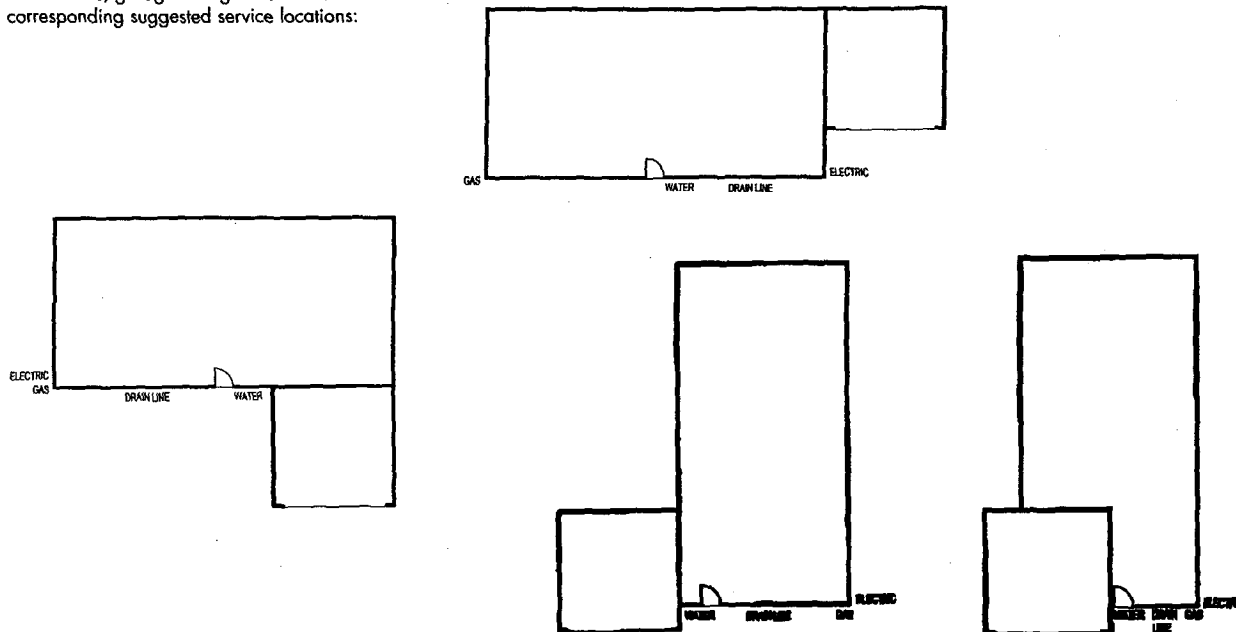
Water heaters must be installed on a pedestal at least 18" above the garage floor. Water and gas lines (or electric junction box in the case of an electric water heater) must be stubbed out in the appropriate locations, calculating the height of the heater plus the pedestal, and considering the relationship of the house to the garage slab. Some height variations can be absorbed by building a taller pedestal.

The factory would provide the water heater and the fittings. It should also provide instructions and drawings for the installation of the water heater.

Firewall penetrations and sealing must meet firewall requirements. Research into the best fittings, fixtures and sealants must be undertaken.

Other home/garage configurations and their corresponding suggested service locations:

Other home/garage configurations and their corresponding suggested service locations:



EXCERPTS FROM THE PINE RIDGE BUILDING SUMMIT CRITERIA

Oglala Sioux Tribe Partnership for Housing, Inc. HUD-Code Manufactured Home Criteria

I. GENERAL:

The Oglala Sioux Tribe Partnership for Housing, Inc. seeks the manufacture, delivery, and installation of approximately 15 HUD-Code manufactured homes on individual sites on the Pine Ridge Indian Reservation in and around Pine Ridge, South Dakota. The sites are remote and/or subdivision lots over an approximate twenty five mile radius from Pine Ridge village. All homes must be delivered to individual sites no later than July 15, 1999 and be complete on foundations no later than July 30, 1999. The foundations will be by others. The set, close up and finish will be included work of the contract.

II. PROCEDURES AND CONTACTS:

All persons and entities desiring to supply the work shall submit 5 copies of a written Proposal and Statement of Qualifications responding to all items in this Criteria (including an aggregate price that takes into account all applicable taxes and fees). All proposals must be received by the Partnership by no later than May 17, 1999.

Supplier selection is expected to be based on price and the other requirements in this Criteria, but Purchaser reserves the right to add, subtract or modify requirements at its sole discretion.

Following receipt of Proposals, the Purchaser anticipates negotiating with one or more proposed Suppliers to determine a final Supplier for the work. Purchaser specifically reserves the right, in its sole discretion, to reject any or all Proposals, to purchase more or fewer homes with similar or different specifications than set forth in this Criteria, to request further information from any proposed Supplier, to negotiate terms different than provided in this Criteria, to have the purchases made by individual tribal members or other persons or entities, to select one or more Suppliers for any reason it deems reasonable, and to waive any nonconformity.

III. STATEMENT OF QUALIFICATIONS

General Performance Criteria:

All Proposals must include the following information:

- General information regarding Supplier, including length in business, average unit sales (nationally and by geographic region), evidence of compliance with all applicable rules and regulations and licenses.
- Examples of similar prior jobs within the last 18 months involving delivery of between 5 and units.
- Names and contact information of 3-5 references, with detailed experience regarding compliance with specific delivery schedules and warranty performance

Specific Performance Criteria:

All Proposals must also provide evidence that Supplier does the following:

- Supply durable and energy efficient products
- Demonstrated commitment to customer service (including delivery, installation, set-up, and post-installation warranty and other work)
- Demonstrated ability to deliver large numbers of units to a remote location within required timetable

IV. PLANS:

Units shall have three and four bedroom, two bath plans on basement or crawlspace foundations - approximately 1,288 sf - 28'x46'. Approximately thirteen basement and two crawlspace units are anticipated. The exact quantity, floor plan and foundation type and buyer's selections are to be determined. Plan variations will be considered.

V. SPECIFICATIONS

All Proposals must be based on the following specifications:

A. Construction:

- Built to National Manufactured Housing Construction and Safety Standards
- HUD thermal zone III, wind zone I
- Cathedral ceilings throughout
- 4/12 roof pitch
- 2x6 exterior wall framing
- Class A 25 year warranty composition shingles
- 12" gable eaves
- Fixed or site installed sidewall overhangs - minimum 12" width

B. Foundation:

- Foundations (by others) for basement and crawlspaces will be 8" poured in place concrete or a precast concrete panel system (typically 10")
- Pressure treated sills and anchor bolts by others
- All components of standard chassis recessed 10" from floor edge with 8" foundation
- All exterior wall utility drops located minimum 10" from floor edge with 8" foundation
- Exterior siding or sheathing placed over raised galvanized z-bar at foundation closure
- All vertical trim boards cut 10' long and shipped loose
- Provide 4 sets of 18"x24" engineered foundations plans and span charts
- Manufacturer to provide details for supporting the marriage wall, including plans for location, sizing, and reinforcing of footers, beam requirement (if not part of the home section), and design of columns, in timely manner.

C. Chassis/Floor:

- Basement stair is desired to be per plan. Other configurations will be reviewed
- In basement sets, columns are allowed only at marriage line and around stair
- In crawlspace sets, any reasonable arrangement of supports will be considered
- In both basement and crawlspace sets, perimeter of home will be supported by and tied down to perimeter foundations and covered with inconspicuous trim
- Exterior decks are anticipated on the front and rear and provisions for their addition by others must be considered.

D. Energy Conservation:

- These units are required to be energy efficient and once installed field blower door tests are to be done by others
- Performance levels comparable to EnergyStar are desired.
- R-38 ceiling insulation
- R-19 wall insulation
- Basements and crawlspaces are insulated to R-8
- Attic vent system - note blowing snow is a venting concern

E. Exterior Walls:

- Construction by layer, from inside out
- Interior gypsum wallboard (GWB), taped, textured, and painted
- 6-mil poly vapor barrier
- 2x6 studs with R-19 unfaced fiberglass batt insulation
- 7/16 OSB sheathing
- Painted hardboard siding
- Exterior wall height 7'-6" above finish floor minimum
- Masonite or equal vertical and horizontal pattern siding

- Window, door, corner trim and eave and fascia trim to be determined
- Two coats of exterior paint over primed siding and trim

F. Exterior Doors:

- White steel raised panel insulated 36"x80" front door assembly
- Brass lockset and deadbolt, keyed alike
- White solid 32"x80", lockset and deadbolt keyed alike rear door assembly

G. Interior Doors:

- 6'8" height, oak finish slab doors
- Three mortise plate hinges per door
- Oak finish slab bypass wardrobe doors
- Brass knob privacy sets on bath and master bedroom doors
- Brass knob passage sets on other doors
- "Residential" grade door casings, jambs and stops

H. Windows:

- Dual pane, vinyl or vinyl clad wood, low-E glass windows - R-2.7 NFRC rated
- Pine stool & apron sills, to match trim

I. Electric:

- 200 amp service
- Factory installed recessed main/branch panel with meter base, underground feed
- Location of electric terminus per site plans
- Electric door chime - front and rear buttons
- Two phone jacks per plan, wired to bell box located per site plans
- Two TV/CATV jacks per plan, wired to junction box per site plans
- 20 amp waterproof receptacles on GFCI, located in front and rear

J. Lighting:

- Brass lantern or equal at front door, mason jar at rear door
- Dining room chandelier
- Two 2-tube 48" surface mounted fluorescent fixtures in kitchen ceiling
- One 2x60w spot, track or bullet fixture over kitchen sink
- All bedrooms: 2x60w pan ceiling fixtures
- Two 2x60w drum or globe fixtures in hall(s), on three way switches
- One fluorescent over each bath mirror to be selected
- One 1x60w drum or globe fixture in each bath ceiling
- One 2x60w drum or globe fixture in laundry area
- One ceiling fan with light kit in living room

K. Rough Plumbing:

- CPVC or PEX potable water system
- Shut offs at each fixture
- ABS DWV system, all plastic autovents okay
- Propane gas plumbing
- Terminus locations for water, drain, gas per site plan
- 40 gallon propane water heater - .56 energy factor
- Two frost proof hose bibbs - front and rear

L. HVAC:

- Propane downflow 60,000 btuh furnace (approximate size) - .88 efficiency AFUE
- Fresh air system integrated with furnace
- Provide supply and return at basement and unvented, insulated crawlspace
- Floor vents located in non-traffic areas
- Return air transfer grille over interior doors at bedrooms

M. Kitchen:

- EnergyStar rated 18 cf refrigerator
- Deluxe propane free standing range with window, clock, oven timer
- Upgrade hardwood cabinet stiles and door/drawer fronts - submit sample
- Visible hinges acceptable
- Interior cabinet pre-finished - no exposed cleats or fasteners
- High pressure laminate counter top, self edge; block backsplash
- 29" base cabinet doors, one drawer bank - or per drawings
- Stainless steel ledge double sink - residential quality
- Single lever faucet with spray

N. Baths:

- One-piece fiberglass tub and/or shower in each bath
- Upgraded shower enclosure
- Recessed medicine cabinet with mirror door
- High pressure laminate lav top, self edge; block backsplash
- Porcelain sink, dual control faucet, pop-up and overflow
- Power vent fans
- 1.6 gallon ultra low flush toilets

O. Utility:

- Plumb and wire for washer (crawl space model)
- Prepare for basement located washer and dryer per plan
- Wire for electric dryer
- Base and overhead cabinets or linen closets per plan

P. Interior Finish:

- All interior walls are GWB, taped, textured with soft spray knock-down and painted
- Kitchen, bath and laundry semi-gloss off white paint
- Balance of home walls flat off white paint
- All ceilings textured with soft spray knock-down
- Kitchen, bath and laundry ceilings painted semi-gloss off white
- Balance of home ceilings painted flat off white
- 2 1/2" reversible baseboard - installed at factory 1/2" above floor
- No moldings at ceiling / wall joint

Q. Floor Coverings:

- Vinyl in kitchen, dining, baths, laundry area, or stair area and entry
- Minimum FHA grade level cut pile carpeting in balance of home
- Minimum 1/2" rebound carpet pad
- Carpet and pad shipped loose with adequate tack strip, seaming tape and carpet bar

R. Window Coverings:

- Metal mini blinds at each window
- Vertical blind at picture window

S. Transport:

- All sites are next to or near public roads. A graded route from the roadway to the home site is expected to be built by others
- Do not subject the home section to stresses greater than those for which the home section was road-tested
- Where necessary to bridge dips or short sections of uncompacted soil, provide portable ground mats or short bridges of metal mesh, fiberglass, or multiple layers of OSB or plywood.
- Provide level ground with adequate headroom near the home to park the home sections during erection by crane or rollers
- Do not drive over underground utilities that can be damaged by wheel loads
- Remove and return to dealer hitch and running gear from shackles down, with proper notice to buyer

T. Warranty

- Warranties for all items not specified above shall be at least as good as Supplier

SELECTED LIST OF INTERVIEW PARTICIPANTS

George Allen, GFA Management
Eric Alexander, MHI
David Alley, P.E. Alley & Associates, Inc.
Gerry Brown, Cavco
Guss Davis, Smithfield Neighborhood, Inc.
Elliot Fabri, New Era Building Systems
Bill Farish, Fleetwood Enterprises, Inc.
Ros Farland, Fleetwood Homes
Noel Fernandez, Jensen Residential Communities
Craig Fleming, Silvercrest Homes
William Freeland, Neighborhood Development Corporation
Kent Hogan, McStain Enterprises, Inc.
Steve Hullibarger, The Home Team
Kris Jensen, Jensen Residential Communities
Dennis Jones, R-Anell Custom Homes, Inc.
Warren Keyes, Liberty Homes
Randy Luther, Centex
Muscoc Martin,
Jim Miller, HomeMax
John McLaren, Architect
Mike Meyer, Marlette Homes, Inc.
Wayne Newsome, Corridor 1 LLP
Mark Nunn, MHI
Steve Payne, Town and Country Homes
Richard Rand, Asset Development Group
Dan Rolles, Holiday Homes
Andy Scholz, Champion Enterprises, Inc.
Paul Wang, Paul Wang and Associates
Frank Walter, MHI
Donald Westphal, ASLA
David Whitson, American Homestar
Jeff Wick, Wick Building Systems, Inc.
Walt Young, Champion Enterprises, Inc.

SOURCES CONSULTED

Bady, Susan. "Factory-Built Housing Pushes the Envelope," *Professional Builder*, October 1998.
DePietropaolo, Rebecca. "Manufacturer Appeal," *Builder*, March 1998.
Donohue, Gerry. "Zaring Goes Mobile," *Builder*, October 1997.
Manufactured Housing Institute. *Developing Residential Property with Manufactured Homes*, Arlington, VA 1998.
Manufactured Housing Institute. "Innovations Reshaping Manufactured Homes Retailing," *Housing Currents*, Winter 1998.
NAHB Research Center, Inc. for the U.S. Department of Housing & Urban Development Office of Policy Development & Research. *Factory and Site-Built Housing. A Comparative Analysis*. Washington, D.C. 1998.
O'Malley, Sharon. "Out of the Box," *Builder*, September 1998.
O'Malley, Sharon. "Pulte Pulls Out," *Builder*, May 1998.

RESOURCES

Sanders, Welford. *Manufactured Housing, Regulation, Design Innovations, and Development Options*. Chicago: American Planning Association, 1998.

Steven Winter Associates, Inc. for the U.S. Department of Housing & Urban Development Office of Policy Development & Research. *Building Innovation for Homeownership*. Washington, D.C. 1998.

Steven Winter Associates, Inc. for the U.S. Department of Housing & Urban Development Office of Policy Development & Research. *Next Generation of Manufactured Housing, Design Phase*. Washington, D.C. 1997.

Steven Winter Associates, Inc. for the U.S. Department of Housing & Urban Development Office of Policy Development & Research. *Manufactured Home Installation Training Manual*. Washington, D.C. 1999.

U.S. Department of Housing and Urban Development. *Innovations at the Cutting Edge - New Ideas in Manufactured Housing*. Washington, D.C. 1999.

U.S. Department of Housing and Urban Development Office of Consumer and Regulatory Affairs Manufactured Housing and Standards Division. *Ninth Report to Congress on the Manufactured Housing Program*. Washington, D.C. 1996.

Watson, Kami. "Designing the Future," *Modern Homes*, May-June 1999.

Young, Burr. "Fleetwood & Pulte Joint Venture Very Interesting," *The Journal*, November 1997.

1997 Consumer New Home Survey, Production Home Prospects, NFO Research, Inc.

U.S. Department of Housing and Urban Development
HUD User
Washington, DC 20410-6000

Official Business
Penalty for Private Use \$300

Return Service Requested

FIRST-CLASS MAIL
POSTAGE & FEES PAID
HUD
Permit No. G-795



MAY 2000