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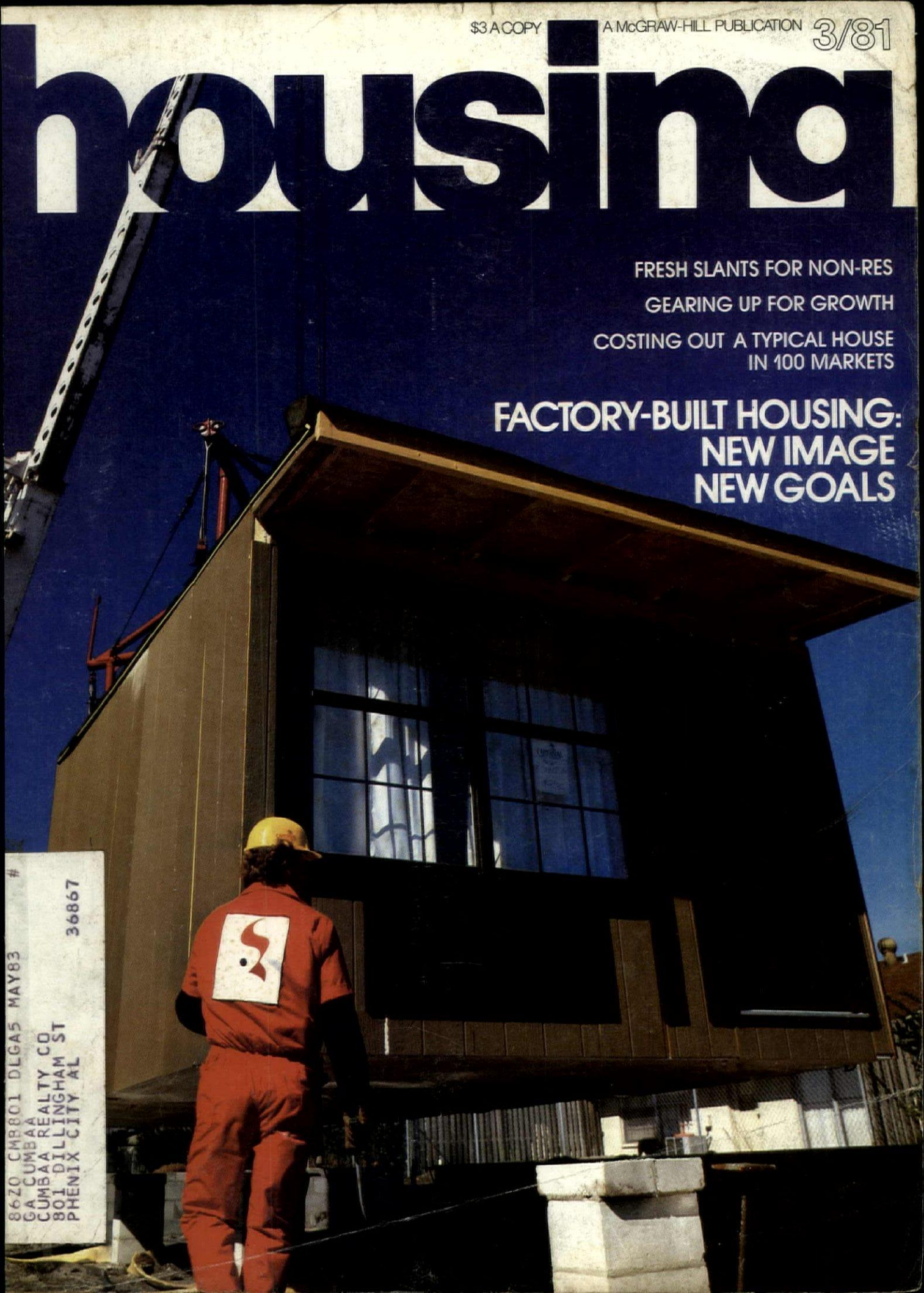

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March 1981/Vol. 59 No. 3

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McGraw Hill

New look at factory-built housing

If you've been skeptical of the claims made for the so-called industrialized building process, welcome to the club. As HOUSING editors Walter Updegrave and Fran Donegan observe in this month's cover story, "Factory-built housing is a good idea that promised too much too soon."

Now there's a question before the house: Is today still too soon? Perhaps not.

What was promised in the first place was lower construction cost and thus a lower price to the homebuyer. But that, of course, is not how things have worked out.

It's true that direct costs can be cut by building all or part of a house under controlled plant conditions. Labor is more efficient, for example, there's less waste and pilferage, and unpredictable weather doesn't mess up scheduling. It's equally true, however, that such savings are largely offset by plant overhead plus charges for shipping panels, other factory-made components or complete modular boxes (which are mostly air) to the builder's site. So the direct-cost case for panelized or modular construction over conventional stick building is, at best, debatable.

Nevertheless, an update on factory-built housing is in order.

Why? Not because of sudden advances in design and technology—there aren't any. But because of critical problems stemming from recent changes in the climate of homebuilding. Consider, for instance, the growing shortage and rising cost of skilled on-site labor, the unprecedented cost of construction financing, and—perhaps most critical of all—the high degree of risk engendered by an uncertain economic climate.

These problems add appeal to what have always been the real benefits to the builder of factory-built housing: a shorter on-site construction cycle, better control of the job and reduced risk.

Introducing a new cost guide

What should it cost to build identical houses, in say, Omaha, Chicago and Boston? How much should the various parts of a house cost in labor, in materials and per square foot?

You'll find answers to questions like these in a new feature—the HOUSING Magazine Construction Cost Guide—which makes its debut this month. The Guide reports costs for each of 100 major metropolitan areas—all of which, by the way, are also covered in this magazine's Housing Demand Index. Like the Index, it will be published four times a year.

Our plans call for tracking the costs of two typical houses in alternate quarters—in other words, at six-month intervals. This month we cost out a small, one-story, detached house. Next, we'll do the same with a two-story townhouse. Such periodic cost coverage will be useful on at least two basic counts. It will reveal cost trends for each house in each of the 100 markets. More importantly, it will spot the type of cost—labor or materials—and the elements of the house—exterior walls, for example, or plumbing—that are largely responsible for increases or (builders should be so lucky) decreases in total cost.

The Guide is a good example of collaboration between McGraw-Hill's construction magazines and its construction information services. It is produced for HOUSING by a division of the McGraw-Hill Information Systems Co. that specializes in gathering, analyzing and distributing construction cost data. To see the result, turn to page 35.

—JOHN F. GOLDSMITH

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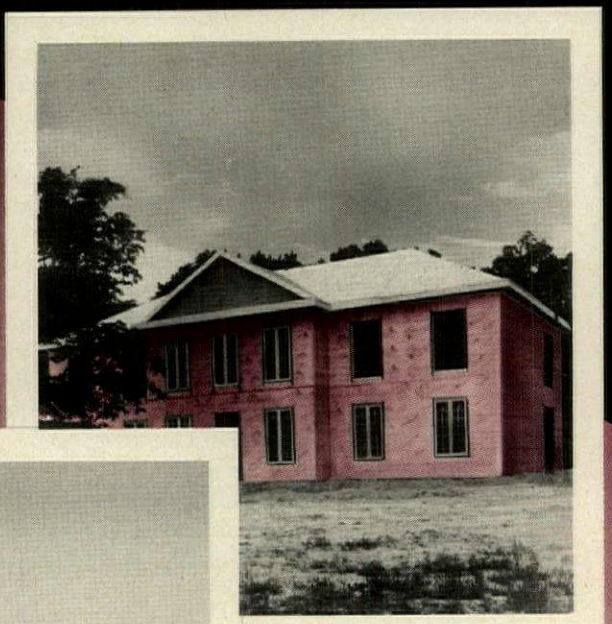

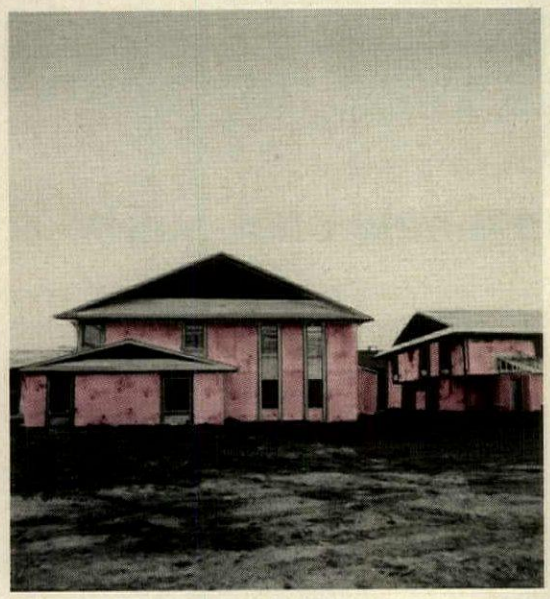

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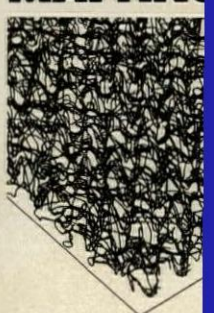

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Rate outlook: more swings, lower peaks

Don't look for interest rates to go down much anytime soon.

Even though the Federal Reserve has finally achieved the goal it was seeking when it pushed rates to record highs, all signs are that it will resist declines for at least the first half of the year. And by that time a revival of the economy should renew the upward pressure on rates.

Forecast. Most economists believe that the lowest rates are likely to go this year is 13% for the prime and 12% for home mortgages.

They base this forecast on a host of factors, including an expectation that the underlying rate of inflation will remain between 9.5% and 10% all year. And if lenders can't get at least two points over the expected inflation rate, they are reluctant to lend at all.

Background. Last year was a learning experience of sorts for the Fed. It was the first full year in which it tried to regulate the supply of money—and thus credit—by controlling bank reserve balances and permitting wider swings in interest rates. Thus, when the Fed provided ample supplies of bank reserves, loans became easier to find; when it tightened up, loans became harder to find.

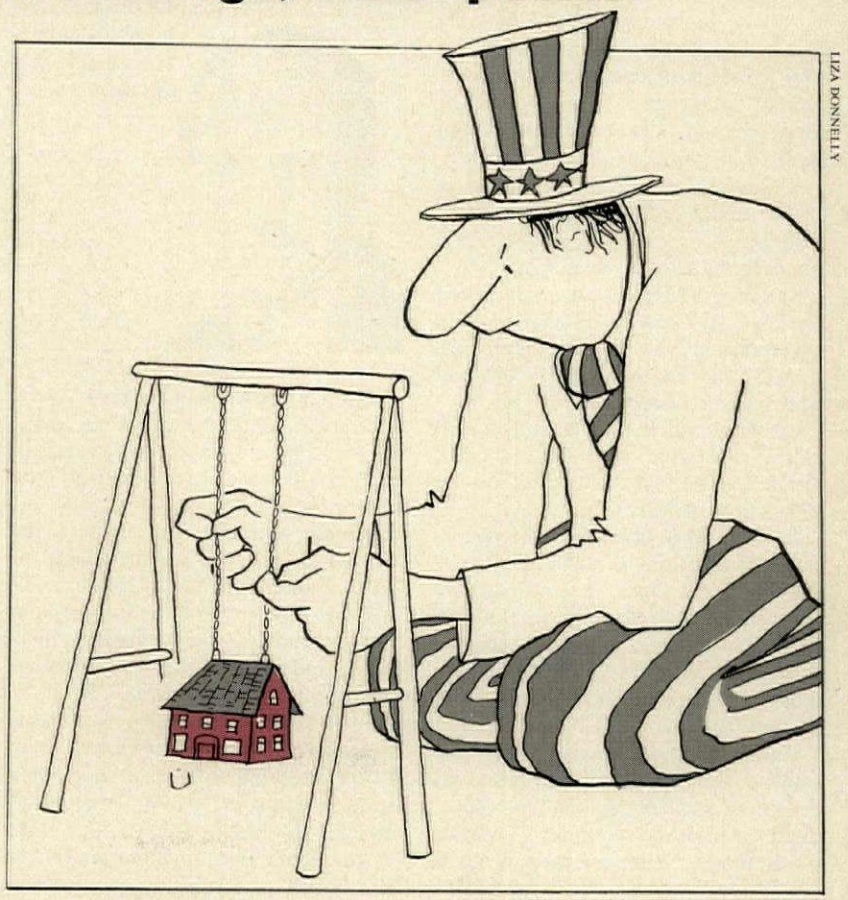
When interest rates peaked last spring, shortly after President Carter imposed credit controls, the economy tipped into its steepest slide since World War II. The Fed then pumped reserves into the banking system to stem the slide, and within three months the prime dropped from 20% to 11% and home mortgage rates from 17.5% to 12.8%.

This, in turn, helped fuel a snapback, which quickly sent rates rising and helped balloon the money supply. The Fed tightened up again, but the prime hit a new high of 21.5% before the Fed finally reached its goal of slower growth in money supply.

Says Fed Vice Chairman Frederick H. Schultz: "In retrospect, I think it's clear that we made a mistake in letting interest rates go as low as they did and not letting them go back up faster."

His statement may serve as a good indication of the Fed's probable strategy this time around.

More swings ahead. The betting is that the Fed will dampen any downward movement in rates this time around. Most economists believe that some drop in interest rates will take place in the first half of 1981 as the housing and auto industries, where high rates have hit hardest, lead the rest of the economy into a relatively



LIZA DONNELLY

modest slump. By mid-year, however, as the proposed Reagan tax cuts and lower interest rates stimulate activity, the Fed appears likely to permit another rebound in the rates.

The Fed is operating on the theory that slower growth in the amount of money in circulation will eventually lead to slower inflation as well. It has succeeded in getting growth in its M1-B measure, which includes cash and checking account deposits, down to 7.3% last year—from 7.7% in 1979 and 8.2% in 1978. And its goal for growth in 1981 is for the equivalent of no more than 6%. Hitting that level will mean exercising even greater control than in 1980.

Lower peaks. There are two bright notes, however: After its experience of last year, the Fed appears anxious to moderate the rate swings.

And even though Fed policy appears to foreshadow historically high rates for most of this year, there is some hope that the peaks over the remainder of this year could fall short of last year's.

One key factor: the ability of President Reagan to deliver the big budget cuts he has proposed. [illegible] government is borrowing a record [illegible] billion in the credit markets this year, siphoning off money that otherwise would have been available to home-buyers, builders and others. The sizeable Treasury borrowing to finance the government deficit is a key element in the outlook for continued high rates, so any success by Reagan in trimming government borrowing needs would obviously translate into rates that are lower than they would have been without the cuts.

A second key factor and, in the view of many economists, perhaps the more important: the possibility that Reagan, by providing convincing evidence that he will bring inflation rates down, will provide lenders with confidence that they can accept lower returns on their loans—lower interest rates—and still stay ahead of inflation.

'Speedy recovery.' Treasury Secretary Donald T. Regan says the Administration's economic policy "is designed to reduce the uncertainty and long-term inflationary expectations that are gripping the public and paralyzing the economy."

He predicts "a speedy recovery of the financial markets, accelerated real growth and reduced inflation, as savings and investments rise, deficits fall, and the market system works more efficiently." —G. DAVID WALLACE

McGraw-Hill World News, Washington

Is this the S&L of tomorrow?

It will be more specialized, stressing builder and developer business. It will offer a variety of residential and commercial mortgages: rollovers, second trusts, equity kickers. Savings will cease to be a major source of funds.

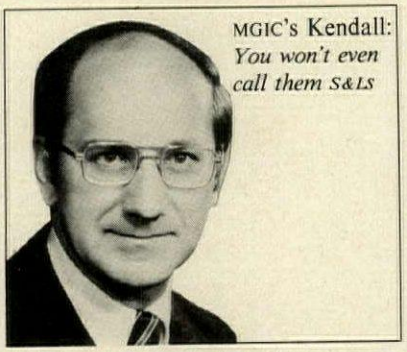
So says Leon T. Kendall, president of Milwaukee's Mortgage Guarantee Insurance Corp. (MGIC), in describing his vision of S&Ls of the future.

Speaking at a recent meeting of the National Association of Mutual Savings Banks in New York, Kendall gave a new name to this thrift: "the real estate mortage assocation."

"Savings will be secondary at a real estate mortgage association," said Kendall. "The focus will be on full use of new loan powers."

Across state lines. The recent federal deregulation of S&Ls now gives them the real estate lending capacity of a commercial bank, says Kendall. Now that S&Ls are no longer restricted to in-state lending, Kendall sees S&L mortgage banking operations going nationwide.

Associations could also fund real-estate-related loans in their areas by becoming local or regional correspondents for insurance companies, pension funds, money center commercial banks and international investors, he said.



MGIC's Kendall: *You won't even call them S&Ls*

Another change: a larger role for service corporations of federally chartered S&Ls, since they now can invest 3% of the parent association's assets in real estate ventures instead of the former limit of 1%.

Money sources. But perhaps the biggest change will be the source of funds. Said Kendall, "As much as $7 of every $10 lent will come from non-savings sources—the secondary market of mortgage securities and other capital market instruments."

With these new sources, he expects S&Ls to increase lending volume from 1979's $100-billion level to more than $500 billion by 1990. (In 1980, because of high outflows and tight money, S&Ls lent an abnormally low $72 billion, according to the Federal Home Loan Bank Board.) —W.L.U.

Freddie Mac plans to buy VRMs

Mortgage money from another new source could become easier to find around mid-year. By that time, federal financial regulators and a major secondary buyer, the Federal Home Loan Mortgage Corp., plan to begin a new program for variable rate mortgages.

S&Ls have been reluctant to make traditional fixed-rate loans lately because they have been burned in the last few years by lending out money at 12% or 13%, only to have to pay 15% or 16% a few months later to raise new money.

But VRM lending has remained relatively low, largely because the secondary market for the loans is limited.

Lenders use the secondary market to sell off the mortgages they make, and then relend the proceeds. But secondary buyers usually insist on buying the mortgages in packages rather than one-by-one. And to be packaged, the mortages must all have the same provisions on interest rate adjustments and default protection.

By this spring, the Comptroller of the Currency—which regulates national banks—and the Federal Home Loan Bank Board—which regulates federally chartered S&Ls—plan to publish regulations to standardize VRMs issued by the institutions they regulate. And by July 1, the Federal Home Loan Mortgage Corp.—also called Freddie Mac—will create a secondary market and begin buying the loans.

'Freddie Macs?' The Federal Home Loan Mortgage Corp. is considering another program designed to expand the mortgage market, says President Philip R. Brinkerhoff. He is proposing to have his agency guarantee securities which would be backed by pools of conventional mortgages.

The program would be virtually identical to another operated by the Government National Mortgage Association ("Ginnie Mae") for FHA and VA mortgages. Brinkerhoff says such a program could amount to $90 billion a year. But it would first have to be enacted into law, which is far from assured, since President Reagan has identified reining in the growth of federal credit programs as one of his top priorities. —G.D.W.

BRIEFS

Housing starts rose slightly in January to an annual rate of 1.59 million units, the Commerce Dept. reports. Single-family starts were down 3.1% from a month previous. Residential building permits moved 2.0% to 1.21 million.

New home sales in December fell slightly to a seasonally adjusted annual rate of 545,000 units, according to Commerce. Existing home sales in January fell 12% to an annualized rate of 2.6 million, the National Association of Realtors reports.

Average price for a new home sold in the last quarter of 1980 was $80,600, Commerce says. That figure is up 4% from the third quarter. But the median price was only $67,000, a spokesman noted. Reason for the difference: the higher-priced homes—some upwards of $400,000 and $500,000—pulled the average up.

NOW accounts haven't helped financially strapped S&Ls, says Rollin D. Bernard, president of the U.S. League of Savings Associations. The interest-bearing checking accounts were authorized January 1. Since then the nation's S&Ls have gained about $2.3 billion in NOW deposits. But at the same time, the thrifts have lost $2.5 billion in outflows from passbook accounts, Bernard says.

A self-imposed price freeze is the basis of a new program by the HBA of Mid-Florida. The association has asked its 980 members to halt price hikes from Feb. 14 through April 11. Says HBA President Michael Ashington-Pickett: "The prospective buyer needs help and can't wait for the federal government. The industry must do whatever it can to meet the consumers halfway."

Housing riots erupted in protest over scarce housing and high rents in West Berlin, after German police evicted 23 squatters from a barricaded house. Last year, Amsterdam youths rioted because of similar shortages there [HOUSING, June '80].

Is this trip necessary? Many government employees would probably be hard-pressed to tell you, according to a recent survey by the Office of Management and Budget. When asked, civil servants give "unknown" as the reason for their trips more than any other. And HUD employees take trips for "unknown" reasons more often—87% of the time—than any other agency's employees, the OMB found.

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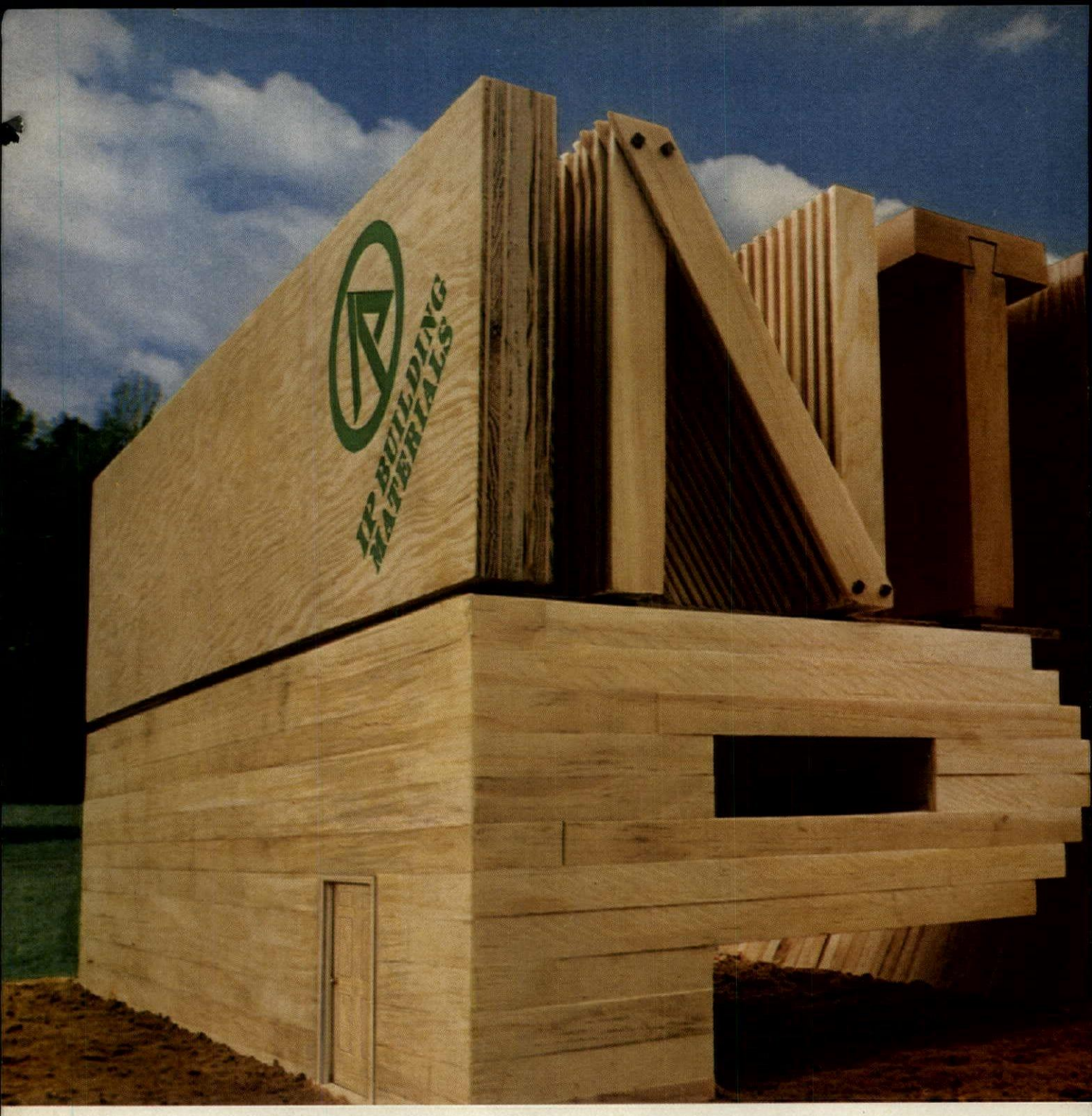

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Pension plans cleared to lend...but will they?

New money for construction loans and mortgages at below-market rates may soon be available from union pension funds around the country, says AFL-CIO official Robert A. Georgine. But an industry economist is skeptical.

According to Georgine, who is president of the Building and Construction Trade Dept. of the AFL-CIO, a recent decision of the U.S. Department of Labor clears the way for the building trades unions to invest some of their $50 billion in pension assets [HOUSING, Nov. '80]. No one is sure how much will be loaned for construction and mortgages, but some estimates run as high as 10% to 15%.

Georgine says the unions will begin an extensive program right away, and that they want to "promote sound investments that also promote the unionized sector of the economy."

Low-yield danger. Robert J. Sheehan, an economist for NAHB, called the development "a step forward," but questions, "How much are they really going to do it?"

His point: pension fund managers, sensitive to getting the maximum return on their investments, invested very little when they could get the going market interest rate. How much more money will they invest at a below-market interest rate?

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AFL-CIO's Georgine: *A good, solid return*

Labor letter. Permission to make below-market mortgages came in a letter to Georgine from the Labor Dept. dated January 15—during the last days of the Carter administration. The letter states that multi-employer pension plans may make mortgage loans to union members or offer "residential mortgage financing" to others at interest rates "below the stated rate of other lenders" as part of an investment program.

The letter, which went to Georgine in his capacity as chairman of the National Coordinating Committee for Multiemployer Pension Plans, warns that the loans would not be legal if they "provided the plan with less return, in comparison to the risk involved, than comparable investments...available to the plan."

Some local unions' plans are already making such loans, but Georgine says "there will be a lot more done" now. Before the clarifying ruling, he says, "the whole thing was shrouded in mystery, and it was not clear what a plan could or could not do. People were afraid."

After he received the Labor Dept. letter, Georgine advised member unions around the country to feel free to make such loans, providing that prudency tests would hold.

Reagan view. In light of President Reagan's announced concern about playing "Russian roulette" with pensioners' funds, will the administration be as likely to approve this move as the Carter regime was? Georgine says he does not expect opposition.

"We are talking about a good, solid return," he says, noting that even if mortgages bore a rate of 14%—as opposed to the prevailing 16%—it would both encourage new home construction and offer a better return than the current return on stocks, which he called "miserable."

The Labor Dept. ruling would permit both mortgages to member-participants and construction loans to outsiders, Georgine says. —PETER GALL

McGraw-Hill World News, Washington

WASHINGTON

New housing leaders prepare for reduced spending

A power shift in Reagan's Washington has given budget-cutters clout, at the expense of advocates of government spending. The new cast of characters affecting housing is inclined to act accordingly.

Case in point: the Department of Housing and Urban Development. New HUD Secretary Samuel R. Pierce, Jr. has spent his first weeks in office mainly working with Reagan deputies on cutting the HUD budget. One targeted program: Urban Development Action Grants (UDAG), which may be eliminated entirely.

As far as housing is concerned, the real power in Washingon now lies at the Office of Management and Budget, under Director David Stockman, and in the Senate Banking Committee, under Chairman Jake Garn (R-Utah).

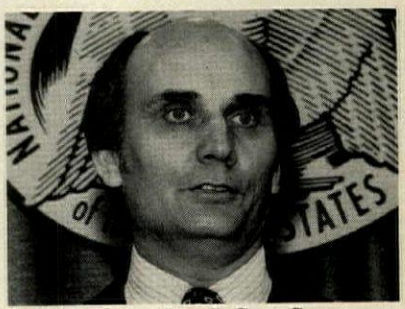
Garn replaces Wisconsin's William Proxmire (D), whose effectiveness has waned because of basic disagreements with Carter Democrats. Carterites generally favored more and bigger housing programs as the cure for the industry's ills, which Proxmire opposed.

Garn sternly insists on the major cuts in HUD programs that Stockman wants. Bolstering Garn is Proxmire—now the ranking minority member of the committee—who agrees with many of the Republican proposals.

Nothing new. Garn ascended to leadership quickly—he became committee chairman after only one Senate term. Under his chairmanship, the Banking Committee will entertain "no ideas for new legislation...or bold new initiatives," he says. "Policy decisions" will be directed at getting control over HUD's "unfunded liabilities," which, under the Carter budget submitted just before Reagan's arrival, would increase by $30 billion in fiscal year 1982.

The issue, according to Garn: "Where do we cut?"

Garn agrees with Reagan and Stockman that every program is a potential target—including the popular UDAG and Community Development Block Grant programs. The Republicans have to "stand the political heat...(they have) got to consider cuts in those areas, popular as they are," he says.



Banking Committee's Sen. Garn: *Where do we cut?*

Sympathetic. Garn is aware how devastating the high interest rates have been. He cites a builder he knows who

Turn to page 18

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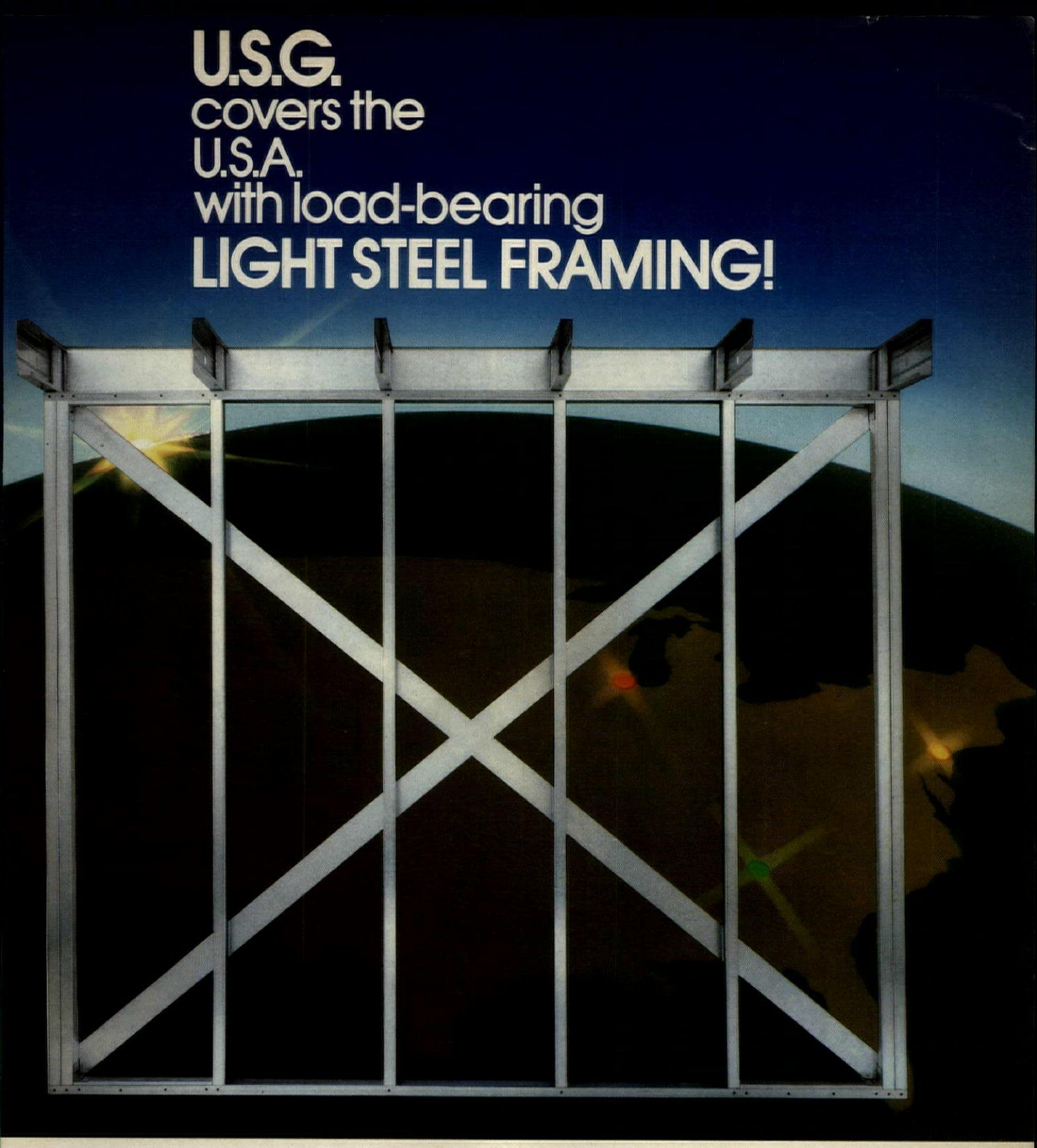

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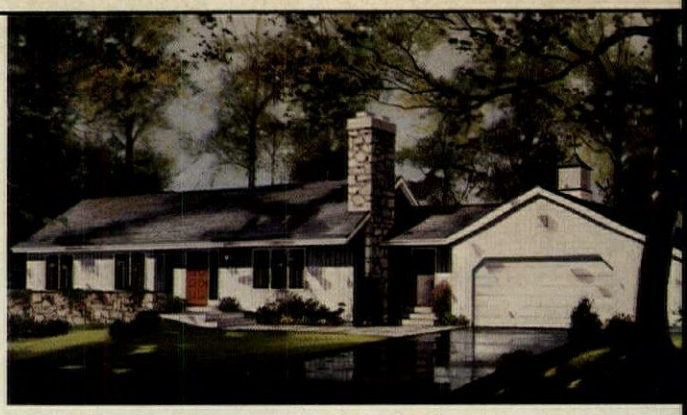
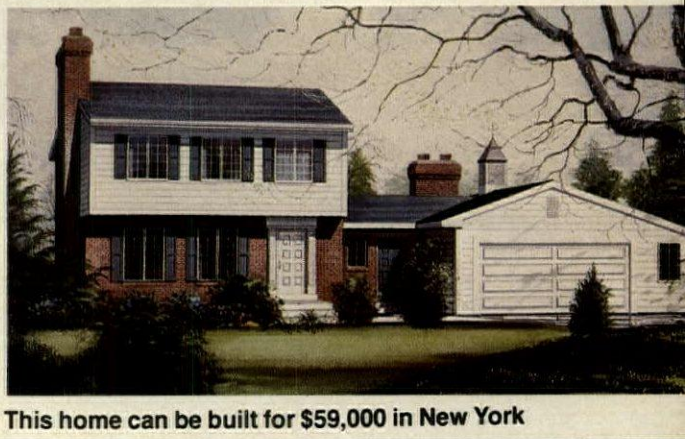


This home can be built for $58,000 in Illinois

This home can be built for $54,000 in Pennsylvania

This home can be built for $59,000 in Minnesota



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Reagan 'reg freeze' hits housing programs

The Reagan administration's temporary freeze on issuance of new regulations hits both conventional builders and manufactured housing producers where it hurts—in the wallet.

The freeze temporarily affects programs for public housing, manufactured housing, housing for the elderly, low-income ownership, the Ginnie Mae tandem, Urban Development Action Grants as well as other programs. About 40 regulations in the bureaucratic maze were affected.

All pending rules and rule changes are immobilized by the freeeze, including those final regulations published in the Federal Register whose effective dates have not yet arrived.

Also frozen: proposed rules that HUD forwards to Congress, where the Banking Committee members may review them.

Paralyzed. Among the items caught in the freeze:

- An increase in limits for FHA's Title I insurance program for manufactured houses. Existing loan ceilings and terms range from $18,000 and 15 years for a single-wide unit without land to a $31,500 and 20 years for multi-wide units with land. The proposed increases would have pushed up the dollar limit by as much as 33%, or lengthened the loan term in some cases.
- A Sec. 202 final rule for subsidized rentals for the elderly, which would have been effective Feb. 23. The program's direct loan interest rate would have been cut to ¼ of one percent above a base rate determined by the average rate on Treasury obligations. The current add-on rate is 1% during the construction period and ½% afterwards, and covers estimated losses and administrative costs.
- A revision of the Sec. 235 low-income ownership program, to increase the limit on insurable mortgages. Currently it ranges from $32,000 to $38,000, depending on an area's housing costs. The new—frozen—limits would be from $40,000 to $55,000.
- An increase in loan limits for the Sec. 312 Direct Rehabilitation Loan Program, which would have become effective February 15. HUD's request to raise the limits above the current $27,000 level was before Congress for review, but its progress was frozen. This program benefits investors who own buildings in eligible neighborhoods, when the structures are rehabbed to benefit low-income people.

Also frozen: the processing of existing contracts. Bidders who had a solicitation in hand from HUD were told that proposals submitted will have to be approved by "the new presidential appointee." One snag was, at the time, no appointees—except Secretary Pierce—had yet been named.

Early icing. Outgoing HUD General Counsel Jane McGrew, acting under incoming Sec. Pierce's orders, clamped on the freeze even before Reagan's administration-wide action was announced publicly.

In early February, HUD officials indicated that Secretary Pierce was concentrating on budget cuts and other priority issues, which meant that the sorting out of frozen regulations would have to wait until later in the month.

In is first days in office, Pierce was working without any of his own top aides, whom he would need to get department business moving. Toward mid-February, some sub-cabinet appointments were made: Donald I. Hovde as under secretary, and Philip D. Winn as assistant secretary for housing and FHA commissioner.

HUD will unfreeze the regulations case by case as the new Reagan team—under pressure from interest groups—decides which ones get thumbs up—and which don't.

—D.O.L.

New leaders *continued from page 14*

went bankrupt, even after he had presold 62 buyers at a townhouse project. The problem was that by closing time, 59 of the buyers could no longer qualify for a mortgage.

"There are no short-term solutions," says Garn. He blames Congress far more than the Federal Reserve Board for the nation's economic ills. Congress controls the spending, he says, while the Fed must monetize the additional federal debt caused by the federal spending.

One proposal Garn favors: the conversion of housing subsidy programs into general housing assistance block grants. He sees such a change as another way for Congress to get more control over federal spending on housing. Enactment of such legislation—if it ever comes about—is expected to take at least two years.

Democratic downs. The Democrats, still in control of the House, are demoralized by their losses from the Republican firestorm that swept last November's elections.

The new chairman of the House Banking, Finance and Urban Affairs Committee is Rep. Fernand St Germain (D-R.I.), and the new chairman of the Housing Subcommittee is Rep. Henry B. Gonzales (D-Tex.)

WIDE WORLD

House Banking's St Germain:
A greater housing role

Neither has demonstrated great interest in housing legislation in the past, although both have been on the Housing Subcommittee. St Germain, however, has been a leader in banking reform, including last year's landmark legislation.

So for housing leadership, it remains to be seen who can fill the gap created by the departure of Thomas L. Ashley (D-Ohio), who was defeated last November. Ashley headed the Housing Subcommittee.

But it may not matter too much anyway, since the importance of the Housing Subcommittees—in both the House and the Senate—may be lessened. Two reasons: First, the program-cutting political environment, and secondly, because of battles within the parties.

House hoopla. For example, Ashley's defeat brought on a contest between Gonzalez, a 20-year House veteran, and Jerry M. Patterson (D-Calif.), a three-term representative.

To win, Gonzalez could hardly promote his housing record, since he has a reputation for sporadic interest in housing. So he capitalized on his seniority and his Mexican heritage.

He convinced House Speaker Tip O'Neill (D-Mass.) and Majority Leader Jim Wright (D-Tex.) that Hispanics would be affronted if he were not elected to the post.

This turn of events may give greater influence over housing legislation to full committee Chairman St Germain, who, up to now, had been mainly concerned with bank reform and financial legislation.

—DONALD O. LOOMIS
McGraw-Hill World News, Washington

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Mobiles: Optimistic outlook for '81

Optimism ran high at the Manufactured Housing Institute's 45th annual show in Louisville last January. High enough to generate an estimated $1 billion in future orders, despite the twin storm clouds of high interest rates and reports of formaldehyde dangers.

More than 8,000 industry representatives, ranging from manufacturers and suppliers to mobile home park operators and bankers, were on hand to view 213 units—a record number for the show. They saw few gimmicky designs, but, rather, good basic homes with upgraded amenities.

Attention-getters. Interior features, such as cathedral ceilings, exposed beams and new types of wall coverings attracted the most attention. Many mobiles featured wood-burning fireplaces that double as primary heating units. Several had sunken tubs or saunas.

"We're trying to get away from the trailer idea," said Richard E. Bittinger, a salesman for Tidwell Industries of Haleyville, Ala. We're selling workmanship and quality."

A Tidwell unit, "The American Dream," featured a bathroom with a raised Roman tub under a chandelier, a fireplace and a round kitchen with the range in the center.

Affordability. But while such luxury items served to garner attention at the show, the industry was well aware that its greatest prospects for growth lay at the lower end of the market.

"More families are buying mobile homes these days because they can't afford conventional homes," said James Carroll, of Skyline Corp., the largest producer of mobile homes.

Skyline's houses range from about $9,000 to $35,000. The industry estimates the average price of a manufactured house at $18,000.

"Because mobile homes are less expensive than homes built in the conventional way, and because more consumers are accepting them, we expect the manufactured housing share of the market to improve," said Robert L. Berner, a vice president of New York's Citicorp. Berner expects interest rates to drop this year from the current 16% level to an average of 14%.

Merchandising. In keeping with this emphasis on selling to buyers who a few years ago would have been considered prospects for conventional homes, Redman Industries of Dallas set about teaching its dealers the things builders already know about model home merchandising.

"Create an air of normality," advised a video display. "Put some children's toys on the floor to remind customers that the floors are warm. Stick notes on the refrigerator with magnets. Place live plants around. Turn an open book upside down on a desk as if someone reading it had just gone to answer the door."

Problems. As with conventional housing, the mobile home industry must contend with wildly gyrating interest rates. Unlike a few years ago, however, homes may now be financed with long-term mortgages rather than installment loans.

A more serious problem is public concern about the build-up of formaldehyde and other vapors in the homes. Formaldehyde is present in both conventional and mobile homes, for it is used in making particle board, plywood, carpeting and furniture. However, mobile homes are more tightly built than most conventional homes, so

Turn to page 24

Mobiles under roof: Visitors preview big Louisville mobile-home show.

Investors turn to mobiles

Mobile home communities have become more attractive places not only for living, but for investment. By the end of 1981, Angeles Realty Corp., a Los Angeles company which sets up limited partnerships, expects to raise between $25 and $30 million which will be used to acquire mobile home rental communities in California, the Pacific northwest and throughout the Sunbelt.

The company previously did similar limited partnership deals for investing in garden apartments. "But we've gone into mobile homes because the current housing crisis makes it a strong growth area," says James Winther, the company's executive vice president.

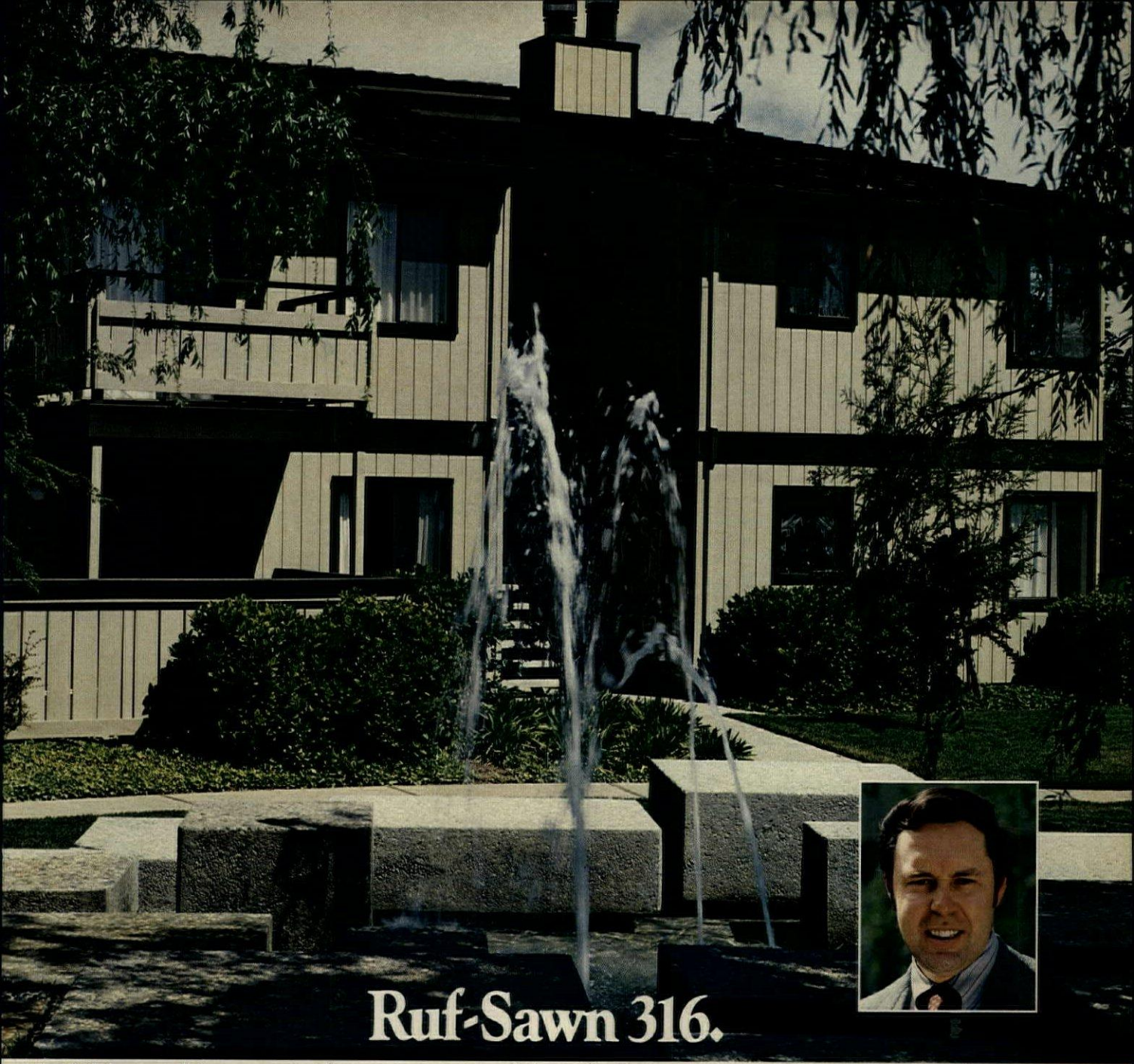
Angeles Realty Corp. takes the general partner's role and sells limited partnership shares to investors. The partnership then acquires rental parks, holds them anywhere from four to seven years and sells them for a capital gain.

"What we offer investors," says Winther, "are cash flow, some losses for tax purposes and, most importantly, capital appreciation." In five partnerships which have already sold off their portfolio of properties, Winther says investors realized in excess of a three-to-one return on investment, not including tax benefits.

One of the company's current offerings is Angeles Park Communities, Ltd.: 15,000 limited partnership units sold at $1,000 per unit. The minimum investment is $5,000 and the partnership has the option to add 7,500 units to the partnership. This would give the partnership total equity of $22,500,000 when fully sold. So far, $1,500,000 has been raised, including a $100,000 investment by the general partner, Angeles Realty Corp.

In addition to ten such public, SEC-registered offerings, there have been three private offerings geared toward a smaller number, usually 35 or fewer, of larger investors. Unlike the public offerings, where capital is raised against unspecified properties, the privately placed partnerships are done to acquire specific mobile home parks. Both private and public offerings are made through securities brokers and dealers who are members of the National Association of Securities Dealers, Inc.

Angeles Realty Corp. is a subsidiary of First Diversified Investments, Inc. which is a subsidiary of Angeles Corporation. —W.L.U.



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by Jerry Lohr. President, Saratoga Foothills Development Co., San Jose, Calif.

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Those things are important to Jerry Lohr.

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HOW carries its rate story to the grass roots

How do you tell a customer that the price has increased, if you want to still keep the customer?

You might try the approach of the Home Owners Warranty Corp., which raised its rates to builders on February 1 from 30% to 95%, varying by region [HOUSING, Feb.].

From its Washington, D.C. headquarters, HOW produced and distributed a presentation to inform builders about program changes—and to persuade them that the rate increases are necessary.

'Underpriced.' The presentations were made in December and January by local HOW councils to builders and others in the housing industry. At a presentation by the HOW Council of mid-Florida to a small group of builders in Melbourne, Fla., council representatives Lynda Grosvenor and Debbie Steinly began by giving a brief history of HOW and a description of program coverage in the mid-Florida region.

Then began an 18-minute slide show, called "Something New for the '80s and Beyond." The rate increase was explained succinctly right away: "The HOW program was simply underpriced from the start," an authoritative narrator announced.

The other major change in the program—the introduction of a $250 consumer deductible for repairs on HOW houses in the first two years—was explained as a way "to cut down on those frivolous claims that are costing the program so much."

After the slide presentation was over, Grosvenor made another explanation to the builders: "Everybody goes through growing pains, as you have, no doubt, in your own business. You've got to take the punches and go on."

Reaction. There were only a few complaints from the builders present about the rate increase; one praised the program for its promise to be more selective in the future about which builders are allowed in.

Said Richard E. Cameron of Palm Bay, "If you all start policing the industry as the program was set up to do, that's fine with me."

But then he complained that the timing of the boost in rates—"when mortgage money is 15% and the industry is in trouble"—was not the best.

Not too sweet. The builders were advised to keep their costs down by being familiar with what is covered under HOW and what isn't—especially when dealing with an angry buyer.

"Don't be Mr. Nice Guy," suggested Steinly. "Don't offer to make repairs that aren't covered in the warranty, or you'll end up paying for it yourself." —DAVID GARFINKEL

HOUSING STAFF

HOW rep Grosvenor: *Take the punches*

A maybe ban on U-F foam insulation

The health controversy over urea-formaldehyde foam insulation may not yet be over—even though the Consumer Product Safety Commission has voted to ban its residential use.

The 3-2 vote is not final, and may be reversed after President Reagan names a new CPSC chairman. Further, an interagency squabble between the Department of Energy and the CPSC on the level of danger dilutes the strength of the CPSC position.

But significant damage has already been done to the industry, say U-F foam manufacturers. The two-year controversy over the safety of the insulation has cut sales severely.

Cancer threat. The CPSC recommended last year to ban residential use of U-F foam because of suspected cancer-causing properties of formaldehyde. In addition, the CPSC said it had received reports from more than 1,500 people that the foam installed in their homes was the probable cause of short-term ill effects. [HOUSING, July '80].

Urea-formaldehyde foam has never been widely used in conventional new home construction; its main use has been in retrofit. Home manufacturers have used U-F foam as original insulation in the past—not for 15 to 20 years, claim industry spokesmen—but never extensively, in any case. Why not? For technical reasons, they just seem to prefer other materials. □

Mobile homes *continued from page 22*

odors and vapors build up faster.

Experiments at a national level with relatively high concentrations of formaldehyde indicate that it is an irritant and may even cause cancer. The U.S. Consumer Products Safety Commission has asked that its use be banned.

However, Walter L. Benning, president of the Manufactured Housing Institute, does not believe that such a ban will be put into effect. The tight construction of mobile homes can trap vapors of many types, says Benning, some of which may be more prevalent than formaldehyde.

He pointed out that ventilation can remove vapors and that research is under way to tackle that problem.

Opportunities. New legislation bodes well for the manufactured housing industry. California recently required local governments to include mobile homes and other types of housing in new development plans. And the idea seems to be spreading to other states. The Indiana state legislature is considering a similar measure.

Sydney Adler, president of Design Communities Inc. of Bradenton, Fla., emphasized that mobile homes are compatible with conventional housing in a seminar discussing how to take advantage of these changes.

Adler said that his Trailer Estates mobile home park, developed in 1954, is now flanked by an FHA single-family subdivision on one side and by a new four-story condominium on the other.

In fact, says Adler, "the entrance into the subdivision is through Trailer Estates."

He then described an even more striking example of compatibility: Lake Mountain Estates in Boulder City, Nev. [HOUSING, May '79]. This is a terraced development overlooking Lake Mead, where the home and land package sells for between $70,000 and $90,000. And it is surrounded by conventional housing that sells for between $150,000 and $200,000.

"Let me assure you," said Adler, "this is not a mobile home park; it is a housing community. There are no coaches here, only homes. The homes are not on pads, they're on beautiful homesites. And they don't have tag rooms, expandos or tip-outs, but interesting floor plans." —JIM THOMPSON

Louisville

For more on mobiles, see the factory-built housing story starting on page 48.

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Is large-lot zoning legal? It depends...

Although a number of state courts have ruled out multi-acre zoning, New York is not following this trend. Its highest court—the Court of Appeals—has rejected a developer's effort to overturn a village ordinance requiring lot minimums of five acres in some residential areas.

Developer Robert E. Kurzius's argument—identical to those in most similar zoning cases—was that the five-acre minimum kept low-and moderate-income persons from living in the village of Upper Brookville, Long Island. This, said Kurzius, was unconstitutional government discrimination.

Kurzius tried to show the village was motivated by bias when it adopted the land-use plan. He noted that the planner who recommended approval had admitted discussing his ideas with large landholders in the village before making his report.

No intent. In their ruling, the judges said large-lot zoning is allowable unless its purpose is exclusionary. It cannot be invalidated simply because its effect is exclusionary.

Kurzius did not offer enough evidence to prove bias, the judges ruled, adding that the developer failed to show that poorer residents cannot find housing in the general area, even if it isn't in Upper Brookville.

The opinion notes that the village has a lot of open space, and the five-acre minimum is intended to preserve that look.

Neither yes nor no. The judges would not give blanket approval to every multi-acre zoning decision taken for environmental reasons. What makes their decision significant, however, is that they also did not issue an across-the-board ban on such zoning plans, as many other state courts have done.

In other cases, courts held that:

- A homebuyer who uses Farmers Home Administration (FmHA) loans can sue the government when the house later turns out to have a buckling foundation, a leaky roof or other defects. James F. Batten, chief judge of the U.S. District Court in Montana, refused a federal bid to have a case thrown out of court. In setting up the FmHA program, Judge Batten noted, Washington was trying to help persons with "little exposure to the world of real estate." And since the agency inspected the home before okaying the loan, "the government, through its regulations and through its official conduct, seems to have held itself out as a protector of the underprivileged...and should stand ready to live up to the promises it has made."
- If a multiple listing service has enough economic clout to hurt firms it excludes, it cannot impose on its members any restrictions not directly related to the needs of the listing business. So ruled the U.S. Court of Appeals in New Orleans in an anti-trust case brought by the Justice Dept. against the only MLS in Muscogee County, Ga.

The judges said the service has no legitimate business-related reason to force members to buy its stock, to have a "good reputation," or to maintain "customary hours." The case goes back to a district court for trial on other issues—such as whether the operations affect interstate commerce enough to come under the Sherman Antitrust Act.

- It is not a violation of the Real

Estate Settlement Procedures Act (RESPA) for an employee of a county recorder's office to take cash payments from lenders who believed such "grease" helps speed service in the office. In a case of charging bribery, the U.S. Court of Appeals in Chicago ruled against the government. The court's reasoning: RESPA bars certain payments for real estate services, and the employee handling the recording gave no extra services in return for the payments.

•A scheme developers had worked out with a lender to get additional loans to cover interest due does not qualify for favorable tax treatment. Barry and Jerry Battelstein, Texas land developers, made this deal with Gibralter Savings Assn.: After each quarterly interest payment on a $3-million loan, the S&L would send back to the Battelsteins a check equal to the interest payment; the S&L would then add that amount to the loan's principal balance. The U.S. Court of Appeals in New Orleans decided, by a 14-10 vote, that the checks to Gibralter do not qualify as interest payments, and so are not deductible on the developer's income tax. —DANIEL B. MOSKOWITZ

McGraw-Hill World News, Washington

Usury ceiling upheld in recent ruling

A developer who sells properties and finances the deal at a high interest rate may be courting legal troubles. The federal Monetary Control Act passed last year overrides state usury ceilings on first mortgages. But the Arkansas Supreme Court has now declared that part of the law unconstitutional.

The Arkansas case involves a 12% note written last July for a $6,500 lot in Hot Springs Village. The lot was sold by Cooper Communities, Inc., of Bella Vista, Ark. Cooper averages about $2 million a month in loans for residential real estate.

The 12% interest rate exceeds the urury limit in the Arkansas constitution. So the single issue in the case was whether Congress had legitimately wiped out usury ceiling in the monetary Control Act. In a 4-3 decision, the state high court ruled it hadn't.

Out of bounds. Chief Justice John A. Fogleman explained, "Federal law must be authorized by the United States Constitution before it preempts a state constitutional provision. We find nothing in any of the legislation involved here that pertains to the regulation of interstate commerce."

The telling point in the law: It allows states to exempt transactions from the law's provisions, if the transactions occur within state borders. That proves, the Arkansas majority suggested, that there is no overriding national interest, for if there were, there could be no exceptions.

This decision flies in the face of most legal precedents, which view financial transactions as part of the general flow of money among the states. Under this view, those transactions are therefore subject to federal regulation. (This decision does not apply to federal S&Ls and national banks.)

No support. Dissenting Justice John F. Stroud noted that the Arkansas ruling "cannot be supported by any persuasive legal authority and, to their credit, the majority have not attempted to cite any cases in support of their holding." Stroud believes that the U.S. Supreme Court will review the case and overturn the state high court. —D.B.M.

CAROLE EICHEN,
Carole Eichen Interiors
Fullerton, Calif.

Patterns: the mix-and-match turn-on

Printed wallpaper and fabrics have been around a long time, but they're being combined in fresh ways—ways that you can use to make your model homes more appealing and marketable.

For instance, we're seeing dissimilar patterns used together, such as the floral sofa and plaid chairs seen in the living room below.

Not only does this new freedom with patterns result in a room that's more interesting to the eye, but the mixtures make good merchandising sense.

The reason: Shoppers are less able than ever before to discard old furniture and start over in a new house, so the stage set look of a perfectly matched room is likely to intimidate them.

When you successfully combine dissimilar patterns in your model rooms, on the other hand, prospects will get excited about their ability to decorate a new home. They realize they need buy only a few new pieces of furniture to complement what they already have in their present homes.

Here's how to combine patterns effectively:

Don't lose your balance. You can't mix and match with abandon. The two cardinal rules:

1. Don't use more than three or four colors. Three is the best number—a background and two accents.

2. Repeat the color combination throughout the room. This is the most important point to remember. In fact, you've probably walked through another builder's model and disliked it without being able to figure out why. The reason was probably a color imbalance. Your shoppers will have the same negative reaction if you cluster colors on only one side of a room.

Stay in scale. Don't overwhelm a

PHOTOS: JOHN BARE

Floral-plus-plaid living room *(above)* shows prospects how to juxtapose dissimilar patterns. Color combinations are the same, however; the background color on the sofa is the accent color on the chairs, and vice versa. Potted palms repeat the sofa pattern. Project: Millstream, Huntington Beach, Calif. Builder: Schaffer Development. Project director for Carole Eichen Interiors: Sue Schug.

Eclectic den *(right)* is a lively mixture of different prints. The light background is a must for such a small room. Project: same as above.

small room with dark, bold prints. In the den shown at the bottom of the facing page, for example, the wallpaper and couch both have light backgrounds, and a large print is used only on the couch. (Note the way that contrasting dark accents—*e.g.* navy blue pillows and chair—carry the eye around the room, making the most visually of every square foot.)

In a small room, patterns can also be used to define functions. For instance, if a dining area is part of your model's living room, use a patterned tablecloth that picks up the colors of the nearby sofa, but combines them in a different way.

Incidentally, don't be afraid to use prints if your prospects are men. Do, however, keep away from small, fussy patterns. Your best bet: a bold print complemented with textured fabrics, such as cordouroy.

Pattern it personal. Shoppers today are looking for ways to add custom-like charm to their homes—at do-it-yourself prices. By capitalizing on patterns, you can offer them just the ideas they're looking for.

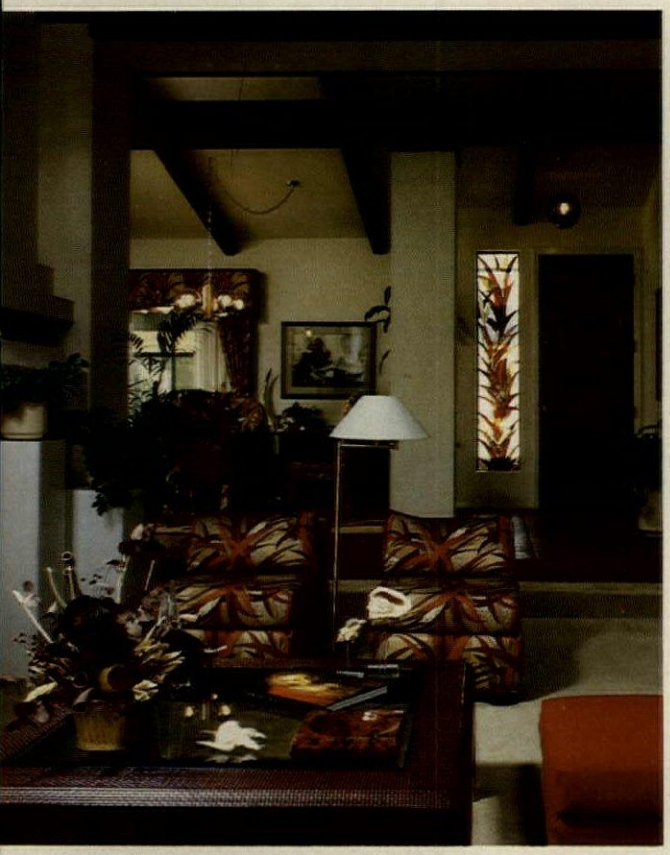
Stained glass is one example. There are many classes in making it, as well as kits and books that shoppers anywhere can buy. So you may want to show prospects how an upholstery pattern can be repeated in a stained-glass sidelight *(below)* or in stained-glass ornaments to hang in a greenhouse window.

Another way to achieve that personal touch: stencils.

Anyone with any talent at all can cut a stencil to match a patterned fabric and, in two or three hours, create a decorative border on a painted wall. (Using stencils cuts down on wallpaper costs too.)

Coordinate with patterns. Bold, heavy colors—dark greens, dark maroons, etc.—are being used on walls more often today. But if you've ever walked into an unfurnished room with such a dark wall, you know that it seems to jump out and grab you—not a pleasant impression. The wall won't seem so overpowering, if the room is brought into balance with the help of patterned fabrics.

Take a look at the print bedspreads in the rooms below, for example. In both cases, the pattern blends the colors of dark wall and the lighter floorcovering, thus easing the shopper's eye away from the intense color. It's this sort of mixing and matching that sets the tone in your models and turns on buyers.



Stained-glass sidelight *(above)* picks up the pattern used on living room chairs (in foreground) and dining room chairs and draperies (in background). Not only does the repeating pattern carry prospects' eyes around the model, but the sidelight is the kind of personalized feature that prospects like to duplicate. Using such a stained-glass window is also a good way to glamorize a small powder room. Project: Los Lagos, Indian Wells, Calif. Builder: Gentry Construction. Project director for Carole Eichen Interiors: Sue Schug.

The well-balanced bedroom *(above and below)* is the result of using patterns to complement a dramatic dark wall. The bedroom above is at Los Lagos *(see credits below left)*. The bedroom below is at Villa Vista, Tierrasanta, Calif. Builder: The Christiana Co. Project director for Carole Eichen Interiors: Margo Hazlett.

PHOTOS: LELAND LEE

'Zero lot line is no damn good'

So says land planner, David Clinger of Lookout Mountain, Colo.

Don't get him wrong; it's not the concept he's knocking. As president of David Clinger Associates, he's been responsible for thousands of the zero-lot line houses that have been built to date.

What Clinger's knocking is the idea that zero-lot-line houses have to be built right on the lot line—a procedure which he says can lead to both higher costs and design problems.

To wit: The Uniform Building Code requires a fire wall for any residential wall within three feet of the property line. And with any communities adhering to that code, an expensive and often unsightly fire-rated wall is required—unless the builder can get a variance.

That's not always possible—as Las Vegas builder Dudley Smith, president of DASCO discovered building "Approach '80," a demonstration project co-sponsored by HUD, the Land Use Committee and NAHB Research Committee.

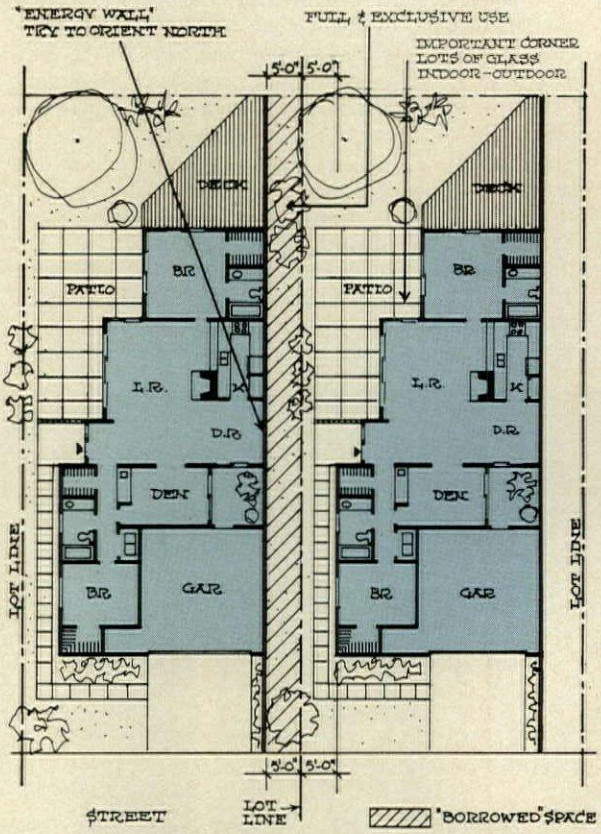
Las Vegas officials wouldn't waive fire-wall requirements for the project's zero-lot-liners, which came on stream right after the tragic MGM Grand Hotel fire.

Clinger's solution—and one which he's used to develop over 1,200 units—is to site zero-lot-liners further than three ft. from the property line. Five ft., he says, is typical for any project with narrow lots *(see plan below)*.

In this concept the blank wall on one house becomes the "privacy wall" for an adjoining house, with the owner of the adjoining house using five ft. of his neighbor's lot as outdoor living space.

What about title problems? There aren't any Clinger says, because of special easements created by attorney Harvey Deutsch of Denver.

The easements *(below)* may have to be reworded slightly to cover individual homeowner association regulations. But the basic wording should cover most cases.



But there are more benefits to this concept than those of design, Clinger says. One, he says, concerns marketing.

He finds that the term zero-lot-line is negative, turning a lot of buyers off. But, he says, "By orienting the blank walls to the north, we merchandise them as "energy walls," that will lower the potential buyer's fuel bills.

Another benefit: In the offchance that your subs get your foundations slightly off line (It happens more often than you think, Clinger says.) there's no problem with title searches because there's not any part of a house straddling a lot line.

—J.R.V.

Special Exterior Wall and Patio Easements

Special Exterior Walls. Each residence shall contain one windowless exterior wall (the "Special Exterior Wall") which shall face an adjacent lot ("Adjacent Lot").

Drainage Easement and Roof Runoff. An easement is hereby granted to the Association, its officers, agents and employees to enter upon, across, over, and under any Lot for the purpose of changing, correcting, or otherwise modifying the grade or drainage channels of a Lot so as to improve the drainage of water from the Lots or Common Area. It shall be the responsibility of each Owner to take appropriate measures, whether by landscaping or otherwise, to protect an Adjacent Owner's Lot or the Common Area from water running off of such Owner's roof onto an Adjacent Owner's Lot or onto the Common Area and no Owner shall have liability to otherwise be responsible to any other Owner or to the Association for any loss, expense or damage resulting from such roof runoff.

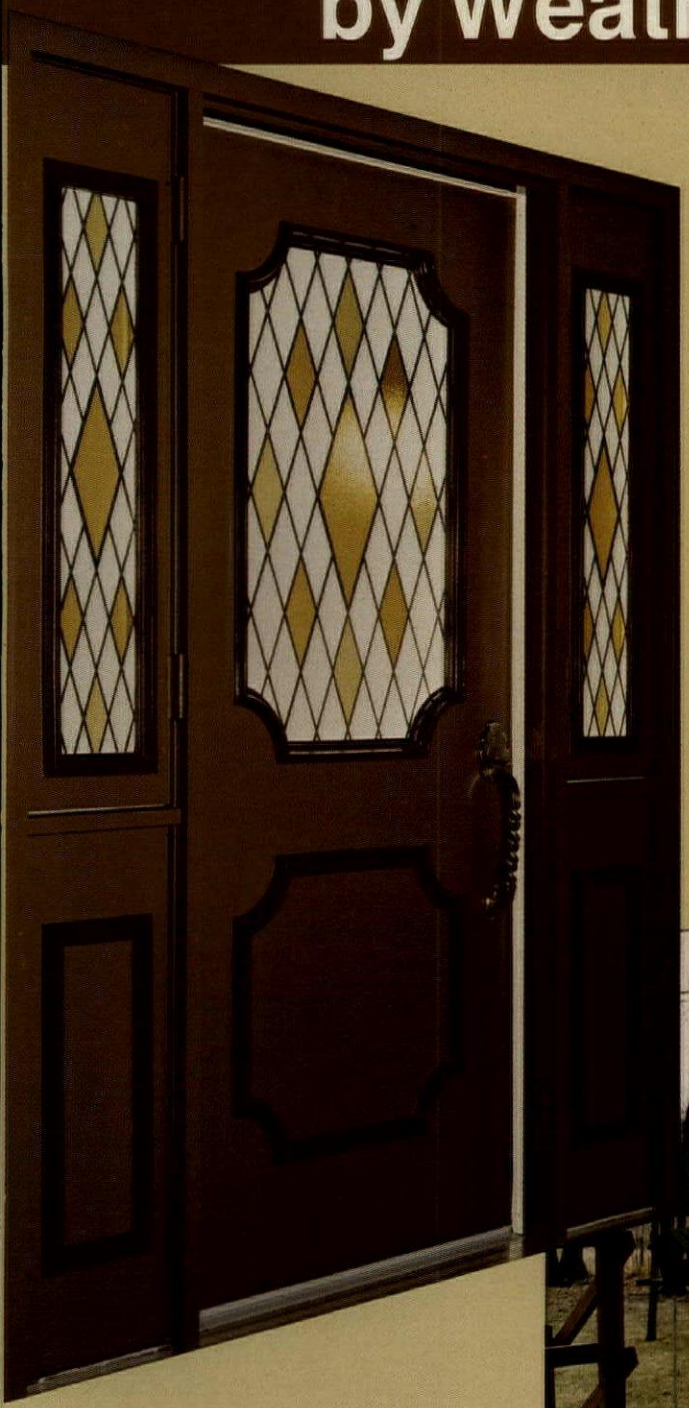
Patio and Repair Easements. Subject to the temporary easements hereinafter described, a perpetual exclusive easement covering the ground area between: (1) a line running the length of the Special Exterior Wall and extending to the sides of each Lot containing the Wall, and (2) the property line of each Adjacent Lot is hereby created for the benefit of the Owner of each such Adjacent Lot. Such easement areas are depicted on the plat attached hereto as Patio Easements and are expected to be approximately five feet in width. All Patio Easements may be used by the Owner of each Adjacent Lot for any purposes consistent with this Declaration. In addition to the Patio Easement, each Owner of a residence shall have an easement on the property surrounding an Adjacent Owner's Residence, whether the same is located on such other Owner's Lot, the perpetual easement above described, or the Common Area, for the purpose of temporarily utilizing ladders and such other equipment as may be required to repair any Special Exterior Wall or other exterior wall or the roof of a Residence. Such easement shall be of a temporary nature and shall exist only for such reasonable period of time as is required to make such repairs or perform such maintenance. Such temporary easement shall extend onto such other Owners' Lot, perpetual easement, or the Common Area for only such distance as is reasonably required to undertake and perform such repair and maintenance work.

Rights of Owner with Respect to Maintenance of Special Exterior Wall. The Owner of the residence containing the Special Exterior Wall shall have the right at all reasonable times to enter the Patio Easement Area and such other portion of the Adjacent Lot as is reasonably necessary for the purpose of repairing, maintaining, or restoring the Special Exterior Wall; provided, however, that such access shall be permitted only at reasonable times during daylight hours and with the prior knowledge of the Owner of the Adjacent Lot.

Restrictions on Owner of Adjacent Lot. The Owner of the Adjacent Lot shall avoid any action which shall in any way restrict the use of the Special Exterior Wall by its Owner including, but not limited to, refraining from attaching any objects to such wall, such as wires, trellises and plantings; defacing the wall in any manner; placing graphics or other design work (whether painted or otherwise) on the special exterior wall; or using the wall as a playing surface for any sport.

Restrictions on Owner with Residence Containing Special Exterior Wall. The Owner of the Residence containing the Special Exterior Wall shall similarly be prohibited from attaching anything to such wall or from altering it in any way other than painting the wall in such manner as shall be approved by the Board or the Architectural Review Committee. Additionally, the Owner of such Residence shall not make any openings for windows or otherwise on such Wall and shall take no other action, except as specifically contemplated herein, in connection with such Wall which shall interfere with the privacy of the Owner of the Adjacent Lot.

Lee Haven Entrance Systems by Weather Shield



Compliment your Weather Shield wood windows and patio doors with our Lee Haven steel insulating entrance systems.

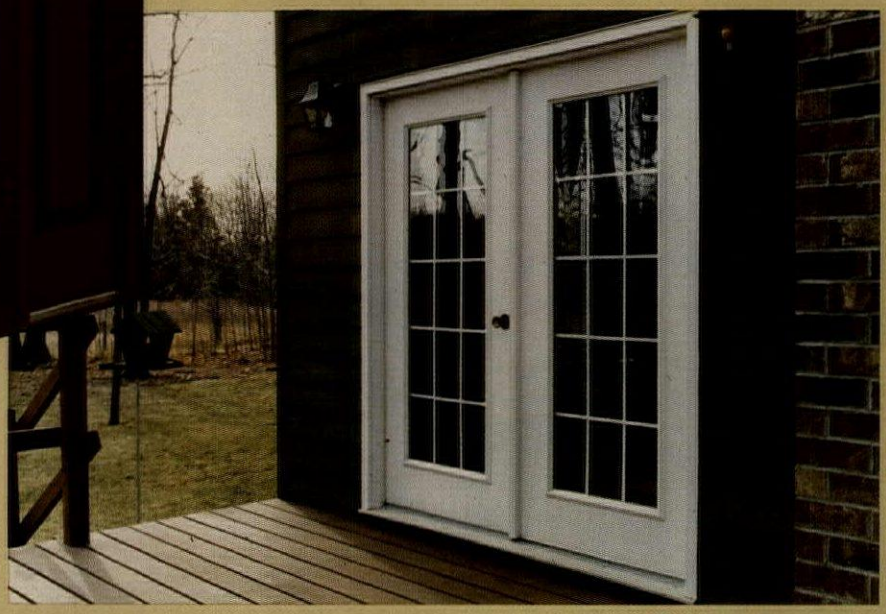
The styles shown here are just two of the hundreds of combinations available from Weather Shield's Lee Haven line.

Five tough exteriors to match those of our entire window line – from primed to the virtually maintenance free exteriors of white Lifeshield, adobe Aluma Clad, and white and adobe Thin Fin Trim.

Engineered for total energy efficiency, the Lee Haven features:

* wood stiles and rails for a complete thermobreak
* injected polyurethane core for highest insulating value
* double weatherstripping
* adjustable vinyl bottom expander
* durable aluminum sill with vinyl frost break
* doors with glass feature 1" double or triple insulating glass
* optional reversible KD package cuts inventory in half

LEE HAVEN for years of care-free operation and beauty!



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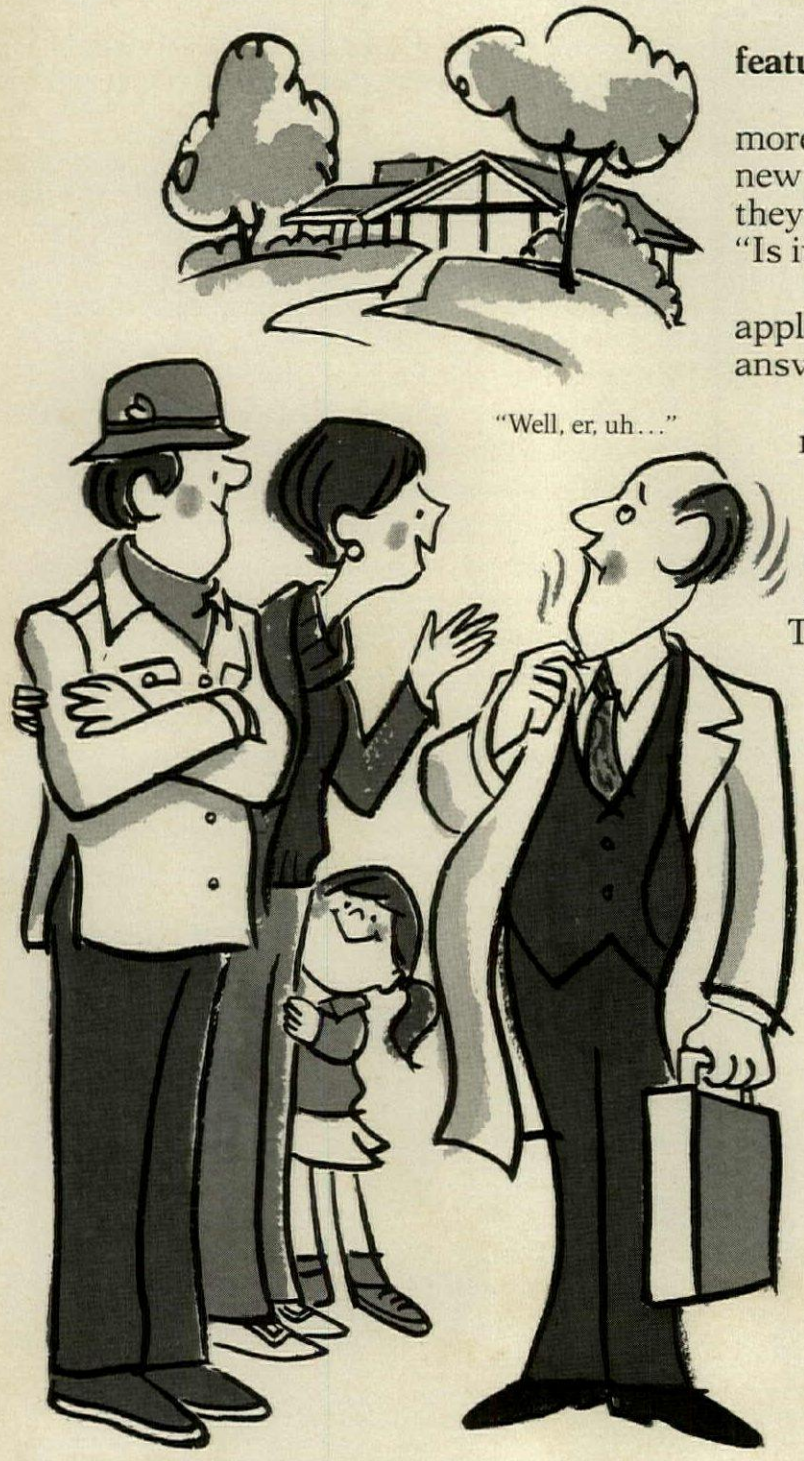
"I LOVE THE NEIGHBORHOOD, THE SPACE, THE BAY WINDOW, AND THE YARD...

BUT IS IT GAS?"



Gas appliances are built-in selling features.

As America moves into the '80s, more Americans will be moving into new homes. But before they buy, they'll be asking the same question, "Is it energy-efficient?"

Homebuilders who have built gas appliances right into their homes can answer truthfully, "Yes."

You see, compared to electric, the new gas appliances are far more efficient for cooking, drying clothes, heating water, and heating homes.

Americans are buying efficiency.

The national consumer information program sponsored by GAMA on television, radio, and in magazines is telling Americans how the increased efficiency of the new gas appliances saves them money and energy. And, they're looking for these new gas appliances in the homes they buy.

For you, the builder, the new gas appliances can mean the difference between a sale and a "Thank you, but I'm just looking."

The new gas appliances. Isn't it time you started building for your future?

Gama

Gas Appliance Manufacturers Association

The new gas appliances are good for your economy.

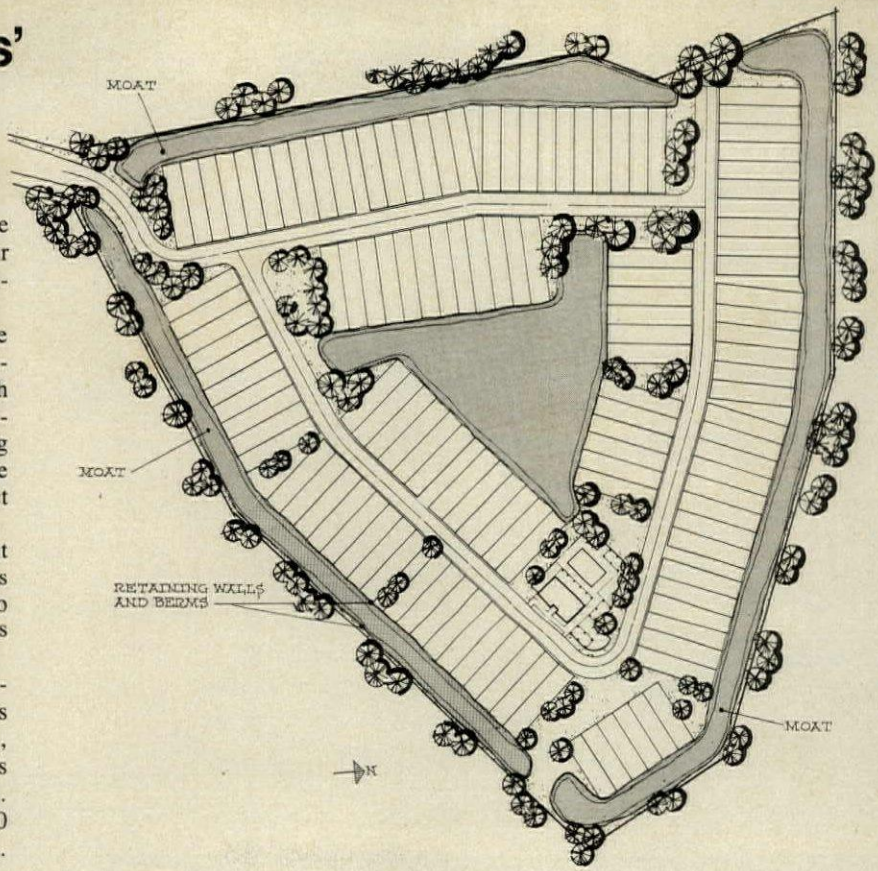
For homeowners' privacy: a water hazard

This townhouse project sits smack in the middle of a golf course. So the developer faced a problem: how to keep stray golfers from wandering onto the premises.

The answer is reminiscent of the moats that once secured European castles: three water-filled trenches — each 30 feet wide and 6 feet deep — that enclose the project. Berms and retaining walls, which are built up alongside the trenches, add to privacy and help protect the houses from wayward golf balls.

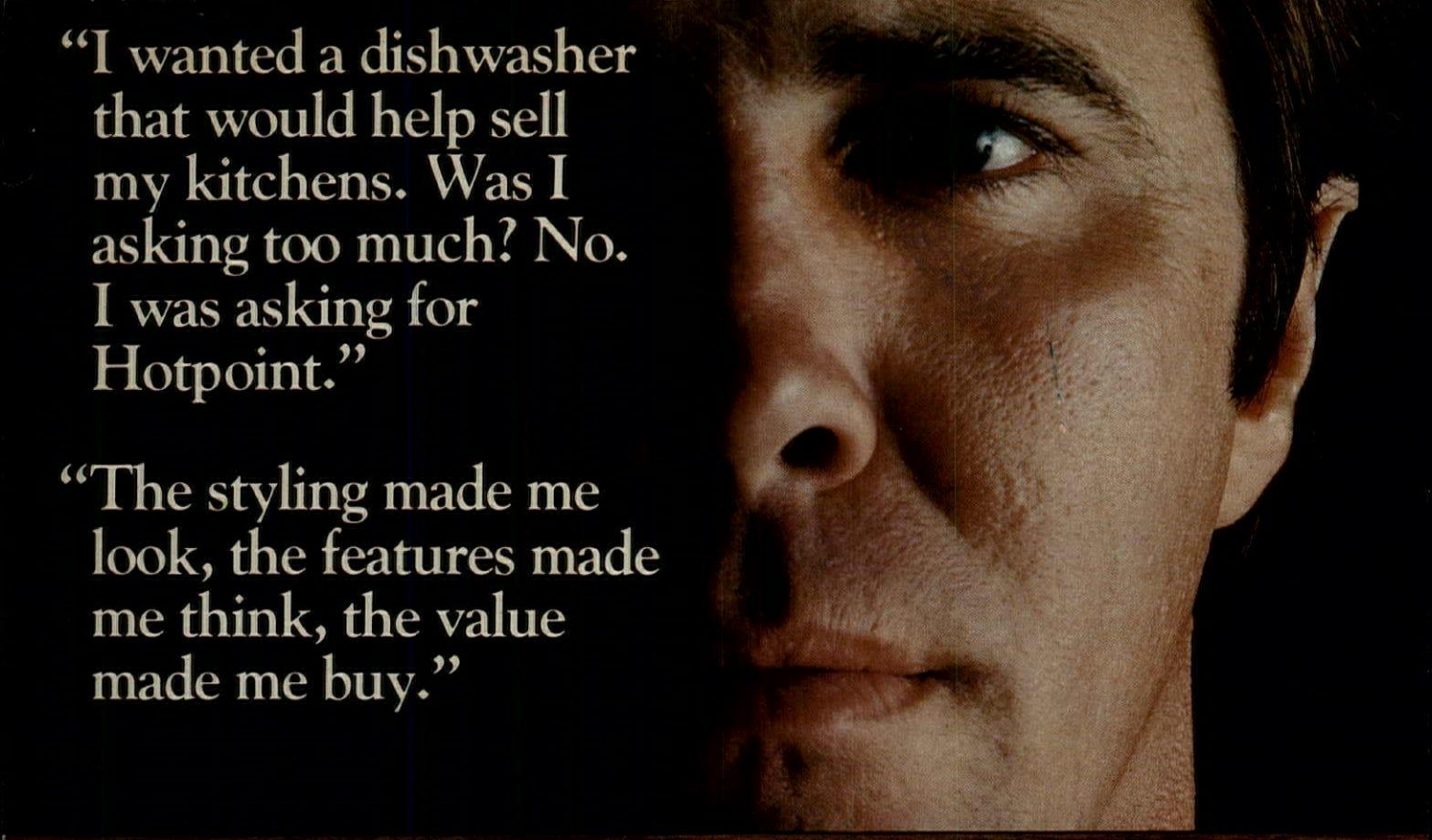
All units in the Tempe, Ariz. project are sited to overlook either the trenches or a man-made interior pond. Purpose: to provide each unit with a water view so as to enhance sales appeal.

The project, known as Lake Park Village, includes 126 townhouses. It was built by Meteor Development Inc., a Canadian builder/developer. Units range in size from 1,900 to 2,000 sq. ft., and sell for between $95,000 and $98,000. —S.L.



"I wanted a dishwasher that would help sell my kitchens. Was I asking too much? No. I was asking for Hotpoint."

"The styling made me look, the features made me think, the value made me buy."



This is the HDA960. Check it out.

It's just one of a full line of Hotpoint dishwashers – including 3 Potwasher™ models – designed to please both you and your customers.

You're looking for easy installation and versatility. Hotpoint responds with an upfront hook-up, a money saving 2 on 1 dishwasher-disposer hook-up plus interchangeable color door panels.

Your customers want energy-savings and convenience. Hotpoint offers energy-efficient features like the Short Wash cycle and an Energy Saver drying option. Plus helpful extras like a built-in Soft Food Disposer, a Sani-Cycle wash option and a Power Scrub® cycle for pots and pans.

And it's all wrapped up in a thick blanket of sound insulation. Something both homeowners and tenants can appreciate.

Best of all, Hotpoint Customer Care™ service handles repair problems promptly and dependably so you won't have to get involved.

Call your Hotpoint Contract Sales Representative today and ask about our complete dishwasher line or the total Kitchen Clean-up Center – a dishwasher, trash compactor and disposer.

Remember, finding a full-featured built-in dishwasher that's easy on the eye *and* easy on the budget is not asking too much. It's asking for Hotpoint.

Hotpoint

A Quality Product of General Electric Company.

Circle 34 on reader service card

THE HOUSING MAGAZINE
CONSTRUCTION COST GUIDE

This new quarterly feature tells you, in detail, what it should cost today to build the same house in 100 different markets. The house is shown in plan below — a 1,502-sq.-ft. ranch with a 467-sq.-ft. garage. Its construction is straightforward wood frame on slab. And its quality is "above average," according to the experts who developed this Cost Guide — the Cost Information Systems Division of the McGraw-Hill Information Systems Co.

Their cost analysis is shown in the tables on the next seven pages. It breaks the house down into 13 elements *(see below)*, then lists the labor cost, materials cost and cost per square foot of house and garage for each.

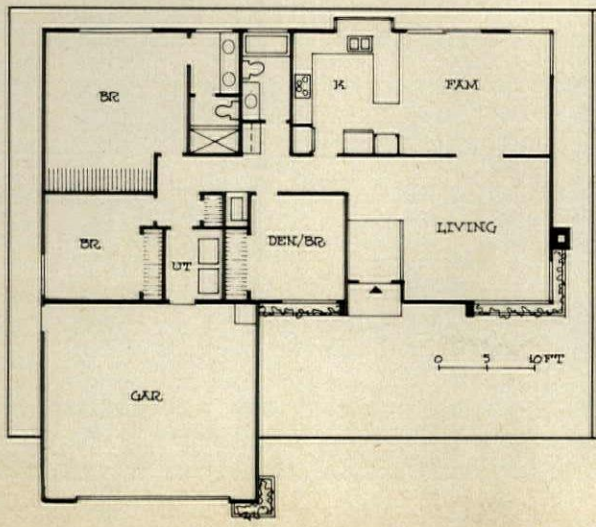
The 100 markets were selected, for the most part, because of their size. Eighty-five of them are among the 100 most populous SMSAs (Standard Metropolitan Statistical Areas). But geographical distribution was also a factor. Hence, for example, the inclusion of Boise, Idaho, which ranks only 196th in SMSA size.

A few regional differences in materials and equipment were plugged into the Guide. The McGraw-Hill experts divided the country into five climate zones ranging from the coldest (Zone A) to the warmest (Zone E), and each market in the tables is labeled accordingly (e.g., cold Minneapolis in Zone A, hot Tampa in Zone E). Specs for HVAC, roof insulation and foundations were then altered to suit temperature conditions in each zone. Roof insulation is 9 in. thick in Zone A, for example; 6 in. in B, C and D, and 3½ in. in E. Foundation footings are 4 ft. deep in Zone A, 3 ft. in B, C and D. And in all Zone E markets except Los Angeles, foundation costs are based on the use of monolithic slabs with no footings.

Some of the cost figures may strike you as high — particularly if you build standard models in any appreciable volume. There are a couple of reasons for this:

First of all, the figures are based on one-time construction of the house. So there's no allowance for economies of scale — namely, for volume purchasing and the cost-cutting efficiency that comes naturally with repeated production of the same model.

Second, labor costs are based on union scale — even though most builders go the non-union route — because union rates are easier to pin down accurately. —J.F.G.



Foundation — excavation and footings
Floor on grade — fill, concrete, steel-trowel finish
Roof system — framing, sheathing, insulation
Roofing — shingles, flashing, gutters, downspouts
Exterior walls — framing, sheathing, wood siding, insulation, paint, wood doors, aluminum windows, insulating glass
Partitions — studs, drywall, doors
Wall finishes — paint, ceramic tile
Floor finishes — ceramic tile, vinyl asbestos tile, carpeting
Ceiling finishes — drywall, paint
Fixed equipment — range, range hood, oven exhaust fan, refrigerator, counters, cabinets, vanities, medicine cabinets, bathroom fittings
HVAC — forced hot air heating plus air conditioning
Plumbing — water heater, bathroom fixtures, kitchen sink, laundry tub, pipes
Electrical — light fixtures, switches and outlets, connections for major appliances, service panel, wiring

	ALBANY, NY [B]	ALBUQUERQUE, NM [B]	ALLENTOWN, PA [B]	ATLANTA, GA [C]	AUGUSTA, GA [C]	AUSTIN, TX [E]	BAKERSFIELD, CA [E]	BALTIMORE, MD [C]	BATON ROUGE, LA [C]	BIRMINGHAM, AL [C]	BOISE, ID [B]	BOSTON, MA [B]	BUFFA
Foundations													
Labor	2,488	2,271	2,525	2,051	1,698	1,033	3,493	2,356	2,312	2,097	2,517	2,547	3,229
Material	1,704	1,984	1,999	1,936	1,757	933	2,259	2,146	1,902	1,958	1,835	2,241	2,009
Sq. ft.	2.13	2.16	2.30	2.02	1.75	1.00	2.92	2.29	2.14	2.06	2.21	2.43	2.66
Floors on grade													
Labor	1,346	1,110	1,386	1,076	927	1,340	1,824	1,273	1,159	1,033	1,300	1,381	1,657
Material	1,114	1,312	1,327	1,394	1,241	1,228	1,566	1,548	1,323	1,355	1,275	1,572	1,451
Sq. ft.	1.25	1.23	1.38	1.25	1.10	1.30	1.72	1.43	1.26	1.21	1.31	1.50	1.58
Roof system													
Labor	4,111	3,892	4,192	3,405	2,673	4,239	5,810	3,892	3,754	3,296	4,111	4,301	5,569
Material	4,121	4,713	4,757	4,328	3,970	3,958	5,011	4,759	4,398	4,555	4,237	5,125	4,463
Sq. ft.	4.18	4.37	4.54	3.93	3.37	4.16	5.50	4.39	4.14	3.99	4.24	4.79	5.09
Roofing													
Labor	1,423	1,125	1,414	1,040	696	1,180	1,763	1,183	1,224	1,083	1,343	1,452	1,696
Material	1,486	1,681	1,704	1,561	1,434	1,486	1,879	1,698	1,568	1,626	1,521	1,826	1,591
Sq. ft.	1.48	1.43	1.58	1.32	1.08	1.35	1.85	1.46	1.42	1.38	1.45	1.66	1.67
Exterior walls													
Labor	5,322	5,321	5,793	5,027	3,899	5,813	7,375	5,571	5,205	4,905	5,553	5,903	7,113
Material	7,314	8,381	8,441	7,700	7,091	7,314	9,260	8,466	7,786	8,054	7,537	9,084	7,930
Sq. ft.	6.42	6.96	7.23	6.46	5.58	6.67	8.45	7.13	6.60	6.58	6.65	7.61	7.64
Partitions													
Labor	2,266	2,257	2,389	2,024	1,643	2,452	3,139	2,239	2,184	1,907	2,246	2,368	2,923
Material	3,245	3,603	3,631	3,338	3,137	3,245	3,902	3,636	3,377	3,476	3,300	3,842	3,450
Sq. ft.	2.80	2.98	3.06	2.72	2.43	2.89	3.58	2.98	2.82	2.73	2.82	3.15	3.24
Wall finishes													
Labor	1,196	1,063	1,282	1,194	841	1,140	1,536	1,164	1,187	1,192	1,189	1,417	1,438
Material	558	667	641	605	547	558	707	673	610	621	599	697	617
Sq. ft.	0.89	0.88	0.98	0.91	0.70	0.86	1.14	0.93	0.91	0.92	0.91	1.07	1.04
Floor finishes													
Labor	676	686	719	609	515	758	979	667	685	583	703	725	882
Material	2,172	2,480	2,500	2,278	2,101	2,172	2,741	2,505	2,305	2,379	2,227	2,688	2,352
Sq. ft.	1.45	1.61	1.63	1.47	1.33	1.49	1.89	1.61	1.52	1.50	1.49	1.73	1.64
Coating finishes													
Labor	1,370	1,346	1,489	1,371	1,011	1,538	1,826	1,419	1,419	1,346	1,369	1,634	1,777
Material	596	698	690	629	570	596	752	705	629	656	629	745	656
Sq. ft.	1.00	1.04	1.11	1.02	0.80	1.08	1.31	1.08	1.04	1.02	1.01	1.21	1.24
Fixed equipment													
Labor	1,036	1,066	1,075	1,006	912	1,156	1,272	1,050	1,069	965	1,048	1,074	1,225
Material	4,797	5,316	5,373	4,963	4,666	4,797	5,774	5,368	5,006	5,143	4,878	5,671	5,101
Sq. ft.	2.96	3.24	3.27	3.03	2.83	3.02	3.58	3.26	3.09	3.10	3.01	3.43	3.21
HVAC													
Labor	2,342	2,397	2,505	2,213	1,867	2,470	2,873	2,451	2,342	2,159	1,867	2,505	2,818
Material	1,949	2,230	2,258	2,054	1,884	1,358	1,701	2,251	2,069	2,136	2,008	2,409	2,121
Sq. ft.	2.18	2.35	2.42	2.17	1.91	1.94	2.32	2.39	2.24	2.18	1.97	2.50	2.51
Plumbing													
Labor	2,849	2,927	3,055	2,694	2,273	3,335	3,928	2,758	2,853	2,643	3,019	3,017	3,234
Material	1,888	2,154	2,174	1,980	1,824	1,888	2,379	2,176	2,001	2,068	1,935	2,335	2,041
Sq. ft.	2.41	2.58	2.66	2.37	2.08	2.65	3.20	2.51	2.47	2.39	2.52	2.72	2.68
Electrical													
Labor	1,626	1,519	1,582	1,591	1,369	1,761	2,051	1,595	1,712	1,369	1,638	1,591	1,994
Material	1,139	1,301	1,315	1,196	1,101	1,139	1,436	1,314	1,207	1,248	1,168	1,409	1,233
Sq. ft.	1.40	1.43	1.47	1.42	1.25	1.47	1.77	1.48	1.48	1.33	1.43	1.52	1.64
Totals													
Labor	28,051	26,980	29,406	25,301	20,324	28,215	37,869	27,618	27,105	24,578	27,903	29,915	35,555
Material	32,083	36,520	36,810	33,962	31,323	30,672	39,367	37,245	34,181	35,275	33,149	39,644	35,015
Sq. ft.	30.55	32.26	33.63	30.09	26.21	29.88	39.23	32.94	31.13	30.39	31.02	35.32	35.84

CHARLESTON, SC [C]	CHARLOTTE, NC [C]	CHATTANOOGA, TN [C]	CHICAGO, IL [B]	CINCINNATI, OH [B]	CLEVELAND, OH [B]	COLORADO SPRINGS, CO [B]	COLUMBIA, SC [C]	COLUMBUS, OH [B]	DALLAS-FORT WORTH, TX [C]	DAVENPORT, IA [B]	DAYTON, OH [B]	DENVER, CO [B]	DES MOINES, IA [B]	DETROIT, MI [B]	EL PASO, TX [D]
506	1,614	2,189	2,966	3,040	3,328	2,423	1,562	2,612	2,180	2,832	2,677	2,882	2,666	3,338	1,667
080	1,824	1,814	2,057	2,207	2,278	2,142	1,816	2,092	2,408	1,923	1,958	2,230	1,927	2,321	1,873
.82	1.75	2.03	2.55	2.66	2.85	2.32	1.72	2.39	2.33	2.41	2.35	2.60	2.33	2.87	1.80
861	873	1,072	1,602	1,643	1,873	1,321	823	1,392	1,167	1,458	1,371	1,469	1,358	1,734	847
490	1,273	1,293	1,505	1,539	1,538	1,455	1,290	1,400	1,636	1,333	1,355	1,591	1,339	1,587	1,402
.19	1.09	1.20	1.58	1.62	1.73	1.41	1.07	1.42	1.42	1.42	1.38	1.55	1.37	1.69	1.14
380	2,859	3,483	4,977	5,137	5,623	3,999	2,566	4,137	3,699	4,730	4,484	4,754	4,354	5,593	2,811
667	4,192	4,121	4,505	5,074	5,370	5,026	4,121	4,962	5,602	4,418	4,555	5,026	4,418	5,391	4,008
3.58	3.58	3.86	4.82	5.19	5.58	4.58	3.40	4.62	4.72	4.65	4.59	4.97	4.46	5.58	3.46
764	808	1,199	1,656	1,696	1,866	1,327	825	1,418	1,072	1,542	1,500	1,554	1,423	1,816	933
671	1,514	1,459	1,606	1,808	1,932	1,791	1,486	1,772	1,997	1,575	1,626	1,791	1,575	1,939	1,446
.24	1.18	1.35	1.66	1.78	1.93	1.58	1.17	1.62	1.56	1.58	1.59	1.70	1.52	1.91	1.21
552	3,948	4,677	6,695	6,744	7,334	5,614	3,759	5,818	5,277	6,321	6,007	6,497	5,809	7,479	3,853
282	7,435	7,283	8,006	8,997	9,540	8,912	7,314	8,824	9,962	7,854	8,054	8,912	7,854	9,611	7,162
6.01	5.78	6.07	7.47	7.99	8.57	7.38	5.62	7.44	7.74	7.20	7.14	7.83	6.94	8.68	5.59
516	1,697	2,015	2,753	2,833	3,046	2,273	1,629	2,407	2,163	2,623	2,514	2,701	2,390	3,084	1,661
565	3,251	3,221	3,482	3,806	3,972	3,769	3,245	3,728	4,128	3,414	3,476	3,769	3,414	4,000	3,167
2.58	2.51	2.66	3.17	3.37	3.56	3.07	2.48	3.12	3.20	3.07	3.04	3.29	2.95	3.60	2.45
825	725	1,144	1,352	1,481	1,650	1,256	877	1,486	1,164	1,401	1,413	1,556	1,362	1,725	823
629	596	558	623	689	745	684	558	683	760	613	621	684	613	747	554
0.74	0.67	0.86	1.00	1.10	1.22	0.99	0.73	1.10	0.98	1.02	1.03	1.14	1.00	1.26	0.70
452	518	652	858	864	927	702	528	715	686	774	751	872	727	953	479
454	2,202	2,157	2,376	2,663	2,818	2,637	2,172	2,612	2,948	2,330	2,379	2,637	2,330	2,844	2,122
1.48	1.38	1.43	1.64	1.79	1.90	1.70	1.37	1.69	1.85	1.58	1.59	1.78	1.55	1.93	1.32
962	1,011	1,275	1,609	1,705	1,872	1,443	1,034	1,634	1,442	1,658	1,609	1,754	1,515	1,995	987
677	609	599	663	739	779	732	596	718	799	650	656	732	650	779	576
0.83	0.82	0.95	1.15	1.24	1.35	1.10	0.83	1.19	1.14	1.17	1.15	1.26	1.10	1.41	0.79
878	925	1,005	1,197	1,187	1,225	1,094	901	1,048	1,071	1,140	1,113	1,231	1,067	1,277	893
271	4,835	4,778	5,151	5,618	5,880	5,564	4,797	5,530	6,095	5,050	5,143	5,564	5,050	5,922	4,712
3.12	2.93	2.94	3.22	3.46	3.61	3.38	2.89	3.34	3.64	3.14	3.18	3.45	3.11	3.66	2.85
811	1,867	2,213	2,910	2,818	2,781	2,982	1,739	2,671	2,103	2,141	2,287	2,451	2,543	3,128	1,922
214	1,977	1,944	2,141	2,386	2,527	2,364	1,949	2,340	2,651	2,100	2,136	2,364	2,100	2,558	1,903
2.04	1.95	2.11	2.57	2.64	2.70	2.72	1.87	2.54	2.41	2.15	2.25	2.45	2.36	2.89	1.94
203	2,264	2,700	3,335	3,475	3,392	3,629	2,177	3,353	2,572	3,165	3,114	2,969	3,135	3,810	2,335
134	1,913	1,873	2,062	2,312	2,448	2,291	1,888	2,269	2,560	2,023	2,068	2,291	2,023	2,471	1,842
2.20	2.12	2.32	2.74	2.94	2.97	3.01	2.06	2.86	2.61	2.63	2.63	2.67	2.62	3.19	2.12
315	1,096	1,495	2,032	1,909	1,958	2,050	977	1,512	1,578	1,847	1,744	2,273	1,676	2,157	1,269
289	1,155	1,131	1,244	1,395	1,479	1,383	1,139	1,370	1,544	1,222	1,248	1,383	1,222	1,493	1,112
1.32	1.14	1.33	1.66	1.68	1.75	1.74	1.07	1.46	1.59	1.56	1.52	1.86	1.47	1.85	1.21
025	20,205	25,119	33,942	34,532	36,875	30,113	19,397	30,203	26,174	31,632	30,584	32,963	30,025	38,089	20,480
423	32,776	32,231	35,421	39,233	41,306	38,750	32,371	38,300	43,090	34,505	35,275	38,974	34,515	41,663	31,879
8.15	26.90	29.11	35.23	37.46	39.72	34.98	26.28	34.79	35.19	33.58	33.44	36.55	32.78	40.52	26.58

	EUGENE-SPRINGFIELD, OR [B]	FLINT, MI [B]	FRESNO, CA [D]	GARY, IN [B]	GRAND RAPIDS, MI [B]	GREENSBORO, NC [C]	GREENVILLE, SC [C]	HARTFORD, CT [B]	HONOLULU, HI [E]	HOUSTON, TX [D]	HUNTSVILLE, AL [C]	INDIANAPOLIS, IN [B]	JACKSON
Foundations													
Labor	2,832	2,988	3,503	2,798	2,293	1,398	1,381	2,336	1,162	2,630	1,930	2,668	1,848
Material	1,878	2,138	2,286	2,013	2,006	1,952	2,010	2,065	1,376	1,917	1,819	2,151	1,925
Sq. ft.	2.39	2.60	2.94	2.44	2.18	1.70	1.72	2.24	1.29	2.31	1.90	2.45	1.92
Floors on grade													
Labor	1,540	1,548	1,883	1,548	1,244	682	757	1,265	1,487	1,388	1,042	1,401	920
Material	1,352	1,441	1,506	1,423	1,399	1,376	1,327	1,435	1,779	1,400	1,258	1,436	1,357
Sq. ft.	1.47	1.52	1.72	1.51	1.34	1.05	1.06	1.37	1.66	1.42	1.17	1.44	1.16
Roof system													
Labor	4,808	4,941	6,134	4,778	3,891	2,162	2,295	3,866	4,785	4,324	3,135	4,648	2,973
Material	4,201	5,030	5,473	4,575	4,620	4,418	4,804	4,754	6,217	4,232	4,192	5,120	4,371
Sq. ft.	4.58	5.06	5.89	4.75	4.32	3.34	3.61	4.38	5.59	4.35	3.72	4.96	3.73
Roofing													
Labor	1,515	1,642	1,710	1,542	1,244	780	808	1,320	1,597	1,376	1,053	1,452	1,064
Material	1,516	1,801	1,969	1,634	1,665	1,575	1,722	1,714	2,314	1,529	1,494	1,843	1,558
Sq. ft.	1.54	1.75	1.87	1.61	1.48	1.20	1.28	1.54	1.99	1.48	1.29	1.67	1.33
Exterior walls													
Labor	6,678	6,866	7,937	6,655	5,382	3,291	3,420	5,465	6,534	6,140	4,323	6,496	4,246
Material	7,474	8,907	9,722	8,121	8,210	7,854	8,560	8,449	11,505	7,512	7,427	9,086	7,775
Sq. ft.	7.19	8.01	8.97	7.50	6.90	5.66	6.08	7.07	9.16	6.93	5.97	7.91	6.11
Partitions													
Labor	2,745	2,855	3,258	2,668	2,263	1,384	1,520	2,197	2,671	2,495	1,883	2,542	1,770
Material	3,242	3,770	4,050	3,504	3,528	3,414	3,641	3,629	4,679	3,282	3,257	3,830	3,391
Sq. ft.	3.04	3.36	3.71	3.13	2.94	2.44	2.62	2.96	3.73	2.93	2.61	3.24	2.62
Wall finishes													
Labor	1,565	1,612	1,590	1,397	1,255	778	751	1,327	1,512	1,435	988	1,348	990
Material	587	687	758	624	628	613	675	646	889	601	561	694	614
Sq. ft.	1.09	1.17	1.19	1.03	0.96	0.71	0.72	1.00	1.22	1.03	0.79	1.04	0.81
Floor finishes													
Labor	855	877	999	824	681	402	474	662	824	761	555	807	554
Material	2,213	2,638	2,873	2,407	2,432	2,330	2,533	2,500	3,412	2,223	2,196	2,690	2,297
Sq. ft.	1.56	1.79	1.97	1.64	1.58	1.39	1.53	1.61	2.15	1.52	1.40	1.78	1.45
Coating finishes													
Labor	1,801	1,848	2,018	1,728	1,418	866	843	1,441	1,753	1,658	1,179	1,634	1,106
Material	611	718	794	656	656	650	698	675	943	616	596	739	642
Sq. ft.	1.22	1.30	1.43	1.21	1.05	0.77	0.78	1.07	1.37	1.15	0.90	1.21	0.89
Fixed equipment													
Labor	1,218	1,230	1,336	1,199	1,031	831	839	1,040	1,184	1,123	967	1,150	942
Material	4,817	5,574	5,990	5,187	5,228	5,050	5,402	5,376	6,879	4,879	4,837	5,663	5,015
Sq. ft.	3.07	3.46	3.72	3.24	3.18	2.99	3.17	3.26	4.09	3.05	2.95	3.46	3.03
HVAC													
Labor	2,927	2,892	2,873	2,910	2,451	1,592	1,592	2,269	2,707	2,433	2,103	2,415	2,231
Material	1,994	2,371	2,576	2,167	2,183	2,100	2,276	2,246	2,121	1,996	1,981	2,418	2,063
Sq. ft.	2.50	2.67	2.77	2.58	2.35	1.88	1.96	2.29	2.45	2.25	2.07	2.45	2.18
Plumbing													
Labor	4,150	3,530	4,174	3,353	3,063	1,944	1,944	2,917	3,303	2,891	2,574	3,167	2,729
Material	1,922	2,291	2,495	2,089	2,110	2,023	2,202	2,169	2,963	1,931	1,910	2,334	1,997
Sq. ft.	3.08	2.96	3.39	2.76	2.63	2.01	2.11	2.58	3.18	2.45	2.28	2.79	2.40
Electrical													
Labor	2,191	2,156	2,207	1,864	1,545	1,233	880	1,769	2,105	1,847	1,509	1,686	1,406
Material	1,160	1,384	1,506	1,261	1,274	1,222	1,329	1,311	1,787	1,165	1,152	1,410	1,208
Sq. ft.	1.70	1.80	1.89	1.59	1.43	1.25	1.12	1.56	1.98	1.53	1.35	1.57	1.33
Totals													
Labor	34,825	34,985	39,622	33,264	27,761	17,343	17,504	27,874	31,624	30,501	23,241	31,414	22,779
Material	32,967	38,750	41,998	35,661	35,939	34,577	37,179	36,969	46,864	33,283	32,680	39,414	34,213
Sq. ft.	34.43	37.45	41.46	34.99	32.34	26.39	27.76	32.93	39.86	32.40	28.40	35.97	28.96

JACKSONVILLE, FL [E]	KANSAS CITY, MO-KS [B]	KNOXVILLE, TN [B]	LANSING, MI [B]	LAS VEGAS, NV [D]	LEXINGTON, KY [B]	LITTLE ROCK, AR [C]	LOS ANGELES, CA [E]	LOUISVILLE, KY [B]	MADISON, WI [A]	MEMPHIS, TN [C]	MIAMI, FL [E]	MILWAUKEE, WI [A]	MINNEAPOLIS, MN [A]	MOBILE, AL [C]	NASHVILLE, TN [C]
34	2,733	1,940	2,680	2,926	2,449	2,124	3,452	2,381	3,441	2,213	905	4,123	3,329	2,162	2,111
40	1,889	1,750	1,982	1,879	1,907	1,874	2,129	1,830	2,611	1,876	961	2,924	3,061	1,931	1,816
90	2.35	1.87	2.37	2.44	2.21	2.03	2.83	2.14	3.07	2.08	0.95	3.53	3.25	2.08	1.99
04	1,442	942	1,355	1,539	1,186	975	1,692	1,259	1,335	1,153	1,334	1,512	1,283	1,148	1,017
60	1,330	1,192	1,374	1,286	1,320	1,308	1,488	1,298	1,314	1,330	1,244	1,310	1,425	1,328	1,337
15	1.41	1.08	1.39	1.43	1.27	1.16	1.62	1.30	1.35	1.26	1.31	1.43	1.38	1.26	1.20
20	4,461	3,082	4,484	5,001	4,137	3,513	5,810	3,921	4,256	3,513	3,704	4,989	4,094	3,483	3,483
38	4,292	4,121	4,575	4,398	4,412	4,287	4,643	4,160	4,441	4,253	4,351	5,101	5,485	4,463	4,006
53	4.45	3.66	4.60	4.77	4.34	3.96	5.31	4.10	4.42	3.94	4.09	5.12	4.86	4.04	3.80
23	1,479	1,010	1,472	1,618	1,322	1,155	1,856	1,337	1,379	1,183	1,254	1,660	1,397	1,093	1,094
56	1,530	1,459	1,634	1,568	1,592	1,528	1,746	1,502	1,535	1,538	1,626	1,763	1,899	1,591	1,446
26	1.53	1.25	1.58	1.62	1.48	1.36	1.83	1.44	1.48	1.38	1.46	1.74	1.67	1.36	1.29
36	6,088	4,480	6,018	6,707	5,466	4,809	7,778	5,473	5,656	5,051	5,061	6,502	5,420	4,913	4,981
56	7,632	7,283	8,121	7,786	7,849	7,627	8,633	7,386	7,610	7,548	8,054	8,736	9,416	7,930	7,122
84	6.97	5.97	7.18	7.36	6.76	6.32	8.33	6.53	6.74	6.40	6.66	7.74	7.53	6.52	6.15
56	2,450	1,831	2,495	2,728	2,305	2,020	3,202	2,185	2,328	2,046	2,177	2,628	2,260	2,050	1,992
13	3,329	3,221	3,504	3,377	3,404	3,325	3,685	3,278	3,332	3,299	3,476	3,716	3,960	3,450	3,156
52	2.93	2.57	3.05	3.10	2.90	2.71	3.50	2.77	2.87	2.71	2.87	3.22	3.16	2.79	2.61
94	1,360	1,110	1,394	1,442	1,148	998	1,652	1,165	1,284	1,200	1,159	1,469	1,241	1,112	1,073
37	603	558	624	610	617	602	684	563	604	603	621	680	743	617	553
83	1.00	0.85	1.02	1.04	0.90	0.81	1.19	0.88	0.96	0.92	0.90	1.09	1.01	0.88	0.83
10	744	581	770	852	711	600	986	683	691	621	647	789	678	601	616
92	2,255	2,157	2,407	2,305	2,323	2,253	2,555	2,194	2,249	2,232	2,379	2,585	2,790	2,352	2,103
32	1.52	1.39	1.61	1.60	1.54	1.45	1.80	1.46	1.49	1.45	1.54	1.71	1.76	1.50	1.38
22	1,538	1,202	1,633	1,705	1,417	1,228	1,921	1,346	1,441	1,371	1,299	1,658	1,418	1,347	1,275
55	630	599	656	629	642	629	711	602	637	619	656	718	779	656	579
95	1.10	0.91	1.16	1.19	1.05	0.94	1.34	0.99	1.06	1.01	0.99	1.21	1.12	1.02	0.94
16	1,093	944	1,119	1,195	1,089	994	1,269	1,055	1,053	1,005	1,015	1,130	1,063	995	998
91	4,924	4,778	5,187	5,006	5,058	4,992	5,462	4,842	4,929	4,905	5,143	5,490	5,836	5,101	4,689
80	3.06	2.91	3.20	3.15	3.12	3.00	3.42	2.99	3.04	3.00	3.13	3.36	3.50	3.10	2.89
97	2,707	2,123	2,525	2,561	2,561	2,359	3,658	2,561	2,561	2,505	2,543	2,764	2,579	2,433	2,123
33	2,025	1,944	2,167	2,069	2,094	2,023	1,590	1,968	3,009	2,006	1,482	3,462	3,742	2,122	1,896
84	2.40	2.07	2.38	2.35	2.36	2.23	2.67	2.30	2.83	2.29	2.04	3.16	3.21	2.31	2.04
38	3,312	2,595	3,277	3,826	3,135	2,882	4,463	3,122	3,131	3,212	2,679	3,371	3,159	2,956	2,601
32	1,960	1,873	2,089	2,001	2,018	1,959	2,221	1,906	1,954	1,939	2,068	2,246	2,425	2,041	1,826
37	2.68	2.27	2.73	2.96	2.62	2.46	3.39	2.55	2.58	2.62	2.41	2.85	2.84	2.54	2.25
52	1,795	1,334	1,771	2,078	1,785	1,489	2,071	1,725	1,671	1,552	1,626	1,951	1,879	1,387	1,485
45	1,187	1,131	1,261	1,207	1,218	1,184	1,339	1,151	1,180	1,171	1,248	1,354	1,464	1,233	1,105
32	1.51	1.25	1.54	1.67	1.53	1.36	1.73	1.46	1.45	1.38	1.46	1.68	1.70	1.33	1.32
02	31,202	23,174	30,993	34,178	28,711	25,146	39,810	28,213	30,227	26,625	25,403	34,546	29,800	25,680	24,849
48	33,586	32,066	35,581	34,121	34,454	33,521	36,886	32,680	35,405	33,319	33,309	39,985	43,025	34,814	31,634
63	32.91	28.05	33.81	34.68	32.08	29.79	38.96	30.91	33.34	30.44	29.81	37.84	36.99	30.73	28.69

	NEW BRUNSWICK, NJ [B]	NEW HAVEN, CT [B]	NEW ORLEANS, LA [C]	NEWARK, NJ [B]	NEWPORT NEWS, VA [C]	NORFOLK, VA [C]	OKLAHOMA CITY, OK [C]	OMAHA, NE [B]	ORLANDO, FL [E]	PENSACOLA, FL [E]	PEORIA, IL [B]	PHILADELPHIA, PA [B]	PHOENIX
Foundations													
Labor	2,578	2,652	2,191	2,617	1,857	1,857	2,302	2,556	858	816	2,972	2,584	2,636
Material	1,953	1,999	2,090	1,978	2,021	2,040	1,867	1,825	931	909	2,130	2,107	2,051
Sq. ft.	2.30	2.36	2.17	2.33	1.97	1.98	2.12	2.22	0.91	0.88	2.59	2.38	2.38
Floors on grade													
Labor	1,387	1,415	1,179	1,391	953	953	1,186	1,439	1,166	1,118	1,575	1,419	1,272
Material	1,372	1,348	1,497	1,428	1,468	1,482	1,303	1,276	1,230	1,201	1,501	1,388	1,390
Sq. ft.	1.40	1.40	1.36	1.43	1.23	1.24	1.26	1.38	1.22	1.18	1.56	1.43	1.35
Roof system													
Labor	4,271	4,569	3,619	4,271	2,996	2,996	3,728	4,429	3,435	3,296	4,977	4,248	4,080
Material	4,485	4,708	4,669	4,412	4,510	4,555	4,285	4,192	3,824	3,750	4,851	5,056	4,804
Sq. ft.	4.45	4.71	4.21	4.41	3.81	3.83	4.07	4.38	3.69	3.58	4.99	4.73	4.51
Roofing													
Labor	1,531	1,457	1,212	1,497	843	843	1,290	1,337	1,058	1,063	1,648	1,620	1,397
Material	1,599	1,681	1,664	1,592	1,609	1,626	1,546	1,514	1,438	1,406	1,738	1,805	1,722
Sq. ft.	1.59	1.59	1.46	1.57	1.25	1.25	1.44	1.45	1.27	1.25	1.72	1.74	1.58
Exterior walls													
Labor	6,130	6,152	5,019	6,187	4,364	4,364	5,139	6,075	4,834	4,515	6,508	5,921	5,455
Material	7,936	8,357	8,303	7,849	7,978	8,054	7,623	7,435	7,090	7,001	8,644	8,993	8,560
Sq. ft.	7.14	7.37	6.77	7.13	6.27	6.31	6.48	6.86	6.06	5.85	7.70	7.57	7.12
Partitions													
Labor	2,424	2,536	2,096	2,476	1,827	1,827	2,175	2,502	2,049	1,981	2,703	2,449	2,203
Material	3,443	3,603	3,567	3,404	3,440	3,476	3,306	3,251	3,142	3,114	3,675	3,798	3,641
Sq. ft.	2.98	3.12	2.88	2.99	2.67	2.69	2.78	2.92	2.64	2.59	3.24	3.17	2.97
Wall finishes													
Labor	1,335	1,390	983	1,377	964	964	1,173	1,420	1,069	966	1,479	1,344	1,189
Material	620	640	661	617	616	621	598	596	551	548	681	697	675
Sq. ft.	0.99	1.03	0.83	1.01	0.80	0.80	0.90	1.02	0.82	0.77	1.10	1.04	0.95
Floor finishes													
Labor	741	781	625	741	546	546	668	755	623	609	817	741	655
Material	2,350	2,476	2,457	2,323	2,355	2,379	2,256	2,202	2,094	2,069	2,558	2,661	2,533
Sq. ft.	1.57	1.65	1.57	1.56	1.47	1.49	1.49	1.50	1.38	1.36	1.70	1.73	1.62
Ceiling finishes													
Labor	1,562	1,633	1,179	1,586	1,106	1,106	1,322	1,634	1,226	1,131	1,656	1,538	1,347
Material	642	675	692	642	650	656	623	609	576	576	705	731	698
Sq. ft.	1.12	1.17	0.95	1.13	0.89	0.89	0.99	1.14	0.92	0.87	1.20	1.15	1.04
Fixed equipment													
Labor	1,122	1,132	1,009	1,127	943	943	1,024	1,125	993	973	1,141	1,090	1,049
Material	5,104	5,334	5,265	5,058	5,093	5,143	4,914	4,835	4,667	4,621	5,455	5,636	5,402
Sq. ft.	3.16	3.28	3.19	3.14	3.07	3.09	3.02	3.03	2.87	2.84	3.35	3.42	3.28
HVAC													
Labor	2,818	2,579	2,287	2,836	1,976	1,976	2,470	2,433	2,359	2,159	3,073	2,561	2,470
Material	2,109	2,230	2,208	2,094	2,116	2,136	2,034	1,977	1,295	1,280	2,298	2,386	2,276
Sq. ft.	2.50	2.44	2.28	2.50	2.08	2.09	2.29	2.24	1.86	1.75	2.73	2.51	2.41
Plumbing													
Labor	3,439	2,865	2,949	3,435	2,418	2,418	3,005	3,167	2,871	2,634	3,418	3,109	2,484
Material	2,040	2,148	2,134	2,018	2,046	2,068	1,960	1,913	1,819	1,798	2,223	2,310	2,202
Sq. ft.	2.78	2.55	2.58	2.77	2.27	2.28	2.52	2.58	2.38	2.25	2.86	2.75	2.38
Electrical													
Labor	1,924	1,760	1,545	1,985	1,368	1,368	1,530	1,890	1,509	1,344	1,855	1,669	1,971
Material	1,229	1,298	1,289	1,218	1,236	1,248	1,183	1,155	1,101	1,086	1,341	1,397	1,329
Sq. ft.	1.60	1.55	1.44	1.63	1.32	1.33	1.38	1.55	1.33	1.23	1.62	1.56	1.68
Totals													
Labor	31,262	30,921	25,893	31,526	22,161	22,161	27,012	30,762	24,050	22,605	33,822	30,293	28,208
Material	34,882	36,497	36,496	34,633	35,138	35,484	33,498	32,780	29,758	29,359	37,800	38,965	37,283
Sq. ft.	33.58	34.22	31.69	33.60	29.10	29.27	30.74	32.27	27.35	26.40	36.37	35.18	33.27

PITTSBURGH, PA [B]	PORTLAND, OR [B]	PROVIDENCE, RI [B]	RALEIGH, NC [C]	RICHMOND, VA [C]	ROCHESTER, NY [B]	SACRAMENTO, CA [D]	ST. LOUIS, MO [B]	SALT LAKE CITY, UT [B]	SAN ANTONIO, TX [E]	SAN DIEGO, CA [5]	SAN FRANCISCO, CA [D]	SAN JOSE, CA [E]	SEATTLE, WA [B]	SHREVEPORT, LA [C]	SPOKANE, WA [B]
76	3,083	2,485	1,437	1,967	2,673	3,625	2,921	2,565	840	3,130	3,664	3,667	3,279	2,111	3,119
96	2,037	1,851	1,964	2,083	1,907	2,126	1,894	1,827	1,002	2,099	2,334	2,262	2,094	1,988	1,912
68	2.60	2.20	1.73	2.06	2.33	2.92	2.45	2.23	0.94	2.66	3.05	3.01	2.73	2.08	2.56
08	1,462	1,335	743	1,048	1,434	1,897	1,564	1,318	1,093	1,617	1,883	1,847	1,714	1,078	1,714
37	1,442	1,098	1,329	1,460	1,394	1,476	1,392	1,261	1,323	1,434	1,741	1,587	1,529	1,365	1,326
65	1.47	1.24	1.05	1.27	1.44	1.71	1.50	1.31	1.23	1.55	1.84	1.74	1.65	1.24	1.54
17	4,977	4,027	2,295	3,052	4,569	6,187	4,977	3,999	3,405	5,055	6,134	6,242	5,384	3,459	5,384
73	4,619	4,757	4,623	4,758	4,192	4,896	4,157	4,232	4,049	4,708	5,056	4,965	4,621	4,623	4,412
12	4.87	4.46	3.51	3.97	4.45	5.63	4.64	4.18	3.79	4.96	5.68	5.69	5.08	4.10	4.98
06	1,635	1,271	726	1,103	1,533	2,022	1,581	1,392	1,113	1,750	1,940	1,932	1,812	1,151	1,728
43	1,655	1,704	1,656	1,705	1,494	1,753	1,480	1,529	1,529	1,753	1,805	1,843	1,648	1,656	1,592
80	1.67	1.51	1.21	1.43	1.54	1.92	1.55	1.48	1.34	1.78	1.90	1.92	1.76	1.43	1.69
18	6,734	5,406	3,352	4,720	5,975	8,372	6,594	5,583	4,559	6,955	8,501	8,408	7,020	4,757	6,904
70	8,232	8,441	8,203	8,481	7,427	8,724	7,362	7,512	7,512	8,724	8,993	9,170	8,199	8,203	7,849
07	7.60	7.03	5.87	6.70	6.81	8.68	7.09	6.65	6.13	7.96	8.88	8.93	7.73	6.58	7.49
12	2,795	2,194	1,423	1,923	2,532	3,407	2,665	2,293	2,016	2,827	3,412	3,396	2,941	2,032	2,878
79	3,500	3,631	3,527	3,606	3,257	3,712	3,229	3,282	3,282	3,712	3,798	3,879	3,536	3,527	3,404
35	3.20	2.96	2.51	2.81	2.94	3.62	2.99	2.83	2.69	3.32	3.66	3.69	3.29	2.82	3.19
54	1,524	1,255	743	1,103	1,315	2,074	1,377	1,221	1,046	1,662	2,143	1,806	1,606	1,094	1,527
04	648	641	624	668	561	688	554	601	601	688	697	704	630	624	617
15	1.10	0.96	0.69	0.90	0.95	1.40	0.98	0.93	0.84	1.19	1.44	1.27	1.14	0.87	1.09
52	883	669	435	599	765	1,068	789	709	628	857	1,076	1,066	895	612	883
14	2,436	2,500	2,431	2,508	2,196	2,582	2,178	2,223	2,223	2,582	2,661	2,714	2,430	2,431	2,323
81	1.69	1.61	1.46	1.58	1.50	1.85	1.51	1.49	1.45	1.75	1.90	1.92	1.69	1.55	1.63
30	1,705	1,394	892	1,250	1,537	2,306	1,633	1,394	1,251	1,875	2,306	2,137	1,777	1,299	1,800
52	671	690	671	692	596	711	590	616	616	711	731	752	663	671	642
26	1.21	1.06	0.79	0.99	1.08	1.53	1.13	1.02	0.95	1.31	1.54	1.47	1.24	1.00	1.24
59	1,226	1,028	843	965	1,118	1,363	1,131	1,065	1,007	1,200	1,384	1,391	1,232	1,023	1,207
24	5,914	5,373	5,223	5,351	4,837	5,509	4,795	4,879	4,879	5,509	5,636	5,724	5,236	5,223	5,058
50	3.26	3.25	3.08	3.21	3.02	3.49	3.01	3.02	2.99	3.41	3.57	3.61	3.28	3.17	3.18
71	3,384	2,470	1,356	2,287	2,764	3,440	2,892	2,324	2,397	3,640	4,353	3,658	3,440	1,848	2,707
32	2,189	2,258	2,193	2,255	1,981	2,321	1,964	1,996	1,389	1,607	2,386	1,685	2,188	2,193	2,094
59	2.83	2.40	1.80	2.31	2.41	2.93	2.47	2.19	1.92	2.66	3.42	2.71	2.86	2.05	2.44
66	4,135	2,782	2,189	2,775	3,366	4,204	3,159	2,845	2,927	4,185	5,310	4,465	4,185	2,882	4,163
58	2,117	2,174	2,112	2,180	1,910	2,243	1,894	1,931	1,931	2,243	2,310	2,358	2,108	2,112	2,018
86	3.18	2.52	2.18	2.52	2.68	3.27	2.57	2.43	2.47	3.26	3.87	3.47	3.20	2.54	3.14
55	2,248	1,659	1,073	1,286	1,811	2,520	1,718	1,676	1,505	2,105	2,750	2,529	2,295	1,677	1,997
22	1,277	1,315	1,277	1,316	1,152	1,353	1,143	1,165	1,165	1,353	1,397	1,422	1,274	1,277	1,218
61	1.79	1.51	1.19	1.32	1.50	1.97	1.45	1.44	1.36	1.76	2.11	2.01	1.81	1.50	1.63
24	35,791	27,975	17,507	24,078	31,392	42,485	33,001	28,384	23,787	36,858	44,856	42,544	37,580	25,023	36,011
04	35,017	36,433	35,833	37,063	32,904	38,094	32,632	33,054	31,501	37,123	39,545	39,065	36,156	35,893	34,465
45	36.47	32.71	27.07	31.07	32.65	40.92	33.34	31.20	28.10	37.57	42.86	41.44	37.46	30.93	35.80

	SPRINGFIELD, MA [B]	STOCKTON, CA [D]	SYRACUSE, NY [B]	TACOMA, WA [B]	TAMPA, FL [E]	TOLEDO, OH [B]	TUCSON, AZ [D]	TULSA, OK [C]	WASHINGTON, DC [C]	WICHITA, KS [C]	WILMINGTON, DE [B]	WORCESTER, MA [B]	YOUNGSTOWN, OH [B]
Foundations													
Labor	2,500	3,502	2,588	2,949	858	3,260	2,711	2,300	2,565	2,110	2,540	2,439	2,956
Material	1,883	2,149	1,959	1,986	954	2,130	2,252	1,794	2,127	1,746	1,725	1,939	1,951
Sq. ft.	2.23	2.87	2.31	2.51	0.92	2.74	2.52	2.08	2.38	1.96	2.17	2.22	2.49
Floors on grade													
Labor	1,365	1,837	1,390	1,543	1,166	1,732	1,435	1,235	1,318	1,213	1,280	1,229	1,568
Material	1,291	1,463	1,325	1,361	1,247	1,480	1,650	1,227	1,356	1,198	1,233	1,349	1,344
Sq. ft.	1.35	1.68	1.38	1.47	1.23	1.63	1.57	1.25	1.36	1.22	1.28	1.31	1.48
Roof system													
Labor	4,192	6,002	4,301	4,730	3,435	5,616	4,484	3,704	4,137	3,435	4,429	4,053	4,953
Material	4,371	5,010	4,620	4,621	4,049	4,869	4,962	4,196	5,217	4,081	3,854	4,485	4,555
Sq. ft.	4.35	5.59	4.53	4.75	3.80	5.33	4.80	4.01	4.75	3.82	4.21	4.35	4.83
Roofing													
Labor	1,403	1,805	1,528	1,576	1,058	1,770	1,508	1,269	1,338	1,140	1,475	1,312	1,591
Material	1,558	1,796	1,665	1,648	1,529	1,754	1,772	1,506	1,870	1,472	1,390	1,599	1,626
Sq. ft.	1.50	1.83	1.62	1.64	1.31	1.79	1.67	1.41	1.63	1.33	1.46	1.48	1.63
Exterior walls													
Labor	5,595	7,912	5,728	6,242	4,860	7,371	6,020	5,200	5,695	4,880	6,067	5,835	6,644
Material	7,775	8,899	8,210	8,199	7,512	8,646	8,824	7,468	9,260	7,247	6,885	7,936	8,054
Sq. ft.	6.79	8.54	7.08	7.33	6.28	8.13	7.54	6.43	7.60	6.16	6.58	6.99	7.46
Partitions													
Labor	2,352	3,310	2,368	2,614	2,049	3,073	2,509	2,113	2,327	2,023	2,455	2,289	2,726
Material	3,391	3.784	3,528	3,536	3,282	3,693	3,728	3,267	3,894	3,214	3,044	3,443	3,476
Sq. ft.	2.92	3.60	2.99	3.12	2.71	3.44	3.17	2.73	3.16	2.66	2.79	2.91	3.15
Wall finishes													
Labor	1,221	1,701	1,286	1,441	1,111	1,584	1,260	1,272	1,400	1,155	1,214	1,405	1,541
Material	614	693	628	630	601	678	683	592	703	551	530	620	621
Sq. ft.	0.93	1.22	0.97	1.05	0.87	1.15	0.99	0.95	1.07	0.87	0.89	1.03	1.10
Floor finishes													
Labor	708	1,004	719	789	623	952	740	661	718	610	773	712	816
Material	2,297	2,635	2,432	2,430	2,223	2,559	2,612	2,205	2,740	2,152	2,040	2,350	2,379
Sq. ft.	1.53	1.85	1.60	1.63	1.45	1.78	1.70	1.46	1.76	1.40	1.43	1.56	1.62
Ceiling finishes													
Labor	1,394	2,019	1,489	1,609	1,250	1,897	1,537	1,394	1,562	1,250	1,490	1,610	1,728
Material	642	731	656	663	616	718	718	623	745	590	554	642	656
Sq. ft.	1.03	1.40	1.09	1.15	0.95	1.33	1.15	1.02	1.17	0.93	1.04	1.14	1.21
Fixed equipment													
Labor	1,043	1,296	1,081	1,137	993	1,258	1,139	1,018	1,058	980	1,134	1,074	1,149
Material	5,015	5,594	5,228	5,236	4,879	5,448	5,530	4,830	5,764	4,750	4,529	5,104	5,143
Sq. ft.	3.08	3.50	3.20	3.24	2.98	3.41	3.39	2.97	3.46	2.91	2.88	3.14	3.20
HVAC													
Labor	2,251	3,512	2,305	3,038	2,359	2,927	2,873	2,433	2,359	2,305	2,799	2,213	2,651
Material	2,063	2,368	2,183	2,188	1,389	2,308	2,340	1,988	2,456	1,931	1,829	2,109	2,136
Sq. ft.	2.19	2.99	2.28	2.65	1.90	2.66	2.65	2.25	2.45	2.15	2.35	2.20	2.43
Plumbing													
Labor	2,832	4,217	2,956	3,743	2,871	3,577	3,515	2,956	2,839	2,902	3,373	2,745	3,234
Material	1,997	2,289	2,110	2,108	1,931	2,223	2,269	1,918	2,382	1,868	1,771	2,040	2,068
Sq. ft.	2.45	3.30	2.57	2.97	2.44	2.95	2.94	2.48	2.65	2.42	2.61	2.43	2.69
Electrical													
Labor	1,525	2,030	1,757	2,022	1,509	1,920	2,090	1,601	1,582	1,538	1,782	1,590	1,821
Material	1,208	1,381	1,274	1,274	1,165	1,341	1,370	1,158	1,435	1,128	1,067	1,229	1,248
Sq. ft.	1.39	1.73	1.54	1.67	1.36	1.66	1.76	1.40	1.53	1.35	1.45	1.43	1.56
Totals													
Labor	28,381	40,147	29,496	33,433	24,142	36,937	31,821	27,156	28,898	25,541	30,811	28,506	33,378
Material	34,105	38,792	35,818	35,880	31,377	37,847	38,710	32,772	39,949	31,928	30,451	34,845	35,257
Sq. ft.	31.74	40.10	33.16	35.18	28.20	38.00	35.85	30.44	34.97	29.18	31.14	32.18	34.85

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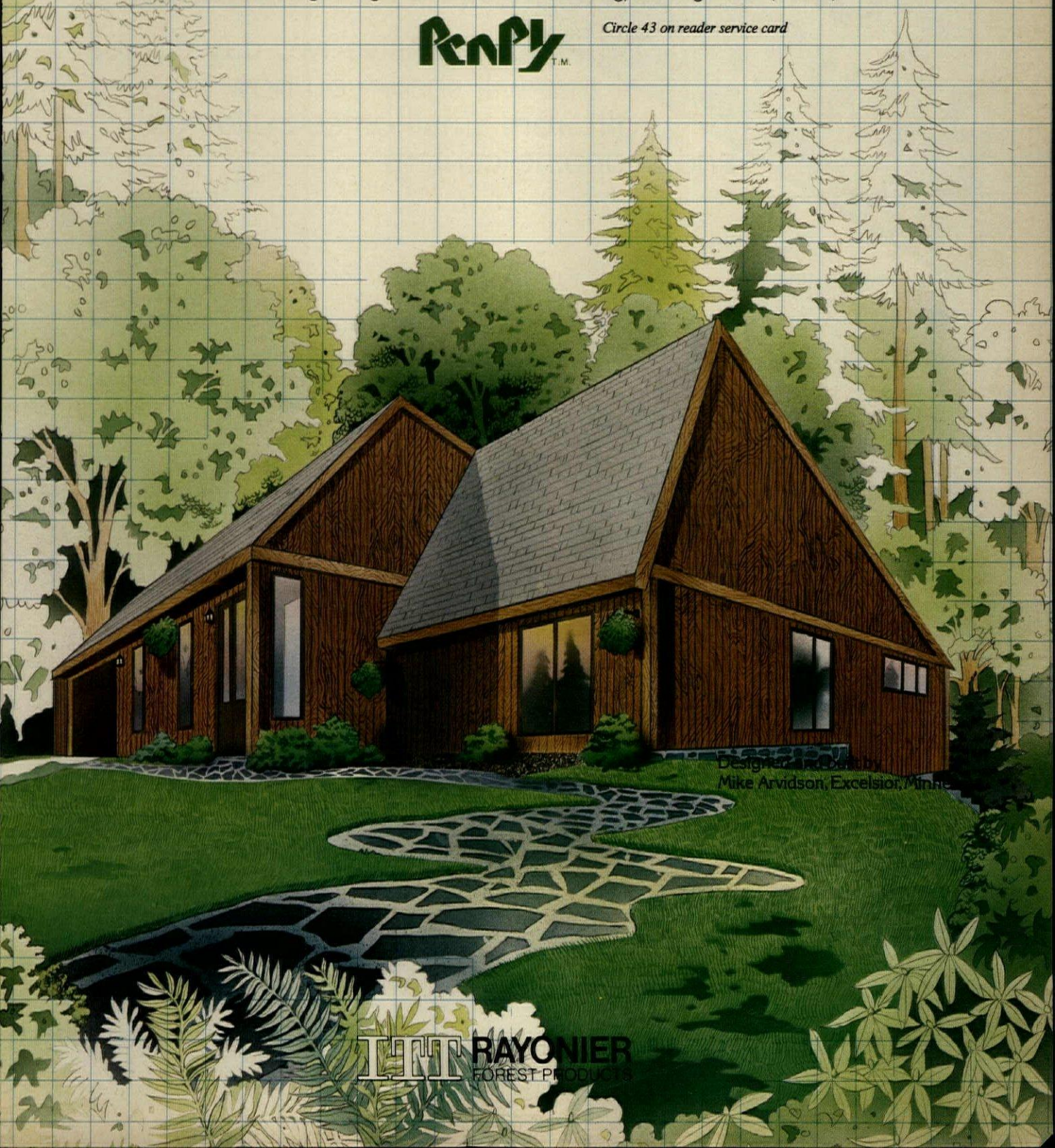

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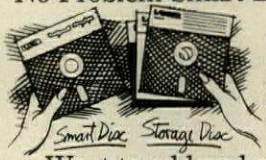

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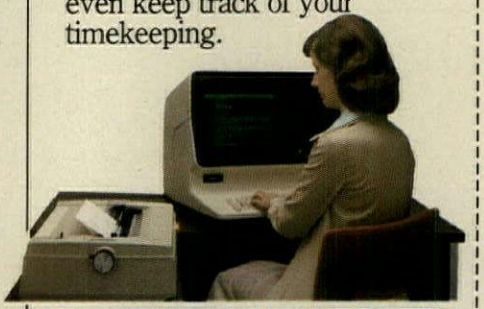

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COMING TO TERMS

Start talking about the different kinds of housing produced off-site, and one fact becomes instantly clear: There is a total chaos of terms. Words like industrialized, prefabricated, panelized, modular, sectional and a host of others are tossed about according to the user's whim—often to describe a single house. The result: confusion and inaccuracy.

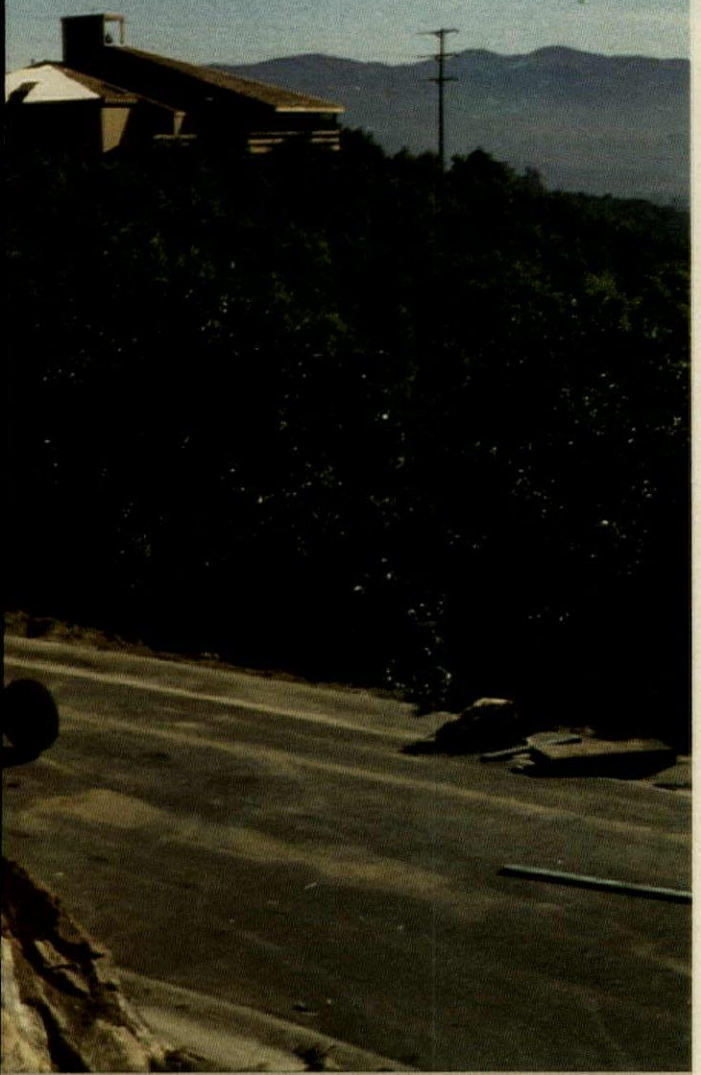
To avoid this problem, here are the definitions of some important terms you'll come across in this story:

Factory-built housing: A generic term used to describe housing produced either totally or substantially in a factory. This term includes all the housing types listed below. It does not, however, cover pre-cut packages and site-built homes that include only one or two prefabricated components such as floor and roof trusses.

Mobile home: A living unit built to the specifications of the National Manufactured Housing Construction and Safety Standards Act of 1974 and designed to be used with or without a permanent foundation. A mobile home may be a single-section—8 to 14 ft. wide by 40 to 75 ft. long—or a multi-section—two or more single sections fit together. The 1980 Housing and Community Development Act changed the term mobile home to manufactured housing.

Modular housing: Living units built to meet the same code specifications as site-built homes and designed for placement

IS FACTORY-BUILT HOUSING READY TO DELIVER?



on a permanent foundation. Modular units are shipped from the factory in two or more three-dimensional sections, also called modules, which are united at the site.

Panelized package: A system of wall panels made in the factory and erected at the site. Packages can include roof and floor trusses and mechanical cores that hold kitchen and bath fixtures. Two kinds of panels are available: open-wall panels—one side of the panel is finished in the factory, the other side finished at the site—and closed wall panels—the panels are completed at the factory and include insulation, electrical wiring, interior wallboard and exterior finish.

Sectional home: A name for a single-family modular home. It refers to the sections that make up a modular home.

Factory-built housing is a good idea that promised too much too soon. In its early days, the industry did a lot of talking about how efficient factory production lines were going to significantly reduce homebuilding costs and meet this country's demand for low-cost housing. Even the federal government got into the act through programs like Operation Breakthrough.

But, when you get right down to it, the industry produced more talk than affordable housing. By the time a factory-built house was erected on site and finished, it didn't really cost much less than a site-built house after all—and it often cost more. Which, in itself, is no crime. Problem was, though, that the industry's unfulfilled early promise gave it a long-standing image problem that boiled down to this: Factory-built housing's success was measured *solely* by its ability to "solve the affordability problem." It was a yardstick the industry had a hard time shaking.

This 16-page overview shows that the factory-built industry is finally coming into its own—and on its own terms. Housing manufacturers are telling builders they've got more to offer than price. Panelized manufacturers, for instance, are stressing control and service. They're pointing out ways for small builders to use limited capital and time more efficiently. Modular producers are emphasizing quality and style. And they're wooing builders with financial incentives. And mobile homes—due to a number of important zoning, financial and legislative changes discussed in this story—are producing more and talking less when it comes to low-cost housing.

For an in-depth look at factory-built housing's new image and new goals, turn the page.

—FRAN J. DONEGAN, WALTER L. UPDEGRAVE

MOBILE HOMES

They could be the affordable homes of the future

The Orchard, Santa Rosa, Calif.: A mobile home community by R.C. Roberts & Co.

Except they aren't supposed to be called mobile homes anymore. By authority of the 1980 Housing and Community Development Act, the term mobile home has been officially changed to manufactured housing.

The significance of this change goes beyond mere semantics. It illustrates a shift in both government and consumer perception of mobile homes, the result of which is this: Mobile homes are climbing toward equal footing with conventionally built housing. Making that climb easier is the glaring need for affordable housing in this country—a need neither non-site or in-factory builders have satisfied. Whether by default or by choice, mobile home manufacturers have already begun—and seem eager to continue—to assume the role of providing low-price housing.

Five years ago, they wouldn't have been able to take on the job. A number of obstacles—zoning problems, financing limitations, the public's wariness of the homes—either singly or combined would have prevented it. Today, that's all changed. Mobile homes on the owner's land are now considered real property, not personal property, and are financed and taxed as real estate. Zoning restrictions have eased and a new federally imposed building code has made mobiles a better-constructed product. Most important, more and more mobile homes look like site-built homes inside and out. And in many places they're being marketed and sold like conventional housing in subdivisions as well-planned as those for site-built homes.

Mobile home subdivisions

Although they've been noticed more the past few years (HOUSING, May, '79), mobile home subdivision aren't exactly new. In fact, Syd Adler, president of Design Communities, Inc., Bradenton, Fla. pioneered the first one in Sarasota back in 1954: Trailer Estates, 1,450 units, mostly 8 ft. wide, on 2,400-sq.-ft. lots. Still, the move to subdivisions is big news in the mobile home industry for two reasons: One, it's helping the industry shake the trailer park image. Two, it provides the industry the opportunity to grab a significant share of the low-to-middle part of the traditional housing market—namely, prospects who would normally shop for single-family homes and townhouses.

Adler's most recent subdivision, in Venice, Fla., shows just how far the mobile home industry has come since 1954. An adult condominium community on a 135-acre site, Harbor Isles consists of 650 two-bedroom, two-bath homes that sell for between $39,950 and $70,000. Homes vary in size from 900 to 1,800 sq. ft., while lot sizes start at 4,640 sq. ft. and run up to 5,400 sq. ft. Appliances, drapes, carpeting and landscaping are included in that price, but not, as in the earlier trailers, furniture. Notes Adler: "We've also got amenities like fireplaces, wet bars, storage areas and carports."

Besides the move to well-designed units in subdivisions, Harbor Isles points to the growing trend toward joint-venture deals between mobile home manufacturers and developers. The reason: Manufacturers see the future growth of the industry in providing affordable housing, and joint ventures are a good way of grabbing a share of that market.

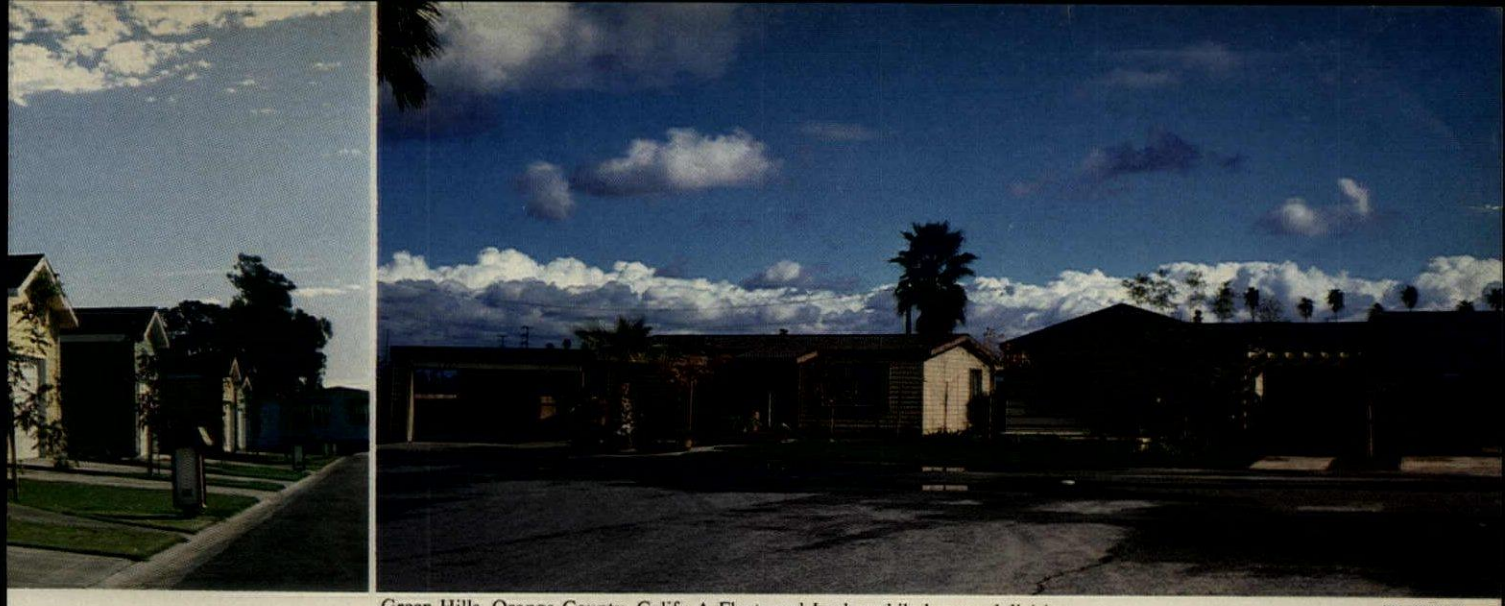
At Harbor Isles, the second largest mobile home manufacturer in the country, Fleetwood Enterprises, Inc., struck a joint-venture deal with Adler similar to those done in conventional subdivisions. Fleetwood provides the capital for the acquisition and development of the land. Adler develops the project and markets the units. Profits on the sales are split 50-50, the majority of sales consisting, of course, of Fleetwood units.

While the benefits to such an arrangement are pretty much the same as with any other joint venture, there's an extra benefit to dealing with a mobile home manufacturer. By going to mobiles, rather than conventional homes, a developer like Adler can get a house on site faster. This means he cuts interim financing costs on the unit itself. Also, the quicker delivery of units gets him out of the project faster, reducing the length of time he's financing site improvements.

And perhaps most important, the developer can also offer a home at a very low price. Although cost figures are generally slanted in favor of the person giving them, mobile home industry spokesmen estimate a $17.80 cost-per-sq.-ft.—quite a bit below the NAHB-estimated national average of about $30.00 for conventional homes. In many ways the comparison is unfair—the two products are built to different codes and different quality standards. But this much is clear: Compared on price alone, mobile homes are cheaper.

Two years ago, William W. Weide, Fleetwood's president, announced the company's intention to go after subdivision sales in a big way by acquiring and developing land. After a two-year taste of the development business, that approach has been put on the back burner. Now, says Dave Marriner, the company's treasurer, joint ventures are the more likely route.

This tactic especially makes sense when doing subdivisions in areas where the approval process can stretch to several years—areas, for instance, like Orange County, Calif. where Fleetwood is doing a joint venture with builder John Lusk. That project, Green Hills, is a hybrid of factory-built and site-built housing which has so far been approved for 200 Fleet-



Green Hills, Orange County, Calif.: A Fleetwood-Lusk mobile home subdivision. JIM SWITZER

wood units and 50 Lusk homes. Eventually, the local zoning board willing, the project will consist of 600 homes—400 Fleetwood, 200 Lusk—with a retail value of $80 million.

Prices for the mobile homes will range from $70,000 for a 960-sq.-ft. home to $90,000 for the largest unit at 1,666 sq. ft. The Lusk homes will run $200,000 and up. The difference in price doesn't mean the Fleetwood homes will stand out as sore thumbs next to their more expensive neighbors. Fleetwood units will feature vaulted ceilings, clerestory windows and asphalt shingle roofs. These are not standard Fleetwood units, rather ones designed specially for this project by Lusk and Fleetwood. How much do the extra features in these units add to construction costs? Fleetwood is not prepared to say. However, Marriner does note that "the more we do to bring our product closer to conventional housing, the less difference there is in cost."

Other manufacturers are also selling mobile homes with the land in the same way conventional housing is sold. Champion Home Builder Co., Dryden, Mich. has launched a two-pronged attack: One, to acquire—and develop—land for subdivisions. Two, to acquire scattered lots for mobile homes in rural and semi-rural areas. It will attempt this through its Champion Home Communities, Inc. subsidiary. That unit's president, John Seibel, is busy building an inventory of lots which, if present plans pan out, will be marketed through Century 21 Realtors in the lot areas.

On the subdivision front, the company expects to start a 400-lot mobile home project in Flint, Mich. by fall of this year. Also planned is a 193-lot subdivision in Huron Township, Mich., but, says Seibel, that's been postponed due to problems. He says there are no plans at present for Champion to look for joint ventures with builders or developers.

Financing changes

The growth of mobile home sales in subdivisions and on odd lots would not have been possible without some advances in mobile home financing—specifically, the opportunity for buyers to get conventional long-term mortgages. Earlier financing arrangements—installment loans similar to those offered for automobiles—prevented mobile homes from effectively catering to the traditional first-time buyer. The low price of the home was washed out by the higher down payment and monthly carrying costs necessitated by the short-term installment loans. Today, financing has become—and is still becoming—easier to get for mobile homes. Here are a few recent developments:

- On January 12, FHA announced it would insure mortgages on double-wide mobile homes on owned land under its Title II program, opening up 30-year financing for mobile homes with FHA-approved lenders.

Trailer park goes condo

Syd Adler, who in 1954 developed the first mobile home subdivision in the United States, has come up with what should be another first for mobile homes: a condominium conversion.

Palm Lake Estates, Bradenton, Fla., was developed in 1973 as a 292-lot mobile home park. In February it was turned into a "horizontal condominium," a form of condominium ownership which is in some ways similar to fee-simple.

Approximately 97% of existing residents decided to convert, says Adler. What each got was title to his individual lot and an undivided interest in all common areas, which include extensive recreational facilites and a 25-acre lake. The cost: $9,300 at the low end, $12,900 for lots facing the lake. A local lender offered 80% financing over a fifteen-year term. Residents also pay a $33 per month condominium association fee which provides maintenance and a few other necessities—like cable TV.

Adler sees such conversions offering advantages to owners and renters of such parks. "The owners get a nice capital gain on the sale of the park," he says. "The residents pick up the appreciation on their property, and don't have to worry about future rent increases." Rents ran about $100 per month. At 80% financing most residents broke even when rent and mortgage payments are compared.

Adler is considering more rental park conversions, but sees a problem if tenant resistance to conversions isn't properly handled. "This threatens to pose a bigger problem than in the regular conversion market," says Adler, "because mobile home park tenants usually have a higher capital investment in their homes than the apartment dweller. They can't just pick up and leave." Aware that bad publicity could hurt the market, Adler says he'll only convert when at least 75% of the residents give their okay.

The only other obstacle he sees to park conversions is where condominium laws don't allow "horizontal condos." The way around that: "Go co-op." —W.L.U.

TO NEXT PAGE

Many mobile homes look and feel like site-built homes

●Last August, Fannie Mae approved a 42-unit mobile home subdivision just outside Tacoma, Wash., making the home-and-lot package eligible for a 30-year mortgage at 5% down through Pacific National Bank of Washington. This was the first such Fannie Mae approval; others are expected to follow.

●VA recently created a single-interest-rate loan for financing mobile homes on owners' lots. Previously, buyers had to take separate notes at two different rates. This follows a move by VA last August to increase the VA guaranty on mobile home loans to the lesser of $17,500 or 50% of the loan amount and to extend the term of the guaranty to 15 years for single-wides, 20 for doubles.

In addition to the above, private lenders—S&Ls, banks, mortgage companies—are offering a variety of terms to buyers, even where VA, FHA or Fannie Mae approval doesn't exist. For several years now, through a variety of subsidiaries, Citicorp has offered 25-year loans at 80% of value to mobile home buyers. Other lenders are offering similar deals where down payment requirements vary between 5% to 25% and repayment period runs from 10 to 30 years.

At Harbor Isles, for instance, Adler offers buyers two plans. One, through Citicorp's City Homeowners, Inc. subsidiary, requires 20% down and offers a 25-year term. The rate is comparable to conventional mortgage rates. Adler's second plan is through Coast Federal, a local S&L, and offers a 30-year term with as little as 5% down. To get this 95% financing, Adler brings in Mortgage Guaranty Insurance Corporation to insure the top 15% of the loan. This is a far cry from the financing at Trailer Estates, the first mobile home subdivision, where lot and home were on separate notes, home on a five-year term, lot on seven.

In Eugene, Ore. developer Bob Harrison offers the same Citicorp package to buyers at Creswood, a 47-unit mobile home subdivision. He's also using a state VA program which gives a 25-year loan with 5% down at the incredibly below market rate of 5.9%. Harrison's project has also been approved for a HUD program through which he gets 30-year, FHA-insured financing at 13½%.

It's important to note that despite these breakthroughs, installment-type loans with short terms still account for somewhere around 70% of mobile home financing. Average loan maturities run from 10 to 15 years, according to the Manufactured Housing Institute, the association for mobile home makers. Similarly, it should be noted that, by far, the majority of mobile homes sold today are going onto rented land. The number being put on scattered lots and subdivisions, however, is definitely on the rise.

Financing for mobile homes would never have been blown this wide open without mobiles making the transition from personal property to real property. Mobile homes are now considered real estate and appreciating, as opposed to depreciating, assets. Just how much the units appreciate depends on a number of factors—just as with any other property. The size of the mobile home, its geographic location and whether it sits on an owned or rented lot all affect its rate of appreciation. Robert Berner, a Citicorp vice president who oversees Citicorp's $2 billion portfolio of mobile home mortgages, says, "Given a mobile home in the proper location on owned land, it should appreciate at the same rate as conventional housing."

Early this year, Citicorp created a new subsidiary, Citicorp Acceptance Corp., St. Louis, Mo., to handle and expand its existing portfolio. Berner says Citicorp sees the manufactured housing industry as a "viable, growing business" for two simple reasons: "There's a tremendous need for affordable housing in this country. And the conventional stick builder has priced himself out of the market."

The New Code

Behind all the strides mobile homes have recently made is the improvement in the product itself. Much credit for that goes to the Federal Mobile Home Construction and Safety Act of 1974, the national, uniform code to which all mobile homes must be built. It replaces two other codes—American National Standards Institute (ANSI) and National Fire Protection Association (NFPA)—which had provided voluntary guidelines to manufacturers. "What HUD did," says Walter Benning, president of MHI, "was take the best of ANSI, NFPA and a few state codes and put them together into a national pre-emptive code. No state can alter it by making its requirements either more or less stringent."

The benefits to the new code have been many, perhaps most important being that it helped dispel negative consumer and shelter industry perceptions concerning the quality of mobile homes. Also, it saved manufacturers from having to adapt production lines to meet standards of the more than 1,800 local building codes across the country. HUD-contracted inspectors enforce the code at the factory during the construction process.

A developer only need show his HUD inspection sticker for his home to be put on land zoned for mobile home use. Where land isn't specifically zoned for mobile homes, the developer can apply for a zoning change and a waiver of local building code requirements. This waiver request can be denied, but, says Benning, "courts have ruled that communities can't use restrictive zoning to outlaw mobile

JIM SWITZER

Interiors often include such features as the vaulted ceilings, exposed beams and fireplace shown in these Fleetwood models.

homes. They must provide for mobile home parks or subdivisions in their planning." Some states, notably California and Texas, have even passed legislation requiring that mobile homes be considered eligible for placement on any land zoned residential.

Many housing industry observers—particularly makers of modular housing, which must meet the same code requirements as site-built houses—like to point out that the HUD mobile home code is far less stringent than such model codes as the Uniform Building Code and the Standard Building Code. MHI's Benning, not surprisingly, feels they're not that far apart. Leaving ample room for disagreement, interpretation and subjective judgement, this fact emerges unchallenged: It costs more to build to the model codes than to the HUD mobile home code, as much as $7 a square foot more according to Benning. Still, he contends the consumer doesn't get an appreciably better product for the extra money. Modular manufacturers and conventional builders, no doubt, disagree.

Conclusions

Most evidence indicates that mobile homes will assume a major role in the future—and they're doing pretty well at present—in providing affordable housing. The industry sees a wide-open market at the low end and has the inclination and means to fill it. Here's why they should be able to do so:

- Mobile homes are the only housing many people can afford. The average price of a multi-wide unit, according to MHI, is $27,500, including furniture and appliances and excluding land. Given the pent-up demand for housing, the low number of starts the past two years and the fact that most first-time buyers can't afford the conventional product, it's logical to assume people will turn to what they can afford.
- Better design and construction of mobile homes will aid this process. Some who considered mobiles in the past decided against them because they were too big a compromise. With the new look of mobile homes, buyers make the compromise more easily or find it's not a compromise at all.
- Mobile homes increase in value—especially those in well-planned, landscaped communities. This should qualify them as legitimate starter housing since first-time buyers can rely on equity buildup in the mobile home which can be used for a later move-up purchase.
- Private and government-insured financing packages have opened up the mobile home market immensely. True, most homes are still bought with installment loans, but the groundwork has been laid for mobiles to be financed like conventional homes.
- Mobile homes offer special advantages to builders and developers. By going to mobile homes, a builder can let the manufacturer worry about construction while he worries about developing and selling the project. The builder can operate with less risk, less capital and less overhead. Or, he can keep the same overhead and increase production.
- Pressure for affordable housing will increase at the federal, state and local levels and further ease zoning and financing restrictions. Result: more mobile home subdivisions.

There is one caveat: Already mobile home prices are creeping up as manufacturers add amenities so the homes can compete with conventional homes. Higher amenity levels usually translate to higher profit, so it may be tempting for the manufacturers to follow a course of catering to the upper end of the market. If this occurs, they will have shunned the role of providing low-cost housing not because they couldn't handle the role, but because they chose not to.

Mobile home resale network

Bob Silverman says he wants to be "the Century 21 of mobile home resales." An odd statement from a man currently negotiating with the ERA realty network to carry his listings of used mobile homes in ERA offices around the country.

Early last year, Silverman started Mobile Home Finders of America, a Florida-based brokerage specializing in used mobile homes. And if his talks with ERA work out, Silverman stands to become the first broker offering multiple listings of mobile homes.

"Most of the people who come to us are from up North," explains Silverman. "We get a lot from New York, Ohio and Michigan." By listing with ERA brokers in those states, Silverman hopes to get a crack at out-of-state buyers before other Florida mobile home salesmen do.

At present, there are three Mobile Home Finders offices on the west coast of Florida—one each in Bradenton, Venice and Fort Meyers. Silverman plans to add at least twice that number on the state's east coast by the end of this year. Through these he'll sell used mobile homes ranging in price from $22,000 to $59,000, some with land, most without. Lot rentals vary between $60 and $180. Through a Sarasota S&L, buyers can get 90% financing on a 15-year term for single-wide units, up to 20 years for doubles. So far, Silverman estimates he's sold about 250 mobile homes. —W.L.U.

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MODULAR HOUSING

It's breaking out of the affordability box

Modular housing has shifted to a strategy of pushing quality and style in an attempt to grab a larger share of the housing market. Ten years ago, its banner had been "affordability," and it had cultivated the image of an industry about to spark a revolution that would stand the conventional housing industry—slogging along with supposedly antiquated building methods—on its ear.

The revolution never came.

"We concentrated on a cheap product," says John Kupferer, executive vice president of the National Association of Home Manufacturers, which counts manufacturers of modular homes among its members, "and we turned them out like cookie cutters." But the industry stopped doing that, he says, when "we found we could sell a better product." Some might re-phrase that last sentence to read: When they found they couldn't sell the cheaper product—at least not enough of them to start any revolutions.

The sentiments expressed by John Baxter, general manager of operations for Boise Cascade, are typical of how the industry sees itself now. "Modular housing is *not* going to be the answer for affordable housing in the next ten years," says Baxter. NAHM's Kupferer agrees, and glady passes the affordability banner on: "Mobile homes really have the answer when it comes to affordable housing." And instead of that revolution, Kupferer sees modular's share of the housing market growing via evolution.

Quality and design

The thrust of this evolution, says Kupferer, is that "dollar for dollar, you get much more value in a manufactured house." There will be no more trying to stress a lower cost-per-square-foot than conventional builders': "We never say we can beat the other guy's price. We don't want to be known as the cheaper house." Instead, the emphasis will be placed on the quality control available through the factory production line, upgraded amenities in the home and more flexibility in style and design.

And where modular manufacturers used to harp on the inefficiency of conventional building methods, they now sometimes draw favorable comparisons between the factory process and site building. "What we're doing, is stick building in the factory," says Jeff Thompson, a vice president at Cardinal Industries at Columbus, Ohio, a major modular producer.

Unibilt Industries, Inc., a modular manufacturer in Vandalia, Ohio, last year introduced a new home into its modular line which well illustrates modular's move toward the middle and upper end of the market. Significant too is the way the new home was introduced: At a Dayton Homearama which, with the exception of Unibilt's entry, consisted entirely of conventionally built homes.

Doug Scholz, president of Unibilt, named the new model The Stonewood because it features a wood and stone-veneer exterior. It's a 2,800-sq.-ft., tri-level home made from four sections which are 12 or 14 ft. wide and 28 or 32 ft. long. The three-bedroom and three-bath home comes with a luxury amenity package, including intercom and central vacuum systems and a two-tier rear deck.

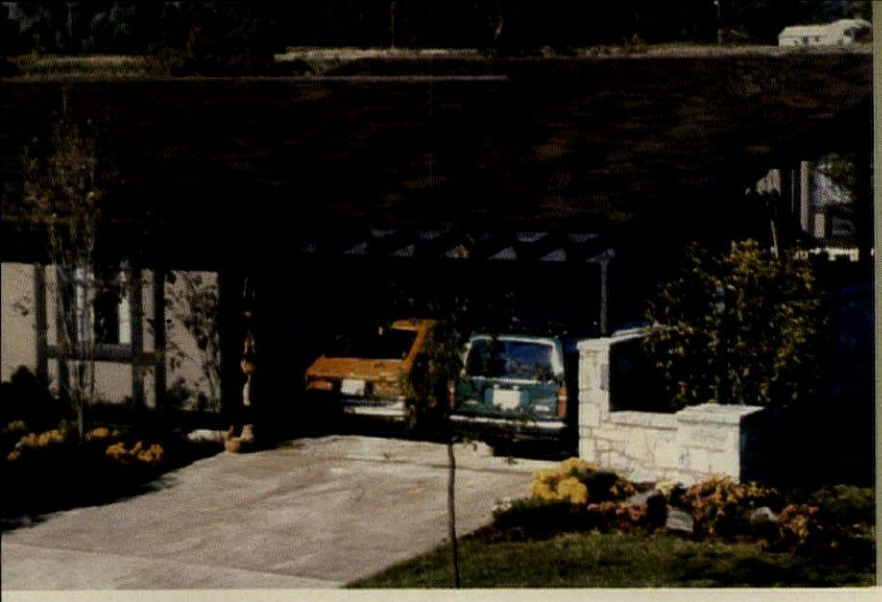
"To our knowledge," says Scholz, "this is the first modular home to be included in a Homearama." The Stonewall sold for $125,000, but Scholz believes it would have gone for $150,000 were Dayton's economy not suffering the effects of the downturn in the auto industry.

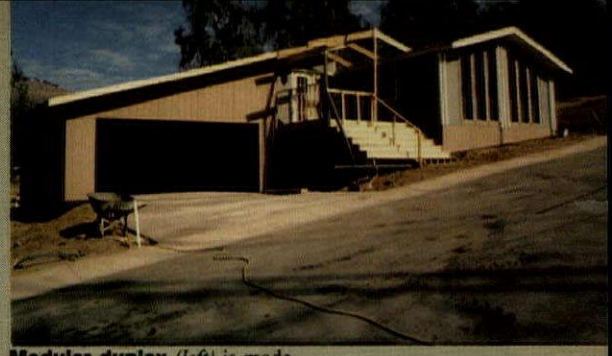
At Continental Homes, which builds over 2,000 units a year at plants in New Hampshire and Virginia, the trend is also towards style and flexibility. For instance, one Continental model combines two factory methods—modular construction on the first floor and panelized on the second. "Designs are getting more complex," notes Ted Cahow, president of Continental's New England division in Nashua, N.H. "And we're including more energy features."

The energy package featured in homes coming out of the New England division includes R-19 walls, an R value builders usually meet by going to 2×6 studs. Continental, however, sticks to 2×4s and R-13 batt insulation, and brings the R value up to R-19 by adding ¾″ Styrofoam sheathing. The homes are built so tight in the factory, says Cahow, that an attic vent fan, activated by the buildup of heat or humidity, was added to avoid condensation problems.

Developers Jack Mahan and Homes Capital Corp. chose to go with modular housing at Oro Verde, a planned 307-unit $30-million development in Escondido, Calif., for some unusual reasons. The 100-acre site for the project sits on hillsides north of Escondido and contains a 5,000-tree avocado grove. The city wouldn't allow the grading and removal of trees that would have been necessary to build the homes on site. The solution: A modular home placed on an all-weather wood foundation, both of which could be produced off site. "After we put the foundation in," says Mahan, "we use a 90-ton crane to lift the house up and over the trees and nestle it down onto the foundation."

The homes, which range between 1,299 and 2,000 sq. ft. in size, start at $90,000 and go up to $150,000. All are one-story and consist of two to five separate sections. Once the crane sets the sections on the foundation, a five-man crew "marries" the sections and then builds decks, trellises, overhangs





Modular duplex *(left)* is made from standardized modules shown below. Each unit has two bedrooms and measures 1,152 sq. ft. Homes at Oro Verde, in Escondido Calif. *(above)* consist of factory-built sections coupled with garages built at the site.

and a detached two-car garage. This whole process takes about four days.

So far, seven models have gone up and Mahan expects sales to start in June, by which time he, apparently an optimist, hopes interest rates will have fallen. Mahan says he'll be able to guarantee buyers a ready-to-live-in home 60 days from the day the sale takes place.

The developers will buy the modular units from LCS, (formerly Levitt Construction Systems) Fountain Valley, Calif., which produces about 500 modular homes a year. The remainder of the homes at Oro Verde will come from four or five other manufacturers in the area.

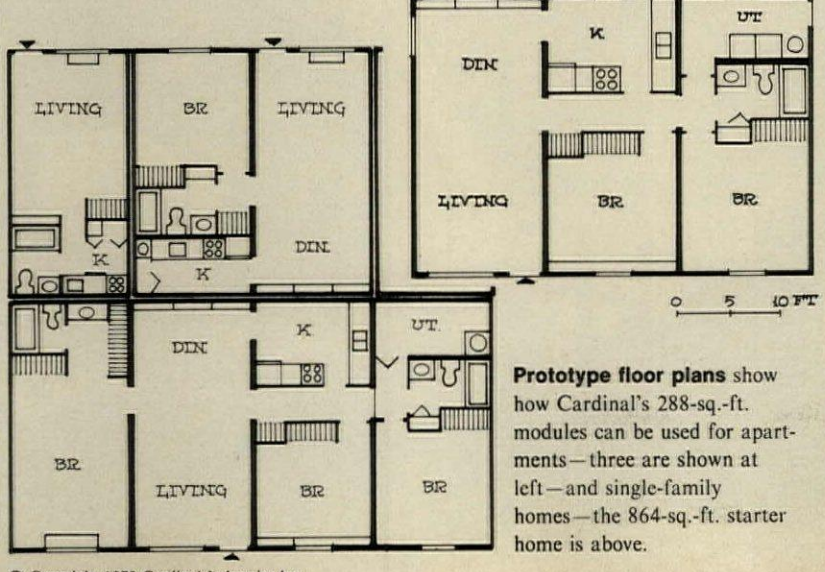
Advantages to builder

If modular manufacturers offered builders no more than a house comparable in quality and price to a site-built one, there would be little incentive for builders to consider switching to a modular system. But modular manufacturers believe they can offer builders some tangible benefits that can't be matched by conventional building.

For example:

More control of a project. Dealing with a modular manufacturer is a "clean" way of doing business, says NAHM's Kupferer, clean in the sense of the builder having less involvement with the construction process. The builder still has to see to site improvements and finishing, but the actual construction of the unit is left to the manufacturer. There's no dealing with the whole gamut of subs involved in building a home on site. For one, this means fewer headaches to the builder. It also means, says Baxter of Boise Cascade, "increased production without increased overhead, or the same production with less overhead."

Interest expense savings. By working with a modular manufacturer, a builder should be able to cut his interim finance costs for two reasons. First, the builder no longer finances the labor and materials used to build the home. Second, since manufacturers can construct a home and get it on site faster than a conventional builder can build one, the builder finances site improvements for a shorter period of time.



Prototype floor plans show how Cardinal's 288-sq.-ft. modules can be used for apartments—three are shown at left—and single-family homes—the 864-sq.-ft. starter home is above.

The actual cost savings resulting from these two factors are difficult to gauge accurately for several reasons. For instance, some of the money saved by not having to finance the construction costs of a unit are passed on to the builder by the manufacturer who's had to finance his inventory purchase. Although this cost isn't labeled by the manufacturer, the price he charges a builder for a unit certainly reflects it.

Cardinal Industries' Jeff Thompson estimates a builder can reduce his interim finance costs by 80%. Boise Cascade's Baxter says that interim finance costs for a unit can be totally eliminated if the builder can correctly coordinate the buyer's closing with delivery of the unit. Boise Cascade gives the 305 builders in its dealer network 30 days to pay for a home. The builder gets a 1% discount if he pays for the home within fifteen days after delivery, a 2% discount if he pays within seven days.

Less risk. This benefit stems from the fact that the builder lets the manufacturer make the investment in materials and labor for the home. Also, since manufacturers quote a firm price on a home, a builder doesn't have to worry about his margins being eaten away by rising costs during the construction process. A smaller, but nonetheless noteworthy, saving comes from reduced losses from on-site pilferage and vandalism.

Increased market radius. "Modular will put housing where it might not otherwise be built," says John Baxter. Oro Verde, the project set in an avocado grove, is one example of this, but single-family housing in small towns and rural areas is where modular has had, and will continue to have, its greatest effect. In areas where skilled labor is scarce and materials have to be transported to site at great cost, modular housing holds its greatest potential for providing single-family

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Modular construction means fewer headaches to the builder

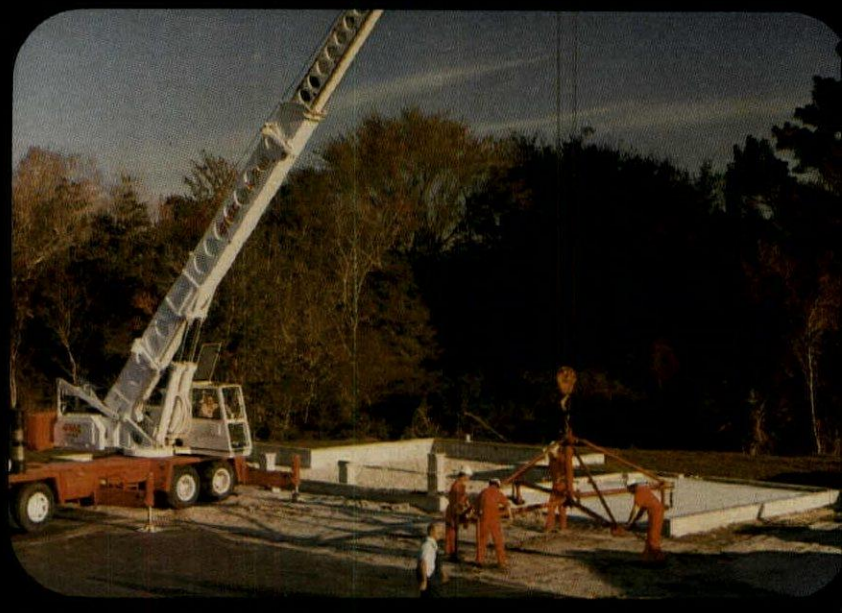
homes, notes John Kupferer. The further the site is from densely populated areas, says Kupferer, the greater the advantage modular systems have over conventional building. In short, where it may not pay a builder to go in and build a home on site, he might be able to use a modular home.

Strong in multifamily

The multifamily market is particularly well-suited for modular construction. The factory method works well in this market because the projects involved tend to be large and demand less of an individual stamp for each unit. The larger number of units per project and the ability to produce a repetitive product allow the factory process to attain full economies of scale. As opposed to two to four different sections which make a single-family modular, multifamily units normally consist of the same modules stacked side-by-side, then one atop the other. Boise Cascade, which does multifamily residential and special purpose—dormitories, barracks, etc.—units, usually stacks its modulars two stories high, but has gone as high as five.

Cardinal Industries, the largest manufacturer of multifamily units in the United States, offers a perfect example of how the factory system works for multifamily housing. Last year, in a market hardly conducive to rentals, Cardinal produced 3,000 rental units, giving the company a total of 17,000 apartments—all made from a prototype 12-ft.-by-24-ft. module.

A studio apartment is one 288-sq.-ft. module. Add another to it, and it's a one-bedroom apartment. Add still another, and it's a two-bedroom apartment. Put them together in 50- to 60-unit, one-story clusters, and it's one of the more than 400 apartment complexes Cardinal has built in seven states. All apartments are both shipped and rented furnished.



Construction process for a single-family modular home *(photo sequence begins at top, left)* goes as follows:

Four-man setting crew and 30-ton hydraulic crane ready lifting frame at site. Truck arrives with modular sections, five in this case.

Crew fits lifting frame to each section of the home and crane lifts section off truck. Crew guides section as crane lowers it to the appropriate place on the foundation. Once all sections have been set, crew unites sections. Crew next assembles garage which is made of factory-built panels. From delivery of section to closed home takes about five hours. All interior finishing and landscaping are usually completed within 30 days.

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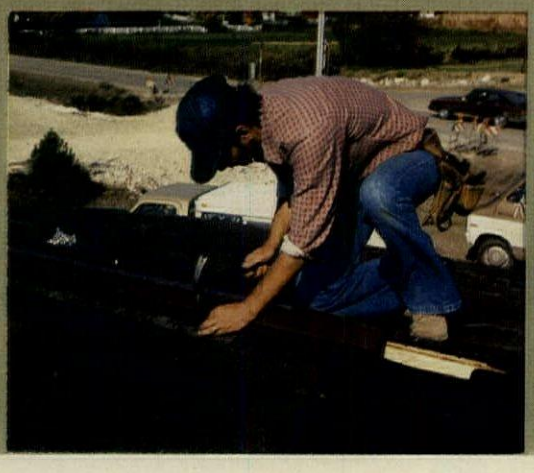


On-site finishing of modular homes is often performed by the manufacturer's delivery crew. The builder may opt, however, to have his own subs do the work.

Cardinal uses a syndication program *(see box, below)* to sell off anywhere from 50% to 90% of a complex. Through the Cardinal Apartment Management division, the company manages about three-fourths of the complexes. Motels too are a part of the Cardinal network, and are made from the same 288-sq.-ft. module. The company has 23 motels in operation and plans to add nine this year. Most of them operate under the Knights Inn name and are concentrated in the Midwest with a few in Florida.

The company has begun expanding into the retail housing market with condominiums—essentially the same as the apartments, but done in duplexes and fourplexes and with higher quality carpeting and appliances—and single-family homes. The same workhorse module will be adapted to the single-family market via what Cardinal calls the concept of the "expandable home." The idea is that a buyer can go from an 864-sq.-ft., two-bedroom starter home to a 1,440-sq.-ft., three-bedroom move-up by adding 288-sq.-ft. modules.

The basic price for an 864-sq.-ft. Cardinal home in Sanford, Fla. is $24,000, excluding land. The 1,440-sq.-ft. model, which has a two-car garage, runs $49,000, again without land. At least eight configurations of three to five modules are available through Cardinal's "master plans," which suggest possible floor plans to consumers. In fact, Alan Cordill, vice president of Cardinal's single-family division, says the expandable home can go as large as 2,016 sq. ft.—seven modules—without getting unwieldly.

So far, condos and single-family homes have accounted for a relatively tiny portion of Cardinal's output. The company expects this part of its business to grow, however, and in anticipation of growing demand has opened a new 120,000-sq.-ft. plant in Atlanta.

Conclusions

The key to growth in modular housing is evolution, not revolution. "I don't see a spectacular growth for modular housing," says Kupferer. "I see a continued steady growth."

High interest rates should nurture this growth by making the advantages of lower interim finance costs and lower capital requirements more important to builders than ever before. Also, the lower risk in dealing with modular manufacturers should appeal more to builders in a stormy economic climate than in a tranquil one.

Most of this steady growth will occur in that portion of the modular industry striving to shake the "cheaper house" image. Price will be secondary to quality as a selling point and extra features and amenities will keep the price of modular housing in the same range as site-built homes. Quite simply, modular manufacturers have found that the higher profit lies toward the higher end of the line.

This doesn't mean that some modular manufacturers won't make a bid for the lower end of the market. Many are doing just that, particularly in small towns and rural areas where incomes and available financing won't support high-priced housing. Unibilt's Doug Scholz, for instance, in addition to the $125,000 Stonewall, has a Challenger line geared toward buyers who will use Farmers Home financing. The units will be small—834 to 1,200 sq. ft.—will offer fewer amenities and less design than The Stonewall, for instance, and will sell for between $38,000 and $42,000 with land.

And, finally, modular housing will continue to be an important factor in the multifamily market where the large numbers and standardized product allow the factory production line to operate most efficiently.

Cardinal's syndication deal

To finance its apartment complexes, which range anywhere from 4 to 400 units, Cardinal Industries, Inc. turns to a syndication program which works as follows:

Cardinal sells shares in the apartment project to a syndicate made up of one to six individual investors. Usually, the investors are professionals such as doctors and lawyers looking for tax shelters. The syndication can also be set up to attract investors who are interested in cash flow.

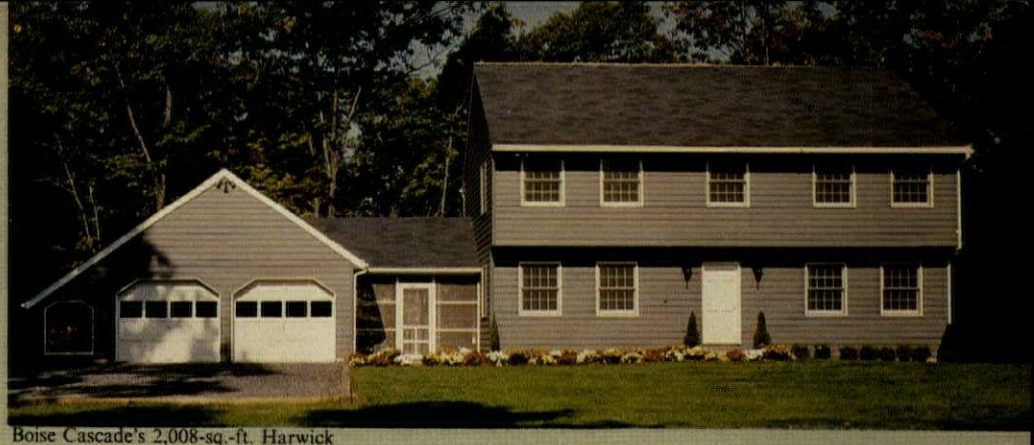
Cardinal retains anywhere from 10% to 50% ownership of the complex and assumes the managing partner role. The investors are limited partners. For managing the complex, Cardinal receives 4% to 5% of gross rentals as its fee, and gets an incentive bonus on top of that. The bonus is tied to the profitability of the project.

An interesting note on their system is that Cardinal most often syndicates the deal well into or after construction of the project. Cardinal's timing on bringing in investors, says Cardinal Vice President Jeff Thompson, depends on the company's cash flow and tax shelter positions. Some apartment and motel projects, he adds, may be held a year or more after completion before they're syndicated.

A final note: While all syndications to date have been done with individual investors, Cardinal is looking at pension funds as potential partners. —W.L.U.

PANELIZED PACKAGES

They can reduce risk—but not prices—in uncertain times



Boise Cascade's 2,008-sq.-ft. Harwick

You might expect price to be the big benefit of building with factory-made panels, but it's not. Most panel manufacturers aren't geared to mass-producing affordable housing. Some packages do cater to low-end markets, but they are competitive with, not cheaper than, comparable stick-built housing.

Why can't panelized beat conventional housing in price?

Because while on-site labor may be reduced, it is not eliminated. And much of what's left involves the more costly parts of the house—the mechanicals, for example, and the finishing jobs. Moreover, savings in on-site labor are, in large part, offset by plant-overhead and shipping costs, which of course are passed along to the builder and then to the homebuyer.

Even the amount of in-factory work varies throughout the industry. It normally includes roof trusses and floor systems. But there's a considerable range in the degree of panelization. Builders can opt for a closed-wall system: Electrical wiring, insulation, interior wall board and exterior finish are installed at the factory. Or they can choose an open-wall panel: The factory completes the outside of the wall and the builder finishes the job at the site. Some systems include pre-hung doors and windows or mechanical cores that hold kitchen and bath fixtures, and some don't. So in shopping manufacturers, the builder has a wide choice, which hinges on how much he wants to do at the site and how much he wants the factory to do.

Many of the components in panelized packages—trusses, for instance, and open panels—are available from local lumberyards for the same prices or less. But that doesn't faze the manufacturers.

"We don't have to beat the lumber yard on prices," says Gaylord Lindal, president of Viceroy Homes in Scarborough, Ontario. "We only have to match them because we offer other services." *(See below).*

Nor do panel packagers stress savings in direct costs.

"It is a general misconception that panelized housing offers a less expensive price alternative to stick-built housing," says Todd Robinson, operations manager for Boise Cascade, Boise, Idaho.

Basic benefits

Since they can't offer a less expensive price tag, manufacturers promote other advantages to their customers—generally the 3-to-15-house-a-year builder.

The most important of these: Panelized systems offer time-savings and control. Builders can shorten their construction cycles by anywhere from 30% to 50%, according to Bruce Junius, sales vice president of National Homes, Lafayette, Ind. That, of course, cuts the time span of construction loans—no mean advantage with interest rates at high levels—and lets the builder get off the site quickly and move on to other projects.

Big builders are well aware of these advantages. Some, like Fox & Jacobs of Dallas and Pittsburgh-based Ryan Homes, run their own panelizing operations. Others buy from panel manufacturers.

Kettler Brothers, developer of Montgomery Village in Gaithersburg, Md., for instance, designs panels and then has them fabricated by companies like National Homes Corp.

"This lets us close in a house in a few days," says Senior Vice President Charles Phillips. "It also gives us a better handle on labor costs and reduces pilferage at the site."

Ken Noorman, a 10-house-a-year builder from Grand Rapids, Mich., speaks as a more typical panelized customer: "We don't build Scholz

A small builder can offer custom designs and know the exact cost of the extras

Homes to save money. We build them to save time. We cut about 30 days off the time of construction."

Noorman cites a house he has just finished: "When we started, a stick builder was starting a similar house on the next lot. People are living in our house now, and he has just completed the decorating on his. It will be another three weeks before it's finished."

Robert Matthews, of Burlington, Iowa, used to be a conventional builder. Now he buys panelized packages from Wausau Homes. In his best year as a stick builder, he says, he managed to build ten houses with a crew of 15, plus subs. In his best year (1978) as a panelized builder, he completed 54 homes with a crew of 12 and no subs.

And because he can speed up the construction process, he can manipulate his financing more efficiently. "With a given amount of construction financing, I can build six houses a year, one every two months," Matthews says. "But a stick builder can only build four, one every three months. In other words, I can use my construction financing about 50% more productively than if I were still stick building."

Extras

With a little shopping around, a builder can find a manufacturer who will supply more than a stack of panels and a set of instructions. Some of the extras include:

- Designs that can be customized by the manufacturer's staff of architects and engineers.
- Model catalogs.
- Co-op advertising agreements.
- Market research.
- Financing.
- Consumer promotion.
- Construction and sales training.
- An erection service—some manufacturers send their own crews to put up and weatherproof the shell.

"This allows an individual to get into the housing business without getting into the construction business," says Chuck Lynch, general sales manager for Wick Building Systems, Madison, Wis. "They get speed in the construction phase along with the professional services of a manufacturer's architectural, engineering and merchandising staff."

Not all manufacturers offer every service. Company policy varies with each of the 200-plus panelizers now doing business.

Larger companies offer different products and services in different areas. Boise Cascade has plants in Alabama, Oklahoma and Virginia. Its Kingsberry line offers about 100 different floor plans and 300 different elevations. But each manufacturing center handles about 50 plans—selected because they are most marketable in that particular area.

There are also differences in the manufacturers' marketing arrangements with builders. Some will sell to any builder. Others have exclusive contracts with builders who handle only one company's line. And some offer franchise agreements.

Ryan Building Systems, a subsidiary of Ryan Homes, for example, has been establishing franchises in smaller markets like Erie and Harrisburg, Pa. Currently, the company has agreements with nine building companies. The local builder uses Ryan's name and products and takes advantage of the company's marketing and training services.

Varied design

Panelized manufacturers can supply designs for houses that run the gamut in price: from the low $20,000's to $250,000 and over. And, since many of the standard models can be customized, builders and their customers have a broad range of options. But this could be a mixed blessing: The more variety manufacturers offer, the less they can standardize production, the higher their costs go and the further they get from providing lower-priced housing for the starter market.

"The true purpose of manufactured housing is standardization," says Wallace Borger of Winchester Homes *(see box)*. "It reduces labor to the lowest possible denominator." Borger's company, a homebuilder owned by Weyerhaeuser, runs its own panelizing operation and sells a standard line of models. As a result, Borger says, Winchester Homes is able to undercut the competition—pricing its top-of-the-line model at $50-a-sq.-ft., while a comparable stick-built house in the same area ends up at about $60-a-sq.-ft.

But the majority of panelized manufacturers won't opt for the standardization route because, they feel, a flexible design package sells their houses.

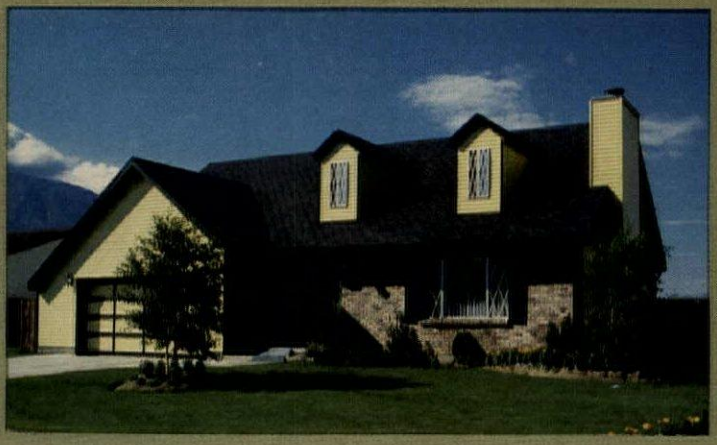
"The homebuyer likes to be part of the design," says Marvin Schuette, president of Wausau Homes, Wausau, Wis. "He wants the opportunity to individualize his house."

Smaller houses

Although plenty of 2,000-sq.-ft. packages are still shipped every year, manufacturers are beginning to produce smaller homes. Bruce Junius of National Homes says the conventional housing average in 1978 was 1,650 sq. ft., and National's was 1,500 sq. ft. In 1979 and last year with sales dropping, the company's average decreased to 1,350 sq. ft.

Todd Robinson of Boise Cascade says his company is putting more emphasis on the 1,000-to 1,600-sq.-ft. market because "this tends to be where the strongest segment is right now. We shy away from the higher end, although we do have models to fit that buyer."

Boise Cascade's 1,262-sq.-ft. La Plaz *(above)*.
Heritage Building Products' 2,870-sq.-ft. Lafayette *(left)*



Heritage Building Products' 1,380-sq.-ft. Hampton *(right)*.

Robinson noticed a pick-up in the company's multifamily business last year. He attributes the rise to the softness of the single-family market and to Boise Cascade's increased efforts in that direction. For the most part, however, the focal point for panelizers still lies in the single-family market.

Craig DeSimone, manager of marketing communictions for Scholz Homes in Toledo, Ohio, points out that the company's traditional best sellers, which are priced in the intermediate range, don't meet current demand for smaller, lower-priced housing. So two months ago, Scholz introduced its New American line, which retails for $60,000 to $90,000 and averages about 1,500 sq. ft.

Energy saving

Most designs normally follow the site-built trends when it comes to insulation, energy-efficient windows and doors and other energy-saving devices. Some stand out by promoting extra energy features. And some manufacturers are beginning to offer factory-built passive solar houses—a promising area for panelized manufacturers because of their design and engineering expertise.

The Solar Energy Research Institute recently set up a shared-cost agreement with a number of manufacturers to develop passive designs. One manufacturer—Acorn Structures, Inc. of Concord, Mass.—submitted plans for a series of four houses that make use of standard passive solar energy components, such as glass walls to absorb the sun's energy and masonry masses to store it.

Mark Kelly, an Acorn engineer, says the relatively simple designs were created for builders who have little experience with passive techniques. But despite the simplicity, Acorn ran into problems in developing a storage mass. Precast concrete couldn't be used because it isn't available everywhere. A Trombe wall looked like the best bet, but would be difficult to ship over long distances. The solution: The builders construct the wall based on Acorn's design.

Codes

Panelized houses must meet the same codes as conventional houses. No matter where a manufacturer ships, there will be a local inspector waiting to enforce his version of local standards. Generally, the builder informs the manufacturer's design department of any special requirements when ordering. Since manufacturers are used to dealing with custom work, making changes isn't a problem.

Marketing areas are pretty well defined: Most panelizers ship within 300-500 miles of the plant, although some will go further. So there's rarely a particular code requirement that baffles them.

However, John Kupferer, executive vice president of the National Association of Home Manufacturers, cites codes as the industry's biggest problem. He wants one code to cover factory-built housing, like the code the mobile home industry adheres to. Everyone agrees it would be easier to work with one code, but the codes now enforced haven't harmed business.

Conclusions

Factory-built housing no longer offers to revolutionize the housing industry, but has settled for a spot in its evolutionary growth. And that applies particularly to panelized housing, which ranks second to mobile homes in the number of factory-built units produced.

According to the *Red Book of Housing Manufacturers*—and the statistics

Doing it yourself

There is a way for builders to get into factory-built housing without buying from a manufacturer: by starting an in-house panelizing operation.

That's what Winchester Homes, Inc., a subsidiary of Weyerhaeuser Co., did. The compny started production in its Pasadena, Md. plant in September, 1979. At the end of the first full calendar year, it ended up with 96 houses under contract, and closed 76 of them.

Wallace Borger, chief operating officer for Winchester, feels a builder can look at himself in one of two ways: as a craftsman or as a businessman. As either one, he can produce a quality product. But as a businessman—someone who worries about reducing labor and material costs—he can help his company grow with the market.

To that end, Winchester leased a 12,000-sq.-ft. building and sank $57,000 into it for improvements and equipment. The company bought a used panelizing machine that is the core of the factory, three radial arm saws, a small overhead hoist, a compressor and automatic nailer, and some hand tools. Company workers built additional jigs and tables.

Winchester's plant, which has a 250-house-a-year capacity, is staffed by a manager and eight to ten workers. Borger figures he had to sell seven houses a month in the first year to break even. In 1981, he is expecting to build 200 houses.

A standard line of models fills the needs of both the high-end Washington, D.C. market and the blue-collar Baltimore buyer. —F.J.D.

TO NEXT PAGE

Most companies offer more than a stack of panels and a set of instructions

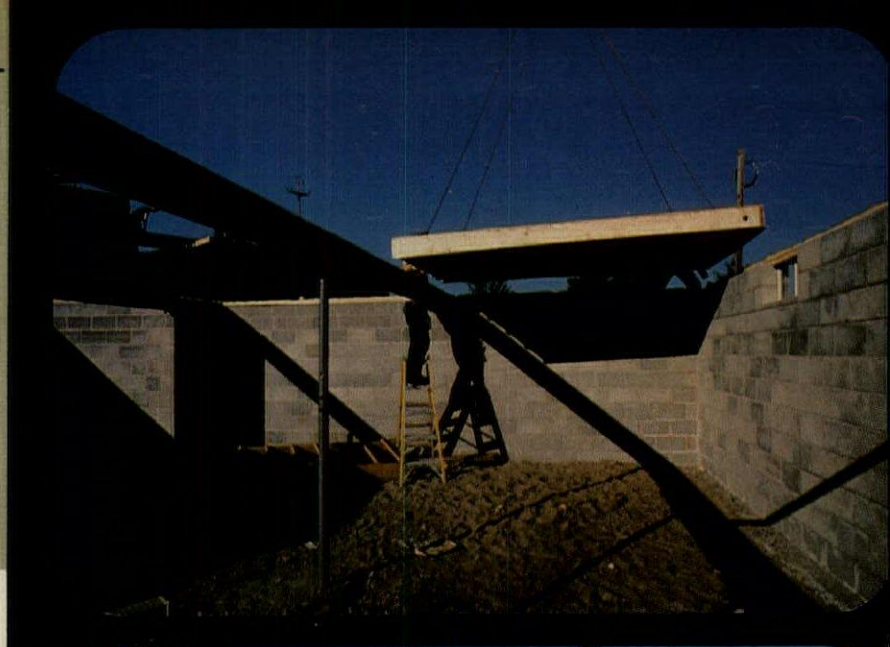
vary from source—panelized housing (excluding that produced by tract builders) captured between 6% and 8% of the housing market throughout the last decade. It will probably remain at that level.

"There have been higher expectations for factory-built housing in the past than the industry has been able to deliver," says Chuck Lynch of Wick Building Systems. "There will be a growing percentage of factory-built houses in the future, but I don't see any dramatic leaps forward."

If the panelized manufacturers are going to increase their market share, they must first convince the builders of the advantages of panelization. And it does have some good selling points:

- The panelized process is more akin to what builders have been doing all along than either modular or, of course, mobile homes.
- Qualified labor is scarce right now, and once someone inserts the key that releases the pent-up housing demand in this country, it will get even scarcer—and more expensive. Panelization offers the builder a way around that problem.
- A smaller builder can offer custom designs to his customers. And in building them he will be less likely to underestimate the cost, as he will know exactly what the price for extras is going to be.
- A builder who ordinarily wouldn't have the resources to do so can advertise and promote his products professionally because of the co-op programs offered by many manufacturers.

It's possible that the uncertain economic climate of the '80s will make these advantages more valuable to builders than they have been in the past. But the industry won't suddenly turn to panelized building. If market share does increase, it will be by a series of small steps, rather than one big leap forward.



On site construction can be handled by the manufacturer or the builder, depending on the system. However, most panelizers do provide a crane for unloading. Here *(as shown in the sequence of shots beginning upper left)* Wick Building Systems' crews assemble the 1,692-sq.-ft. Fleetwood model.

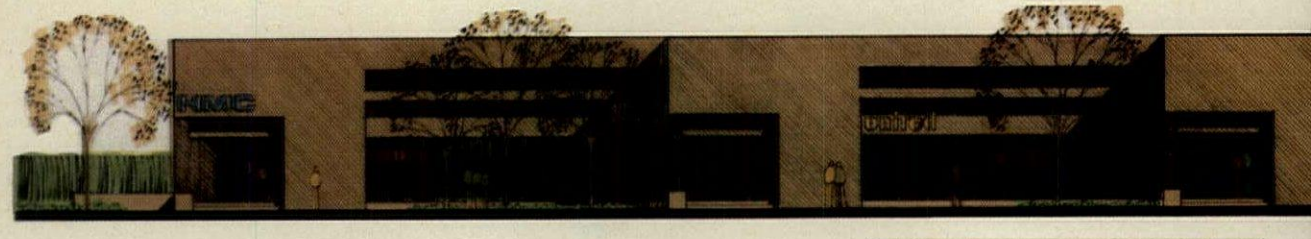
Once the foundation is in, a crane drops the floor panel into position. Next, the first wall panel is aligned. The structure is now ready to receive the adjoining exterior panels, interior walls and finally the roof system. The house is up and weather-tight in one day.

For more on factory-built housing see Products *(p. 80)* and Literature *(p. 94)*

IN THE WORKS:

FRESH SLANTS FOR NON-RES

What's most welcome about the ideas shown here and on the next four pages is how uncomplicated they are—which means they're eminently borrowable. And all three make good marketing sense today when competition for non-res buyers and tenants is red-hot. —JUNE R. VOLLMAN

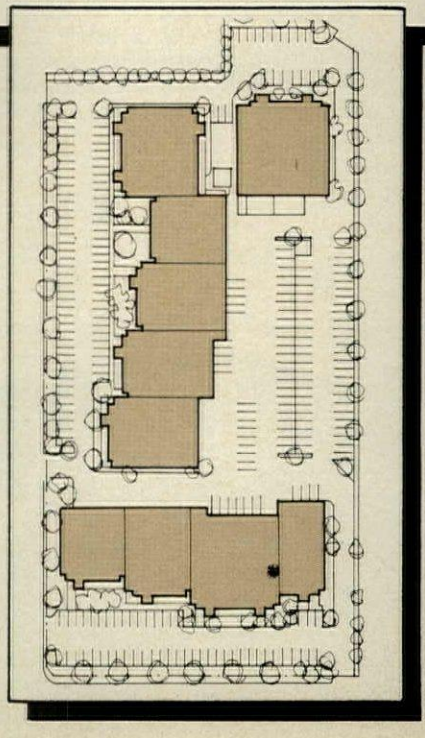


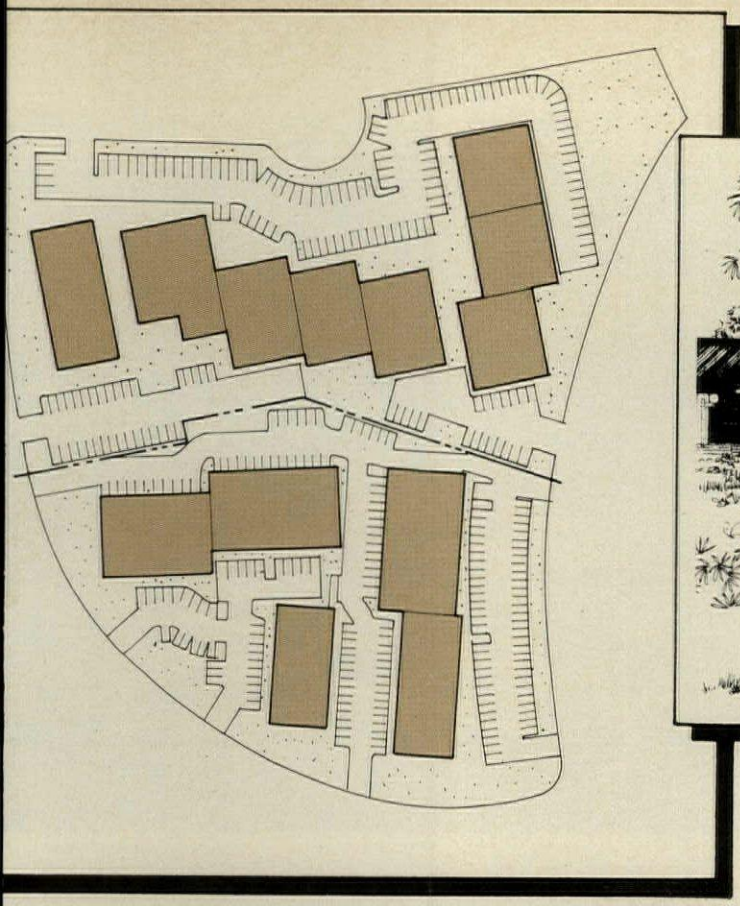
1: PLANNING FOR HYBRID USE

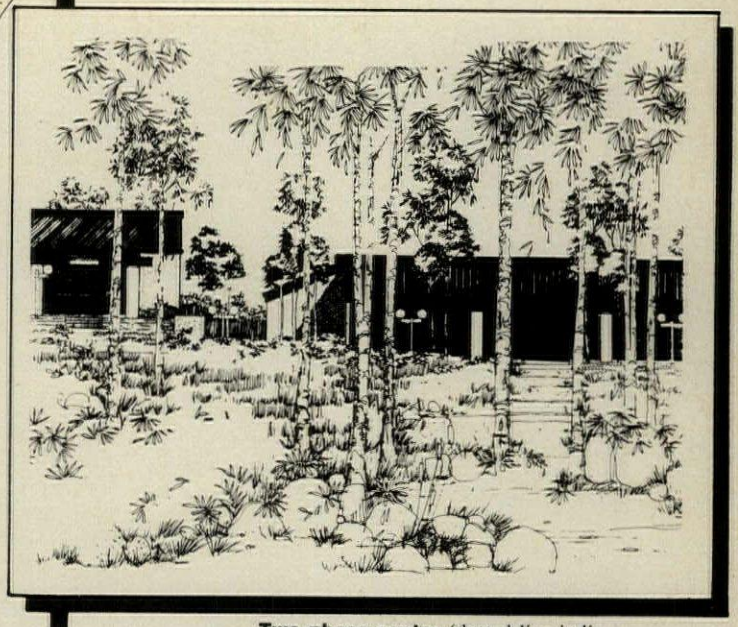
Adaptability is the key word here. For the idea is to provide space that's unstructured enough to be rented by a mixed-bag of tenants—companies that otherwise would choose among light-industrial, garden-office or quasi-commercial centers. So the developer has a broad base of prospects to draw from.

Space in these centers is flexible as well, offering a choice of anything from 2,000 to 20,000 sq. ft. of space. So young companies know there's "growing room," that they won't have to move if they need more square footage. To date, six of these mixed-use centers have opened, and several more are in the works.

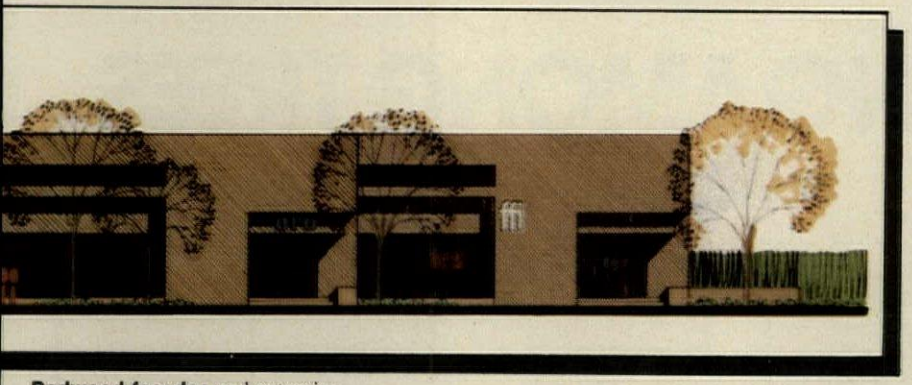
PROJECT(S): Commercenter, California and Oregon
DEVELOPER: Edward C. Ellis Assoc., Santa Monica, Calif.
ARCHITECT: Leroy Miller Associates, Santa Monica





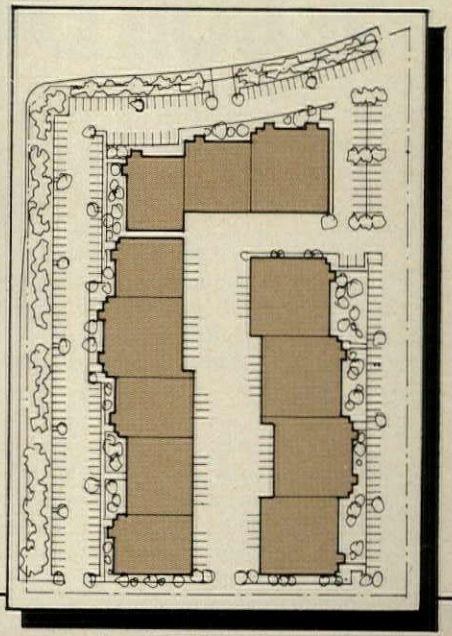


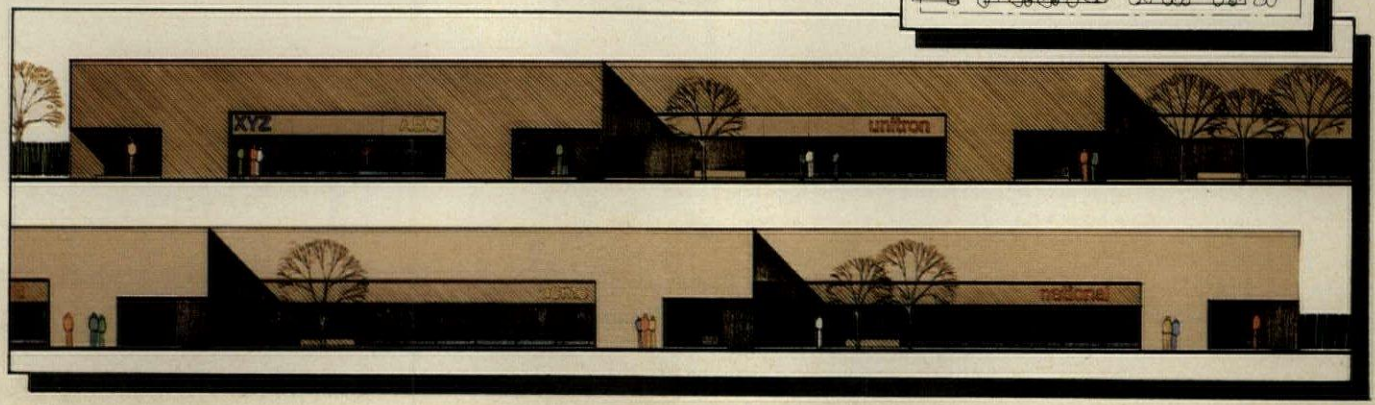
Two-phase center (dotted line indicates phases) is located in Scripps Ranch Business Park, San Diego. Note the staggered siting of contiguous buildings—one way the developer tries to individualize spaces so each tenant can retain its identity. Controlled signage is another way.



Redwood facades and extensive landscaping make centers like this one in Santa Monica desirable for image-conscious tenants. Many, the developer says, are mom-pop businesses that begin in a garage, move after a year or so to a modest building and continue to grow annually by increments of 1,000 to 2,000 sq. ft. of space.

12-building complex in Laguna Hills is located where zoning permits leasing for sales, distribution, services, assembly, manufacturing, research and development, laboratories, showrooms and general offices. Tenants get one car space per 400 sq. ft. of leased space. Buildings contain from 2,000 to 9,700 sq. ft.





2: BUILDING AMONG TREES

It's a good way to get the nod from city hall—especially when you build in an area where environmentalists have a big say as to whether a project is go or no-go.

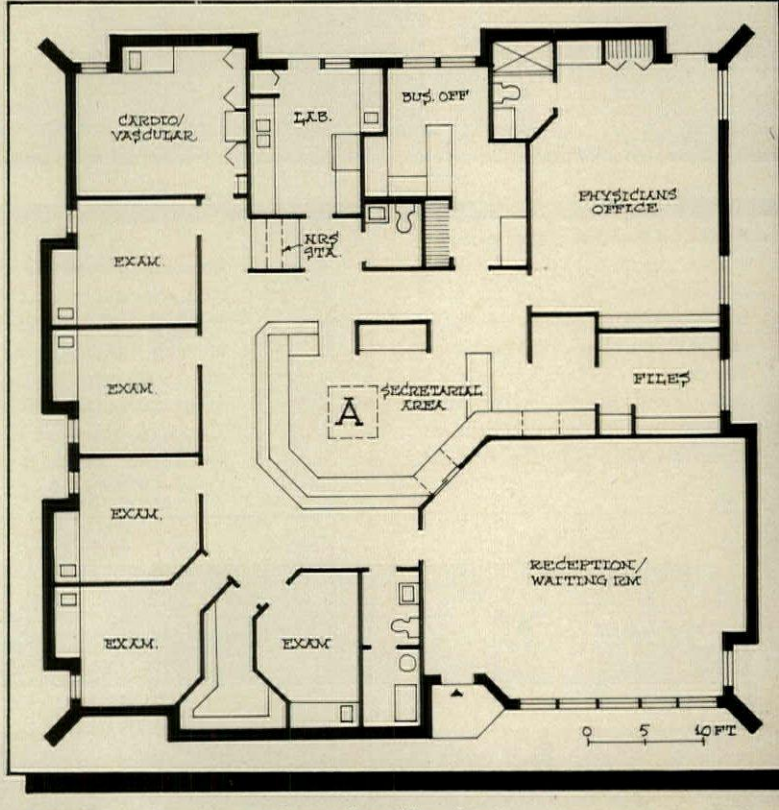
Here, for example, the developers of a medical-office center knew that local planning officials were greatly concerned with tree preservation. So they commissioned a tree survey *(plan, near right, facing page)* before consulting with their architect. That survey, which pinpoints several heavily treed areas (some with very old specimens) was then used as a basis for site planning.

Thus the project layout *(far right, facing page)* differs markedly from that of most medical complexes: In place of the typical common-wall, single-building plan, there are eight buildings of differing sizes spotted randomly among the trees.

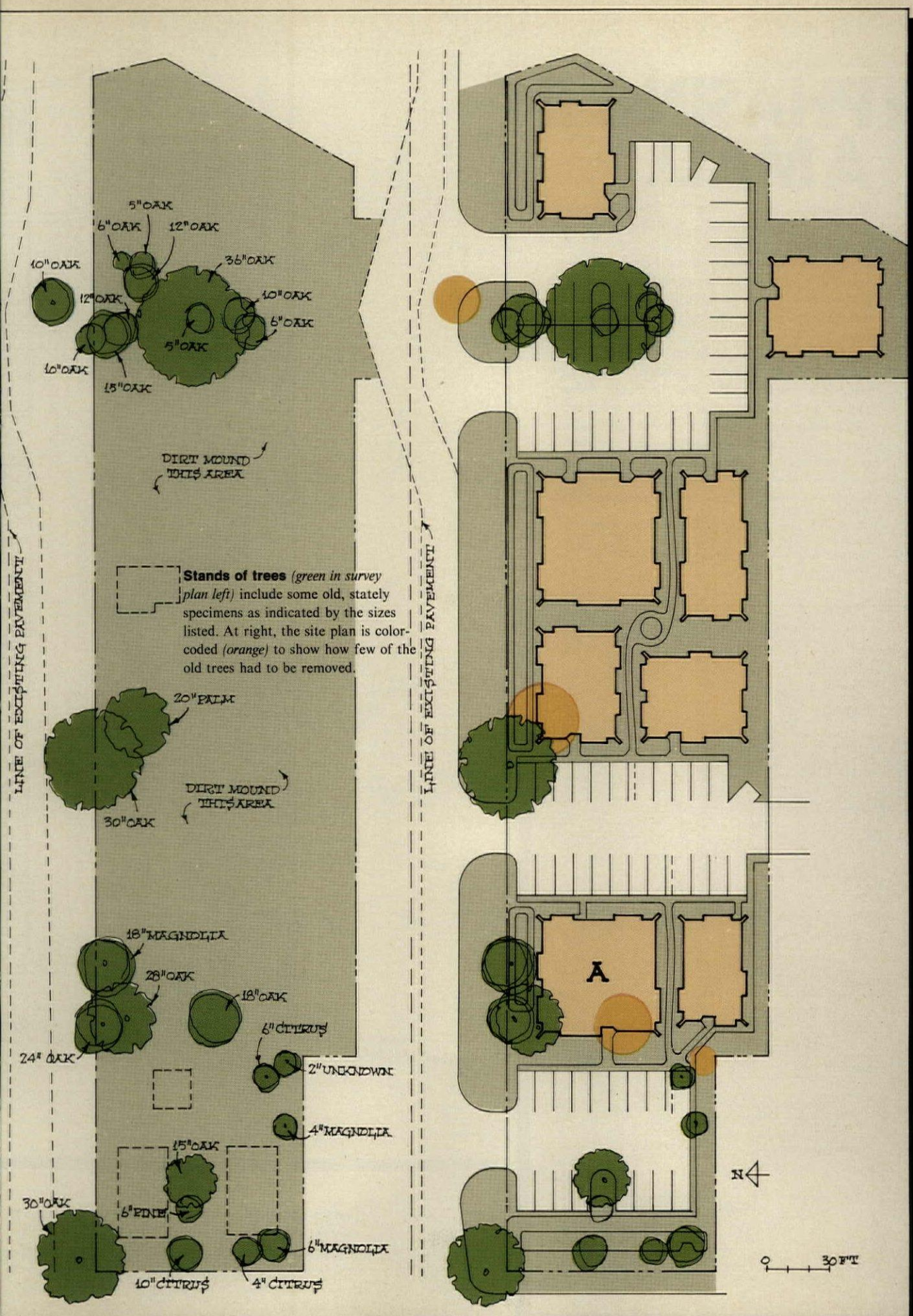
Building this way also allows the developers to sell fee-simple which, says managing partner Emerson Atkinson, "we feel is more acceptable to doctors than condo."

Common space is held by an owners' association, which has first right of refusal if a building comes up for resale. Three of five buildings under way have been sold.

PROJECT: Harrison Square, Clearwater, Fla.
DEVELOPER: Atkinson-Van Horn Assoc., Clearwater, Fla.
ARCHITECT: Gary Brock, The Evans Group, Orlando, Fla.



Typical building layout *(above)* reflects ideas from a physician-consultant employed by the developers, who lacked expertise in building medical complexes.



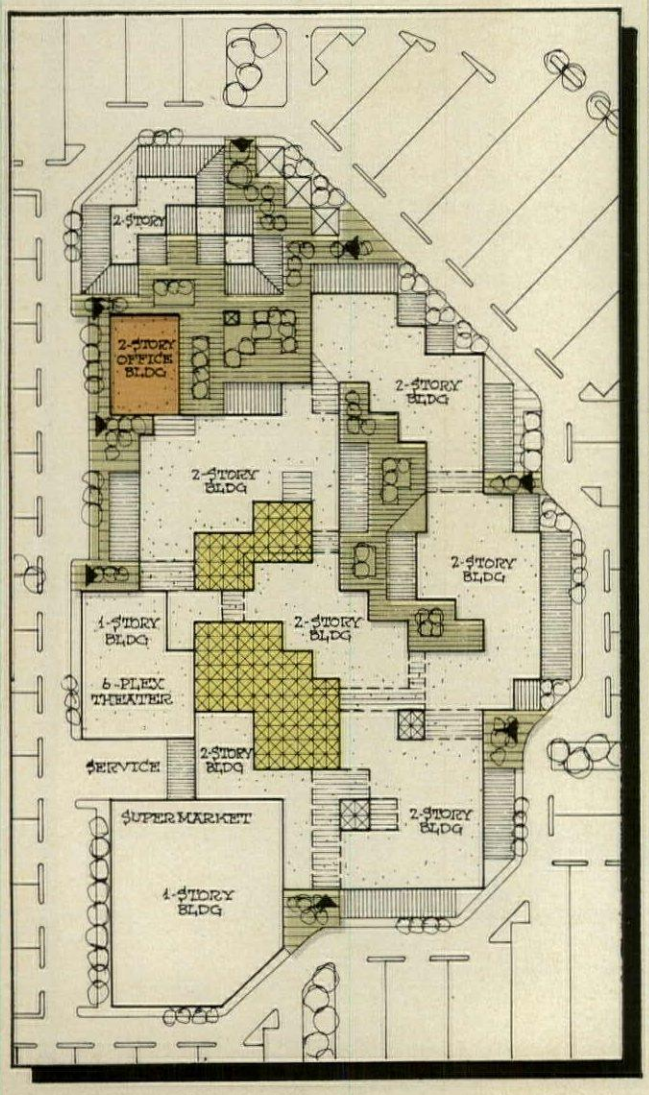
Stands of trees *(green in survey plan left)* include some old, stately specimens as indicated by the sizes listed. At right, the site plan is color-coded *(orange)* to show how few of the old trees had to be removed.

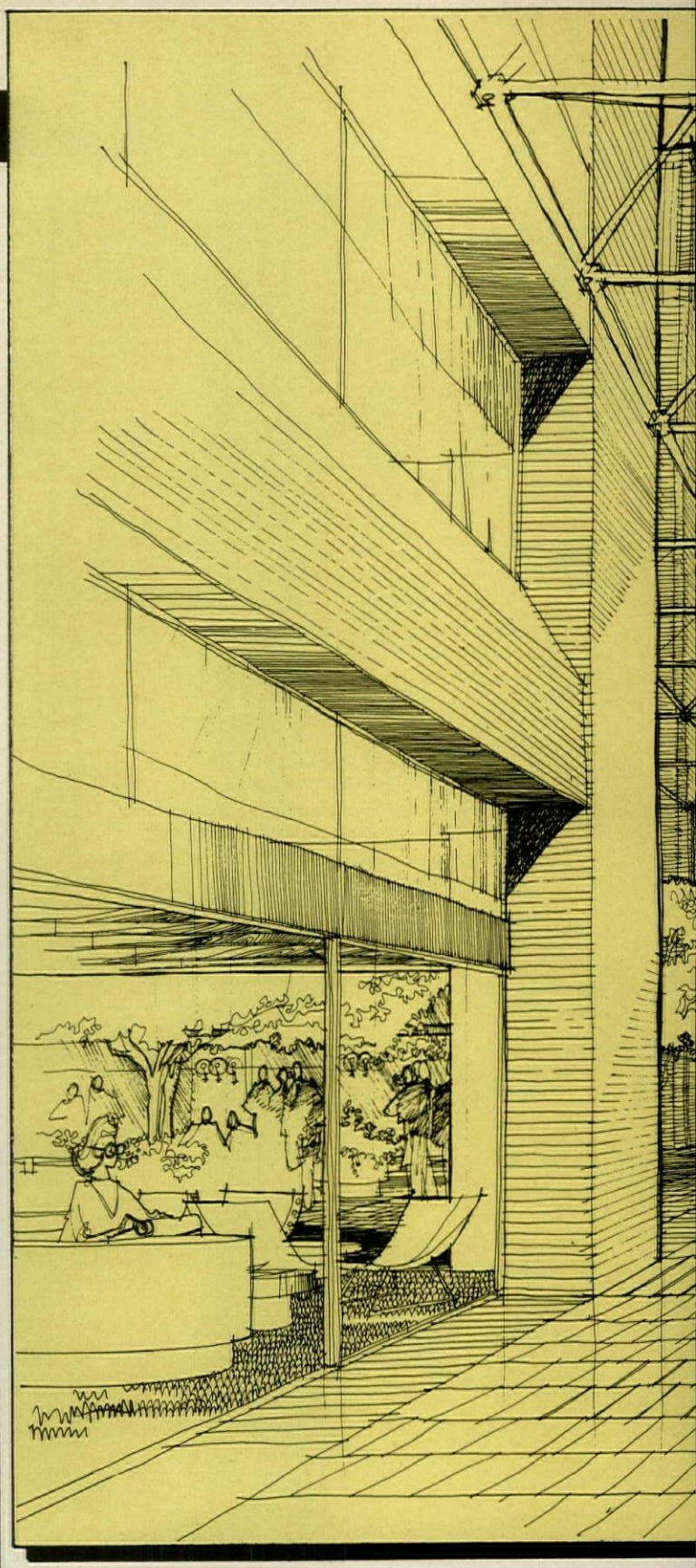
3: PHASING IN A MALL

Designing a retail complex this way—as a series of small buildings linked by sky-lighted promenades—means a developer can offer the all-weather convenience of mall-type shopping, and still time his building schedule to coincide with increases in population growth. So he reduces the risk of building too much space too soon.

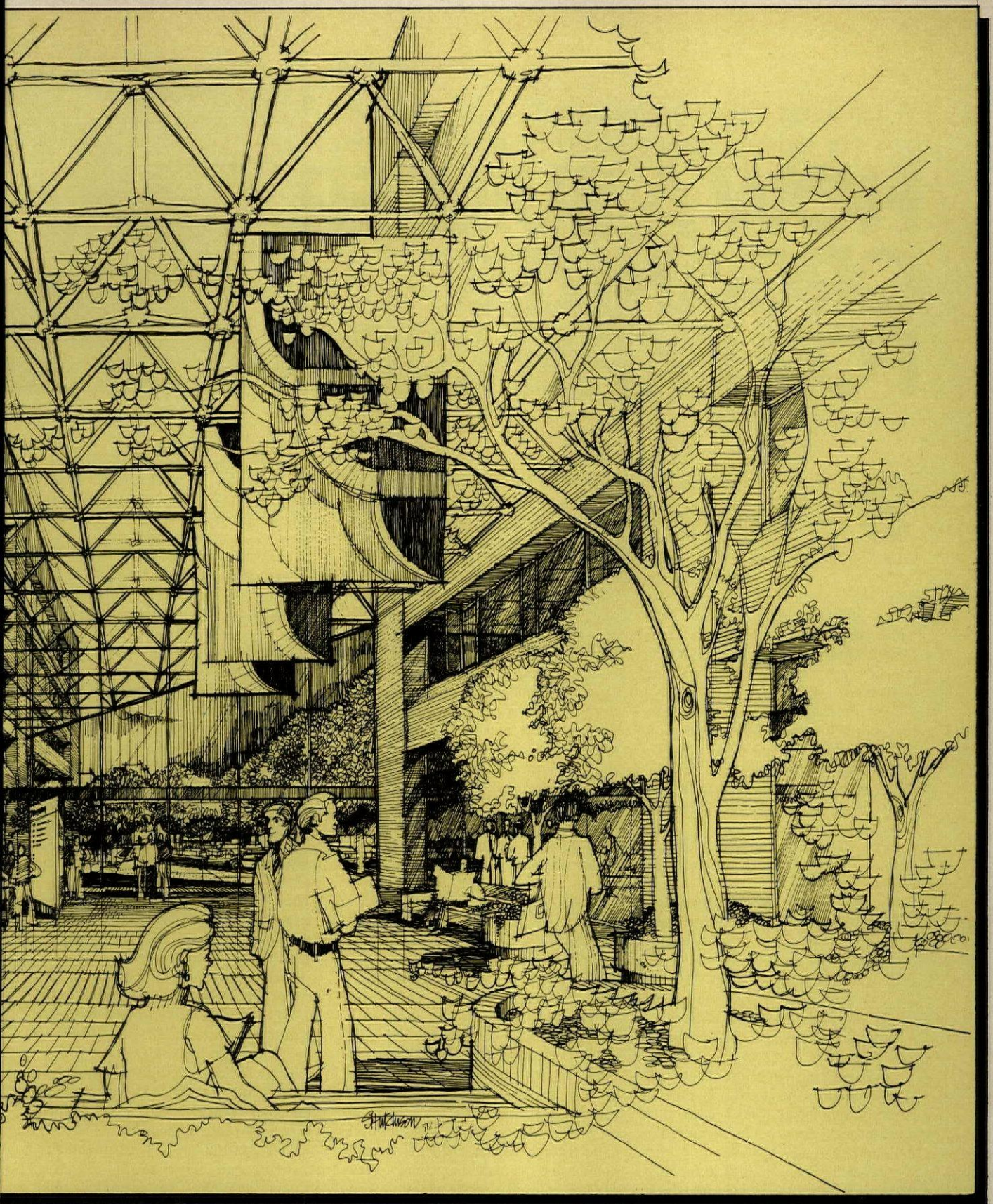
This complex, for example, is in a PUD where the first phase of 1,608 residential units gets under way next month. The developer doesn't expect much interest in retail space until early 1982 when some high-density multifamily units come on stream. So only one building *(orange in plan)* will be built this year.

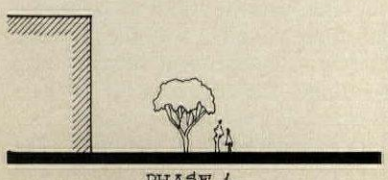
PROJECT: Vanguard Plaza at Independence Park, Anchorage, Alaska
DEVELOPER: Quadrant Developer Co., Anchorage
ARCHITECT: The Ramos Group, Kanasa City
PLANNING CONSULTANT: David Clinger, Lookout Mountain, Colo.





Custom-designed space frame, based on 3 ft. and 5 ft. modules, will bathe the promenades in daylight. The system consists of plastic pyramid skylights and steel tubes that are bolted together on site, then hoisted into place by crane. Skylights include integral gutters that provide for water run-off.





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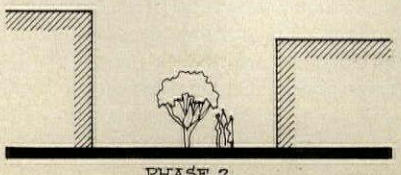

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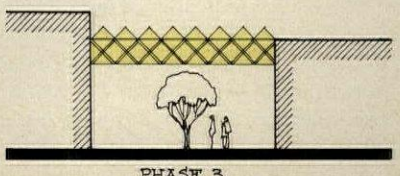
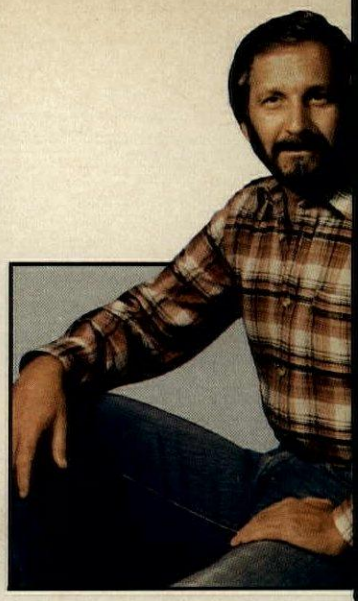


PHASE 3

When Jerry Stiles *(right)* says "I have six clones," he's not kidding around. Rather, he's describing

HOW A BUILDER ORGANIZES FOR EXPANSION



Says Stiles: "We spent our first nine years the way a football player spends high school and college—sharpening his skills before he joins the pros."

The Dallas builder is referring to the years he spent putting up custom homes—first building two in 1968 under his builder-father's tutelage ("He'd wind me up like a doll and send me out every morning"), then growing to 90 houses in 1977.

Now he has "graduated": J. Stiles Inc. sold 270 homes in 1980 and plans 600 ("I know people will say it's impossible") for this year. In the process, 36-year-old Stiles has had to shift from hands-on builder to corporate guru. Here's why.

First: The company's reputation for good customer relations is an invaluable marketing advantage.

"In our price range [mostly over $100,000], people want to feel a friend built their home, not a big company they can't talk to," Stiles says. But there aren't enough days in the year for one Jerry Stiles to sit down and drink coffee with hundreds of buyers.

Second: Management by committee wasn't working.

"Having the superintendent, the sales manager, the decorator, etc. all sit down and decide what needed to be done usually resulted in Jerry Stiles making decisions," he says.

That didn't leave any time for daydreaming—for thinking creatively about where the company should be next year or five years from now.

Third: Talented young people were leaving his organization.

"More builders in North Dallas were trained by me than by anyone else," he says. "I had to figure out a way to keep them instead of seeing them turn into competitors."

Dividing to conquer. These three stumbling blocks to growth were overcome in the same way—by breaking down the ballooning company into geographic divisions. Five ring North Dallas; a sixth is in Houston, where J. Stiles is establishing an outpost this year. Each is headed by a vice president who is, in essence, a 1977-style Jerry Stiles for his area.

That means, for one thing, that a v.p. won't manage more than 100 units a year. If a division grows beyond that, the v.p. must pick a successor from within his ranks and split up the area—though still retaining a measure of control over the new v.p.

Keeping the division small ensures that history won't repeat itself—that the v.p. won't lose contact with buyers the way Stiles did three years ago.

And to keep Stiles himself from having to spend time putting out fires, each v.p. is given complete operating responsibility for his area—i.e. hiring or firing subs and salespeople, monitoring construction, providing after-sales service, etc.

"It's like running your own little company," says Kip Clark, who was division vice president for The Timbers, a zero-lot-line project that opened last June *(see p. 72)*. Except that if Clark had done the project on his own, he wouldn't have had an experienced corporate staff sitting behind him—a staff that offers a great deal of help during the planning process for any project.

Financing, for example, is handled by headquarters experts, as are land purchases (The company also has a development arm: Stiles Land Corp.). Stiles himself has final say-so on floor plans and pricing (though a v.p. can make adjustments on a house-to-house basis as long as, on average, a minimum markup is maintained). And design and marketing experts are on hand to help the v.p. get his project on paper *(see chart below right)*.

Corporate counselors. "We see the staff as an advisory board the v.p. can draw on," says Stiles. "And by consolidating these services at the corporate level, we keep divisional overhead low."

The services of the corporate staff are, of course, not free. But neither is the v.p. charged for them on a percentage-of-gross-profit basis, as is the case in some large building firms. Rather, the v.p. is charged a standard fee per house—a fee that's set in each year's budget, so he knows exactly what his soft costs will come to.

What's more, the flat-fee arrangement encourages the v.p.'s to make good use of the company's resources. "They know it doesn't cost them an extra $1,000 every time they come back into corporate," says Norm Medlen, executive vice president.

Clark, for example, has a background in production, not sales *(see p. 72)*. so when it came to interviewing applicants for sales positions, he asked a veteran, Vice President for Sales Cliff Sinclair, to give him an assist.

This type of support is particularly important because the v.p.s are young (26 to 34) and homegrown. They've typically started out as superintendent trainees and have risen rapidly through the ranks. (The exception is in Houston, where a 40-year-old was hired away from another company.)

Besides back-up from a corporate staff, there's another way the divisions differ from independent small-builder operations—they can trade on the parent company's reputation.

"If I had designed and built The Timbers myself, it wouldn't have sold

GITTINGS OF NEIMAN-MARCUS

out in five months," says Clark. "Eighty-percent of its success was due to the J. Stiles name."

Such an opportunity to hitch a ride on the fast track is one thing that has lured blue-jeaned young builders like Clark to J. Stiles all along—but now the decision-making aspect of the v.p. post and the compensation that comes with it should keep them there.

Speedy success. "I'm putting golden handcuffs on the young people in my company," says Stiles. "If they go out on their own, it will take them forever to build back up to what they can do—and what they can earn—now."

In 1981, the division v.p.s will take home a guaranteed salary plus a percentage of total company profits—a package which, Stiles says, should add up to $110,000 to $120,000 if the company reaches even 70% of its goals.

This is a different program than was set up when the first v.p. was appointed in early 1980. At that time the v.p.s were given a percentage of the profits of their divisions and were promised eventual ownership in them. But the result was sibling rivalry.

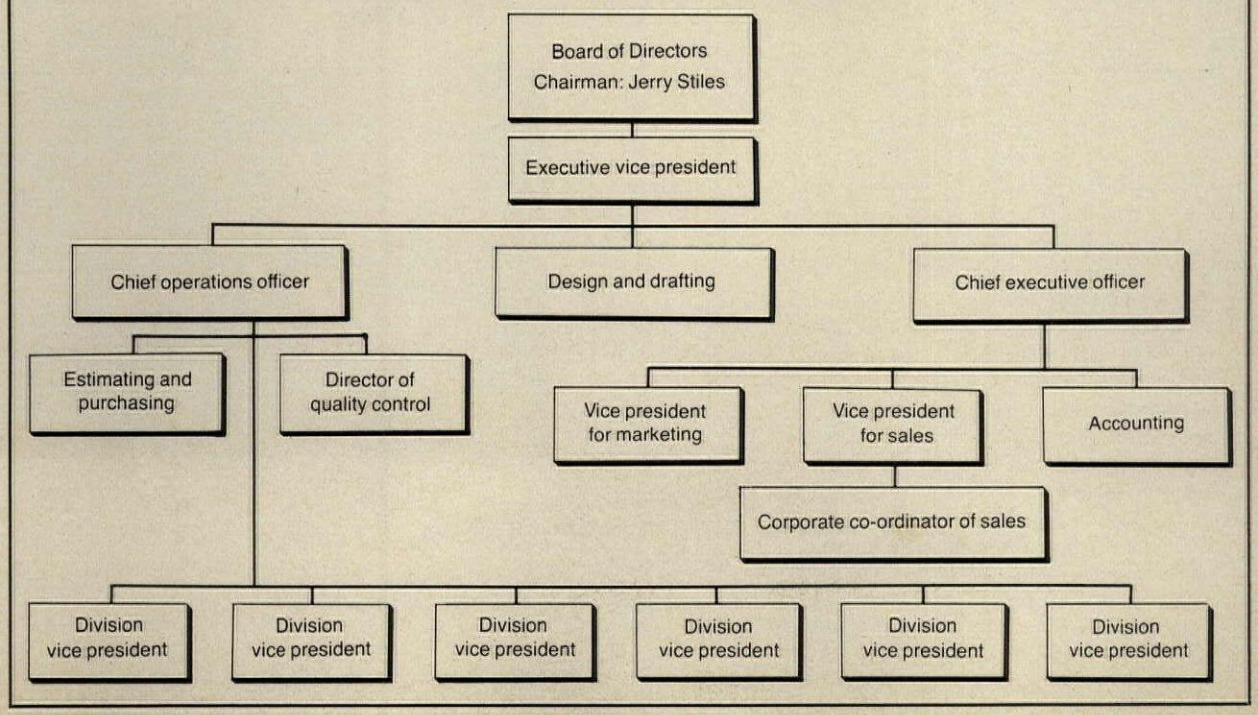
"The v.p.s became competitive and defensive of their territories," says Stiles. "They'd be unwilling, for example, to share salespeople for a weekend if one area was understaffed."

So the profit-sharing plan was reoriented, and the ownership program was scrapped, at least for the time being.

The clones. For now, the young v.p.s are concentrating on absorbing everything Jerry Stiles has learned since he built his first house in 1968—but in a fraction of the time.

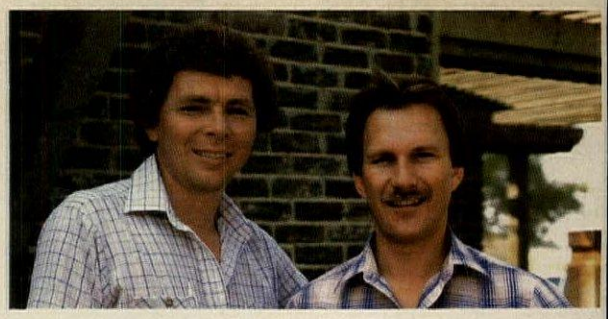
"They're like vultures," says Stiles, "who say 'teach me this,' and ask 'why are you thinking this way?' " It's sometimes scary to look around and see young guys as talented as we have here and know that they're looking up the hall for Jerry Don to be setting the company's goals in the right direction." —BARBARA BEHRENS GERS

HERE'S HOW THE COMPANY IS ORGANIZED



TURN THE PAGE FOR A PROFILE OF A TYPICAL V.P. AND THE PROJECT HE MANAGED.

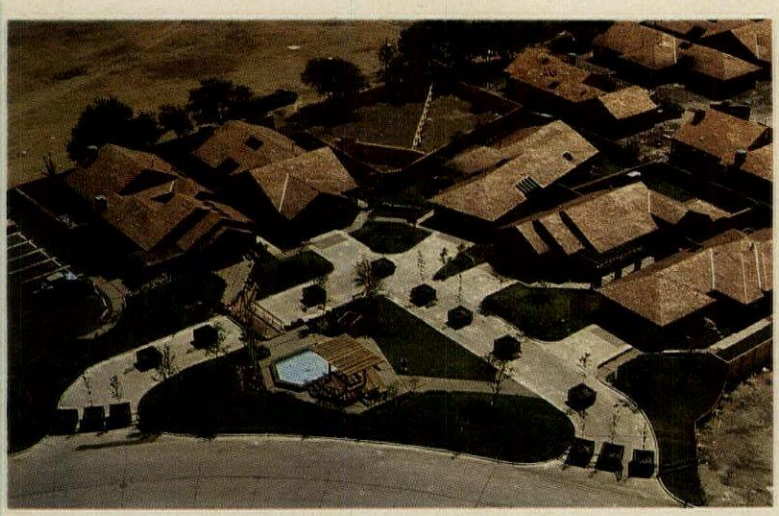
Here's a typical division v.p...

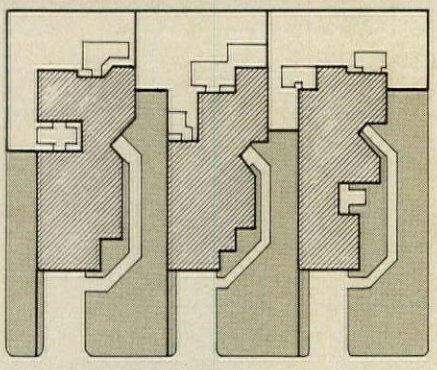


In 1978, Kip Clark *(left in photo)* was a fireman and, TV's *Emergency!* notwithstanding, he was "bored to death." So Clark, who at age 30 "knew I wasn't going to be the biggest anything" but still wanted to be part of a "biggest and best," fell back on an earlier job experience working on a framing crew. In Clark's opinion, the best builder around was J. Stiles, so that's where he went looking for work. He started as a superintendent trainee, soon became a super himself, and not much more than a year later, was named v.p. for The Timbers *(below)*.

And here's the project they worked on

from site planning → to design



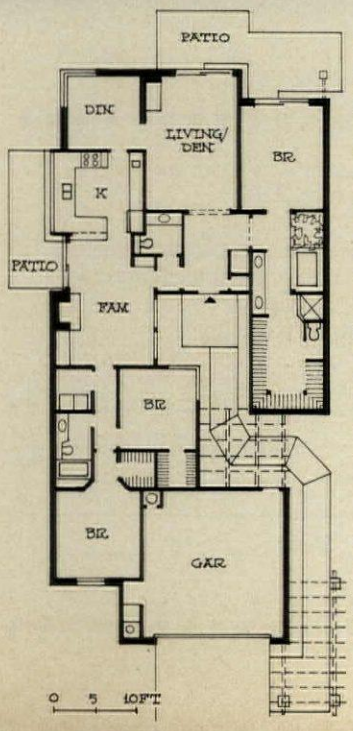


Zig-zag lot lines *(plan above)* are a siting twist which allows for windows on four sides of the 104 zero-lot-line units. Privacy isn't a problem because homes are all one-story and backyards are uniformly fenced *(see model complex photo above)*. Moreover, rear yards are the only "exclusive use area" buyers have: Front yards *(olive in plan above)* are landscaped and maintained by a homeowners' association (fee: $400 a year). Approval for the unusual siting was relatively uncomplicated: The project is located in Addison, Tex., a newly growing community north of Dallas which is welcoming development.

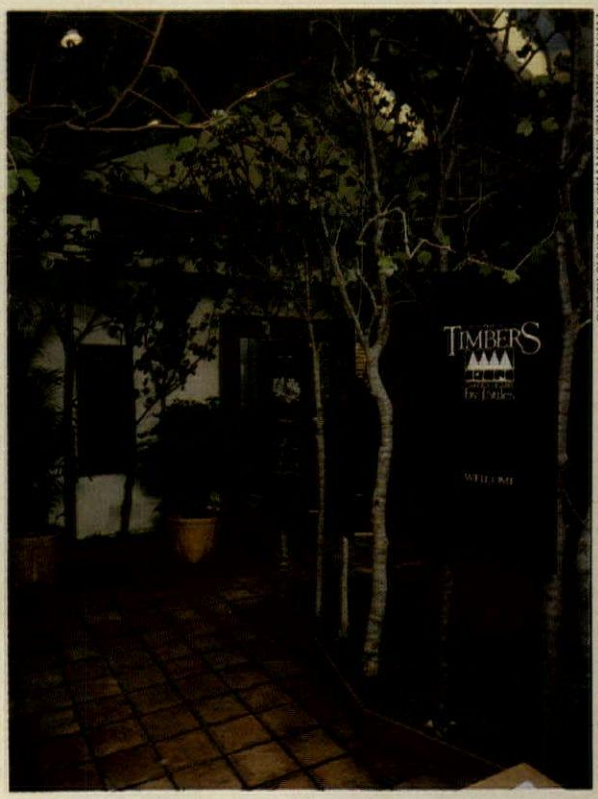
and his successor

The Timbers' sales manager, Jim Holland *(right in photo)*, is 32 and was once a trim carpenter who thought he'd do better hammering out sales. "He just kept coming over here and beating on the door," says Clark, "so the company decided to take a chance on him." Holland, who by the time The Timbers was developed had proved himself as a salesman, sat in with Clark from day one of project planning—a good thing, as it turned out, since Clark has recently been promoted to chief operations officer of J. Stiles Inc. and Holland has stepped up to division v.p.

to merchandising



Plant-filled model *(above and left)* calls attention to indoor/outdoor lifestyle. Note how living room extends onto patio and how greenhouse window relates kitchen to the outdoor space *(plan left)*. Such design is typical: Project's five plans all have both side and rear patios *(see site plan facing page for other examples)*. At 2,000 sq. ft., model shown is the project's largest and sold for $124,000 at opening; smallest is 1,400 sq. ft. and started at $92,000. Interiors: Marlene Dibrelle of Interior Stiles Inc. [See HOUSING, Mid-May '80, pp. 38 and 63 for two baths from The Timbers and HOUSING, June '80, p. 46 for another J. Stiles project.]



PHOTOS: MICHAEL MATTHEWS & LOUIS REENS

Woodsy sales office *(above)* fixes "The Timbers" name in prospects' minds. The twenty trees are dead saplings fitted out with artificial leaves. The greenery appealed to a mixed-bag of buyers: They ranged from affluent young singles to members of the over-60 set. The common denominator: 84% had no children. The sales office, which was in a model's garage, was designed in consultation with David Gillespie of Rosenberg and Co., Dallas.

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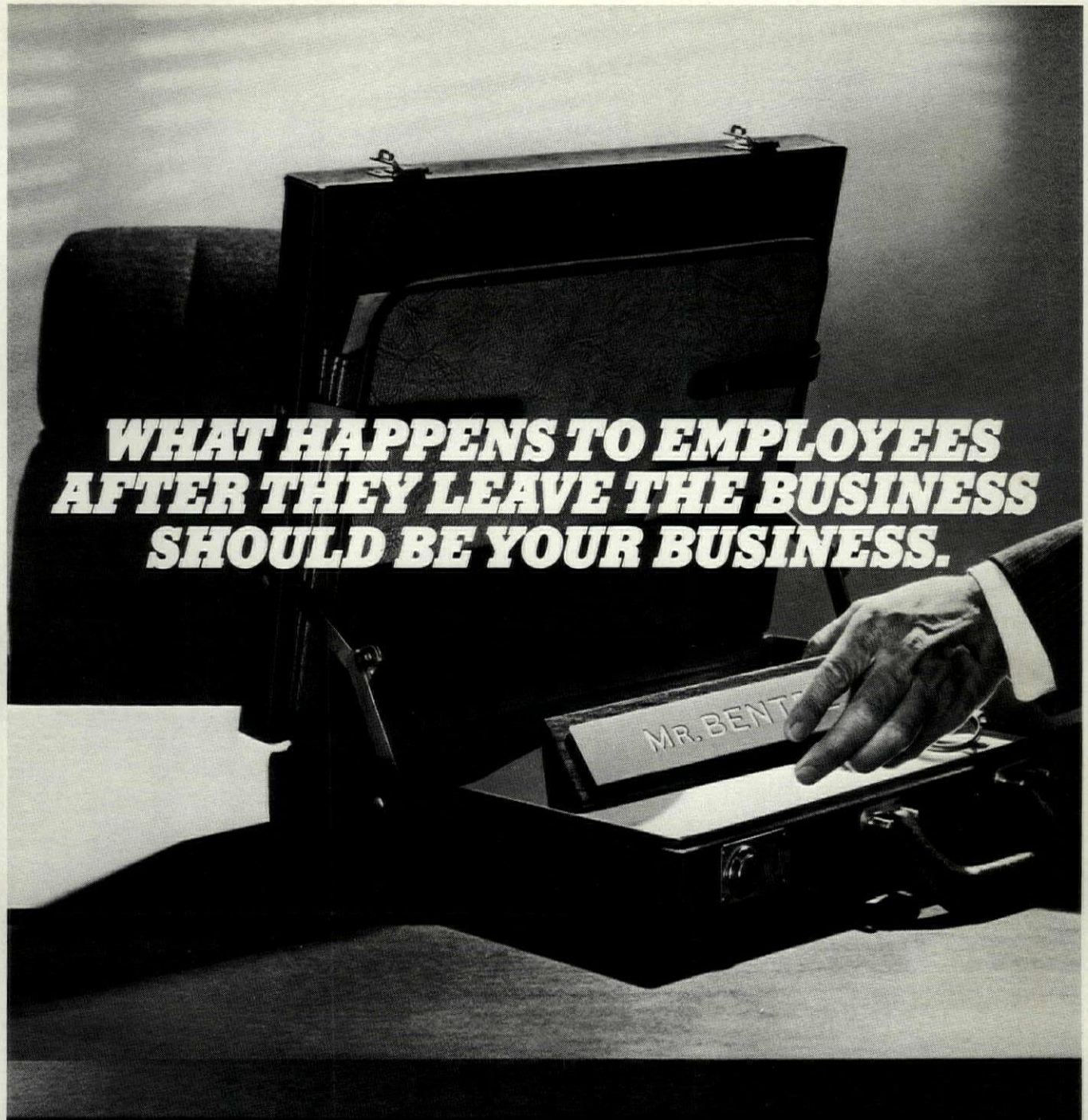

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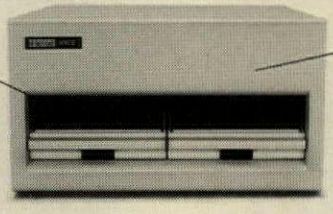

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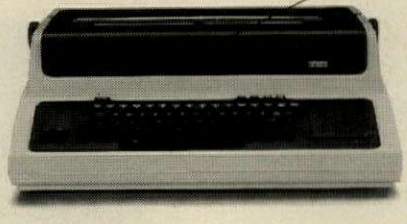

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THE MANY 'FACES' OF MANUFACTURED HOUSING

Refuting its reputation for producing monotonous design, the manufactured housing industry has come up with a wide range of styles that achieve a balance between standardization and customization.

The houses shown here and on the overleaf fall into four categories: mobile, modular, panelized and precut—in descending order of prefabrication.

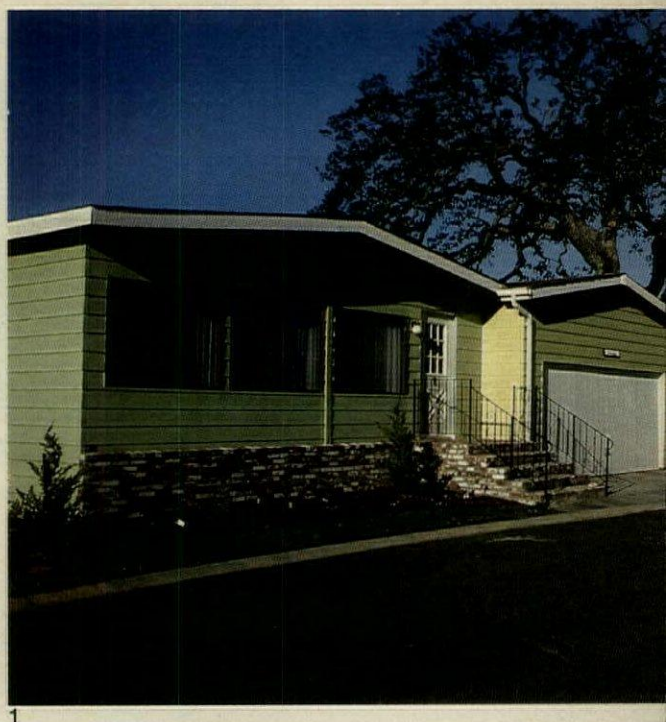
But no two houses, even within categories, are exactly alike. Each manufacturer offers a different, custom-like package. Some provide a choice of floor plans, some a choice of furnishings, siding, paneling, door and window arrangements.

Note that not all these units are available nationally. High transportation costs restrict many firms to regional delivery.

Take a look through the next four pages—you'll find packages ranging from a cabin-like vacation home to a five-bedroom colonial with a high-end look.

For more on the industry, see "Is factory-built housing ready to deliver?" which begins on page 48.

—JENNIFER A. WAGNER



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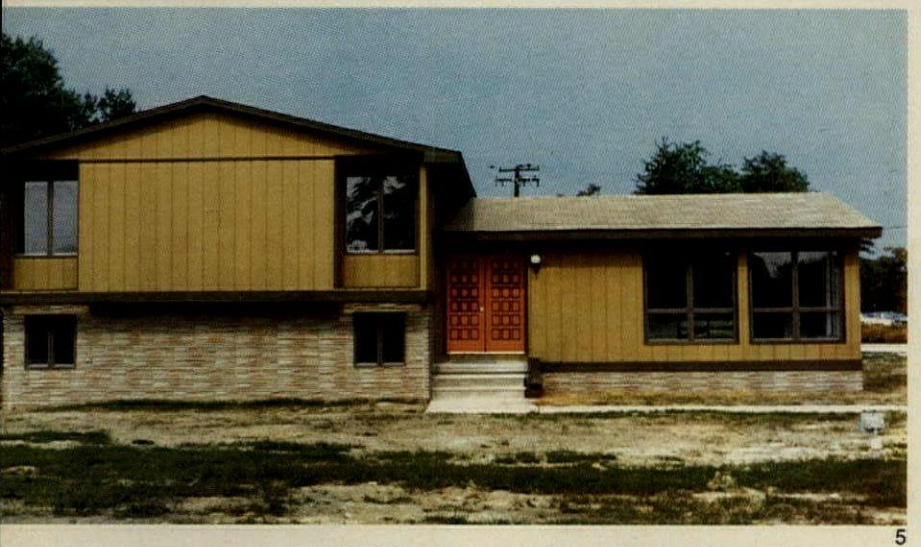
MOBILE:

1. "Stonewood" mobile home, with two bedrooms and two baths, is offered in sizes ranging from 1,344 sq. ft. to 1,838 sq. ft. Shown is the 1,664 sq. ft. model with site-built garage. Options include: vaulted ceilings, wet bar, mirrored sliding closet doors. Beginning this spring, this manufacturer is adding direct sales from the factory to its services; delivery will be included in price. Distribution: Calif. Roberts Homes. *Circle 200 on reader service card*

2. "Highland Park" is built with a transverse ridge beam to provide high volume in main living area. Unit shown includes a master suite, two secondary bedrooms, two baths and utility room. A choice of furnishings and wall treatment is offered. Distribution: national. Fleetwood Enterprises. *Circle 201 on reader service card*



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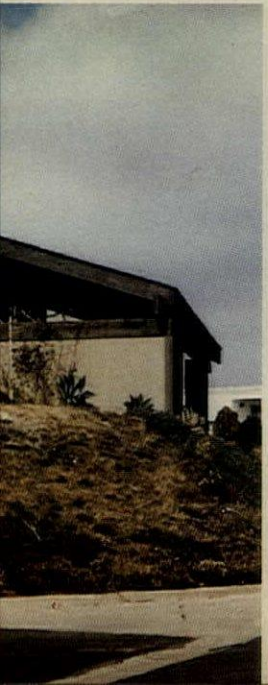
MODULAR:

3. Six-module unit is shown being erected around a site-built section that includes a great room and loft. The floor plan consists of five bedrooms, six baths, kitchen, conference room, dining room, family rec rooms, office and three fireplaces. Distribution: Ky., Md., N.C., Ohio, Penn., Tenn., Va., West Va. Mod-U-Kraf. *Circle 202 on reader service card*

4. Contemporary home with two bedrooms, two baths, living room and family room, may be customized by changing deck locations or changing exterior materials. Distribution: national. LCS Homes. *Circle 203 on reader service card*

5. Contemporary tri-level house is composed of modules that include factory-installed electrical system and mechanicals. Features: three or four bedrooms, two full baths, a dressing room off master bedroom and full-height windows in living room. Distribution: within 300 mi. of plant in Md., which includes areas in Del., N.J., Penn., and Va. Coastal Housing. *Circle 204 on reader service card*



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6. "Sunset Lodge," featuring cathedral ceilings, has sheetrock walls and ceilings, wood-framed doors and window. Options include fireplaces, bay window, heat pump. Distribution: primarily in Ill., Ind., Mich., Ohio, Wisc. RODA Corp. *Circle 205 on reader service card*

PANELIZED:

1. Spacious colonial-style house, called "Old Greenwich," is the latest in Scholz Homes' collection of "Custom Designs." Model houses in 32 locations across the country will be on view starting in April. Square footage: 4,000. Distribution: 40 states as far west as Colorado. Scholz Homes. *Circle 206 on reader service card*

2. House-in-the-round with 2,100 sq. ft. can be adapted to non-res uses. The "R-20" is one of a line of house packages that includes panelized floors, walls, precut roof system, and a wide variety of door, window and siding options. Distribution: national. Rondesics. *Circle 207 on reader service card*

3. "Sunwedge" solar house offers 1,612 sq. ft. of living space on four levels; a 12′ × 24′ garage, cedar decks and master bedroom addition are optional. Distribution: national. American Timber. *Circle 208 on reader service card*

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PRECUT:

4. Customized "Deck House" includes Douglas Fir posts and beams, preassembled wall panels, mahogany stairs, cedar floor and ceiling materials. Manufacturer offers one-on-one seminar for the builder. Distribution: national. Deck House. *Circle 209 on reader service card*

5. Solar-Shed™ Sunspace is offered as an extension to an existing home or to the manufacturer's own panelized/precut home, as shown. Distribution: national. Green Mountain Homes. *Circle 210 on reader service card*

6. "Gambrel" house, with a hybrid solar heating system, includes a precut frame made of Eastern White Pine, siding, insulation, floor decking, skylights and prehung doors. Distribution: national. Timberpeg. *Circle 211 on reader service card*

7. Ranch-style home package includes precut, prenotched cedar logs. The single story unit shown is standard, but the manufacturer can adapt this system to some split-level and 2-story structures. Distribution: national. Pan-Abode. *Circle 212 on reader service card*

8. "Unit One" cabin may stand alone as shown or be joined with similar units, as well as with a 9′ × 12′ porch and/or deck to form a larger house. Distribution: primarily Northeast. Shelter-Kit. *Circle 213 on reader service card*

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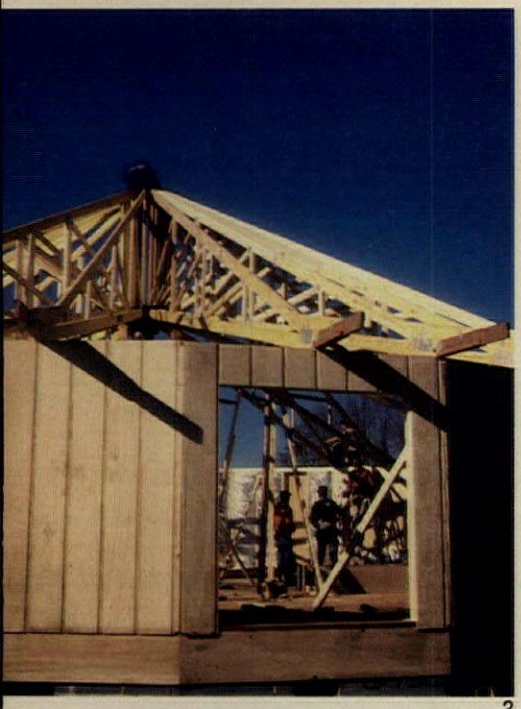

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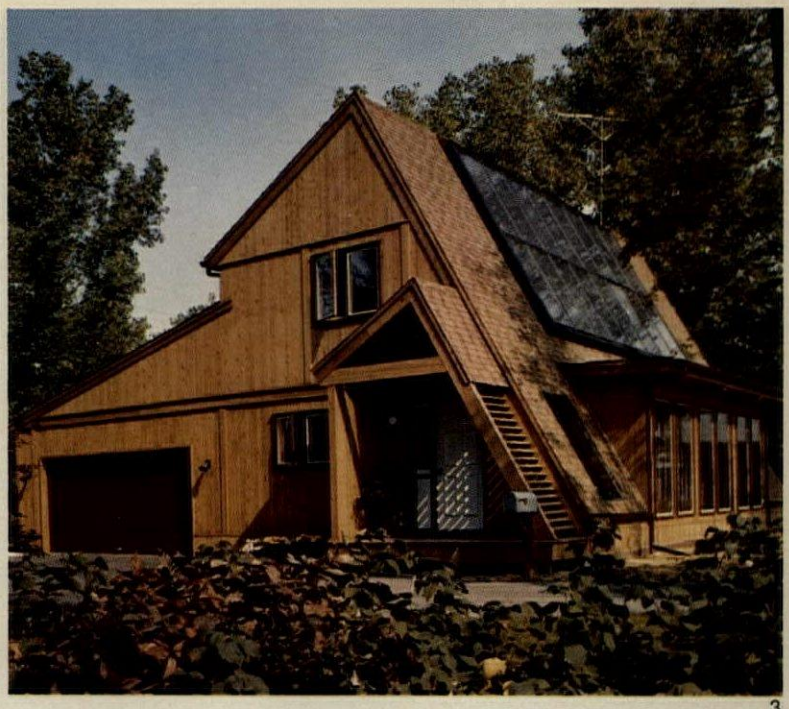

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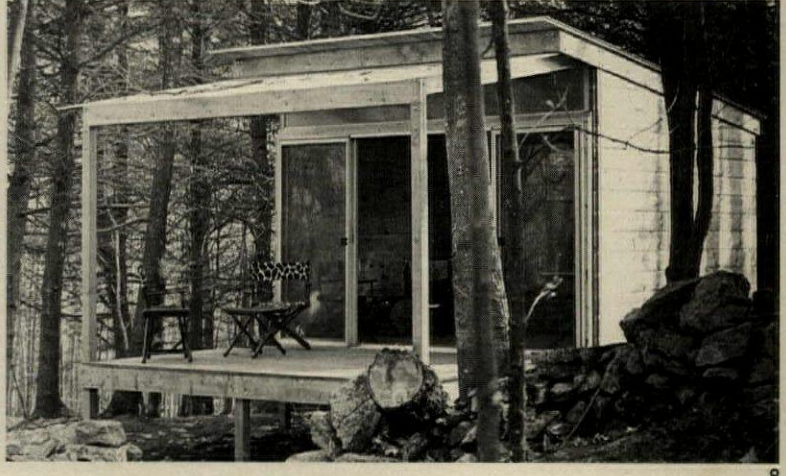

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1. Embossed hardboard siding has a stucco-like appearance. Panels, measuring 4′×8′, come primed or unprimed and are offered in nominal or full ½″ thicknesses. Forest Fiber Products. *Circle 263 on reader service card*

2. "Ambassador" solid vinyl siding, available in seven colors, comes in 8″, double 4″, double 5″ horizontal and vertical panels. Siding line also includes matching accessories, such as corner posts, soffits and fascias, sill covers and window trim. VIP Co. *Circle 264 on reader service card*

3. Interlocking concrete roof tiles are suitable for remodeling since they may be installed directly over existing asphalt shingles. When installed, the "Vanguard" tiles form a channel system that aids water run-off. Integral weep holes prevent moisture build-up in underlayment. Gory. *Circle 265 on reader service card*

4. ColorKlad ®roofing sheets are made of 24-guage galvanized steel. The prefinished metal sheets, available in a variety of sizes, come in nine colors and two textures. Roofing is suitable for new or retrofit construction. Vincent Brass and Aluminum. *Circle 266 on reader service card*

5. "Fairfax" hardboard siding comes in panels that are 16′ long and 12′ wide. Self-aligning siding panels can be installed without starter strips, wedges or shims around door and window openings. Champion. *Circle 267 on reader service card*

6. Prefinished hardboard siding has a textured reverse board-and-batten design. Textured siding is offered in three colors: bay gray, bayou beige and tawny brown. Celotex®. *Circle 268 on reader service card*

7. Double-four insulating siding is constructed of aluminum with fiberboard backing. Siding is available with a smooth or textured woodgrain design, and in a wide range of Thermo-Color™ finishes. The siding carries a 30-yr. limited warranty. Mirro. *Circle 269 on reader service card*

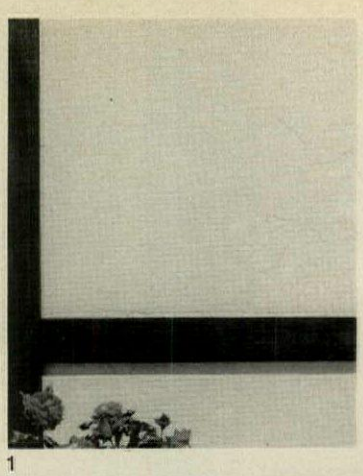
8. Cedargrove™ siding line is made of 4′×8′ plywood panels faced with rough-sawn western red cedar. Panels are available grooved, plain or in reverse board-and-batten patterns. A range of grades and a variety of thicknesses are offered. MacMillan-Bloedel. *Circle 270 on reader service card*

9. Super Rigid Shake® shingles made of reinforced fiber glass have the look of rough-sawn wood. Shingles are available in frost white, chestnut brown, dorado tan or heather gray. USS Alside. *Circle 271 on reader service card*

10. Panelized cedar shingles come eight feet long. Easy-to-install siding is self-aligning and is nailed directly to studs. Panel is constructed of 5″-wide shingles bonded to a ⅜″ plywood back. Shakertown. *Circle 272 on reader service card*

11. Barricade® roofing underlayment comes in widths from 18″ to 96″; 48″ is standard. Designed as an alternative to asphalt felt, underlayment will, according to the manufacturer, be more pliant and tear-resistant in extreme weather. Simplex. *Circle 273 on reader service card*

12. Stonehenge® architectural panels are constructed from a variety of inorganic fibers, binders and fillers that provide a weather- and rot-resistant surface. The panels, with the appearance of stone, come in a grey color. Johns-Manville. *Circle 274 on reader service card*



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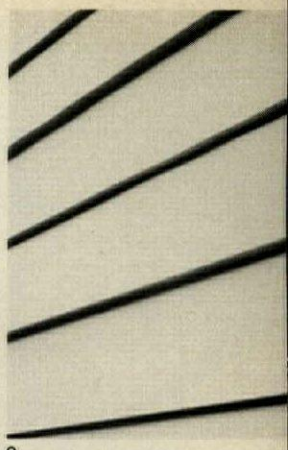

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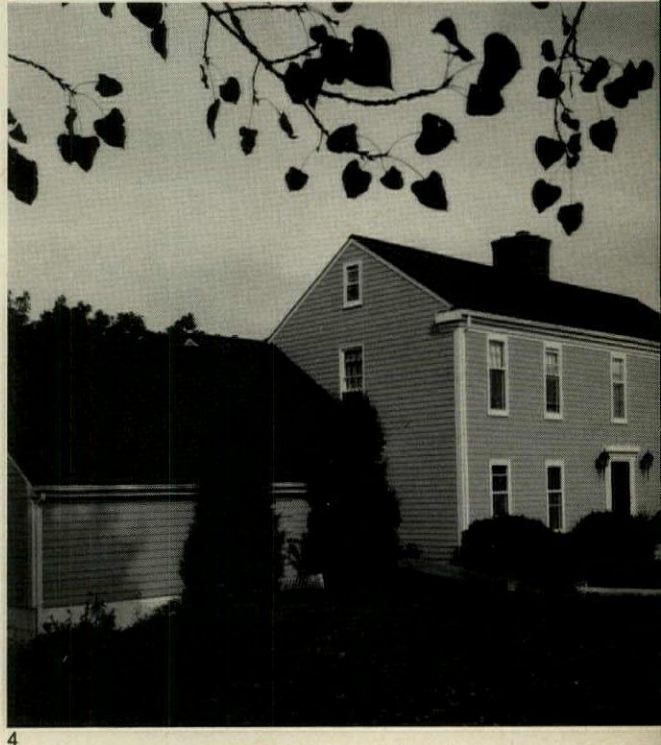

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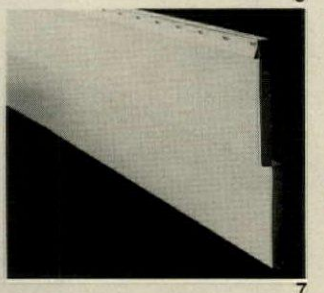

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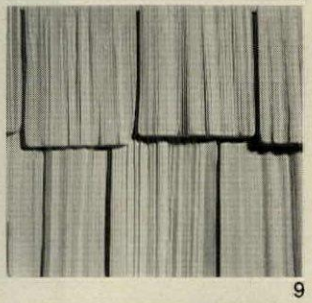

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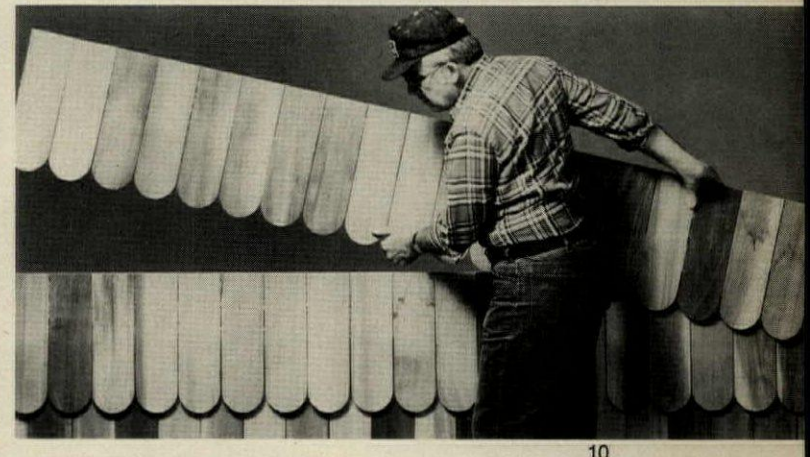

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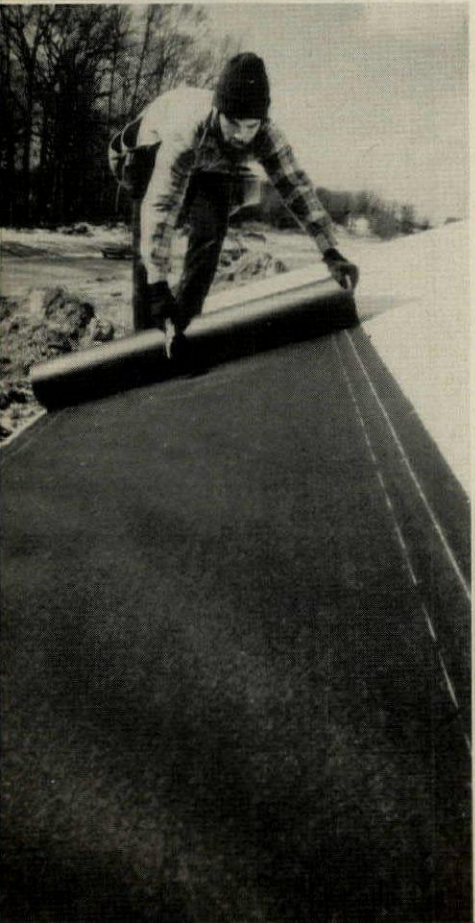

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1. "ThermaCal," composed of a ½" waferboard sprayed with polyurethane foam, is designed as an alternative to sleepers, insulation and sheathing when installed under shingles. Cornell Corporation. *Circle 251 on reader service card*

2. "Aggreboard" panels have a face layer of stone aggregate, an insulating core and come with a choice of backings. The structural sheathing panels are available in nine colors, including cocoa brown, desert brown, tangerine, suntan, black, northern green, and jewel white. MMI. *Circle 252 on reader service card*

3. Structural panel, which may be used in place of plywood in light construction applications, is constructed of ashen flakes bonded with phenolic resin. The laminated panels, called "oriented strand board," can be used in roof decks, side walls, and single-layer floors. Panels are available with both kraft and foil facings. Potlatch. *Circle 253 on reader service card*

4. Underlayment board, suitable for re-siding jobs, as shown, helps reduce air infiltration. Lightweight Fome-Cor® comes in accordian-folded strips 4′ wide by 50′ long. Monsanto. *Circle 254 on reader service card*

5. Oak spiral stairs are custom-made to fit individual specifications. Diameters range from 3′6″ to 8′6″. Options include a variety of balusters and handrails. Curvoflite. *Circle 255 on reader service card*

6. "TJI" joist, for floor and roof construction, is available in lengths up to 56′. Lighter than the solid sawn 2 × 12's, the 11⅞″ TJI features a center web of ⅜″ plywood that is pressure-fitted into top and bottom flanges. Trus Joist. *Circle 256 on reader service card*

7. "W" metal web joist is available 8½″, 9½″ and 10½″ in depth and up to 36′ in length. Lightweight units feature open webs that accommodate wiring and plumbing. ACE. *Circle 257 on reader service card*

8. Curved polystyrene panels allow insulated concrete walls to be completed in a single pour. Thermo-curve™ panels are resistant to most acids and salt solutions. Units are available in three width sizes. Thoro. *Circle 258 on reader service card*

9. Nailbase insulating sheathing accepts a variety of finishes, like the stucco and batten strip shown. Composed of asbestos-free insulation, Homosote® building board and polyurethane foam, Thermasote® has a class "2" flame spread rating. Homasote. *Circle 259 on reader service card*

10. Reinforced fiber glass panels attach to home foundation, as shown. Designed to be used with rigid foam insulation board, the paneling may be fastened with adhesive or nailed into place. Skirt Board™ is non-corrosive and insect-resistant. Trend. *Circle 260 on reader service card*

11. Colonial-style aluminum columns resist splitting, warping or weathering. Columns, which can be assembled by one man, are offered in a variety of sizes and with a choice of three caps. Superior. *Circle 261 on reader service card*

12. All-metal spiral stairs are shipped k/d with all necessary fasteners. Stairs are available in 48″, 54″ or 60″ diameters and a variety of heights. Units come in aluminum or steel. Spiral. *Circle 262 on reader service card*

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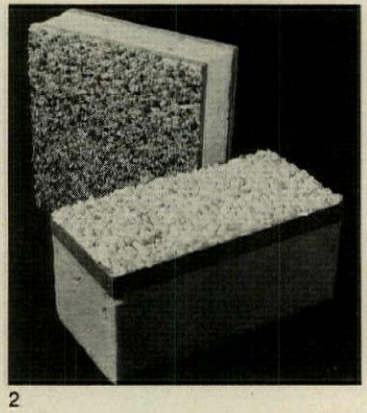

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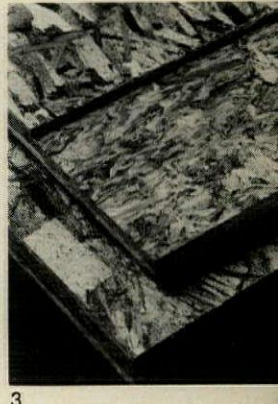

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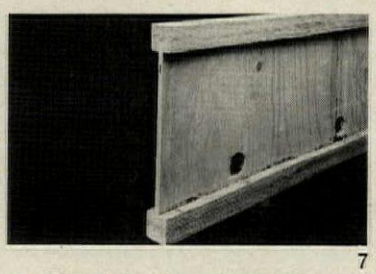

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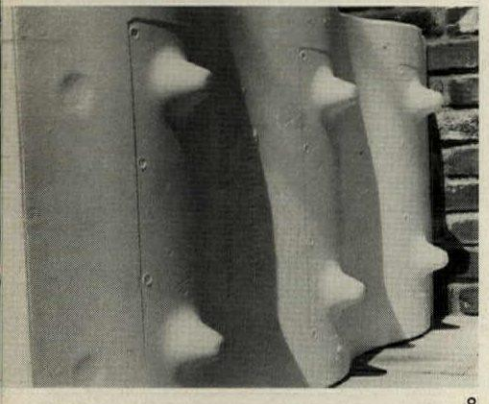

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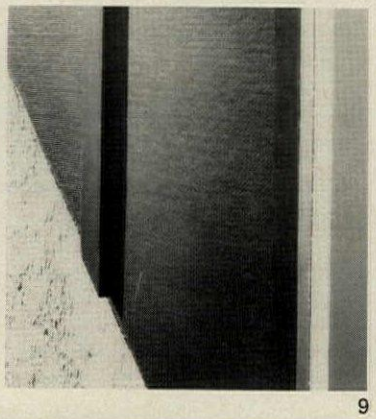

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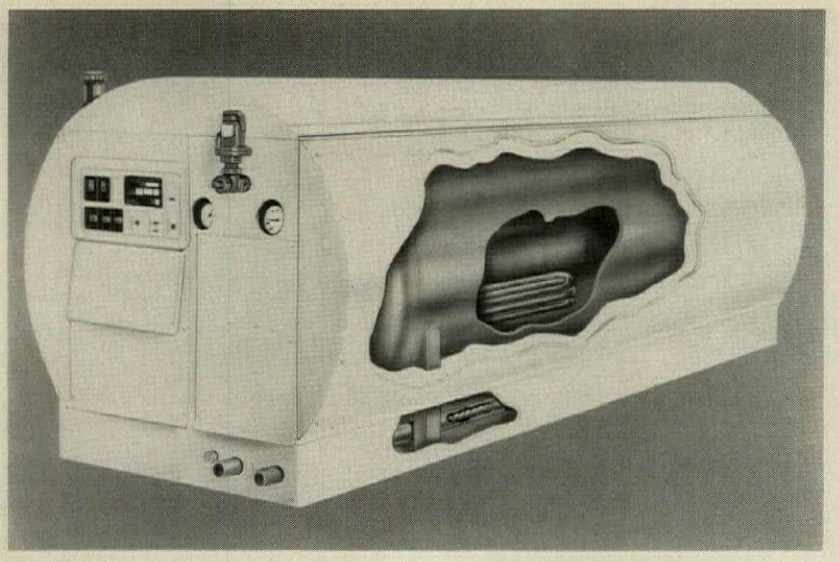
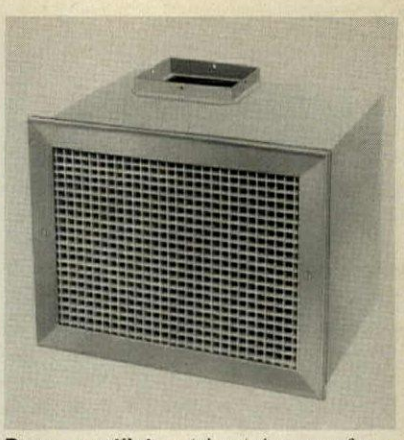
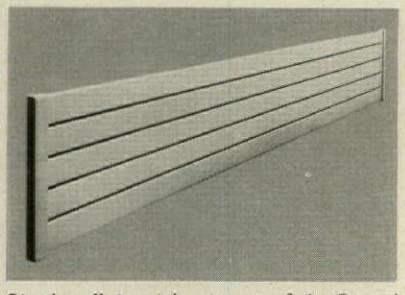


Thermal electric storage tank *(cutaway above)* is designed to replace conventional boilers in residential heating systems. Prepiped unit gathers energy during off-peak times so it can be used during peak rate hours. Megatherm. *Circle 244 on reader service card*

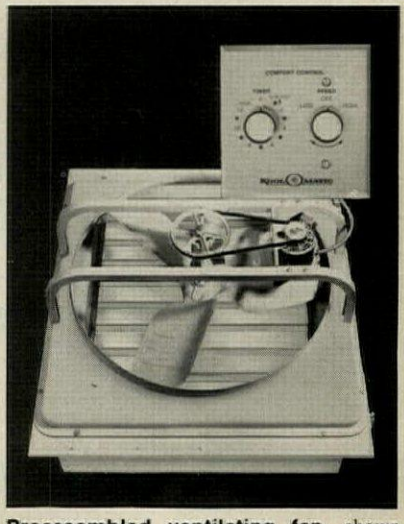


Room ventilator *(above)* is one of two models added to the "VQT" series. One model offers air delivery at a nominal 600 cfm, the other model at 1,000 cfm. Unit housing and grille are constructed of heavy-gauge steel. Other models in the series deliver from 90 to 400 cfm. Thermador. *Circle 248 on reader service card*

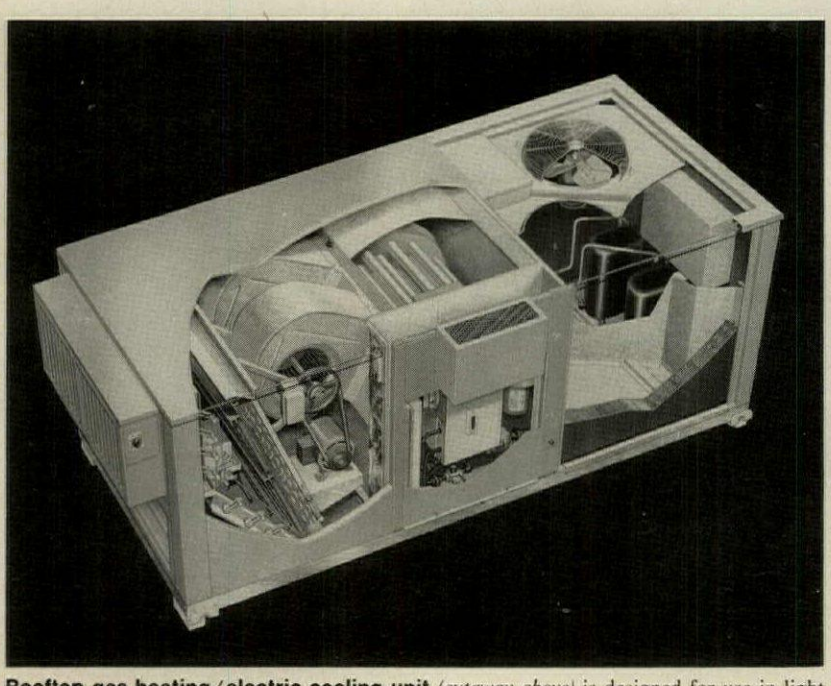


Steel radiator *(above)*, part of the Runtal Radiator heating system, is also compatible with other forced hot water heating systems. Oval tubing within the panel improves heat transfer, according to the manufacturer. Conservation Techne. *Circle 245 on reader service card*

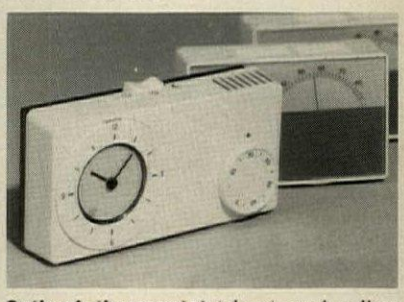
Triple-setback thermostat *(above)* can be programmed for a week at a time. The "Comfort Zone" unit compatible with standard 24v heat and heating/AC thermostat systems, requires no new wiring when used as a replacement unit. PCI. *Circle 246 on reader service card*



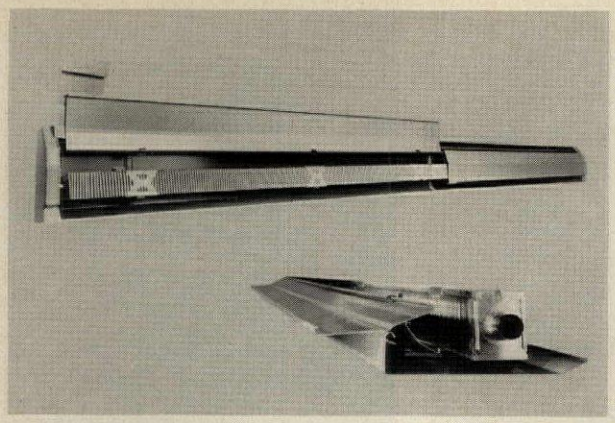
Preassembled ventilating fan, shown above with solid-state controls is part of a whole-house ventilating system. Two specially-designed models are offered: one model for houses that have over 1,000 sq. ft. of living area; the other for houses with 1,000 sq. ft. or less. Kool-O-Matic. *Circle 249 on reader service card*



Rooftop gas heating/electric cooling unit *(cutaway above)* is designed for use in light commercial buildings. Unit, with electronic control system, comes in 7.5 and 10-ton models. Lennox. *Circle 247 on reader service card*

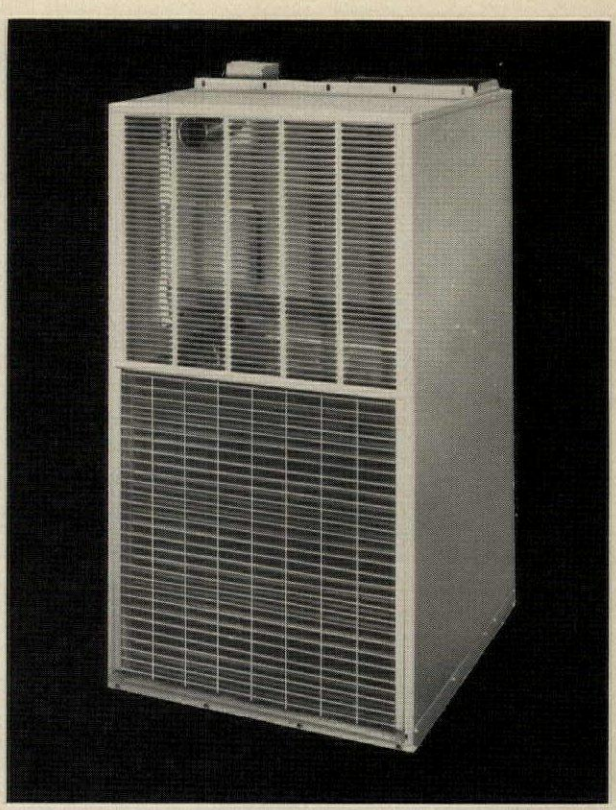


Setback thermostat *(above)* can handle a seven-day program for a multi-zone heating system. The unit functions as a master thermostat for each thermostat in the system. A three-position switch allows selection of "automatic," "override," or "cancel setback" functions. Ammark. *Circle 250 on reader service card*

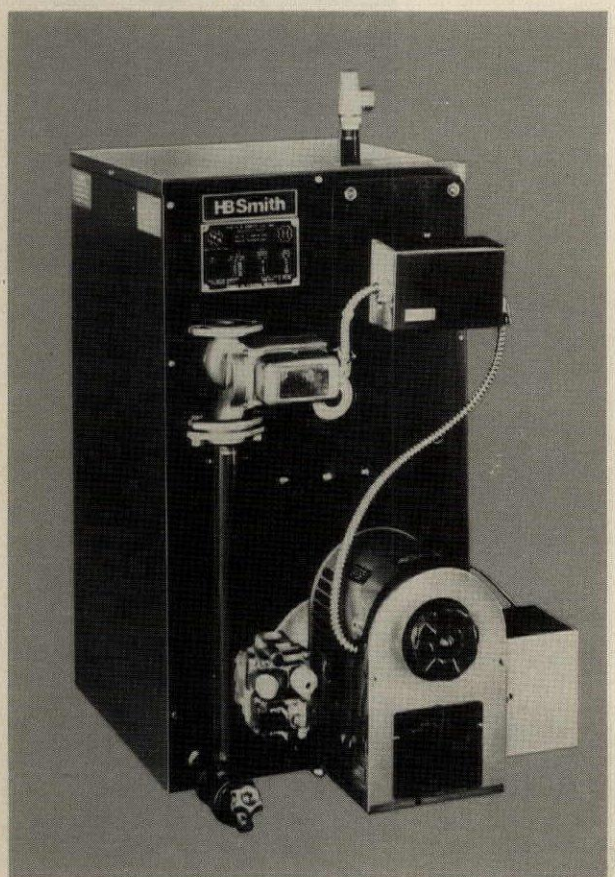


Hydronic baseboard *(above)* is 7″ high. The "Petite 7" features a lay-back front panel to facilitate cleaning, snap-on trim and edges, fingertip temperature control. Sterling Radiator. *Circle 237 on reader service card*

Heat reclaimer *(left)*, with circulating fan, plugs into any 115v outlet. Unit replaces a 24″ section of fluepipe of gas, oil or solid-fuel furnaces, stoves or freestanding fireplaces. Air Control Industries. *Circle 238 on reader service card*

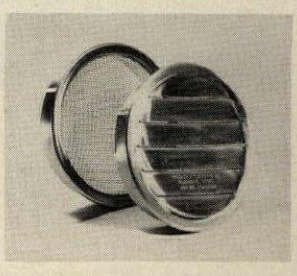


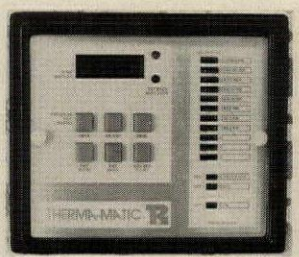
Through-the-wall heat pump *(above)*, suitable for rehab work and new construction, measures 27⅞″ wide × 29 7/16″ deep × 48⅛″ high. Johnson Corp. *Circle 240 on reader service card*



Cast-iron gas boiler/burner *(above)* is available in three sizes, with heating capacities ranging from 50,000 to 100,000 BTU's. The pilotless unit is ignited with direct spark. H.B. Smith. *Circle 239 on reader service card*

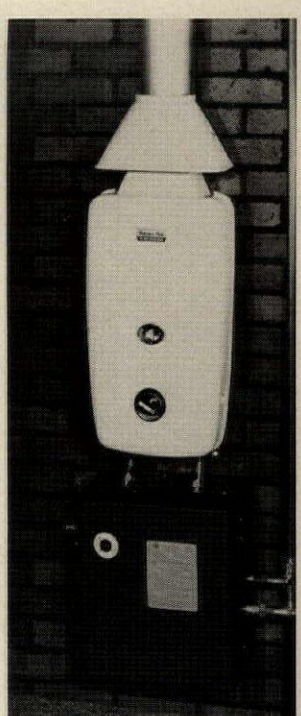
Aluminum louver is offered with or without water deflector, as shown at right. Whenever mounted on outside, louver should be installed in soffits or overhangs; basement walls are specified for indoor mounting. Midget Louver. *Circle 241 on reader service card*

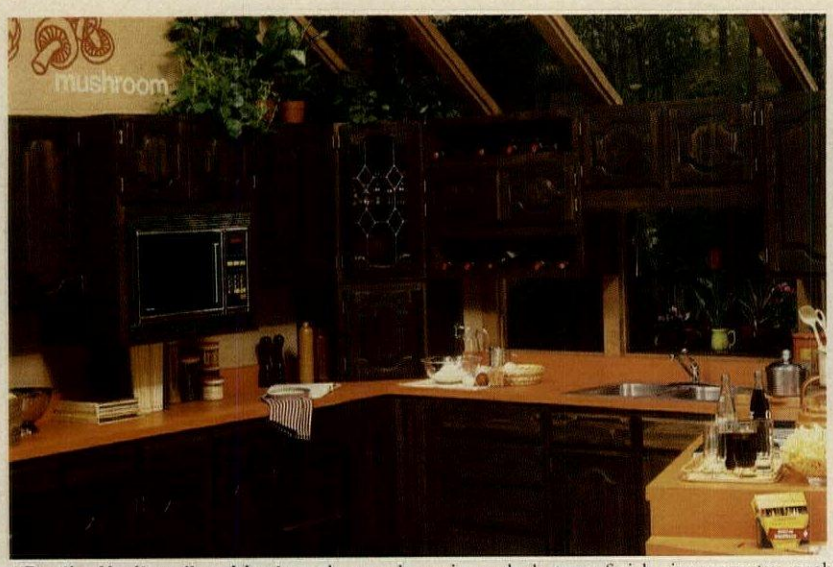




Master console *(above)*, part of a radiant-panel heating system, controls up to 10 thermostats. Unit can set back temperatures 10° or 20°F at specified times. Therma-Ray. *Circle 242 on reader service card*

Wall-mount "Paloma-Pak" *(right)* maintains temperature of water circulating through hydronic heating systems, eliminating the need for large boilers. Compact unit has a DOE thermal efficiency rating of 86%. Negea. *Circle 243 on reader service card*





"Rustic Heritage" cabinetry, shown above in a dark tone finish, incorporates such custom-like options as the leaded glass door, wine-rack shelving and microwave cabinet featured. Diamond. *Circle 230 on reader service card*

Built-in double oven *(above)* has a microwave upper oven and gas lower oven. Microwave offers 10 cooking levels. Pilotless lower oven, with lift-off door, is self-cleaning. Gray & Dudley. *Circle 234 on reader service card*

Ceramic tiles, shown on countertop above in blueberry, come in six other solid-color glazes, seven "mottled" glazes and a white-on-white pattern. "Sierra" tiles come 4¼" and 6" square. Franciscan Ceramics. *Circle 231 on reader service card*

Cast-iron single bowl sink *(above)*, designed for small kitchens, measures 25" × 22". Disposal compartment is slightly raised. "The Urbanite" is offered in 15 colors and white. Kohler. *Circle 232 on reader service card*

Freestanding range *(above)* has self-cleaning microwave/electric lower oven and eye-level oven/broiler. Also available: a gas convection/microwave lower oven. Caloric. *Circle 235 on reader service card*

Convertible cooktop *(above)* is available with ceramic or electric elements (shown). One grille module is included. Options include the rotisserie shown. Jenn-Air. *Circle 233 on reader service card*

Large-capacity refrigerator *(above)*, with 17.2 cu. ft., has adjustable shelves, a slide-out meat pan, and an automatic ice-maker. Unit comes in almond, harvest wheat or white. GE. *Circle 236 on reader service card*

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Anyone who has a Craftsman Motorized Miter Saw bought between July 1978 and June 1980 should check the plate at the end of the motor for model numbers 315.23730 and 315.23731. If the saw is either of these models, the purchaser should contact his local Sears store or call 800-845-4781 toll-free to arrange for a free correction kit.

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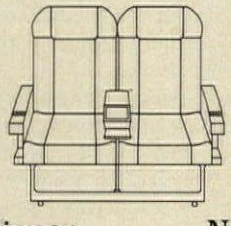

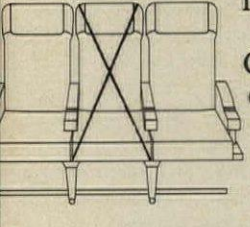

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Breaking out the systems approach to building

The following group of publications will keep you up to date on the prefab building industry:

A light **steel framing system** for residential or light commercial construction is featured in an eight-page brochure. The publication describes the advantages of a lightweight steel system over both wood and masonry ones. Those advantages, according to the manufacturer, include reliable pricing, fire and sound ratings and load-bearing capabilities. Four-color photographs show installations in single- and multifamily units, light commercial and industrial buildings. United States Gypsum. *Circle 300 on reader service card*

Tilt-up construction is expedited by this manufacturer's **wall jacks,** shown in a four-page publication. Step-by step drawings show how a pair of these jacks can lift a finished wall over 75 feet long in five minutes or less. An adjustable wall brace is also described. Proctor Products. *Circle 301 on reader service card*

From the same manufacturer: A publication describes a footing/stemwall **form system** that, according to the manufacturer, allows a builder to produce strong foundations with reduced labor and material costs. Cross-sections and a step-by-step description of foundation pouring highlight the advantages of the "Speed Forms." Standard panel specifications are included. Proctor Products. *Circle 302 on reader service card*

The "Douglas System" for wall **panel prefabrication** is described in a flyer. The publication illustrates a wall-panel machine with a production capacity ranging from 50 to 500 structures per year. Douglas Systems. *Circle 303 on reader service card*

A **foundation/anchoring system** designed specifically for mobile and modular home installations is featured in a foldout. The Transtationary© foundation system, according to the publication, offers such benefits as resistance to shifting, elimination of cement slabs and piers, reduced installation time and costs. The foldout also describes the TFS double-wire coupling system, which is said to eliminate frame distortion and fixture dislocation, and the Teralock® caisson system. Transtationary Foundation Systems. *Circle 304 on reader service card*

A **standing seam roof system** is the subject of a four-page publication. The system's benefits and advantages—such as its resistance to ice and snow loads, its watertightness, its insulation capabilities—are discussed. Marathon Metallic Building Co. *Circle 305 on reader service card*

An eight-page brochure describes how the manufacturer's **precast decks** offer construction savings for six building projects, ranging from a small office building to a large commercial construction project. Structural benefits of the Flexicore® system are also discussed. The Flexicore Co. *Circle 306 on reader service card*

A complete line of **panelized buildings** and accessories is featured in a 16-page booklet. The shelters shown and fully described include octagonal and rectangular buildings. The versatility and benefits of these steel-and-wood structures are highlighted. Also shown: park and outdoor accessories, such as benches and picnic tables. Game Time. *Circle 309 on reader service card*

Precut log homes are the subject of a 45-page booklet. Over 30 suggested floor plans, with exterior renderings, are shown. The booklet is available for $3.00 from Yellowstone Log Homes, Route 4, Box 2, Ribgy, Ida. 83442. Phone: (208)745-8110

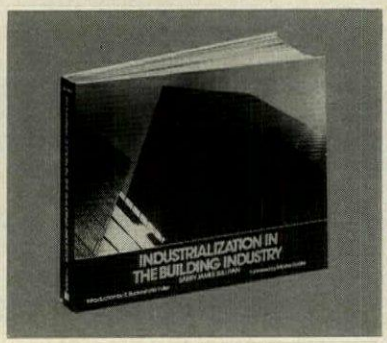
Industrialized building: an overview

It has the makings of a textbook, with a textbook title and, at 250 over-sized pages, a textbook's amount of information. But Barry James Sullivan's *Industrialization in the Building Industry* is more than a gathering of facts about the manufactured housing industry. It gives the reader a coherent and directed view of that industry.

The book's coverage is extensive, including clearly written discussions of the following areas:

- the birth and development of industrialized housing, including Operation Breakthrough in the late 1960s and early '70s;
- the main types of manufactured housing, including mobile, modular, panelized and precut units;
- "hybrid" housing systems, such as geodesic domes and plastic housing;
- metal building systems;
- concrete building systems;
- production technology: its setbacks and its future;
- management strategy.

The author presents a history of each sector, putting each into the perspective of the industry as a whole. He then discusses the advantages and disadvantages of each type of housing or system, illustrating with case studies of successes and failures.



The overall impression the book gives is of an industry with great diversity—one of the industry's greatest problems. As the author himself points out in his summary:

> The problem of further industrialization in the building industry does not seem to be a technological one. The technology is definitely there, as well as the design expertise to greatly improve what is already available. The problem is, instead, an organizational one. Primarily, it involves a whole range of interrelated problems that involve industry, the design professions, financial institutions, all levels of government, and . . . the consumer, who is inevitably the end-user of the products and systems of industrialized building. (p. 223).

Aware of the many paths open to the industry, Sullivan warns that the one finally taken may not be beneficial to the consumer. "Perhaps the first question," he asks, "is 'Do we really need or want to further industrialize the building industry?' " (p. 223).

Whether the reader knows a great deal about manufactured housing or nothing at all, *Industrialization in the Building Industry* is interesting and enjoyable. The book is published by Van Nostrand Reinhold, 135 West 50th St., N.Y., N.Y., and costs $26.50.

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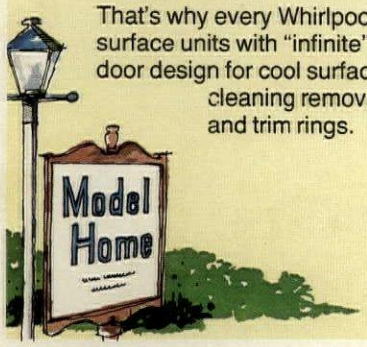

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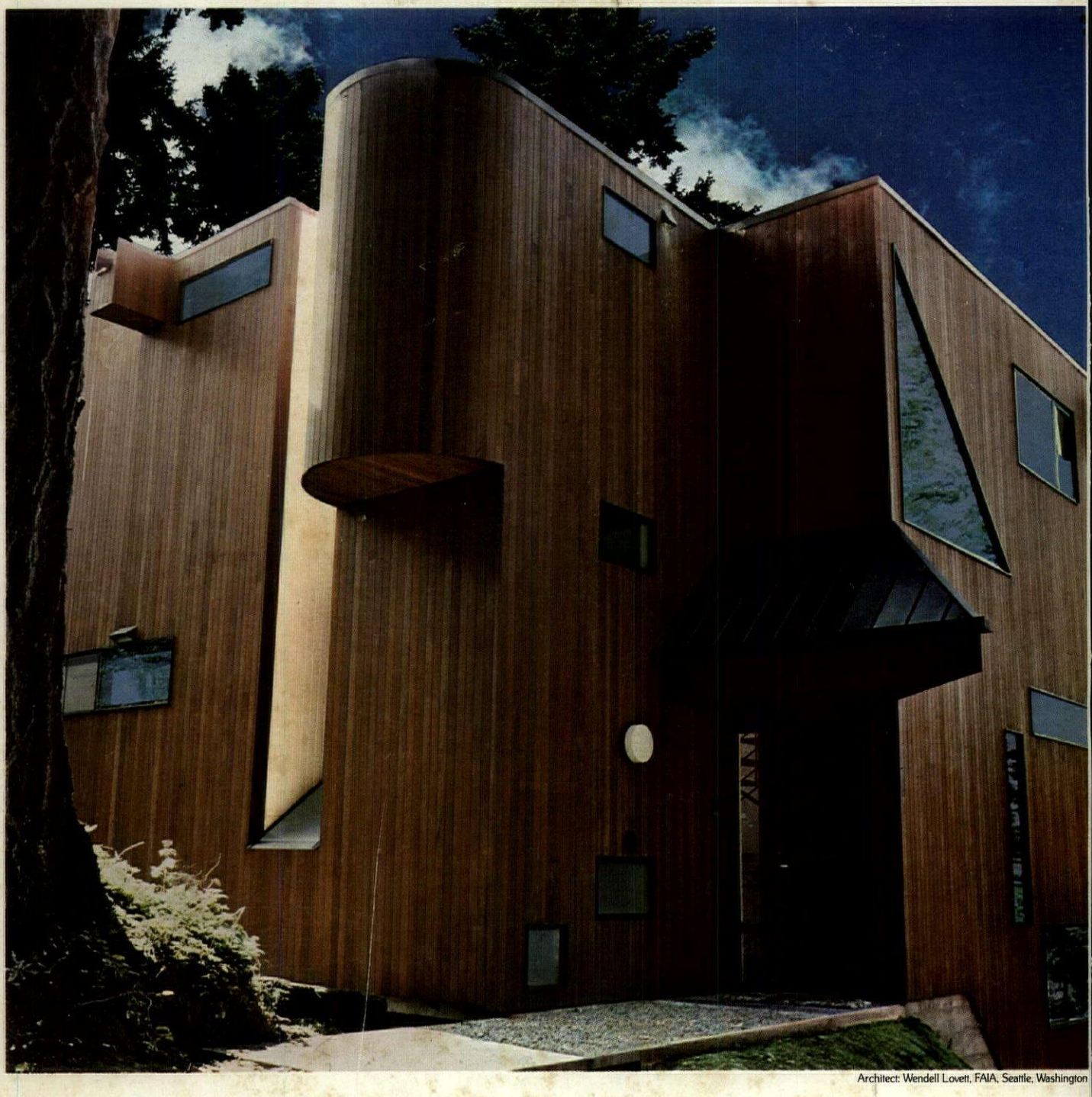

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