

PREFERENCES IN THE EXTERIOR HOUSING ENVIRONMENT

by

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## CHAPTER ONE: INTRODUCTION

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### PROBLEM AREA

A comfortable and desirable place to live and raise ones family has always been a central part of the American dream. Although the definition of what is comfortable and desirable has changed, it remains an important concern of todays family.

The form of housing today can not be separated from the past. Both the positive qualities and problems in the housing of today is a product of evolving technologies, social values, and economy. Rising land and building costs, high interest rates, and energy costs are just a few of the factors that are influencing todays housing markets. Builders are responding by offering smaller, more efficient living units, at higher densities to keep the cost of housing within reach of the American homebuyer. The result is an increasing variety of alternatives to the traditional single family detached suburban home.

Changes in family composition, the changing tastes of todays households, and economic conditions make it increasingly difficult to determine the makeup of todays homebuying market. It is critical for the development team to know what traditional preferences continue to be important and what preferences have changed in response to todays conditions. High interest rates and development costs act to reduce even further the margin for error in the development process.

## PROBLEM DEFINITION

One of the most significant trends in housing is increased density. As a developer increases the density of a development, savings on land and development costs allow a higher level of development to the individual lot and public areas than would otherwise be possible. This study investigated what priorities the homebuyer places on such factors as lot size and level of development. Three hypothetical alternatives were developed for a single family detached housing development. As the lot size decreased, the level of development increased so that each alternative cost the same. A questionnaire was used to determine the effect of lot size and level of development on the preferences of the homebuyer towards the single family detached home.

## IMPORTANCE OF STUDY

Many preference studies have been conducted throughout the housing industry. However, these studies have focused on the home itself and very little attention has been given to preferences for the exterior aspects of the housing environment. This study, and ones like it, would be beneficial to the landscape architect as well as the developer and homebuyer. The landscape architect often functions as a design consultant for housing developments, with a responsibility to be knowledgeable in the aspects of housing that relate to the design services. This includes an awareness of buyer preferences and its effect on site design.

A knowledge of buyer preferences is important because of the large capital investment that is tied up in any development. The

developer can not afford to build unmarketable housing. The holding costs of slow moving homes and reduced selling prices can quickly eliminate profit margins. Anticipating buyer preference minimizes the guessing and allows the developer to tailor the product to the needs of the homebuyer market. The results are quick sales for the developer and a selection of homes that meet the reasonable needs and expectations of the homebuyer.

## METHODOLOGY

In this study, three hypothetical housing situations for the single family home that varied in lot size and level of improvements were developed. A questionnaire was then used to study the preferences of the homebuyer or homeowner.

Each alternative was designed on the same location. In this way, variables in the context that might influence preference such as, distance to work, school, and shopping are constant. Density, site layout, and type and level of improvements, were manipulated to generate three different alternatives while keeping the cost constant. The final costs were compared as monthly payments made by the homebuyer. This included a monthly fee for a neighborhood association found in the third alternative.

The home itself can be very influential in the determination of preference and was therefore kept exactly the same in each alternative. Details were avoided when showing the home in the drawings to encourage people to concentrate on site related factors. For the purpose of cost estimates the home was assumed

to be a modular-sectional home assembled on site, to maintain the price of the home in an affordable range.

#### DESCRIPTION OF HOUSING ALTERNATIVES

The variables in the study were lot size and level of development. Because of the cost savings that result from increased density, as the lot size decreased, the level of development increased, while the cost of the home remained constant.

##### Alternative A:

This layout (appendix B.1) is modeled after the traditional subdivision arrangement. It has the largest lot and the lowest level of development. The yard is seeded and one shade tree is included. It is assumed that the homeowner would complete the yard improvements himself. There would be no public open space or improvements beyond what is found on the street right of way, which is constant in each alternative.

##### Alternative B:

This alternative (appendix B.2) represents a middle ground. Slightly higher densities result in smaller lots and some cost savings that can be used to increase the level of development to the lot. This included a wood deck, screen fencing, and landscaping that includes shade trees, flowering trees, and planting beds. This alternative, like alternative A, does not include any significant public space or amenities.

## Alternative C

This scheme (appendix B.3) is representative of some of the recent alternatives to the traditional housing layout. It has the highest density and the smallest lot size. The trade off is a higher level of development which includes the same lot improvements found in alternative B, a system of common open space which includes a swimming pool and clubhouse, tennis courts, a picnic and playground area, and jogging/walking paths.

## PRESENTATION

It was critical that the participants in the survey be able to quickly and clearly understand the characteristics and trade-offs of each layout. The presentation of the alternatives was accomplished through graphic and written descriptions combined into a display board for each alternative. Introductory information about the study was included at the beginning of the questionnaire.

## QUESTIONNAIRE

The survey instrument was a questionnaire (appendix A). It was developed to be used in conjunction with the display boards. The questionnaire began with a brief introduction that indicated the purpose and approach of the study. The questions were divided into three areas:

1. Information about the respondent—age, sex, income, marital status, children, etc.
2. Preference for housing situation
3. Factors influencing preference choice

Once the surveys were completed they were compiled into a computer data file. The data was tabulated and analyzed by the use of a standard statistical package. The results and conclusions are summarized in chapter four.

Because of a limited sample size, from a single location, the direct application of this study is basically local; although, it is possible to identify some broader areas that additional studies can address in more depth. This study is also limited by time. It is a measure of current preferences. Other studies in this area would be necessary to document the shifts in buyer preferences and trends over time.

## CHAPTER TWO: BACKGROUND

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### OVERVIEW: RECENT HOUSING HISTORY

#### INDUSTRIALIZATION

The second half of the 19th century saw this country's economy change from an agricultural base to an industrial base. That change, and its associated shifts in population, wealth, and productivity dramatically altered the country's social, political and economic structure. The steady growth of the urban areas was an inherent byproduct.

The growth of the urban population was a reflection of a worldwide trend towards urbanization associated with industrialization. The industrial revolution began in England at the close of the 18th century. It gradually spread through Europe and then to the United States. The development of interchangeable parts, machine tools, steam power, and transportation resulted in greater productivity and efficiency, and led to the gradual development of an industrial economy (Woods, 1979).

In the United States, industrialization gathered momentum in the second half of the 19th century. The migration of people to the city provided industry with the large labor pool that it required. The work was grueling, requiring long hours in poor working conditions, but generally did not require any special skills. Jobs were filled by the influx of unskilled labor attracted to the city by the promise of steady work. The move-

ment into the city consisted of three general groups. The first group was the native born Americans moving from rural areas to the city. The second group was the native born blacks moving from the rural south to the industrial cities of the north. The third group was the immigrants, the majority from Europe. Changes in European agricultural methods, crop failures, the spreading factory system, political, and religious factors all contributed to the migration (Andrachek, 1979).

This rapid growth of the urban populations had a significant impact on housing. There was a heavy demand for more and more household units to accommodate the growing population. The factory worker was limited in his housing choices. Walking distance to and from work, especially with 14 hour workdays, made it imperative to find housing within easy walking distance. The use of the horse drawn streetcar later in the century extended this distance somewhat, but the cost of fares kept the worker from moving too far from work. Only those with higher incomes could afford to move away from the crowded, undesirable neighborhoods. Another factor that limited the factory workers housing choices was the low wages, forcing the lower class families to select inexpensive housing. These factors funneled the growing numbers of lower income workers into the fairly limited areas near the manufacturing districts. Existing buildings were converted into tenements to accommodate higher and higher densities. Families doubled up or took in boarders to save money, even with everyone in the family working. Many of the tenements had only two or three rooms for an entire family. Water and sanitary facilities were minimal, if they existed at

all. The common sidewalls of the tenements meant that only a few of the rooms on each floor would have windows, limiting the amount of sunlight and air circulation. Finally, most of the buildings were old and in varying states of disrepair, many to the point of being dangerous (Andrachek, 1979).

While, the overcrowded lower class tenement was not the only type of housing during the late 19th and early 20th century, it was the area where urbanization had its most significant impact on housing, both in terms of density and social issues. The growing middle class and wealthy could afford to live away from the industrial centers in newer rowhouses or individual homes. Many of these homes, some of the earlier "suburbs", were a product of a housing boom in the 1920's that came about after World War I. Of course the conditions in these homes were much better than in the lower class homes.

## DEPRESSION

The housing boom of the mid 1920's came to an abrupt halt in the economic crash of 1929. Housing starts plummeted, mortgage finance dried up, millions of people in the building industry were thrown out of work, and more than 1.5 million homes were foreclosed (Mason, 1982). As the economic decline gathered momentum, people lost confidence in the economic and banking systems and began to withdraw their deposits. Banks with substantial long term investments were illiquid. This often led to the banks failure. During the last half of 1932, bank failures occurred in unprecedented numbers, with a large share of

their long term investments in defaulted home mortgages (Fish, 1979).

During the 1920's and 1930's the standard mortgage term was for three to five years. The borrower did not make periodic payments to reduce the principal, but only paid the interest, usually once each year. Also, banks usually would not risk more than 40 percent of the value of a home on a first mortgage. That meant that the owner either used his own equity for the remaining 60 percent or found a second, and sometimes third, mortgage (Fish, 1979). So most homes had at least two mortgages, with no procedure for amortizing the principal. The principal was due as a lump sum at the end of the mortgage term. This meant that the homeowner would have to renew the mortgage many times before the debt could be retired. It also left the homeowner vulnerable to foreclosure.

During the first few years of the 1930's, homeowners throughout the country were hit hard by the depression. Under normal conditions the homeowner would have been able to extend the note, but the banks were in desperate need of cash and could not renew the loans. The banks would foreclose and usually try to recover their investment by selling the property at a public auction. In the depressed economy, the home generally sold for far less than it was worth leaving the banks with a loss, often a total loss for banks holding second and third mortgages (Fish, 1979). By 1933 more than 1.5 million homes were in default, foreclosed, or in the process of foreclosure (Mason, 1982).

One of the characteristics of the housing industry was its interdependence with so many other elements. In many cases, bank

failures were a result of failed mortgage investments. Unemployment put an adequate place to live out of reach for most and all but eliminated new home construction. The construction industry, from builders to material suppliers, ground to a halt. Housing starts hit a low of 93,000 in 1933, a 90 percent drop from the 1925 peak of 937,000 (Mason, 1982).

It was in response to the desperate situation that the federal government, gradually under the Hoover administration and aggressively under the Roosevelt administration, took an active role in strengthening the economy and providing relief for its victims. Many of the federal programs that were developed at this time had both an immediate and long term impact on housing. The Federal Home Loan Bank System (1932) was aimed at strengthening the mortgage credit system. Under Roosevelt, it was expanded and a subsidiary, the Home Owners Loan Corporation (1933) helped home owners refinance their homes and avoid foreclosure. The Federal Housing Administration was established through the National Housing Act of 1934. The Federal Savings and Loan Insurance Corporation (FSLIC) and later the Federal National Mortgage Association (FNMA) helped to strengthen the mortgage system (Fish, 1979). These programs and others not only provided relief to the homeowner, but brought reform to the housing industry and particularly the national credit system.

## WORLD WAR II

By the time the war began in 1939, the deep depression of the early 1930's had reversed and the economy was well on its way

to recovery. Although the government maintained a stance of neutrality, the defense industry began to expand in response to the threatening international climate of 1938-1940. This gave the economy an extra boost toward recovery.

Housing stock declined dramatically during the difficult economic times of the 1930's. Lack of maintenance and repair had left much of the housing in poor condition, 40 percent of which was more than 30 years old (Nenno, 1979). Housing starts had climbed to a respectable 603,000 by 1940, up from the 1933 low of 93,000, but had not made up the large housing shortages that had accumulated over the previous decade. Although the war proved to be a boost to the general economy, the housing industry continued to be slow during the war years. Since the countries efforts were oriented to the production of war machinery, little manpower or materials were left for the production of lower priority housing. As the production of war materials reached its peak housing production slipped to 356,000 starts in 1942, 191,000 starts in 1943, and a low of 142,000 starts in 1944 (Mason, 1982).

Although housing construction was slow it did not come to a halt. A major portion of the housing that was produced during the war years was directed towards accommodating the large number of workers that had moved to the industrial areas and defense factories across the country. The need to house the workers was urgent. Speed was critical, federal financing was available, and the market assured. Builders took advantage of this combination of factors and introduced new construction methods and materials, such as the use of mass produced, prefabricated parts, panels,

and components that would later become standard in the industry. These included factory-built door and window units, wall panels, ducts, plumbing modules, trusses, and other parts that cut building time and costs (Mason, 1982).

#### POST WAR BOOM

During the war, a large housing shortage had accumulated. These shortages were accumulated on top of a housing stock already weakened by the depression the decade before. Demand for housing was high and would become more acute with the end of the war. Ten million veterans would be returning from the war and more than 3.5 million families would be looking for a home in 1946 (Mason, 1982). The federal government made easy financing available to the homebuyer through FHA title VI loans at 5 percent down for 25-30 years. In 1944, congress passed the Serviceman's Feadjustment Act, which became known as the G.I. Bill of Rights. Title III authorized, among other things, the guarantee, by the Veterans Administration, of loans to veterans in order to purchase, build, or improve homes (Nenno, 1979). People also had money to spend. During the war years unemployment was low and the wages were high, but because of the war there was not a lot of consumer spending. People had savings and were ready to spend. There was a large skilled-labor force returning from the Seabees, army engineers, and builders of war construction projects. New construction methods, improved motorized tools, and new materials, allowed new home construction with modern amenities in a short period of time. All of

these factors combined to put the post war housing industry in a position for tremendous expansion (Mason, 1979).

The ingredients for a housing boom were in place; demand, financing, skilled-labor, and new construction technology. But wartime materials shortages and government restrictions kept starts down to 142,000 in 1944 and 326,000 in 1945. It was not until 1946 that housing starts began to gather momentum, topping one million and pushing one-and-a-half million by 1949.

One of the most significant characteristics of post war housing was the move to the suburbs that began after the war and continued through the 1950's and 1960's. The "American Dream" of clean air, green grass, more room, and a "wholesome" place to raise a family, manifested itself to many in the suburban home. This movement was not really new. Its roots can be traced back to the second half of the 19th century and development of reliable urban mass transit. Before the introduction of the street railway the physical dimensions of the city were limited by walking distance. Few towns extended much beyond two miles from the city center. As it progressed from the horse-drawn omnibus to the steampower trolley and eventually the electrified rail lines, mass transit could move more people, faster and farther, steadily expanding the boundaries of the city. The early horse-drawn omnibus began to emerge in the 1820's and 1830's. It was replaced by the horse railway in the 1850's. The smooth rail allowed the horse drawn railway to travel faster and carry more people than the omnibus. The development of mechanical power allowed even greater capacities and higher speeds. The cable car in the 1880's and particularly the electric trolley beginning in

the 1890's brought efficient travel to mass transit. In 1904, New York opened its first underground section of the electric railway, the subway (Klein & Kantor, 1976).

Prior to the advent of mass transit, only the wealthy could afford to live away from the industrialized city center. The introduction of the rail lines and the suburban communities that sprang up along them allowed the upper and rapidly expanding middle classes to move away from the city center. An example of the increase in the dimensions of the city is Cincinnati, which went from an area of six square miles in 1850 to 23 square miles in 1880 to over 50 square miles in 1910 (Klein & Kantor, 1976). Even the well known sprawl of Los Angeles was not begun by the automobile but by the street car. Between 1900 and 1913 Henry Huntington extended his street car lines 35 miles, tying together and creating many new suburban communities (Healy, 1974). The exodus to the suburbs was heralded by many as a solution to the congestion and evils of the city. But it quickly became apparent that spreading the city over a greater area simply magnified existing problems and created new ones for the city (Klein & Kantor, 1976).

The next major step in the development of transportation was the automobile. Its influence on the lifestyle and form of the city was tremendous. The fledgling auto industry grew from a producer of 4,200 cars in 1900 to 187,000 cars in 1910. By 1915, 2.5 million cars were in use and it was during this time that the industry made the transition to mass production (Healy, 1974). It was the application of mass production methods to the auto

industry that made the car an affordable mode of transportation and led to its impact on American society. By 1920, nine million cars and trucks were in use and by 1930 this number had grown to 27 million (Healy, 1974). The car had grown from a luxury item to an indispensable tool for every family. It allowed the family to travel with more freedom and speed than ever before. During the growth years of the 1920's, the car was the catalyst behind the movement of the middle class to the suburbs. This movement was interrupted by the Depression and war but continued after the war at a greatly accelerated pace. The car combined with the federal governments' highway program, the pent up housing market, and other factors to trigger the large suburban growth of the post war period.

Many cities adopted a system of inner belt freeways and loop freeways to increase access to the city center from the suburbs and nearby cities. These changes occurred largely as a result of the Interstate Highway Act of 1950, which provided for a \$60 billion limited access highway program linking every major city in the nation (Gerckens, 1979). This made travel between the city and the suburbs faster and easier than ever, allowing the middle class family to live in one of the new suburban neighborhoods and still commute easily to work. The highway was a major stimulant to building throughout the metropolitan area, making thousands of square miles of undeveloped rural land accessible. Land values skyrocketed and developers moved in to take advantage of new residential, commercial, and industrial markets (Mason, 1979). The highway system along with the rail lines allowed many of the industrial and manufacturing interests to escape the high

costs and undesirable locations in the city and locate near its suburban labor force (Gerckens, 1979).

The suburbs as the "American Dream", did fulfill many of the dreams for those that lived in them. There was extra room for entertaining or childrens play. The houses were built with the latest building methods, the streets were clean, the schools were new, and in many other ways the suburbs offered what people wanted in a place to live. But, everything was not ideal. There were problems with the "American Dream". The low density suburb with its detached home on individual lots was extremely land intensive. The suburbs spread out for miles around every major city, taking large amounts of prime rural farmland out of production. The pattern of development was haphazard, often outstripping the capabilities of local governments to plan for and control development (Whyte, 1970). The standard development procedures attempted to maximize the number of lots and minimize the short run cost of development. In the long run the results were often costly from an economic, social and environmental standpoint. This was particularly true in the earlier stages, before many cities had developed effective policies to control environmentally damaging development procedures. Some of the problems included overbuilding in environmentally sensitive areas, such as wetlands, coastlines, and floodplains. Increased runoff from impervious surfaces and storm drainage systems became a problem in terms of flooding, siltation, and erosion damage. Finally, the low density of the suburbs often made the cost of sewer, water, and other services higher than the local tax base

could support (Gerken, 1979). This meant that local governments would lose money servicing these low density neighborhoods, forcing a reallocation of the tax base, a significant raise in taxes, or a reduction in the services provided.

## CURRENT ISSUES

Housing is constantly changing in response to new priorities and technologies of the generation it accommodates. Housing that is being built today reflects many of the changes that have taken place over the last 15 to 20 years. Spiralling material, labor, land, and financing costs have significantly increased the price of a new home over the last two decades. Energy costs and the changing demographics of the family have also effected housing perceptions. These factors have encouraged developments in design and technology that respond to the changing needs of the family.

## RISING COSTS

Changes in the economy have dramatically increased the cost of the new home. In May of 1984, the median price of a new single family home rose above \$80,000 and is likely to continue to rise each year. Americans are spending a growing share of their income on housing. From 1970 to 1978, the cost of a median priced, single family home rose 180 percent. During this same period, median family income rose by only 75 percent (Marshall, 1983). Of course part of this increase is due to changes in the average home and not cost increases. There are many factors that

contribute to the rising cost of housing today, including land, construction, financing, regulation, and energy.

#### LAND

Prime development land around the metropolitan area is becoming increasingly scarce. This is becoming increasingly true as rising costs of energy, travel time, and overextension of services are beginning to reverse the trend of decentralization. Competition for scarce development sites continues to drive the cost of land upward.

In order to minimize the impact of land costs, residential developments are moving towards higher densities. Single family detached lots are becoming smaller and attached multi-family housing developments are becoming more common. Local governments are gradually becoming more flexible, allowing planned unit development, zero lot line, cluster designs, and other approaches that allow greater flexibility than traditional zoning regulation. Also, infill on vacant parcels of land and rehabilitation of existing structures are being used by developers to reduce the impact of land cost and decrease per unit cost.

#### CONSTRUCTION

Rising building costs also contribute to increasing home costs. It is a reflection of steadily increasing costs throughout the building industry, from raw materials through the cost of labor. The builder has no alternative but to pass these costs on to the homebuyer.

There are several options however, that builders can use to cut costs in the construction process. One of the most basic is to reduce the size of the home. Attached multi-family developments take the smaller unit a step further and add cost savings from common walls, services, roofs, and shared site development costs. The trend towards smaller, attached homes is not new. In the early 1950's, single family detached homes accounted for more than 90 percent of all housing starts. By the late 1960's this number had dropped to around 60 percent and to less than 50 percent in the 1970's (Gercken, 1979). The use of prefabricated modules and components also allow the builders to cut construction costs and time. More complete prefabricated units are gradually gaining acceptance as design and quality are improved, and as it becomes apparent to many that other forms of homeownership are out of reach (Langdon, 1984). Prefabrication includes several levels of finish ranging from the home of precut dimensional lumber, to the modular/sectional home, that is over 90 percent completed at the factory and shipped to the site in sections (Mason, 1982).

## FINANCING

Another aspect of rising home costs having a substantial impact on the affordability of the home is the cost of borrowing money. Interest rates are effected by many factors in the economy, but in the broadest terms reflect a rate of return that an investor considers reasonable on the investment. An example clearly shows the impact of interest rates on the cost of

housing. In 1978-79, monthly payments on a typical 9 percent fixed rate mortgage for \$60,000 were \$483. That same mortgage at rates of approximately 14 percent would cost \$711, an increase of more than 47 percent (National Association of Home Builders, 1984). When the rising costs of the home are combined with the increasing cost of financing, the impact on the affordability of housing is greatly magnified. In 1972, using a fourth of the income, 42 percent of the nations families could afford to buy a median priced home of \$27,600 at an average interest rate of 7.35 percent. In 1984, if the same criteria of one fourth of the income was used, only 11 percent of all American families could afford to buy a median priced home of \$78,700 at the current rates of approximately 14 percent (NAHB, 1984). As mentioned before part of the change in the average cost of the home is that in many ways the average home is a different product with better finishes, appliances, and other changes. However, this example does show the changes that have occurred that effect the ability of the homebuyer to purchase the average home.

Interest rates climbed steadily through the inflationary times of the 1970's. They hit a peak during the 1981-82 recession when fixed rate mortgages rose to an annual rate of 17.5 percent and the prime rate climbed to 20 percent. In 1984, fixed rate mortgages came into the year at around 13.8 percent and by the end of the summer had climbed to over 15 percent (Anderson, 1984).

The rise in interest rates hurt lending institutions that had too much of their portfolio committed long term, fixed rate mortgages at interest rates too low to cover the rising cost of

operation. The financial community has taken steps to ease the impact of high interest rates on both the lender and the home-buyer. The variable rate mortgage allowed the lender to adjust the interest rate, with maximum adjustments ranging from 1/2 to 1 percent per year and 2 1/2 to 5 percent over the life of the loan. Mortgage programs like the renegotiable rate mortgage, adjustable mortgage loan, and others are similar in that they use an interest rate that is adjustable, allowing the lender to offer the loan at a reduced rate. Another approach has been the graduated payment mortgage and similar loans, where initial payments are low and gradually increase over a period of years, this allows young homebuyers, who anticipate a steadily increasing income to buy. In the face of slow sales developers were often willing to offer some form of a buy down, where they agree to buy down the interest rate a specified number of points, for a period of time. Another approach that has become increasingly important to the lower to middle income market is tax exempt bonds. Investors are willing to purchase the bonds at a lower rate because they are tax exempt. The money that is raised is then made available to qualified buyers at a slightly higher rate than the bond issue but well below current market rates (Mulligan,1980).

## REGULATION

Many people contend that over regulation by government agencies is another factor that contributes to the rising cost of a new home, although there is much discussion over how signifi-

cant over regulation is. Current development rules and practices have evolved over many years for the purpose of providing control over the direction and quality of development in the community. Many feel that these regulations are overly structured and do not respond to new needs and methods evolving within the housing industry. For example, new building methods and materials that offer better quality at lower cost often do not conform to existing building codes and therefore are discouraged. Also, many zoning requirements restrict mixed uses, higher densities, narrower right of ways, the preservation of open space and existing drainage systems, and other cost saving,enviromentally sound site development practices. Finally, insistance of local governments to maintain policies that encourage traditional suburban densities throughout the community result in an over extension of basic services as well as an inadequate tax base to support those services due to a low density (Langdon, 1984).

## ENERGY

The rising costs of energy has, and will continue to have, a pervasive influence on almost every aspect of the American life-style, including the cost of housing. Rising energy costs directly effect the cost of transportation. As transportation costs increase, distances from work, school, shopping, and entertainment will become more important in the decision making process of buying a home. These considerations have been leading to higher density housing near central locations of employment and activity as part of a trade off in the purchase of a home. Also, past zoning and development practices have led to a pattern

of dispersed development, with each land use isolated from the other. Dispersed land development patterns make the car an everyday necessity. As travel costs continue to rise communities will have to alter outdated regulations and tradition in order to encourage a better mixture of land uses, higher densities and alternatives to the car. Finally, transportation costs increase the cost of materials, from raw materials to final products, that are used in the construction of new homes.

Energy costs have also had a significant impact on the cost of heating and cooling our homes, and the use of appliances, hot water, and lights. When energy cost skyrocketed in the 1970's interest in energy saving methods and alternative energy sources rose. In the last 15 years many energy saving approaches have been introduced and accepted in the housing industry. Solar collectors as well as many sources of passive solar energy as a supplement to traditional energy sources have been developed and applied to the housing industry. Some of these approaches include careful siting, windbreaks, earth berming, windows on the south wall, overhangs for shading summer sun, masonry floors topped with brick or tile, and tromb walls. Solar designs also encourage internal air circulation with an open design and ceiling fans. Fireplaces with an enlarged chimney wall and attached solariums are often used as special selling features for their aesthetic and solar qualities (Langdon, 1984). Michael Bell of the National Association of Home Builders says, "my best guess is that anywhere from 7-10 percent of all houses built today use some form of passive solar" (Langdon, 1984, p.55).

These percentages will grow as solar applications gain acceptance and energy costs continue to rise.

A related source of energy conservation is super insulation, where the air change between the inside and outside is dramatically reduced. By the use of advanced insulation techniques, the air infiltration rate is reduced from about 70 percent air change per hour in the conventional house to under 10 percent air change per hour in the super insulated home. A family in an experimental three bedroom, 1300 square foot house in New York heated their home through the winter with nothing more than their own bodies, appliances, and light bulbs (Langdon, 1984).

#### CHANGING DEMOGRAPHICS

One of the most influential factors in the changing form of housing is the change in composition and lifestyle of today's family. Lane Marshall (1983) says that the traditional nuclear family of two to three children, the wage earning father, and housewife mother represented only seven percent of all households in 1980. The traditional family has moved in several directions. Fewer people are getting married and those that do are waiting longer. More are opting to not have children, or if they do, they are waiting longer and having fewer children. The average family size is expected to decrease from 3.3 in 1978 to 2.41 in 1990. The divorce rate climbed 68 percent between 1970 and 1979 while at the same time the number of marriages dropped 16 percent (Marshall, 1983). Combined with the fact that people are waiting longer to get married, it is evident that there is a growing

trend towards single person and single parent households. The single person household is expected to grow by 52 percent during the 1980's. The single parent household is expected to increase almost three times faster than the conventional husband-wife unit through the 1980's. In fact the single person and single parent household types should account for 30 percent of the nations households by 1990 (Marshall, 1983). Whether they are responsible for their own household or contributing a second income, there are more women working today than ever before. This number is expected to increase 23 percent by 1990 when 57 percent of the women in the work force over the age of 14 will be working. Today, approximately 60 percent of all households have two adult incomes, a trend largely due to economic conditions. There has been a decline in disposable family income in real terms despite a growing number of two income families (Houstoun, 1981).

#### RELATED STUDIES

Housing industry publications such as Builder and Professional Builder regularly conduct and publish studies on housing preferences. These studies are geared towards providing the information the housing industry needs to design and market their product. Current market trends are critical to any successful marketing effort. These studies provide in-depth information on what the homebuyer wants in a home, size, room arrangement, architectural style, and amenities. They also give detailed information about financial considerations and how variation in the type of household effect preferences. However,

minimum consideration is given to the character of the external housing environment in these studies.

In some of the more in-depth surveys some questions indirectly give an indication of homebuyer preferences for the exterior environment. A study published in the December 1982 issue of Professional Builder indicated an overwhelming preference (88%) for a single family detached home over any form of attached housing. When people were given a choice of 1) half acre lot or more, 2) narrow front and big backyard, 3) minimum yard with court, or 4) shared space only, approximately 50 percent of the detached home buyers desired the large lot compared to 38 percent who preferred the narrow front and big back yard. Attached homebuyers preferred the small yard with court option over the shared space by a large margin. Finally, a question indicated a direct correlation between the price of a home and the amount people were willing to pay for landscaping. The higher the purchase price for the home, the more people were willing to pay for landscaping (Diez, McNeilly, & Carper, 1982).

In a review of research literature on migration between urban and rural settings, Zuiches (1981) notes that few studies had dealt with the effect of residential preferences and mobility expectations on migration plans. In the studies that did, residential preferences or destination selection was generally related to a larger context than the immediate housing environment. Preference was generally measured in relation to the characteristics of a community rather than preference for characteristics of the actual residence. Also, residential preference was studied in regards to its effect on migration decisions

between rural and urban settings and not the actual homebuying decision itself (Zuiches, 1981).

A study conducted by Elizibeth Harman and John Betak (1974) looked at the cognitive meaning of external privacy in housing. Forty adults in the market for a new house were interviewed for descriptions of the factors they used in evaluating a set of ten alternative homes. The ten residences represented a variety of type, size, price, location, and upkeep. The results indicated that people are significantly concerned about external privacy and space relationships. Content analysis indicated that respondents associated external privacy with at least four general elements:

1. Private outdoor space, generally related to lot size
2. Proximity to neighbors
3. Building type, with a preference for single family detached
4. Perceived rural/suburban character vs. an urban character

The different factors were tested for correlation with privacy. Lot size was the most significant factor related to privacy, followed by rural/suburban character. Other factors that correlated highly with peoples sense of privacy were window considerations, and parking and drive considerations. Few respondents mentioned courtyards, screen walls, or vegetation in their considerations for privacy. It would be interesting to see what the response would be today with the changes that have occurred in housing over the last ten years.

Cooper (1975), conducted a study of Easter Hill Village, an

existing low cost housing project in Richmond, California. Cooper used a questionnaire and interview process to conduct the study. The study was developed over a number of years and covered a broad range of housing issues. A number of interesting considerations about the exterior housing environment came out of the study. The backyards were important to all the residents. They were used for childrens play, sitting outside, flower and vegetable gardens, and for tasks such as clothes drying and small repair jobs. Most residents commented that they would use their backyards more if they offered more privacy. The front porch and front yards were important to the residents in a different way, providing an opportunity to watch or interact with the outside world. Finally almost every resident felt that the open space was important to the neighborhood.

## CHAPTER THREE: METHODOLOGY

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### OVERVIEW

In general, increased residential densities result in a lower per unit cost for site development improvements. Basic areas of site improvement include rough grading, installation of main line utilities (sewer, water, gas), streets, and any improvements made to the common areas such as street trees, lighting and signage. Given the same land use and the same basic site design, total site improvement costs would remain relatively constant as densities were varied. That is, the amount, and therefore the cost, of rough grading, streets, and main line utilities would not change significantly as densities varied. However, the per unit cost would decrease as the density increased because of the greater number of units to share the relatively constant site improvement costs. For example, if a 100 unit residential development had 10,000 lineal feet of road, each unit would absorb the cost of 100 lineal feet of road. If the density was increased to 200 units, the cost per unit for road would be reduced to 50 lineal feet. Increased density would effect the per unit cost of utilities and rough grading in much the same way.

The development of the alternatives presented in this study was based on the premise that higher densities result in a lower per unit cost for the site improvements. As densities increase, the developer accumulates cost savings that could be turned into

a higher level of development throughout the project without increasing the cost of the individual home. There is a basic trade off between the size of the lot and the level of development. An increasingly common example of this trade off is the townhouse condominium development that offers home ownership where the individual "lot" has been reduced to a private patio area. The trade-off of a greatly reduced individual lot is a highly developed public area.

For the purpose of this study the independent variables were lot size and the level of development. As lot size decreased the level of development increased while maintaining a constant home cost. The independent variables were manipulated in an effort to determine how they effected homeowner/homebuyer preferences, the dependent variable. Three hypothetical housing situations were developed for the single family detached housing type. A range of realistic lot sizes from 0.33 to 0.10 acres was established. Working within that range an alternative was developed with a large lot and minimum improvements. A second alternative had minimum lot dimensions and a fairly high level of development. A third alternative was developed to represent the middle ground between the two extremes. Each alternative was established while keeping costs constant.

This study represents an academic exercise and does not entirely reflect reality. Assumptions have been made in order to study certain variables and allow the study to be of a manageable size. One assumption in particular is that a developer would return 100 percent of the cost savings that result from density

back into the project. Although not likely to occur, this assumption was made in order to keep the costs for each alternative constant. However, if a developer can be shown a relationship between additional improvements and increased sales there would probably be a willingness to recycle at least some of those savings back into the project.

The three alternatives were developed on an actual site in the Manhattan, Kansas area. An actual site was used to define some parameters for the design. The site was basically flat and somewhat linear in character. It was bounded by a road on one side and a creek bed on the other. Excluding the creek bed, 35 of the sites 42 acres were buildable. The design approach was to develop schematic alternatives. These schematic alternatives would be representative of the different housing situations and provide reasonably accurate estimates of the density for each alternative. The designs were not intended to be finished designs but schematic, for the purpose of generating development statistics. The people taking the survey would not be seeing these overall plans.

The number of alternatives were left at three because it was felt that each alternative represented a clearly recognizable choice without overlap. Only two alternatives would have eliminated a distinct option, with a clear set of trade-offs, from the homebuyers choices and reduced the surveys' accuracy. More than three alternatives would have begun to overlap and made the choices less distinct, which would have made the results of the survey more confusing.

## DESCRIPTION OF ALTERNATIVES

### ALTERNATIVE A

Alternative A has the largest lot (appendix B.1). Its dimensions are 110'x125' or 0.32 acres. The case study site can accommodate about 69 units of this size. It is difficult to accurately define lot size in terms of "large" or "medium" sized lot because these perceptions are so closely tied to an individuals background and experience.

The level of development for this alternative is minimal. A seeded yard and one shade tree are all that was included. Any additional improvements would be completed by the homebuyer after the purchase of the home. Common improvements are not found in this alternative.

Of the three alternatives, A is most typical of the standard suburban neighborhood over the past 25 years. It was anticipated that alternative A would be a desirable choice for a number of reasons. The larger yard area offers additional space for gardening activities, future home additions, entertainment, or childrens play. It was anticipated that a greater distance between neighbors would be correlated with added privacy and possibly a sense of status. Also, this alternative was expected to be popular with many people because it is similar in style or type to what they currently live in or have so in the past. Therefore, they are familiar and comfortable with this type of housing.

## ALTERNATIVE B

Alternative B represents the middle range (appendix B.2). The lot size, 80'x120', has been reduced from 0.32 to 0.22 acres. This allowed the site to accommodate 27 additional units, going from 69 to 96 units, while keeping the same basic site layout. Using the cost estimates discussed later in the chapter, there was a savings of approximately \$2,900 per unit. With 96 units at \$2,900 per unit, this amounted to a cost savings of \$278,000 for the whole project. In order to maintain constant costs for each alternative this \$2,900 per unit was redirected into landscape improvements around the home in addition to the shade tree and seeded yard found in alternative A. These improvements included, a 15x15 wood deck, 50 lineal feet of wood screen fencing, 1-2 additional shade or evergreen trees, 1-2 flowering trees, and planting beds with shrubs and ground covers. These landscape improvements would be completed by the developer and would be completed before the sale of the home.

Although specific designs were not developed for this study, by working from several plans and adding variations, the landscape improvements completed by the developer could avoid monotonous repetition throughout the development. Also, many of the homeowners would make further modifications to the yard providing additional variety.

It was felt that alternative B might be a desirable alternative for people that did not want to undertake landscaping and site improvements along with the other responsibilities of a new home. Others might choose alternative B because the yard size seemed most appropriate, or because they were not interested in

the public amenities available in alternative C.

## ALTERNATIVE C

Alternative C represents the smallest lot and the highest level of development (appendix B.3). By reducing the lot dimensions to 55'x100' the lot size was reduced to 0.12 acres. That is compared to 0.32 acres for alternative A, and 0.22 acres for alternative B. This allows the site to accommodate a total of 134 units, which is 65 more units than alternative A (69 units) and 38 more units than alternative B (96 units). The cost estimates that were used projected a savings of approximately \$5,400 per unit over the cost per unit of alternative A and \$726,000 over the whole project. In order to develop alternative C at the same cost as alternative A, the \$5,400 must be cycled back into the project in the form of site improvements and common amenities. This is the only alternative with any significant amount of common open space and amenities. The \$726,000 available for improvements was divided between the individual lot and the common improvements.

The same basic landscape improvements that were made in alternative B for \$2,900 were used in alternative C. These included a 15x15 wood deck, approximately 50 lineal feet of wood screen fencing, 1-2 additional large shade or evergreen trees, 1-2 flowering trees, and planting beds with shrubs and ground covers. It should be noted that these improvements very adequately provide alternative B with a finished yard. When concentrated on the smaller lot of alternative C they create a

very complete yard including a well screened and private yard area. The remaining \$2,500 of the \$5,400 were used for improvements and maintenance for the public open space. These improvements included two tennis courts, a pool area and clubhouse, a childrens play area, picnic tables, and open fields for softball or other games. These improvements still left sufficient funds for the installation of plant material throughout the open space. Also taken into account was a small monthly fee to cover the maintenance and replacement cost for the public open space. The maintenance fee would be part of the monthly cost to the homebuyer that would remain constant between alternatives and is not an additional cost.

#### COST ESTIMATES

One of the objectives of this study was to develop models that realistically reflected what could be done in a residential development. Economic considerations are certainly a major concern for both the developer and the homebuyer. There is no reason for the developer to build a project that he would lose money on, and every homebuyer must weigh the trade-offs between the benefits of each step up the market against its economic cost. This study attempted to work with realistic cost figures. These figures were then used to determine what should be included in each alternative while maintaining the same cost per unit.

## AFFORDABLE HOUSING

This study chose to look at an "affordable" range of housing. For the purpose of this study, affordable housing was loosely defined as the low to middle price range for housing in any given area. This type of housing was chosen because of the large number of homebuyers that fall into this category where the trade offs are most critical. Potential homebuyers with higher incomes must also make choices between trade-offs, but they become less critical.

## SINGLE FAMILY DETACHED

Another parameter was to limit this study to preferences in single family detached homes rather than multi family housing. Although current housing trends are toward multi family housing because of costs, a single family detached home remains the number one goal of most homeowners. The demand for single family housing will remain high for many years to come. Therefore, the application of any study that investigates methods to improve the livability of single family detached homes will remain for some time.

## SITE IMPROVEMENT COSTS

In an effort to analyze the development costs for this study, a program was developed using the Lotus 123 spread sheet program (by Lotus Development Corporation). The program encompasses land costs, construction costs, design fees, financing costs, and profit in terms of unit costs. As the

alternatives were developed, the cost factors were varied to determine the cost effect on each of the three alterantives. The following sections work through the program explaining the different componants and how they were applied in this study.

## LAND COST

The program breaks the land cost into two catagories; purchase cost, the actual cost of the land and financing cost, the interest paid on the borrowed money. For this study, the purchase cost was set at \$3,000 per acre and was not varied. For 42 acres at \$3,000 per acre the land cost totaled \$126,000. This price is representative of the market around the Manhattan, Kansas area that has reasonable development potential. The land price was confirmed with a local real estate agent and several developers familiar with local land prices.

The financing costs were based on the purchase of land under a land contract agreement. The loan arrangement called for 8 equal quarterly installments of \$15,750 over two years. The interest was established at a 13% annual rate and at the end of the two years totaled \$18,427. The combined cost of \$126,000 for the land and \$18,427 in interest, totaled \$144,427. The installments to the owner were paid at the beginning of each quarter and repayment would be due at the end of the final quarter. There is an endless variety of financing arrangements that could have been used. This form of financing was chosen to represent a developer who had optioned the land contingent on certain approvals and conditions. When approvals were obtained and construction arrangements made, the developer could then

execute the purchase agreement and begin work immediately. Land financing would be short term. By the end of the two years, any costs that had not been recovered by the sale of units would be refinanced in order to pay off the loan.

## CONSTRUCTION COSTS

A second area the program analyzes is the construction costs. It breaks these costs down into two areas, building construction and site development costs.

### BUILDING CONSTRUCTION COSTS

The building construction cost was calculated by a dollar per square foot figure. This figure is multiplied by the total square footage of the homes to be built in the project.

For the purpose of this study the house was kept constant throughout the project. In terms of affordability, it was important to keep the home price as low as possible. A two bedroom, 1200 square foot, modular home with a one car attached garage was used as the cost estimating model. A modular home is partially built in pieces or modules at a factory location, transported to the site, and then assembled and finished on the site. Factory assembly allows for cost savings because of the volume repetition of production steps.

The cost per square foot is difficult to determine because of the many variables involved. Home construction costs can vary widely even among local builders depending on their resources, work volume, and other factors. Estimates used in the

comparisons for this study were provided by builders familiar with the local Manhattan market and ranged between \$23 and \$30 per square foot. One builder had just completed a cost study for a modular home development and felt that given five or more units assembled and finished turnkey as a package, the homes could be built for \$23 per square foot. For the purpose of this study, \$23 per square foot was used.

#### SITE WORK

The second area of construction cost is site work. Site work was broken down into two categories- 1) site work required for each individual lot including service line utilities, drives, walks, and plant materials and 2) site development including grading, streets, mainline sewer, water, and electrical service, as well as any basic improvements made to the public right of ways such as lighting, street trees, and signage.

Site development is one of the major areas of cost savings as densities increase. However, the spread sheet program did not account for the cost economies of density because site work was calculated as a percentage of building construction cost. Building construction costs correspond directly to the number of units and there is no reduction in the building construction cost for increased density. There is a cost reduction from building in volume rather than one at a time, but that has already been taken into account in the square footage cost. Since the program simply takes a percentage of building cost to determine the site work cost, the site work figures also will not reflect the cost economies of density unless the percentages that are used are

adjusted. In other words the site work cost, as a percentage of construction cost, must be adjusted to take into account the savings that result from increased density.

In order to accurately determine what that percentage is, several steps were taken to estimate what the actual site work cost would be. These cost estimates were obtained from Means "Building Construction Cost Data 1984", and then adjusted after checking with a local builder.

First, the major costs for the improvements of the overall site were calculated. Since each alternative had the same basic layout, one estimate of road length would be sufficient for all three alternatives, approximately 5,000 lineal feet. Since the main lines of the utilities were in most cases intended to follow the road right of way, the length of the road could be used to calculate the cost of the utilities. The costs of the overall site improvements are summarized in figure 3.1. The cost for

FIGURE 3.1: COST ESTIMATES FOR OVERALL SITE IMPROVEMENTS

Road	\$45/lf	\$225,000
Sanitary Sewer Main	\$13/lf	65,000
Water Main	\$9/lf	45,000
Street lights	12 @ \$750	9,000
Open Space Seeding		<u>2,000</u>
Total Cost		\$346,000

installing roads, sanitary sewer and water mains, street lights and open space seeding totaled \$346,000. The rough grading costs were limited to street construction and therefore was included

within the cost of the street improvements. The development cost was then divided by the number of units in each alternative to determine the cost per unit for the overall site work (fig 3.2).

TABLE 3.2: OVERALL SITE IMPROVEMENT COST PER LOT

Alternative A:	$\$346,000/69 = \$5,015$
Alternative B:	$\$346,000/96 = \$3,605$
Alternative C:	$\$346,000/134 = \$2,285$

The second step was to estimate the site work that had to be completed for each individual lot and would be a constant cost per unit. These improvements included the drive and entry walk, finish grading and seeding, one shade tree, sewer and water service lines, tap fees, and the foundation (fig 3.3). There also was an additional charge of \$300 per unit by the power company for the installation of underground electric service instead of overhead lines. The total cost came to \$4,500 and does not vary with density.

FIGURE 3.3: COST ESTIMATES FOR INDIVIDUAL LOT IMPROVEMENTS

Drive/walk	\$ 500
Finish grading/seeding	250
Underground electric	300
Shade tree	150
Hook-up: sewer/water	300
tap fees: sewer/water	1,000
Foundation	2,000
Total cost	\$4,500

The overall site improvement costs and individual lot improvement costs were totaled for each alternative (fig 3.4). These costs were then multiplied by the number of units in each alternative to establish a total cost of the site improvements for each alternative.

FIGURE 3.4: TOTAL COST FOR SITE IMPROVEMENTS

Alternative	A	B	C
Site improvements	\$5,015	\$3,605	\$2,285
Lot improvements	4,500	4,500	4,500
Unit Total	9,515	8,105	6,785
Number of units	69	96	134
Total improvements (# units x unit cost)	\$656,535	\$778,080	\$909,109

Dividing the total site improvement cost by the building construction cost for each alternative, provides a relatively accurate indication of what percentage of the building construction cost the site work represents (fig 3.5).

FIGURE 3.5: SITE IMPROVEMENT COST AS PERCENTAGE OF BUILDING COSTS

Alternative	A	B	C
Total improvements	\$656,535	\$778,080	\$909,109
Building costs	\$1,904,400	\$2,649,600	\$3,698,400
Site work as % of building cost	34.4%	29.3%	24.6%

## FEES

The costs of professional fees, for site planning and engineering services needed for the site master plan and construction documents was included as a percentage fee. The percentage was derived from a fee schedule showing the national averages for landscape architectural fees, published by the American Society of Landscape Architects.

## CONSTRUCTION LOAN

This portion of the spread sheet program assumes a short term loan intended to carry the developer through the construction stages of the project, with the developer repaying the loan from home sales income. The loan period was for three years with four equal quarterly installments per year or 12 equal payments. The annual interest was set at 13 percent, representative of a favorable rate at the time of the study.

## PROFIT

Profit was calculated as a percentage of the assessed value, at 20 percent. Assessed value was the sum of land costs, construction costs, fees, and interest. Profit and assessed value combined represent the total project cost. It is out of this total project cost that unit prices are calculated.

## UNIT COSTS

The unit cost per square foot is computed by dividing the total building square footage for the project into the total project cost. This figure is different than the building

construction cost that is also given in a square footage figure. It takes into account total project costs, and when multiplied by the square footage in a given unit provides an estimate of what the unit should sell for.

#### COST SUMMARY

A program was developed for each alternative using the unit numbers generated from the schematic designs. Land costs, unit type, square footage costs, fees, and construction loan factors were kept constant. Factors that were varied included the number of units and the site work percentage. Alternative A with the largest lot and therefore lowest density, had 69 units and a site work percentage of 34.4%. Alternative B had 96 units and a site work percentage of 29.3%. Alternative C with the smallest lot had 134 units and a site work percentage of 24.6%.

Figure 3.6 summarizes the unit costs generated for each alternative. The cost per square foot was \$50.08 for alternative A, \$47.67 for alternative B, and \$45.56 for alternative C, a variance of slightly more than \$2.00 per square foot between the three alternatives. The square footage cost, for a 1200 square foot house, translated into \$60,100 for alternative A, \$57,200 for alternative B, and \$54,680 for alternative C. That means that there is a difference of \$2,900 per unit between alternatives A and B, and a difference of \$5,420 between alternatives A and C. The difference in project costs between the three alternatives (number of units x savings per unit) would represent a savings of \$278,400 for alternative B and \$726,280 for alternative C.

FIGURE 3.6: UNIT COSTS AND PROJECTED SAVINGS

Alternatives	A	B	C
# of units	69	96	134
Cost per sq ft	\$50.08	\$47.67	\$45.56
Unit cost	\$60,100	\$57,200	\$54,680
Savings per unit	*	\$2,900	\$5,420
Total savings	*	\$278,400	\$726,280

A premise of this study is that density results in certain cost savings that could be cycled back into the project in the form of additional amenities without raising the cost of the home. The difference between alternative A and B, totaling \$2,900, has been used to develop the yard area of the individual unit. The difference between the unit cost of alternative A and C, totaling \$5,420, has been used to develop both the yard area of the individual unit and the common open space.

#### IMPROVEMENTS: ALTERNATIVE B

As previously noted, the cost differential between alternative A and B of \$2,900 was redirected into landscaping in the yard area. To determine what could be realistically provided for \$2,900, prices were obtained from local sources. Figure 3.7 is a summary of these improvements and related costs.

FIGURE 3.7: INDIVIDUAL LOT IMPROVEMENTS

1. PLANT MATERIAL

<u>Qty.</u>		<u>Unit Price</u>	<u>Total</u>
2	Shade trees	\$150	\$300
2	Flowering trees	80	160
10	Deciduous shrubs	17	170
15	Evergreen shrubs	20	300
	Ground cover		220
	Bark mulch		80
	TOTAL		\$1,230

2. WOOD SCREEN FENCE	50 lf @ \$10/lf	\$	525
3. WOOD DECKING	15 x 15 @ \$5/sq ft		<u>\$1,125</u>
	TOTAL		\$2,880

IMPROVEMENTS: ALTERNATIVE C

To ensure that there is no cost differential between the alternatives, the cost savings of \$5,420 was cycled into three areas of the project. These areas are improvements to the individual lot, improvements to the public area, and considerations for a neighborhood association fee.

The same improvements that were included in alternative B were used for alternative C (fig 3.7). Because alternative C has a smaller lot area than alternative B the improvements appear even more complete, increasing the sense of privacy. The improvements to the individual lot account for \$2,900 of the \$5,420 that was recycled in alternative C. An additional \$1,520 was directed towards improvements in the common areas. There was

a total of approximately \$204,000 (\$1,520 x 134 units) that could be directed toward the common areas. Cost estimates for the improvements came from Means "Building Construction Cost Data 1984". Figure 3.8 is a summary of what was included.

FIGURE 3.8: SUMMARY OF COMMON IMPROVEMENTS

Two tennis courts @ \$19,000	\$38,000
Pool 20 x 44 @ \$25/ sq ft	22,000
Pool deck 2050 sq ft @ \$1.80/sq ft	3,700
Clubhouse 750 sq ft @\$35/sq ft	26,250
Bike rack	300
Volley ball poles 2 @ \$150 ea	300
See saws 2 @ \$500 ea	1,000
Slides 3 @ \$800 ea	2,400
Swing sets 3 @ \$800 ea	2,400
Small timber forms 2 @ \$1,100 ea	2,200
Timber form	2,300
Pedestrian lighting	3,000
Plant material & seeding	<u>100,000</u>
TOTAL	\$203,850

The built improvements totaled approximately \$104,000. When this is subtracted from the \$204,000 that was available for public improvements there is \$100,000 to complete the landscape improvements throughout the open space.

The improvements to the yard (\$2900), and the open space (\$1520), total \$4,420. The \$1,000 balance of the \$5,420 is used

in the form of a price reduction of the unit, to accommodate a \$10 monthly neighborhood association fee. If alternative A and B were to sell for \$60,100 per unit, with the assumption of 10% down and a 30 year fixed rate mortgage at 13% annually, the monthly payment, excluding tax and insurance, would be \$598.00 per month. If the purchaser of a unit in alternative C was to have the same monthly pay out, then the mortgage payment would be reduced by \$10 per month to accommodate the association fee.

The neighborhood association would be responsible for the maintenance of the open space and common improvements. Street and utility maintenance would become the responsibility of local government paid for through property taxes. The \$10 monthly fee provides the neighborhood association with an operating fund of approximately \$16,000 per year.

#### METHOD OF DATA COLLECTION

The method of data collection selected for this study was the survey questionnaire. It was intended that a display be set up at one of the homes of Manhattans Spring Homes Tour, sponsored by the Manhattan Builders Association. During their visit to the home, potential homebuyers would be asked to complete the survey. In this way, the survey would be made available to a large number of persons in a short period of time. Also the survey would sample persons interested in buying a home and already considering the kind of issues that the questionnaire brought up.

An alternative for completing the survey was to leave the display and questionnaire at a builders model home. Persons

visiting the model would be invited to complete the survey and over a period of time, the survey could be completed. A final alternative for implementing the survey was to give the survey to different groups of people willing to participate. A drawback for this option was a lower chance to approach a random sample because the groups were likely to have common tendencies, a single age bracket or predominantly one gender, that could skew the response to the survey. However, this problem can be minimized by involving a range of groups in the survey.

#### DISPLAY BOARDS

One of the most challenging problems of the study was to communicate clearly to the participants what the alternative choices were within a short period of time. The more time you ask someone to spend on a questionnaire the less likely they are to agree to take the survey. Another problem was that the general public as a whole does not have the skill to read graphic communications. Therefore, care must be taken in assuming how accurately sketches or plans would be interpreted.

It was decided that the best way to describe the three alternatives was through a display board that included both a graphic and written description. The board would summarize the most important features, the character, and highlight the trade offs for each alternative. Each board was approximately 24 x 36 inches and had the same series of graphic and written descriptions. Each display board included an overall plan of several units together. This plan was at a scale of 1"=50' and was

intended to give an overall picture of the alternative, including an indication of density and how the homes relate to each other.

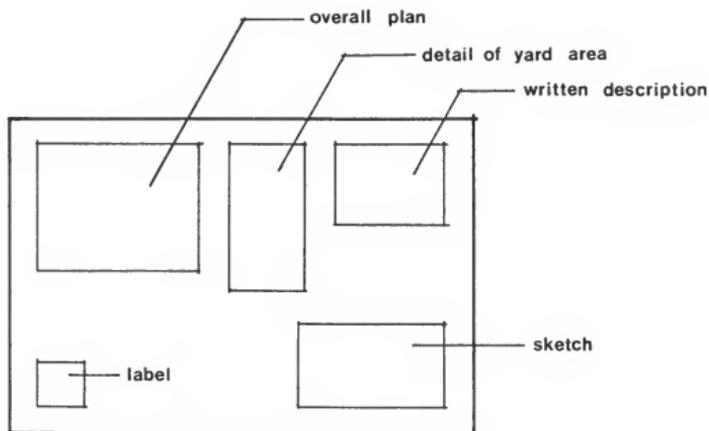


FIGURE 3.9: ARRANGEMENT OF DISPLAY BOARDS

Adjacent to the overall plan was a more detailed plan of the yard of an individual unit at a scale of 1"=20'. The major features were labeled to avoid confusion on the part of anyone that did not understand the graphic symbol. This plan indicated in greater detail what the yard area was like. Next to the detailed plan, in the upper right hand corner, was a written summary of the major features. It described the size of the lot with both its demensions (ie. 80 x 120), and its equivalent acreage. The description also briefly describes what improvements were included in the yard and what, if any, public improvements were included. On the lower right hand side of the board was a simple

perspective sketch. Finally, in the lower left hand corner was a letter designation identifying each alternative. Prints of the drawings were rendered in color, cut out, and placed on illustration board. This allowed them to be easily moved and set up at different locations.

## QUESTIONNAIRE

The survey questionnaire (appendix A) is organized into four sections. The first section consists of introductory remarks and the last three sections contain questions. Questions 1-13 are intended to determine the background of the participant; age, sex, income, marital status, and others. Question 14 asks for the participant's preference. Questions 15-27 attempt to find out what factors might have influenced their preference.

The introductory remarks attempt to give the information that is necessary to complete the questionnaire. The first paragraph explains briefly the subject and purpose of the study and offers an invitation to complete it. The second paragraph provides the participant enough information to complete the survey. It explains that there are three hypothetical housing situations and that each situation is exactly the same except for variations in the lot size and level of development.

### Question 1-3: Sex, age, and marital status

These questions were interested in seeing what correlation these categories might have with a certain preference.

Question 4: Number of children at home?

Question 5: Approximate age of children?

It was felt that these questions could be used to see how children at home and their age might influence the preference choice, whether a big yard or the public amenities were more important.

**Question 6: Level of formal education?**

**Question 7: Total family income?**

**Question 8: Number of incomes in household?**

These questions (6-8) were included to see if education or income had a significant impact on preference.

**Question 9: What type of home do you currently live in?**

**Question 10: Do you own or rent?**

**Question 11: If you own, how many homes have you owned?**

These questions were included to see if any correlations could be drawn between the type of home or ownership and preference.

**Question 12: How soon do you plan to buy?**

Question 12 was used to get a feel for how actively the participant was looking for a new home.

**Question 13: What reason(s) have led you to consider a new home?**

This question was included to see what the major reasons were for looking for a new home.

**Question 14: Considering each situation carefully, and remembering that the costs, location, and home are the same in each situation, please indicate which alternative would be your first choice if you were to buy and live in the home.**

Question 14 was the second portion of questionnaire. This is where the participant was asked to choose one of the alternatives.

Question 15: Rank in order (1,2,3...) the factors that were influential in your first choice of the alternatives in question 14 above. If some factors did not effect your decision then leave them blank.

This question, in effect, tried to summarize the factors that might have effected a choice. There was some question over whether it should be used at this point or at the end of the questionnaire after people had thought about these things. It was decided to get their initial reaction, and then probe that reaction with additional questions.

Question 16: Do you enjoy working in the yard?

Question 17: Did the amount of yard work effect your decision?

These questions were included to see how yard work influenced a preference.

Question 18: Did the planned and completed landscape improvements of B and C have an influence in your selection of a home?

This was included to get a better feel for what people wanted to see in their yard and how they reacted to a yard that was already completed.

Question 19: In general terms, how much do you use your yard area now, weather permitting?

Question 20: How would you anticipate using your yard area?

These questions were used to find out how much people used their yards and what they might use their yard for.

Question 21: Was outdoor privacy an important factor in your decision?

Question 22: How well do you feel each situation provides for outdoor privacy?

Question 21 asked about the importance of privacy in their selection. There might be some correlation between that and how much they use their outdoor living area or what size yard they chose. Question 22 was included to see how participants perceived the privacy offered by each alternative. There were no right answers. Some would sense the immediate privacy of the visual screening in alternative B and C, while others might see distance to the neighbor as more significant.

Question 23: Were the common recreation facilities and the near proximity of open space a factor in your choice?

Question 24: If yes, rank (1, 2, 3...) in order which facilities were the most important.

Question 25: Which facility would you be most willing to do without?

Question 26: Are there any public facilities that you would include rather than one of the facilities listed above?

These questions along with question 15 were included to see how important public facilities were in the preference choice. They would also give some indication of which facilities were considered important and which were not.

Question 27: If you have children living at home, what factors were important in your choice when considering your children?

This question and some of the others would help indicate how children in the household might influence preferences.

## IMPLEMENTATION

After the questionnaire was written, it was pretested by six persons. Each participant was asked to complete the survey first and then comment on portions of the questionnaire that were poorly written or difficult to understand. The actual questions were not changed after the pretest, however, some of the instructions were reworded to make them more understandable.

As mentioned before, the intended method for collecting data was to set up the displays at the Manahattan Spring Homes Tour. However, because of a cold winter and a late, wet spring the home tour was continually postponed. By the end of the 1983-84 school year, nothing had been finalized, and an alternative method of data collection had to be selected.

A set of display boards was left with Bill Carson of Carson Mobile Homes Sales. The display boards and questionnaire were to be set up in the sales office or one of the model homes. Arrangements were made to have another student check in on the progress of the survey and be available to offer assistance in the event of a sales promotion.

Since the author was spending the summer in Ann Arbor, Michigan, it was intended to also administer the questionnaire in Michigan. Comparisons could be made between groups from two different locations as well as within the groups. Several Ann

Ann Arbor builders and realtors were contacted for permission to conduct the survey, however, nobody agreed to participate. Apparently the questionnaire was viewed as a distraction to the sales effort. By mid June, it became apparent that the survey left in Manhattan was not going to generate many responses. It was decided to select a method of data collection in Ann Arbor that provided more control over the implementation. The alternative method selected was to personally take the boards to different groups and administer the questionnaire while waiting. This would assure at least a minimum number of responses to complete the study.

The questionnaire was completed by 75 persons. All 75 people were from the Ann Arbor, Michigan area. The questionnaire was given to different church groups, a womens group, a number of offices, a small neighborhood group, and other individuals that were willing to take the time.

The steps used to administer the questionnaire were fairly standard. The boards were stood up so that they were easily visible for everyone. A brief explanation was given about the purpose of the study. The premise of cost saving resulting from density was highlighted and related to the study's three housing alternatives. It was explained that the two variables were lot size and level of development and as one increased the other decreased. This short explanation seemed to be helpful for many of the participants. The two paragraph written introduction discussed the same things but many people had difficulty understanding when they read just the introduction. When the

written introduction was reinforced by the one or two minute explanation, people had a better understanding of what the study was looking at.

## CHAPTER FOUR: RESULTS AND CONCLUSIONS

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The information generated in the study has been organized into several general categories, including a profile of the sample, yard work, outdoor living area, privacy, public amenities, and children. The results and conclusions will be discussed for each category. Some of the conclusions may be different than expected. Other conclusions will not be a surprise to someone familiar with the housing industry. However, even data that simply supports expected conclusions has value because it strengthens the confidence in that conclusion.

### PREFERENCE CHOICE

The overall preference choices in this study are as follows: 19 percent preferred alternative A the largest lot and least development, 22 percent preferred alternative B the middle choice with improvements in the yard, and 59 percent chose alternative C the smallest lot with both yard and public improvements.

FIGURE 4.0 PREFERENCE CHOICES

	<u>RESPONSE</u> <u>PERCENTAGE</u>	
Alternative A	14	19%
Alternative B	17	22%
Alternative C	44	59%

The remainder of the chapter breaks these results down and looks at what factors influenced these preferences.

## SAMPLE PROFILE

The total sample included 75 persons. A summary of the sample is shown in figure 4.1. The sample had approximately a 2:1 ratio of females over males. There were people in all five age categories, but the predominant portion of the sample was younger, with 72 percent of the sample under 40 years of age. Almost three-quarters of the people in the sample were married. Households without children at home made up 61 percent of the sample. Of the families with children at home, children were generally young. A logical trend considering that better than 70 percent of the sample are in their 20's and 30's. The level of education is high in the sample, with 89 percent having at least some college background and 71 percent having completed a college degree. Even with a relatively young sample, income levels were distributed fairly evenly to \$49,000+ and reflect the level of education. Over 60% of the households have one income. However, considering single persons that automatically comprise a one income household, households

FIGURE 4.1: SUMMARY OF SAMPLE PROFILE

CATEGORY	RESPONSE	%
<b>SEX</b>		
MALE	24	32%
FEMALE	51	68%
<b>AGE</b>		
20-29	31	41%
30-39	23	31%
40-49	7	9%
50-59	10	13%
60+	4	5%
<b>MARITAL STATUS</b>		
SINGLE	17	23%
MARRIED	53	71%
DIVORCED	5	7%
<b># OF CHILDREN</b>		
NONE	46	61%
1-2	27	36%
3+	2	3%
<b>AGE OF CHILDREN</b>		
0-5	20	27%
6-10	5	7%
11-15	5	7%
15+	5	7%
<b>EDUCATION</b>		
HIGH SCHOOL	8	11%
SOME COLLEGE	13	17%
COLLEGE DEG.	34	46%
GRAD. STUDY	19	26%
<b>INCOME (\$)</b>		
<15,000	9	12%
15,000-21,000	13	17%
22,000-28,000	14	19%
29,000-35,000	11	15%
36,000-42,000	5	7%
43,000-49,000	5	7%
>49,000	17	23%
<b>NUMBER OF INCOMES</b>		
ONE	47	63%
TWO	28	37%
<b>TYPE OF HOME</b>		
SINGLE FAMILY	47	63%
DUPLEX	2	3%
TOWNHOUSE	6	8%
APARTMENT	20	27%
<b>OWN VS. RENT</b>		
OWN	44	59%
RENT	31	41%

with two adults are split approximately 50/50 between one and two incomes. The type of homes in which families currently live in are dominated by the single family home (63%), followed by the apartment (27%). The townhouse and duplex were the other types of homes represented in the survey. Finally, almost 60% of the households own their residence while just over 40% of the households rent.

A major area of interest in this study was how the different characteristics of the sample such as age, sex, children, and others might influence buyer preferences. This was accomplished by comparing first choices (A, B, or C) against each characteristic. A problem with a comparison of this type is the more the sample gets broken down, the fewer the responses in any given category. For example, in the comparison between first choice and sex there are six categories (3 choices by 2 sexes), for age there are 15 categories. The fewer the responses in each category the lower the confidence in the results. For trends that did surface it is important to remember that a larger sample would be necessary before greater confidence could be established. In spite of the need for a larger sample in these comparisons, there were some interesting results worth describing.

A higher percentage of males picked alternative A (29%) than females (14%). The preference might be attributed to the traditional association of yard work with the man of the house or perhaps the female gender has more sensitivity toward privacy or amenities.

Married persons had a preference for alternative A. They selected alternative A 25 percent of the time compared to 6 percent for single persons. Also, there is a slight trend towards families with children preferring alternative A. Families with children chose alternative A 23 percent of the time while families without children chose alternative A only 17 percent of the time. A likely reason is so the children would have more space in which to play, since that was the number one answer to question 27 concerning influences by children on buyer preference.

There did not appear to be any significant trends between different levels of education or income in terms of preferences. In terms of the number of incomes, there might be some expectation for two income families preferring the smaller yard area because of work commitments by both adults allowing less time for yard maintenance. However, the results from this study indicated that two income families chose alternative C 46 percent of the time compared to 67 percent of the time in one income households.

#### **YARD WORK: RESULTS**

One of the areas that the questionnaire investigated was the relationship between yard work and preference. Several of the questions related to yard work and the results are summarized in figure 4.2. Question 16 asked whether people enjoyed working in the yard. If you combine the first two responses, 65 percent say they enjoy yard work even if many of these people have

FIGURE 4.2: QUESTIONS RELATING TO YARD WORK

	RESPONSE	PERCENTAGE
(16) DO YOU ENJOY WORKING IN THE YARD?		
Enjoy yard work & do it regularly	19	26%
Enjoy yard work but do'nt have time	29	39%
Other things I would rather do	26	35%
(17) DID THE AMOUNT OF YARDWORK EFFECT DECISION?		
Yes, very much	17	23%
Yes, somewhat	29	39%
No, not significantly	28	38%
(18) DID YARD IMPROVEMENTS IN B & C EFFECT DECISION?		
Yes, prefer to have improvments done	43	61%
No, prefer to do improvments myself	15	18%
Not as important as other factors	13	21%

trouble finding time for it. On the other hand, if you combine the last two responses, 74 percent of the sample either do not have the time or do not care to do yard work. When considering the importance of yard work in terms of preference in question 17, 62 percent said that yard work did effect their decision and 23 percent said that it was very important. When respondants were asked if the landscape improvements in alternative B and C effected their decision, 61 percent said they would prefer to have the landscape improvements completed prior to purchase of the house. This preference for a non-traditional yard arrangement is higher than might be expected. As might be expected, those that enjoy yard work and do it regularly and those who prefer to complete the improvements in the yard themselves showed a significantly higher preference for alternative A. Those that did not care for yard work had a higher preference for alternative B or C.

Some of the responses to question 15 (fig 4.3), ranking the influential factors in the selection of an alternative, also

related to yard work and improvement. The category, "landscaped yard saves time and work for the owner" was ranked by 48 percent

FIGURE 4.3: QUESTION 15: RANKING OF INFLUENTIAL FACTORS IN THE SELECTION OF AN ALTERNATIVE (TOTAL RANKINGS)

RANK		RESPONSE	PERCENTAGE
1.	Privacy	53	71%
2.	Outdoor living area	37	49%
3.	Size of yard	36	48%
4.	Landscaped yard saves time & work	36	48%
5.	Yard work	24	32%
6.	Swimming pool	24	32%
7.	Room in yard for garden/flowers	23	31%
8.	Unlandscpd yard lets owner do own way	19	25%
9.	Room for additions	15	20%
10.	Tennis courts	14	19%
11.	Play fields	14	19%
12.	Playground area	13	17%
13.	Picnic area	11	15%

of the sample. That is almost 2:1 over the category, "unlandscaped yard allows the owner to landscape the yard in their own way", which was picked by 25 percent of the sample. That supports the response in question 18 where the popular choice was to have yard improvements completed prior to the purchase of the home. Also in question 15, "yard work" was the number five answer, ranked by 32 percent of the sample. The category "yard work" does not make a distinction between a positive or negative response, but either way its influence on the preference is not reduced. This supports the response in question 17 where yard work considerations were a factor in the preference choice of 62 percent of the sample.

#### YARD WORK: CONCLUSIONS

People in general, enjoy some yard work (65%) but often do not have the time or desire to commit large amounts of time for

yard work. Yard areas should be designed to require low levels of maintenance. The growing acceptance of smaller yards may be attributed to the desire of homeowners to keep their commitments to yard maintenance in balance with other priorities.

Bearing in mind the conclusion that many people do not want to make a commitment to large amounts of yard work, some yard work is desirable to many. If the responses to question 16 are studied, 74 percent did not have the time or desire to do a lot of yard work, yet, 65 percent of the sample enjoyed yard work even though many had difficulty finding time for it. This concept is underlined by the response to question 20, which will be discussed further in the following section. When people were asked how they anticipated using their yard area, two of the most popular responses were to plant perennial and flower beds (63%) and plant vegetable gardens (41%) both forms of yard work. Apparently people do enjoy spending time in their yard, probably from the standpoint of relaxing, "puttering", or adding a personal touch with flowers or a garden. This is in contrast to a large commitment to regular yard work. In summary, people enjoy spending some time working in the yard, they want to avoid having to spend too much time maintaining their yard at the expense of other commitments or priorities.

Anticipated time commitments for yard work are fairly important when considering the purchase of a home. This is true whether a person enjoys yard work or does not care for it. They will look for a situation that accommodates their interests and priorities. During the design stages and particularly in the

marketing aspects of new homes considerations necessary to accommodate both view points toward yard work should be addressed.

An interesting response to question 18 was that many people want the landscape improvements completed prior to purchasing the home. This preference is in contrast to the current approach of not including landscape improvements around a home and leaving that responsibility to the homeowner. Designers and developers should take notice of the preference for the inclusion of landscape improvements around the house and reevaluate current practices. One possible approach would be to develop several basic designs each with variations. This offers added design control, reinforcing design themes and ensuring good visual quality. New homeowners will add personal touches further increasing variety and interest.

#### **OUTDOOR LIVING AREA: RESULTS**

In the survey, questions 19 and 20 (fig 4.4) were related to the outdoor living area and are summarized below. Question 15, which asked participants to rank influential factors in their preference choice, also related to the outdoor living area.

When asked how much they use their present yard area weather permitting, 29 percent said they would use it very often and an additional 29 percent said that they use it somewhat often. Combining these two groups, 58 percent of the participants use their yard area at least once each week. When the 10 people who do not have a yard area to use are taken into account, 67 percent

FIGURE 4.4: OUTDOOR LIVING AREA

	RESPONSE	PERCENTAGE
(19) HOW MUCH DO YOU USE YOUR YARD AREA?		
Very often (4-5 times/wk)	22	29%
Somewhat often (1-2 times/wk)	22	29%
Occasionally (2-3 times/mo)	11	15%
Very seldom (<2-3 times/mo)	7	9%
Do not have yard area to use	10	13%
Yard not important	1	1%
(20) HOW WOULD YOU ANTICIPATE USING YOUR YARD AREA?		
Patio area: relaxing/gathering	64	85%
Plant perennial/flower beds	47	63%
Plant vegetable gardens	31	41%
Childrens play	29	39%
Working in yard/landscaping	27	36%
Add small pool or hot tub	20	27%
Use room for addition	15	20%
Other	3	4%

of the people with yard areas to use, do so at least once each week. only one participant said that a yard area was not important to their lifestyle and did not use it. These results indicate the availability of a yard is significant to potential homebuyers.

Question 20 related to anticipated use of the yard area. By far the most popular choice was using the patio area for relaxing and gatherings. It was selected by 85 percent of the participants. Planting perennial and flower beds was the second choice with 63 percent and planting vegetable gardens was third with 41 percent. Also, working in the yard or landscaping was chosen by 36 percent of the people. A large percentage of the people choose to participate in horticultural type activities. Childrens play was selected by 39 percent of the sample, or 29 people. The number of households with children is 29, which probably means that 100 percent of the households with children consider

childrens play an important role of the yard. Finally, the categories that were the least popular were additions to the home and built additions to the yard such as a pool or hot tub. Significant financial commitment probably had some influence regarding the lower preference.

In question 15, the second most influential factor in the selection of an alternative was the availability of an outdoor living area. This finding supports the response to question 20, which indicated the popularity of the outdoor living area. The response to question 15 also indicated that the most influential factor was privacy, giving an indication of the kind of outdoor living area potential homebuyers are looking for. Space in the yard for gardening activities was also ranked fairly high in question 15, paralleling what was said earlier about people enjoying more active as well as passive activities in the yard. Those who chose the category of, "room in yard for gardens and flowers", had a higher preference for alternative A (35%) than the overall average (19%).

FIGURE 4.5: QUESTION 15: RANKING OF INFLUENTIAL FACTORS IN THE SELECTION OF AN ALTERNATIVE (TOTAL RANKINGS)

RANK		RESPONSE	PERCENTAGE
1.	Privacy	53	71%
2.	Outdoor living area	37	49%
3.	Size of yard	36	48%
4.	Landscaped yard saves time & work	36	48%
5.	Yard work	24	32%
6.	Swimming pool	24	32%
7.	Room in yard for garden/flowers	23	31%
8.	Unindscpd yrd lets owner do own way	19	25%
9.	Room for additions	15	20%
10.	Tennis courts	14	19%
11.	Play fields	14	19%
12.	Playground area	13	17%
13.	Picnic area	11	15%

## OUTDOOR LIVING AREA: CONCLUSIONS

The yard area is an important part of the home setting. This is reinforced by the fact that two-thirds of the sample use their yard area at least once each week and by the fact that, "outdoor living area" was the second most important factor in the selection of an alternative.

The passive use of an outdoor patio area for relaxing and gatherings is the most popular use of the outdoor living space. Designs should recognize this and provide an attractive and private patio area to accommodate these uses. Other preferences include more active uses such as the planting of perennial and flower beds, vegetable gardens, and childrens play. Part of the enjoyment and experience of an outdoor living area is related to working in the yard, watching plants grow and giving the space a personal touch. Designers and developers should recognize these preferences by providing a low maintenance outdoor space with the opportunity for the homeowner to participate in the noted activities.

The outdoor living area is an important extension of the home for families with children. This was just as true for families that selected alternative C, with its playgrounds and playfields.

As the size of the home continues to decrease, the importance of an outdoor living area to supplement the families indoor living space will increase, even in regions with inclement seasons. The outdoor living area functions as an extension of

the indoor living space for both children and adults. It must provide some opportunity for both passive activities, such as relaxing or sitting and active uses such as gardening or play.

The outdoor living area was clearly an important part of the home. However, feelings towards the outdoor living area did not seem to influence preferences in any one direction. This is probably because it was equally important to everyone, no matter which alternative they picked.

#### PRIVACY: RESULTS

The results of this study indicate that privacy is an important aspect of housing. Some of the questions included in the questionnaire were directed towards privacy and how it might influence preference. Question 21 (fig 4.6) asked if privacy was important in the selection of an alternative and Question 22 (fig 4.7) asked for an evaluation of privacy for each alternative.

FIGURE 4.6: QUESTION 21: PRIVACY

(21) WAS OUTDOOR PRIVACY IMPORTANT IN YOUR CHOICE?

	<u>RESPONSE</u>	<u>PERCENTAGE</u>
Yes, very much	43	60%
Yes, somewhat	21	29%
No, not significantly	8	11%

A total of 89 percent said that privacy was at least somewhat important in the selection of an alternative and 60 percent said that it was very important. It is interesting to note that although privacy was important to almost everyone, participants who selected alternative A considered privacy somewhat more

important than the others. Of the participants that chose alternative A, 78 percent indicated that privacy was very important in their selection of an alternative. This is compared to 60 percent of those who chose alternative B and 52 percent for alternative C.

Question 22 (fig 4.7) asked how well each alternative provided for privacy. Thirty percent said that alternative C provided for privacy very well and 43 percent said adequately. For alternative B, 21 percent said very well and 53 percent said adequately. So approximately 74 percent felt that both alternatives B and C provided for privacy at least adequately. For alternative A, the response was a little more spread out. Thirty percent said that alternative A provided for privacy very well, 17 percent said adequately, and 35 percent said somewhat.

FIGURE 4.7: QUESTION 22 PRIVACY

(22) HOW WELL DOES EACH SITUATION PROVIDE FOR PRIVACY?

	A	B	C
Very well	30%	21%	30%
Adequately	17	53	43
Somewhat	35	24	21
Not at all	18	3	6

It was interesting to separate those who picked each alternative and look at how each group rated the alternatives on privacy (fig 4.8) Those who chose alternative A and C clearly rated the alternative that they chose as better at offering privacy than the other choices. They both rated alternative B as a second choice in terms of privacy and the alternative they did not chose as least able to provide privacy. Those who chose alternative B were more evenly distributed, showing a trend to

rate the two alternatives with landscape improvements in the yard about the same and slightly above alternative A. It may be that privacy is viewed in two ways, in terms of distance or in terms of visual screening.

FIGURE 4.8: PRIVACY RATING BY PREFERENCE CHOICE

PRIVACY RATING OF ALTERNATIVES BY THOSE WHO PICKED A

	A	B	C
Very well	57%	0%	0%
Adequately	21%	38%	31%
Somewhat	21%	54%	54%
Not at all	0%	8%	15%

PRIVACY RATING OF ALTERNATIVES BY THOSE WHO PICKED B

	A	B	C
Very well	33%	27%	27%
Adequately	33%	53%	53%
Somewhat	27%	20%	7%
Not at all	7%	0%	13%

PRIVACY RATING OF ALTERNATIVES BY THOSE WHO PICKED C

	A	B	C
Very well	17%	26%	41%
Adequately	10%	56%	43%
Somewhat	44%	16%	14%
Not at all	29%	2%	0%

In question 15 (fig 4.9), privacy was clearly the most important factor in the selection of an alternative. It was ranked by 71 percent of the participants. It is interesting to note that the two most important factors, privacy and outdoor living area, have to do with the private space around the individual home. In contrast, the common amenities ranked significantly lower in priority.

FIGURE 4.9: QUESTION 15: RANKING OF INFLUENTIAL FACTORS IN THE SELECTION OF AN ALTERNATIVE (TOTAL RANKINGS)

RANK		RESPONSE	PERCENTAGE
1.	Privacy	53	71%
2.	Outdoor living area	37	49%
3.	Size of yard	36	48%
4.	Landscaped yard saves time & work	36	48%
5.	Yard work	24	32%
6.	Swimming pool	24	32%
7.	Room in yard for garden/flowers	23	31%
8.	Unlndscpd yrd lets owner do own way	19	25%
9.	Room for additions	15	20%
10.	Tennis courts	14	19%
11.	Play fields	14	19%
12.	Playground area	13	17%
13.	Picnic area	11	15%

### PRIVACY: CONCLUSIONS

Privacy is a very important consideration in the homebuying decision. This conclusion supports the findings found in other studies on residential privacy. The individual living space around the home and its privacy has a higher priority than other factors in the exterior housing environment. The results indicate that any design scheme for the outdoor living area should incorporate some degree of privacy. Design options available to accomplish privacy in the residential setting include the use of plant material, screen fencing, the siting of the home, design grading, architectural projections, and other methods.

As housing densities continue to increase, privacy considerations will become increasingly important. Questions that need to be dealt with in the future include how the homeowner perceives privacy, which privacy characteristics are critical and which are not, and what design methods adequately provide privacy.

## COMMON FACILITIES: RESULTS

This study also addressed how the common amenities effected preferences. Several questions were directed towards the common facilities. Question 23 asked if the common recreation facilities and open space were important in the decision (fig 4.10). A total of 55 percent said common recreation facilities were at least somewhat important and 37 percent said that they were very important. Forty five percent of the sample said

FIGURE 4.10: IMPORTANCE OF COMMON FACILITIES

(23) WERE COMMON REC. FACILITIES AND OPEN SPACE IMORTANT?

	<u>RESPONSE</u>	<u>PERCENTAGE</u>
Yes, very much	27	37%
Yes, somewhat	13	18%
NO, not significantly	33	45%

common amenities were not important. As might be expected, a higher percentage of participants that chose alternative C felt that the common recreation facilities and open space were important. However, 37 percent still said that these elements were not important. For those 37 percent, preference for alternative C must have been related to the design of the individual lot.

Questions 24 and 25 asked which individual common facilities were considered important (fig 4.11). Question 24 asks for a ranking of the facilities in terms of importance. Question 25 asks which facility the people would be most willing to do without. The results from both questions correlate fairly

closely. The most important common amenity is the open space itself. The swimming pool is the second most important common

FIGURE 4.11: RANKING OF COMMON FACILITIES

(24) RANK WHICH FACILITIES WERE MOST IMPORTANT?

-----	1st	2nd	3rd
Open space	19	4	7
Swimming pool	13	9	10
Jogging/walking trails	8	8	8
playground areas	3	8	2
tennis courts	3	7	4
picnic area	1	6	3
playfields	0	5	2

(25) WHICH FACILITY WOULD YOU BE MOST WILLING TO DO WITHOUT?

	<u>RESPONSE</u>	<u>PERCENTAGE</u>
Playfields	15	25%
Playground area	14	24%
Picnic area	10	17%
Tennis courts	8	13%
Jogging/walking trails	5	8%
Swimming pool	4	7%
Open space	3	5%

(% figure is the % of those that responded to ques. 25)

amenity. The results to question 15 also indicate the popularity of the swimming pool. The number three preference was for the jogging/walking trail system. Its importance is probably related to its connection with the popular open space system and the current popularity of jogging and exercise activities. Of the remaining facilities, the playfields were the least important public facility in both questions.

In question 15, several of the common facilities were listed individually (fig 4.12). Open space and jogging/walking trails were not included in question 15 and judging from their popularity in question 24 they should have been. Of the common

facilities listed, the swimming pool was clearly the most popular, being ranked fifth by 32 percent of the people. The remaining facilities showed a lower priority with a majority of the participants.

FIGURE 4.12: QUESTION 15: RANKING OF INFLUENTIAL FACTORS IN THE SELECTION OF AN ALTERNATIVE (TOTAL RANKINGS)

RANK		RESPONSE	PERCENTAGE
1.	Privacy	53	71%
2.	Outdoor living area	37	49%
3.	Size of yard	36	48%
4.	Landscaped yard saves time & work	36	48%
5.	Yard work	24	32%
6.	Swimming pool	24	32%
7.	Room in yard for garden/flowers	23	31%
8.	Unlandscpd yrd lets owner do own way	19	25%
9.	Room for additions	15	20%
10.	Tennis courts	14	19%
11.	Play fields	14	19%
12.	Playground area	13	17%
13.	Picnic area	11	15%

#### COMMON FACILITIES: CONCLUSIONS

Common amenities are important for many when considering different housing options. However, they do not have the same overall importance as the outdoor living space and its privacy. In other words, considerations for the private living space have a higher priority to households in general, than do considerations for common improvements. These conclusions are based on the overall response to the questions on public improvements, outdoor living space, and privacy. It must be emphasized that common improvements are still an important considerations for many households, as reflected in the fact that over half of the sample said that common facilities were important. Also common amenities were significantly more important to participants

selecting the high density alternative. In this study, the largest group of participants selected alternative C (59%) reflecting a general trend toward higher density living situations occurring for a number of reasons. Public amenities are important to a group of people significant in size and likely to increase in the future.

Survey results also suggest common facilities should not be implemented collectively, but on an individual basis. In this study the highest priority common amenity was the open space probably, at least in part, a response to the increasing densities of housing. It becomes desirable to be near some space that can be counted on to remain open and not subject to the building whim of a neighbor. Another popular common amenity were the jogging/walking trails. As mentioned previously, their popularity can probably be traced to their association with the open space system and the current popularity of jogging and exercise activities. The implications suggest that if a developer can offer a project that includes a system of open space without a large loss in gross density, the project will be more attractive to the potential homebuyer. Also, the survey results support the growing acceptance of newer design approaches that concentrate living units in order to preserve some open space.

The swimming pool was clearly the most popular of the built common facilities included in this study. This result came from a location with a climate that limits the pool season to approximately three months. In spite of fairly high installation and maintenance costs, inclusion of a swimming pool as a common

facility should be carefully considered in view of its high preference ranking. The fact that a pool is not land intensive might also suggest its use when other, more land intensive common facilities are not possible.

Although the other common facilities did not individually demonstrate enough support to easily justify inclusion, they did show some popularity. With the exception of the tennis courts, common facilities such as the playground area, picnic area, and play fields could be incorporated without great expense, strengthening the open space system. The results also suggest that these facilities could be selectively included within a development to strengthen its appeal to a particular target market. For instance, the playground and playfields might be more attractive to households with children, while the tennis courts would appeal primarily to adults.

#### **CHILDREN: RESULTS**

Question 27 asked which common facilities were important for households with children (fig 4.13). Sixty two percent of those that responded said that a larger yard was an important factor. The preference for a larger yard for childrens play by families with children is supported by a slight trend for those households to prefer alternative A. Twenty three percent of the families with children chose alternaive A compared to 17 percent for households without children.

FIGURE 4.13: COMMON FACILITIES FOR HOUSEHOLDS WITH CHILDREN

(27) RANKING OF COMMON FACILITIES FOR HOUSEHOLDS WITH CHILDREN

	<u>RESPONSE</u>	<u>PERCENTAGE</u>
Large yard for play	18	62%
Open space	15	52%
Playgrounds	15	52%
Swimming pool	10	34%
Play fields	7	24%
Tennis courts	5	17%
Picnic area	3	10%
Other	1	3%

(% figure is the % of those that responded to question 27)

On the other hand, a large portion (58%) of the households with children still chose alternative C, the higher density alternative with its common improvements and open space. In question 27, the public open space and playgrounds, chosen by 52 percent, were close in preference to the large yard as an important factor for households with children. They were followed by the swimming pool (34%) and playfields (24%). This indicates that although the large yard found in alternative A is considered important by many families with children, it is not viewed as a significantly better choice than the higher density alternative with public improvements. In fact, the overall preferences for families with children do not differ greatly from those families without children.

When considering children, the least important factors were the picnic area and tennis courts, suggesting that these activities are not necessarily oriented to children's play. The overall responses indicate that these market limitations are also found at the adult level suggesting that these types of facilities might be best accommodated in a public park.

When participants were asked to indicate how they would use

their yard area in question 20, 29 people indicated the yard would be used for childrens play. Since there were 29 households with children, that response probably represents 100 percent, indicating that the yard plays an important role for families with children, allowing them to play safely near the home.

#### **CHILDREN: CONCLUSIONS**

There is a slightly higher preference for alternative A and its larger yard, by families with children than families without children. However, the overall results do not indicate a major difference in the preferences. It appears that other factors weigh more heavily in the selection of a home. That does not mean however, that considerations for the children are not important to the family. If one of the alternatives had been perceived as not meeting the need for safety and the opportunity to play, it probably would not have been selected by households with children. When considering children, the factors that were identified as most important included the larger yard of alternative A and B, and the common open space, playgrounds, and swimming pool of alternative C.

#### **SUMMARY CONCLUSIONS**

The two most important considerations in the selection of an alternative were privacy and the outdoor living area. People are concerned about their private living space, which is even true of those that selected alternative C with its common amenities. Most likely, privacy is important because homeowners want to feel

comfortable enough in their outdoor living space to be able to use it as they chose. As housing densities increase in the future, privacy issues will probably become more critical.

The outdoor living area is an important aspect of today's home. As the home gets smaller, the need to be able to use the outdoor space as an extension of the indoor living area becomes more important. Most families use the outdoor living area regularly and in a variety of ways, suggesting the key to successful design of the outdoor living area is "flexibility". It is important that a yard be able to accommodate both passive uses, such as sitting and gathering around the patio area, and active uses such as working in flower beds and children's play. It is not always necessary that a yard area be large to accommodate these different activities, in fact many families prefer smaller yards. It is important that families feel that their outdoor living area offers a sense of privacy, an opportunity to use it as they would choose, and a chance for children to play in relative safety.

The fact that almost 60 percent of the participants chose alternative C, with the highest density and public improvements, suggests that higher density living is becoming more acceptable. Part of the attraction for the higher density situations like alternative C may be a result of the reduced yard maintenance and access to a variety of common open space and amenities. The results from this study tend to indicate that many homebuyers would prefer a smaller yard, due to a busy schedule or preference for other activities during leisure time. That does not mean that people dislike yard work. Some of the most popular activities in

the yard include planting flower beds, gardens, and landscaping. People enjoy working in their yard but want to avoid commitments to yard work that conflict with other priorities.

The most popular common amenities included the open space, jogging/walking paths, and the swimming pool. Open space helps to minimize the impact of higher densities, providing a large collective land area for a variety of uses.

Again, it is important to acknowledge that the results of this survey reflect the location and characteristics of the sample. The direct application of these results is limited in many ways to Ann Arbor, Michigan. However, the results of this study do provide a chance to identify some general trends that can be compared and tested in further studies.

## RECOMMENDATIONS FOR FUTURE STUDY

There are many directions that future studies could take related to this topic area. This same basic study could be directed towards different population groups to see what differences there are between groups. An important population group is the first time buyer. The first time buyer market has tremendous potential as a result of a slow market in recent years creating a pent up demand and the increasing number of potential homeowners ready to enter the homebuying market. Another group whose impact on the housing industry will be felt in the coming years is the elderly and the retired. Other specific groups that will have an influence on the housing industry are the single parents, the single person, unrelated persons that buy collec-

tively, and the traditional household. Any of these groups could be studied in depth with the survey oriented towards their specific characteristics, needs, and preferences.

A comparison of local market trends in different locations will provide an indication of which preferences are local and which ones have a more general application. These comparisons could be between rural and urban markets in the same region, or inter-regional comparisons between both urban and rural markets.

Comparisons could be made through time which can give a good indication of changing trends. This type of study would be difficult to accomplish in a limited time frame, but could generate important information.

A different approach is to focus the study on a particular part of the exterior housing environment. There are many possible topic areas, including the outdoor living area, privacy, common amenities, density, and many other issues related to the exterior housing environment which this study did not address.

It is apparent from this study that the characteristics of the exterior portion of the housing environment do matter to people. The characteristics of the yard, common amenities, and privacy will have an impact on how the homebuyers perceive a potential home and how it will sell. Therefore, it is important for the developer and the landscape architect to be aware of what these preferences are and how they will effect design. In this way they will be able to provide a product that meets the expectations of the homebuyer and therefore increases the probability of a successful project.

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## APPENDIX A: QUESTIONNAIRE

I am a graduate student in landscape architecture at Kansas State University. I am studying recent trends in the housing industry and their effect on the homebuyers preferences. The purpose of this study is to look at how variations in the exterior setting of the home effect the homebuyers preferences. I would appreciate your help as a homeowner and/or a prospective homebuyer in this survey. It should take no more than 5 minutes to complete. This survey is voluntary and does not ask for your name or other information that might be used to infringe upon your privacy. Your input will provide members of the housing industry with an indication of what your priorities as a homebuyer are.

Thank you very much for your time and assistance to this project.

Mark Johnson  
Department of Landscape Architecture  
Kansas State University

### INSTRUCTIONS

As you can see, there are three different and hypothetical housing situations in the adjacent display. Each situation has been designed on the same site so that distances to work, school, and shopping are always the same. Consider the site to be located in the general area of your community. The downpayment and monthly cost to the homebuyer are the same in each situation. Also, keep in mind that the exact same house was used in each alternative, and that the quality level of the development is the same. What has been varied is the size of the lot and the level of amenities (privacy fences, outdoor living areas, shade trees, etc) that the developer will provide.

Please take a few minutes to study each situation and its trade-offs. When you have familiarized yourself with each alternative proceed with the questions.

1. sex
  - Male
  - Female
  
2. Age
  - 20-29
  - 30-39
  - 40-49
  - 50-59
  - 60 or over
  
3. Marital Status
  - Single
  - Married
  - Divorced
  - Separated
  - Widow/Divorcer

4. Number of children at home  
 None  
 1-2  
 3 or more
5. Approximate age of children  
 0-5 years  
 6-10 years  
 11-15 years  
 Older than 15 years
6. Level of formal education  
 High School  
 Some College  
 College degree  
 Graduate study
7. Total family income  
 Less than \$15,000  
 \$15,000-21,000  
 \$22,000-28,000  
 \$29,000-35,000  
 \$36,000-42,000  
 \$43,000-49,000  
 Over \$49,000
8. Number of incomes in household  
 One  
 Two  
 More than two
9. What type of home do you currently live in?  
 Modular sectional home  
 Single-family home  
 Duplex  
 Three or Fourplex  
 Mobile home  
 townhouse  
 Apartment  
 other: \_\_\_\_\_
10. Do you own or rent?  
 Own  
 Rent
11. If you own, how many homes have you owned?  
 One                     Three  
 Two                     Four
12. How soon do you plan to buy a home?  
 Within 6 months  
 Within 1 year  
 Beyond 1 year  
 Just looking

13. What reason(s) have led you to consider a new home?  
(chase all that apply)
- Looking for more space
  - Looking for amenities (tennis courts, swimming pool, playground, etc)
  - Looking for a new location
  - Job transfer
  - Family reasons
  - Looking for less space
  - Looking for less yard work
  - Want to own, rent now
  - Looking for retirement home
  - Not looking to buy a new home
  - Other: \_\_\_\_\_
14. Considering each situation carefully, and remembering that the costs, location, and home are the same in each situation, please indicate which alternative would be your first choice if you were to buy and live in the home.
1. \_\_\_\_\_
- What would your second and third choices be?
2. \_\_\_\_\_
3. \_\_\_\_\_
15. Rank in order (1,2,3..) the factors that were influential in your first choice of alternatives in question 13 above. If some factors did not effect your decision leave them blank.
- Yard work
  - Privacy
  - Size of yard
  - Outdoor living area
  - The yard that is not landscaped allows the owners to landscape the yard their own way.
  - The landscaped yard saves time and work for the owner.
  - Room in the yard for a number of gliding birds
  - Room in the yard for a hot tub or a hot or a hot tub.
  - Swimming pool
  - Tennis courts
  - Playground area
  - Picnic area
  - Play field for softball or volleyball
  - Public open space
  - Jogging/walking trails
  - Other: \_\_\_\_\_
  - Other: \_\_\_\_\_

16. Do you enjoy working in the yard?
- I enjoy working in the yard and do quite regularly
  - I enjoy working in the yard but usually do not have enough time.
  - There are other things I would prefer to do.
17. Did the amount of yard work effect your decision?
- Yes, very much
  - Yes, somewhat
  - No, not significantly
18. Did the planned and completed landscape improvements of B and C have an influence in your selection of a home?
- Yes, I would prefer the landscape improvements be completed prior to purchase
  - No, I would prefer to complete the landscape improvements myself
  - Landscape improvements are not as important as other factors in the selection of a home.
19. In general terms, how much do you use your yard area now, weather permitting.
- Very often (about 4-5 times per week)
  - Somewhat often (about 1-2 times per week)
  - Occasionally (about 2-3 times per month)
  - Very seldom (less than 2-3 times per month)
  - Do not have a yard area to use
  - Do not consider a yard area important to my lifestyle
20. How would you anticipate using your yard area? (chose all that apply)
- Using the patio area for relaxing or gatherings.
  - Plant a vegetable garden.
  - Plant perennial and flower beds.
  - Childrens play
  - Use the room for a possible addition to the house.
  - Possibly add a small pool or hot tub.
  - Working in the yard, landscaping.
  - Other: \_\_\_\_\_
21. Was outdoor privacy an important factor in your decision?
- Yes, very much
  - Yes, somewhat
  - No, not significantly
22. How well do you feel each situation provides for outdoor privacy.
- |               | Very well                | adequately               | some what                | not at all               |
|---------------|--------------------------|--------------------------|--------------------------|--------------------------|
| alternative A | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| alternative B | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| alternative C | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

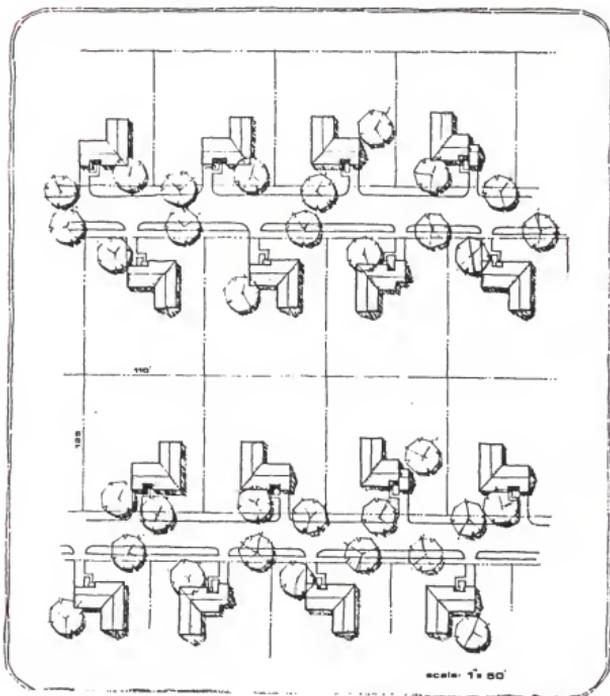
23. Were the common recreation facilities (tennis courts, swimming pool, playground, etc) and the near proximity of open space a factor in your choice?
- Yes, very much.
  - Yes, somewhat.
  - No, not significantly.
24. If yes, rank in order (1,2,3) which facilities were the most important.
- Tennis courts
  - Open space
  - Playground area
  - Picnic area
  - Swimming pool
  - Jogging/walking trails
  - Play fields (softball, volleyball, soccer)
25. Which facility would you be most willing to do without?
- Tennis courts
  - Open space
  - Playground area
  - Picnic area
  - Swimming pool
  - Jogging/walking trails
  - Play fields
26. Are there any public facilities that you would include rather than one of the facilities listed above?
- No
  - Yes, .....
27. If you have children living at home, what factors were important in your choice when considering your children? (chuse all that apply)
- Open space
  - Playgrounds
  - A larger yard to play in
  - Swimming pool
  - Playfields
  - Tennis courts
  - Picnic area
  - Other,

Thank you very much for your time. If you are done please place the stubs in the box marked "Completed surveys". If you would like to comment on the survey or if you feel that some important considerations were left out, use the space below for your comments:

COMMENTS:

APPENDIX B

GRAPHIC REPRESENTATION OF ALTERNATIVES



**ALTERNATIVE A**

**Size**

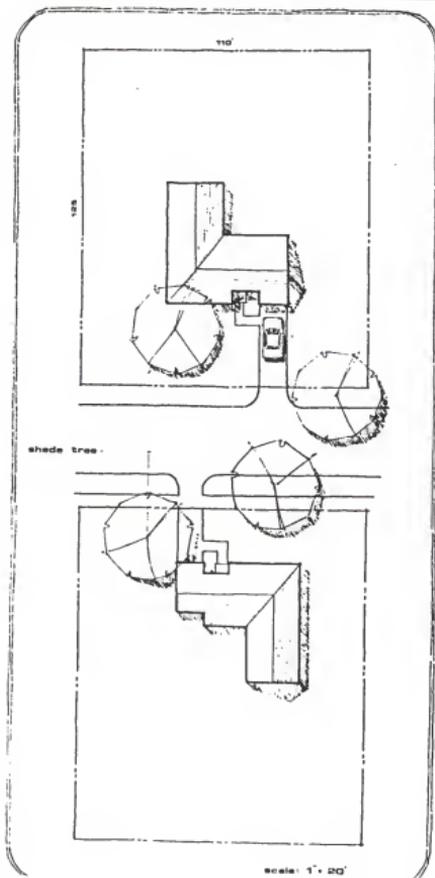
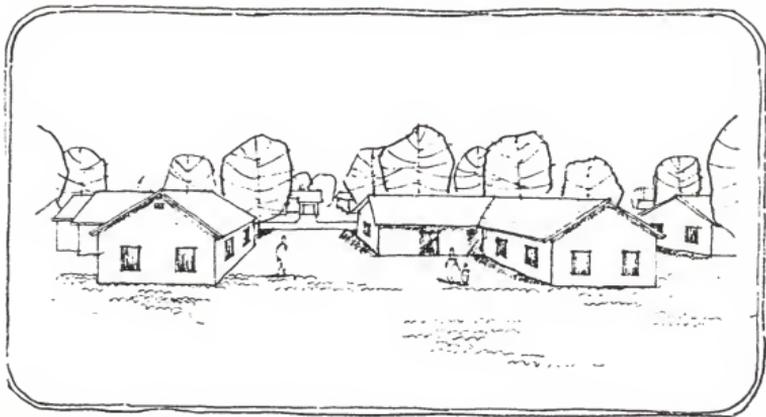
- the largest lot
- 110' x 125' or .32 acres

**Lot improvements**

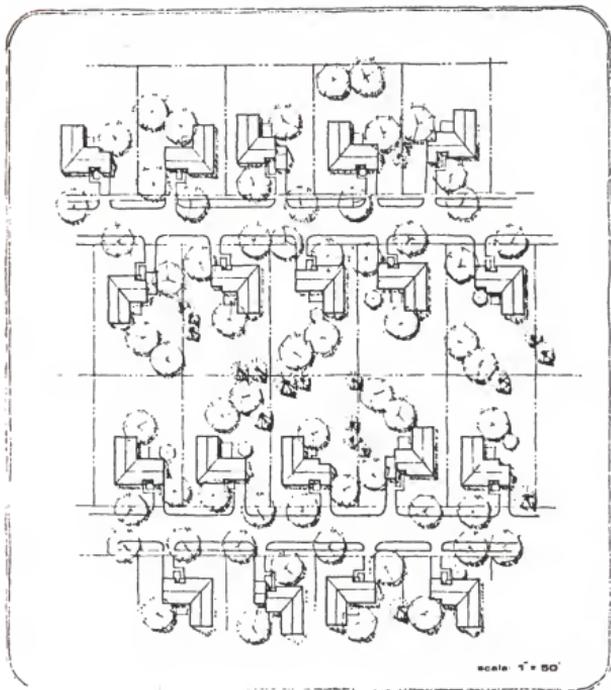
- two shade trees
- seeded yard
- no other landscape improvements

**Public improvements**

- no public open space or public improvements



ALTERNATIVE A



## **ALTERNATIVE (B)**

### **Size**

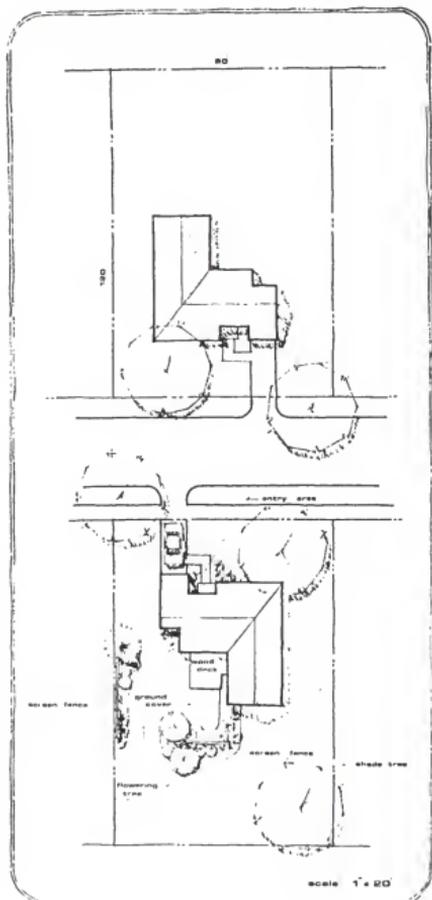
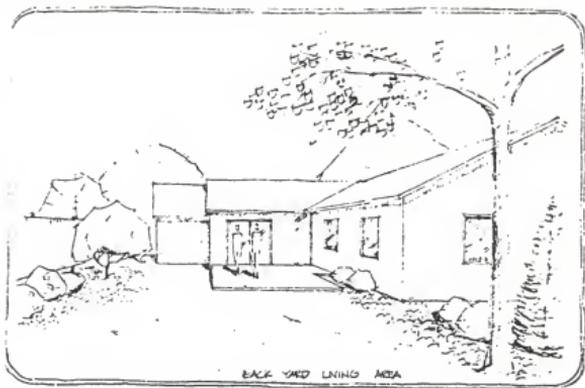
- 80' x 120' or .22 acres

### **Lot improvements**

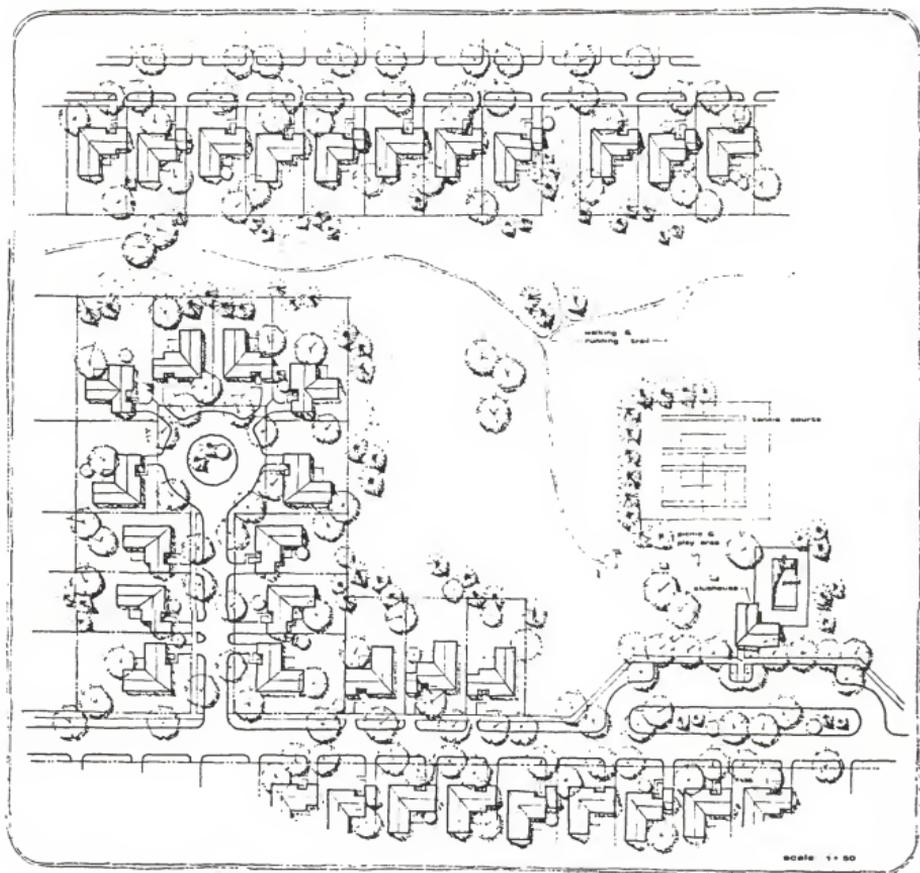
- 2-3 additional shade or pine trees
- 1-2 flowering trees
- beds planted with shrubs and ground cover
- wood screen fencing
- 15' x 15' wood deck

### **Public improvements**

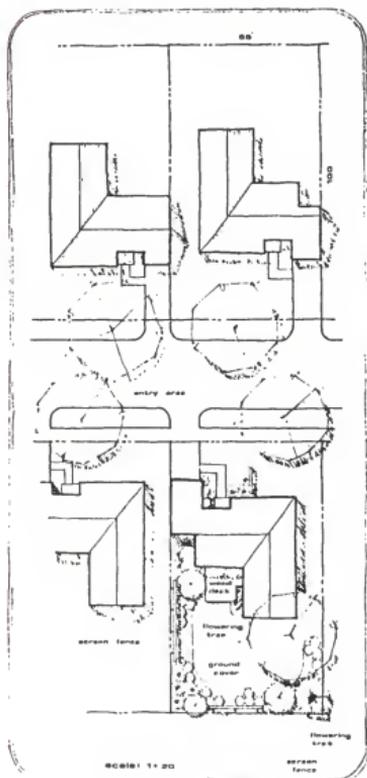
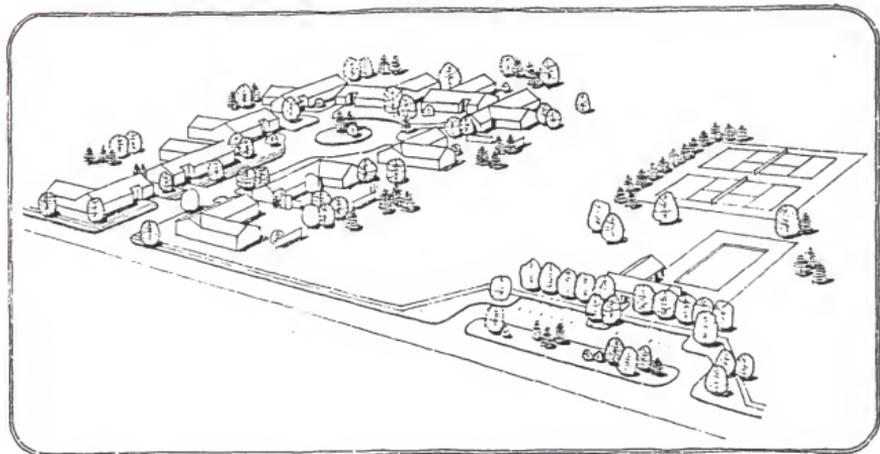
- no public open space or public improvements



ALTERNATIVE B



ALTERNATIVE C



### ALTERNATIVE C

#### Size

- the smallest lot
- 55' x 100' or .13 acres

#### Lot improvements

- the same improvements found in alternative B, including screen fencing, wood deck, and landscaping

#### Public improvements

- swimming pool and clubhouse
- 2 tennis courts
- picnic and playlot area
- playfields (for softball or soccer)
- jogging/walking trail
- system of open space

PREFERENCES IN THE EXTERIOR HOUSING ENVIRONMENT

by

MARK JOHNSON

B.S. Natural Resources, University of Michigan, 1980

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF LANDSCAPE ARCHITECTURE

Department of Landscape Architecture

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1985

## ABSTRACT

Rising land and building costs, high interest rates, and energy costs are just a few of factors that are influencing todays housing market. Builders are responding by offering an increasing variety of alternatives to the traditional single family detached suburban home. Changes in family composition, the changing tastes of todays households, and economic conditions make it increasingly difficult to determine the make up of todays volatile homebuying market. It is important to know what traditional preferences continue to be important and what preferences have changed in response to todays conditions.

One of the most significant trends in housing is its increasing density. As the density of a development increases, savings on land and development costs allow a higher level of development to the individual yard and common areas to be offered than would otherwise be possible.

This study analyzes what priorities the homeowner or homebuyer places on such factors as lot size and level of development. Three hypothetical alternatives were developed for a single family detached housing development. As the lot size decreases, the level of development increases so that each alternative would cost the same. A sample of potential homebuyers was tested by means of a questionnaire to determine the effect of lot size and level of development on preferences. The questionnaire also investigated how much yard work, privacy, outdoor living area, public facilities, and children influenced the choice of a home.

The highest preference was clearly for the alternative with the smallest lot and highest level of improvements in both the yard and common open spaces. When considering a home, the two most important site factors were privacy and the outdoor living area. The outdoor living area should accommodate passive uses such as sitting and gathering and more active uses such as planting beds and childrens play. It is also important that the outdoor living area provide some sense of privacy for the homeowner. Yardwork factors are also important considerations for the homebuyer. People will look for a home that accommodates their interests in yardwork. Most people do not have the time or do not care for yardwork and therefore do not want to be committed to a large amount of it. However, many do enjoy spending at least some time working in the yard. Finally, the common facilities are important to many people but seem to fall a step below the individual outdoor living area and its privacy in terms of importance. The open space itself was considered the most important element of the common improvements and the swimming pool was the most popular built facility.

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