SPACE AND LOCATION OF LAUNDRY AREAS IN SPLIT LEVEL HOUSES

by

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The two-fold purpose of this study was, first, to determine present arrangements, space allowances, and locations of laundry equipment in split level houses, and second, to determine the preferences of the homemakers for space allowances and locations of laundry equipment as related to other areas, levels, and rooms in houses of split level design.

The houses selected for inclusion in the study were of three split level designs. The identifying difference among the houses was the variety in the placement of the laundry room in relation to the kitchen location.

Data for this study were collected through interviews with sixty homemakers living in a housing development. The split level residences were equally divided and classified according to the three designs. Eligibility for inclusion in the study required: (1) a homemaker not gainfully employed outside the home, (2) family laundry done mainly at home, (3) home laundry equipped with an automatic washer, and (4) at least one child in the family.

Of the homemakers interviewed, 83 per cent currently used laundry appliances which were installed in below grade or basement laundry rooms. Twenty-five per cent of the homemakers indicated some degree of satisfaction with the existing laundry location. The desire for a more convenient location of the laundry room was expressed by 73 per cent of the homemakers who used basement laundries.

The laundry equipment generally found in the households surveyed consisted of laundry tray, washer, dryer, ironing board, and electric hand iron. Dryers were installed in 70 per cent of the homes. This represents a figure three times greater than the national average for all electrically wired homes reported by one of the major appliance manufacturers. The number of dryers appeared to be related to the design of the house. More dryers were found in houses which had basement laundries with stairwells leading up to the drying yards.

The usual arrangement of the equipment in the laundry rooms consisted of the side-by-side placement of laundry tray and washing machine with the dryer on the opposite wall from 3 feet to 18 feet away. The washing machines had been installed to drain into the existing laundry tray, while dryers had been positioned for ease in venting. The resulting physical arrangement evidenced little thought for the convenience of the homemaker in using the laundry equipment. Fifty-seven per cent of the homemakers suggested the rearrangement of the equipment for increasing the efficiency of their present laundry room. Thirty-three per cent of the suggestions specified a side-by-side arrangement of washer and dryer.

The homemakers' suggestions for equipment additions to relocated laundry rooms were far more numerous than those for the present laundry rooms, even though the suggested spaces were smaller. It appeared that the homemakers' concept of needed laundry equipment was influenced by the location of the laundry room. While only two homemakers wished to add tables and ironing arrangements to their existing laundries,

30 mentioned tables and 21 mentioned ironing equipment as additions desired for the relocated laundry.

Nearly all of the homemakers who elected to relocate the laundry chose an area in or near the kitchen. The preferences thus expressed concurred with the preferences indicated in the selection of areas desired adjacent to the laundry. The kitchen was the area rated of first importance near the laundry by 65 per cent of the homemakers, and the service entrance was rated second by 35 per cent of the homemakers. This choice was also borne out by the inclusion of a service entrance in or near the relocated laundry room by nearly all of the homemakers.

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CHAPTER I

INTRODUCTION

The split level house design is a recent development in the housing industry. The immediate and continuing sales success of speculatively built split level houses has led to the incorporation of this design into prefabricated houses and into shell homes.[1] As a result, split level houses have become readily available to families of differing economic status. In the decade since 1952, the general public has gradually become aware of the desirable characteristics as well as the inadequacies of split level house plans. By February, 1955, the trade magazine House and Home acknowledged the impact of the split level design in the homebuilding field in the following statement: "We think split levels are too well imbedded in the builder's book to pass over as a fad."[2]

With the continued construction of new houses featuring more than one level, the problem of priority locations for various home work centers becomes a foremost consideration. The relation of the laundry area to the over-all house plan is a subject often overlooked by the shelter magazines and by other media which influence the opinions and choices of homemakers, builders, and architects. Certainly in the

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[1] "House-Package Plan," House and Home, XIX (March, 1961), 141; "Twenty Trade Secrets," House and Home, XXII (October, 1957), 126.

[2] "Is the Split Level Here to Stay?" House and Home, VII (February, 1955), 144.

planning of any house the ideal location of one area may be given priority over that of another. The one area location which often is sacrificed is the laundry center. In fact, the Family Home Editor of Parents' Magazine observes that, over the nation, "less than one per cent of all builders are including a laundry center of any kind in their housing projects."[3] Laundry appliances are usually optional extras, as compared with the dishwasher which frequently is included in the price of the house.[4] If a laundry is included, its location may appear to be an afterthought. Often it is relegated to the basement or to a utility room which also houses the furnace and the water heater.[5] Consequently, the homemaker may have the latest step saving arrangement in her kitchen but may continue to carry her laundry down several flights of stairs to a dimly-lighted, poorly ventilated, cluttered room far from the center of family activity.

I. THE PROBLEM

The problem of the placement of the home laundry in the split level house became evident to the writer during her residence in such a

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[3]Robert Charles, "Let's Make Way for Planned Home Laundry Centers," What Is Modern Home Laundry, Sixteenth National Home Laundry Conference (Chicago: American Home Laundry Manufacturers' Association, 1962), p. 13.

[4]Robert K. Scarborough, "Buying and Selling a New Home Laundry," Home Laundry Management Efficiency, Fifteenth National Home Laundry Conference, (Chicago: American Home Laundry Manufacturers' Association, 1961), p. 24.

[5]"Offer a Laundry That Is Convenient," House and Home, VII (May, 1955), 138.

house. The observation of neighbors struggling against the inconvenience of their basement laundries initiated an interest in the problem of laundry location. This led to the selection of the problem for study--Space and Location of the Laundry Area in Split Level Houses.

It was the two-fold purpose of the study (1) to determine the present arrangements, space allowances, and locations of laundry equipment in split level houses of three selected designs; (2) to determine the homemakers' preferences for space allowances and locations of laundry equipment as related to other areas and levels in the selected houses of split level design.

II. DEFINITIONS OF TERMS USED

Design I. A four-level front-to-back split level house which consisted of 1,388 square feet of floor space on the three living levels. The fourth and lowest level was partially below grade and housed a combination laundry-utility room in one end of a large basement. The laundry was fourteen steps or two levels below the kitchen.

Front

Rear

FIGURE 1

FRONT AND REAR VIEW OF DESIGN I HOUSE

Design II. A three-level front-to-back split level house which consisted of 1,404 square feet of floor space on the three living levels. The laundry room was located adjacent to the kitchen, to the service entrance, and to the half bath. A fourth level basement approximately six feet below grade was an optional feature generally included. In some of the houses of this design the laundry was located in the basement.

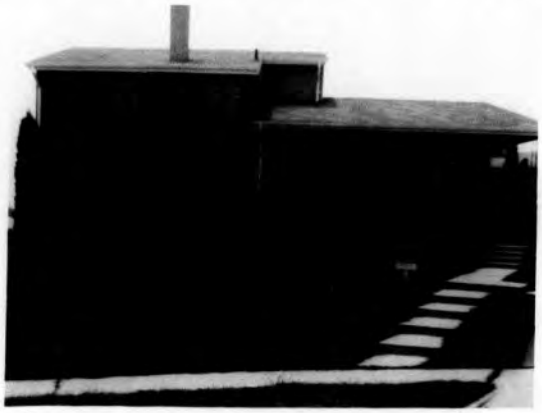
Front

Rear

FIGURE 2

FRONT AND REAR VIEW OF DESIGN II HOUSE

Design III. A three-level side-to-side split level house which consisted of 1,000 square feet of floor space on the three living levels. The laundry-utility room was located on the lowest level seven steps below the kitchen partially below grade and adjacent to the recreation room which had an outside entrance at ground level.[6]



Front

JUNE 1963

Rear

FIGURE 3

FRONT AND REAR VIEW OF DESIGN III HOUSE

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[6]Scale drawings of the floor plans of the houses may be found in the Appendix.

CHAPTER II

REVIEW OF LITERATURE

In a search of the literature a considerable quantity of printed material can be found on the subject of split level houses, although little of it can be classified as the result of research. Several research studies on the subject of laundry equipment have been conducted, however, these studies relate primarily to the determination of space allocations for the operation of the appliances, rather than to the location of the laundry room within the house.

Recommendations for the convenient arrangement of the laundry appliances and equipment and suggestions for the placement of these appliances in the total floor plan of the laundry room are included in the studies.

DEVELOPMENT OF THE SPLIT LEVEL HOUSE DESIGN

Long before merchant builders introduced the split level house to New Jersey in 1950, a "tri-level" house was popular in the Midwest.[7] As early as 1940, "prototypes of today's split level . . . were built on Chicago's North Shore.[8] Ideally suited to a sloping site, the split level design necessitated a minimum of excavation and allowed two floors to open on ground level. By 1952, the "fastest-selling houses around

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[7]"What's Happening in Split Levels," House and Home, V (April, 1954), 113.

[8]"The Split Level Boom," House and Home, II (December, 1952), 117.

New York City" were split levels.[9] A New Jersey builder, in 1952, reversed the over all proportions of houses that he built by constructing two-thirds of his models as split levels and reducing to one-third the ranch style designs.[10]

The immediate and overwhelming success of the split level on sloping sites encouraged builders to meet the increased public demand for this house design by locating them on level sites as well. This practice caused protests among architects who argued that "the split level does not make sense on level ground" and "does not lend itself to good design."[11] Sixteen months later, House and Home noted in April, 1954, that four split levels were being sold for each single ranch type house on Long Island. Since the New York Metropolitan Area represents the most concentrated and highly competitive home building area in the United States, it is closely observed by hundreds of merchant builders from other geographic areas.[12] The trend in that area in 1954 was reported by the editors of House and Home in the following:

> The sales success of the split is already influencing builders in other areas who are impressed by its popularity. The lessons of the split level are these: People are tired of the same old thing. They want more space, a recreation room, more bathrooms, bedrooms separated from living area, a house that looks large and impressive. In the split level they find all of these features.[13]

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[9] Ibid. [10] Ibid.

[11] Ibid., p. 119.

[12] "What's Happening in Split Levels," House and Home, V (April, 1954), 111.

[13] Ibid.

Influential architects such as Charles Eames, Mario Corbett, and Don Emmons further praised the split level design for its "added visual excitement, privacy without loss of spaciousness, and airy volume at low cost.[14] The first split level designs were generally unattractive because of their choppy roof lines and the mounds of earth excavated and relocated on level lots to produce a slope. Working with the design, architects improved the appearance by uniting both the sections under a continuous roof and redesigning the levels to conform more nearly to level lots. In 1956, House and Home noted the resulting design improvements in the following statement: "Today's split level house can pass the stiffest tests of good planning and good design . . ."[15]

Merchant builders have for some time recognized and admitted that the houses they build are actually designed by the desires and ideas of their potential buyers. The builders also realize that the decision of the buyer can be swayed by either the addition of a few novelties, a new piece of equipment, or a colorful decorative scheme. These added features often have the capacity to distract the attention of all but the most wary home buyer from undesirable features in the house plan. The "six easy steps"[16] between levels, which simultaneously served as a natural spatial divider and contributed a feeling of openness; the

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[14]"The One-Room Split-Level House," House and Home, II (September, 1952), 121.

[15]"What It Takes to Make A Split Level House Look Better," House and Home, IX (February, 1956), 136.

[16]"What's Wrong with Splits?" House and Home, V (April, 1954), 119.

recreation room, which received a generous amount of daylight; the cathedral ceiling, which provided spaciousness through its height--all attracted and slightly awed the prospective home buyers.

Gradually throughout the decade of the 1950's, the split level advanced north and south along the East Coast, ever changing in appearance as builders added their individual variations.[17] From the original hillside splits evolved a rear-to-front split, a side-to-side split, and an offset side split.[18] Various facades allowed the split levels to adopt the appearance of the ranch type, the Cape Cod, the colonial, or the contemporary house design.

In 1957, Presidential, a prefabricated house manufacturer, specialized in split level designs because "this is what the volume market wants."[19] To meet the demand in the South, a second prefabricated house manufacturer offered a back-to-front split with a front balcony facade of ornamental iron reminiscent of New Orleans houses.[20]

As noted in succeeding issues of House and Home, the trend continued as the split level design spanned geographical differences as well as social and economic differences among buyers. Not only were shell home split levels successful, but so were expensive custom

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[17]"Long Island," House and Home, IX (March, 1956), 128.

[18]"Is the Split Level Here to Stay?" House and Home, VII (February, 1955), 144.

[19]"17 Prefabbers Pick Their Sales Leaders," House and Home, X (December, 1956), 141.

[20]Ibid.

designed split levels which appeared on hilltop sites in the East and on flat ranch land in the West.[21] Even with its acceptance in all economic levels, ". . . economy is not a major factor in the split level boom."[22] As recently as 1962, a split level design in Southglenn, a Denver suburb, was the best selling house in the entire development.[23]

The split level can be credited with the design impetus that led to the split-entry house, acclaimed in December, 1961, along with the hillside house, as definitely the trend.

> From almost every part of the country (except the Deep South and Southwest) builders report the split-entry is, or is fast becoming, their best-selling house type. But all these builders agree that the split-entry has a head start on becoming to the market of the 60's what the split level was to the market of the 50's.[24]

A Housing Forum in 1960, sponsored by Better Homes and Gardens in cooperation with builders in fifteen cities across the nation, invited a total of six hundred consumer delegates to express their housing preferences. One finding was:

> One story houses are still a favorite, but split levels are popular, too. Most housing forum delegates (53%) now live in ranch houses and, coincidentally, 53% would prefer a ranch house for their next home.

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[21] "Split Levels," House and Home, XI (March, 1957), 140; "Three Levels and a View," House and Home, II (July, 1952), 74.

[22] "What's So Good About Splits?" House and Home, VII (February, 1955), 146.

[23] "How to Sell More Houses Today," House and Home, XXI (January, 1962), 116.

[24] Max Huntoon and Jan White, "The Split-Entry House," House and Home, XX (December, 1961), 139.

> Not so those who live in other types of houses. Only 7% live in split level houses, but 29% want one.[25]

Another article attested to the same trend in housing preferences in 1960:

> The comeback of the multi-level house continues to be one of today's strongest trends in housing. One reason is simply a turning of the cycle--reaction to a decade of ranch houses. But that is only part of the explanation. The multi-level houses . . . reflect one or more economic reasons for the trend:
>
> 1. Many homebuyers need more space for a bigger family and it generally costs less to build a big house on two levels than to sprawl the same space over ground level.
> 2. A two-level is more compact than a single-story, so it fits a smaller lot or leaves more room for outdoor living.
> 3. In a multi-level house it is easy to zone quiet areas from noisy areas and to shut off the children's clutter.
> 4. Many builders are turning to bypassed hillside sites where a multi-level house is a natural solution.[26]

The split level is responsible, at least in part, for a returning trend to houses with steps and multiple levels in many builders' 1963 lines.[27] That the direction of housing designs has remained consistent during the intervening two years is verified by this prediction for 1963: ". . . increased emphasis on multi-level design; split-entries with their big daylight basements; 1½-story houses . . . ; split levels, and two stories."[28]

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[25] "Housing Forum Report," House and Home, XVIII (December, 1960), 168.

[26] "Good Ideas in Multi-Level Planning," House and Home, XVIII (November, 1960), 106.

[27] "Designs for 1963," House and Home, XXII (October, 1962), 137.

[28] Ibid., p. 132.

ADVANTAGES AND DISADVANTAGES OF THE SPLIT LEVEL DESIGNS

Good interior circulation, eliminating many traffic patterns across rooms, and the built-in opportunity for expanding the lower level are two advantages of the split level design.[29] The visual effect provided by the cathedral ceilings featured in some split levels are innovations in the moderately priced house. Height and distance between levels contribute a new degree of privacy to the bedroom wing, yet the short stair runs may be less tiring than the single long flight found in the two-story house. The bulk of the exterior contributes the look of a large house but frees more of the lot for outdoor living. The recreation room relieves the living room from the strain of casual family living.[30] Additional merits were credited to the split level because of the ease with which it could be zoned into three areas. The three levels are a natural solution to the three zones necessary in the bigger house: "night, day, and multipurpose."[31]

Several disadvantages of the split level house cited by architects Craig and Jones of The Small Homes Council are as follows: (1) the

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[29] G. Craig and A. Jones, Split Level Houses, Small Homes Council, Building Research Council, Circular C 2.5 (Urbana: University of Illinois, 1960), p. 2.

[30] "On Long Island, Splits Outsell Ranches Four to One," House and Home, V (April, 1954), 120; "What's So Good About Splits," House and Home, VII (February, 1955), 147.

[31] "What It Takes To Make a Split Level House Look Better," House and Home, LX (February, 1956), 147.

necessity for stair climbing, (2) generally poor appearance on a level lot, (3) choppy roof line and poor proportion in the smaller models, (4) difficult construction because of complicated exteriors and framing, (5) inconsistency of room temperatures on different levels.[32] Regardless of its disadvantages, the split level has come into its own as an American house type.

Home magazines feature floor plans and photographs of split level houses at frequent intervals. A split level plan was the choice for the syndicated newspaper feature, "House of the Week" in the spring of 1963.[33]

CLASSIFICATIONS OF BASIC SPLIT LEVEL DESIGNS

Craig and Jones established five basic designs for split level floor plans. Within their publication are drawings of each design and a discussion of the merits of each plan, as well as information about general room arrangements.

> The usual arrangement in a split-level house is to locate the living-dining areas and kitchen at mid-level, bedrooms on the upper level, and utility, recreation, or work areas on the lower level. Variations are possible, of course. This circular presents several different arrangements of the various levels. Two plans, for instance, have only the entrance and formal living room at mid-level, with the kitchen, family room and utility area on the lower level.[34]

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[32] Craig and Jones, op. cit., p. 3; "What's Wrong with Splits," House and Home, V (April, 1954), 119.

[33] Jules Loh, "Traffic Plan Features Split-Level," House of the Week, Greensboro Daily News (North Carolina), May 12, 1963, p. D8.

[34] Craig and Jones, op. cit., p. 2.

Plan one placed kitchen, dining, and living room on the middle level, bedrooms one level above and utility level and recreation room one level below. It was planned essentially for a level lot and required excavation of the ground outside the recreation room.

Plan two, designed for a site sloping downward to the rear, had a single room on the middle level a story-and-a-half high which was the formal living room. The upper level master bedroom could be opened up for a dramatic balcony effect over the living room. On the lower level were kitchen, family room, utility and mud room and half bath.

Plan three showed the kitchen-dining room on the lower level with the family room and a laundry, mud room, and half bath. The middle level accommodated only the formal living room and the upper level, only the bedrooms. Not recommended for a flat site, this plan works best on a lot which slopes downward from the side.

Plan four was best suited to a lot which sloped upward at the rear. It was the only plan which located the family room and the living room on the same level along with the dining area and kitchen. The lower level accommodated a carport and adjacent storage, utility, and laundry areas. All bedrooms and baths were located on the upper level.

Plan five, a variation of the preceding plan, added a fourth level six steps down from the ground level of the garage and brought the main entry from the middle level to the lower level. This allowed additional space to be allocated to the kitchen for family dining.[35]

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[35] Ibid., pp. 4-12.

A classification of split level designs by House and Home showed three basic designs, distinguishable by exterior appearance rather than by interior and floor plan. They were the offset side split, the continuous side split, and the front-to-back split. Perhaps the least attractive in appearance, the offset side split has its entrance on the middle level. The choppy roof line results from the joining of the single story middle level to the two story section. The continuous side split has a single roof over both sections which contributes a simpler, more attractive exterior appearance. The front-to-back split is often the most handsome in appearance. When placed with either the two story or the one story section directly facing the street, it appears deep and narrow. Then there is the original split level design for sloping sites which usually is constructed with a shed type roof.[36]

LOCATION OF THE LAUNDRY AREA

According to preferences expressed at the Women's Congress on Housing in 1956, only two of the split level designs categorized by Craig and Jones would be desired by these homemakers because they included a separate first floor laundry. In selecting only minimum components for a house suitable for the middle income level, the separate first floor laundry was considered a basic necessity by 50 per cent of the groups. Three groups or 30 per cent agreed to a basement location as an economy measure, while the remaining two groups chose locations

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[36]"What's So Good About Splits," House and Home, VII (February, 1955), 145.

on a service porch and in the kitchen, respectively.[37] Nine of the groups felt that laundering should not be done in the kitchen.[38] However, all of the groups agreed upon a separate laundry-utility room on the first floor when preference was the only basis for selecting and locating rooms.[39] By comparison, none of the groups included a separate dining room in any of the minimum combination of components, but eight of the groups desired it when economy was not a consideration. The resulting summary in Architectural Record did not include the expressed preference for a laundry room although the separate dining room desired by a smaller majority was noted.[40]

"Good Laundries are Divorced from Kitchens" was the title of design data and specifications presented in House and Home by the architect Harold Sleeper. This recognized authority stated that "Ideally, the laundry-utility core should be a room by itself near kitchen and bathroom."[41] He pointed out the need for: (1) logical arrangement of appliances, (2) natural light from big windows, (3) adequate space so appliances do not obstruct storage, and (4) a big hamper.[42]

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[37] Housing and Home Finance Agency, Women's Congress on Housing (Washington: Government Printing Office, 1956), p. 77.

[38] Ibid., p. 16. [39] Ibid., p. 19.

[40] "Calling All Builders: What Women Want in Houses is Better Design," Architectural Record, CXIX (June, 1956), 32.

[41] Harold Sleeper, "Good Laundries Are Divorced from Kitchens," House and Home, VI (September, 1954), 117.

[42] Ibid.

A study of one thousand homemakers' preferences in Buffalo by The Cornell University Housing Research Center disclosed that:

> . . . almost half the women preferred to wash clothes on the ground floor rather than in the basement; slightly over half were indifferent to the question or actually disliked a laundry located on the ground floor. The high percentage of families who liked having their laundry facilities on the ground floor is all the more significant because nearly all of them lived in houses with a basement.[43]

Scarborough, a successful designer and builder of custom built homes, in addressing the National Home Laundry Conference in 1961, implied that the economy resulting from the sacrifice of a separate laundry room is exaggerated. His calculations of the monthly cost of a laundry in a $25,000 home which allowed "extremely adequate space" and the "best possible equipment" totalled "just nine dollars per month, including everything--construction, equipment cost, power, and interest on borrowed money." This cost represented to Scarborough "the greatest bargain in the home."[44]

Though automatic appliances have greatly reduced the time required for home laundry, even less time needs to be devoted to this second most important household task as a result of convenient placement of the laundry appliances.

> Laundering is indicated as the next important household task after meal preparation, serving, and clean up. . . . But the equipment should be adjacent to the kitchen for convenience in combining work activities. . . . With equipment adjacent to the kitchen they can start the laundering, and while the automatic washer is operating, they can clean up the breakfast dishes, start luncheon

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[43] Glenn H. Beyer, et al., Houses Are for People (Ithaca: Cornell University, 1955), p. 27.

[44] Scarborough, loc. cit.

> preparations, and supervise the baby, all simultaneously. . . . The laundry, also, should be located near the drying yard.[45]

In a speech before the National Home Laundry Conference in 1959, Miller noted two trends in the location of laundry equipment:

> One is to bring the laundry upstairs out of the basement. And the other is to stop mixing it with so many areas. . . . a reader survey by our magazine, New Homes Guide, brought out the fact that 57.2% of the families wanted a separate laundry when they built. And the recent survey by the American Home Laundry Manufacturers' Association has also proved much the same trend. It showed that even though the kitchen and the open basement are currently the most-used areas for the laundry, the utility room or the first floor laundry room--room, not area--would be the preferred spots if these families were building new homes.[46]

Charles expressed the opposite school of thought on laundry locations in a speech three years later in 1962 before the same group. "You don't have to devote 500 square feet of floor space to provide a good, workable home laundry center." In a little over 16 square feet of floor space, in a hallway, he showed a laundry center which

> . . . provides storage for unironed laundry, an automatic ironer or ironing board, hanging space for ironed clothing, a pull-down sorting board, plus washer and dryer. The center can be closed off with a folding door when not in use. Total hall width for such a center should be no less than 5 feet 10 inches.[47]

Hallways as a desirable location for laundries were also promoted by House and Home in 1955, as a result of findings by The Small Homes

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[45] Housing and Home Finance Agency, Women's Congress on Housing (Washington: Government Printing Office, 1956), p. 15.

[46] Gladys Miller, "Plunge Into the Laundry Head First," Trends in 1960 Home Laundry Planning, Proceedings of the Thirteenth National Home Laundry Conference (Chicago: American Home Laundry Manufacturers' Association, 1959), p. 7.

[47] Charles, loc. cit.

Council: ". . . three families tried out various locations for months; the hallway won because of availability and looks."[48]

A study conducted in Battle Creek, Michigan, also indicated that women tend to use a first floor location for some laundry tasks even when the main appliances are located in the basement.

> Washers were located in the basement in 82.5 per cent of the homes in the sample. In the remaining 17.5 per cent they were in first floor locations.
>
> When the washer was located in the basement, homemakers tended to move some laundry activities to other parts of the house, usually to a first-floor location.[49]

EQUIPMENT AND PROCEDURES FOR HOME LAUNDRY

Additional data collected by Johnston indicated that the laundry facilities in households are not likely to be the epitome of efficiency and good planning. Few of the houses in the study had a central location which housed the complete laundry facilities; rather, different parts of the house fell heir to various steps in the laundering process. Soiled clothing was stored in more than one place in the house and the ironing task was performed in a number of different locations.[50] The lack of sufficient work and storage space near the laundry appliances was viewed as an important reason for the moving of laundry activities

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[48] "Offer a Laundry That Is Convenient," House and Home, VII (May, 1955), 138.

[49] Betty Jane Johnston, "Home Laundering," Journal of Home Economics, L (January, 1958), 37-38.

[50] Ibid.

to other locations within the house. Fewer than half of the households in Johnston's survey afforded good facilities for work and storage near the laundry equipment. For this reason, 104 of the 120 homemakers interviewed sorted laundry from the floor. Only 23 of the women expressed any interest in improving their present facilities. Johnston cited indications that in many homes the performance of tasks associated with laundering are not confined to any one area known as "The Laundry." She suggested that the washing machine is frequently viewed as a unit within itself, rather than as a work center. Much the same trend appeared in regard to ironing. Most of the women had separated the ironing process from other laundry activities and preferred to iron in various locations in the house. The location of the television set was often the basis of the decision to iron in a specific location.[51] However, the majority preference at the Women's Congress on Housing in 1956 was that sufficient space should be provided in the laundry-utility room to allow a permanent set up for the ironing board and the unironed clothes.[52] The laundry area required will vary with the number of appliances. According to a General Electric report, dryers are installed in 22.9 per cent of the electrically wired homes in the United States.[53]

According to a Small Homes Council report, "a well-planned laundry area should be large enough to accommodate not only washing and

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[51] Ibid., p. 38.

[52] Housing and Home Finance Agency, loc. cit.

[53] General Electric Share Owners Quarterly (April 12, 1963).

ironing appliances, but related laundry equipment." The list of equipment suggested by this research group included the following: "Clothesbasket or Laundry Cart, Laundry Sink, Counter, Cabinets, Drip-dry Space, Ironing Board, and Clothes Rack."[54] Ball stated that the average laundry in speculatively built houses measures ten feet by ten feet and would contain "Automatic Washer, Automatic Dryer, Rotary Ironer, Standard Portable Board, and Sorting Shelves."[55]

SPACE REQUIREMENTS FOR THE PERFORMANCE OF LAUNDRY TASKS

A number of space requirements for laundry appliances and activities have been determined experimentally by research groups at several agricultural experiment stations, universities, and in industry. Measurements for front clearances needed for the operation of automatic washers and dryers resulted from research supported by agricultural experiment stations in Washington, Pennsylvania, and Georgia. Table I sets forth a compilation of these measurements with a fourth set of dimensions from a study conducted by Helen E. McCullough at the University of Illinois. Each of the studies from Pennsylvania and Illinois made a definite recommendation for clearance in front of specific types of automatic dryers, while the Georgia study suggested a range of 30 to 42 inches for all types of dryers.

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[54]Helen E. McCullough, Laundry Areas, Small Homes Council (Urbana: University of Illinois, 1957), p. 4.

[55]Victoria K. Ball, The Art of Interior Design (New York: The MacMillan Company, 1960), p. 53.

TABLE I

RECOMMENDED FRONT CLEARANCES FOR THE INDIVIDUAL OPERATION OF AUTOMATIC WASHERS AND DRYERS

Appliances	Washington[a] (Inches)	Pennsylvania[b] (Inches)	Georgia[c] (Inches)	Illinois[d] (Inches)
Washers				
Drop door	32		36	
Front opening		36	36-48	38
Top opening	30	29	24	36
Dryers				
Slant opening drop door	38	34	30-42	36
Front opening 90° door swing	42		30-42	36
Front opening		42	30-42	36
Front opening 180° door swing	40		30-42	
Combination	38			42

[a]A. Nichols, T. S. Russell, A. L. Wood, "Space Requirements for Use and Care of Laundry Appliances," Journal of Home Economics, LIII (March, 1961), 188.

[b]C. P. Sinden and K. A. Johnston, Space for Home Laundering, Pennsylvania Agricultural Experiment Station, Bulletin 658 (University Park: Pennsylvania State University, 1959), p. 15.

[c]J. J. Mize, et al., Laundry Work Areas for Southern Rural Homes, Georgia Agricultural Experiment Station, Bulletin N. S. 42 (Athens, Georgia: University of Georgia, 1957), p. 15.

[d]H. E. McCullough, "A Preliminary Report on Space Requirements for the Home Laundry," Journal of Home Economics, XLIV (June, 1952), 429.

Recommendations for a total laundry area include a wide range of measurements. In some of the research situations, the equipment used to determine measurements for the total laundry area consisted only of the washer and the dryer. As would be expected, the resulting specifications differ considerably from recommendations originating from studies using additional pieces of laundry equipment such as bins, closets, and laundry trays. The space recommendations for the operation of automatic washers and dryers which resulted from studies conducted at The Pennsylvania State University and The University of Illinois are compiled in Table II. The work space recommended in these two studies did not include the space occupied by the equipment.

The research studies included recommendations for the areas required for the tasks of ironing, sorting of soiled laundry, and storage of soiled laundry. The studies conducted at Illinois and Pennsylvania included recommendations for ironing arrangements and the space required for equipment and worker. For an ironing board only, with adequate clearances for activity on three sides, the minimum spaces required were 5 feet 9 inches by 3 feet 9 inches in the Illinois study and 6 feet by 4 feet 7 inches in the Pennsylvania study.[56] The differences between the recommendations can be explained by a variation in the equipment used in the two studies. When using an ironing board, a chair, and a laundry cart, the space needed for ironing was established as

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[56] McCullough, "A Preliminary Report on Space Requirements for the Home Laundry," Journal of Home Economics, XLIV (June, 1952), 429; Sinden and Johnston, op. cit., p. 19.

TABLE II

MINIMUM WORK SPACE REQUIREMENTS FOR THE COMBINED OPERATION OF AUTOMATIC WASHERS AND DRYERS

Arrangement of appliances	Pennsylvania[a] (Inches) Width	Depth	Illinois[b] (Inches) Width	Depth
Combination			44	48
Stacked	43	37		
135° Angle	59	36		
Right angles	47	40		
Side-by-side				
Dryer to right	66	36	66	42
Dryer to left	76	35		
Opposite	57	30	44	48
Opposite (drop doors)	50	32		

[a]Sinden and Johnston, op. cit., p. 29-30.

[b]McCullough, Laundry Areas, Small Homes Council (Urbana: University of Illinois, 1957), p. 3.

The Pennsylvania study used one 19 inch round basket for loading and unloading.

The Illinois study used a laundry cart for loading and unloading.

5 feet 10 inches by 4 feet 3 inches.[57] An arrangement consisting of ironing board, basket, table and clothes rack, with sufficient space for a worker required a minimum area of 7 feet 3 inches by 6 feet.[58] The total space needed by a worker to use a rotary ironer with auxiliary equipment consisting of a tiered utility table, a chair, a hanging bar, and a clothes basket was 4 feet by 7 feet.[59]

The storage of soiled clothing was considered in two studies. One study located a soiled clothes bin measuring 21 by $22\frac{3}{4}$ by 17 inches under a counter surface beside the washer.[60] In the Western Cooperative Series a recommendation was made for the location of bins above front loading machines. Both of these arrangements allowed the sorting of laundry directly from bin to washer. A bin 14 inches deep, 22 inches wide, and 9 to 12 inches in height front-to-back held five pounds of clothes. If the width was increased to 30 inches, the capacity increased to nine pounds.[61]

Sorting a four pound load of laundry on a table $2\frac{1}{2}$ to 3 feet by 6 feet required an area of 6 by 5 feet for surface area and worker.[62]

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[57] McCullough, Laundry Areas, Small Homes Council (Urbana: University of Illinois, 1957), p. 3.

[58] McCullough, "A Preliminary Report on Space Requirements for the Home Laundry," Journal of Home Economics, XLIV (June, 1952), 429.

[59] Sinden and Johnston, op. cit., p. 34.

[60] Mize, et al., op. cit., p. 10.

[61] Space Standards for Home Planners, Western Cooperative Series, Bulletin G-2, p. 4.

[62] Sinden and Johnston, op. cit., p. 9.

A second study listed a surface area 2 feet deep by 5 feet long as the maximum used in sorting three 8 pound loads of laundry.[63]

Pre-treating required a table area 1 foot 8 inches by 5 feet and floor area, with space for the worker, of 3 feet 5 inches by 5 feet.[64]

Sprinkling required a floor area, including space for the table of 2 feet by 6 feet and space for the worker, of 4 feet by 6 feet 2 inches.[65] The surface space used in folding and stacking clean dry articles ranged from 8 to 32 square feet, depending on the amount of surface area which the subject could reach without making steps.[66]

SPACE REQUIREMENTS FOR TOTAL LAUNDRY AREA

The minimum space requirements set up for the laundry-utility area by the 1956 Women's Congress on Housing ranged from 8 feet by 7 feet to 8 feet by 14 feet. The median suggested by the ten groups was an area 6 feet by 11 feet, while the mean area was 73 square feet.[67] Miller recommended an area of 8 feet by 10 feet as the minimum space which would house a washer and a dryer and "a complete laundry."[68]

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[63] Mize, et al., op. cit., p. 30.

[64] Sinden and Johnston, loc. cit.

[65] Farmhouse Planning Guides, A Northeastern Regional Research Publication, (New York: Cornell University, 1959), p. 23.

[66] Mize, et al., op. cit., p. 31.

[67] Housing and Home Finance Agency, op. cit., p. 20.

[68] Miller, op. cit., p. 31.

The space requirements for a laundry area are stated in a study supported by the Georgia Agricultural Experiment Station. The equipment used in determining such requirements included, in addition to the two automatic appliances, two bins, a tall cabinet, and a laundry sink. The various arrangements required the following amounts of minimum space:[69]

SPACE REQUIREMENTS OF VARIOUS LAUNDRY ARRANGEMENTS

Arrangement	Feet	Inches	by Feet	Inches
One wall	12	5	5	6
Parallel walls	7	6	6	4
L shape	10	5	6	6
U shape	7	7	7	9

The great diversity present among the findings of research undertaken to date on the subject of home laundry have resulted from the variety of equipment included in the studies, the tasks performed, and the manner in which the floor area required was determined, whether for the equipment alone or for the worker and equipment in combination.

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[69] Mize, et al., op. cit., p. 8.

CHAPTER III

PROCEDURE

Homemakers living in a residential development in Fairfax County, Virginia, known as Bren Mar Park, were surveyed concerning their present laundry facilities and their preferences for (1) the space provided for laundry activities, (2) the arrangement of equipment within the space, and (3) the location of the laundry area within the house.

Three designs of split level houses offering diversity in the location of the laundry area were selected for the study. The location of the laundry in relation to the kitchen was the criterion used for selecting the three split level house designs.

A visual survey was undertaken to determine whether each of the three designs sought were available in Bren Mar Park. To aid in locating these houses later for interview scheduling, the three house types to be studied were designated by number and in the following contrasting colors on a map secured from the Fairfax Zoning Commission (see Appendix): Design I in yellow, Design II in red, and Design III in green. A total of 237 split level houses were located; there were 48 of Design I, 72 of Design II, and 117 of Design III.

In order to have some uniformity and to make the findings applicable, the following limitations were set for the study:

1. Interviews were limited to homemakers who were not gainfully employed outside the home. Homemakers who are gainfully employed often do not perform home laundry tasks and therefore are not concerned about the laundry location.

2. Interviews were limited to homemakers whose family laundry was done mainly in the home. Homemakers whose laundry is done commercially may not have opinions resulting from experience in the present home laundry.

3. Interviews were limited to homemakers whose home laundries were equipped with an automatic washer. Non-automatic laundry equipment requires a different laundering procedure and different space allotments.

4. One-half of the interviews in each house type was limited to homemakers with at least one child of diaper age. The presence of infants in the family may create a large amount of laundry. The remaining half of the homemakers all had children beyond diaper age.

A schedule for the interviews was developed and subsequently tested with nine homemakers--three each living in houses of the three designs. Minor revisions were made before the schedule was used for the collection of the data. It required less than thirty minutes to administer. The interview schedule may be found in the Appendix. A scale drawing of each of the house designs was prepared to supplement the interview schedule. It was used during each interview by the homemaker who was asked to indicate (1) the present location of the laundry, (2) the arrangement of the equipment within the laundry, and (3) the preference of the homemaker for the location of the laundry.

In order to locate sixty homemakers who met the limitations of the study, the interviewer engaged in a door to door appraisal of 131 homes and families. To locate the twenty families for each house type, it was necessary to approach a total of 41 homemakers living in houses of Design I, 51 homemakers living in houses of Design II, and 39 homemakers living in houses of Design III. Only one homemaker who qualified for the study refused to be interviewed.

The following procedure was used in the collection of the data:

1. Introduced self and presented an identifying letter from The School of Home Economics at the University of North Carolina at Greensboro (see Appendix).

2. Explained purpose of visit.

3. Determined eligibility of homemaker for an interview and inclusion in the study.

4. Made additional calls at homes where homemakers previously had been absent.

5. Secured information through the use of an interview schedule and a scale drawing of each house (see Appendix).

6. Expressed appreciation for homemaker's cooperation.

The data will be treated by means of descriptive analysis. Scale drawings will be used to illustrate the preferences of the homemakers.

The remainder of this study is organized in the following manner: the background information; the findings in five parts--description of laundry areas, laundry practices of the homemakers, preferences of the homemakers, interpretation of suggested changes, location of laundry and type of future house; drawings indicating the preferences of the homemakers for the relocation of the laundry in their present houses; and a summary of the findings and the conclusions.

CHAPTER IV

BACKGROUND INFORMATION

Bren Mar Park is composed of 478 brick or brick and shingle homes constructed over a period of years from 1950 to 1956. Of the total number, 237 are of split level design and were originally priced from sixteen thousand to nineteen thousand dollars. The remaining 241 homes are variations of ranch style homes, most of which have daylight basements. The Bren Mar Elementary School in the northwestern section of the development provides schooling through the seventh grade for children residing in Bren Mar Park. It was in this setting that the survey was conducted in the summer of 1962. The writer visited 131 Bren Mar Park homes and briefly questioned the homemakers to determine their eligibility and willingness to be interviewed. From this group, sixty homemakers were selected and included in the study.

The section of Fairfax County in which Bren Mar Park is located is classified as part of the Metropolitan Area of Washington, District of Columbia; many of the residents are employees of the federal government, either in a military or a civilian capacity. At the time of the study, commercial establishments had recently moved into adjacent areas of Bren Mar Park. A large warehouse had been constructed near the railroad that bounded the east side of the development. Access to the warehouse through the residential development created excessive noise and additional traffic. Each house was situated on a landscaped lot approximately one-fourth acre in size. All of the split level houses

had three bedrooms and one bathroom on the upper level. However, Design I and Design II houses had a room adjacent to the living room which could be used as a fourth bedroom, although intended as a family room or den.

All of the homes in the residential area chosen for study were relatively new and the majority of the families that occupied them were expanding families. The parents were in the 25 to 40 year age group. The children ranged in ages from infancy to adolescence but the greatest concentration of ages was in the pre-school through elementary school group.

Size and composition of households. The number of children per family ranged from one to eight but the family size occurring with the greatest frequency was five members (Table III). Thirty-three per cent of the households had two adults and three children. Thirty per cent of the households had four member families. Approximately 28 per cent of the families had six or more members. Eighteen per cent of the families ranged from seven to ten members. Ninety-seven per cent of the households were composed of two adults and their children. One household had only one parent, the mother; a second household had an adult in addition to the parents, the paternal grandmother.

In houses of Design I and Design II, 40 per cent of the households were composed of five members (Table IV, page 35). In houses of Design III the modal household consisted of four members since 35 per cent of the families were composed of the parents and two children.

TABLE III

NUMBER OF ADULTS AND CHILDREN IN HOUSEHOLDS

Number of persons in household	Number of adults			Number of children					
	1	2	3	1	2	3	4	5	6-8
Three		5		5					
Four	1	16			16	1			
Five		20				20			
Six		5	1			1	5		
Seven		7						7	
Eight to Ten		4							4

TABLE IV

NUMBER OF CHILDREN IN HOUSEHOLDS

House plan	Number of persons in household	Number of families	Number of children in household					
			1	2	3	4	5	6-8
Design I								
	Three	1	1					
	Four	3		3				
	Five	8			8			
	Six	1				1		
	Seven	4					4	
	Nine	1						1
	Ten	2						2
Design II								
	Three	2	2					
	Four	7		7				
	Five	8			8			
	Six	2[a]			1	1		
	Eight	1						1
Design III								
	Three	2	2					
	Four	8[b]		7	1			
	Five	4			4			
	Six	3				3		
	Seven	3					3	

[a]One family consisted of three adults and children.

[b]One family was composed of the children and only the mother.

The maximum sizes of the families varied proportionately with the sizes of the houses. Fifteen per cent of the families in houses of Design I, the largest house, had nine or more members. In houses of Design II, the same number, 15 per cent, had families of only six or more members, and no family group was composed of more than eight members. In houses of Design III, the smallest house, the number of persons per household did not exceed seven.

Educational level of head of household. The maximum educational level attained by the majority of the heads of household was four years of college (Table V). Forty-three per cent had earned college degrees, moreover, 30 per cent had completed post graduate degrees. While 27 per cent did not have college degrees, over half of this group had received some college training. Only 12 per cent had not attended college at any time.

Occupation of head of household. Sixty-seven per cent of the heads of household were employed by the federal government. Half of those were on active duty in one of the military organizations, the other half were employed in a civilian capacity. Three per cent were retired from active military duty and were employed in civilian pursuits not connected with the government. The 33 per cent not employed by the federal government were engaged in a variety of occupations which included newspaper reporters, proprietors of small businesses, clerks, bankers, salesmen, and policemen.

TABLE V

OCCUPATION AND EDUCATIONAL LEVEL
OF HEAD OF HOUSEHOLD

Occupation	Educational Level				Total
	Post Graduate	College Graduate	College 2 Years	High School	
Professionals					
Military	5	9	4	2	20
Civil Service	8	9	1	2	20
Lawyers	1				1
Reporters	1	1			2
Other	1	2	1		4
Proprietors		2		1	3
Business Men					
Office and Department Managers	1		2		3
Minor Officials		1	1		2
Clerks					
Certified Public Accountants		1			1
Bank Cashiers	1				1
Salesmen		1		1	2
Protective and Service Workers					
Policemen				1	1
Total	18	26	9	7	60

Occupations were classified according to the rating scale found in W. L. Warner's Social Class in America, p. 140.

Source of income of participating families. Seventy-eight per cent of the homemakers reported salary as the sole source of income for the head of household. However, 95 per cent obtained some part of their income from salary. Almost 12 per cent of those salaried also received additional income through commission, bonus, or profit-sharing. Five per cent received some income in addition to their salaries from wealth, either earned or inherited. The sole income of two of the heads of households was from profits from small businesses, while a third received his income from fees and earned wealth. Only 5 per cent of the total number of sixty received income from sources which did not include salary.

Home ownership and length of residence of participating families. Tabulation of home ownership revealed an interesting fact: although their residence in any area could be considered only temporary, 60 per cent of the heads of household whose occupation was military owned the homes in which they were living.

HOME OWNERSHIP BY OCCUPATION

Occupation	Owner	Renter
Military	12	8
Government service	12	8
Other	18	2

Only 37 per cent of the families surveyed had been the original residents in their homes which were from five to six years old. Thirty per cent had lived in their present house less than a year, 17 per cent more than one year, 13 per cent more than two years, and 7 per cent more than three years.

Socio-economic levels of participating families. The socio-economic status of each family included in the study was computed according to Warner's Index of Status Characteristics.[70] From the seven ratings for the categories of dwelling area, house type, source of income, and occupation, those which applied to this study were selected as follows:

1. The dwelling area was given a rating of five because the business entering in adjacent areas had affected the resale value of the homes.

2. The house types were rated as three because all were good houses only slightly larger than utility demanded and were situated on landscaped lots with lawns.

3. The sources of income were rated from one through four since they included inherited wealth, earned wealth, profits and fees, and salary.

4. The occupations were rated from one through five since they included professionals, businessmen, proprietors, salesmen, clerks, and protective and service workers.

From the ratings assigned, a score was computed for each of the families. The scores placed all of the participating families in the middle class, but they were divided in the following manner: 4 in the upper middle class, 21 in the middle-middle class, and 35 in the lower middle class.

It seems somewhat questionable that a group of persons with the educational level of these heads of household would fall into the lower middle class. Several factors, however, may account for the predominance of the lower middle class placement of the families who participated in this study.

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[70] W. Lloyd Warner, Marchia Meeker, and Kenneth Eells, Social Class in America (Chicago: Science Research Associates, 1949), p. 123.

The professions and occupations represented in Warner's study did not include military personnel nor employes of the federal government, since it was conducted in a locale where such occupations were almost non-existent. Self-employed persons such as dentists and certified public accountants were given the highest occupational rating of one by Warner. Since their incomes were from fees, they received a source of income rating of three. If employed by the federal government in the same capacity, these persons would have received a lower rating of four for source of income because it was derived from salary.

Towns differ from busy metropolitan areas in that there usually are distinct divisions among the commercial, residential, and industrial sections, whereas, in housing developments in metropolitan areas it is not unusual to find an industrial area near by or a shopping center or super market adjacent to a residential area.

The ratings given for the dwelling area and source of income probably account for the scores being lower than might be anticipated. The uniformity of the scores, however, serves as an indicator of the relative socio-economic status of the participating families.

CHAPTER V

DESCRIPTIVE ANALYSIS

This chapter presents the findings of this study in five parts. The first section describes the laundry areas as they were found in the three house types. The information includes the equipment used, the arrangement of the equipment within the laundry rooms, the additional uses made of the laundry rooms, and the locations of the laundry rooms within the houses. The second part is concerned with the laundry practices of the homemakers within the laundry room and in other parts of the house. These include the types of laundry tasks performed and their frequency, as well as the uses made of commercial and household or family help. The third section is concerned with the preferences of the homemakers for the location and size of the laundry room and the arrangement of laundry equipment. The fourth section deals with the interpretation through scale drawings of the changes in laundry location suggested by the homemakers. The final part includes the homemakers' preferences for a particular house design as a permanent residence and the relationship of the laundry room to other rooms within the house.

I. DESCRIPTION OF LAUNDRY AREAS

Location and size of laundry area in Design I

The laundry-utility room located in the basement and adjacent to a recreation room was three levels and 21 steps below the bedroom level and two levels or 14 steps below the kitchen. This room was 95 square

feet in size with approximately 79 square feet of the area available for laundry equipment and tasks. The remaining 16 square feet of the area was occupied by a furnace and a water heater. An exit from the laundry room to the drying yard in approximately half of the houses was possible through use of an outside stairwell of 14 steps. In half of the houses the exit was at ground level through a basement room 36 feet from the laundry entrance and upgrade to the drying yard. Two of the basement rooms had been finished as recreation rooms.

Physical features of laundry areas in Design I

Laundry chute. A laundry chute was located four steps down from the bedroom level adjacent to the stairway. Clothes dropped into the chute accumulated in an open space in front of the furnace.

Natural light. Daylight was provided by a single 18 by 24 inch window at ground level or by a glazed section in the door leading to the exterior stairwell.

Artificial light. An exposed bulb in a centered ceiling fixture supplied light to 19 of the 20 laundry rooms. The bulb in one laundry room had been covered with a diffuser.

Arrangement of laundry equipment

Usual arrangement. In 85 per cent of the laundries, the washer or a combination appliance was located to the left of the laundry tray in the corner of the room. In all of the arrangements, the washer had been installed to drain into the laundry tray.

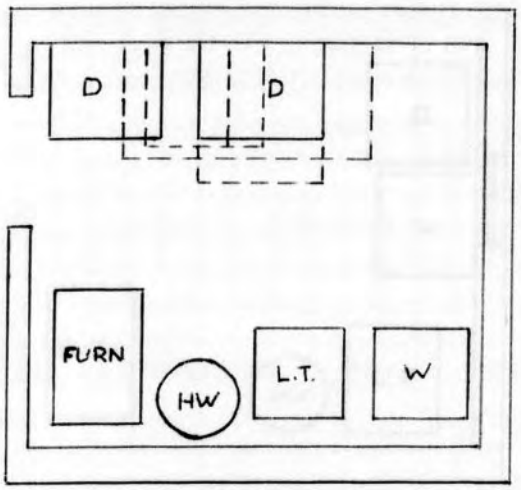


FIGURE 4

USUAL ARRANGEMENT OF EQUIPMENT IN HOUSES OF DESIGN I

In 65 per cent of the laundries a dryer was located on the opposite wall. Variations in the placement of the dryer controlled the distance between the washer and the dryer, increasing the distance from a minimum of 3 feet to a maximum of 9 feet. One arrangement was a variation of the usual arrangement in the placement of the dryer.

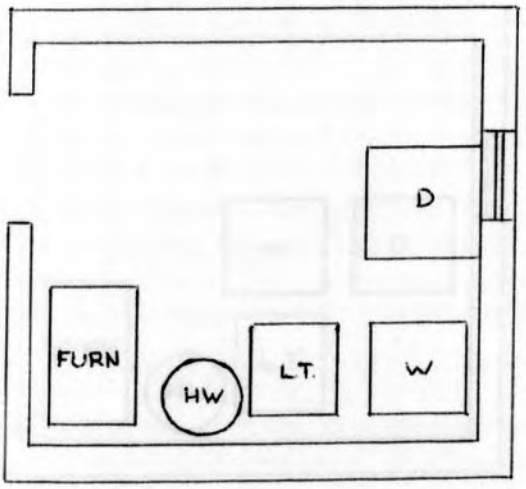
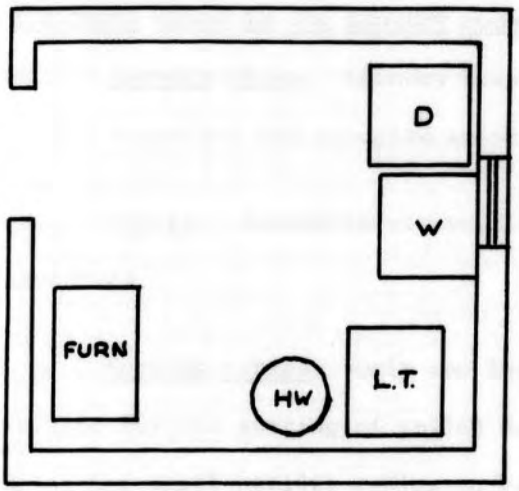


FIGURE 5

FIRST VARIATION TO USUAL ARRANGEMENT

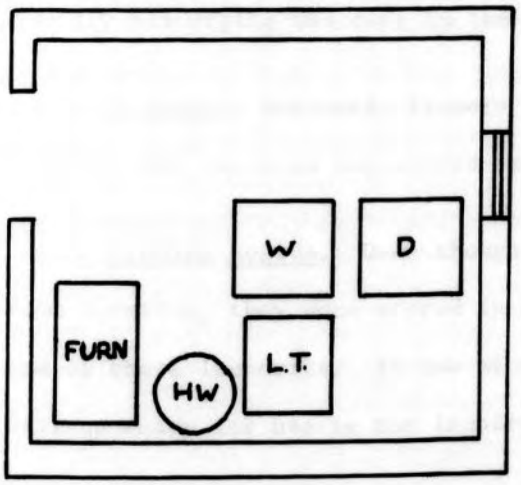
Instead of being located along the opposite wall, it had been placed against the end wall under the window with the sides of the dryer 18 inches from the front of the washer.



In one laundry room, the washer and the dryer had been placed along the end wall and under the window. The front of the laundry tray faced the side of the washer. This allowed an 11 inch front clearance for the laundry tray.

FIGURE 6

SECOND VARIATION TO USUAL ARRANGEMENT



The third arrangement placed the washer and dryer side-by-side in front of the laundry tray rather than against a wall. The fronts of the two appliances faced the opposite wall with a front clearance of 42 inches.

FIGURE 7

THIRD VARIATION TO USUAL ARRANGEMENT

Equipment found in the laundry rooms

Laundry trays. Laundry trays with a single tub were found in all of the laundries and occupied an area two feet square.

Dryers. Automatic electric dryers were installed in 17 of the laundries.

Sorting tables. Only one laundry was equipped with a table surface for the sorting of soiled laundry, although four of the laundries had small utility tables on casters.

Clothes lines. Eight of the laundries or adjacent rooms were equipped with stationary indoor drying lines. Outdoor clothes lines were part of the laundry equipment in 12 of the houses. Three of the houses had neither outdoor nor indoor clothes lines, and consequently all drying was done in the automatic dryers.

Ironers. Automatic ironers were found in two of the houses, but were neither operated nor stored in the laundry room.

Ironing boards. Even though each house had an ironing board in some location, they were stored in only three laundries and used in only one of these laundries. In two of the houses, the ironing board was left up ready for use in the laundry room and recreation room.

Hand Irons. Electric hand irons were stored in the same three laundries which housed the ironing boards, however, only one was used in a laundry.

Laundry carts. Laundry carts were used in seven of the laundry rooms.

Sewing machines. Although 16 of the houses had sewing machines, none were stored or used in the laundry.

Storage for unironed laundry. Provisions for the storage of unironed clothes and linens existed in ten of the laundry rooms. Baskets accounted for storage in five of the laundries, laundry carts in three of them, while a laundry bag, a table, a chair, a hamper, accounted for storage in other laundries.

Storage space for laundry supplies

Storage facilities for detergents, bleaches, and other laundry supplies were provided in 85 per cent of the laundries. In three of the laundry rooms a combination of either cabinets and shelf or shelf and table was found. Three of the laundries had no provision for supply storage; in these rooms the containers were placed on the floor.

Open shelf. Open shelf storage was used for the supplies in 13 of the laundry rooms.

Enclosed shelves. Cabinets were installed in three of the laundries for the storage of the supplies.

Table surface. Laundry supplies were stored on the surfaces of utility tables in three of the laundry rooms.

Additional uses of laundry rooms

Thirty-five per cent of the laundry rooms were used essentially for laundry equipment and related tasks, furnace, and water heater. Sixty-five per cent were used for various other purposes.

Freezers or refrigerators. Half of the laundry rooms contained either a freezer or a refrigerator.

Storage. Storage items such as paint, tools for gardening and woodworking, seasonal clothing, and toys were found in eight of the laundries.

Activities. Drying and arranging flowers, cutting hair, feeding pets, and cleaning shoes were other tasks performed in the laundry room.

Location and size of laundry areas in Design II

The laundry room was located on ground level adjacent to the kitchen and half bath and two levels or 14 steps below the bedroom level. This room was 63 square feet in size with approximately 51 square feet of the area available for laundry equipment and tasks. The other 12 square feet, in ten instances, was occupied by an enclosed stairway of six steps leading to the basement. In the one house which had no basement, the furnace and water heater had been installed in a space equivalent to that occupied by the stairway in the other houses. An exit from the laundry room to the drying yard was possible through a door leading either directly from the laundry room or from the adjacent area four feet from the laundry room.

In the remaining nine houses the laundry area was located in the basement one level or seven steps below the kitchen and three levels or 21 steps below the bedroom level. The entire basement was 408 square feet in size with 372 square feet of area available for laundry; but in no instance was all the available area used for laundry equipment or tasks. The furnace and water heater were installed in all of the basements and occupied approximately 36 square feet of area. In two of the basements a recreation room had been combined with the laundry area. An exit from the basement to the drying yard was available through use of the basement stairs of seven steps leading to the ground level exterior door.

Physical features of laundry areas

Laundry chute. No laundry chutes were included in any of the houses of Design II. The strategic placement of the bathroom directly above the ground floor laundry room introduced the physical possibility of such a facility.

Natural light. Daylight in the ground floor laundry room was provided by a single 18 by 48 inch window in the upper part of one outside wall. Two 18 by 24 inch windows were located in either end of the basement laundry room and opened at ground level; these admitted a limited amount of daylight. The windows were 16 to 20 feet from the location of the laundry tray.

Artificial light. A single exposed bulb in a centered ceiling fixture was the only source of artificial light in the 11 ground

floor laundry rooms. Four of the nine basement laundries obtained artificial light from a single exposed bulb in a ceiling fixture installed just beyond the stairway and to the right of the laundry equipment. In seven of the basement laundries additional light had been supplied in various ways. In three of the laundries fluorescent fixtures had been added to supplement the single incandescent bulb. The two laundry rooms used as recreation rooms had a number of incandescent lamps in various locations for general illumination, in addition to an incandescent fixture above the washing machine. An exposed bulb in one room had been located over the washing machine and a second bulb and a table lamp had been added at the dryer location.

Arrangement of laundry equipment

Usual arrangement in the ground floor laundries. In nine of the ground floor laundries, the washer was located against the interior wall to the immediate left of the basement stairway. In one laundry room the washer was the single piece of laundry equipment. In six of the laundries a laundry tray was beside the washing machine in the corner of the laundry room. In addition, in four of these rooms a dryer had been installed in the corner opposite the laundry tray. In two of the laundries a dryer was located in the

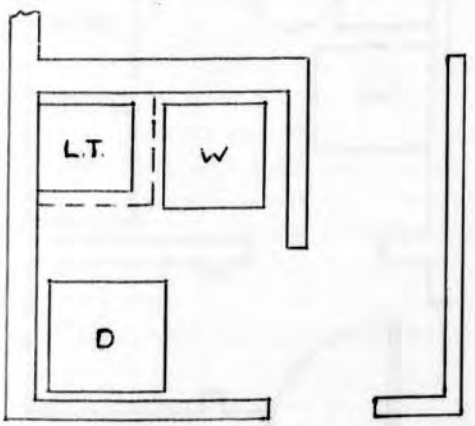


FIGURE 8

USUAL ARRANGEMENT OF EQUIPMENT IN HOUSES OF DESIGN II WITH GROUND FLOOR LAUNDRIES

corner next to the washing machine. The laundry tray from one of these rooms had been installed in the basement. The distance from washer to dryer was approximately four feet.

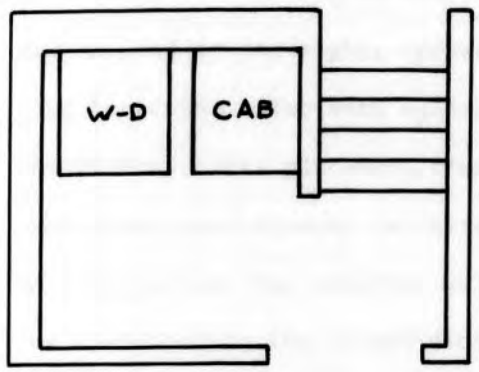


FIGURE 9

FIRST VARIATION TO USUAL ARRANGEMENT

One variation of the usual arrangement was caused by the use of a combination washer-dryer. The appliance had been installed in the space allocated to the laundry tray in the usual arrangement. Between the appliance and the stairway was a built-in cabinet with a soiled clothes bin in the lower half.

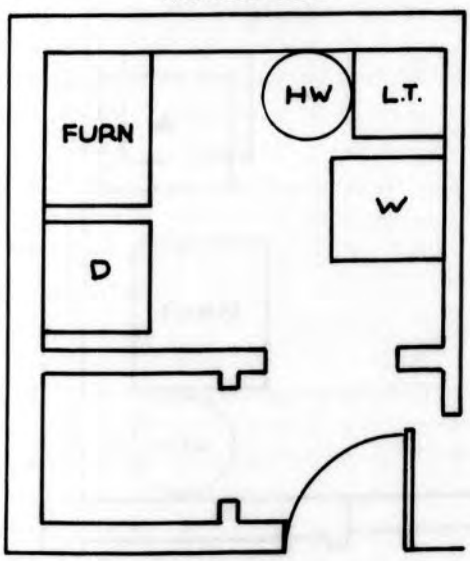


FIGURE 10

SECOND VARIATION TO USUAL ARRANGEMENT

One ground floor laundry room housed the furnace and water heater in addition to the laundry equipment. The laundry tray was placed against the inside wall in a portion of the space usually allocated to the basement stairs. The washing machine was located against the perpendicular inside wall six inches in front of the laundry tray and facing the dryer located in the usual corner against the outside wall.

Usual arrangement in the basement laundries. In all of the basement laundries the washer and laundry tray were located side-by-side against the wall to the right of the stairs. In eight of the laundries the washer was located to the left of the laundry tray, but in one it was located to the right. Dryers were installed in three of the basement laundries. Two were against the perpendicular outside wall under the window. This placement created distances of 10 and 12 feet between the washers and dryers. A third dryer was installed beside the washing machine against the interior wall. In a fourth arrangement the dryer was installed in the ground floor room next to the basement stairway 18 feet from the washer.

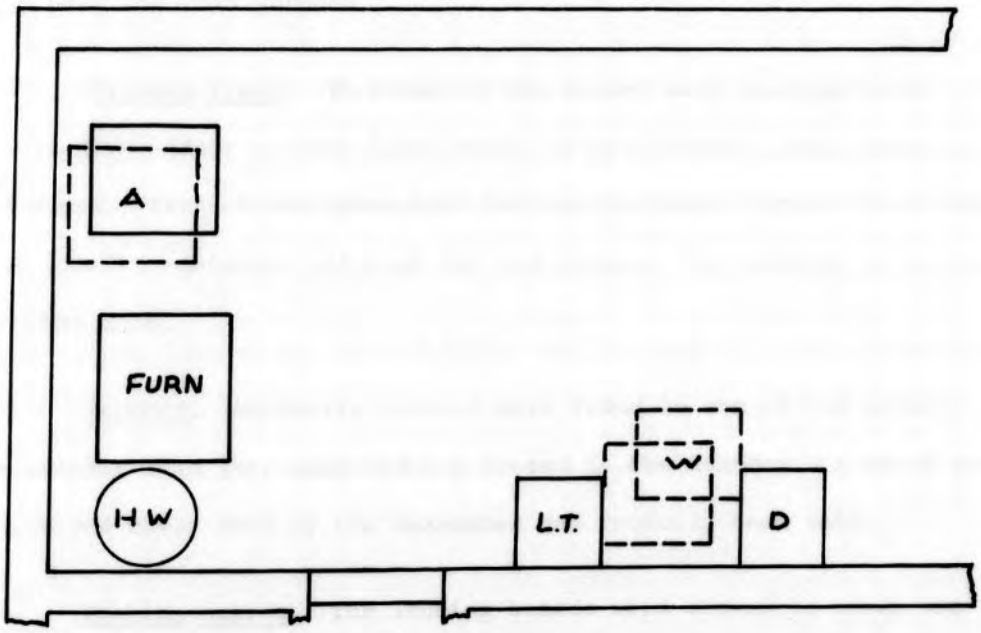


FIGURE 11

USUAL ARRANGEMENT OF EQUIPMENT IN HOUSES OF DESIGN II WITH BASEMENT LAUNDRIES

Equipment found in the laundry rooms

Laundry trays. Laundry trays were installed in seven of the ground floor laundries and in two of the basements near the ground floor laundry facilities. Laundry trays had been removed from two of the houses.

Dryers. Automatic dryers were installed in 12 of the laundries. Nine of the dryers were located in the ground floor room and three were located in the basement room.

Sorting tables. Two of the laundries contained a table that was suitable for use in sorting the soiled laundry. Only one of the tables was used for this purpose.

Clothes lines. Thirteen of the houses were equipped with stationary indoor clothes lines while 12 had clothes lines located out of doors. Five of the homemakers had not included clothes lines among the laundry equipment although one had planned the addition of an indoor clothes line.

Ironers. Automatic ironers were found in two of the houses, but in neither were they operated nor stored in the laundry. A third ironer which was never used by the homemaker had recently been sold.

Ironing boards. The ironing boards were stored in seven but used in only two of the laundry rooms. Both were in basement laundries which allowed space for the permanent placement of the ironing boards.

Hand irons. Electric hand irons were stored in seven but were used in only two of the laundry rooms.

Laundry carts. Laundry carts were used in three of the laundry rooms although they were found in six of the homes.

Sewing machines. Although 17 of the houses had sewing machines, none were used or stored in the laundry room. In two of the houses with basement laundries, the sewing machines had been placed in the near-by ground floor room.

Storage for unironed laundry. Provisions for the storage of unironed clothes existed in 19 of the houses, although only 11 were in the laundry room. The storage was most often in the form of baskets, although surfaces, shelf, hamper, laundry cart, and refrigerator were named as other resources for storage. One homemaker stated that since she ironed immediately she needed no such storage.

Storage space for laundry supplies

Some type of storage facility for detergents, bleaches, and other supplies had been provided in 85 per cent of the laundries. In one laundry, two types of storage space were found. Three of the laundry rooms had no provision for storage, but the addition of shelves to two of the rooms was planned. Half of the laundries had oversize boxes of detergents which were too large for shelves and were stored on the floor.

Open shelf. In 13 of the laundry rooms, the only storage facilities were open shelves.

Enclosed shelves. Cabinets were installed in five of the laundry rooms.

Table surface. In three of the laundry rooms, table surfaces served as additional storage for the supplies.

Additional uses of the laundry room

The laundry rooms in 70 per cent of the houses served a number of purposes in addition to housing laundry equipment. Ten of the laundry rooms contained the furnace and water heater in addition to the laundry equipment. Two of the basement rooms containing the laundry equipment were used as recreation rooms for the family.

Storage. Storage items such as children's outdoor wraps and toys, gardening equipment, lawn furniture, and a grill were found in five of the laundries.

Activities. Woodworking, play, feeding the dog, bathing the baby, and bathing the dog were among the activities conducted in the laundry rooms.

Location and size of laundry area in Design III

The laundry-utility room, located on the lower level and adjacent to a recreation room and a half bath, was one level or seven steps below the kitchen and two levels or 14 steps below the bedroom level. This room was 187 square feet in size with approximately 165 square feet of the area available for laundry equipment and tasks. The other 22 square

feet of the area were occupied by a furnace and a water heater. The drying yard could be reached through an outside door in the recreation room which opened at ground level and was 11 feet from the laundry room exit.

Physical features of laundry areas in Design III

Laundry chute. No laundry chutes were included in these houses although the location of the upstairs bath immediately above the half bath presented such a possibility.

Natural light. Natural light was admitted to the laundry room through three windows 18 by 36 inches in size which were located at ground level. The windows were approximately 19 feet from the laundry tray location.

Artificial light. Artificial light was furnished by two exposed bulbs in ceiling fixtures 11 feet apart. One bulb was located above the usual laundry tray location; the other was near the furnace.

Arrangement of laundry equipment in Design III

Usual arrangement. In 85 per cent of the laundries the washing machine was situated near the laundry tray for drainage purposes. In 15 per cent of the laundries, the trays had been removed and the washing machines installed in the space. In all of the laundries in which laundry trays were found, they occupied the space just outside the door of the half bath and were adjacent to the access hall of the crawl space.

The washing machines were located either directly beside the laundry trays or in angular positions to the back or front of them.

One of the washers was in the access hall facing the wall and, as a result, had a front clearance of 14 inches.

In eight of the laundries the dryer had been installed against the exterior wall opposite the laundry tray and washing machine. Variation in the dryer placement controlled the distance between the two appliances, increasing it from a minimum of 12 feet to a maximum of 18 feet.

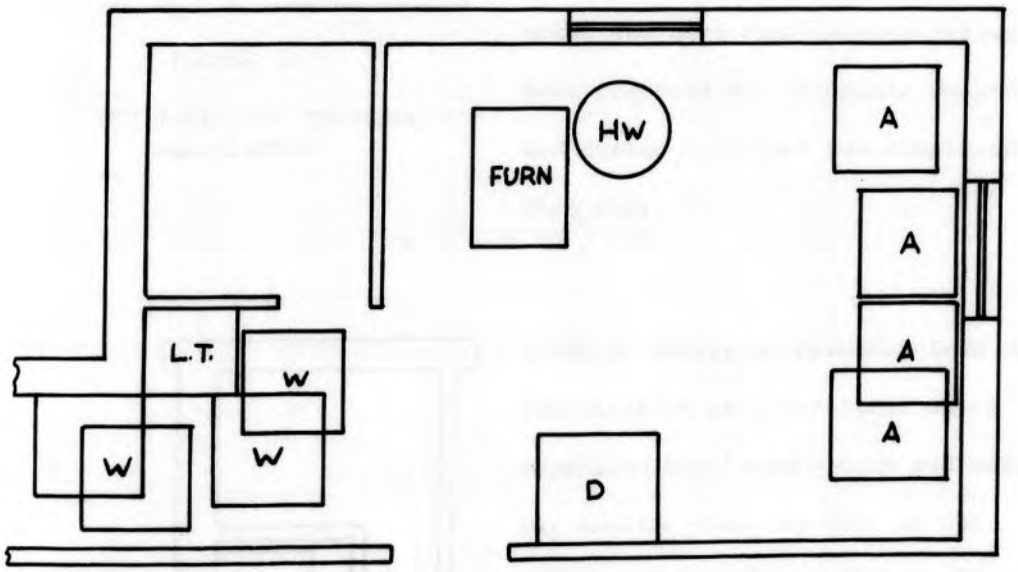


FIGURE 12

USUAL ARRANGEMENT OF EQUIPMENT IN HOUSES OF DESIGN III

One dryer had been installed against the interior perpendicular wall 8 feet from the washer. The installation of the washers in the space allocated originally to the laundry trays did not appreciably change the distance between appliances.

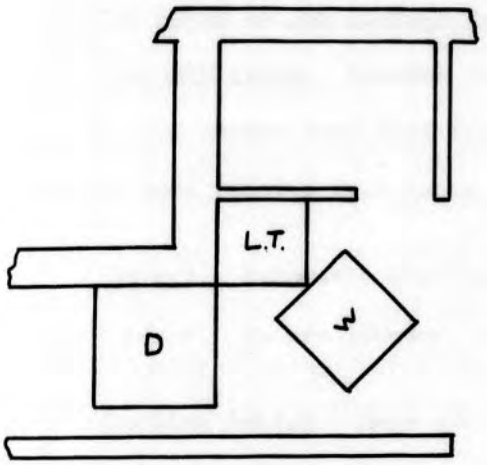


FIGURE 13

FIRST VARIATION TO USUAL ARRANGEMENT

One arrangement limited the location of the laundry equipment to the immediate area surrounding the laundry tray. The washer was angled to the side-front of the laundry tray and the dryer was installed in the access hall facing the wall with a 7 inch front clearance. The homemaker who used this laundry arrangement reported the automatic washing and drying procedure was completed with ease.

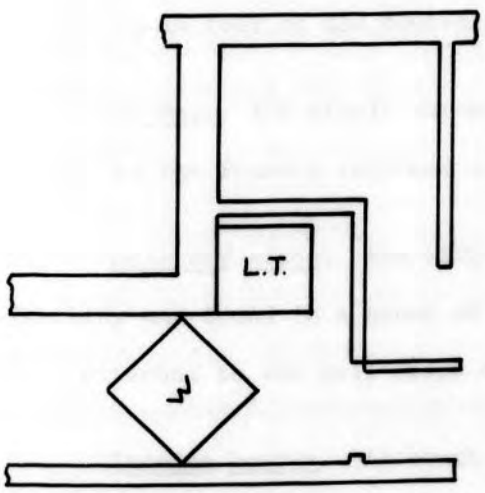


FIGURE 14

SECOND VARIATION TO USUAL ARRANGEMENT

A second variation resulted from the installation of a partition which separated the laundry tray and washing machine from the rest of the utility room. The partition allowed an 11 inch front clearance for the laundry tray and a 36 inch front clearance directly in center front of the washing machine.

Equipment found in the laundry rooms

Laundry trays. Laundry trays with a single tub which occupied an area of four square feet were installed in 17 of the laundry rooms. They had been removed from three of the installations.

Dryers. Automatic electric dryers were installed in 13 of the laundry rooms. In one laundry, a dryer was only being stored.

Sorting tables. Only one table suitable for sorting was found among the laundries, and it, admittedly, was never used.

Clothes lines. Indoor clothes lines were found in five of the laundry-utility rooms and wooden racks for indoor drying were used in three additional ones. Outdoor clothes lines were installed in 15 of the drying yards. There were no clothes lines of any kind either used or stored in four of the houses.

Ironer. The single automatic ironer found among the houses was stored in the laundry room and used in the adjacent recreation room.

Drip dry space. The single example of a planned drip dry facility was found in a house of Design III. It consisted of a wire rack attached to the wall which extended over the laundry tray.

Ironing boards. Although ironing boards were found in every house, only eight of them were stored in the laundry room. Two of these ironing boards were used in the laundry rooms. The remaining six stored in the laundry were used in other rooms in the house.

Hand Irons. Electric hand irons were stored in eight of the laundry rooms and were used in two of these rooms.

Laundry carts. Laundry carts were used in the two laundries in which they were found. A third homemaker used a bassinet on casters as a laundry cart.

Sewing machines. Of the 13 sewing machines found, one was stored and used in the laundry room. A second one was stored and infrequently used in the half bath adjacent to the laundry.

Storage for unironed laundry. Provisions for the storage of clean unironed clothing and linens were made in 13 of the laundry rooms. The most commonly used storage was the clothes basket used by five homemakers, in addition to which two homemakers used laundry bags, two used a shelf or surface, two used the dryer surface, one used a laundry cart, and one, a converted bassinet.

Storage space for laundry supplies

Storage facilities had been installed by the family in 12 of the laundries. In eight of the laundry rooms the homemakers made use of a makeshift shelf which consisted of a brace placed horizontally between two studs. The addition of storage facilities was planned by one homemaker.

Open shelf. In eight of the laundries an open shelf had been installed for the storage of supplies.

Enclosed shelves. Cabinets were installed in three of the laundries for the storage of supplies.

Table surfaces. Laundry supplies were stored on a table in a single laundry room.

Additional uses of laundry rooms

Every laundry room had at least one important function in addition to being used for laundry equipment, furnace, and water heater.

Freezers or refrigerators. Twelve of the laundry rooms contained either a freezer or a refrigerator.

Storage. Storage items such as toys, antique furniture, and yard equipment were found in 18 of the laundries.

Activities. Woodworking, furniture refinishing, and the raising of gold fish were among the additional activities carried on in the laundry room.

Summary of laundry equipment and arrangements in all houses

Among the houses in the study, 92 per cent were equipped with laundry trays and 70 per cent with dryers (Table VI). Ironers were included in 10 per cent of the houses. Storage for supplies was provided in 77 per cent of the laundry rooms. Access to either outdoor or indoor clothes lines was provided in 80 per cent of the houses. The majority of the arrangements (63 per cent) consisted of the three large pieces of equipment (Table VII, page 62).

TABLE VI

PERCENTAGE OF HOUSES WITH LAUNDRY EQUIPMENT

Equipment	All Designs	Design I	Design II	Design III
Laundry tray	92	100	90	85
Automatic dryer	70	85	60	65
Ironer	10	10	15	5
Supply storage	77	85	85	60
Open shelf	57	65	65	40
Enclosed shelf	18	15	25	15
Surface storage	12	15	15	5
Clothes lines	80	85	75	80

TABLE VII

COMBINATIONS OF LAUNDRY EQUIPMENT

Equipment	Percentage in All Designs	Design I	Design II	Design III
Washer	65	85	50	60
Washer and Tray	27	15	40	25
Washer and dryer	3		5	5
Washer alone	3			10
Combination	2		5	

The washer and the laundry tray were the only large pieces of laundry equipment in 27 per cent of the laundries. A combination of the washer with separate dryer was found in 7 per cent of the laundries.

II. LAUNDRY PRACTICES OF THE HOMEMAKERS

The laundry practices of the homemakers did not vary greatly from one household to another nor from one house design to another. Therefore laundry practices will be described as they were performed by the total group of homemakers.

Assistance with laundry tasks

Among the homemakers interviewed, 30 per cent neither received help from any source nor made use of commercial laundry services in performing the family laundry tasks. Nearly three-fourths of this group were mothers of diaper-age children and the households consisted of from four to six members.

Commercial laundry assistance. Commercial services were used by 58 per cent of the homemakers for white shirts and by 21 per cent for other purposes such as diapers, linens and military uniforms.

PERCENTAGE OF HOMEMAKERS USING COMMERCIAL LAUNDRY SERVICES

Service	Per Cent
White shirts	58
Military uniforms	8
Diapers	8
Linens	5

Domestic help. Part-time maids assumed responsibility for some laundry tasks in 17 per cent of the households. Maids were employed in 14 per cent of the households with five or fewer members and in 3 per cent of the households with six or more members. All of the ironing was done by maids in 15 per cent of the households and in 2 per cent of the homes, they laundered the household linens.

Family assistance. At least some of the ironing was performed by children in 22 per cent of the households. Children assisted more often in the larger families. Husbands assisted with washing by loading and starting the washer in 3 per cent of the households.

Time and frequency of laundering

Time of day. Morning was the part of the day in which the laundry was performed by 70 per cent of the homemakers. One homemaker reported that she usually laundered in the evening, while 28 per cent stated that they had no particular time of day scheduled for laundering.

Frequency of laundering. A single homemaker did a weekly Monday laundry. All others washed more frequently than once a week. A large proportion of the homemakers, 43 per cent, washed every day. Of these, 20 per cent were homemakers with families of six or more members, who represented 28 per cent of the total group. Thirty per cent washed two or three times a week.

Days Per Week	One	Two	Three	Four	Five	Six	Seven
Percentage of homemakers	2	15	15	12	8	5	43

Day of week. No preference for a particular day for laundering was expressed by 70 per cent of the homemakers. Specific days for doing laundry were mentioned by 30 per cent of the homemakers. A single homemaker failed to mention Monday among the laundry days.

Storage of soiled clothing and linens

The 62 per cent of the homemakers who preferred to store soiled laundry in an area other than the laundry room chose a location in or near the upstairs bathroom. The laundry room was used by 38 per cent of the homemakers for the storage of soiled laundry. More than half of this number were occupants of the Design I house which had a laundry chute. Three of the occupants of the house, however, found the use of the laundry chute undesirable because of its proximity to the furnace and the soiling of the wall near the chute opening.

Sorting, pre-treatment, and soaking of laundry

Sorting. Sorting of the soiled clothing and linens into loads was accomplished in the laundry room by 73 per cent of the homemakers. One-fourth of those sorting in the laundry used the floor for this procedure. The remaining 27 per cent of the homemakers sorted at the place of storage on the bedroom level. The homemakers who washed every day gathered the clothes which were soiled from the bedrooms and storage area daily in preparation for washing. This practice seemingly did not include sorting.

Pre-treatment. Of the 57 per cent of the homemakers who pre-treated the soiled laundry, 47 per cent used the laundry room. The

remaining 10 per cent used the half bath, the upstairs bath, and the kitchen for pre-treatment.

Soaking. Soaking of some laundry prior to washing was a laundry procedure practiced by 50 per cent of the homemakers. A location other than the laundry area was chosen by 7 per cent.

Drying of clothes

Indoor line drying. The drying of some laundry on indoor lines was done by 32 per cent of the homemakers. One homemaker used a drying rack rather than lines.

Outdoor line drying. Outdoor clothes lines were used by 50 per cent of the homemakers for the drying of some or all of the household and family laundry.

Machine drying. Automatic dryers were used by 68 per cent of the homemakers for the drying of some or all of the family laundry. Five per cent reported the drying was accomplished with difficulty because of the distance between the washer and the dryer.

Drip drying. One laundry room had planned drip dry space in the form of a rack attached to the wall above the laundry tray. Water pipes above the laundry tray were used by 10 per cent of the homemakers as drip dry space. A total of 20 per cent of the laundries were used for drip drying of some articles. Areas other than the laundry were used for drip drying by 65 per cent of the homemakers. Half of these used the upstairs bathroom for this purpose.

Hand laundering, folding, and sprinkling

Hand laundering. The laundering of hand washables was undertaken in the laundry by 17 per cent of the homemakers. A location other than the laundry was definitely preferred by 55 per cent of them. The location chosen by 53 per cent was the upstairs bath, while 15 per cent did hand laundering in the half bath near the laundry room, and 13 per cent used the kitchen sink. Twenty-three per cent of the homemakers found the laundry room undesirable for the laundering of hand washables.

Folding of clean unironed laundry. The folding of clean laundry was completed in the laundry room by 40 per cent of the homemakers. Surfaces in the kitchen or dining room were used by 22 per cent of the homemakers, while 17 per cent chose to fold in a bedroom, and 13 per cent folded the laundry outside as they gathered it from the clothes line.

Sprinkling. The task of sprinkling as stated by 27 per cent of the homemakers was accomplished in the laundry room. Preference for another location was the only reason given by the 35 per cent of the homemakers who used another room for this task. The kitchen was chosen by 30 per cent of the homemakers as the location for the sprinkling task. The laundry room was found an undesirable location for this process by 8 per cent of the homemakers.

Storage of unironed clothing and linens and ironing

Storage of unironed laundry. Unironed laundry was stored by 47 per cent of the homemakers in the laundry room in a variety of ways

which cannot be classified as formal storage. Table surface, tops of appliances, refrigerator, laundry cart, utility table shelf, cabinet, and basket were types of storage facilities mentioned in use in the laundry rooms. Nearly the same number, 48 per cent, chose to store the unironed laundry outside the laundry room and in manners just as diverse.

Ironing. Ironing was reported as being done in the laundry room by 14 per cent of the homemakers. The 86 per cent who used another location chose either the kitchen or the den, family, or recreation room. More than a third of the homemakers found the laundry room undesirable for the ironing task due to poor lighting or insufficient space.

A few of the homemakers from each house type, totalling 13 per cent, performed all tasks related to family and household laundry entirely in the laundry room. Three per cent of the homemakers reported some difficulty in accomplishing all the tasks in the laundry room.

III. PREFERENCES OF THE HOMEMAKERS

The preferences of the homemakers were sought concerning the adequacy of space available for laundry equipment and tasks, the location of the laundry room in relation to other rooms in the house, the arrangement of the equipment within the laundry room, and the adequacy of the lighting. The suggestions of the homemakers were solicited for the improvement of the laundry facility through additions or changes in the physical plan, the location, or the equipment.

Adequacy of space in the laundry room

The opinions concerning the adequacy of the space provided for the laundry area reflected a majority preference for additional space. Of the sixty homemakers, 40 per cent indicated that their present laundry space was adequate for their needs and for this reason desired no more space than was originally provided in the house as designed. Among the 58 per cent who preferred a larger area for laundry activities, 37 per cent felt that the space presently alloted to laundry activities was inadequate (Table VIII). Of the 62 per cent who reported the present space allotment adequate, many stated that they desired more space in order to have a laundry arrangement which could house all laundry tasks and provide for related activities such as pressing, mending, and sewing.

Dovetailing of household duties and laundry tasks. Of the 32 per cent of the homemakers who found that the laundry room location allowed the dovetailing of laundry tasks and other household duties, 25 per cent were occupants of Design II houses in which the laundry was adjacent to or near the kitchen. Among the twenty residents of Design II houses, 15 stated that the laundry location permitted dovetailing. This number includes four homemakers who stated some dovetailing was possible with a basement location of the laundry. Not a single homemaker resident of a Design I house thought the dovetailing of tasks feasible with the basement laundry location. Four of the homemakers who thought dovetailing possible were residents of Design III houses and had combined activities in the recreation room with laundry activities. All of the residents of Design II houses whose laundry equipment had been installed

TABLE VIII
HOMEMAKERS' PREFERENCES AS RELATED
TO RELOCATED LAUNDRY ROOMS

Preferences*	Design			Total	
	I	II	III	Number	Percent
More space	12	10	13	35	58
Present space inadequate	7	7	8	22	37
Relocation of room	14	9	13	36	60
Adjacent to kitchen	11	7	11	29	48
Near play area	3	4		7	12
Near drying yard	10	6	7	23	38
Near bedrooms	1		1	2	3
Addition of equipment					
Tables	9	8	11	28	47
Cabinets	5	6	6	17	28
Ironing set up	5	7	7	19	32
Sewing machine	5	6	6	17	28
Hamper or bin	3	3	5	11	18
Tub or sink	2	1	2	5	8
Rack	3	1	1	5	8
Dryer	1	4		5	8

*Each homemaker mentioned as many preferences as she wished.

in the room adjacent to the kitchen (18 per cent) thought it was convenient to dovetail laundry activities and other household duties.

Relocation of laundry room

The relocation of the laundry room was preferred by 65 per cent of the homemakers as a means for improving the general convenience of the laundry room by placing it adjacent to the kitchen or near the children's play area or the drying yard. Of the 35 per cent who preferred not to relocate the laundry room, over half were occupants of Design II houses with a ground floor laundry room which fulfilled all three of the stated preferences for location. Every homemaker living in a house of Design II with a basement laundry preferred the relocation of the laundry room to the same level as the kitchen.

Of the twenty homemakers in Design I houses, 16 were of the opinion that relocation of the laundry room would increase the opportunity for the dovetailing of household tasks, but two of these preferred to leave the laundry in its basement location to segregate its noise and clutter from other household activities. The relocation of the laundry to the same level as the kitchen was preferred by 13 of the homemakers; one chose a location on the bedroom level.

In houses of Design III, 12 homemakers preferred the relocation of the laundry from its lower level placement. Areas adjacent to the kitchen were chosen by 11 of the homemakers and an area near the bedrooms and bath on the upper level was chosen by one homemaker.

The desire for an arrangement which would allow space for a permanent ironing set up, a sewing machine, and the provision of

enclosed shelf storage were other preferences of a third or more of the homemakers.

Rearrangement of laundry area

Preferences for the rearrangement of laundry equipment within the present laundry room were stated by 43 per cent of the homemakers (Table IX). Most of those desiring the side-by-side placement of the washer and dryer were residents of Design III houses in which the appliances were separated by 14 to 18 linear feet. Minor physical changes in the construction of the laundry room such as changing the position of the door opening and the additions of fixtures such as a drain pipe for the washing machine were viewed as means of increasing the laundry room efficiency. Some homemakers preferred the removal from the laundry room of such unrelated items as the freezer, lawn furniture, gardening tools, and out of season clothing.

Additional equipment

Eight preferences were expressed for the addition of equipment to the laundry room. Tables were the most frequently requested item since only four homemakers had one in their present laundry arrangement.

Preferences for increased light

Among the homemakers interviewed 42 per cent expressed a desire for increased light in the laundry room. All but three of these homemakers desiring increased lighting had laundry rooms either in a basement or partially below ground level. One homemaker expressed a preference for increased daylight rather than for artificial light.

TABLE IX

HOMEMAKERS' PREFERENCES AS RELATED TO PRESENT LAUNDRY ROOMS

Preferences*	Design			Total	
	I	II	III	Number	Percent
More space	12	10	13	35	58
Present space adequate	12	13	12	37	62
No change in laundry	10	12	4	26	43
Rearrangement	7	3	16	26	43
Washer and dryer side-by-side	5	1	13	19	32
Physical change in laundry		1	5	6	10
Addition of outside door			1		
Relocate door		1			
Add 220 v. wiring			1		
Improve access to crawl space			2		
Addition of equipment	1	4	3	8	13
Table	1		2	3	5
Cabinet		1		1	2
Ironing board		1	1	2	3
Tub		1		1	2
Outdoor clothes line		1		1	2
Increase in lighting	8	5	12	25	42

*Each homemaker mentioned as many preferences as she wished.

The number of homemakers who desired increased light expressed a preference for lighting installations as follows:

Type of Lighting Installation	Number of Homemakers
Fluorescent fixtures	12
Luminous ceiling	1
Incandescent fixtures	4
No preference	7

In four of the houses in the study the original source of artificial light, an exposed bulb in a ceiling fixture, had been increased in number or changed to a fluorescent fixture. In three of the basement laundries in Design II houses, light had been increased by the addition of fluorescent lighting. In each of two laundries, the lighting was in the form of an overhead fluorescent fixture; in one it was a channel lighting fixture on the wall above the appliances. In the basement laundry of a Design I house, a diffuser had been added to cover the bulb. This device decreased the glare but did not increase the amount of light.

IV. INTERPRETATION OF SUGGESTED CHANGES

For Design I houses. Six homemakers preferred to locate the laundry equipment along the inside plumbing wall of the kitchen which was somewhat dark and secluded from the open areas of the house. Four of the homemakers preferred to use the entire 9 foot length of wall and a depth which ranged from 2 feet to 6 feet for the placement of the laundry appliances and equipment (Figure 15). In all four instances the laundry could be closed from view by a folding door. One homemaker preferred to use 40 inches of under counter space along the same kitchen wall for the installation of a front-opening combination washer-dryer.

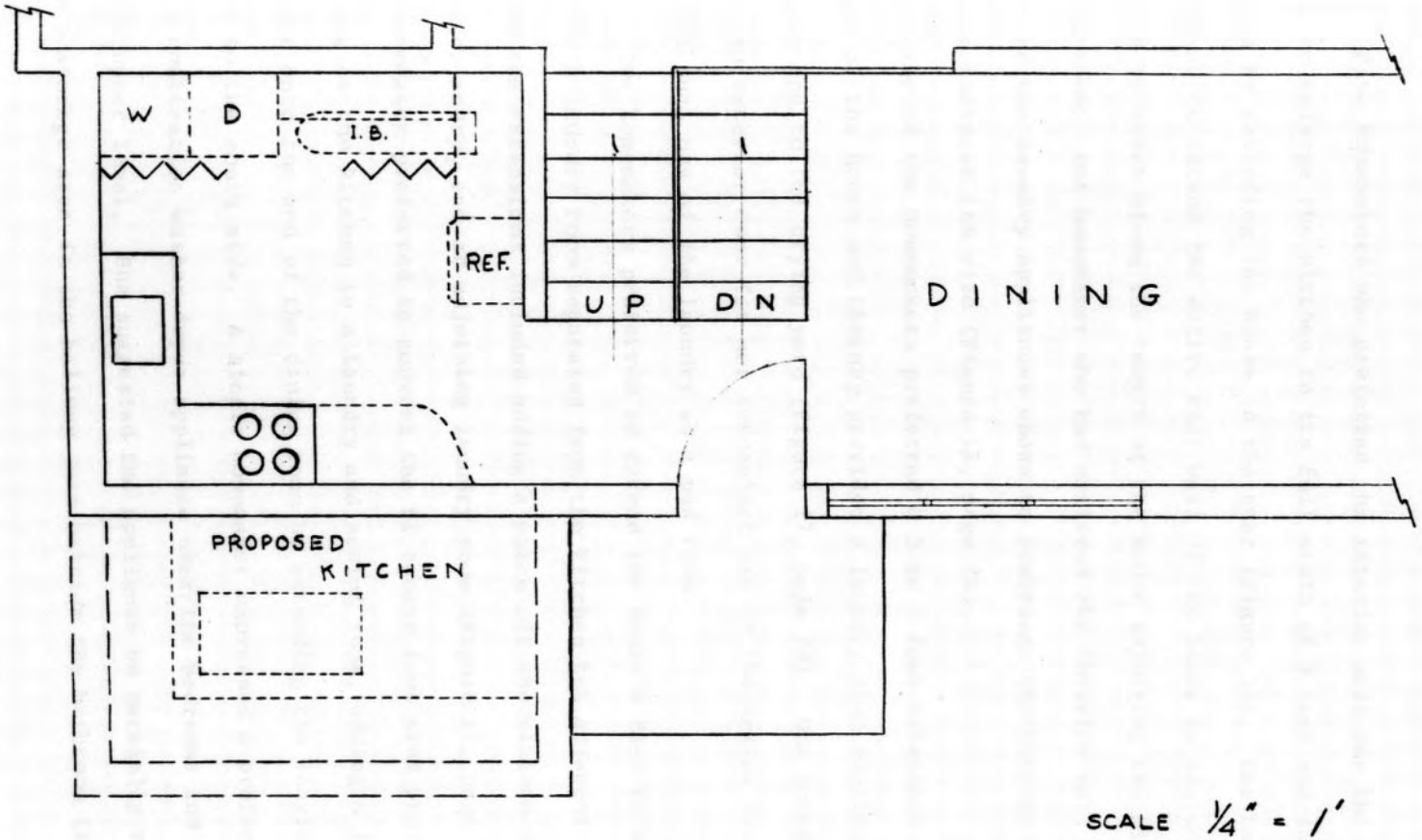


FIGURE 15

PREFERENCES OF SIX HOMEMAKERS FOR LOCATION OF LAUNDRY IN DESIGN I HOUSE

Five homemakers who preferred the interior wall for the laundry chose to enlarge the kitchen in its full width of 9 feet and in variable lengths by extending the house to the rear (Figure 16). One homemaker preferred to extend the entire rear wall of the house to include a glassed-in porch along the length of the house adjoining the kitchen and dining room. One homemaker who had utilized the interior wall arrangement for the laundry appliances chose to rearrange the kitchen rather than to increase its size (Figure 15, page 75).

Two of the homemakers preferred a 5 to 8 foot extension on the length of the house and thereby provided a laundry room adjacent to the kitchen and to the drying yard (Figure 17, page 78). One homemaker added an exterior door for her convenient use of the drying yard and for the dual use of the laundry as a mud room.

Two homemakers preferred to extend the house 6 feet in width to provide a laundry room separated from the kitchen but adjacent to it. One of the extensions included adding a porch off the kitchen for food service, entry, and an adjoining laundry room (Figure 17, page 78). One homemaker preferred to convert the 81 square foot area presently serving as the kitchen to a laundry and sewing room, adding a family-kitchen onto the end of the dining room by extending the length of the house to the south side. A single homemaker expressed a preference for a combination washer-dryer appliance near the bedrooms and bathroom on the upper level. She suggested the appliance be partially recessed into a storage area in the hallway just outside the bathroom (Figure 16,

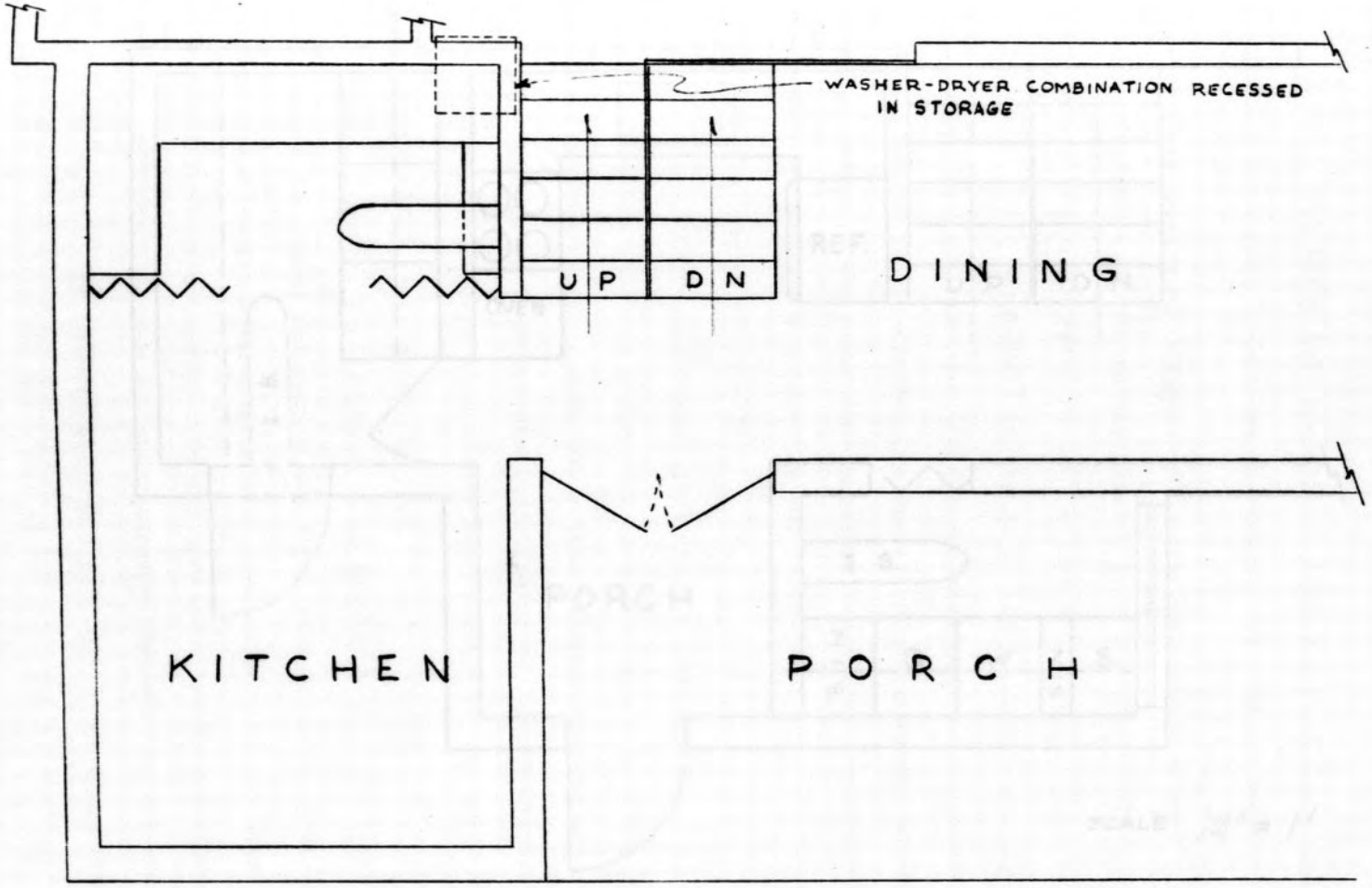


FIGURE 16

PREFERENCES OF FIVE HOMEMAKERS FOR ENLARGED KITCHEN
WITH ADJACENT LAUNDRY IN DESIGN I HOUSE

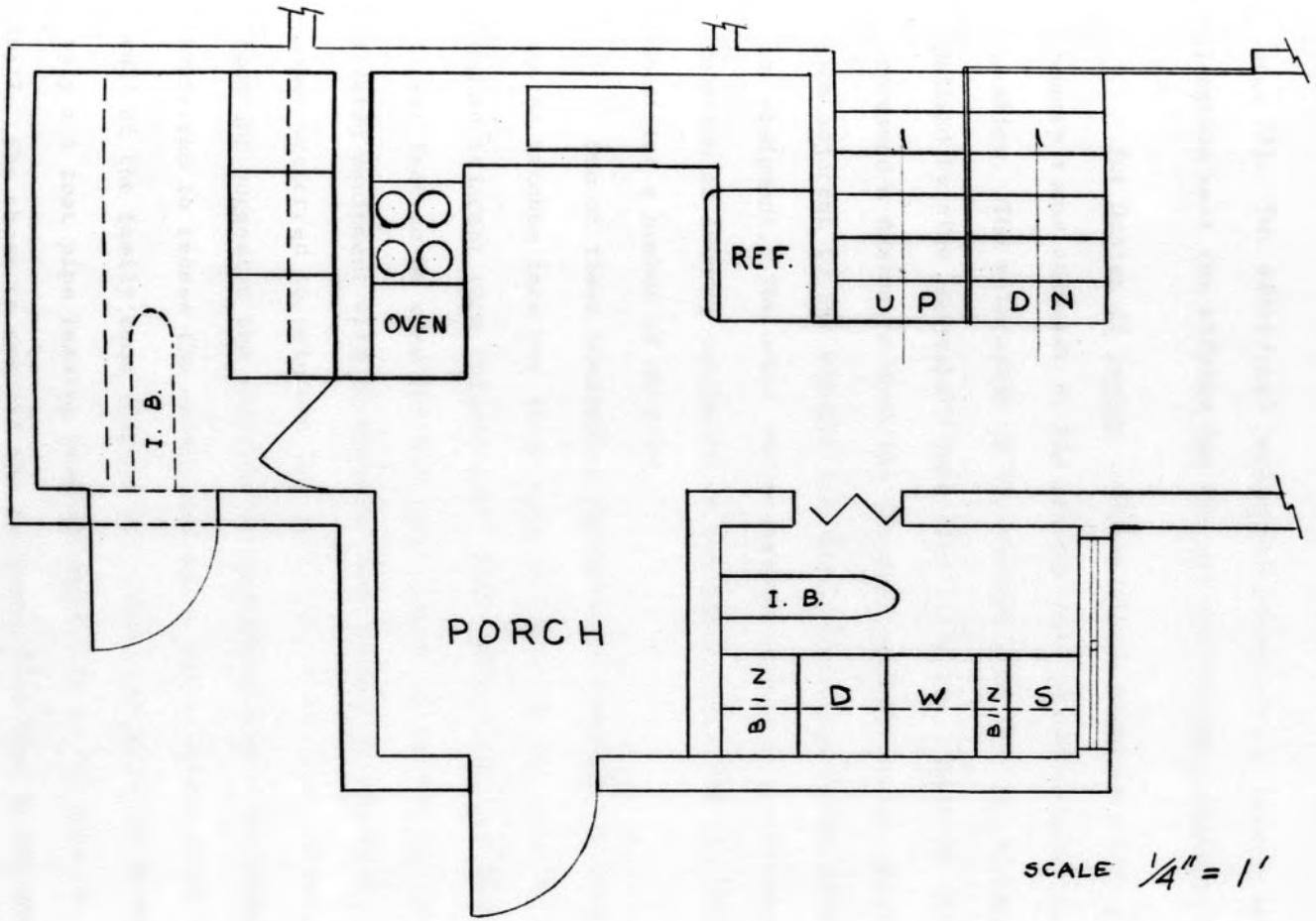


FIGURE 17

PREFERENCES OF TWO HOMEMAKERS FOR LENGTHENED HOUSE
AND SEPARATE LAUNDRY IN DESIGN I HOUSE

page 77). Two additional homemakers preferred the laundry area in a location near the kitchen but did not specify the placement.

For Design II houses. All of the 11 homemakers with ground floor laundry rooms adjacent to the kitchen were satisfied with the existing location. The relocation of the laundry area from the basement was desired by nine homemakers in Design II houses. Seven of the homemakers expressed a desire to move the laundry equipment to the ground floor room adjacent to the kitchen but specified no particular arrangement for the equipment. The other two homemakers expressed a preference for the location of laundry equipment on the lower level with the kitchen and specified a number of details.

One of these homemakers preferred to redesign the area adjacent to the kitchen into one large room encompassing the existing half bath and an adjacent room (Figure 18). This allowed one long wall of 12 linear feet to be used for the installation of laundry appliances and related equipment with an exterior door leading to the yard. This homemaker preferred to relocate the half bath in the basement recreation room and suggested the addition of an outside door. The other homemaker preferred to recess the washer and dryer into a closet on an interior wall of the family room (Figure 18). The venting of the dryer required only a 4 foot pipe leading from the appliance to the adjacent exterior wall. She chose to conceal the equipment from view by the addition of folding doors. The laundry equipment was only a few steps from the work triangle of the kitchen which was adjacent to the family room.

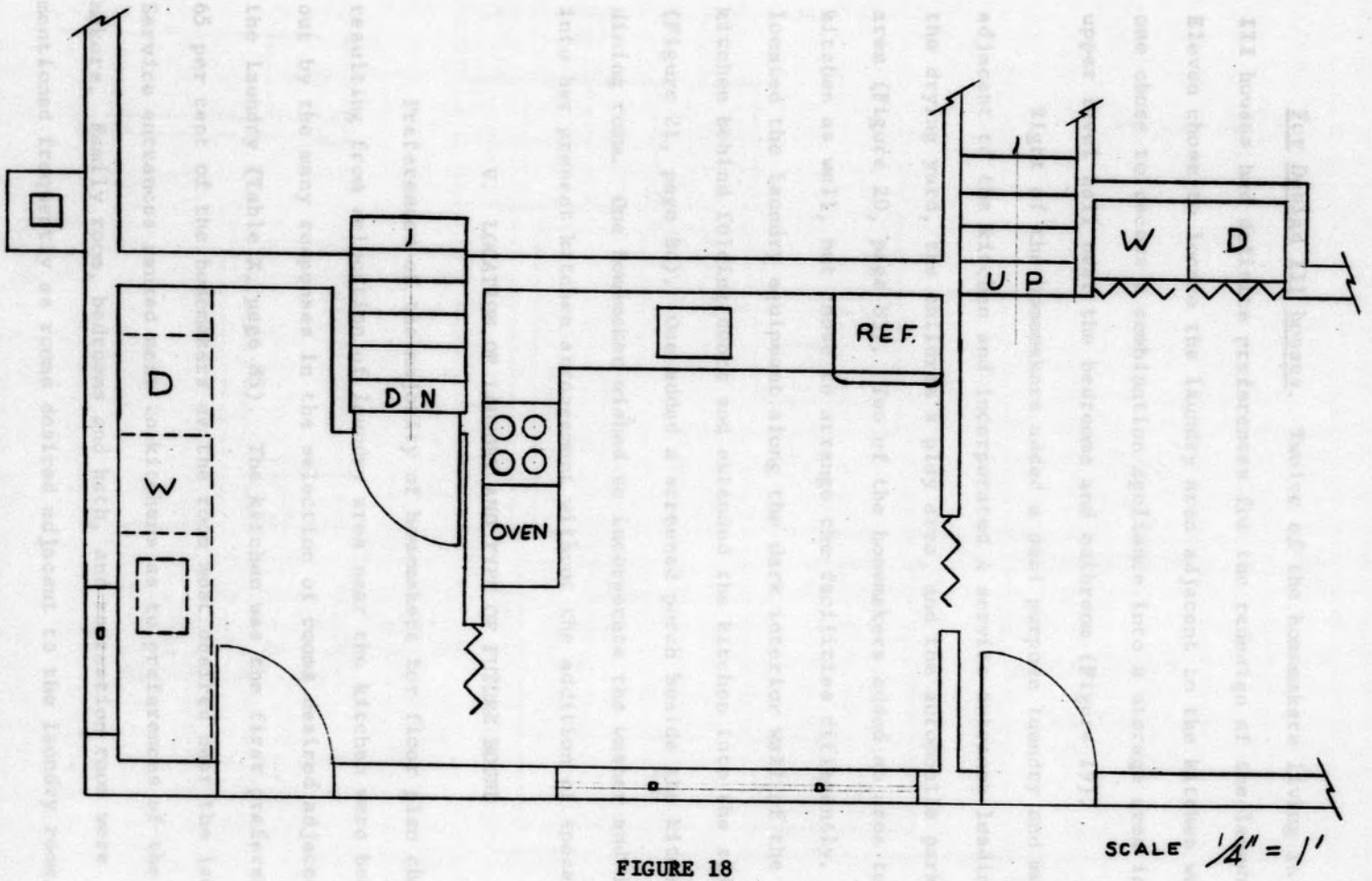


FIGURE 18

PREFERENCES OF TWO HOMEMAKERS FOR ARRANGEMENT OF LAUNDRY ON GROUND FLOOR OF DESIGN II HOUSE

For Design III houses. Twelve of the homemakers living in Design III houses had definite preferences for the redesign of the laundry area. Eleven chose to locate the laundry area adjacent to the kitchen while one chose to recess a combination appliance into a storage area in the upper level hall near the bedrooms and bathroom (Figure 19).

Eight of the homemakers added a dual purpose laundry and mud room adjacent to the kitchen and incorporated a service entrance leading to the drying yard, the children's play area, and the automobile parking area (Figure 20, page 83). Two of the homemakers added an area to the kitchen as well, but chose to arrange the facilities differently. Both located the laundry equipment along the dark interior wall of the kitchen behind folding doors and extended the kitchen into the addition (Figure 21, page 84). One added a screened porch beside the kitchen and dining room. One homemaker wished to incorporate the washer and dryer into her present kitchen arrangement without the addition of space.

V. LOCATION OF LAUNDRY AND TYPE OF FUTURE HOUSE

Preferences of the majority of homemakers for floor plan changes resulting from relocation of laundry area near the kitchen were borne out by the many responses in the selection of rooms desired adjacent to the laundry (Table X, page 85). The kitchen was the first preference of 65 per cent of the homemakers as the room most desired near the laundry. Service entrances ranked next to kitchens as to preferences of the homemakers. Family room, bedrooms and bath, and recreation room were mentioned frequently as rooms desired adjacent to the laundry room.

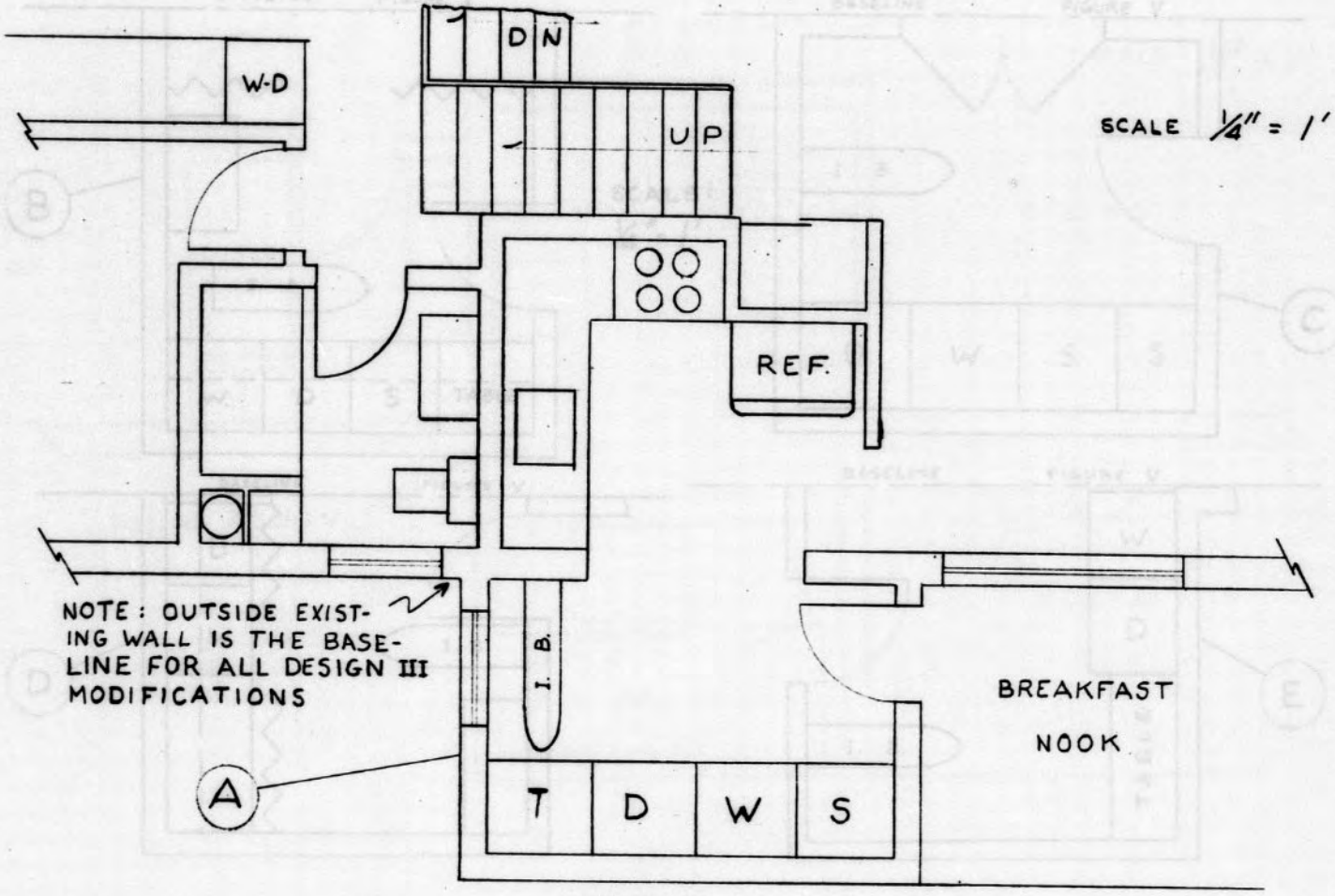


FIGURE 19

PREFERENCES OF THREE HOMEMAKERS FOR REDESIGN OF THE LAUNDRY AREA IN DESIGN III HOUSE

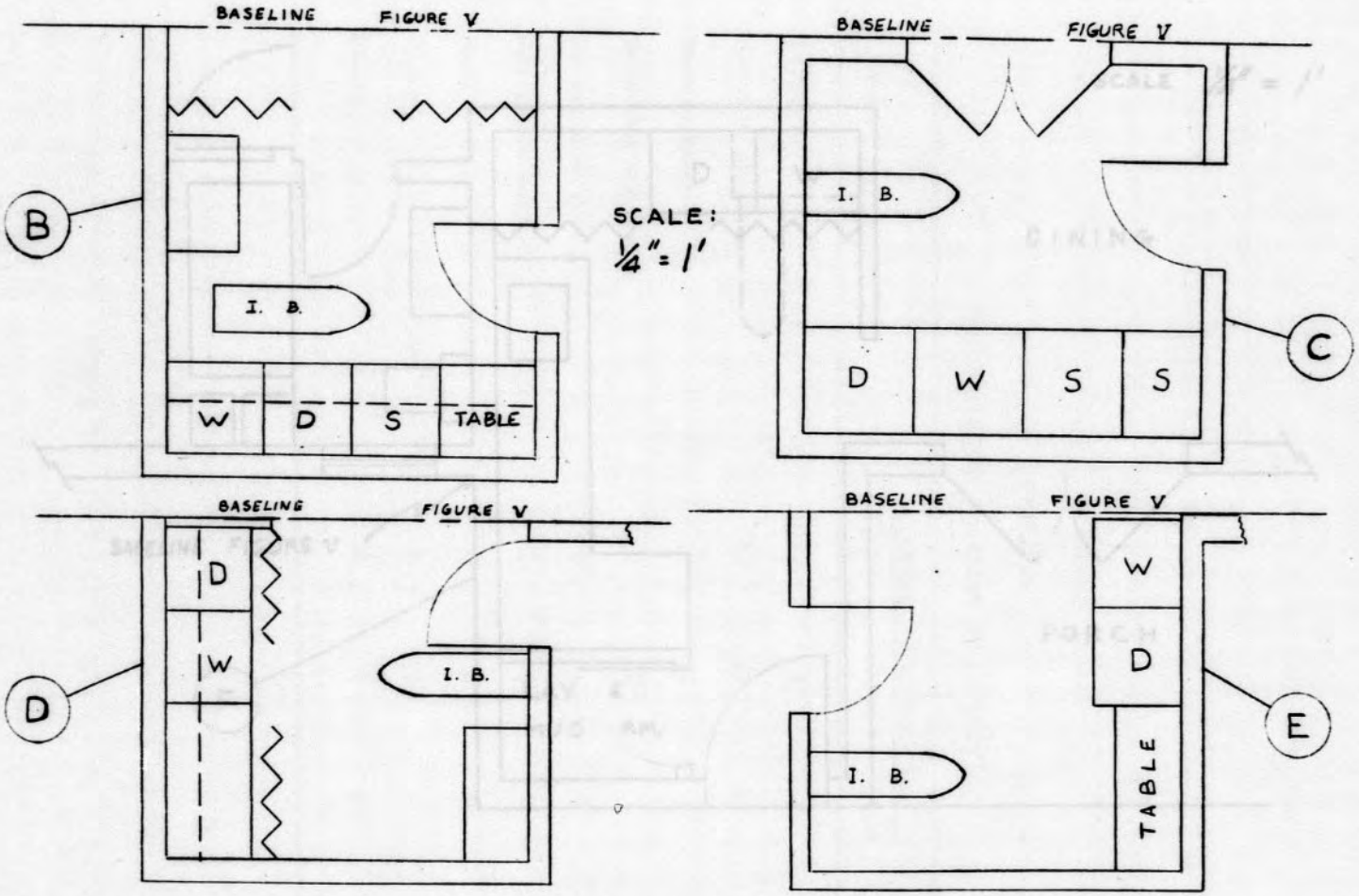


FIGURE 20

PREFERENCES OF EIGHT HOMEMAKERS FOR REDESIGN OF THE LAUNDRY ROOM ADJACENT TO THE KITCHEN IN DESIGN III HOUSE

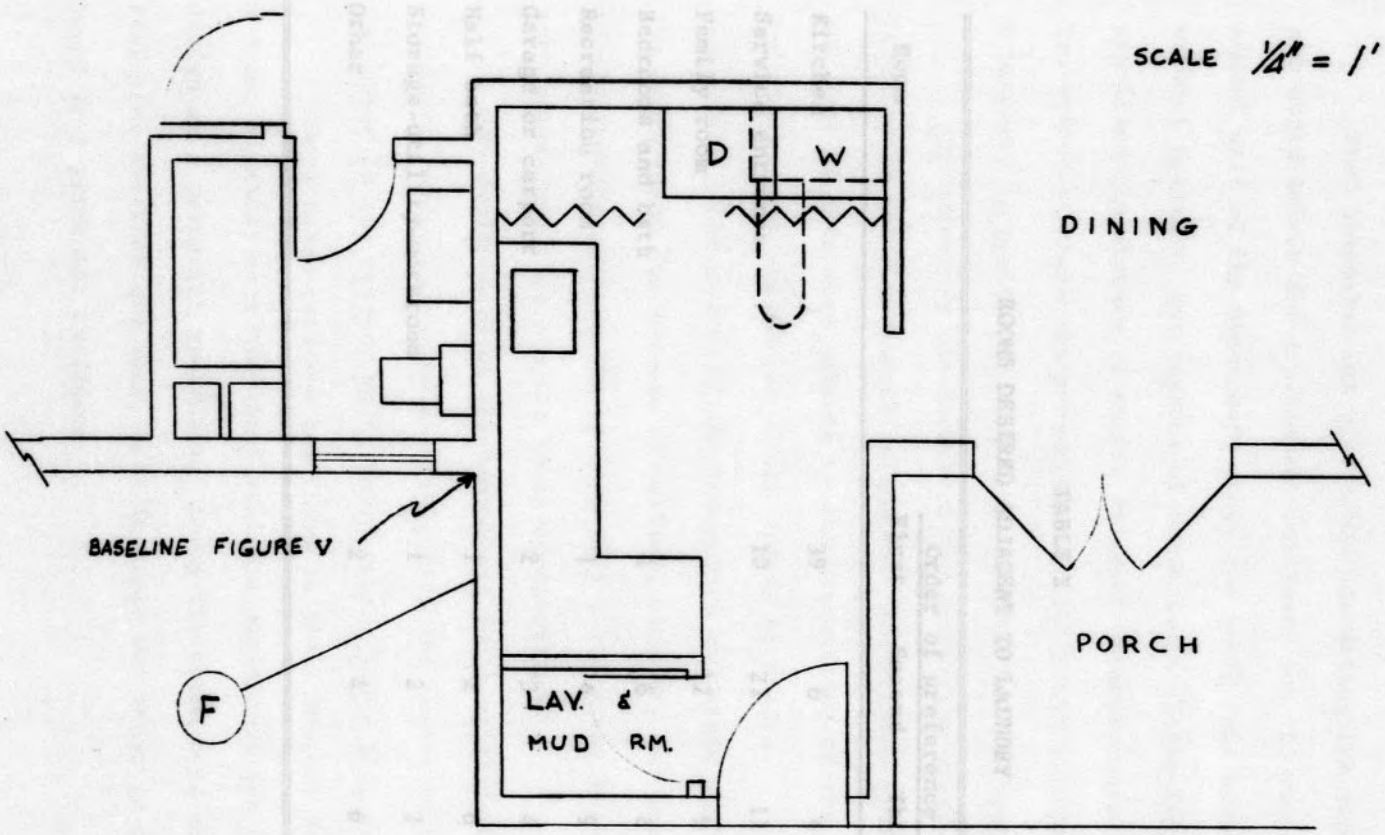


FIGURE 21

PREFERENCES OF EIGHT HOMEMAKERS FOR LAUNDRY AND MUD ROOM
ADJACENT TO KITCHEN IN DESIGN III HOUSE

TABLE X

ROOMS DESIRED ADJACENT TO LAUNDRY

Room	Order of preference			Total
	First	Second	Third	
Kitchen	39	6	4	49
Service entrance	10	21	11	42
Family room		12	9	21
Bedrooms and bath	4	6	8	18
Recreation room	1	4	9	14
Garage or carport	2	3	4	9
Half bath	1	2	6	9
Storage-utility-workroom	1	2	3	6
Other	2	4	6	12

Each homemaker was questioned concerning the type of house plan she would select for a permanent residence and the reason for her choice. Almost half of the homemakers chose the ranch type house, either with or without basement, for reasons of convenience (Table XI). Many of those specified the absence of stairs as their interpretation of convenience. Two-thirds of those who preferred a ranch design indicated a desire for a basement to provide storage or a workroom for the husband.

Approximately one-fourth of the homemakers preferred a split level house for a permanent residence. The reasons given were varied but most of them were related to the versatility of the interior space and the natural separation of the spaces by stairs.

The other fourth of the homemakers expressed a preference for the two story house for reasons of privacy, economy, and convenience. Four of the homemakers held the opinion that a two story house design was more convenient than a split level house design.

The preferences of the homemakers for a split level plan as a permanent residence varied inversely with the number of years of residence in the present split level house (Table XII, page 88).

Among homemakers who had lived in their present house less than a year, slightly more than half stated a preference for the split level design as a permanent residence. Among the homemakers whose length of residence exceeded one year, less interest was shown in the split level house as a permanent residence.

TABLE XI

PREFERENCES OF THE SIXTY HOMEMAKERS FOR TYPE OF FLOOR PLAN

Reason for preference	Type of Floor Plan				Total
	Ranch		Split Level	Two Story	
	Slab	Basement			
Convenience	3	6	1	1	11
Fewer steps	7	12		3	22
Privacy			1	5	6
Separation of spaces			5	2	7
Versatile space			6		6
Economy				3	3
Interior appearance			4	1	5
Total	10	18	17	15	60

TABLE XII

PREFERENCES OF HOMEMAKERS FOR SPLIT LEVEL HOUSE DESIGN ACCORDING TO LENGTH OF RESIDENCE

Length of residence in split level	Design preference		Total
	Split	Other	
Less than one year	9	8	17
One to three years	3	18	21
More than three years	5	17	22
Total	17	43	60

CHAPTER VI

SUMMARY AND CONCLUSIONS

The two-fold purpose of this study was first, to determine present arrangements, space allowances, and locations of laundry equipment in split level houses, and second, to determine the preferences of the homemakers for space allowances and locations of laundry equipment as related to other areas, levels, and rooms in houses of split level designs.

The houses selected for inclusion in the study were of three split level designs, referred to in this study as Designs I, II, and III. The identifying difference among the houses was the variety in the placement of the laundry room in relation to the kitchen location.

In Design I houses, the laundry room was located in the basement 14 steps or two levels below the kitchen.

In Design II houses, an area for the laundry equipment had been provided on the lower level adjacent to the kitchen, however, the area was not always utilized as a laundry room.

In Design III houses, the laundry room was on the lower level seven steps or one level below the kitchen and adjacent to the recreation room.

Data for this study were collected through interviews with sixty homemakers living in a housing development. The split level residences were equally divided and classified according to the three designs. Eligibility for inclusion in the study required:

1. A homemaker not gainfully employed outside the home.
2. Family laundry done mainly at home.
3. Home laundry equipped with an automatic washer.
4. At least one child in the family.

Background information relating to the families revealed that the occupations of the heads of households could be divided into three categories: professional military men, employees of the federal government, civilians employed in a variety of professional or business capacities. Among the heads of households, the level of education most commonly attained was graduation from college. The number of family members ranged from three to ten, but the number occurring with the greatest frequency was five, although families with four members were almost as prevalent. Approximately 27 per cent of the families had four or more children, although the average number of children per household was three and three-tenths. Among the sixty families included in the study, 70 per cent owned their current residence while 30 per cent rented their residence. A smaller proportion of government and military personnel owned their residence than did those persons not associated with the federal government.

Only 2 of the 17 families consisting of six or more members employed paid labor to assist with the laundry tasks. Among the group as a whole, one family of every six employed a part-time maid. However, the large families reported more help from children in the family. Two of the homemakers with larger families performed all the laundry tasks alone, with no assistance from family, maid, or commercial facilities.

The size of the family had a direct bearing on the frequency of laundering. Among the 17 families with six or more members, 80 per cent of the homemakers laundered every day. Among the 43 families with fewer than six members, 33 per cent laundered every day.

The floor space of the laundry rooms ranged in area from 63 to 187 square feet. However, the space occupied by furnace and water heater or stairway reduced the usable areas from 12 to 22 square feet. In the laundry rooms of the largest area space was occupied by stored items while in houses with small laundry areas, storage was necessarily provided elsewhere in the house.

Of the homemakers interviewed, 83 per cent currently used laundry appliances which were installed in below grade or basement laundry rooms provided by the builders. Twenty-five per cent of the homemakers indicated some degree of satisfaction with the existing laundry location since they chose not to relocate the laundry room. Nearly a third of these homemakers used a basement laundry. The desire for a more convenient location of the laundry room was expressed by 73 per cent of the homemakers who used basement laundries. No suggestions were offered by 44 per cent of the homemakers for ways in which more efficient use might be made of the present laundry area and equipment. Several homemakers did not object to the location of the laundry room in the basement because there were always soiled clothes and clean unironed clothes to be processed.

Laundry chutes had been included in all houses of Design I. Laundry chutes were not included in houses of Design II and Design III.

Natural light in varying amounts was furnished to all laundry rooms. The laundries of Design I houses had only one small window at ground level, while Design II laundries on the ground level were more adequately lighted by a larger window above ground level. The one small window at each end of the Design II basements which served in nine homes as a laundry room provided little daylight. In the Design III houses, two windows were included in the laundry room at ground level, but, due to their placement, unequally lighted the room. In none of the laundry rooms was the placement of windows in direct relation to the position of the laundry equipment.

In all of the laundry rooms the source of artificial light as originally installed by the builders was in the form of one or two ceiling fixtures with exposed bulbs. No lighting changes had been made in 56 of the 60 laundry rooms and the few who expressed a wish for increased light needed it "If I ironed there." This failure to make a positive statement suggests that the homemakers were not eager to iron in their present laundries. None of the originally installed lighting was located in relation to the laundry equipment; rather, the light was located in the center of the room.

The laundry equipment found most often among the households surveyed consisted of laundry tray, washer, dryer, ironing board, and electric hand iron. Dryers were installed in 70 per cent of the homes in the study. This represents a figure three times greater than the national average reported by one of the major appliance manufacturers as being 22.9 per cent for all electrically wired homes. The presence

of a diaper-age child in the family seemed to have no relationship to the inclusion of a dryer with the laundry equipment. Equal numbers of families with younger and older children owned and used dryers, however, the length of time the dryer had been in service was not ascertained. The number of dryers appeared to be related to the design of the house. In Design I houses which provided basement laundries with stairwells leading up to the drying yards or exits some distance away, more dryers were found than in houses of the other two designs. Nearly all of the homemakers who used dryers also used either indoor or outdoor clothes lines for some of the drying. Formal provisions for drip-drying had been made in only one of the sixty laundries. Tables other than small utility tables were found with the equipment in six of the laundry rooms. Only two homemakers expressed the desire for the addition of a table to their present laundry equipment. Apparently the homemakers had not considered the convenience offered by a table in sorting, sprinkling, or other laundry procedure in the present laundry rooms. Some used the surface of the clothes dryer for these procedures but many performed these tasks outside the laundry room in a variety of locations in the houses.

The usual arrangement of the equipment in all of the laundry rooms consisted of the side-by-side placement of laundry tray and washing machine and the placement of the dryer on the opposite wall from 3 feet to 18 feet away. All of the washing machines had been installed to drain into the existing laundry tray and near the source of water, while dryers had been positioned for ease in venting near a

window or exterior wall. The resulting physical arrangement evidenced little thought for the convenience of the homemaker in using the laundry equipment.

The suggestion most frequently offered by 57 per cent of the homemakers was that the rearrangement of the equipment would increase the efficiency of the laundry room. Thirty-three per cent of the homemakers specified a change in the position of the laundry appliances to a side-by-side arrangement in order to increase efficiency in their use. An additional nine homemakers suggested rearrangement in non-specific terms. Nineteen additional suggestions involved physical changes in the laundry room itself, such as the addition of specific items of equipment and the removal of stored items. The addition of equipment to the laundry room was the subject of eight suggestions. The addition of a table was suggested for two laundry rooms and ironing equipment was suggested for two others. Only a few homemakers suggested an improvement in storage facilities even though there were instances where the supplies were kept on the floor or in makeshift arrangements.

In terms of a relocated laundry, homemaker suggestions for equipment additions were numerous, even though many of the relocated laundry rooms did not provide as much floor area as the existing laundry. While only two homemakers wished to add tables and ironing arrangements to their existing laundries, 30 mentioned tables and 21 mentioned ironing equipment as additions desired for the relocated laundry. It would seem that the homemakers' concepts of equipment which should be contained and used in the laundry room were influenced by the location of the laundry

room. When the laundry room was relocated to an area near the kitchen, work area, and family activity area, the opportunity to be near the family and work centers and in pleasant surroundings increased the homemakers' desires to perform all laundry tasks and related activities in a single area.

The homemakers using basement laundries stated that the dovetailing of laundry tasks with other household duties was not feasible. Few of these homemakers indicated any concern over the lack of dovetailing possibilities. Several defended the position by a statement that the laundry appliances were automatic and required little attention during their operation. It was noted, however, that those homemakers who chose a new location for the laundry area readily listed a number of household activities which they could dovetail with the laundry activities.

The 58 per cent of the homemakers who chose locations other than the present ones for the laundry expressed their preferences for its location and size on a scale drawing of the house in which they were living. Nearly all of the homemakers chose an area in or near the kitchen for the location of laundry equipment. The preferences thus expressed concurred with the preferences indicated in the selection of three areas desired adjacent to the laundry. The kitchen was the area rated of first importance near the laundry by 65 per cent of the homemakers. The location of the laundry adjacent to the service entrance was placed second to the kitchen in importance by 35 per cent of the homemakers. This choice was also borne out by the inclusion on the drawings of a service entrance in or near the relocated laundry room.

The ability of the homemaker to redesign the house plan during the interview for personal convenience and efficiency suggested that she had adapted herself to her present laundry arrangement.

The acceptance of personal inconvenience while performing laundry tasks was reflected by the homemakers' few suggestions for the improvement of their present laundry facilities by the addition of such equipment as bins, closets, good lighting, and planned work surfaces. This suggests a need for emphasis on laundry arrangements and work simplification applied to laundry tasks by publications intended primarily for homemakers.

The design of laundry areas and the arrangement of the equipment within them could be initially improved in speculatively-built homes if the builders themselves would devote some attention to the convenient location of the laundry area and to the placement of water pipes, drain pipes, convenience outlets, lighting fixtures, and other physical facilities within that area.

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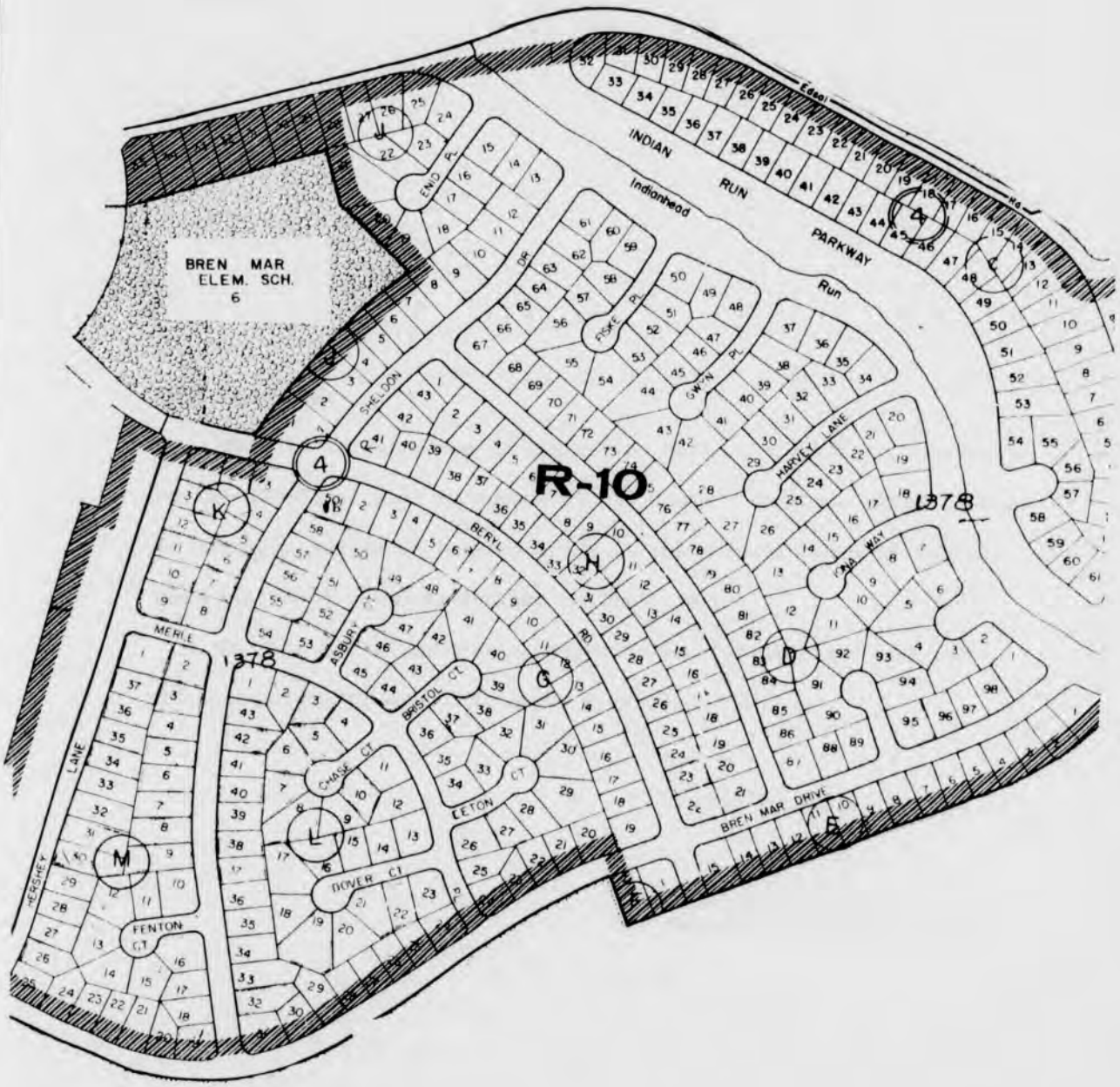
APPENDIX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CHASE CT.
DOVER CT.
FENTON CT.
LETON CT.
HARVEY LANE
BREN MAR DRIVE
HERSHEY LANE
END PL.
FISKE PL.
GWEN PL.
RD
DR
WAY

THE WOMAN'S COLLEGE
OF THE UNIVERSITY OF NORTH CAROLINA
GREENSBORO

SCHOOL OF HOME ECONOMICS

Dear Homemaker:

This is to introduce to you Peyton Eddins, a graduate student in the School of Home Economics at the Woman's College. Mrs. Eddins is making a survey of laundry areas in split level homes to fulfill the thesis requirements for her master's degree.

We join her in expressing appreciation for the time and help you are giving to make this study possible.

Cordially yours,

Madeleine B. Street
Professor of Home Economics

INTERVIEW SCHEDULE

1. Name_____ Address_____

2. House design No._____ Rent_____ Own_____

3. House type: VG_____ G_____ AV_____ F_____ P_____

4. Dwelling area: A av_____ Av_____ V av_____

5. Number in household_____ Adults_____ Children_____ Ages_____

6. Is there a child under two and a half wearing diapers? Yes___ No___

7. Is the mother gainfully employed outside the home? Yes___ No___

8. Is the home laundry equipped with an automatic washer? Yes___ No___

9. How long have you lived in your present home?

Less than three months	_____	More than two years	_____
Six months to a year	_____	More than three years	_____
More than a year	_____	Life of house	_____

10. Of the following four floor plans, which one would you most prefer as a permanent residence?

Ranch style	_____	Two story	_____
Story and a half	_____	Split level	_____
Ranch style with basement	_____		

11. State the main reason for this choice_____

_____

_____

12. Check those laundry tasks performed either outside the home or within the home by someone other than the homemaker.

	Outside	Maid	Husband	Child	Other
LINENS					
WHITE SHIRTS					
DIAPERS					
HAND WASHABLES					
GEN'L. WASHING					
IRONING					

13. During what part of the day do you wash and dry the clothes?
Morning_____Afternoon_____Evening_____

14. How many times a week do you wash the family laundry?
_____1_____2_____3_____4_____5_____6_____Every day

15. Do you have a particular laundry day?__M__T__W__Th__F__S__Sn

16. Are there any household duties unrelated to laundry which are performed in the present laundry room? Yes____No____

DUTY	REASON PERFORMED THERE
1.	
2.	

17. Is your laundry equipment located in the space allotted for it by the builder of your house? Yes____No____

Former location_____

Reason moved_____

At your request_____Yes____No____

18. Does the lighting in the laundry room provide sufficient illumination for comfortable performance of tasks? Yes____No____

19. Are there any laundry tasks for which you would like improved or added lighting? Yes____No____

TASK	LIGHT ADDITION OR IMPROVEMENT
1.	
2.	

20. What is the source of the light?

_____windows in_____directions

_____bare bulbs in lampholder_____watts

21. Is the space provided for laundry activities in your house adequate for your needs? Yes____No____

22. Would you prefer a larger area for laundry activities? Yes___No___
If Yes, complete the following:

Space desired L x W area	Furnishings or equipment use of space	Function

23. Do you feel that the space presently allotted to laundry activities could be more efficiently used? Yes___No___

If Yes, how?_____

_____

_____

24. Does the location of your laundry room in relation to other rooms permit the convenient dovetailing of laundry tasks with other household duties? Yes___No___

25. Which of your household activities seem to combine most easily with laundry tasks?

1. _____
2. _____
3. _____

26. Do you feel that your laundry area would be more convenient if in another location within your home? Yes___No___

27. On the floor plan drawing of your house, designate the most convenient location for your laundry area and indicate the size, adjacent rooms.

28. Which additional household duties could be dovetailed or performed simultaneously with the laundry activities because of the relocation of the laundry?

1. _____
2. _____

29. To which three areas or rooms of the house do you feel the laundry should be adjacent, in order of importance?

Service entrance	_____	Full bath	_____	Bedrooms	_____
Recreation room	_____	Half bath	_____	Basement	_____
Storage-workroom	_____	Kitchen	_____	Family room	_____
Garage or carport	_____				

30. Husband's occupation:

Professional	1	2	3				
Prop. and Mgr.	1	2	3	4	5	6	
Business men	1	2	3				
Clerks, etc.	1	2	3	4	5		
Manual			3	4	5	6	7
Prot. and Serv.				4	5	6	7

31. Education of Husband:

Professional or graduate school	_____	2 yr. or more college	_____
College graduate	_____	1-3 yr. high school	_____
High school graduate	_____		

32. Source of income:

Inherited wealth	_____	Salary	_____
Earned wealth	_____	Wages	_____
Profits and fees	_____		

	Have	Plan to Add	- - - STORED - - -		- - - USED - - -	
			Laundry	Elsewhere	Laundry	Elsewhere
Clothes Chute						
Bin or Hamper						
Sorting Table						
Laundry Tray						
Supply Storage						
Washing Machine						
Clothes Dryer						
Clothes Lines						
Drip Dry Space						
Ironer						
Ironing Board						
Hand Iron						
Sewing Machine						
Storage for Unironed Items						
Soap						
Detergent						
Bleach						

	- - - IN LAUNDRY - - -		- - - NOT IN LAUNDRY BECAUSE - - -			
	With Ease	With Difficulty	Prefer It Elsewhere	Laundry Too Small	Location Undesirable	Actual Location
Storage of Soiled Laundry						
Sorting						
Pre-treating						
Soaking						
Washing (auto)						
Mech. Drying						
Line Drying						
Folding						
Sprinkling						
Ironing						
Storing Unironed						
Storing Laundry Supplies						
Mending						
Laundering Hand Washables						
Drip Drying						

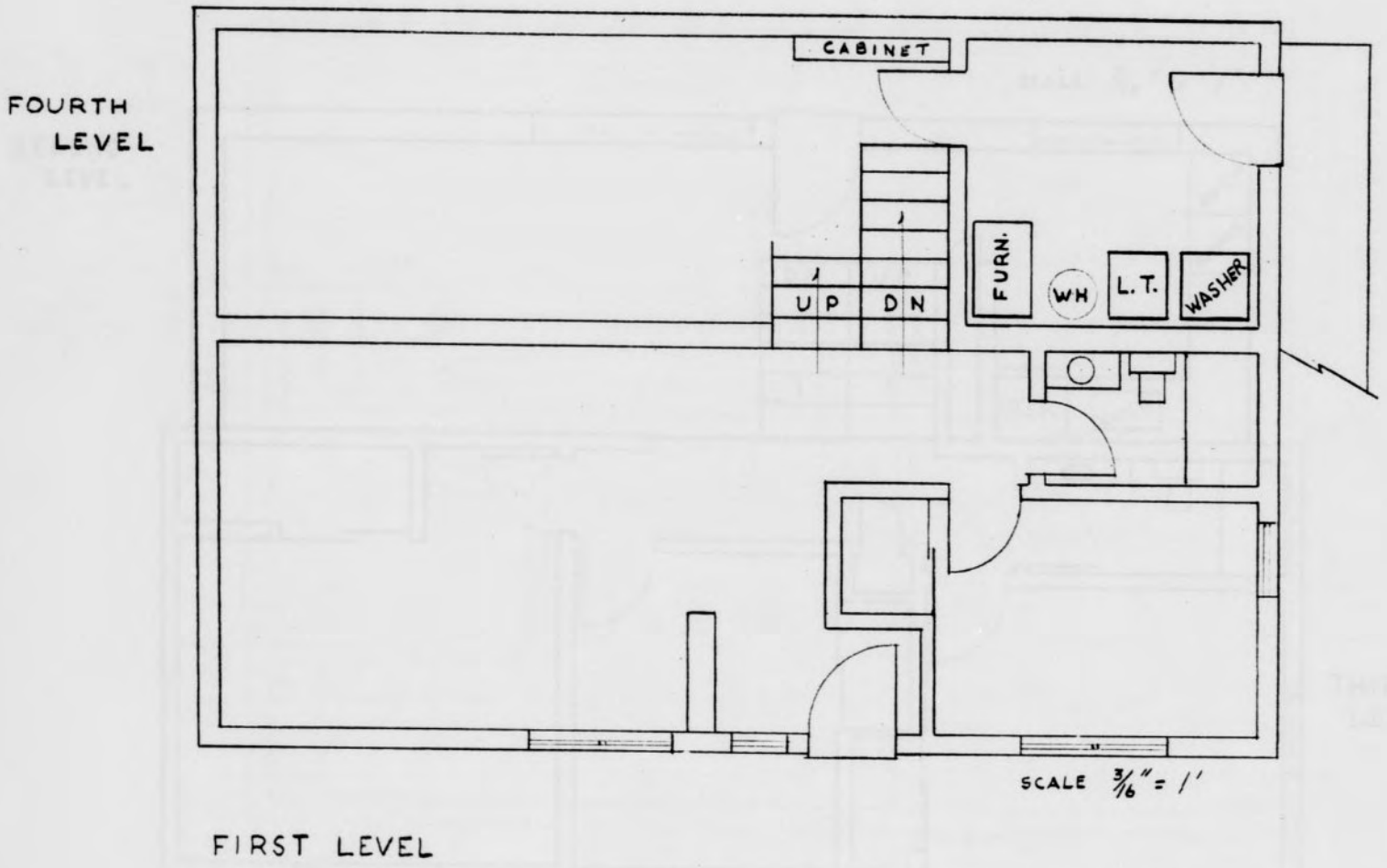

FIGURE 23

FIRST AND FOURTH LEVELS OF DESIGN I HOUSE

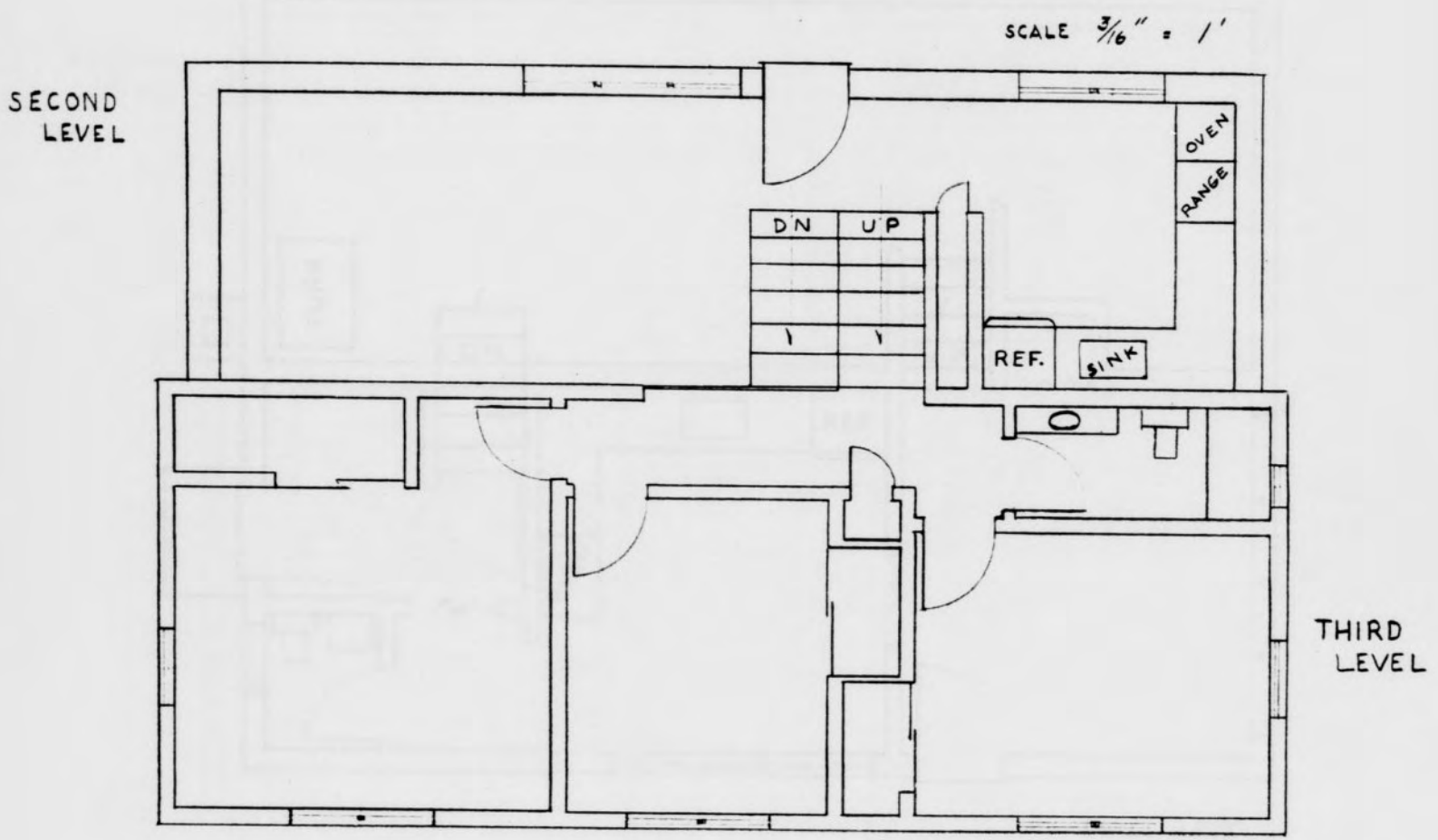

FIGURE 24

SECOND AND THIRD LEVELS OF DESIGN I HOUSE

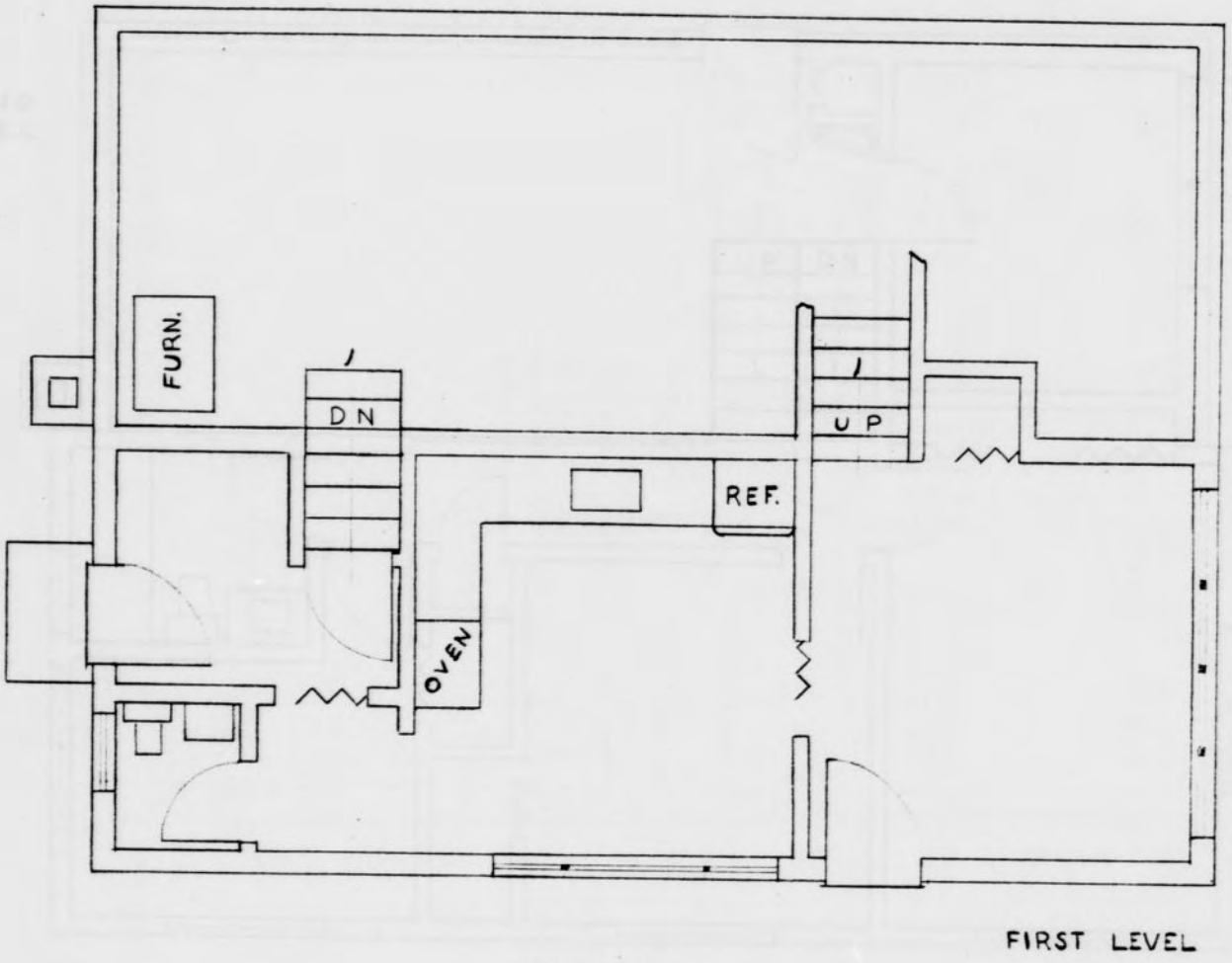

FIGURE 25

FIRST LEVEL AND BASEMENT OF DESIGN II HOUSE

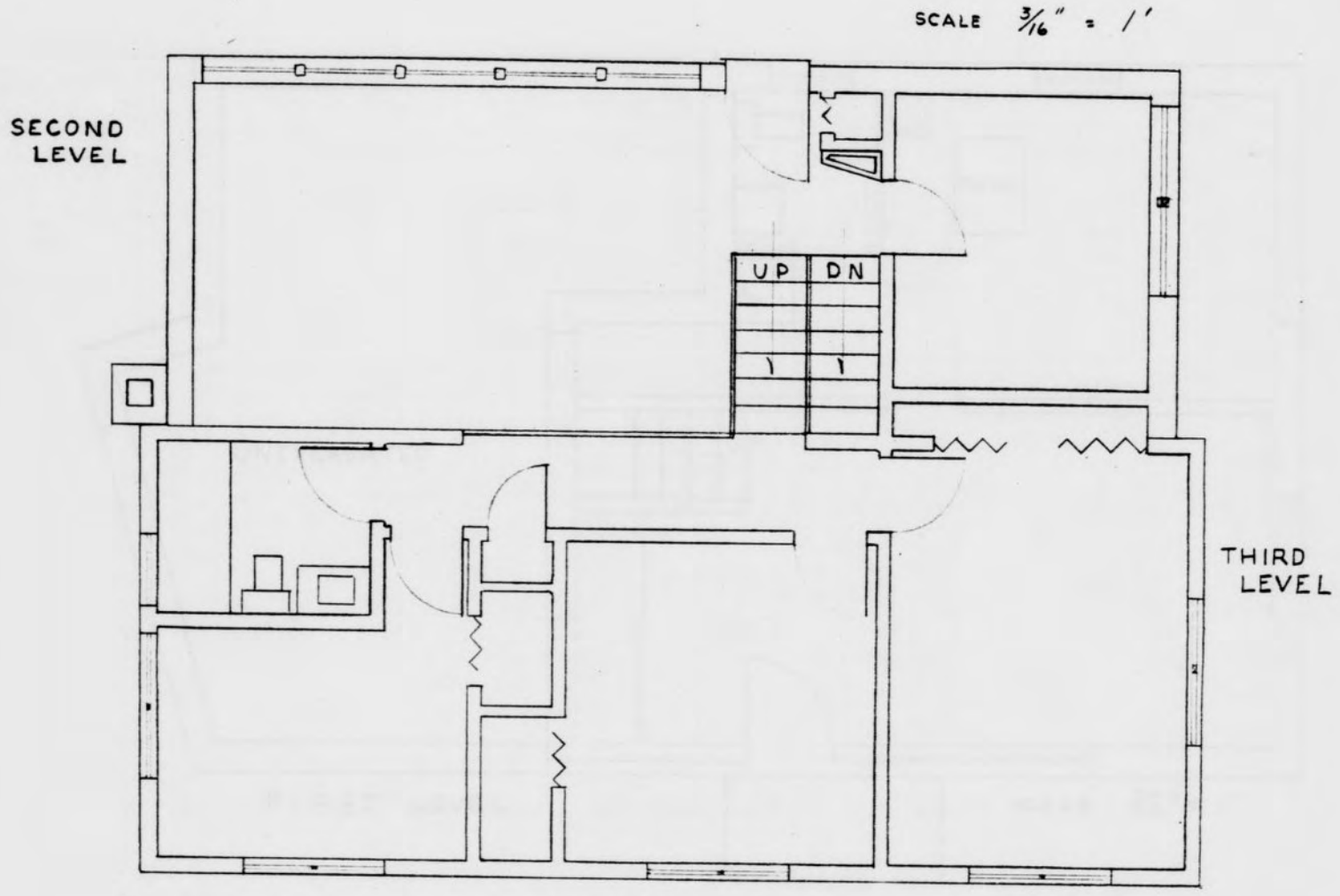

FIGURE 26

SECOND AND THIRD LEVELS OF DESIGN II HOUSE

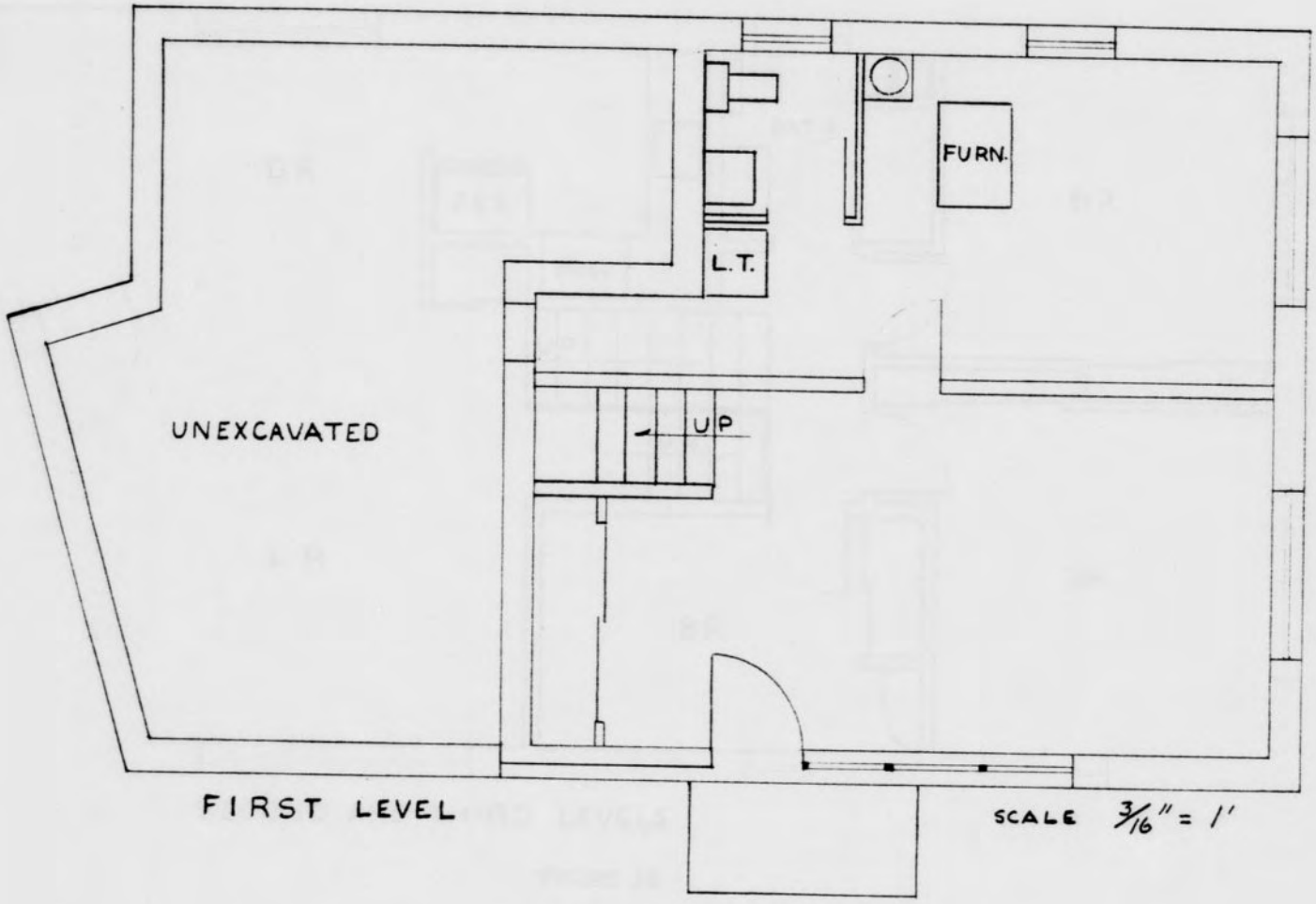

FIGURE 27

FIRST LEVEL OF DESIGN III HOUSE

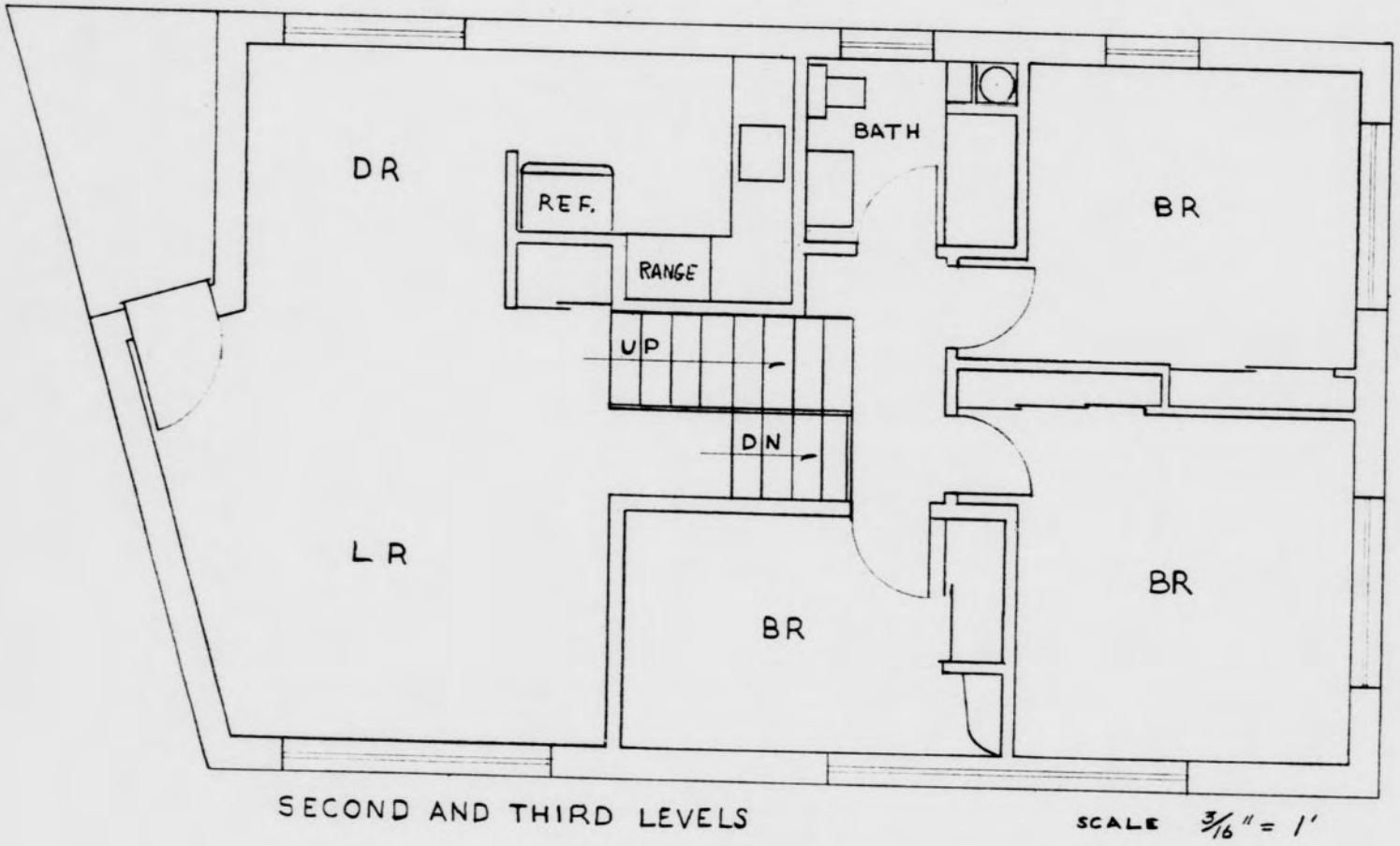

FIGURE 28

SECOND AND THIRD LEVELS OF DESIGN III HOUSE