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HUD-0004747

Fairbanks, Alaska
White Marsh
(Baltimore County),
Maryland

The Affordable Housing Demonstration

Two Case Studies



The Joint
Venture for
Affordable
Housing

The Affordable Housing Demonstration Two Case Studies

Fairbanks, Alaska

White Marsh (Baltimore County), Maryland

Prepared for:
U.S. Department of
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By:
NAHB Research Foundation, Inc.
400 Prince Georges Ctr. Blvd.
Upper Marlboro, Md. 20772

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The Joint Venture for Affordable Housing

Housing costs have risen dramatically in recent years, so that many people have been unable to buy a home. Part of this cost increase was due to the high rate of interest on home mortgages, which reached almost 20 percent in some areas of the country before dropping under 14 percent in 1983.

A large part of the increase, however, was due to other factors -- rising costs of materials and labor, a reduction in the amount of land available for housing which has drastically increased lot prices, and changes in market patterns leading to larger homes on larger lots. Studies by the President's Commission on Housing and by a special U.S. Department of Housing and Urban Development (HUD) Task Force on Housing Costs confirmed the findings of earlier studies showing that ways exist to cut the cost of housing. These studies also show, however, that out-of-date regulations and building practices frequently prevent these ideas from being applied. In fact, the studies pointed out that many builders and local officials do not even know about many of the ways that exist to reduce housing costs.

The Joint Venture for Affordable Housing was initiated by HUD Secretary Samuel R. Pierce, Jr., to correct this situation. Since affordable housing is a

problem which involves all levels of government as well as the rest of the housing industry, finding an answer requires the participation of all of these elements.

Through conferences, workshops, demonstrations, publications, and similar activities, ways to cut construction costs through more effective and efficient planning, site development, and building procedures are being brought to the attention of builders and local government officials all over the country.

The Affordable Housing Demonstrations

Home Builders learn from other builders; successful ideas are copied and used in new ways by other builders in many different areas of the country. The affordable housing demonstrations have been developed to illustrate ideas for reducing housing costs in real projects and to provide information on the cost savings that resulted.

The central theme of the demonstration program is that a builder and those local officials responsible for regulatory approval can, together, identify ways to reduce the cost of housing and to modify or interpret local building codes and site development regulations so that these methods can be used. In the demonstration program, no Federal funds are

provided either to the builder or to the community to support the demonstration projects. HUD and the National Association of Home Builders Research Foundation do provide technical assistance through various publications documenting previous research studies and through suggestions to the project designers, but it is the builders's responsibility to develop a list of possible cost-cutting ideas and it is the responsibility of local officials to accept those which are reasonable for that community.

Participating builders and communities have been selected for the demonstration program in several ways. Before the Joint Venture was announced in January 1982, HUD approached a number of communities which had already demonstrated, in other activities, a willingness to modify regulations and to take other steps to encourage local development. As these communities agreed to participate in the program, NAHB worked through its local associations to identify builders in the communities with reputations for quality and records of innovation. Following announcement of the first twelve communities and builders selected to participate in the demonstration program, many other communities and other builders expressed interest in joining the program. In each case, HUD required a formal commitment by the highest elected official that the local government would support the program.

Once a project was accepted, HUD and the NAHB Research Foundation assisted the builder to identify cost-cutting ideas and to develop a workable, attractive site plan. The cost-cutting measures used in the various demonstrations vary widely. In some projects, street widths, street design standards, and utility system requirements were changed to reduce costs. In other projects, unit densities have been increased to reduce the impact of land cost on the final price, while good site planning and design have made this increased density acceptable to the communities. New housing materials and construction methods were used in many projects. In addition to these changes in materials and methods, many projects benefited from improvements in local administrative procedures which reduced the time and effort needed to obtain building and land use approvals.

The Case Study Approach

Each project undertaken as an Affordable Housing Demonstration as part of the Joint Venture for Affordable Housing is being described in a case study report. The case studies are intended to be learning tools to help home builders, local officials, and others concerned about affordable housing to recognize and seize opportunities to reduce housing costs through regulatory reform and the use of innovative planning and construction techniques.

Information on the changes and their impact on costs is collected by the NAHB Research Foundation. Each case study describes the community, outlines the builder's experience, and discusses the specific project characteristics and history. Where possible, the cost savings resulting from the use of various procedural,

planning, development, and construction change are calculated and reported in detail.

The following material provides this information on the Affordable Housing Demonstration projects in Fairbanks, Alaska and White Marsh, Maryland.

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**The Affordable Housing
Demonstration
Case Study 1**

Fairbanks, Alaska

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The Fairbanks, Alaska, Affordable Housing Demonstration project is "Woodsmoke," located outside the city limits in a fast-growing area halfway between Fort Wainwright and Eielson Air Force Base in the Fairbanks North Star Borough. It is about 100 miles south of the Arctic Circle and 250 miles north of Anchorage. Approximately 70,000 people live in the Borough. Average price of all single-family homes is about \$120,000.

Webb Construction, Inc., Tom Webb, President, began developing Woodsmoke in late August 1984. The project includes 70 single-family homes on one-acre lots in a heavily wooded and open 90 acre site. The homes range in size from 850 to 1,250 finished square feet plus an additional 500 to 1,200 square feet of unfinished area. They sell for \$82,500 to \$110,000.

The three home styles with six floor plans feature exterior cedar accents, wood decks, and vaulted ceilings, and offer options of insulated and heated one- or two-car garages, fireplace/woodstoves, and additional rooms. Webb used all-weather wood foundations as a cost-saving and energy-efficient alternative to concrete foundations. The homes are well-insulated with ratings of R-25 for walls, R-45 for the roof, and R-19 for the basement.

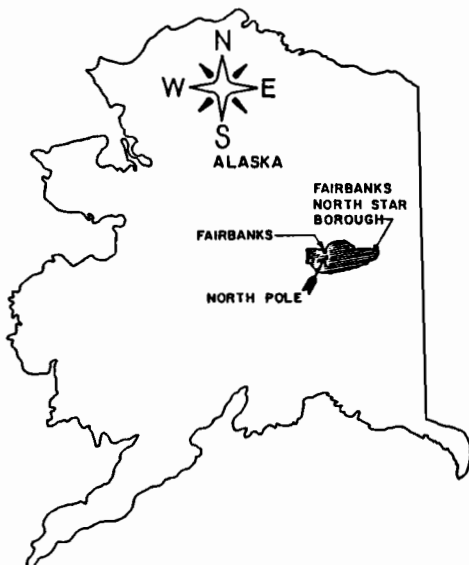
Specific cost savings were realized by Webb in the construction of the homes through use of innovative techniques in foundations, framing, and front porches. Building only 4 to 5 months of the year and with unusual soil conditions and septic system requirements limits the innovations possible in land development.

Project Description

The Community - Fairbanks, Alaska

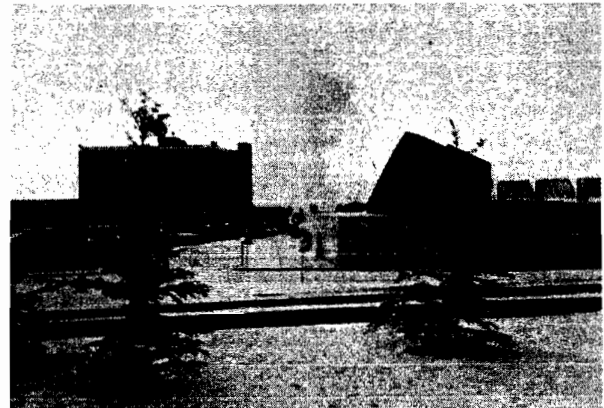
The Fairbanks North Star Borough is located just east of the middle of the state of Alaska at the 65th parallel, about 100 miles south of the Arctic Circle and 250 miles north of Anchorage, Alaska's largest city. One of six Alaskan boroughs (counties), Fairbanks North Star covers an area as large as that of many of the lower 48 states. It is governed by a mayor and assembly.

Fairbanks began in 1901 as a temporary trading post along the banks of the Chena River and became a permanent settlement when gold was discovered in the nearby hills. The city was incorporated in 1903 and today is Alaska's second largest city. In 1984, 69,633 people lived in the Fairbanks North Star Borough: 27,103 in the city of Fairbanks, and 1,005 in North Pole, the second largest community in the borough.



The average monthly temperature is 12°F in January and 61°F in July. Temperatures fall as low as 60°F below zero. The average annual snowfall is 66.5 inches and is heaviest in November. Average annual precipitation is 10.37 inches, with August the wettest month.

The borough population grew about 7 percent from 1983 to 1984; North Pole grew 8 percent, and the city of Fairbanks' population remained stable. Average annual income in 1984 was \$28,248.



University of Alaska

Fairbanks is home of the University of Alaska. It is the trading center for the middle of the state and a military center focusing on space communication from unmanned satellites. Its international airport serves arctic villages and oil fields of the north slope. Major employers are the government, retail and wholesale trades, services, transportation, communication, utilities, and construction. Nonagricultural employment continues to grow, averaging 1,000 more employees in 1984 than in 1983.

The unemployment rate in Fairbanks averaged 13.4 percent in 1984, a 2 percent drop from 1983. Employment in Fairbanks, and most of Alaska, varies with the seasons, with unemployment higher in winter and lower in summer. The average unemployment rate in the state of Alaska in 1984 was 10.2 percent, compared with 7.5 percent for the United States as a whole, according to the Alaska Department of Labor.

The value of new residential construction authorized by building and zoning permits in Fairbanks North Star Borough in 1984 totaled \$58.3 million, over \$13.0 million more than the 1983 value. A total of 949 new housing units was authorized in 1984, up 20 percent from the previous year. Average asking price of all single-family homes advertised for sale in the first half of 1985 was \$119,766, one percent higher than it was in 1984. The most frequently advertised single-family residence has three bedrooms.

Average rent for a two-bedroom, unfurnished apartment, the most frequently advertised type of rental unit, was \$698 in January of 1985. Average rent for a three-bedroom home was \$871 in January 1985. Rental vacancy rate is 5 to 6 percent.

The Builder - Webb Construction, Inc.

Webb Construction, Inc. was formed in 1976 by President Tom Webb in Spokane, Washington. Between 1976 and

1982, the company built approximately 60 homes in Spokane, priced mostly in the lower end of the market. In 1982 Webb built 24 homes in Anchorage and, in 1983, 56 homes in the same city. He then ventured into Fairbanks, where he built 26 homes in 1984 and 14 in 1985. The company was also involved in building on an Indian reservation in 1980 and 1981. Webb is presently constructing mini storage units in Anchorage, as well as homes in Fairbanks.

Webb Construction keeps supervisors and laborers on the payroll and hires subcontractors for all other tasks as needed. Construction materials are purchased from local suppliers. Many local builders purchase supplies directly from the "lower 48."



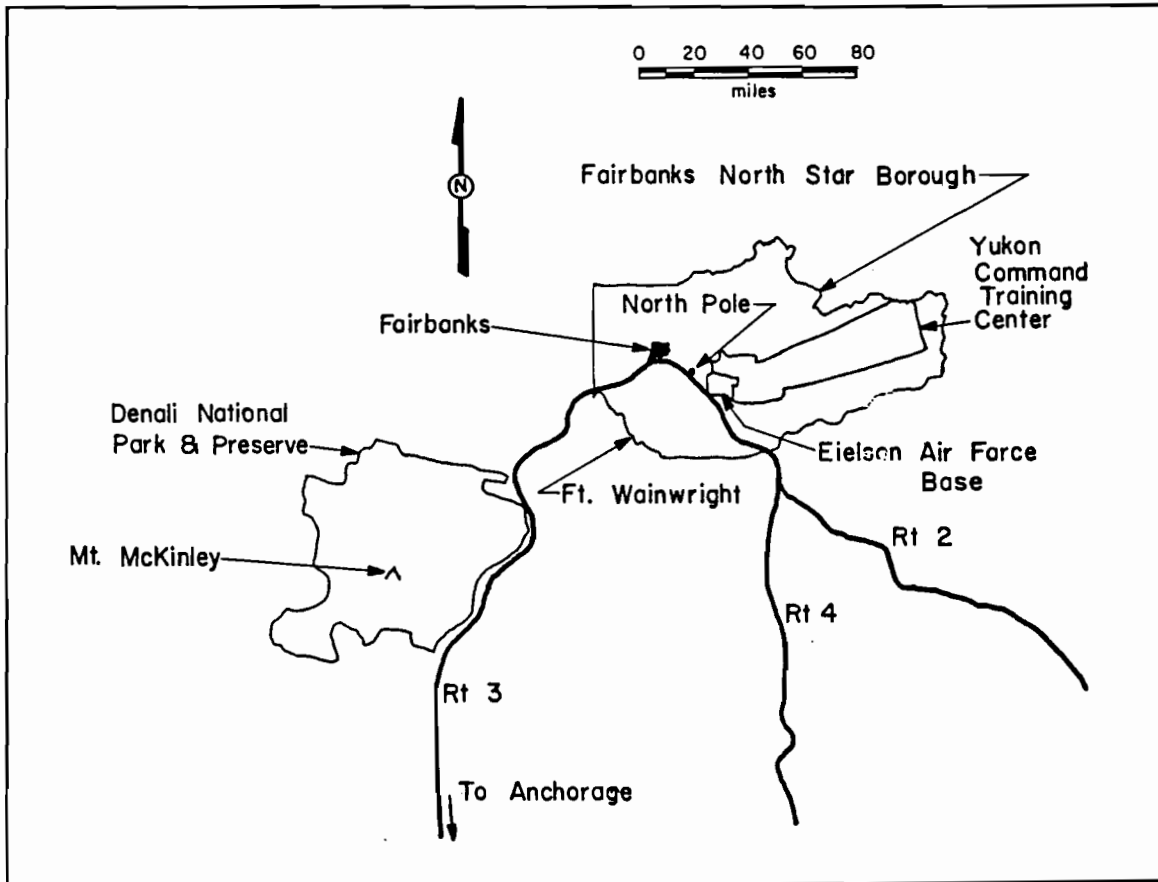
Tom Webb, Webb Construction Company

The Project - Woodsmoke

The demonstration project, Woodsmoke, is three miles outside the city of North Pole, a community of approximately 1,000 located in a fast-growing area south of

Fairbanks, halfway between Fort Wainwright and Eielson Air Force Base in the Fairbanks North Star Borough.

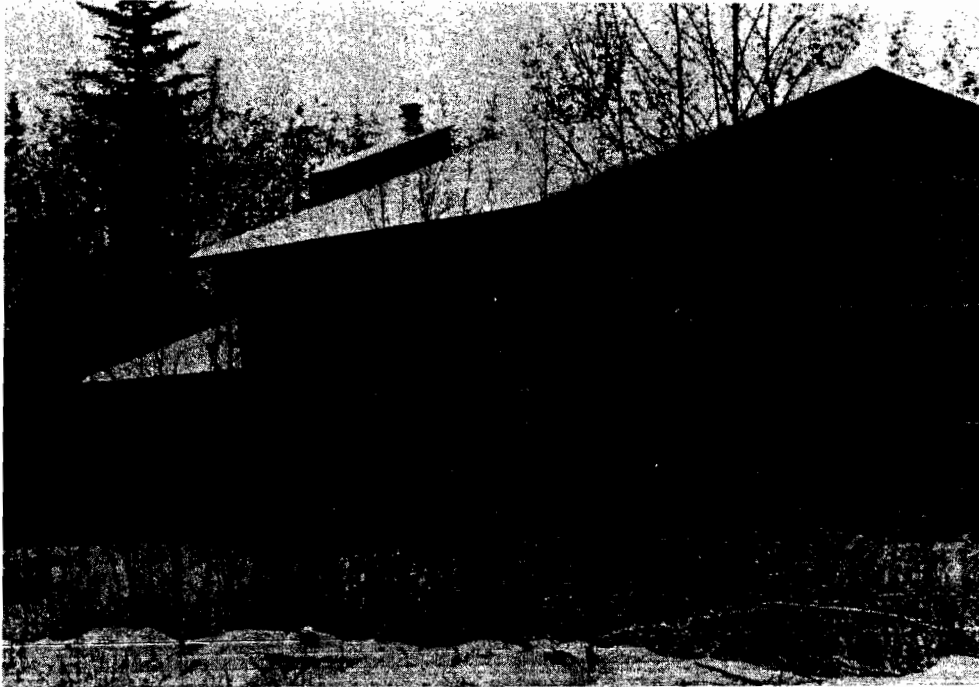
The trans-Alaska pipeline goes through the middle of the project on a 150-foot wide easement.



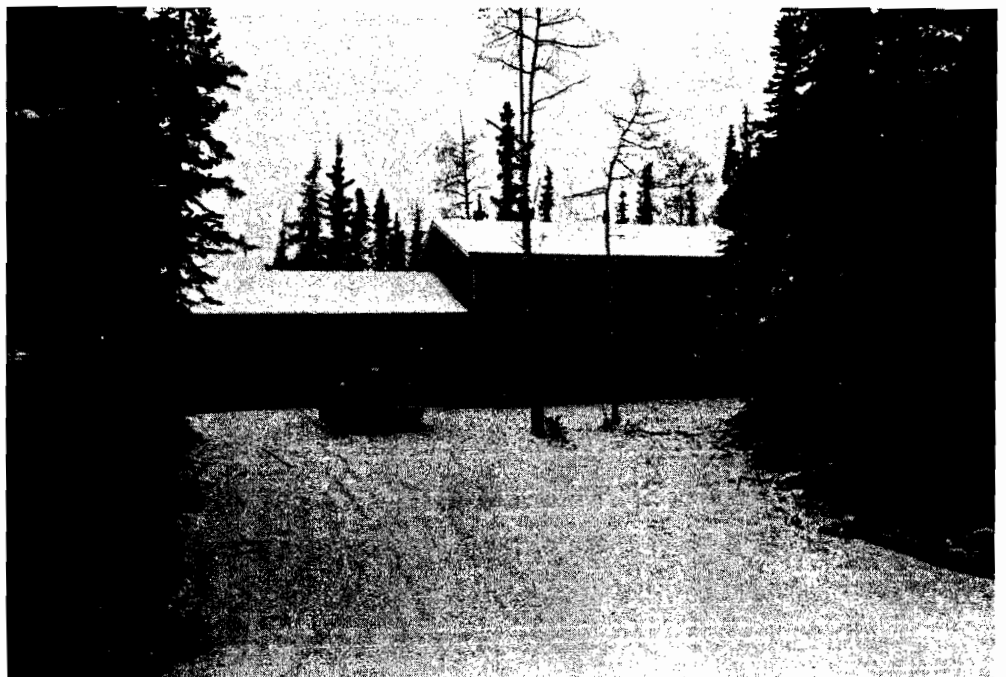
Marker noting pipeline position through Woodsmoke

The project includes 90 acres of heavily wooded and open land for development into 70 single-family homes on one-acre lots. The homes range in size from 850 to 1,250 finished square feet plus an

additional 500 to 1,200 square feet of unfinished area. They sell for \$82,500 to \$100,000 in an area where housing under \$100,000 is rare. Popular options raise the average price to \$95,000 to \$110,000.



Woodsmoke models

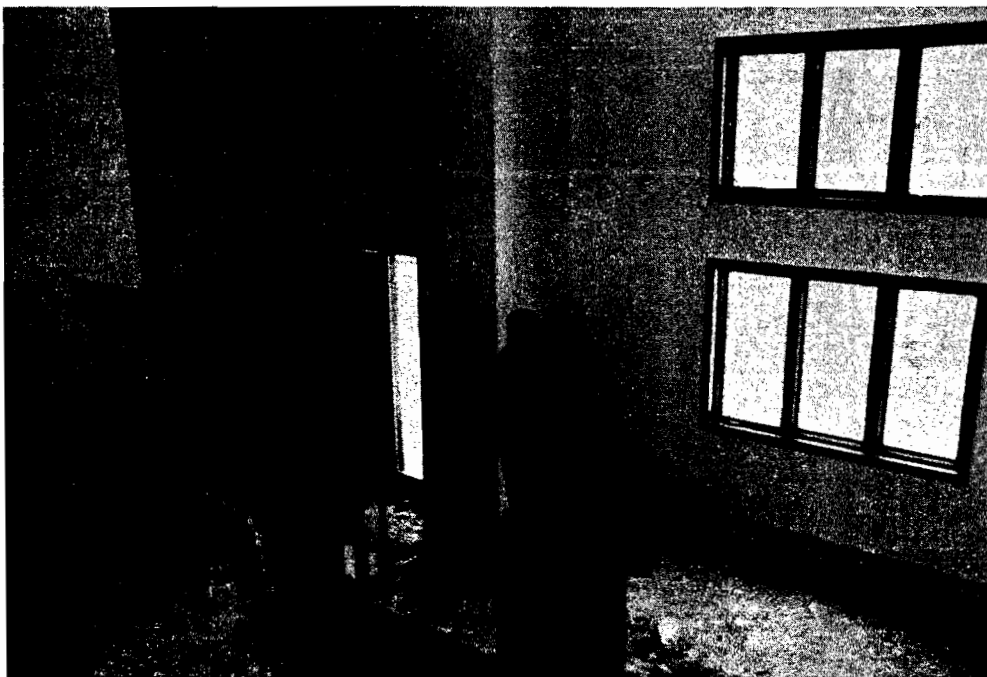


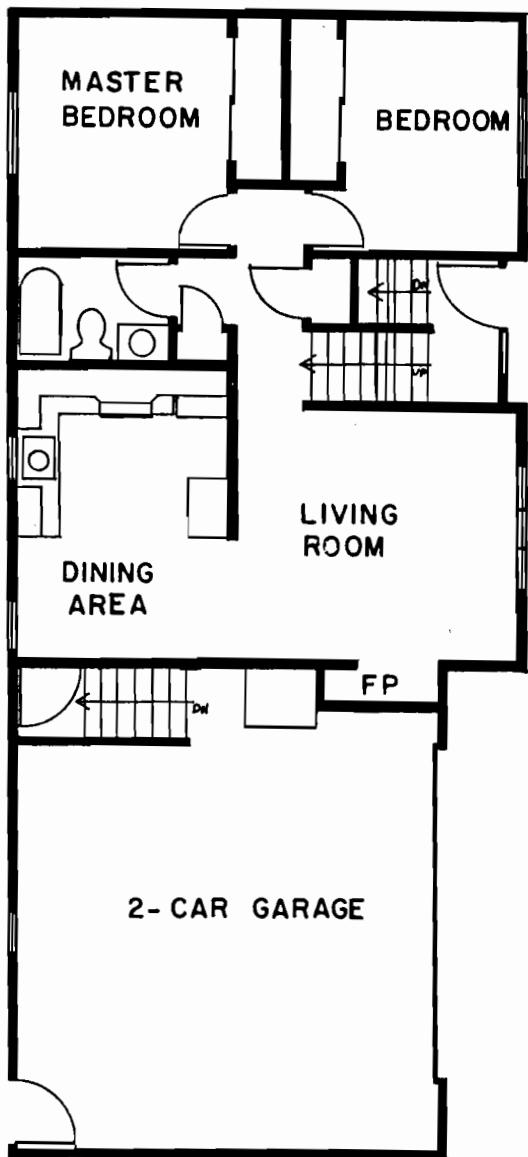
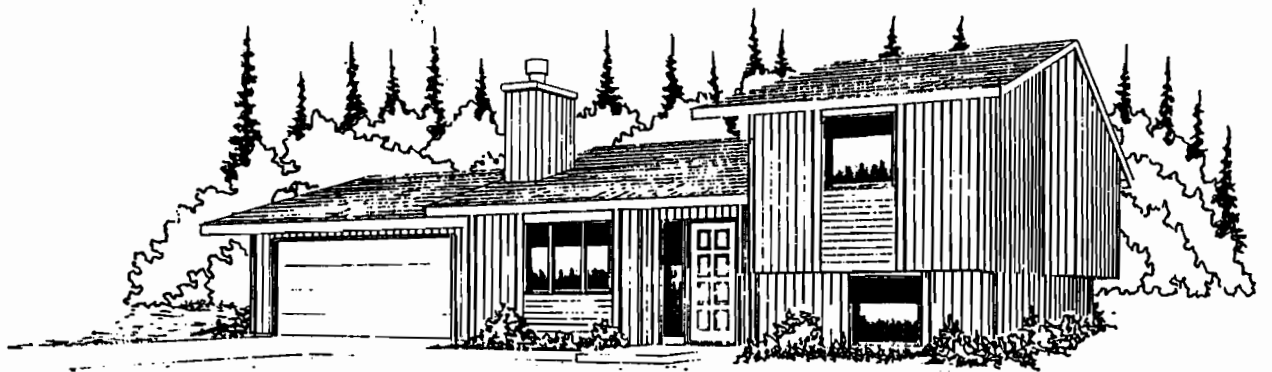
Webb offers three home styles and six floor plans in Woodsmoke. Homes feature exterior cedar accents, wood decks, oak cabinetry, natural wood trim, carpet and vinyl floor coverings, double- or triple-pane windows, and vaulted ceilings. Options include: insulated and heated one or two car garages;

fireplace/woodstove; additional bedroom, family room, and bathroom; two-foot extensions; and duplex conversion for split-entry styles. The garages have outlets on the exterior to allow electric heaters to warm cars. Roughed-in plumbing in the basements allows for additional baths.

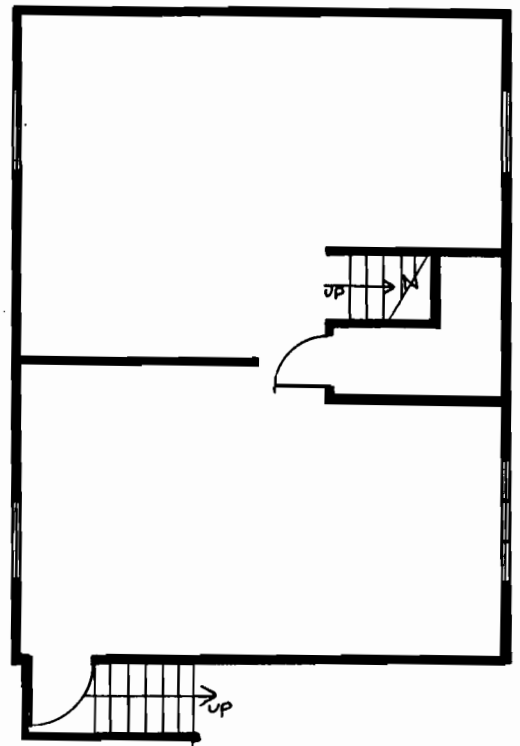


Typical Woodsmoke interiors

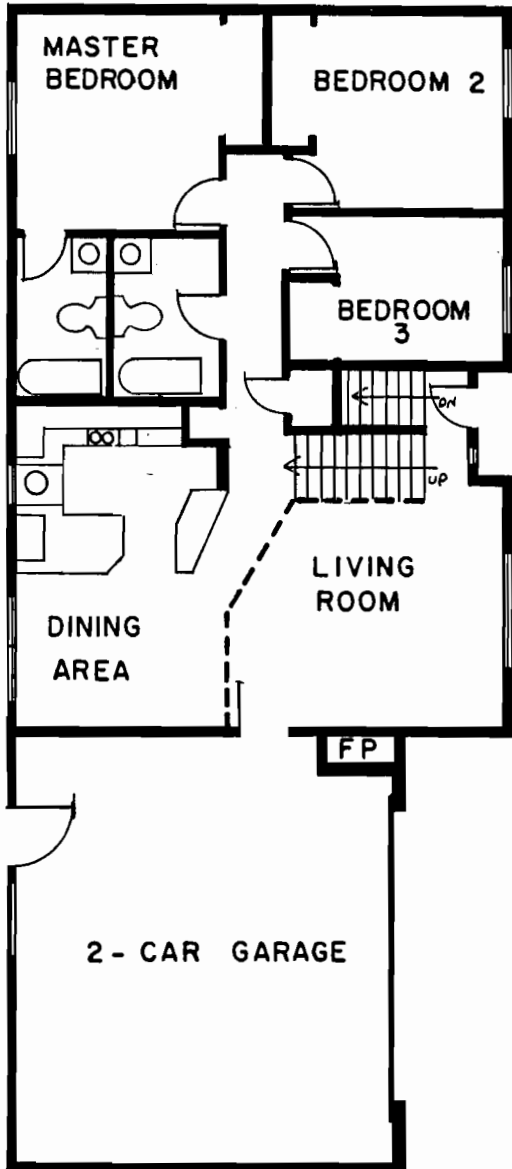
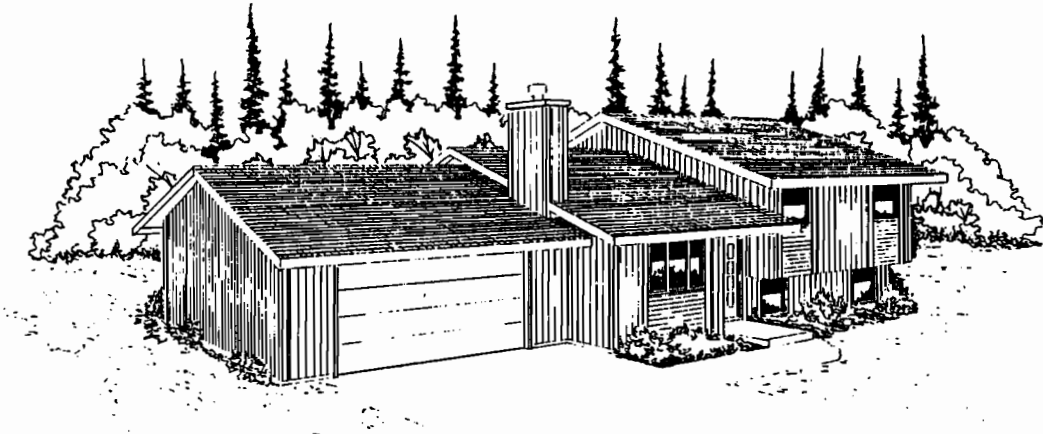




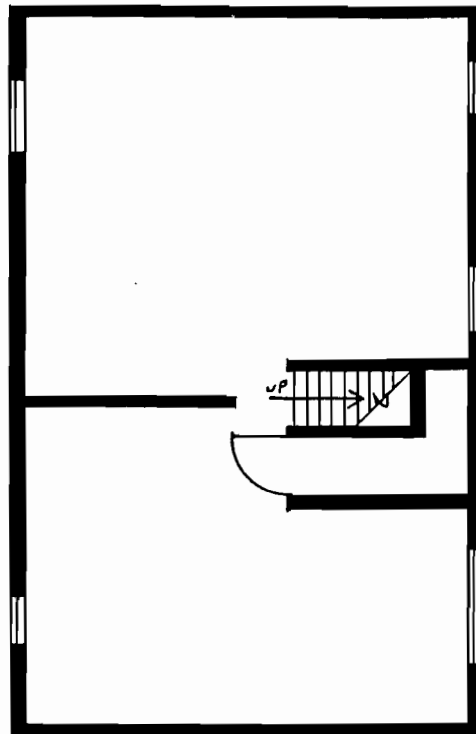
UPPER LEVEL & GARAGE



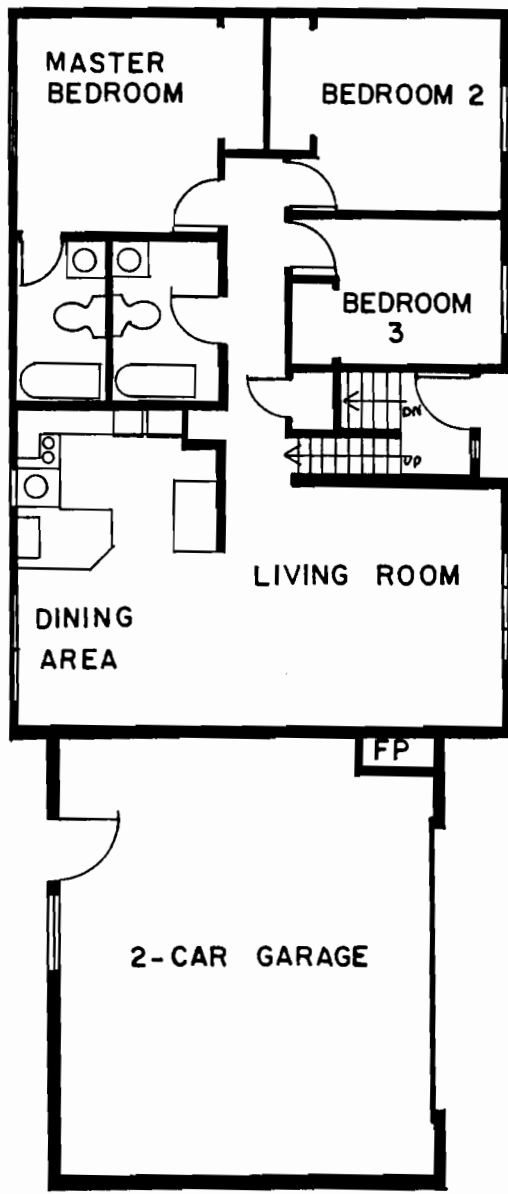
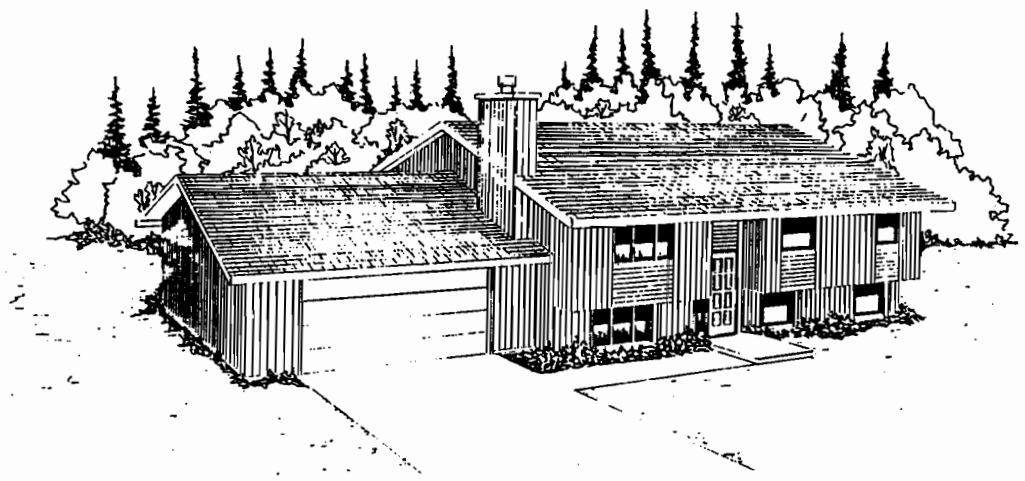
UNFINISHED BASEMENT



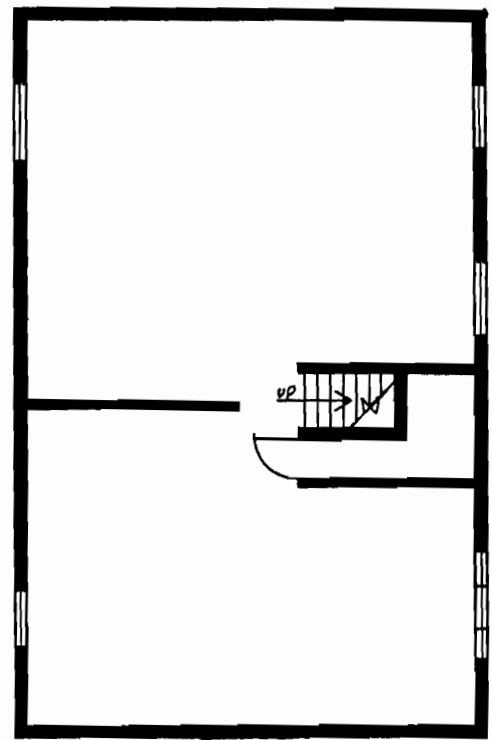
UPPER LEVEL & GARAGE



UNFINISHED BASEMENT



UPPER LEVEL & GARAGE



UNFINISHED BASEMENT

Webb used all-weather wood foundations as a cost-saving and energy-efficient alternative to the more typical concrete foundations. The homes are well insulated, with 6-inch fiberglass, 3/4-inch polyisocyanurate, and 4-mil vapor barrier in the walls for a rating of R-25. Ceilings have 12-inch cellulose insulation and 4-mil vapor barrier for an R-45 rating. Basement walls have 6-inch fiberglass insulation for an R-19 rating.

Oil-fired boilers feed hot water baseboard systems to heat the homes. Each garage has a separately controlled heater. A 500-gallon below-ground fuel storage tank is provided. Because the system is below ground, #2 grade fuel oil is used. When



Insulation in Woodsmoke home



the system is above ground, #1 grade is required. Domestic water is heated in the boiler, with a separate domestic water heater available as an extra.

Homes have well and septic systems, since water and sewer lines are in place only within the city limits of Fairbanks and North Pole. Wells are located in the basements for frost protection. One-acre lots are required to accommodate the insulated leach fields and provide room for a back-up system.

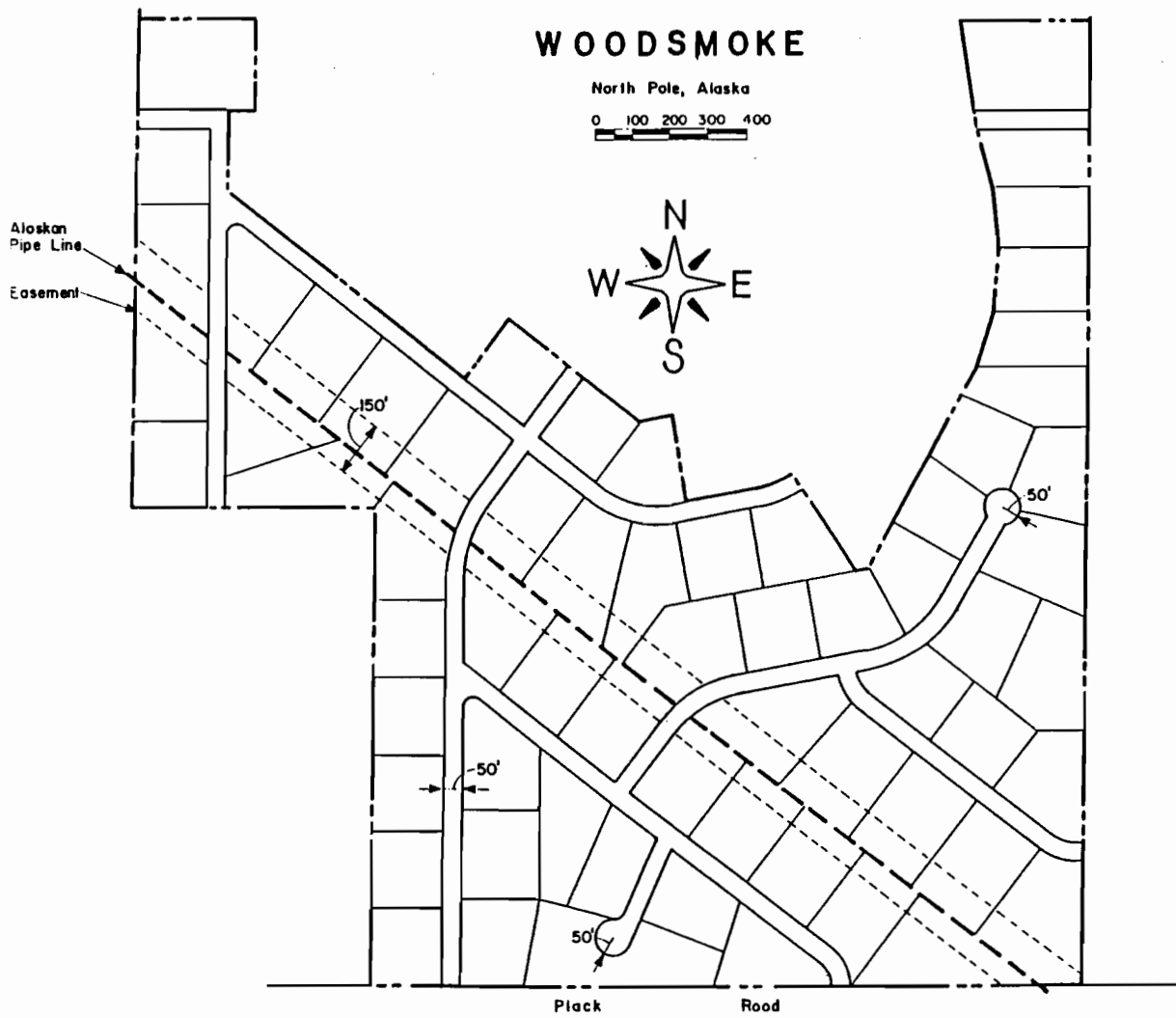


Typical Woodsmoke street

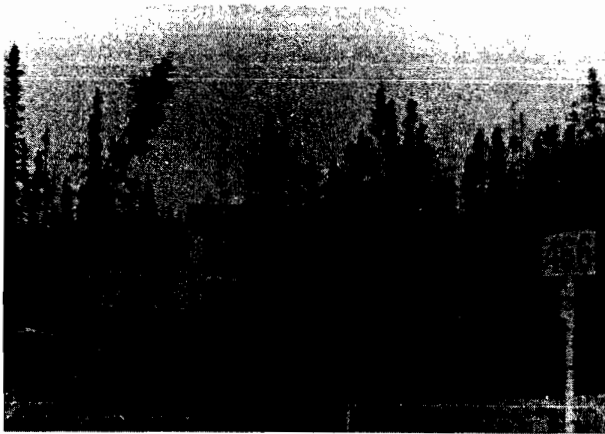
Project History

Webb purchased 138 acres on the edge of the city of North Pole in the Fairbanks North Star Borough in April 1984, contingent on approval of the subdivision plat by the borough assembly. Soil borings were taken to determine the location and depth of permafrost, a required procedure in this area. Ninety acres of the property were determined immediately buildable. The remaining land is "perma-gravel", a low-moisture type of permafrost that must be scraped and thawed before it can be developed.

The land plan was designed over the next few months. Webb wanted to avoid the grid pattern typical of local developments but was constrained in several ways. The land parcel is unusually shaped, with a rectangular section cut out of the southwestern corner. The portion that was not immediately buildable was in the northcentral section. A few sloughs, former streams that have become fingers of deep mud or mire, run through the property.

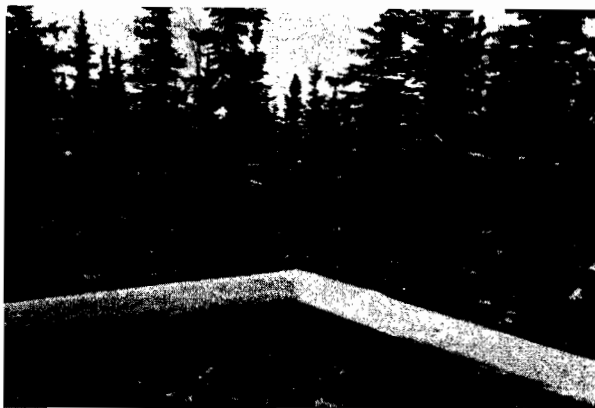


The trans-Alaska pipeline runs underground from northwest to southeast diagonally across the project. The 150-foot pipeline easement is actually 60 feet of openspace on one side of the pipeline and 90 feet on the other, which includes a state required gravel road. Lots were backed up to the pipeline to most effectively use the easements, which belong to the homeowners.



Pipeline easement behind Woodsmoke home

The Alaska Department of Environmental Conservation (DEC) requires 40,000-square foot lots to accommodate a septic system, allowing room for a back-up system if needed.



Large treed lot from deck

Engineering drawings were completed in May 1984. The Fairbanks North Star Borough Assembly approved the proposed 70-unit plat on July 25, 1984, after initial approval by the Planning and Zoning Board. The sale of land was completed at that time. Development financing was provided by Alaska Mutual Bank in Anchorage, with the help of Senior Vice-President for Construction Loans, Wes Clubb. Road work began on the project in August 1984.

Woodsmoke was designated an affordable housing demonstration project on September 5, 1984, with the support of the Borough Assembly.

All processing and administrative procedures except one moved smoothly and routinely. The exception was the Golden Valley Electric Company, the quasi-public agency responsible for providing power to Woodsmoke. Overhead power lines, standard for the area, were used in the project. However, the pole placement proposed by Golden Valley was unacceptable to Webb. Optimum distance between power lines was planned without regard to the subdivision's aesthetics. Because Webb would not accept the original Golden Valley plan, a new contract for pole placement and stringing was required, involving a new draft, bids, and award. Sixty days were allowed by regulation for the new work, which finally began on the 57th day leaving Woodsmoke without electricity until November 15, 1984. Generators and space

heaters provided power and heat for 17 homes from the framing stage in October until November 15.

Additional bedrooms	\$	3,000
Additional bath	\$	3,300
Family room	\$	4,500
Duplex conversion on split entry	\$	18,000

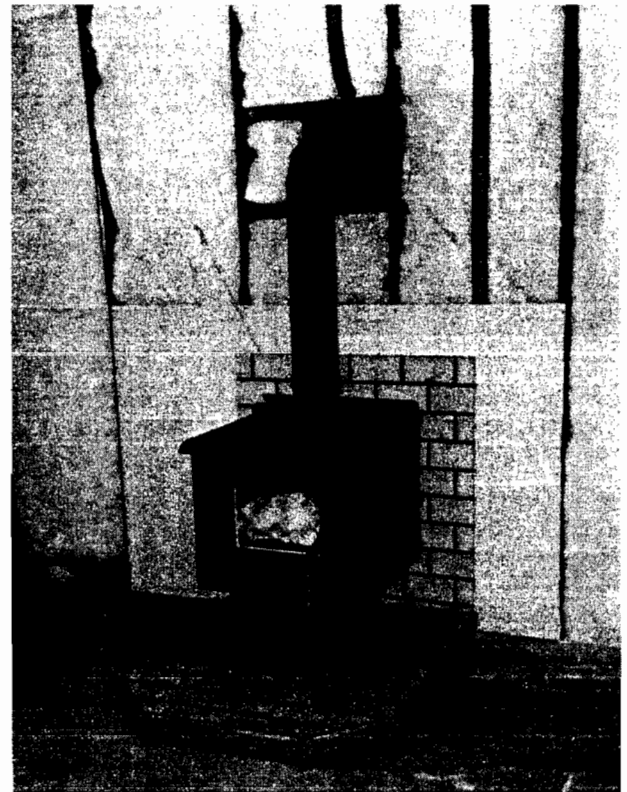
Marketing

Webb designed and priced the Woodsmoke homes to attract personnel from nearby Eielson Air Force Base. (Most Fort Wainwright personnel live in Fairbanks). Thirty-one homes were built between September 1984 and October 1985. Twenty-seven were sold by March 1986.

The split-entry model was the most popular. Most buyers chose units with two-car garages, \$10,000 extra. Only three buyers purchased units without a garage. A popular option was the two-foot extensions on either end of the unit.

Options

Single garage	\$	7,500
Double garage	\$	10,000
Fireplace	\$	2,000
Woodstove upstairs	\$	2,500
Woodstove downstairs	\$	3,000
Elevation changes	\$	400-600
2-foot extensions on either end	\$	2,500



Optional fireplace

The Last Frontier Realty Company, with offices in Fairbanks and North Pole, marketed the homes for Webb.

Innovations and Their Impact on Costs

One purpose of the Affordable Housing Demonstration program is to collect and evaluate information related to all aspects of the project which affect housing costs - the approval process, residential development practices, and construction techniques. This chapter discusses practices and techniques used by the Webb Construction Company in designing and constructing Woodsmoke that differ from normal practice in the Fairbanks North Star Borough. Generally accepted local cost figures are used to estimate cost savings associated with these differences.

Approval Process

Greg Strong, Chief Executive Director of the Fairbanks North Star Borough, stated, "It is the policy of the borough to interfere with the builders as little as possible. One reason people come to the Fairbanks area is to escape government intervention." This hands-off policy is especially important to builders in this area because of its short four to five month construction season. Delays considered routine in the lower 48 states can easily postpone a project one full year in the Fairbanks area.

Initial plat approval by the Borough Planning and Zoning Board is a standard requirement. The Borough Assembly routinely approves these plats if there are no objections.

The Alaska State Building Code is based on the Uniform Building Code (UBC). The State is the inspection authority. Inspections are performed on approximately one-third of the houses.

If the house is financed with mortgages insured by the Federal Housing Administration (FHA) or the Veterans Administration (VA), FHA appraisal of the unit is required after completion.

Site Planning and Development

Land in the Fairbanks North Star Borough is relatively inexpensive, but building materials are costly since most are shipped from the lower 48 states.

Webb purchased the 138-acre parcel that includes Woodsmoke in April 1984 for \$3,000 per acre. He figures the cost of the developed land is \$10,000 per acre.

Webb built gravel roads in Woodsmoke, typical of the area. The streets meet borough standards but were not public streets initially and were not maintained by the borough. For the streets to be public, residents must vote to have them included in a Road Maintenance District, petition the assembly to accept them, and wait while the city holds public hearings on the petition. The process takes one year. Webb agreed to maintain the streets while the

project was under construction. By early 1986, the residents' petition to include these roads in a neighboring Road Maintenance District was accepted, making them public.

Ditches on both sides of the gravel road accommodate storm water runoff and provide a place for snow storage. This is typical for this area. The gravel road, about 20-feet wide, is raised in the middle of the 50-foot right-of-way. Gravel is indigenous to the area; concrete and asphalt, shipped from the lower 48, are much more costly.

Placement of the well and septic system are controlled by DEC. A 40,000 square foot lot is required for a septic system, allowing room for a back-up system if needed. The well must be at least 100 feet from the septic tank. The drain field must be 4 feet above water table, which is 8 to 10 feet down in the Woodsmoke area. A 4-foot minimum soil cover, or an equivalent thickness of insulation, is required over the top of the drain field. An ejector or lift pump is used to convey the sewage to the tank.

Wells are located in the basement to prevent freezing. The DEC requires wells 35 feet deep. The area has traditionally used 6-inch wells. Webb uses 2-inch submersible driven wells, which have proven sufficient.



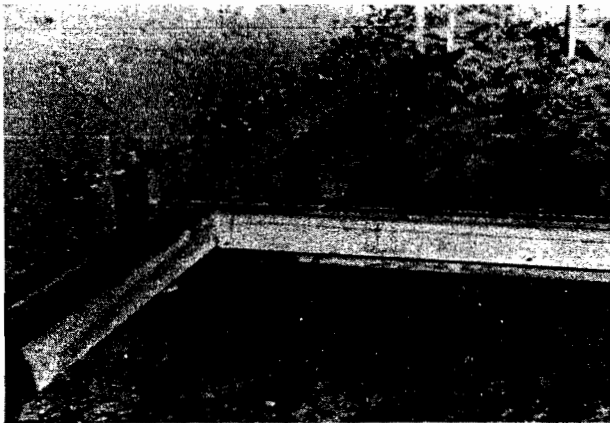
Septic system hook-up

Building Construction

Almost all of the lumber used in Fairbanks is shipped from Seattle. Webb originally bought his raw materials through suppliers in Anchorage and shipped them to Fairbanks. This process required longer range planning, necessitated storage of the materials, and made quality control more difficult. He began dealing with local suppliers and believes that although he may have paid a little more per piece, in the long run he saved money because of reduction in warehousing, handling and other overhead costs.

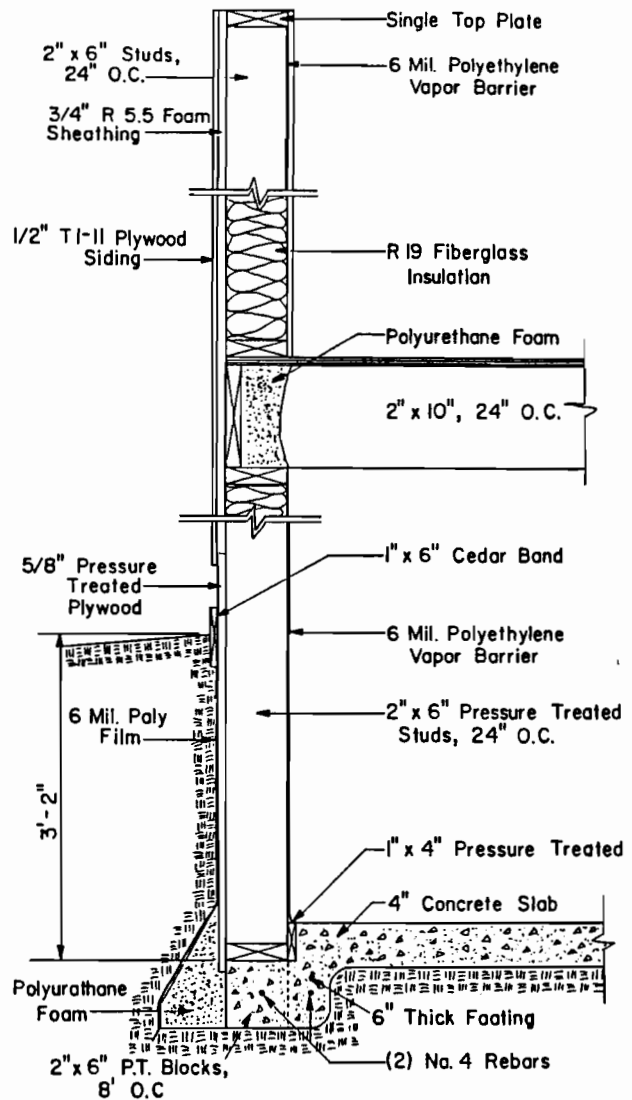
Webb used pressure-treated wood foundations with poured concrete footings in the Woodsmoke homes and garages as a cost-saving and energy-saving measure. He did not use gravel footings under wood foundation walls because he feared negative customer reaction. Since the concrete basement floor and footings were poured monolithically, it added little extra cost to the footings. Using a wood foundation also extended the building season, since concrete can be placed only above certain temperatures. The 2x6 wood foundation, insulated with R-19 batts, increased lower level living area by an average of 83 square feet when compared to an 8-inch thick cast-in-place concrete foundation, furring, and R-19 insulation.

Concrete in Fairbanks costs about \$95 per yard, according to Webb, making the materials



Foundation picture

Wood Foundation System



for the typically poured concrete foundation more expensive than pressure-treated wood materials.

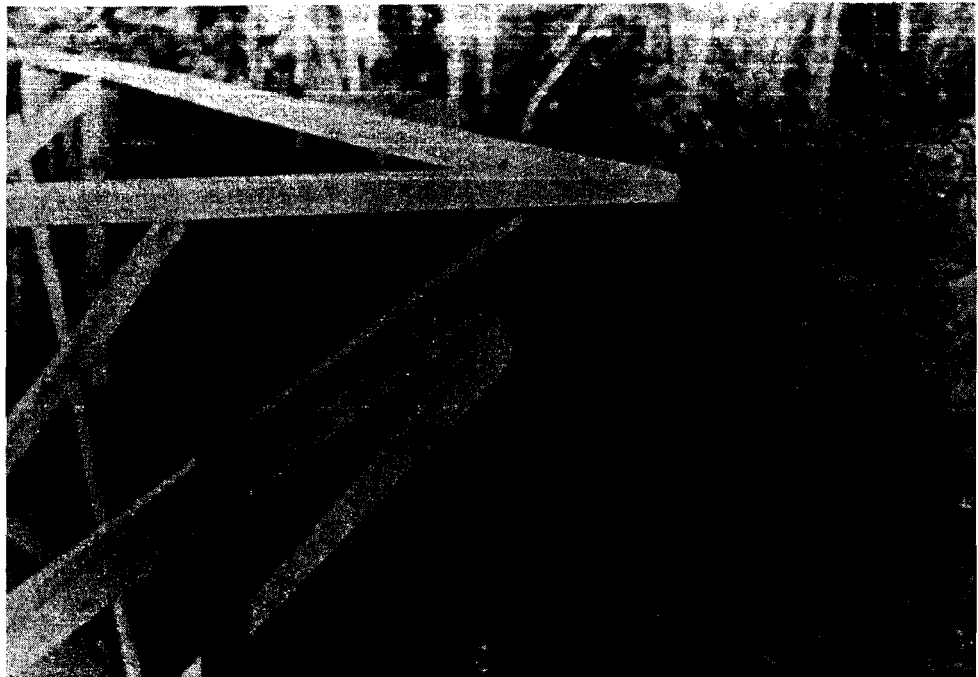
Webb saved an average of \$1,035 per unit on the foundations.

Table 1 Foundation Costs Per Unit

	Demonstration	Comparison	Savings
Formwork	-	\$ 360	\$ 360
Concrete walls	-	2,375	2,375
Sill plate	-	44	44
Furring	-	296	296
Insulation	\$ 300	300	0
Vapor barrier	40	40	0
Slab-on-grade	910	910	0
Treated wood wall	2,040	0	(2,040)
TOTALS	\$3,290	\$4,325	\$1,035

Optimum value engineering (OVE) techniques were used throughout Woodsmoke homes. Webb used 2x6 studs in the exterior wall and 2x4 studs in

interior partitions, typical of the area, but placed them 24-inches on center instead of the normal 16-inches on center. This saved



Framing Woodsmoke homes

approximately 1400 board feet,
when a two car garage is
included. He used 2-stud

corners, metal dry-wall clips,
and single top plates, as
delineated in the OVE system.



Woodsmoke homes framing



In addition, he eliminated furring over kitchen cabinets (bulkhead) and soffit overhangs on the front and rear of

all houses. Total in-place cost savings of the OVE techniques amounted to \$1,204.

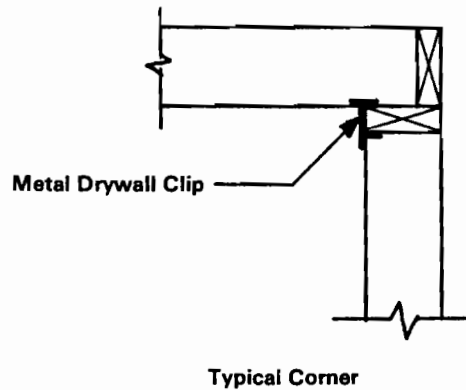


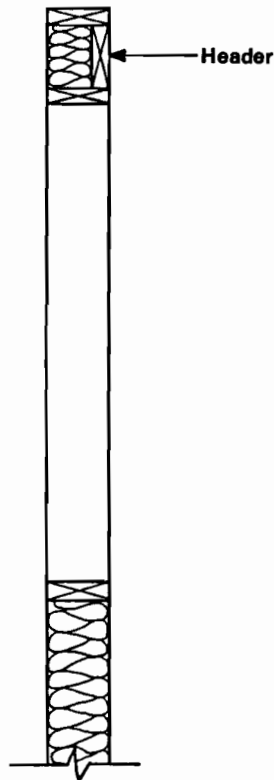
Table 2 Framing Costs Per Unit

	Demonstration	Comparison	Savings
2x6, 16"o.c. ext. walls	-	\$1,130	\$1,130
2x4, 16"o.c. int. walls	-	724	724
2x6, 16"o.c. garage walls	-	530	530
Kitchen cabinet bulkhead	0	60	60
2' soffit overhang	0	340	340
2x6, 24"o.c. ext. walls	\$ 760	-	(760)
2x4, 24"o.c. int. walls	464	-	(464)
2x6, 24"o.c. garage walls	356	-	(356)
TOTALS	\$1,580	\$2,784	\$1,204

Webb used high-quality double or triple pane sealed window units in Woodsmoke homes. The first homes built in Woodsmoke have double-pane windows purchased by Webb through an Anchorage supplier. The later units have triple-pane windows purchased through a Fairbanks supplier for only \$150 more per house, an expense Webb justifies by the added energy

savings. The same windows are used in all homes, but arranged differently. Kitchen, living room, and bedroom windows are identical in each model.

The 4-foot deep, 8-foot wide front porch is built of pressure-treated lumber and is an extension of the inside landing, cantilevered over the



Typical Window Opening



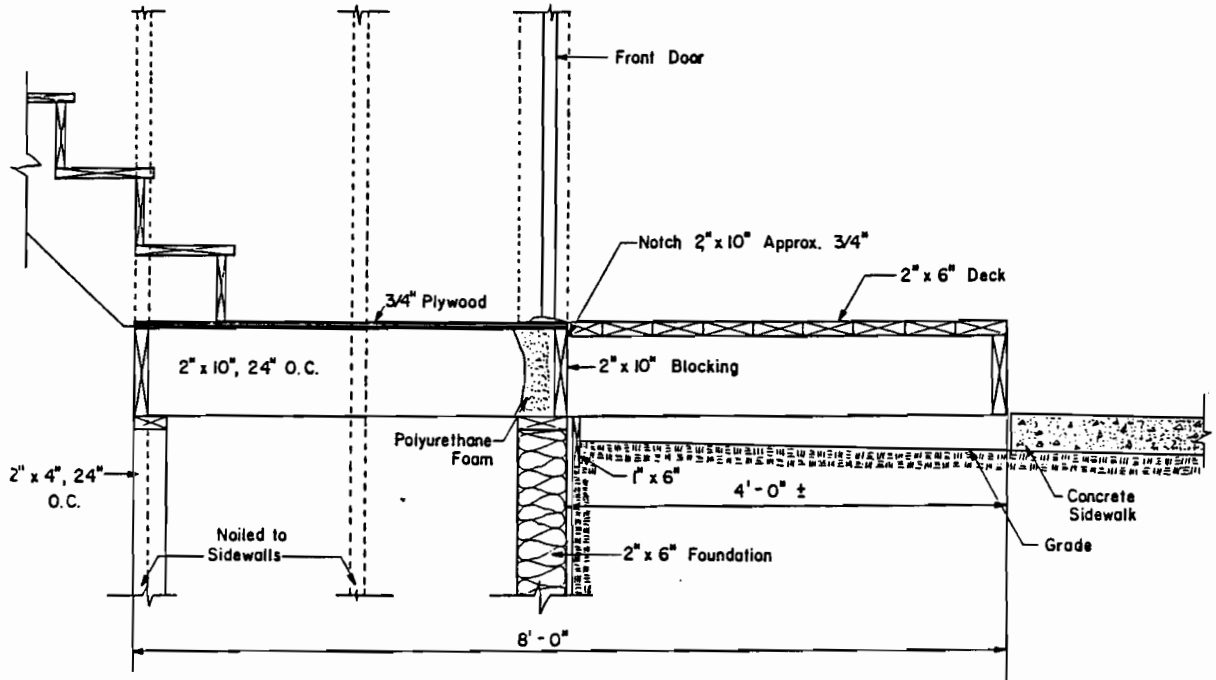
Woodsmoke home showing cantilevered front porch



Windows for all Woodsmoke units

foundation wall. It is not in contact with the ground so deep footings are not necessary to prevent frost heave. Webb estimates a cost savings

of about \$200 per house with this method when compared to a poured concrete porch and foundation.



Cantilevered Front Porch
(Continuous 2" x 10")

Table 3 Construction Cost Saving Summary

Total Construction Savings
Savings/Unit

Foundation	\$1,035
Framing	1,204
Front porch	200
TOTAL	\$2,439

Cost Reduction Summary

Webb was able to sell Woodsmoke homes for less than the typical local prices through careful research of his market, thorough understanding of land development and construction techniques, interest in trying new techniques and materials, and

paying close attention to economics of scale, local vs. "lower 48" materials prices, and time efficiencies. Obviously, building in only 4-5 months of the year and with peculiar soil conditions severely limits the innovations possible in land development.

**The Affordable Housing
Demonstration
Case Study 2**

White Marsh, Maryland

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Summary

The White Marsh, Baltimore County, Maryland, Affordable Housing Demonstration project is "Lawrence Hill" a 111 unit subdivision built on 21.4 acres. The developer is Nottingham Properties; the builder is The Ryland Group. Baltimore County surrounds but does not include Baltimore City in north central Maryland.

White Marsh, the county's planned mixed-use community, is located in close proximity to the Baltimore Beltway (I-695) and the John F. Kennedy Memorial Highway (I-95) and is the county's fastest-growing residential area. White Marsh is under the jurisdiction of the county, which is governed by an elected county executive and a seven-member council. County population was 665,000 in 1983.

Lawrence Hill offers six single-family detached models with two or three bedrooms and one or one-and-one-half baths. Included are split-levels, tri-levels, and two-story units priced from \$75,900 to

\$92,900. The homes range from 900 square feet to 1,700 square feet.

The homes are clustered in groups of four or five lots around a common private parking court. This siting allows space for large backyards and preservation of some of the large old trees.

Lawrence Hill homes are modular units built by Ryland using efficient construction techniques such as the Optimum Value Engineered (OVE) framing system. Units are built to the Maryland State Modular (Manufactured) Housing Code.

Costs saved in Lawrence Hill through reduced regulations and builder/developer changes from normal practice in Baltimore County are estimated at \$7,700 per unit. These savings were achieved through: reduced street widths, rights-of-way, side yard clearance between units, lot sizes, and lot widths; use of roll curbs; and installing sidewalks on only one side of the street.

Project Description

The Community - White Marsh (Baltimore County), Maryland

Baltimore County's urban, suburban, and agricultural areas span 610 square miles of land and water area. Located in north central Maryland, the county surrounds Baltimore City, a separate political subdivision. The county's 1983 population was 665,000, a 6 percent increase from the 1970 census.

More than 11,000 companies engage in diverse business, trade, and manufacturing endeavors in the county. The business community includes nearly 700 industries employing approximately 172,000. More than 315,000 county residents are employed in or near the county.

The area's major employers are Bethlehem Steel Corporation's Sparrows Point Plant (the largest tidewater steel plant in the free world); AAI, a research and development firm employing over 2,500; Black and Decker; Calvert Distillery; McCormick and Company; and Noxell Corporation. The U.S. Social Security Administration, employing 23,000, is also located in the county.

According to the 1980 Census, the average household income in Baltimore County was \$24,800. The 1980 Census also reported that 35.8 percent of the population rented housing. Average rents were \$273 per month and average mortgage payments were \$409.

Baltimore County lies midway between the northern and southern climates, and the weather is moderated by the Chesapeake Bay and the Atlantic Ocean. The average annual temperature in the summer is 75°F and in the winter 35°F.

Baltimore County is governed by an elected county executive and a seven-member council. All elected officials serve four-year terms. The County Executive at the time of the demonstration was Donald Hutchinson. The county is divided into 31 regional planning districts for the purpose of refining the uses of land in critical development areas.

Baltimore County's only planned mixed-use community, the Perry Hall-White Marsh planning district, lies in the travel corridor between the major northeastern cities of the Eastern seaboard, with the major roads from Baltimore to Philadelphia crossing the area. The construction of the Baltimore Beltway (I-695) and the John F. Kennedy Memorial Highway (I-95) have reinforced the area's locational advantages.

As early as 1965, the Baltimore County Master Plan identified the Perry Hall-White Marsh planning district as a growth area. Today it is the county's fastest-growing residential area.

The planning district, bounded by Belair Road, the Big Gunpowder Falls, Pulaski

Highway, and I-95, covers 12,000 acres. As of 1980 the area population was 23,000 persons living in approximately 8,500 housing units. The 1980 Census revealed that during the last decade the population doubled, and the number of dwellings nearly tripled.

The area is rapidly changing from predominantly rural with scattered suburban development to predominantly suburban. Large areas of the district (3,500 acres) remain in agricultural use, but residential development is rapidly supplanting this use. Virtually all of the area is zoned for urban development. White Marsh Mall, a large, regional shopping center, is the single most significant development in the district in the last decade. It stimulated the construction of higher-density housing and was designated town center for White Marsh. Another important development is a 200-acre business community designed to attract a wide variety of business and professional firms.

As the retail and commercial components of the community have matured, more and more new residents have moved to the area's multi-neighborhood residential area, which is oriented to first-time home buyers with homes ranging from the \$50's to the \$80's.

In 1982, 426 housing units were constructed in the district. More than 400 units were begun in 1985. The 12,600 acres that are residential

have an average density of less than four units per acre. Traditionally, development in the area has averaged only 75 percent of the permitted density: substantial areas of the district are zoned for 10.5 and 16 units per acre.

The Modular Manufacturer - The Ryland Group

The Ryland Group was founded in Columbia, Maryland, in 1967 and has become one of the nation's leading home builders. The Ryland Group consists of three divisions: Ryland Modular Homes, Ryland Homes (panelized homes), and Ryland Mortgage Company, which offers financial assistance to builders.

The Ryland Group offers a number of basic home styles in each of its five major operating areas, with current prices ranging from \$50,000 to \$170,000, including the cost of developed lots. The company does not purchase land for investment and does not develop raw land. Normally, Ryland acquires options on fully developed lots that it intends to use for the construction and sale of homes.

Michael Brodsky, Vice President and Manager of Ryland's Baltimore Division, oversaw the White Marsh project. Frederick W. "Rick" Kunkle, Vice President of Operations of Ryland's Mid-Atlantic Area, was also closely involved with the project.

The Developer - Nottingham Properties

Nottingham Properties was founded in 1943 by Henry T. Campbell and Sons as part of the family quarry business. Although the Campbell family is still the company's principal owner, P. Douglas Dollenberg is president and chief executive officer.

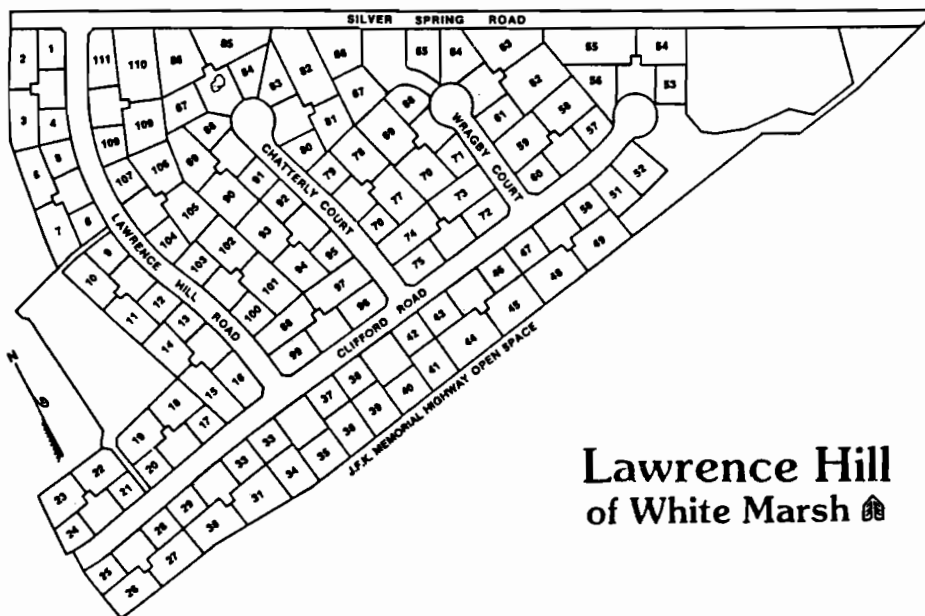
The White Marsh Joint Venture is Nottingham's residential development arm, headed by Richard Jones. Mr. Jones, Nottingham's Vice President/Marketing, served as president of the Baltimore County Chapter of the Home Builders Association of Maryland during 1982.

As master developer of White Marsh, Nottingham oversees the planning and development of 1,500 acres of business and residential land. In addition, the company is a major developer of Towson, Maryland, office buildings.



The Project - Lawrence Hill

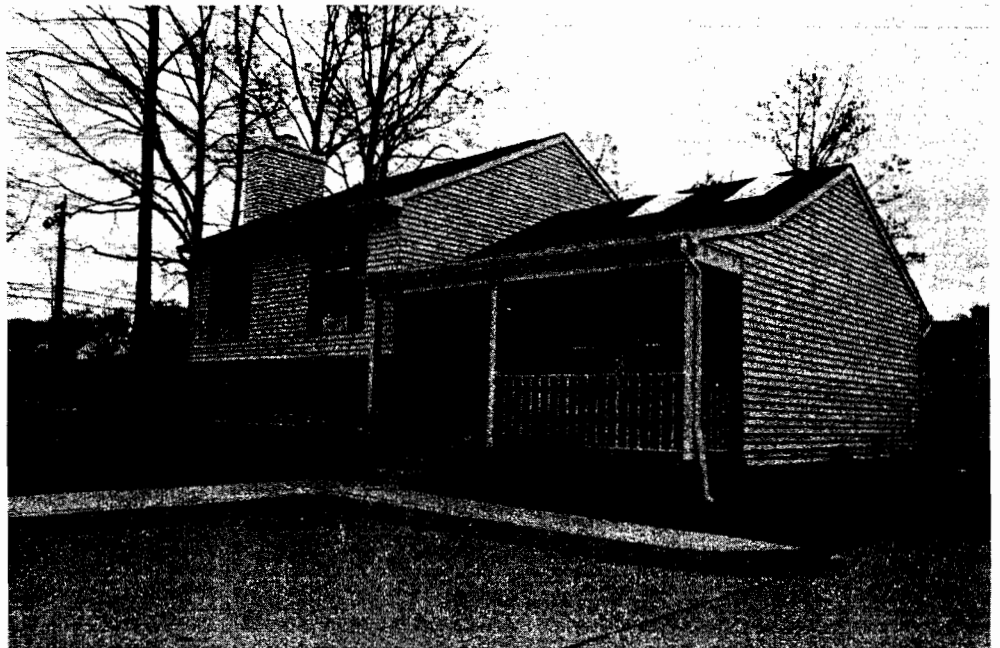
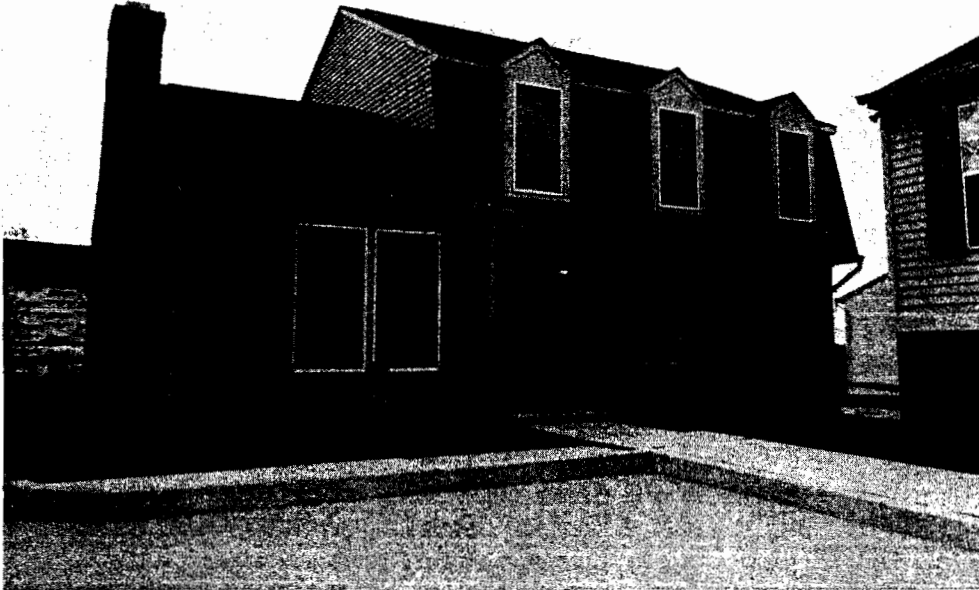
Lawrence Hill consists of 111 lots for single-family detached units on 21.4 acres, for a density of 5.2 units per acre. (The density of the parcel was set by the county as 5.5 units per acre, or 117 units for the site.) The homes range from 900 square feet to 1,700 square feet and are priced from \$75,900 to \$92,900.



Lawrence Hill
of White Marsh 🏠

Lawrence Hill offers six models with two or three bedrooms and one or one-

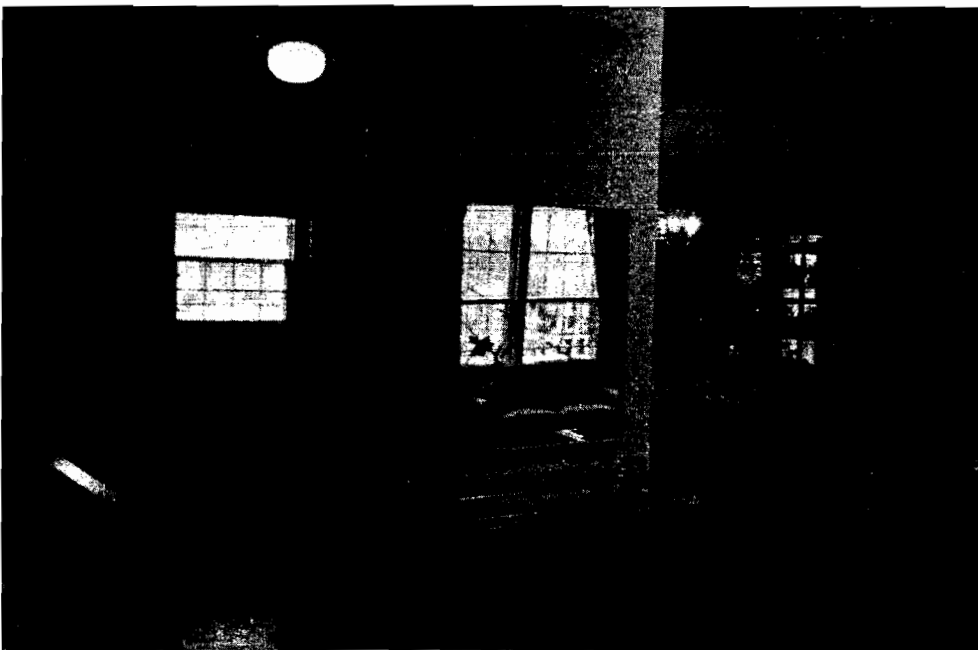
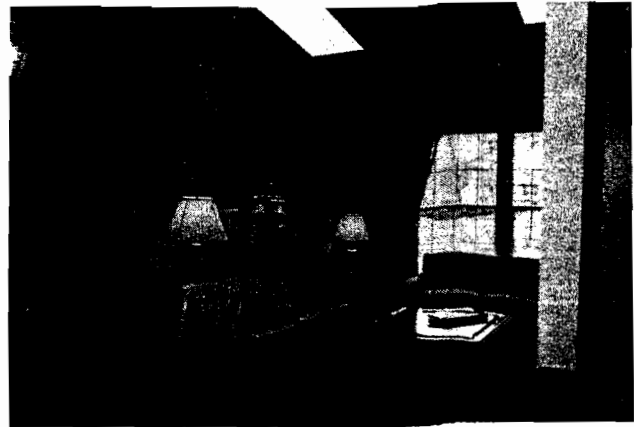
and-one-half baths. Included are split-levels, tri-levels, and two-story units.



Lawrence Hill models

Standard features include air conditioning and heat pump, wall-to-wall carpeting, aluminum siding, Ryland's "Fuel Saver" insulation package, and 10 Year Home-

Owners Warranty, among others. Options for various units include a family room, fireplace, front porch, stone or brick front, cathedral ceiling, and skylights.



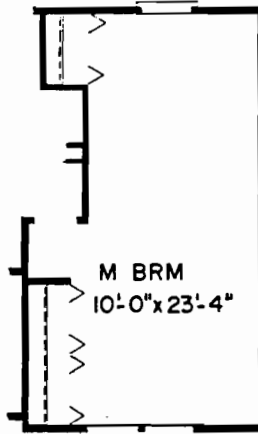
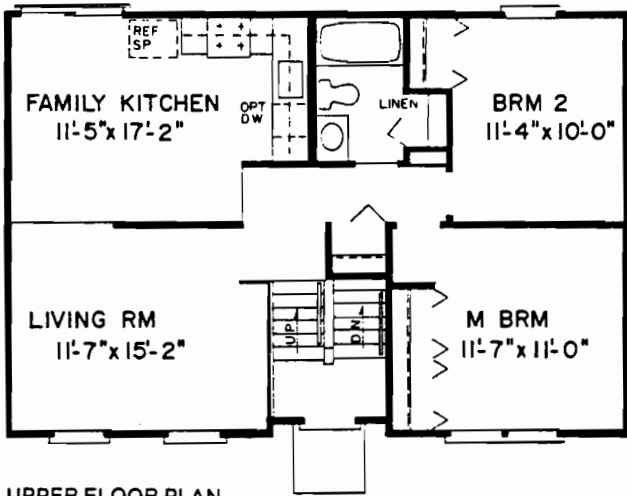
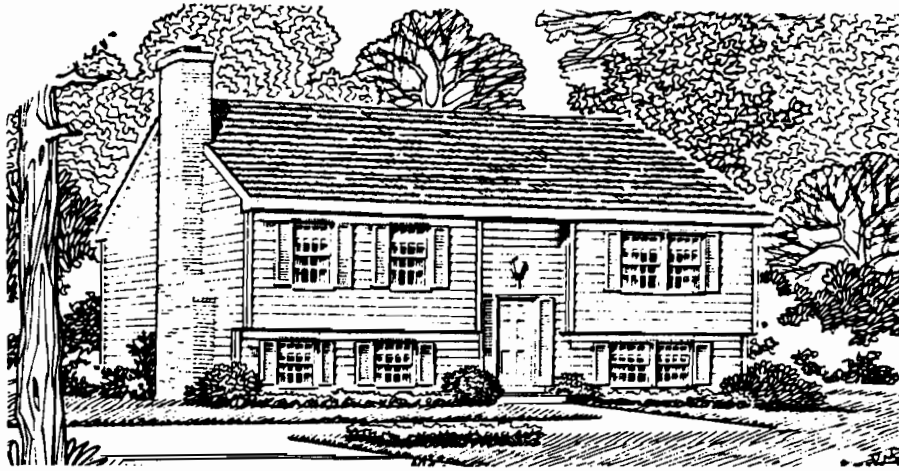
Typical Lawrence Hill interiors



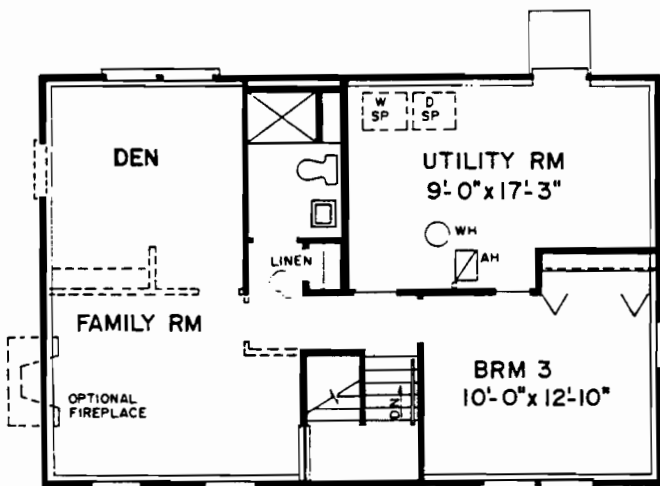
Lawrence Hill cluster homes

The homes are clustered in groups of four or five with off-street parking space in the middle of each cluster. This enhanced the develop-

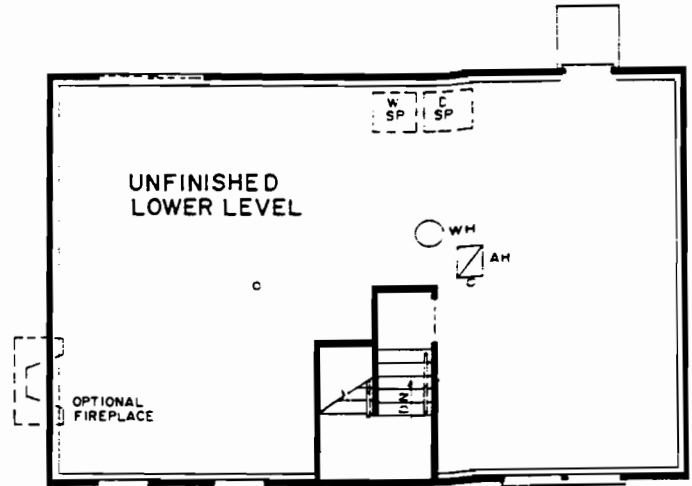
ment's aesthetics, provided large backyards, and enabled preservation of some of the trees.



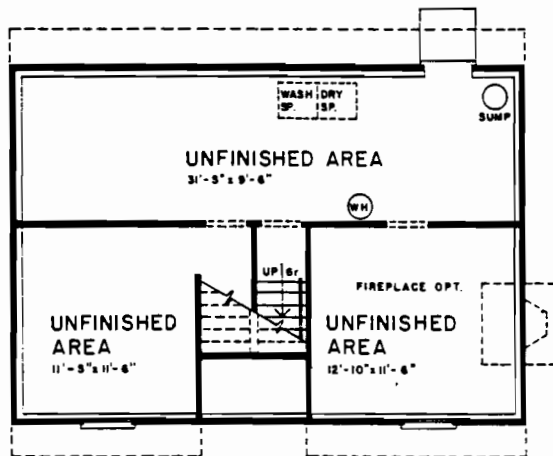
UPPER FLOOR PLAN



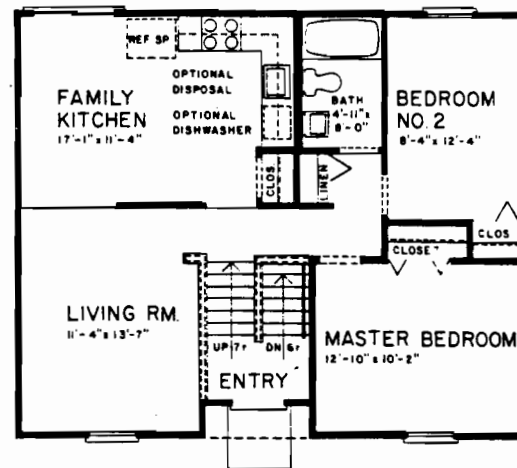
LOWER FLOOR PLAN



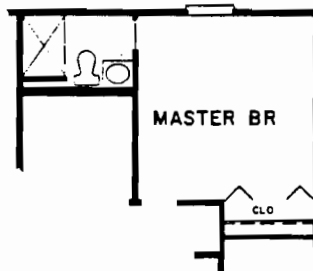
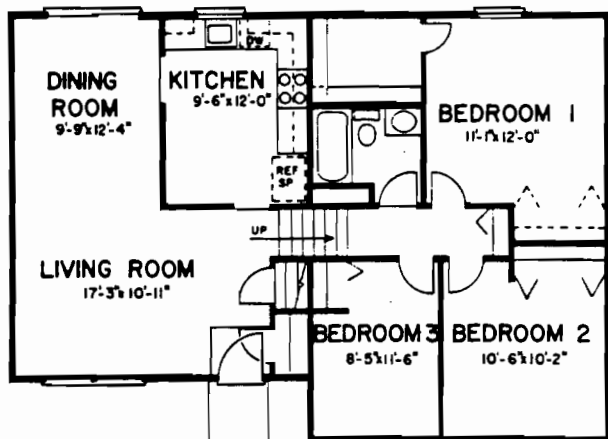
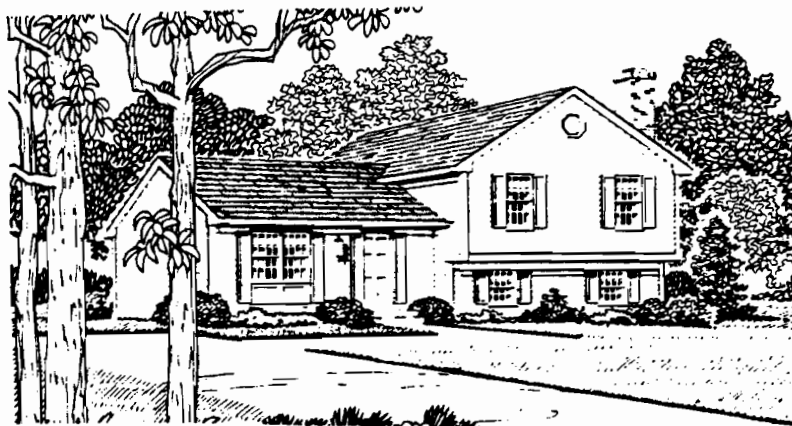
LOWER FLOOR PLAN — UNFINISHED



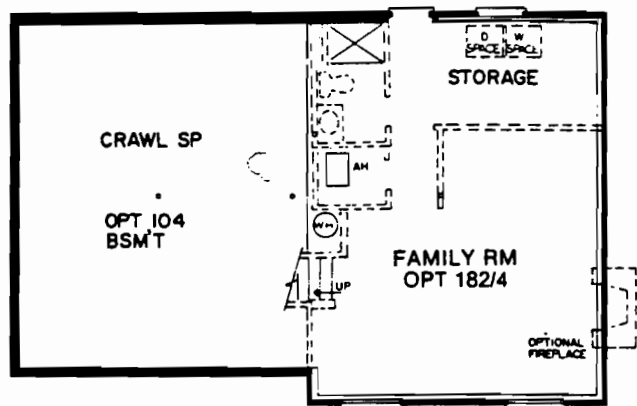
Lower Level



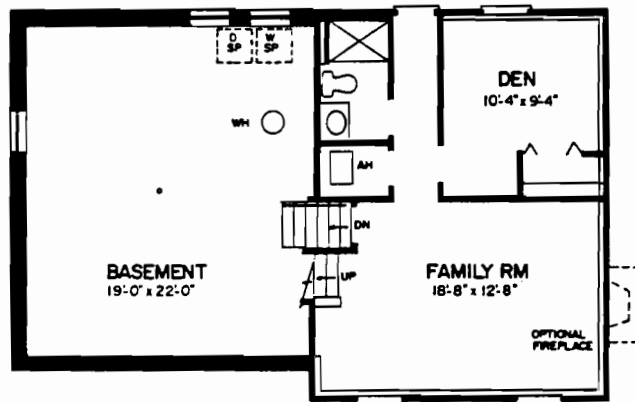
Upper Level



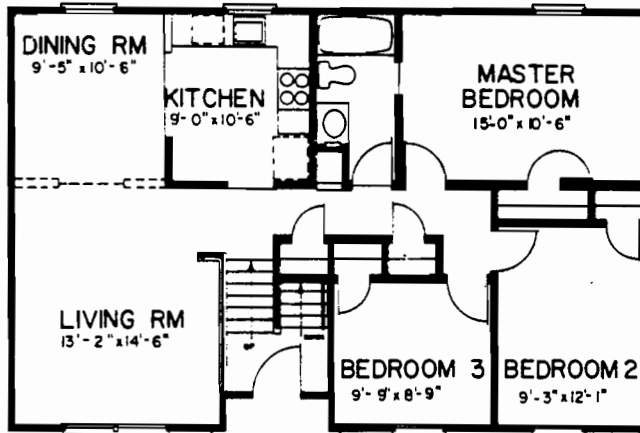
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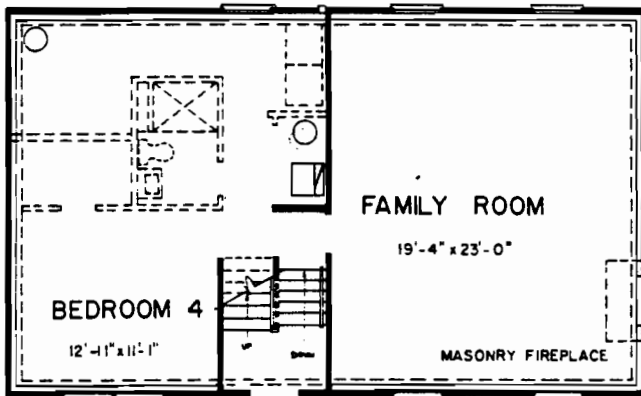
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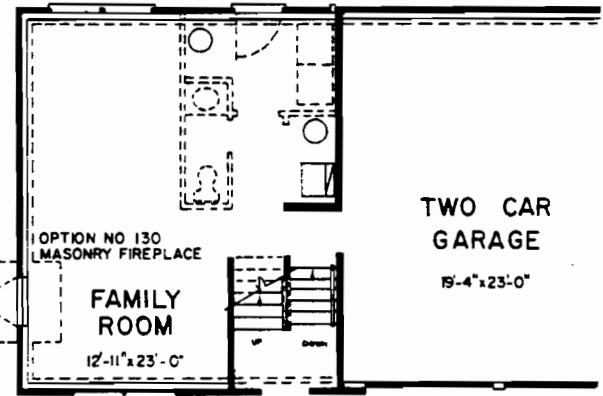
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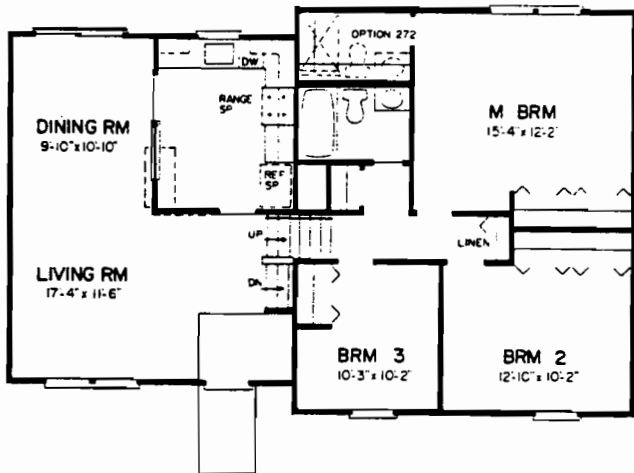
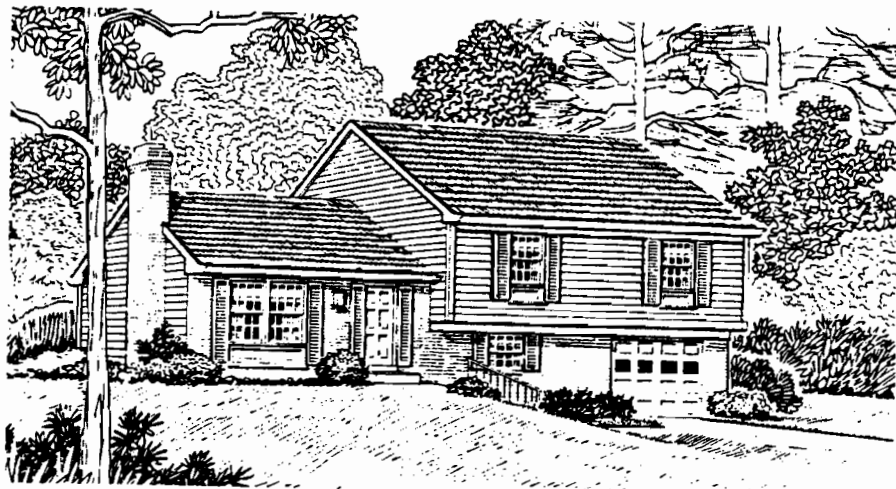
UPPER LEVEL FLOOR PLAN



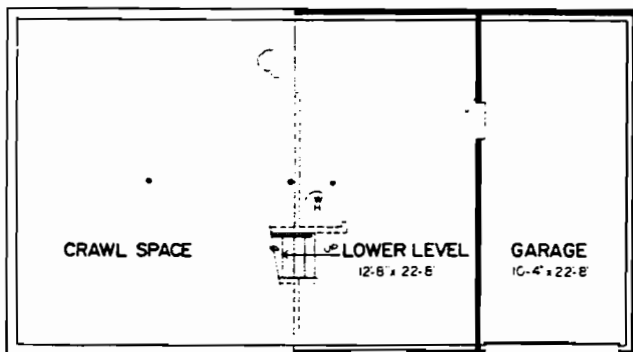
LOWER LEVEL FLOOR PLAN



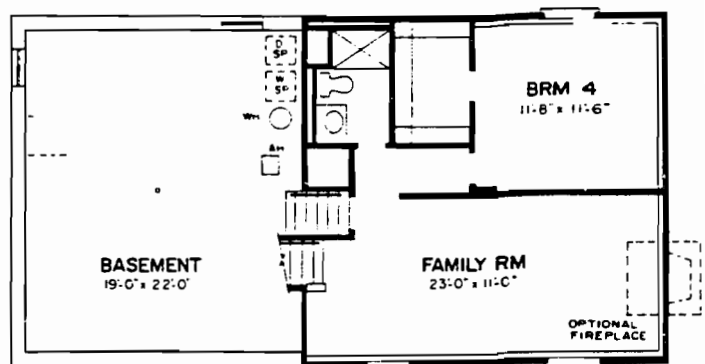
LOWER LEVEL FLOOR PLAN



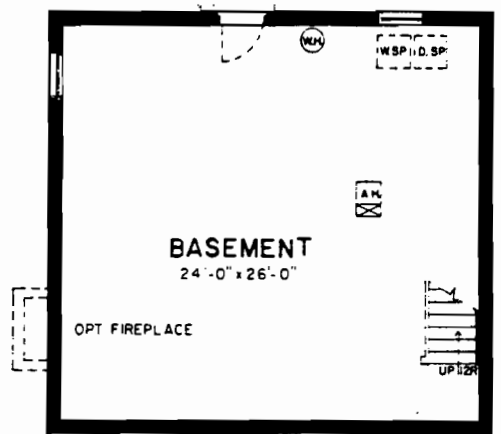
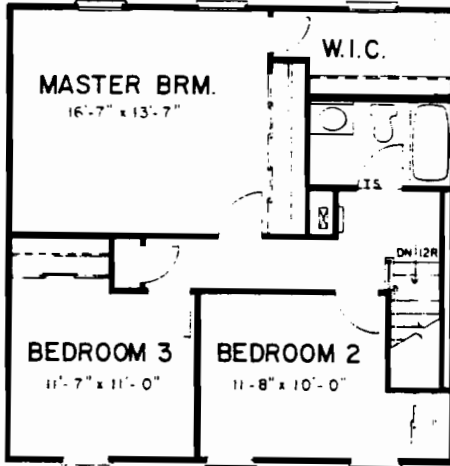
UPPER FLOOR PLAN



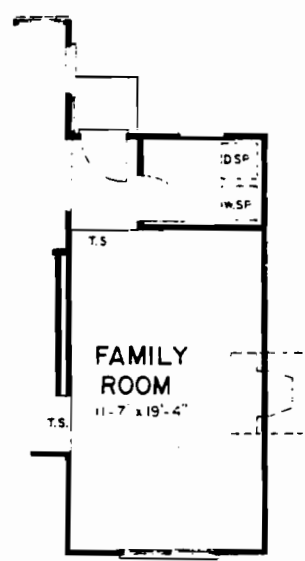
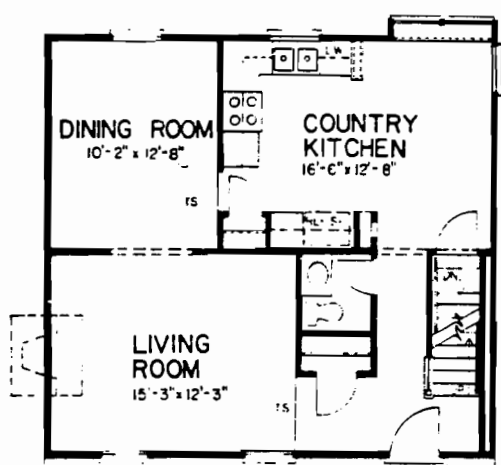
LOWER FLOOR PLAN
(With Garage)



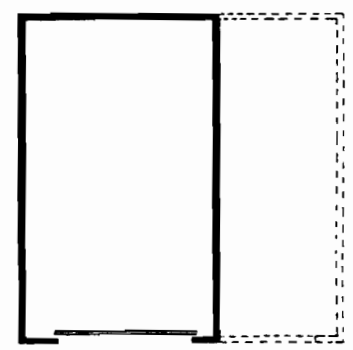
LOWER FLOOR PLAN
(Without Garage)



BASEMENT



OPT



Project History

In the late 1970's, the White Marsh Joint Venture received county approval to subdivide the development that became known as Section III, Phase 1A and Phase 1B of White Marsh. Phase 1A was developed into 89 single-family detached homes called Tartan Hill. Phase 1B, then known as Quarry Hill, was designated for development of 76 single-family detached homes. The prospective purchaser of Phase 1B withdrew from the project, however, and the lots remained vacant.

Officials of the Ryland Group, Inc., Nottingham Properties, Inc., and Baltimore County became interested in the Affordable Housing Demonstration program in the latter part of 1982. Charles Langpaul, President of Ryland's Mid-Atlantic Area, expressed his company's interest in the program in a letter to HUD. He stated that Nottingham would develop the land and that Baltimore County government officials had expressed a desire to cooperate with demonstration efforts. Langpaul viewed the project as an opportunity to eliminate unnecessary regulations, reduce processing time, and increase density to effect cost savings.

Nottingham's Richard Jones and Baltimore County's Director of Planning and Zoning, Norman Gerber, wrote letters to Langpaul stating their interest in cooperating with HUD and Ryland. The Baltimore County office of Planning and Zoning had recently revised permitting and processing

requirements, and Gerber was looking forward to assessing the effect of this change.

HUD designated the White Marsh project an Affordable Housing Demonstration in December 1982.

On July 11, 1983, Nottingham hosted a work session to review the site and house plans. In attendance were representatives of HUD; NAHB/RF; Ryland; Nottingham; and Whitman, Requardt & Associates, consultants to Nottingham. The plan proposed 111 single-family detached 1-1/2- and 2-story units with full basements. The plan was without sidewalks and proposed rollover curbs. Both of these features required variances from standard practice that would need county approval. The group recommended and Nottingham agreed to reduce the number of units to 108 to enhance appearance, privacy, and effective use of open space.

On October 25, 1983, a conference was held to review the proposed plan and requested variances before formal submission to the County Review Board. In attendance were representatives of Ryland, Nottingham Properties, Whitman, Requardt and Associates, the NAHB Research Foundation, and Baltimore County. Representatives of the county were favorably impressed with the plan and said they would try to reduce processing time from 13 weeks to 6 weeks.

Frequent discussions between the developer, builder, engineers, and city staff continued, and in April 1984, the county held a special hearing to consider amendments to the existing development plan and zoning variances. The existing plan was submitted to the County Review Group, consisting of representatives from the county planning and public works departments, on May 11, 1984 and approved on June 6, 1984.

A request for waiver of standards for sidewalks and road widths was submitted to the Office of Planning and Zoning on June 7, 1984 and approved June 22, 1984.

The Zoning Commissioner of Baltimore County, on July 16, 1984, heard a request by Nottingham to amend the original plan for single-family detached homes, semi-detached homes, and townhouses to include cluster single-family homes, townhouses and garden apartments. The cluster plan required variances regarding distances between homes. Protestors (neighbors) argued that the proposed cluster single-family detached homes would adversely affect their property values. The commissioner stated that the protestors presented no evidence that their property values would be reduced, and that...

"the proposed cluster design would not be detrimental to the

health, safety or general welfare of the locality nor tend to create congestion in roads, streets, or alleys therein, nor be inconsistent with the purposes of the property's zoning classification, nor in any other way inconsistent with the spirit and intent of the Baltimore County Zoning Regulations".

It is important that the Commissioner accepted only facts, not unsubstantiated opinions, when hearing the request. The amendment was approved and the Lawrence Hill Project allowed to proceed. The variances were granted July 26, 1984.

Site development permits were issued, contracts awarded, and site development work begun. The amended development plan was approved by the county on November 6, 1985.

The Grand Opening of Lawrence Hill was November 21, 1985. Mike Brodsky reported that the development was well received, with buyers reserving 28 houses even before the sales models opened. The first houses were ready for occupancy in November 1985; the entire development is scheduled for completion by the end of 1986.

Innovations and Their Impact on Costs

One purpose of the Affordable Housing Demonstration Program is to collect and evaluate cost data on residential development practices and construction techniques. The following analysis describes specific variances from the norm in administration and processing, site planning, and building design and construction.

Change List Approval Process

Most of the variances Nottingham and Ryland requested were approved for the demonstration after the special hearing and approval of the amended development plan. Because of submission requirements and time for the special hearing, no processing time reduction occurred. However, the County was very cooperative in all phases of project planning.

Site Planning and Development Changes

Site planning and land development represent major areas of potential cost reduction for most builder/developers. Because Baltimore County was cooperative, Nottingham was able to cut site planning and land development costs in Lawrence Hill by about 24 percent.

Baltimore County ordinances require a 25-foot sideyard clearance between single-family dwellings. Nottingham requested and received a variance to ten feet which

allowed the innovative cluster design. This design also included:

- windows within 3 feet of property lines instead of 15 feet;
- windows within 10 feet of street right-of-way instead of 25 feet;
- minimum distance of 10 feet between facing windows instead of 40 feet;
- and a minimum of 15 feet from the tract boundary instead of 30 or 35 feet.

These and other variances, such as reduced street widths and rights-of-way, reduction in minimum lot size from 6,000 to 4,000 square feet, and reduction in lot width from 55 to 45 feet, enabled Nottingham to increase density from 76 to 111 units.

Baltimore County standards for roadways were reduced substantially for the demonstration. Rights-of-way were reduced from 50 to 40 feet and pavement widths were reduced from 30 to 22 and 24 feet based on usage. Pavement and base thickness remained the same. Total pavement area was reduced from 87,552 to 63,936 square feet for a cost savings of \$39,196. Baltimore County also agreed to reduce street inspection costs (because of reduced pavement area) from \$32,300 to \$26,085 for an additional savings of \$6,215. Total pavement cost savings

amounted to \$45,411. When combined with the density increase, cost savings per unit amounted to \$1,118.

Mountable rolled curbs were allowed in Lawrence Hill instead of the standard combination 6" high curb and 24" wide gutter resulting for a cost reduction of \$2,955. Because of the density increase and the cluster layout, curb requirements were cut from 74 to 50 feet per unit. Therefore, total curb costs per unit were reduced by \$260.

Sidewalks are normally required on both sides of all streets. In Lawrence Hill, Baltimore County allowed sidewalks on one side only. Total sidewalk length was reduced in half, from 2,188 to 1,094 feet. Costs were reduced by \$6,300, or by \$109 per unit when increased density is also considered.

The sanitary sewer was installed to County standards which is 8" diameter PVC. Because of the increased density, the main line was reduced from an average of 39 to 26 lineal feet per unit. The sewer laterals were also reduced because of right-of-way reduction from 35 to 17 lineal feet per unit. Inspection costs, based on lineal foot of sewer line, were also reduced on a per unit basis. Total cost reduction for sanitary sewer was \$770 per unit.

Water supply was also installed to county standards. Mains were reduced in length for each unit from an average of 36 to 26 lineal feet because of the higher density. The 3/4-inch diameter house connections were reduced in length by about 18 feet because of right-of-way reductions. Total savings amounted to \$523 per unit.



Typical Lawrence Hill curbs

Storm drainage was installed to County Standards. Cost savings due to the density increase from 76 to 111 units was \$441 per dwelling unit.

Total development savings amounted to \$3,221. In addition, raw land costs were spread over 35 more units, reducing costs by an additional \$3,279 per unit. Savings to the buyer for each developed lot was \$6,500.

Building Design and Construction

The homes in Lawrence Hill were panelized units built and erected by Ryland Homes. Ryland has been using efficient construction techniques for years prior to the demonstration. The Optimum Value Engineered (O.V.E.) framing system is used in all Ryland modular homes. It consists

of: 24-inch on center framing; two stud corners; and elimination of headers in non-loadbearing walls. The units all complied with the Maryland State Modular (Manufactured) housing code. Costs were reduced by an estimated \$850 per unit when compared to conventional 16-inch on center methods used in the Baltimore County area.

Because of right-of-way reductions, the minimum setback was reduced, cutting the amount of grading, sodding, individual house sidewalk and driveway paving. The total cost savings for these items were estimated to be \$350.

Total Cost Savings

Total costs per unit in Lawrence Hill were reduced by \$7,700.



Lawrence Hill development

