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SCOTT, WILMA GAY. Exterior and Interior Design of Two Mobile Homes. (1971) Directed by: Dr. Clara Ridder. Pp. 110.

Two mobile home designs were created for efficient and spacious solutions for livability in limited spaces. This was achieved by the planning and coordination of space, exterior and interior materials, furnishings, and lighting. Spaces were planned for the anticipated living activities and storage requirements of a typical family in one phase of the family life cycle.

Mobile Home I was designed for a typical family with two small children. The exterior had fir siding and vertical windows. The interior included an L-shaped kitchen with dining area, living room, three bedrooms, and one bathroom. Open planning, light colored wall materials, and furnishings of simple design were used.

Mobile home II was designed for a beginning family. The exterior had cedar siding, vertical windows, aggregate panels, and an asphalt shingled roof with an overhang. The interior included a U-shaped kitchen, living-dining area, two bedrooms, and one bathroom. Light colored wall materials, windows, and furnishings of simple design enhanced the spaciousness.

The quality of the building materials and furnishings was better than that used for many low to medium priced mobile homes. It was recommended that manufacturers consider using the services of an interior designer for creating innovative designs and efficient use of space.


EXTERIOR AND INTERIOR DESIGN
OF TWO MOBILE HOMES

by
Wilma Gay Scott

A Thesis Submitted to the
Faculty of the Graduate School at
The University of North Carolina at Greensboro
in partial Fulfillment
of the Requirements for the Degree
Master of Science in Home Economics

Greensboro
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Approved by


Thesis Adviser

APPROVAL SHEET

This thesis has been approved by the following committee of
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CHAPTER I

INTRODUCTION

It is estimated that during the next five years almost three million of the twenty million unit demand for shelter will be met by mobile homes. The mobile home industry marketed approximately 100,000 units in 1955 and over 400,000 in 1969. It is estimated by the Department of Commerce that production will increase 19 percent in 1970, faster than any other industry. (12) Yet even today mobile homes are not accepted as legitimate housing, but instead termed temporary with depreciation equal to that of the automobile.

Many of the innovations in design are made on the assembly line due to a lack of professional designers in the industry. Those designs which reflect professional imagination often are futuristic, incorporating materials and assembly processes not practical for present manufacturing processes. (2) Professional designs emphasizing space planning, efficient and sufficient living and storage areas, and quality materials and furnishings could have a phenomenal effect on the future of the mobile home as a foundation for modular construction.

Background of the Study

In the spring of 1969, a mobile home manufacturer, Wallace Conner of Conner Industries of Newport, North Carolina contacted the Industrial Extension Service at North Carolina State University and

the School of Home Economics at the University of North Carolina at Greensboro to solicit their cooperation in a project to design an innovative mobile home. The project was expanded to include three units, each built by a different manufacturer, designed for three hypothetical families. Unit I was to be designed for a family with two preschool children, Unit II for a beginning family (newlywed couple), and Unit III for a contracting family (retired couple).

A graduate student majoring in interior design in the School of Home Economics at the University of North Carolina at Greensboro would design the three units.* Her major adviser, the Dean of the School of Home Economics, and three faculty members from various areas of Home Economics would serve as members of an advisory board. The Industrial Extension Service at North Carolina State University would advise the student on construction techniques and use of materials. Several industrial organizations and companies involved in the project's origin would serve as financial sponsors and consultants in various aspects of the design. These included: the Southern Furniture Manufacturers Association, a financial sponsor some of whose members supplied furniture and furnishings for the interiors of the units; the Southeastern Manufactured Housing Institute, a financial sponsor from which three mobile home manufacturer members were selected to build the units; and Duke Power

*Unit III was designed by a senior interior design major and a faculty committee to assure its completion for the Atlanta Show.

Company,* consultant on lighting and wiring designs and the electrical standards of the Mobile Homes Manufacturers Association.

The project would officially be called "Operation Bluesky" derived from the phrase "blueskying" as used in education, meaning to reach beyond the present known sources for ideas and knowledge. The graduate student designing the units would also design a symbol for the project. (Figure 1)

Objective of the Study

The objective of the study was to design two mobile homes, including furnishings, one for a family with two preschool children and one for young householders or a beginning family. Special emphasis was given to: (1) space planning for living activities, both family and individual, and for storage relative to these living activities; (2) selection of exterior and interior materials on the basis of aesthetics, maintenance, and fire resistant qualities; (3) selection of furnishings on the basis of livability, flexibility, color, and enhancement of the total design; and (4) adequate lighting for living and work areas as well as accent lighting for special features.

*See Appendix B for information on the electric switch panel designed by Duke Power for use in Unit I and Unit II

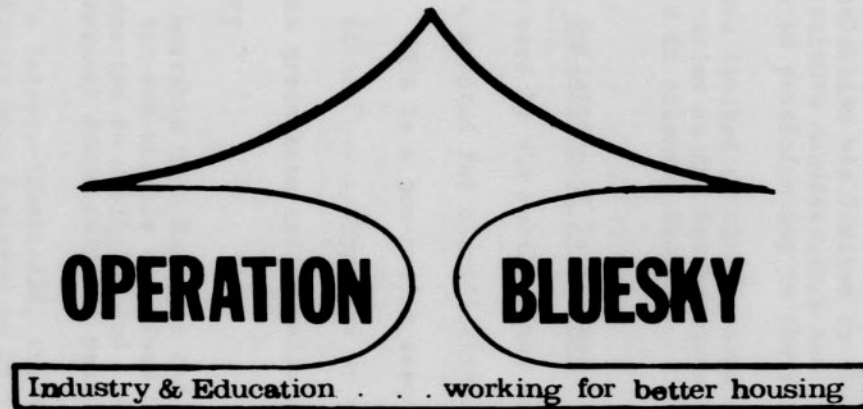


Figure 1

Symbol of the Project

Limitations of the Study

1. Design innovations were limited to assembly line techniques of the mobile home manufacturers building the units.
2. Material selection was limited according to weight and width of the units and cost and availability to the mobile home manufacturers.
3. Furniture selection was limited to those members of the Southern Furniture Manufacturers Association who expressed an interest in participating in the project.
4. The study was limited in time to meet a previously scheduled preview at the Southeastern Mobile/Manufactured Housing Show in Atlanta, Georgia.

Definition of Terms Used

The definitions used by the Mobile Homes Manufacturers Association, (MHMA) are adopted for clarification of the terms used in this study. (35:2) MHMA is a non-profit association serving the mobile home industry. It is ". . . supported by manufacturers and suppliers engaged in the production and/or sales of products and services in the industry."

mobile home--"a portable unit designed and built to be towed on its own chassis comprised of frame and wheels, connected to utilities and designed without a permanent foundation for year round living."

mobile module--"a factory-fabricated, transportable building unit designed to be incorporated (into a structure) at a building site."

sectional home--". . . two or more units factory-fabricated and transported to the home site where they are put on a permanent foundation and joined to make a single house."

CHAPTER II

REVIEW OF LITERATURE

At the 1970 National Association of Home Builders annual convention, builders made a threefold forecast. First, the custom builder will become extinct as large corporations become predominant. Second, industrialization will be more prevalent, especially in the moderately priced homes. Third, the mobile home will gain more acceptance by the housing industry for meeting the housing needs of the United States population. (30)

The Nixon administration contends that mobile homes will have to be included in the total of new housing units if the 1978 goal of twenty-six million is to be reached. President Nixon admits that the mobile home industry "...can no longer be ignored." (18:27)

Mobile Home MarketsGroups occupying mobile homes

A survey by the Department of Housing and Urban Development (33) reported that five and one-half million people, almost three percent of the population in the United States, live in mobile homes. Twenty-eight percent of the total number of families in the United States moving into new single family housing in 1967 moved into mobile homes. A comparison of the ages of mobile home household heads and total population household heads showed that the mobile home household head

was younger in age than the household head for the total population. Of the heads of households occupying new mobile homes, approximately 49.4 percent were under thirty-five years of age. Of the heads of the total population households only 23.6 percent were under thirty-five years of age.

To many young people the mobile home offers economy with the essential conveniences such as furnishings and appliances available in one package. In a mobile home, they can continue a similar standard of living to that established by their parents at a price they can afford to pay.

Retired couples, age 55 and over, who represent an increasing segment of the population, comprise approximately 21.1 percent of the mobile home population. They seek mobile home living for social reasons. They prefer the community atmosphere of the mobile home park and enjoy the reduced home care responsibilities. (2)

Statistics by the United States Bureau of Census and the Department of Housing and Urban Development reveal a trend toward greater ownership of mobile homes by persons in professional, managerial, and service occupations. From 1960 to 1966, the proportion of ownership by persons in professional or technical occupations increased from 5.1 to 7.1 percent, the proportion of ownership by persons in managerial positions increased from 5.1 to 8.1 percent, and the proportion of ownership by persons in clerical or sales positions increased from 3.9 to 7.2 percent. If this trend continues

there should be a greater number of sophisticated and discriminating mobile home buyers. It is assumed such buyers have the knowledge to expect and to demand better quality and have the resources to pay for it. (20)

Growth in production

The mobile home is one form of industrialized housing that has managed to establish a successful market in the housing industry. The growth of the industry has been phenomenal. In 1955 mobile home manufacturers shipped 111,900 units to dealers in the United States. Until 1963, the industry remained relatively unstable as the yearly shipment figures fluctuated above and below the previous year's total. In 1963 the industry finally began to establish a firm market. In 1963 the shipment of 150,840 units was a substantial increase over the preceding year. Since then, mobile home yearly shipments have continued to increase. The greatest growth period was 1969. The 1969 yearly mobile home shipment total of 412,690 was a thirty percent increase over the 1968 total of 317,950. (35)

Evolution of Mobile Homes

Increase in width

The industry in essence evolved from the travel trailer and recreational vehicle. According to a study by Drury, the year 1955 marked the beginning of the mobile home's potential as an industrialized housing unit. (2) In 1955, the ten-foot wide unit was introduced, bringing with it a greater variety of interiors and making

it competitive with conventional housing.

As a competitive housing unit, production and sales increased. The postwar housing shortage had ended. People were buying mobile homes "by preference rather than by necessity." Thus, the industry began to establish a market on its own merits as the total number of people living in mobile homes increased to three million.

With an increasing demand for more space, the twelve-foot wide unit was introduced in 1959. By 1966 it represented over 65 percent of the mobile home sales. (2)

In 1969, the fourteen-foot wide unit was introduced. By August, 1970, fourteen states had approved its transportation on highways. (36)

Use of mobile module

James Hill, President of House of Architecture Incorporated, introduced the mobile module in 1965 using the mobile home as a basis. (2) Some examples of the mobile module include: high-rise apartments where the mobile home-like sections fit into a steel framed core with elevators and stairs, townhouses organized in a similar fashion, tilt-up units and flip-top units offering more variety in design, and single family residences where modules fit together in various patterns. These are especially valuable in meeting the growing needs of the family as new rooms are added by simply adding another module. (8)

In 1967, the sectional unit was introduced as mobile homes began to appear more "conventional". Some manufacturers even complied with the FHA Standards for conventional housing. (2)

Future of mobile home industry

According to the industry (35) the future of the mobile home is in four areas of housing. In the area of urban housing, mobile homes or modules can fit into a fixed structural skeleton for high-rise apartments, row houses, townhouses, or duplexes. Second, mobile home communities are increasing and becoming more sophisticated in compliance with municipal regulations. Third, the market for the mobile homes to be placed on single site location is expected to increase as mobile units begin to resemble conventional homes in appearance. Fourth, the market for vacation homes or second homes is increasing. In the 1970's, it is estimated that mobile homes will represent an increase of fifty thousand second homes per year.

Building Standards

The mobile home is one industrialized housing unit that has enjoyed economic growth and development. Its mobility classified it as a vehicle and thus made it subject to the laws for vehicles. The government and the housing industry did not recognize the mobile home as an authorized housing unit. "Whatever else the mobile home unit might be, to the institutions, it definitely was not a house." (2:110) Therefore, it was not plagued by building codes, financing, and

taxation principles applicable to housing. By using its own standards, the mobile home industry could incorporate innovative building materials and technology.

A building standard for mobile homes

A National Standard was established in 1969 by the industry. To date it has been endorsed by many state legislatures. Commonly known as Standard All9.1, it includes requirements from the United States of America Standards Institute (USA Standard All9.1) and the National Fire Protection Association (NFPA Standard 501-B). The Standard, developed by professional and technical experts in various building fields, covers construction, plumbing systems, heating systems, and electrical systems conforming to the latest technical and engineering building methods.

Construction.--The objectives of the construction section are quoted below:

1. To provide safe, healthful, and comfortable living facilities with adequate storage space and economy of maintenance
2. To provide adequate natural light and ventilation
3. To provide structural strength and rigidity sufficient for design loads, both in transit and on site
4. To provide adequate running gear and hitch for safe transportation of the mobile home
5. To provide equipment designed for and installed for safety of operation, ease of service, and adequate for the intended use
6. To provide installed materials of adequate specifications to resist deterioration

7. To provide against the entrance of water and winds at all joints, connections, and openings in exterior surfaces
8. To provide arrangement of habitable spaces for fire and health safety (24:12)

Plumbing.--The plumbing section requires proper functioning of all fixtures, supply lines, and drain lines. This assures an adequate supply of water at sufficient pressure and provides protection against the entrance of sewer gas into the home.

Heating.--The heating section provides for proper installation of heat producing appliances, fire safety, and the adequate supply of air for healthful living. Also, it requires the manufacturer to display a certificate describing the inside and outside temperatures for which the heating systems and insulation were designed.

Electrical wiring and equipment.--The electrical section establishes requirements in cooperation with the National Electrical Code to prevent fire and electrical shock to the occupants and to assure proper wire and equipment size for efficient operation of electrical appliances. Only those appliances and fixtures that have been tested and approved by recognized testing agencies such as Underwriters' Laboratories and the American Gas Association can be used in the units. (24)

Standard adopted by North Carolina

On June 18, 1969 the General Assembly of North Carolina passed a bill adopting the USA Standard A119.1, to establish requirements for all mobile homes manufactured and sold in North Carolina. The law states:

Mobile homes, because of the manner of their construction, assembly, and use and that of their systems, components, and appliances (including heating, plumbing and electrical systems) like other finished products having concealed vital parts may present hazards to the health, life and safety of persons and to the safety of property unless properly manufactured.... It is the policy and purpose of this State to provide protection to the public against these possible hazards, and for that purpose to forbid the manufacture and sale of new mobile homes which are not so constructed as to provide reasonable safety and protection to their owners and users.

No persons, firms, or corporation may manufacture, sell, or offer for sale any mobile home which has been constructed more than twelve months after July 1, 1969, unless such mobile home, its components, systems, and appliances have been constructed and assembled in accordance with the standards herein defined [USAS A119.1]. Any mobile home unit which bears the label or seal of compliance of a recognized testing laboratory... (such as Underwriters' Laboratories or similar testing service) shall be deemed to be in full compliance with the standards and rules and regulations prescribed in this article. All mobile home units bearing such label or seal shall be acceptable as meeting the requirements of this article throughout the State of North Carolina without further inspection.... Any mobile home unit not bearing such label or seal shall be subject to inspection by local building inspectors.... (32:1108-1109)

Financing

Classified as a vehicle, the mobile home is financed as an automobile. Short-term loans, five to seven years, are made by banks and finance companies. Down payments are usually twenty percent with "add-on" interest charged to the balance. Short maturities and a low delinquency rate have encouraged loans on mobile homes when conventional housing institutions were plagued with tight money. (20)

The 1969 Housing Act may make mobile home financing comparable to conventional home financing. It authorizes FHA loans on new mobile homes as well as land purchased for mobile home park development. Under

the provisions of this act, loans of \$10,000 or less to purchase units of a minimum size of 12 by 40 feet will be insured. Annual interest rates of 7.9 to 10.5 percent are charged on the loans made for a minimum period of twelve years and thirty-two days. The annual interest rate is determined by the amount and term of the loan. Minimum down payments of five percent are to be made on units priced up to \$6,000 and ten percent on units above \$6,000. To be eligible for an FHA loan, the mobile home must be the buyer's primary residence for nine months of the year and must be placed on an FHA approved site. (18)

Real property is classified by law as any structure permanently fixed to the land; whereas, a non-permanent structure is classified as personal property. The wheels of the mobile home give it the characteristic of mobility and generally place it in the latter category. Yet, inconsistencies in classification of the units as real or personal property in each state create inconsistencies in the amount of taxes paid by the mobile home owner. The complexities of taxing the units as real property; personal property, if registered as a motor vehicle; or "in lieu of", a special tax if not registered as a motor vehicle make it difficult to ascertain a fair tax system for the mobile home owner. However, the mobile home is generally considered to have a tax advantage over the conventional home. (2)

Mobile Home Design

Research Studies

Mobile home design has virtually been ignored by the mobile home

manufacturer. Fortune magazine (12) reported the findings of a study of mobile home manufacturing done by Norman Rowland, a construction expert. According to the report, Norman Rowland estimated that manufacturers spent \$360 for the appliances and the furnace that were in a typical unit and only \$315 for the furnishings.

Mobile home design has also been omitted or ignored in research and technical data. One recent study (15) only briefly included design aspects of mobile home living. The survey was conducted by Market Facts in Washington, D. C. for the Owens Corning Fiberglas Corporation. The purpose of the survey was to study consumer and dealer attitudes toward mobile home living. Eight cities with "high mobile home activity" were chosen for the survey. Mobile home owners whose homes were two years old or less were questioned.

One area of the study was consumer interest in spending more money for certain features in a mobile home. Fifty-eight percent of those questioned indicated they definitely or probably would spend \$100 to \$500 for better quality furniture. Over 50 percent said they would definitely or probably spend \$50 to \$75 for better grade of carpet. Fifty-seven percent disclosed the same willingness to spend \$150 to \$200 for better construction. Fifty-six percent indicated they would definitely or probably spend \$40 to \$60 for more insulation. The validity of these figures to actually cover the cost of upgrading in the areas mentioned is questionable. Nevertheless, the percentages are encouraging and noteworthy.

The disadvantages of mobile home living, were also surveyed in the Owens Corning study. Thirty-nine percent of the mobile home owners listed the limited space for living activities and storage as the main disadvantage of mobile home living. (15)

Trends in design

The general consensus of mobile home design, as expressed by Drury (2:152) is "... that the design of the mobile home is inferior, or not of the quality it might be." The mobile home has been the target of much criticism. The more common sarcastic references include "shiny metal box" or "wobbly box." Errol McRill, a park designer feels the "...slick aluminum finish and the lingering pink and turquoise coloring is a stigma." He proposes more extensive use of natural exterior materials, claiming that "...the metal box with its interior lined with a lacquer base imitation wood finish is a perfect container for a fire." (25:187) Architect Paul Rudolph (19:79-80) criticizes the mobile home's design by accusing the mobile home manufacturer of "...covering the countryside with the ugliest things imaginable." Yet he admits its production and technical methods will be the foundation of modular architecture and calls the mobile home the "twentieth century brick."

The lack of sophistication in design as described above could be attributed to two factors in the evolution of the mobile home industry. First, technical problems and improvements of the assembly line process have been the primary concerns of manufacturers, since profits

were determined by the number of units produced. With the increase in the number of mobile home manufacturers (seven new manufacturers in North Carolina in 1969), the emphasis is changing to new features and innovations to offer prospective buyers. Secondly, the mobile home industry has had few professional designers involved in it. According to Drury (2) most innovations are made on the assembly line with suggestions from anyone associated with the manufacturer. Many of the designs done by professional and student designers disregard present possibilities or innovations and concentrate on futuristic designs using materials and techniques not available or practical today.

The emphasis in mobile home manufacturing is beginning to change. The interest and concern for improved mobile home design is evident in the recent organization of the Design Council of Industrialized Housing. The objectives of the organization include:

1. To promote professional coordination of the various industrialized housing designers
2. To serve as the authoritative voice of industrialized housing design
3. To acknowledge achievement in design and marketing techniques
4. To foster high standards of design and professional integrity
5. To support research and creative experiments (36:2)

Mr. Larry Deuel, chairman of the organization, views mobile home design as "...in a state of development." He feels that designers in the mobile home industry are limited as their efforts are

disjunctive from the efforts of other professional designers. Coordination of these efforts to create a new image in mobile home design is the focus of the Design Council of Industrialized Housing and inevitably will become the focus of the mobile home industry as a whole.

CHAPTER III

PROCEDURE

The assembly line procedure of one mobile home manufacturer was observed. The purpose of the observation was to gain an understanding of the assembly line process and its influence on design and use of materials.

The mobile home manufacturer then sent a typical floor plan. The space allotment for the rooms and the use of the living and work spaces in these areas were evaluated.

Mobile Home Unit I

Unit I was designed with consideration for the possible living activities and storage requirements of a typical family with two small children. The efficient use of space was an important factor in planning the design. Lighting and wiring were planned for the living and work areas. The American Standard Requirements for Residential Wiring was used as a guideline to assure adequate lighting and wiring for all areas.

To find available materials for the exterior and the interior walls, ceiling, and floor, visits were made to local building suppliers and distributors. Samples and information were obtained from suppliers and distributors in the Greensboro, High Point, and Thomasville area. Materials were selected from these sources on the basis of

quality, aesthetics, maintenance, cost, and application by the mobile home manufacturer.

All members of the Southern Furniture Manufacturers Association were contacted. Those who expressed an interest in participating sent furniture catalogs for consideration. From these catalogs furniture was selected. Characteristics such as design, flexibility, livability, and quality and color of fabrics formed the basis for furniture selection. A furnishings budget was established to guide the selection.

Window treatments were designed for considerable entrance of light as well as privacy. Fabrics were selected from local retail stores. Students from the School of Home Economics constructed the window treatments. Accessories were provided by a mobile home supplier or purchased locally.

Mobile Home Unit II

In designing the second unit, room areas were allocated according to possible living activities of young householders or a newlywed couple, the space required for these activities, and the furnishings relative to them. Spaces within these areas, as the kitchen work centers and the placement of furnishings, were planned for function and design. A lighting and wiring layout was prepared to provide for adequate lighting and wiring in all areas.

Structural materials were selected on the basis of such characteristics as quality, aesthetics, maintenance, and fire

resistance. A budget for furnishings was proposed to guide selection. Furnishings, of contemporary design, offering flexibility, quality, and color of fabrics were chosen. Both structural materials and furnishings of neutral tones, black and white with varied color accents, composed the color scheme.

Windows treatments with coordinating fabrics were planned. Privacy and entrance of light were primary factors in selection. Accessories were selected from retail stores and a mobile home supplier in order to coordinate the contemporary interior.

CHAPTER IV

FINDINGS AND DISCUSSION

The assembly line process of the participating mobile home manufacturer was observed in order to understand the assembly line procedure and its influence on design and the use of materials. As a result of the observation of Conner Homes Corporation, several notations were made. Mobility, the number and type of axles, as well as transportation regulations, determine the maximum weight of a unit. Extra thickness and weight of wall materials limit interior space and produce additional stress to the foundation.

A typical floor plan sent by the mobile home manufacturer was evaluated. The space allocation for rooms was reasonable. However, the spaces within these areas lacked efficiency in planning for living activities and storage. For example, the kitchen work areas were arranged awkwardly by the fact that there was no counter space beside the refrigerator where the mix center should have been. (Figure 2) The largest work area was to the right of the sink, extending from the sink to the end of the counter. This location was inconvenient, since logically a major work area is placed between two appliances. The placement of the range at the end of the counter created a "dead" space, useful only for opening the oven door. No space was provided in the unit for storage of general cleaning equipment and supplies.

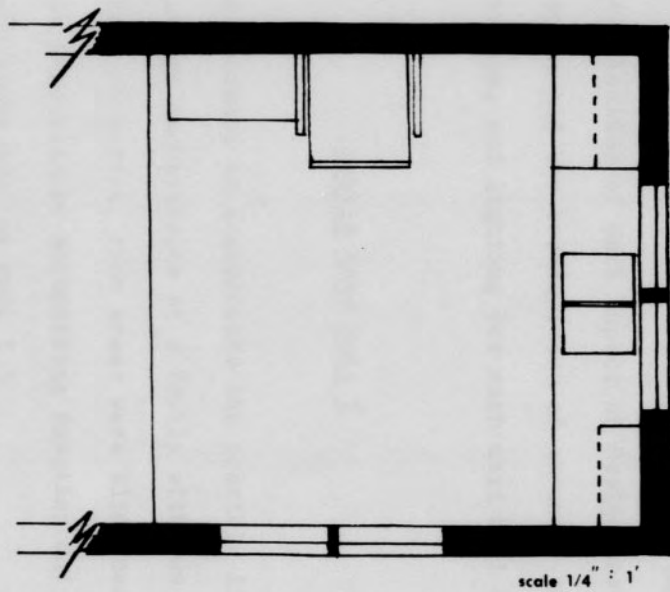


Figure 2

Floor Plan of Kitchen in a Typical Mobile Home

Each mobile home was designed and furnished with consideration for the activities of a typical family in one phase of the family life cycle. Unit I was planned for a young family consisting of parents and two small children. Unit II was planned with consideration for the activities of the beginning family or newlywed couple.

The total design of the units was achieved through the integration of space planning and the selection of exterior and interior materials, furnishings, and lighting. Criteria for the selection and specification of each aspect of design were determined. The planning of space and the coordination of exterior and interior materials, furnishings, and lighting for each unit will be discussed in this chapter.

Mobile Home Unit I

Space Planning

Spaces were planned to accommodate the possible living activities and storage requirements of a family with two small children. With this objective, room areas were allocated. Spaces within these areas were planned emphasizing function and design. (Figure 3 shows the floor plan of Unit I.)

Kitchen, dining, living areas.--For the kitchen an L-shaped plan was designed to provide for continuous work counter surfaces and efficient coordination of work centers. Eighty-four inches of counter space, 96 inches of wall cabinets, and 60 inches of base cabinets comprised the work and counter space. The kitchen was equipped with an electric

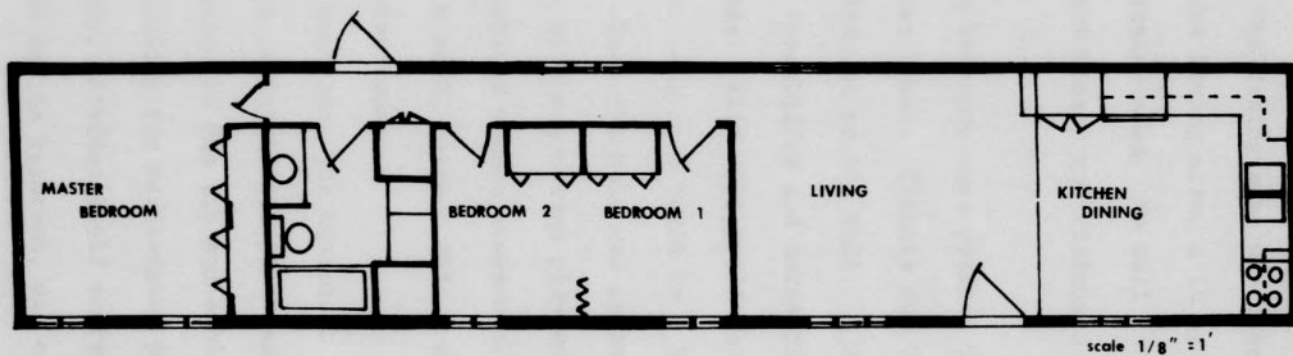


Figure 3

Floor Plan of Mobile Home Unit I

range, a 13 cubic foot refrigerator, a double bowl sink, a dishwasher, and a garbage disposal. The dining area was planned within the 11 by 11 foot kitchen space. The living area, a 14 by 11 foot space, was adjacent to the kitchen-dining area. No wall division was specified. The open plan created spaciousness and minimized the narrow length of the mobile home.

Two Bedrooms.--Two bedrooms were planned for the two preschool children, in a 14 by 8 foot space. Closets for the two rooms were planned along the wall adjacent to the hall. A folding wall separated the two rooms to provide flexibility and versatility and to improve the livability of the areas. This wall could be closed for privacy or for two separate rooms. One room could be a bedroom and the other a studio or sewing room. When the wall was opened, the area would become one larger bedroom with a combined play area for the children. Natural light from the combined window areas would create a more spacious appearance in the small space. Bifold closet doors were used to conserve space in the two rooms.

Bathroom.--In the bathroom, the equipment requiring plumbing was located along one wall to facilitate placement of pipes. The hot water heater was adjacent to the tub and enclosed except for an opening to permit accessibility for maintenance purposes. A vertical unit, 18 by 24 by 72 inches, provided shelf storage for linens. The laundry area, also located in the bathroom, was equipped with a washer and 24 inches of wall cabinets for storage of laundry supplies.

(Figure 4)

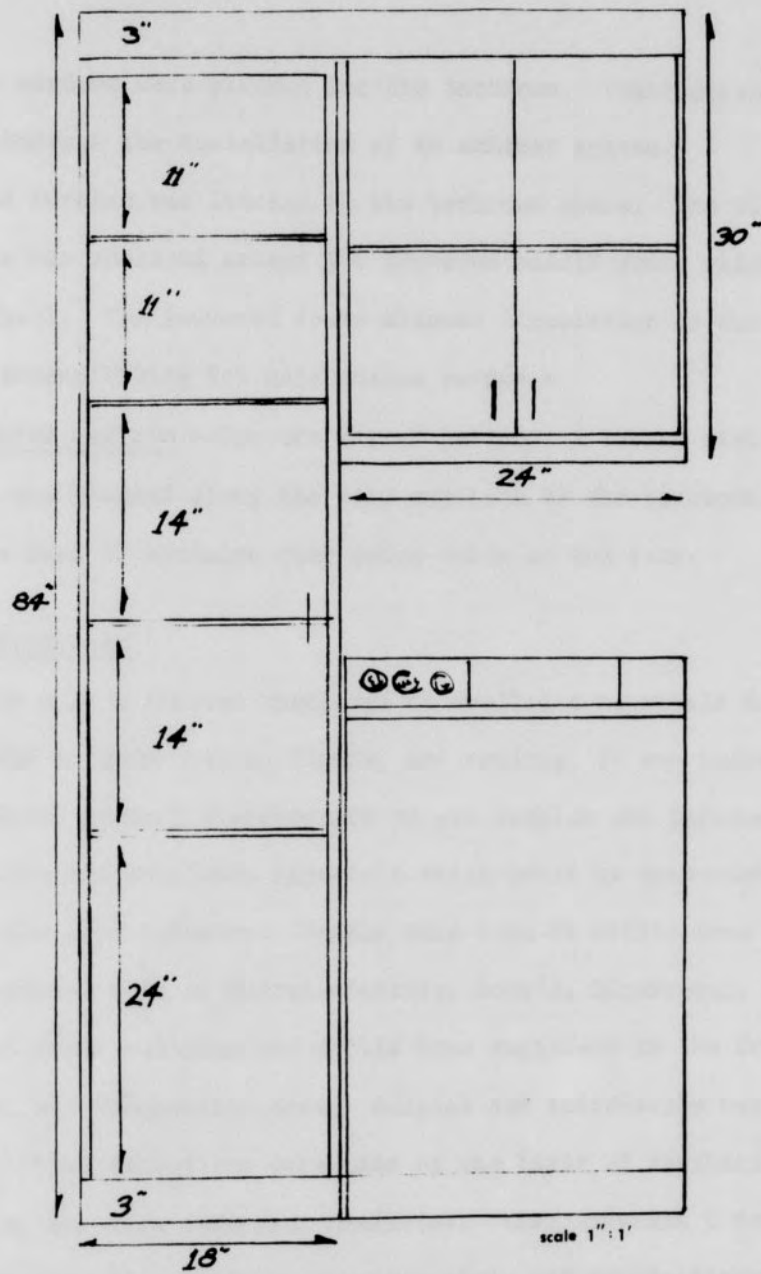


Figure 4

Elevation of Laundry Area in Mobile Home Unit I

No windows were planned for the bathroom. Ventilation was achieved through the installation of an exhaust system.

The furnace was located in the bathroom space. The 26 by 26 inch space was enclosed except for louvered bifold doors which opened into the hall. The louvered doors allowed circulation of air and provided accessibility for maintenance purposes.

Master bedroom.--For the master bedroom, a closet eight feet in length was planned along the wall adjacent to the bathroom. Bifold doors were used to minimize door swing space in the room.

Exterior Materials

With only a limited knowledge of available materials for the exterior and interior walls, floors, and ceiling, it was necessary to visit local product distributors to get samples and information on new materials and available materials which could be converted to use by the mobile home industry. Visits were made to mobile home dealers and to companies such as Georgia-Pacific, Lowe's, Binswanger, Masonite, and several other building and mobile home suppliers in the Greensboro, High Point, and Thomasville area. Samples and information were reviewed. Final selections were made on the basis of aesthetics, maintenance, and fire resistant qualities. (See Appendix C for complete listing of materials, specifications and manufacturers.)

Siding.--A wooden siding was selected for the exterior of the unit to depart from the "shiny metal box" connotation. The selected brushed fir had a vertical pattern. The unfinished wooden panels were

stained with an adobe colored finish. A carved wooden door, used for conventional houses was selected for the front entrance of the unit. At the rear entrance was a typical storm door used by the mobile home manufacturers. To complement the exterior appearance, the doors were painted dark brown. Moldings later added to the windows were also painted dark brown. (Figure 5)

Windows.--In conjunction with the vertical pattern of the exterior siding, slender, vertical windows, 6 feet by 14 inches in size, were specified for the unit. Exclusive use of these sliding glass panels added rhythm and harmony to the exterior design and allowed considerable entrance of natural light to create spaciousness throughout the interior. One example of their effect was evident in the hall. A grouping of three windows in this area contributed a feeling of added width to the otherwise dark, narrow hall.

Insulation.--Polyurethane insulation was used on the floors, walls, and roof of the unit. Its use as an insulating material and its sprayed-in-place application were new to the mobile home industry. (For more information on the polyurethane insulation see Appendix A)

Interior Materials

Flooring.--Three flooring materials were used in the unit. A solid vinyl material in a pebble-like pattern covered the kitchen floor. The solid vinyl is a better quality material than the vinyl-coated flooring material normally used in mobile homes. It resists wear longer and is thicker. The primary flooring material in the unit



Figure 5

Exterior View of Mobile Home Unit I

was a polyester carpet. The carpet had a good to excellent pile density and was tufted on a jute backing. As a fiber, polyester possesses the characteristics of resiliency, strength, and abrasion resistance. The gold-green color was low in value and intensity, making it flexible to coordinate with many color schemes. The flooring material for the bathroom was a nylon carpet with a foam backing. Off-white in color, the carpet was designed for use in bathrooms.

Wall coverings.--To create a spacious appearance, an off-white vinyl wall material was selected as the principal wall covering. The vinyl, of a grass cloth texture, was laminated to a wooden panel, 4 by 8 feet in size. Vinyl is an excellent wall material for a small area as a mobile home because of its ease of maintenance. It is cleaned with soap and water.

Wood paneling was used on one wall area, extending from the kitchen through the hall. As a wall material in the living room, the rich, golden brown color paneling created a warm, cheerful feeling as one entered the mobile home.

A printed vinyl paneling was used for the walls in the bath area. A gold and avocado tortoise shell pattern was selected to complement the avocado appliances in the area.

Wall carpeting, a new idea in mobile home design, served as a decorative and acoustical material for the two small bedrooms. It was selected for the interior walls separating the bedrooms from the

other areas of the unit. The wall material was made from an acrylic fiber with a tufted loop-and-sheared pile construction. The carpet was a vertically striped pattern in colors of gold, copper, olive, and black. It met the federal specification for fire resistance with a flame spread of .25.* Cleaning is a simple process of vacuuming or detergent sponging.

All interior doors and moldings were unfinished and later painted white or stained to coordinate with the walls. Graduate students, faculty members, and friends of the writer helped with such tasks.

Ceiling.--A recent concept in mobile home ceiling installation eliminated the decorative contrasting batten strips and rosettes which attach the ceiling panels to each other and to the framing system. The white, textured, wood fiber ceiling used in Unit I was installed through the use of a spline which fitted into the joint or groove between two boards. The panels were stapled to the rafter with a staple that matched the groove and spline in color. The result of its use in Unit I was a clean and uncluttered appearance that added height to the low seven foot ceiling.

*The fire resistance rating was established by the American Society of Testing Materials. The procedure for testing is to simulate an actual fire in determining the period of time a material will resist fire and to rate its resistance.

Materials are tested primarily for flame spread, fuel contribution, and smoke development. The materials are rated on a basic scale that ranges from 0.00, which is asbestos, to 100 for red oak. Asbestos is the most resistant material. Red oak is not the most flammable, but serves as a point of reference. For example, a material could be rated as high as 200 and still be approved by a building inspector for use in a mobile home. Materials are classified as follows:

0.00-25.00 Class A 25.01-75.00 Class B 75.01-200.00 Class C

Furnishings

Furnishings were selected for their contribution to livability, flexibility, and enhancement of color in the total design. Further considerations were given to fiber content and maintenance of upholstery materials and cost. A \$1200 furnishings budget was established by the manufacturer.

Furniture was arranged with consideration for conserving space, for convenience, for traffic flow, and for design. (Figure 6 shows the placement of furniture in the mobile home Unit I.)

In the kitchen-dining area, the rectangular table was placed with one end against the wall to conserve floor space. Each single bed in the small bedrooms was placed along the outside wall to provide more free space in the rooms. The chest in the master bedroom was located near the closet for convenience. A conversation area in the living room, formed by a sofa and two chairs, was not disturbed by a traffic path to the kitchen area.

Kitchen.--Harvest gold appliances were used in the kitchen. The wall and base cabinets had a walnut colored finish. Micarta counter-tops of a beige marble tone topped the base cabinets. A chenille upholstery fabric of rust orange, constructed as a Roman shade, covered the window above the sink.

Dining area.--A 26 by 50 inch table, in a walnut finish with a Micarta top, furnished the dining area. The chairs, also a walnut finish, featured cane and walnut backs and black vinyl seats. Off-white

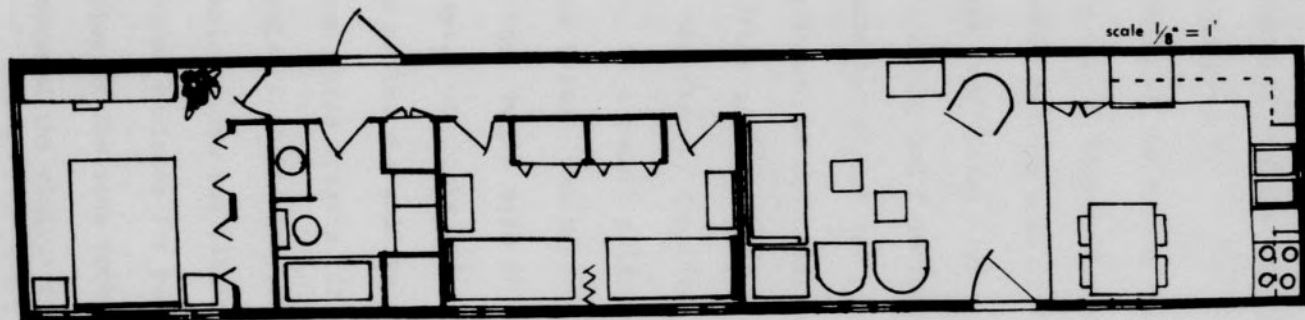


Figure 6

Floor Plan With Furniture Arrangement for
Mobile Home Unit I.

cotton casement material in a striped pattern draped the windows, allowing privacy and reduction of glare while allowing considerable entrance of natural light. (Figure 7)

Living area.--The theme of the living room was cheerfulness and warmth, created through the use of texture and color. A sofa, 72 inches in length, was selected for the area. The cover was striped tweed of green, gold, orange, and white. Its fiber content was 79 percent rayon, 14 percent acetate, and 7 percent cotton. The fabric was treated with a soil resistant finish for protection against stains. Three chairs were chosen in coordinating fabrics. Two chairs in a pumpkin color with a fiber content of 69.3 percent rayon and 30.7 percent cotton were placed together to complete the conversation area. (Figure 8) The third chair, in a desert gold crushed velvet of 65 percent rayon and 35 percent cotton, was placed across the room. Adjustable shelves were mounted on the side of the vertical storage unit in the kitchen for display of books and accessories. A black bachelor's chest was placed beside the gold velvet chair. The campaign style chest featured three drawers for storage. (Figure 9) A Parsons table with a tortoise shell finish was placed in the corner between the sofa and two chairs. Two tea tables with glass tops and chrome bases provided additional surfaces for persons seated on the sofa or two chairs. Draperies of the same cotton casement material as those in the dining area, covered the windows in the living room. Hardware for all included center-draw traverse rods. Accessories of



Figure 7

Kitchen and Dining Area in Mobile Home Unit I



Figure 8

Conversation Area in Living Room of
Mobile Home Unit I



Figure 9

View of Living Area in Mobile Home Unit I Showing
Crushed Velvet Chair and Wood Paneling

two lamps, ash trays, and pottery were furnished by a mobile home supplier. An abstract painting displayed on the wall behind the sofa was purchased from a local discount store.

Two bedrooms.--Each of the two small bedrooms was furnished with a single bed. The headboards were cane with a black finish. The bedding was polyurethane, 5 inches thick with a density of 1.5 pounds per cubic foot. A study-storage unit was selected for bedroom #1. The unit had shelf storage, drawer storage, and a drop-leaf desk. One of the six dining chairs was used for seating. (Figure 10) A bachelor's chest provided drawer storage in bedroom #2. (Figure 11) Gold colored bedspreads covered the beds. The corded spreads were 89 percent cotton and 11 percent rayon. They were machine washable, colorfast, preshrunk, and permanent press. The window treatment in the small bedrooms was a valance and pelments in a green-gold upholstery fabric with black felt strips on the pelments. Bottom-up shades provided privacy where desired, yet allowed entrance of light. Lamps and accessories were selected from a mobile home supplier.

Bathroom.--Avocado appliances were selected for the bathroom. Linens and accessories were chosen to coordinate with the walls and appliances. The shower curtain featured a green vertical stripe pattern. Towels were verdian green and sterling.

Master bedroom.--The furniture in the master bedroom had a sable walnut finish on genuine walnut veneers. The sleeping area was furnished with a queen size bed and two commodes, one on each side



Figure 10
View of Bedroom #1



Figure 11

View of Bedroom #2

of the bed. (Figure 12) The bedding was polyurethane, 5 inches thick and had a density of 1.5 pounds per cubic foot. A 5-drawer chest provided storage for folded clothes. The desk could serve several functions. It could be the business center where household and financial records were kept. With a mirror above, it could also be used as a dresser. One of the six dining chairs was used for seating. (Figure 13) A printed bedspread in blue, green, gold, and white was selected for the bed. Panels for the windows beside the bed were made from a sheet of the same print. Other windows were covered with shirred panels of off-white cotton casement. Bottom-up shades at all windows provided privacy in the area. Lamps were purchased from a local discount store. Other accessories were selected from a mobile home supplier. (For complete specifications of furnishings selected for Unit I refer to Appendix D)

Lighting.--Guidelines from The American Standard Requirements for Residential Wiring were used to assure adequate lighting and wiring for all areas. A layout specified lighting and wiring locations in each room. (Figure 14) Placement of convenience outlets, split-wired outlets, and general lighting were shown.

Recessed incandescent fixtures provided general lighting in all rooms and closets. To provide adequate lighting over the work areas in the kitchen, brackets with fluorescent tubes 24 inches in length were attached under the wall cabinets. These were operated by a switch above the work area. The pitched ceiling in the living room made the use of a recessed fixture difficult. A cove, providing



Figure 12

View of Sleeping Area in Master Bedroom



Figure 13

View of Dressing Area in Master Bedroom

LEGEND:

- incandescent lighting fixture
- ⊖ fluorescent lighting fixture
- S switch location
- ⊕ convenience outlet
- ⊖ split-wired outlet

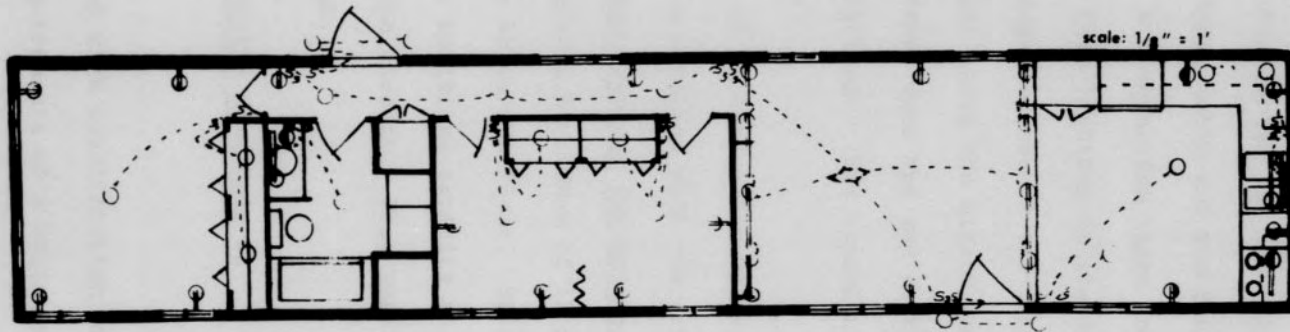


Figure 14

Lighting and Wiring Layout for Mobile Home Unit I

indirect fluorescent lighting, extended the width of the unit at each end of the living room. (Figure 15) As the only suspended fixture, a sphere hung above the dining table and was controlled by a dimmer switch. In the bathroom, a combination light and exhaust fan was recessed in the ceiling. Area lighting in the dressing area of the bathroom was achieved through the use of the mirror unit which featured a fluorescent light above the mirror and a storage bin below it. Two fixtures at the front door and one at the back door were the only specified exterior lighting. (See Appendix F for lighting specifications for Unit I)

Wiring.--Placement of convenience outlets, split-wired outlets, and special purpose outlets complied with the guidelines presented in The American Standard Requirements for Residential Lighting. All convenience outlets were placed a maximum of 12 feet from each other and a minimum of 12 inches above the floor. Split-wired outlets in the kitchen and bath areas maximized capacity at the outlet and lessened voltage drop in the circuit. They were provided for each work surface in the kitchen.

Mobile Home Unit II

Space Planning

Unit II was designed with consideration for the living activities and storage requirements of a beginning family or newlywed couple. Allocation of rooms and planning of spaces were planned for function and design. (Figure 16 shows the floor plan of Unit II.)



Figure 15

View of Lighting Cove in Living Area of
Mobile Home Unit I

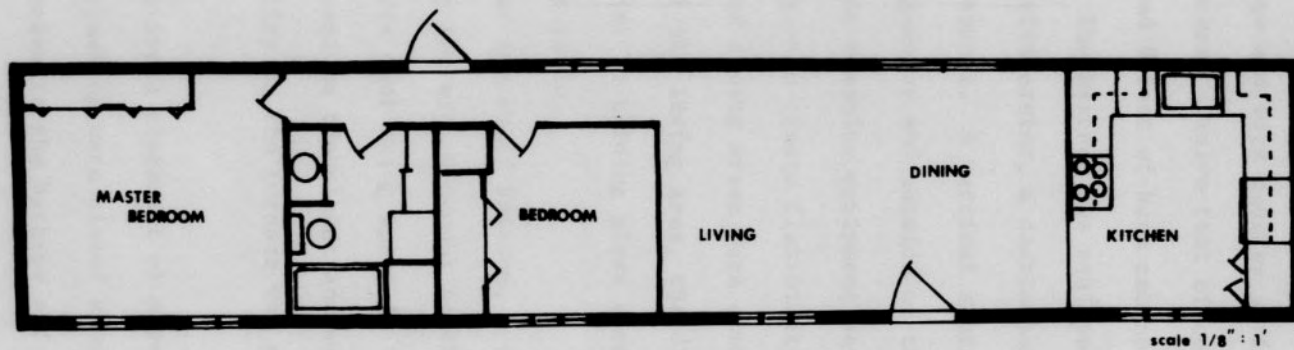


Figure 16
Floor Plan of Mobile Home Unit II

Kitchen.--For the kitchen a U-shaped plan was designed to provide sufficient storage and work counter surfaces and efficient coordination of work centers. Twelve feet of counter space, 10½ feet of wall cabinets, and 8 feet of base cabinets comprised the work and storage space. The kitchen was equipped with an electric range, a 13 cubic foot refrigerator, a double bowl sink, a dishwasher, and a garbage disposal. A vertical storage unit, located to the left of the refrigerator and outside of the food preparation area, provided storage for cleaning equipment and supplies.

Living-dining area.--To create flexibility and a spacious appearance, the living and dining areas were combined in a 12 by 20 foot space. As a part of the living area, the dining table could also serve as a game table. A sliding glass door provided access from the dining area to a patio.

Bedroom-study.--For the small bedroom, a closet 6 feet in length, was planned along the wall adjacent to the bathroom. Bifold doors were used to conserve door swing space in the room. The furnace was located adjacent to the closet and was enclosed in the bedroom area. Accessibility to the furnace was provided by an opening in the hall.

Bathroom.--To facilitate placement of pipes in the bathroom, fixtures which required plumbing were placed along one wall. The hot water heater was adjacent to the bathtub and was enclosed except for an opening to permit accessibility for maintenance. The laundry

area, also located in the bathroom, was equipped with a vertically stacked washer and dryer. A closet 4 feet in length provided storage for linens and laundry supplies. (Figure 17)

Master bedroom.--A closet 8 feet in length was planned along the exterior wall in the master bedroom. The use of bifold doors conserved door swing space in the room.

Exterior Materials

New sources for materials were sought. The area of contacts expanded to include distributors from other states. Samples and information were studied. Final selections were made on the basis of aesthetics, maintenance, fire resistance, cost, and time required for shipment.

Siding.--A rough sawn cedar siding of a vertical pattern was selected for the exterior of Unit II. Four aggregate facing panels, 4 by 8 feet in size, were combined with the wood siding on the front of the unit. A carved wooden door, typical of conventional housing, completed the front exterior view. An asphalt shingled roof with a 12 inch overhang on all sides eliminated the box appearance characteristic of mobile homes. (Figure 18) Three 20 foot length sections of the overhang folded onto the roof to meet the 12 foot transportation regulation.

Windows.--In conjunction with the vertical pattern of the exterior materials, slender, vertical windows were used exclusively to create rhythm and harmony in the exterior design. The windows

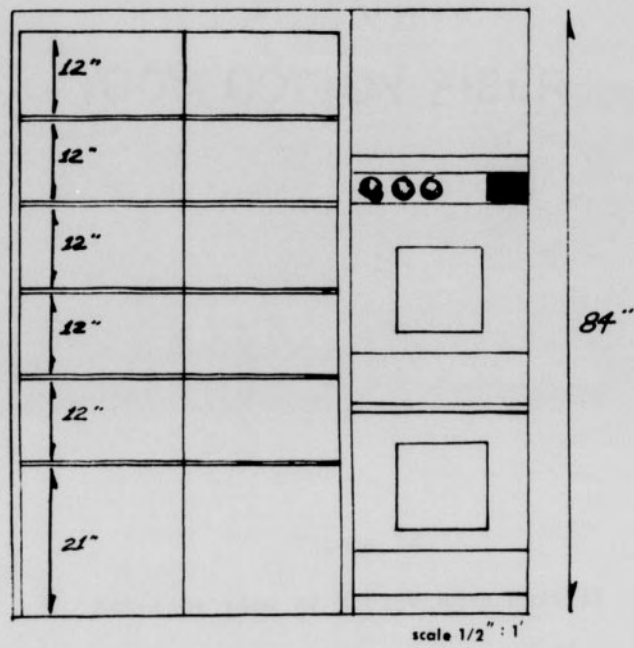


Figure 17

Elevation of Laundry Area in Mobile Home Unit II



Figure 18

Exterior View of Mobile Home Unit II

with translucent lower panels, allowed considerable entrance of light and provided privacy.

Insulation.--Polyurethane insulation was used on the floors, walls, and roof of the unit. Its use as an insulating material was one of the unique features of the mobile home unit. (For more information on the polyurethane insulation see Appendix A)

Interior Materials

Flooring.--Three flooring materials were selected for Mobile Home Unit II. The principal flooring material used in the unit was a nylon carpet. The brown tweed carpet featured dense, low pile with loop construction of 100 percent continuous filament nylon. A foam rubber backing contributed to the resiliency of the carpet. As a carpet fiber, nylon possesses the characteristics of strength, elasticity, and abrasion resistance. A vinyl flooring material in a pebble design covered the kitchen floor. The solid vinyl material used in Unit II resists wear longer than the vinyl coated material typically used in mobile homes. The flooring material for the bathroom was a nylon carpet with a foam backing. Gold in color, the carpet was designed for use in bathrooms.

Wall coverings.--Flexi-wall was selected as the primary wall covering for Unit II. The heather white color contributed to the spacious appearance in the areas. Flexi-wall is a "roll of plaster" which can be applied to any surface. The material appears as powder crystals on a jute backing. After it is applied to the wall with an

adhesive, it is then sprayed with a thin mist of water to crystallize the plaster particles giving the wall a hard plaster surface but with the texture of a wallpaper. The life of Flexi-wall is expected to equal or exceed conventional plaster. A spot remover, similar to those used for flocked wall coverings, may be used for the hard-to-clean stains. Using the Fire Hazard Classification, Flexi-wall has a flame spread rating of 15, a fuel contribution rating of zero, and a smoke development rating of zero (See asterisk on page 32).

A vinyl wall covering in a brown cork pattern was selected as a contrasting wall material in the living area. The material resists scuffs and abrasions. Using the Fire Hazard Classification, it has a flame spread rating of 15, a fuel contribution rating of 5, and a smoke development rating of zero. Moldings in coordinating colors were selected.

A printed vinyl paneling was used in the bath area. A dark brown parkay pattern was selected to contrast with the Flexi-wall in the dressing area.

Ceiling.--A white, textured wood fiber ceiling was used throughout the unit. The installation procedure was similar to the one described previously for Unit I. (For detailed specifications of the exterior and interior materials selected for Unit II refer to Appendix F).

Furnishings

Furnishings for Unit II were selected on the basis of quality, use, maintenance, cost, and color. Consideration was also given to their contribution toward the livability and flexibility of the total design. A \$1500 furnishings budget was established by the manufacturer.

Furniture was arranged with consideration for conserving space, for convenience, for traffic flow, and for design. (Figure 19 shows the placement of furniture in Mobile Home Unit II.) The major conversation area in the living room was formed by a sofa and two chairs. It was located outside the traffic paths in the area. Ottomans provided additional seating in the living room. These were stored under the cocktail table to conserve space. In the master bedroom the dresser was placed near the closet and the bathroom for convenience to reduce traffic in the room.

Kitchen.--White appliances were used in the kitchen. The wall and base cabinets in a walnut colored finish were built by the mobile home manufacturer. Micarta counter tops of a burnt orange color, topped the base cabinets. A Roman shade in a coordinating floral print, covered the window above the sink. The material was 100 percent cotten. (Figure 20)

Dining area.--For flexibility, the dining area and living area were combined. In this location the dining table would also serve as a game table. A 42 inch round table was selected for the area. The table featured a chrome base with a matte white plastic top. Four

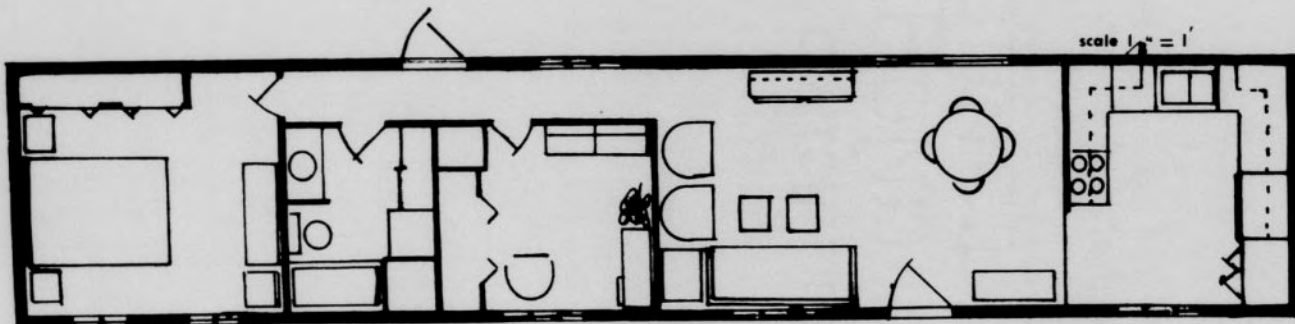


Figure 19

Floor Plan with Furniture Arrangement for
Mobile Home Unit II



Figure 20

Kitchen in Mobile Home Unit II

swivel chairs, with chrome base and arms, black vinyl seats, and walnut grain plastic backs, completed the grouping. (Figure 21) A hall cabinet 48 by 16 by 25 inches, was used as a buffet in the dining area. The walnut cabinet featured adjustable shelves and a Colorlith top. (Figure 22)

Living area.--In the living area an 84 inch sofa and two chairs formed the conversation area. The sofa, in a white 100 percent Herculon fabric, featured a queen size hide-a-bed. The chairs were a beige velvet of 52.7 percent rayon and 49.3 percent cotton. A lamp table with a white lacquer finish separated the sofa and chairs. Two tea tables with chrome base and glass tops were placed in front of the sofa. (Figure 23) A 60 inch cocktail table, also in the white finish, was used as an entertainment center for placement of a portable stereo or television. Above the table were adjustable glass shelves for display of accessories. Extra seating for the area was provided by two beige ottomans placed under the cocktail table. The ottomans were a vinyl material. (Figure 24) Draperies of 100 percent linen covered the slender, vertical windows in the kitchen, dining, and living areas. The white casement fabric coordinated with the color scheme and provided privacy with considerable entrance of natural light. Hardware for all windows was purchased from a discount store. All window treatments in the areas used center-draw traverse rods.

Bedroom-study.--The small bedroom of the two-bedroom unit was furnished as a study. A desk, two bachelor's chests, and two hutches



Figure 21

View of Dining Area in Mobile Home Unit II



Figure 22

View of Living-Dining Area in Mobile Home Unit II
as Seen from the Hall



Figure 23

View of Conversation Area and Living-Dining
Area of Mobile Home Unit II
from Kitchen Entry

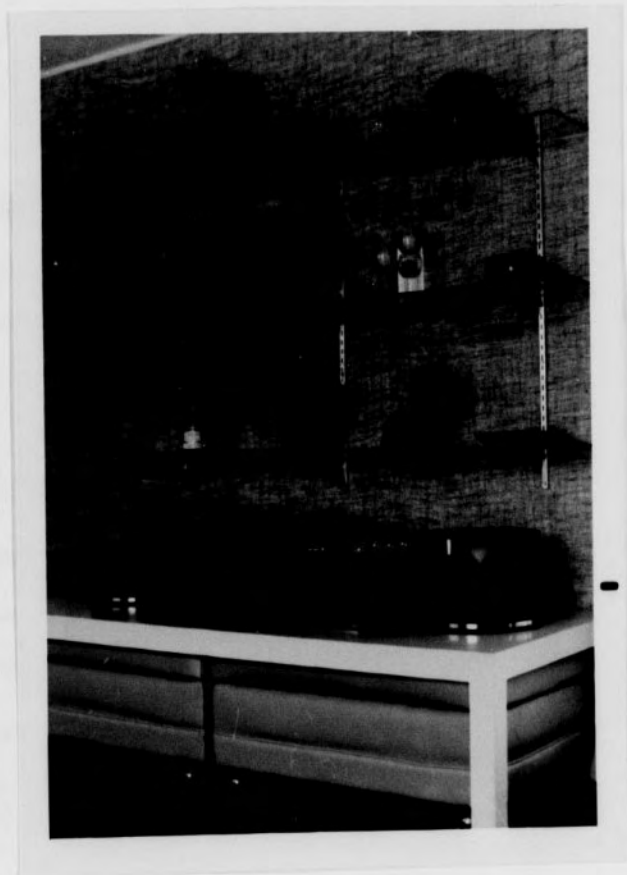


Figure 24

Entertainment Center in Living Area of
Mobile Home Unit II

provided drawer and shelf storage and a work surface. The campaign style furniture had an ultramarine laquer finish. (Figure 25) Reverse roll, bottom-up shades covered the windows. The shades were placed within the window frame area. Two windows were covered with laminated shades of 100 percent cotton in a green, blue, and gold abstract design print. The other window was covered with a laminated shade of 100 percent mercerized cotton in a coordinating gold. The bottom-up operation of the shades allowed privacy without sacrificing natural light and air. (Figure 26)

Bathroom.--White appliances were selected for the bathroom. Mirrors were placed on the three walls enclosing the lavatory or dressing area of the bathroom. A see-through vinyl shower curtain featuring concentric ebony squares on a clear vinyl background was selected for coordination. Bath linens with a jacquard print in ebony and straw completed the bathroom design. (Figure 27)

Master bedroom.--The campaign style furniture was selected for the master bedroom. The sleeping area was furnished with a queen size bed and two commodes, one on each side of the bed. (Figure 28) The polyurethane bedding was 5 inches thick with a density of 1.5 pounds per cubic foot. A triple dresser provided drawer storage in the bedroom. A chair in a black lacquer finish was selected for the area to provide seating. (Figure 29) A diagonal striped bedspread in gold, tangerine, brown, black, and white was selected for coordination. The quilted, reversible bedspread was 50 percent cotton



Figure 25

Bedroom-Study in Mobile Home Unit II

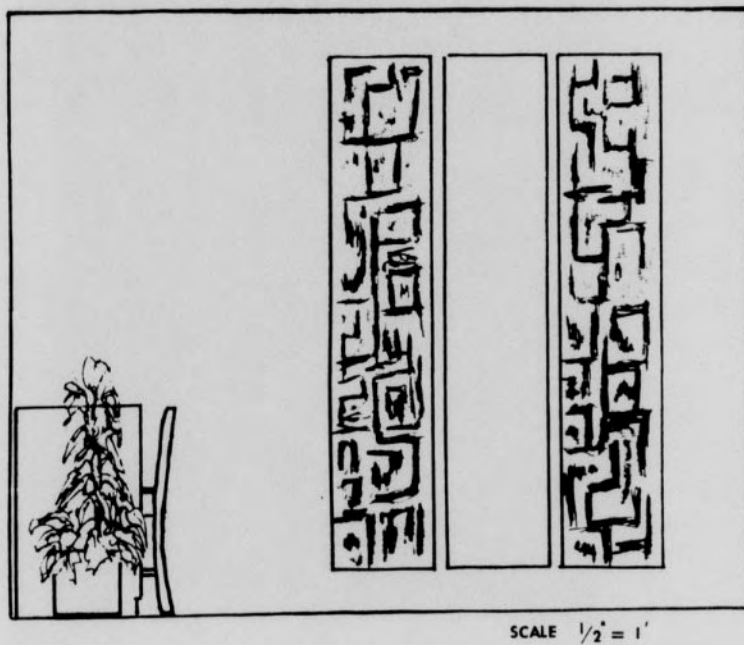


Figure 26

View of Reverse Roll Bottom-Up Shades in Bedroom-Study Area of
Mobile Home Unit II

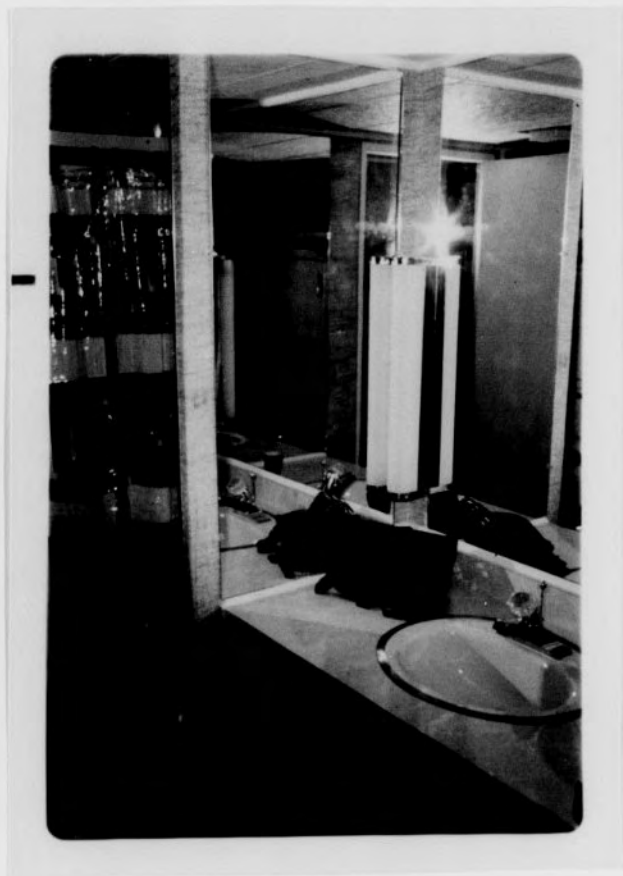


Figure 27

Bathroom Area of Mobile Home Unit II



Figure 28

Sleeping Area in Master Bedroom of
Mobile Home Unit II



Figure 29

Dressing Area in Master Bedroom of
Mobile Home Unit II

and 50 percent polyester. The window treatment included reverse roll, bottom-up shades and coordinating draperies. Laminated shades were made from a black and white geometric print. The sheer fabric was 60 percent rayon and 40 percent polyester with a Scotchgard finish. White draperies, covered the window wall and softened the effect of the shades. A center-draw traverse rod was used for each two-window grouping. Accessories were selected from a mobile home supplier. (Refer to Appendix G for specifications of furnishings selected for Unit II.)

Lighting

Lighting.--Guidelines from The American Standard Requirements for Residential Wiring were used to assure adequate lighting and wiring for all areas. A layout specified lighting and wiring locations in each room. Placement of convenience outlets, split-wired outlets, special purpose outlets, general lighting, and special lighting were shown. (Figure 30)

Recessed incandescent fixtures provided general lighting in all rooms and closets. To provide adequate lighting over the work areas in the kitchen, brackets with fluorescent tubes 24 inches in length were attached under the wall cabinets. These were operated by a switch above the work area near the sink. Two recessed spots highlighted the contrasting vinyl wall in the living area. The spots were placed 3½ feet apart and 12 inches from the wall to create an integrating wash effect. (Figure 31) As the only suspended fixture, a sphere hung above

- LEGEND:
- incandescent lighting fixture
 - fluorescent lighting fixture
 - S switch location
 - ⦿ convenience outlet
 - ⦿ split-wired outlet

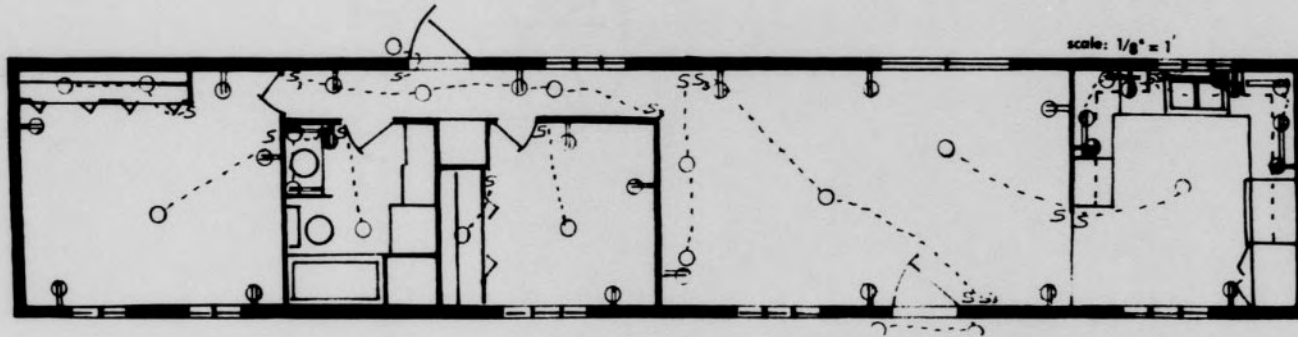


Figure 30

Lighting and Wiring Layout for Mobile Home Unit II



Figure 31

View of Recessed Spot Lighting in Living Area
Mobile Home Unit II

the dining table and was controlled by a dimmer switch. In the bathroom, a combination light and exhaust system was recessed in the ceiling. Two 30 inch fluorescent fixtures, each vertically hung on the wall beside the mirror, provided additional lighting in the dressing area.

Wiring.--In compliance with the guidelines presented in the American Standard Requirements for Residential Lighting convenience outlets were placed a maximum of 12 feet from each other and a minimum of 12 inches above the floor. Split-wired outlets in the kitchen and bath areas maximized capacity at the outlet and lessened voltage drop in the circuit. Split-wired outlets were provided for each work surface in the kitchen.

The primary aim of this study was to produce two design solutions which would offer efficiency and spaciousness within the limited space of the average mobile home. The solutions presented in this chapter were achieved through the planning and coordination of space, exterior and interior materials, furnishings, and lighting.

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

In June, 1969 the School of Home Economics of the University of North Carolina at Greensboro engaged in a cooperative project with the mobile home industry and the home furnishings industry. The purpose of the endeavor was to design three mobile home models for typical families in three phases of the family life cycle. It was an effort to upgrade the design and livability of the mobile home.

This study evolved from the cooperative project. It included the designing of two of the units, Unit I for a family with two preschool children and Unit II for a beginning family or newlywed couple. Two designs, which offered efficient and spacious solutions within the limited space of the average mobile home (12 by 60 feet) were created. The solutions were achieved through the planning and coordination of space, of exterior and interior materials, of furnishings, and of lighting.

Criteria for the selection and specification of each aspect of design were determined. Spaces for each unit were planned to accommodate the anticipated living activities and storage requirements of a typical family in one of the phases of the family life cycle. Room areas were allocated. Spaces within these areas were planned emphasizing function

and design. Exterior and interior structural materials were selected on the basis of aesthetics, quality, maintenance, cost, fire resistance, and application by the mobile home manufacturer. Furnishings were selected for their contribution to design, livability, flexibility, and enhancement of color to the total design. Lighting was planned and recommended to the manufacturer to assure adequate lighting for living and work areas. The American Standard Requirements for Residential Wiring was used as a guideline.

Mobile Home Unit I

Unit I was designed for a typical family with two preschool children. Rhythm and harmony were achieved in the exterior design through the use of vertical, stained fir siding; slender, vertical windows; and a carved wooden door. The interior space included an L-shaped kitchen with dining area, living room, three bedrooms, and one bathroom. Efficient storage space was planned in the kitchen, laundry area, and bedrooms. Bifold closet doors conserved space in the areas. No divisions separated the kitchen-dining and living areas. A folding wall separated the two small bedrooms providing versatility in the area. The open planning of the areas created interior spaces with less of the claustrophobic feeling. The entrance of natural light from the numerous slender, vertical windows added to the spaciousness. Light wall materials and furnishings with clean, straight lines; simple designs; and soft, warm colors further enhanced a cheerful, spacious interior. (See Figures 3-15)

Mobile Home Unit II

Unit II was designed for a typical beginning family or newly-wed couple. The exterior design exhibited rhythm and harmony through the use of vertical unfinished, cedar siding; aggregate panels; slender, vertical windows; and a carved wooden door. An asphalt shingle roof with a 12 inch overhang created an appearance of conventional housing and eliminated the box appearance characteristic of the mobile home. The interior space included a U-shaped kitchen, living-dining area, two bedrooms and one bathroom. Efficient storage space was planned in the kitchen, laundry area, and bedrooms. Bifold closet doors conserved door swing space in the areas. Spaces appeared larger through the entrance of natural light from the numerous vertical windows. Light wall materials and contemporary furnishings with clean straight lines and simple design added to the spacious feeling. Neutral colors, black, brown and white with bold accents enhanced the contemporary interior. Furnishings with multiple uses, such as a sofa with a hide-a-bed and dining/game table in the living area contributed livability and versatility to the mobile home. (See Figures 16-31)

Conclusions

The mobile home has become a recognized form of housing. However, this recognition primarily resulted from the housing shortage and not from any merits of the mobile home itself. A transition toward quality of materials and furnishings must evolve if the mobile home industry is to continue its productivity.

The findings of this study support the need for improved quality and design in mobile homes. The two design solutions exemplify the spaciousness and efficiency which can be achieved in mobile home design when space planning, exterior materials, interior materials, furnishings, and lighting are coordinated. Two other factors contributed to the design of the mobile home units. First, the mobile homes were professionally planned and coordinated by a person trained in interior design. Secondly, the furnishing budgets of \$1200 for Unit I and \$1500 for Unit II were considerably higher than the amount spent for furnishings by the mobile home manufacturer.

The units which were designed and constructed for this study are not as mobile as the typical mobile home. This reduced mobility is due to the additional weight of the exterior wood paneling. This may be the key to changing the image of mobile homes. With more emphasis on quality and less emphasis on mobility the manufacturers could establish a market for permanent industrialized housing. Perhaps this would also reduce the vehicular connotation of the mobile home and thus its depreciation value. With the promotion of the mobile module, a transportable unit that fits into a fixed structure, the manufactured housing industry could expand its present scope to offer the consumer economy along with versatility in design and in placement of the units.

With the number of mobile home manufacturers increasing, the mobile home industry is becoming saturated. As this happens, quality and innovations become primary considerations. Those manufacturers who

continue to produce the shiny metal box with cheap furnishings may find their market diminishing. The consumer will grow tired of the same exterior design and the poor quality furnishings. Therefore, the emphasis must change to innovations in design, efficiency in planning, and quality in furnishings if the mobile home is to become a foundation for modular construction.

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APPENDIX A

FACT SHEET ON POLYURETHANE INSULATION

Both mobile home units were insulated with sprayed-in-place urethane foam. The specially formulated chemical mixture is sprayed directly onto the back of the interior walls after they are fastened to the frame system. A chemical reaction causes the liquid mixture to expand to a rigid foam in approximately 60 seconds filling all corners, cracks, and crevices. Its advantages include:

1. adds strength and rigidity to all sprayed components
2. resists fungus and rot
3. does not settle, powder, or melt
4. completely inert, does not attract rats, termites, or other predators
5. is self-extinguishing
6. is non-allergenic
7. serves as its own water vapor barrier
8. has negligible water absorption properties

The foam is one inch thick on the walls and $1\frac{1}{2}$ inches thick in the roof and floor. Field trials have shown that $1\frac{1}{2}$ inches of sprayed urethane is more efficient than $3\frac{1}{2}$ inches of conventional batt insulation.

Chemicals for the urethane were manufactured by Uniroyal, Incorporated. The foam system was formulated by North Carolina Foam Industries of Mount Airy, North Carolina.

APPENDIX B

ELECTRICAL SWITCH PANEL

A new electrical switch panel supplied electricity to the two mobile homes. The three sections of the panel are shown in Figure 32. The panel is served by three 50 ampere flexible feeder cords which are plugged into the power source. This service eliminates the inconvenience and cost of calling an electrician to the site to wire the mobile home to the power source. The panel, itself, was developed by Duke Power Company with assistance from the Georgia Power Company and the Electric Heating Association of New York. The panel box was distributed by Cutler Hammer.

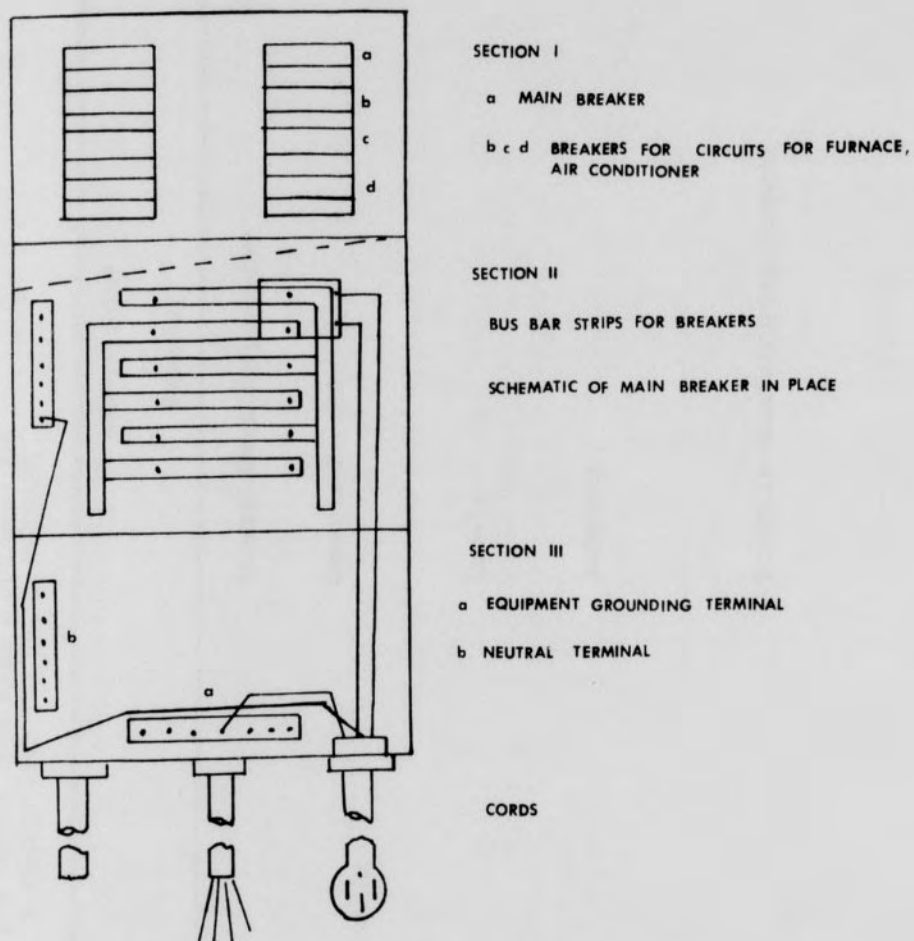


Figure 32

Schematic Drawing of Electric Switch Panel

APPENDIX C

SPECIFICATIONS FOR EXTERIOR AND INTERIOR MATERIALS
FOR MOBILE HOME UNIT I DESIGNED FOR
A FAMILY WITH TWO SMALL CHILDREN

Material and Description	Manufacturer or Supplier
Construction of Mobile Home	Conner Homes Corporation
Exterior Materials	
Brushed Fir Exterior Siding Plain Groove Pattern 8" on Center Size: 4'x 8' Thickness: 3/8"	Georgia-Pacific
Exterior Door Style 830 Wood: Fir Carved Design #10519	Lowe's
Windows Siding Glass Panels Size: 14" x 72"	Anderson
Interior Materials	
<u>Walls</u>	
Prestile Vinyl material laminated to Luan panel Design: Beige Tweed Thickness: 3/16"	Prestile Manufacturing Company

Appendix C Continued

Material and Description	Manufacturer or Supplier
Riveria Paneling Color: Teak	Georgia-Pacific
<u>Bathroom Wall</u>	
Vinyl Shield Paneling Core: Specially treated hardboard Finish: Printed vinyl Tortoise Shell Color: Avocado Thickness: 1/8"	Georgia-Pacific
<u>Two Small Bedroom Walls</u>	
Wall Craft Acrylic fiber Tufted loop-and-sheared pile Pattern: Fashionwall (striped) Colors: Gold, copper, olive, black	Arcadia Carpet Mills Distributed by Bowen Supply Company, a Division of E. T. Barwick
<u>Floor</u>	
100% polyester Jute Backing Loop pile Color: Pineapple Pattern: Goddess Touch	Arcadia Carpet Mills Distributed by Bowen Supply Company a Division of E. T. Barwick
<u>For Kitchen</u>	
Vinyl Corlon #86051 Seranada Color: Green Almond Hydrocord Back	Armstrong Cork Company

Appendix C Continued

Material and Description	Manufacturer or Supplier
Interior Materials Continued	
<u>For Bathroom</u>	
Bath Tone #7739 100% Nylon Foam Backing Color: Oyster #0170	Arcadia Carpet Mills Distributed by Bowen Supply Company a Division of E. T. Barwick
<u>Ceiling</u>	
Instalok Wood Fiber Material Style: Corent:	Armstrong Cork Company

APPENDIX D

SPECIFICATIONS FOR FURNISHINGS FOR MOBILE HOME UNIT I
DESIGNED FOR A FAMILY WITH TWO SMALL CHILDREN

Area	Furnishings	Manufacturer or Supplier	Cost*
Kitchen	Cabinets Pamplico Finish	Marsh Furniture Company	(not included in furnishings cost)
	Roman Shade	Craftsman Interiors (fabric only)	\$8.23 (retail)
	Accessories	Richard Henig Corp.	gift
Dining Room	Table #767 Micarta top 36" x 50" Finish: Walnut	Liberty Chair Co.	\$32.95
	Six Chairs #730 Black vinyl seats	Liberty Chair Co.	\$68.70
	Draperies Casement 100% Cotton	Ronnettes Fabric Shop	\$5.00 (retail)
	Drapery Hardware	Sears	\$3.50
	Accessories	Richard Henig Corp.	gift

Appendix D Continued

Area	Furnishings	Manufacturer or Supplier	Cost*
Living Room	Sofa #3601-2 72" Cover: Tweed 79% rayon 14% acetate 7% cotton Color: Antique	Armstrong Cork Company	\$130.75
	Chairs Signature Design #B28 Cover: Crushed velvet 65% rayon 35% cotton Color: Gold-10PSG Quantity: One	Kroehler Manufacturing Company	\$70.00
	Signature Design #B28 Cover: Shantung 69.3% rayon 30.7% cotton Color: Pumpkin Quantity: Two	Kroehler Manufacturing Comapny	\$114.50
	Parsons Table Tortoise Shell Finish 28" x 28" x 21"	Schoolfield Industries	\$36.95

*1969 price lists

Appendix D Continued

Area	Furnishings	Manufacturer or Supplier	Cost*
Living Room	Tea Tables #735-96 Glass top Chrome base #16 18" x 18" x 16" Quantity: Two	Kroehler Manufacturing Company	\$78.00
	Bachelor Chest Swingers Collection Duratuff-N-Finish Color: Black	Schoolfield Industries	\$36.75
	Draperies Casement 100% cotton	Ronnettes Fabric Shop (fabric only)	\$13.65 (retail)
	Drapery Hardware	Sears	\$7.18 (retail)
	Standards and Brackets	Sears	\$11.39 (retail)
	Accessories	Richard Henig Corporation	gift
Bedroom #1	Bedding 5" 1.5 polyurethane Label: Dream rest Ticking: Voltaire Size: Twin	Waynewood, Incorporated	\$42.00
	Bedframe	Sears	\$7.50 (retail)

Appendix D Continued

Area	Furnishings	Manufacturer or Supplier	Cost*
	Headboard #722-42 Duratuff-N finish Color: Black	Schoolfield Industries	\$28.00
	Bookcase-Storage- Study Unit Mandalay Grouping No. 919-76 Finish: Pecky Persimmon	Kroehler Manufacturing Comapny	\$99.00
	Accessories	Richard Henig Corp.	gift
	Bedspread Accent group Corded pattern 89% cotton 11% rayon Color: gold	Fieldcrest	gift
	Valance and pelmets	Craftsman Interiors	\$2.00 (retail)
	Drapery hardware	Sears	\$1.00
Bedroom #2	Bedding Pattern No. 104-P 5" 1.5 polyurethane Label: Dream rest Ticking: Voltaire Size: Twin	Waynewood, Incorporated	\$42.00

*From 1969 price lists

Appendix D Continued

Area	Furnishings	Manufacturer or Supplier	Cost *
Bedroom #2 continued	Bedframe	Sears	\$7.50 (retail)
	Headboard #722-42 Duratuff-N finish Color: Black	Schoolfield Industries	\$28.00
	Bachelors Chest #919-23 Finish: Pecky Persimmon	Kroehler Manufacturing Company	\$43.00
	Valance & Pelnets	Craftsman Interiors	\$2.00
	Drapery Hardware	Sears	\$1.00
	Accessories	Richard Henig Corp.	gift
	Bedspread Accent group Corded pattern 89% cotton 11% rayon Color: gold	Fieldcrest	gift
	Hall	Shirred Window Panels Casement 100% cotton	Ronnettes Fabric Shop
Drapery Hardware		Ronnettes Fabric Shop	\$2.37 (retail)

Appendix D Continued

Area	Furnishings	Manufacturer or Supplier	Cost*
Bathroom	Shower Curtain Royal velvet Collection Vertical Stripe Color: Verdian Green	Fieldcrest Mills	gift
	Linens Dimension Collection Designed by: Yves Saint-Laurent Jacquard pattern Color: Verdian Green and Sterling	Fieldcrest Mills	gift
Master Bedroom	Bedding Pattern 104-P Label: Dream rest Ticking: Voltaire 5" 1.5 polyurethane Size: Queen	Waynewood Incorporated	\$60.00
	Bedframe Size: Queen	Sears	\$11.49 (retail)
	Headboard	Armstrong Cork Company	\$23.95

*From 1969 price lists

Appendix D Continued

Area	Furnishings	Manufacturer or Supplier	Cost*
Master Bedroom continued	Denmark Collection #141-61 Finish: Sable Walnut Size: Queen		
	Commode Denmark Collection #141-82 20 x 16 x 26 inches Quantity: Two	Armstrong Cork Company	\$59.90
	Chest Denmark Collection #141-36 36 x 19 x 45 inches	Armstrong Cork Company	\$49.50
	Desk Denmark Collection #141-72 48 x 19 x 30 inches	Armstrong Cork Company	\$51.50
	Mirror Denmark Collection #141-141 28½ x 41 inches	Armstrong Cork Company	\$14.95
	Accessories	Richard Henig Corporation	gift

*From 1969 price lists

Appendix D Continued

Area	Furnishings	Manufacturer or Supplier	Cost*
Master Bedroom continued	Bedsread Polynesian Print 100% Cotton quilted Size: Queen	Fieldcrest Mills	gift
	Shades	Woolworth	gift
	Panels for Windows made from polynesian Print sheets	Fieldcrest Mills	gift
	Shirred Panels Casement 100% cotton	Ronnettes Fabric Shop	\$4.25 (retail)
	Drapery Hardware	Sears Ronnettes Fabric Shop	\$5.51
		Total	<u>\$1,207.47</u>

*From 1969 price lists

APPENDIX E

SPECIFICATIONS FOR LIGHTING FOR MOBILE HOME UNIT I
DESIGNED FOR A FAMILY WITH TWO SMALL CHILDREN

Area	Type of Lighting	Description	Supplier
Kitchen	General lighting	Incandescent recessed lighting 10½ x 10½ #74606 Prewired	Lowe's
Kitchen	Direct lighting over sink	Recessed Fluorescent Fixture * 34 K 3290C	Sears
Kitchen	Direct lighting over counter tops	Under cabinet fluorescent Lights M-347 24" in length Quantity: 2	Moe Light
Dining Area	Direct lighting over Dining Area	Suspended Opal Glass Fixture 12" Globe * 34 G 1706L	Sears
Living Area	General lighting	Incandescent Recessed light 11 3/8 in. sq. * 34 G 3267	Sears
Living Area	Recessed Cove	Fluorescent Strip Fixture 2½ x 37¼ in. * 34 G 3116C	Sears
Hall	General lighting	Recessed Incandescent Fixture * 34 K 3235 6 3/4 in. sq. Quantity: 2	Sears

*From 1969 Fall/Winter Catalog

Appendix E Continued

Area	Type of Lighting	Description	Supplier
Bedroom #1	General lighting	Recessed Incandescent Fixture 11 3/8 in. square * 34 G 3267	Sears
	Lighting in closet	Recessed Incandescent Fixture 6 3/4 in. square * 34 K 3235	Sears
Bedroom #2	General lighting	Recessed Incandescent Fixture 11 3/8 in. square * 34 G 3267	Sears
	Lighting in closet	Recessed Incandescent Fixture 6 3/4 in. square * 34 K 3235	Sears
Bathroom	General lighting and ventilation system	11 in. diam. 4 inch vent * 42 G 6362	Sears
	Direct lighting over dressing area	Wall hung Ensemble with light 30 3/8" x 33 1/2" #23683	Lowe's
Master Bedroom	General lighting	Recessed Incandescent Fixture 11 7/8" square * 34 G 3267	Sears
	General lighting in closet	Recessed Incandescent Fixture 6 3/4 in. square * 34 K 3235	Sears

*From 1969 Fall/Winter Catalog

APPENDIX F

SPECIFICATIONS FOR EXTERIOR AND INTERIOR MATERIALS FOR
MOBILE HOME UNIT II DESIGNED FOR A BEGINNING FAMILY

Material and Description	Manufacturer or Supplier
Construction of Mobile Home	Mobilcraft Industries
Exterior Materials	Georgia-Pacific
Rough Sawn Exterior Siding Groove Pattern 8" on center Texture 1-11 Thickness: 5/8"	
Ar-lite Aggregate Panels Type: Facing Thickness: 5/8"	Merry Companies, Incorporated and Architectural Research Corp.
Exterior Door Wood: Fir #10519 Carved Design	Lowe's
Windows Sliding glass panels Translucent lower panels Size: 14" x 72"	Anderson
Interior Materials	
<u>Walls</u>	
Flexi-wall Pattern line: Scotland Weave Fabric backing: Stainless jute Color: Heather white	Flexi-Wall Systems a Division of Wall and Floor Treatments, Incorporated

Appendix F Continued

Material and Description	Manufacturer or Supplier
Cohyde: Tirador vinyl Pattern: Cork geometry Vinyl Topcoat Color: Montella brown	Inmont Corporation
<u>For Bathroom</u> Vinyl shield paneling Core: Specially treated hardboard Finish: Printed vinyl Thickness: 1/8" Pattern: Parkay Color: Brown	Georgia-Pacific
<u>Floor</u> Windweave #150 100% Continuous filament nylon Low pile Level loop construction Tuf-weave Jute back Color: Amber Brown	Armstrong Cork Company
<u>For Kitchen</u> Seranada #86053 Vinyl Corlon Color: Ivory spice Hydrocord back	Armstrong Cork Company

Appendix F Continued

Material and Description	Manufacturer or Supplier
<u>For Bathroom</u>	
Southern Sun 7733 100% Nylon Rubber Lock backing Color: Cortez Gold #3410	Arcadia Carpet Mills Distributed by Bowen Supply Company a Division of E. T. Barwick
<u>Ceiling</u>	
Wood Fiber Ceiling	Cell-o-Tex
<u>Mouldings</u>	
Color: white to co-ordinate with walls Color: Walnut toner	Middlebury Mouldings, Incorporated

APPENDIX G

SPECIFICATIONS FOR FURNISHINGS FOR MOBILE HOME UNIT II
DESIGNED FOR A BEGINNING FAMILY

Area	Furnishings	Manufacturer or Supplier	Cost*
Kitchen	Cabinets Walnut Finish	Mobile Home Manufacturer	(not included in furnishings cost)
	Roman Shade Pattern: Rubiayat Color: 20 Scotchgard Finish 100% Cotton	Norman's of Salisbury	Gift
	Accessories	Richard Henig Corporation	Gift
Dining Area	Table Plaza T301D Matte White Plastic top 42" round	Daystrom Furniture Co.	\$170.00
	4 Chairs #C219DB Black Valino Vinyl		
	Hall Cabinet #42192 48 x 16 x 25" Finish: Walnut Adjustable Shelves Colorlith Top	Founders	\$125.00

Appendix G Continued

Area	Furnishings	Manufacturer or Supplier	Cost
	Draperies Casement Pattern: Broadway Color: 2 (White) 100% linen	Norman's of Salisbury	Gift
	Accessories	Richard Henig Corporation	Gift
	Drapery Hardware	K-Mart Discount Store	\$9.58 (retail)
Living Area	Sofa Style D121.68.9 Sleep-or-Lounge Cover: F27553 100% Herculon Color: White - 20P0	Kroehler Manufacturing Co.	\$234.00
	2 Chairs Signature Design #B28 Cover: Velvet 41205 52.7% rayon 47.3% cotton Color: Beige - 12PSG	Kroehler Manufacturing Co.	\$155.00
	Lamp Table #600-4 Finish: Duratuff-N Color: White	Schoolfield Industries	\$32.95
	Cocktail Table #600-6 Finish: Duratuff-N Color: White	Schoolfield Industries	\$37.95

*From 1970 price lists

Appendix G Continued

Area	Furnishings	Manufacturer or Supplier	Cost*
Living Area	2 Tea Tables #735-96 Glass Top Chrome base #10 18"x18"x16"	Kroehler Manufacturing Company	\$78.00
	2 Ottomans #B1760 Vinyl Color: Cream Beige	Kroehler Manufacturing Company	\$47.00
	Glass Shelves	Pittsburg Plate Glass	\$15.97 (retail)
	Brackets and Standards	Sears	\$8.58 (retail)
	Draperies Casement Pattern: Broadway Color: 2 100% linen	Norman's of Salisbury	Gift
	Drapery Hardware	K-Mart Discount Store	\$4.75 (retail)
	Accessories	Richard Henig Corporation	Gift
	Bedroom Study	Desk #7BB-55 Finish: Duratuff-N Color: Ultramarine 48"x19"x30"	Schoolfield Industries

*From 1969 price lists

Appendix G Continued

Area	Furnishings	Manufacturer or Supplier	Cost
Bedroom Study	2 Bachelor Chests #7BB-33 Finish: Duratuff-N Color: Ultramarine 30"x19"x30"	Schoolfield Industries	\$73.50
	2 Hutches #7BB-53 Finish: Duratuff-N Color: Ultramarine 30"x9"x48"	Schoolfield Industries	\$69.50
	1 Chair #7BB-56 Finish: Duratuff-N Color: Ultramarine	Schoolfield Industries	\$17.50
	1 Chair Polyurethane	Craft Associates	Gift
	Shades Reverse Roll Bottom-up	Norman's of Salisbury	Gift
	Quantity: 2 Pattern: Caracus Color: 47 (blue-green) Scotchgard Finish 100% cotton	Norman's of Salisbury	Gift
	Quantity: 1 Pattern: Mardi gras Color: 53 (gold) Everglaze Finish 100% cotton	Norman's of Salisbury	Gift

Appendix G Continued

Area	Furnishings	Manufacturer or Supplier	Cost
	Accessories	Richard Henig Corporation	Gift
Hall	Shirred Window Panels Casement Pattern: Broadway Color: 2 (white) 100% Linen	Norman's of Salisbury	Gift
	Drapery Hardware	Ronnettes Fabric Shop	\$2.32 (retail)
Bathroom	Shower Curtain Vision designed by Yves Saint-Laurent See-through Vinyl Concentric ebony squares on clear vinyl background	Fieldcrest Mills	Gift
	Linens Dimensions Jacquard print Color: Ebony & Straw	Fieldcrest Mills	Gift
	Accessories	Fieldcrest Mills	Gift
Master Bedroom	Bedding Pattern #104-P Label: Dream rest Ticking: Voltaire 5" Polyurethane Size: Queen	Waynewood, Inc.	\$60.00

Appendix G Continued

Area	Furnishings	Manufacturer or Supplier	Cost
	Headboard and bedframe Mandalay #919-017 Heavy duty frame Size: Queen	Kroehler Manufacturing Company	\$35.00
Master Bedroom	2 Commodes Mandalay #919-08	Kroehler Manufacturing Company	\$58.00
	Triple Dresser Mandalay #919-44	Kroehler Manufacturing Company	\$80.00
	Chair #722-56	Schoolfield Industries	\$17.50
	Mirror #919-46 24"x40"	Kroehler Manufacturing Company	\$27.00
	Draperies Pattern: Clipper Cloth Color: 2 (white) Scotchgard Finish 100% cotton	Norman's of Salisbury	Gift
	Shades Reverse roll Bottom-up Pattern: Prism Color: 15 (Black & White) 60% rayon 40% dacron	Norman's of Salisbury	Gift

Appendix G Continued

Area	Furnishings	Manufacturer or Supplier	Cost
	Drapery Hardware	K-Mart Discount Store	\$8.68
	Bedspread Infinity, Yves Saint- Laurent Collection Antique Gold/Tangerine Stripe Size: Queen	Fieldcrest Mills	Gift
	Accessories	Richard Henig Corporation	Gift
		Total	\$1,397.53

*From 1970 price lists

APPENDIX H

SPECIFICATION FOR LIGHTING FOR MOBILE HOME UNIT II
DESIGNED FOR A BEGINNING FAMILY

Area	Type of Lighting	Description of Fixture	Supplier
Kitchen	General lighting	Incandescent Recessed lighting 10 $\frac{1}{2}$ " x 10 $\frac{1}{2}$ " #74606 Prewired	Lowe's
Kitchen	Direct lighting over sink	Recessed Fluorescent Fixture * 34 K 3290C	Sears
Kitchen	Direct lighting over counter surfaces	Under Cabinet Fluorescent Lights M-347 24" length Quantity: 4	Moe Light
Dining Area	Direct lighting over Dining Area	Opal Glass Suspended Fixture 12" globe * 34 K 1706L	Sears
Living Area	General lighting	Incandescent Recessed Light 10 $\frac{1}{2}$ " x 10 $\frac{1}{2}$ " #74606	Lowe's
Living Area	Direct lighting for contrasting wall	Indoor Swivel Spotlight * 34 K 3218 Quantity: 2	Sears
Hall	General lighting	Recessed Incandescent Fixture * 34 K 3235 6 $\frac{3}{4}$ in. square Quantity: 2	Sears

Appendix H Continued

Area	Type of Lighting	Description of Fixture	Supplier
Bedroom-Study	General lighting	Incandescent Recessed Lighting 10½" x 10½" #74606	Lowe's
	General lighting in closet	Recessed Incandescent Fixture * 34 K 3235 8 in. square	Sears
Bathroom	General lighting in dressing room	Recessed Incandescent Fixture * 34 K 3235 8 in. square	Sears
	Direct lighting in dressing area	Fluorescent Fixtures #M 317 Length: 36" Quantity: 2	Moe Light
Bathroom	General lighting and ventilation system	Vent Fan Light Model 293 #99247	Lowe's
Master Bedroom	General lighting	Incandescent Recessed Light 10½" x 10½" #74606	Lowe's
	General lighting in closet	Recessed Incandescent Fixture * 34 K 3235 8 in. square	Sears
Exterior	Lighting at Front Door	Opal Globe Quantity: 2	Moe Light

*From 1970 Spring/Summer Catalog