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TRENDS IN FACTORY-BUILT HOMES

Adjustable sink height aids use by the disabled (courtesy, SWA).

Many of today's factory-built homes are breaking out of the box—the boxy, flat-roofed configuration that continues to unfairly characterize modular and particularly manufactured homes.

For decades modular homes have been competing with site-built homes in terms of size, design quality, and interior appointments such as wood floors, fireplaces, custom cabinets, upscale appliances, luxury baths, and solid-surface counter tops.

More manufactured homes are coming into a new age with a range of interior design offerings plus the advent of two-story models, high-pitched roofs, cathedral ceilings, permanent foundations, and the addition of site-built extras like garages, porches, decks, and exterior trim.

Exterior elements on today's manufactured homes are also a long way from the shallow, single-line 2-in-12 roof pitches that cried out "mobile home." Today's modular and manufactured home manufacturers now offer roof pitches from 5-in-12 to 12-in-12, often with multiple roof lines. Decorative windows, bay windows, columns, porches, and fancier exterior trim are also boosting curb appeal.

The HUD-Code at one time was updated so infrequently that it was difficult to keep up with the technological advancements that continue to abound. The recent adoption of The Manufactured Housing Improvement Act will help keep manufactured homes current by promoting continued advancements.

Following are some of the best new items on the menu for manufactured and modular homes:

UNIVERSAL DESIGN

Medical and technological advances are enabling more seniors to live independently and longer. In addition to being healthier, today's seniors are wealthier on average than their predecessors, and tomorrow's will be even wealthier than today's.

And these healthier seniors want to be able to age in their own homes. A national survey of 2,000 Americans ages 45 and older, carried out by the American Association of Retired Persons (AARP) in 1999, showed that 83 percent of participants want to stay in their homes as long as possible. Further, 63 percent expect to stay in their residence for the duration of their lives. Site-built and factory-built housing builders are becoming increasingly aware of designing homes

suited to occupants of all ages and abilities.

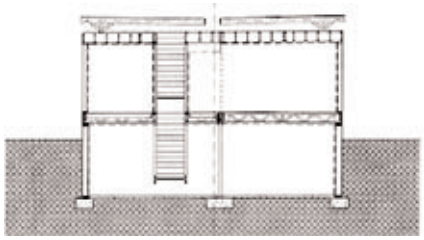
To serve this growing market, manufacturers are coming out with a range of "Universal Design" plans. Universal Design is so named because it allows people of different (universal) abilities to use the same equipment, doors, ramps, kitchens, bathrooms, etc. Nationwide Homes now offers Universal Design features that can be adapted into some of their more popular models. Such features include 36-inch-wide entries into bedrooms, baths, and closets, which allows clearance for a wheelchair or walker. Hallways are 42 inches wide. Light switches 48 inches from the floor level, no more than half-inch thresholds at all exterior doors, 5-foot turning radii in all bathrooms, bathroom grab bars, and a 30-inch knee space beside bathroom lavatories mean wheelchair users can access all important home amenities. Varying counter heights, use of lazy Susans in cabinets, and dishwashers raised 9 inches above the floor for easier loading and unloading, all result in kitchens that are user-friendly for all.

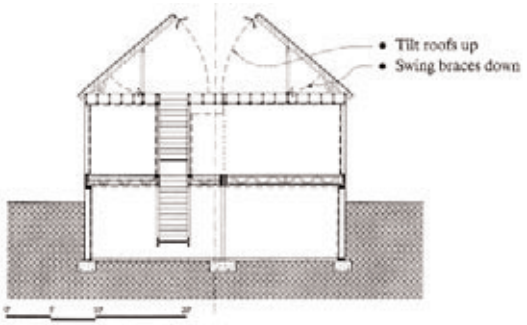
Even homes that are not constructed with the disabled in mind may now sport some common-sense safety items. Brighter lights can aid those with dimmed vision. Carpets and rugs installed with double-sided tape can prevent slippage for young and old. Other modifications include installing rocker-type light switches on stairwells top and bottom, handrails on both sides of the stairs, adding hand rails or grab bars in the bathrooms for better balance (or adding reinforced blocking for future addition of these items), higher toilets, and larger or walk-in showers. Ask modular and manufactured home producers if they offer Universal Design features in their houses.

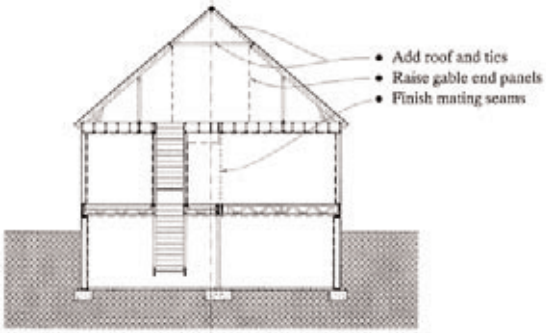
DESIGN IMPROVEMENTS

Increasing attention to aesthetic features is helping manufactured and modular homes blend harmoniously with established communities. In fact, many are indistinguishable from their site-built neighbors.

One of the least attractive features of a manufactured home is the common flat or low-pitched roof. This type of roof was a necessity to ensure that manufactured homes met transport guidelines to clear underpasses. Although modular homes have included tilt-up roofs for more than a quarter century, manufactured homes have only offered them in recent years because of their added cost and complexity. The flat roof problem is intensified in urban areas where steeper-







Tilt-up roofs, which arrive on site as flat sections and are then raised and secured into place, provide steeper pitches and room for additional living space (courtesy, SWA).

pitched roofs are often characteristic of older neighborhoods.

Tilt-up roofs have revolutionized the factory-built home industry. No longer are all manufactured homes destined to have flat roofs. In modular homes, the high-pitched roof allows for second-floor or attic spaces, which increase square footage—especially important on a narrow urban lot.

Another impediment to using manufactured homes in urban areas, particularly on infill sites, is the relative rarity of two-story models. Two-story modular homes are very common. Finding a manufactured housing producer that offers two-story models may still be a challenge, but they are becoming more common and availability is helping push manufactured homes onto urban infill sites.

Urban infill projects are often on narrow lots, with the narrow end of the home as the point of entry. Such models are becoming more available from manufactured and modular home producers. A gable entry with a steep roof pitch is often a staple design in urban neighborhoods. This style, fitted with a welcoming porch, is a favorite for urban dwellings.

Other features that help modular and manufactured homes to blend into existing neighborhoods are site-built elements such as garages, decks, and porches. These elements can also be factory produced but are generally built on site. While these options can upgrade the look and function of a manufactured or modular home, they add another step to the home-construction process.

Modular and even manufactured home producers can modify homes for a better fit in urban neighborhoods, which often sport neo-Victorian and other eclectic housing types. Different window shapes, prefabricated trim, a variety of gable and window trims, designer roof lines, porches, decks, and colors all help a new factory-built house to fit in.

Interior design and space-saving features such as built-ins, cabinets, and under-stair space are helping maximize space and heighten design. On the outside, manufactured homes can be given added curb appeal with neighborhood-compatible materials such as masonry and cedar, and topped off with tile, shake, or other roofing materials. There are even factory-applied stucco systems now developed for manufactured homes. The housing developer should inform the manufacturer if any of these features are desired so that the manufacturer can make necessary adjustments if such products are heavier or denser than standard choices, or if they require special substrates or long purchasing lead times.

UPGRADED ENERGY EFFICIENCY

Modular and manufactured home producers have an impressive and ever-expanding array of strong, energy-efficient construction materials available to customers who want better performing homes. The fact that factory-built homes are built under controlled factory conditions and have better construction quality contributes to their potential for having added energy efficiency.

Samson Homes, Louisville, Kentucky, in conjunction with FischerSIPs, also in Louisville, recently unveiled a line of modular homes constructed entirely of structural insulated panels (SIPs). SIPs are two sheets of 7/16-inch (or other thickness) oriented strand board (OSB) with 3 to 10 inches (nominal) of expanded polystyrene (typically) foam insulation sandwiched in between. Panels provide both structure and insulation for the home and can be finished inside and out. The company purports that houses built with SIPs use up to 50 percent less energy than site-built wood-frame homes, although other published tests place the savings at lower, but still significant, levels.

Since nonprofit housing agencies help those in need of affordable housing, it has become increasingly important that homes not only be built as cost effectively as possible but also that they be cost effective to operate.

Two nonprofit groups in the Midwest are currently at work on urban modular home projects that have been upgraded to ENERGY STAR™ status. The ENERGY STAR Homes program is an energy efficiency ratings system jointly run by the U.S. Department of Energy (DOE) and the Environmental Protection Agency (EPA).

Not only can an ENERGY STAR home result in reduced operating costs, but it can also save money by reducing the size and cost of mechanical and distribution systems. An ENERGY STAR home can also be attainable for more potential homeowners because it can be financed with a preferential mortgage that considers lower operating costs. This permits greater loan-to-income ratios and reduced downpayment requirements, resulting in the borrower being able to buy more house for his or her income.

Structural insulated panels improve energy efficiency (courtesy, SWA).

Modular Energy Star home (courtesy, Neighborhood Housing Services of Toledo).

Change to HUD Code May Speed Innovation in Manufactured Homes

On December 27, 2000 President Clinton signed the Manufactured Housing Improvement Act into law (P.L. No. 106-569). The Act has been long in coming to the manufactured housing industry, which spent years lobbying for legislation of this sort.

Bringing any innovation to manufactured homes has been hampered by the long periods between code updates. The Act will help keep manufactured homes up to date by stipulating that a private sector consensus committee make recommendations to the HUD Secretary at least every two years. The new law also requires that each state institute a uniform installation program and a dispute resolution program within five years of the law's enactment.

SUMMARY

As housing products, modular and manufactured homes are now undergoing new developments and improvements. In some cases, the changes are making these factory-built housing alternatives more responsive to the existing architectural character of established urban neighborhoods. The houses are also better designed inside, with more amenities available than before. Two other improvements are also adding value to modular and manufactured homes: Universal Design is making it possible for residents to "age in place," because their homes are designed to accommodate people with different physical abilities. And a focus on energy efficiency is making these homes more affordable over their life-cycle by lowering operating costs. When choosing a modular or manufactured home producer to work with, ask if such new features are available.

RESOURCES

Publications

Air of Importance: A Study of Air Distribution Systems in Manufactured Homes. Alternative Energy Corporation, Research Triangle Park, N.C., May, 1996. The first research study on how air distribution systems in new manufactured homes affect overall HVAC system performance.

Bevier, Charles. "Innovations in Modular Technology: Survival of the Fastest." *Building Systems Magazine*, January/February 2000. Discuss innovations that not only enhance the appearance of modular homes but also make them even quicker to erect.

Carlson, Don. *How and Why to Buy a Factory-Built Home*. CMN Associates, Inc., 2001.

Steven Winter Associates, Inc. *Energy-Efficient Modular Homes: A Guide for Affordable Housing Providers*. U.S. Department of Energy, Chicago Regional Office, Chicago, September 1999. Written for nonprofit, affordable housing organizations (CHODOs) in the Midwestern U.S. Intended to educate CHODOs on how to build a Five-Star modular home.

Vermeer, Kimberly and Josephine Louie. *The Future of Manufactured Housing*. Joint Center for Housing Studies, Harvard University, Boston, Massachusetts, January 1997. Discusses research on

the origin of manufactured homes; the quality and costs of the homes; installation, zoning, and code issues; and forecasts on the future of manufactured housing.

Websites

www.nahbrc.com. Go directly to the "search" feature and search on "manufactured," and "modular," to bring up lots of good, informative pieces most of which are downloadable. Topics of interest include, "Two Story HUD-Code Homes," "Steel Frame Modular Housing," "On-Site House Factory," "Manufactured Housing Ground Anchor Systems," "Manufactured Housing Disaster-Resistant Pier Systems," "Tilt-up Roofs for Manufactured and Modular Home," "Hybrid Modular/Panelized Housing," and "SIPs Modular Housing."

www.pathnet.org. Website focuses on technological innovation in the housing industry. A number of the books and research manuals listed above can be accessed and downloaded at this site.