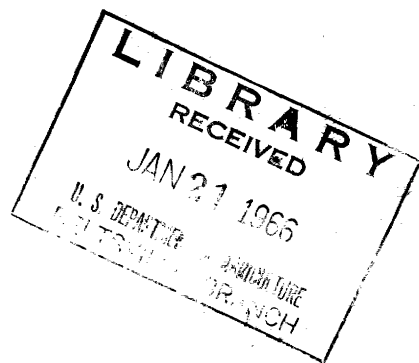


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MULTI-UNIT RETIREMENT HOUSING FOR RURAL AREAS

*A Guide to Design Considerations
for Architects, Engineers, and Builders*



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MULTI-UNIT RETIREMENT HOUSING FOR RURAL AREAS

A Guide to Design Considerations for Architects, Engineers, and Builders

by

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Agricultural Engineering Research Division,
Agricultural Research Service

This information is presented as a guide to design considerations for architects, engineers, and builders in the field of multi-unit retirement housing in rural areas. Plans are given for one- and two-bedroom units that can be combined into multi-unit housing. In addition, the basic space requirements of the various rooms are shown, so that other designs can be developed to meet the needs of the planners.

How does housing for older people, or senior citizens, differ from housing for younger people? First, the older family no longer needs as many rooms or activity areas as it once did. Also, easy maintenance and safety assume greater importance. In addition, older people have more leisure time but are less able to get about, and some are often confined to their homes for long periods of time. For these reasons, their homes—both inside and out—should be as convenient and attractive as possible. The settings should be planned so that the residents can at least observe, if not participate in, daily activities in their surroundings.

Each design must reflect the philosophy that provision for shelter alone is not sufficient, but that consideration has been given to creating a healthful, safe, and stimulating environment, without overemphasizing features that remind the occupant of his age and infirmities. All of this must be included in retirement housing; yet the cost must be kept low so that the rental or purchase price charged will fit the limited budgets of retirees.

The site selected for retirement housing should, if possible, be near churches, shops, and medical and recreational facilities. This is important because the degree of independence that older people can maintain depends largely on the ease with which they can get to these community facilities.

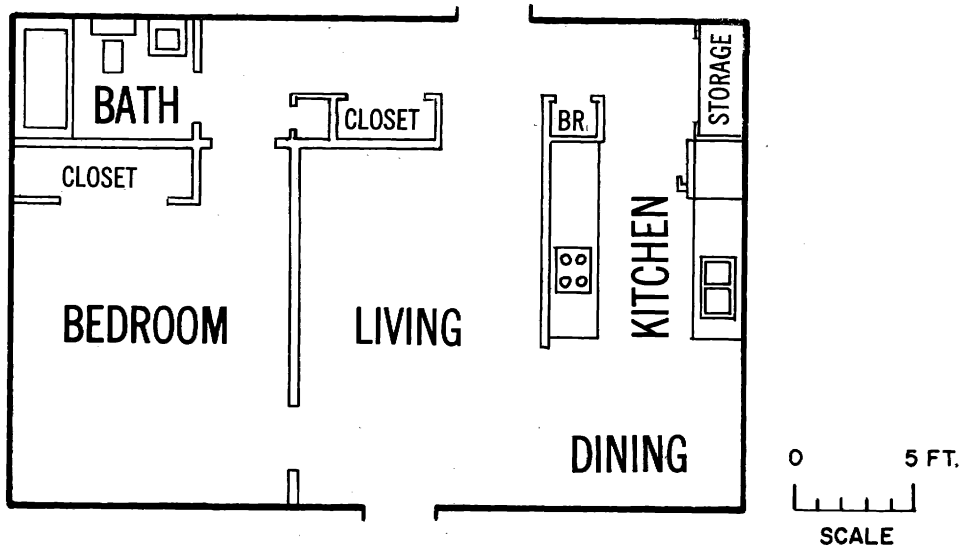
The following sketches, drawn to scale, are examples of suggested types of individual units.¹ Exterior wall thickness and location of windows have not been shown on all plans. Window size and location will vary, depending on how the individual units are arranged for the multi-unit developments. Exterior wall thickness will vary with material used and method of construction.

¹No working drawings are available.

ONE-BEDROOM UNIT

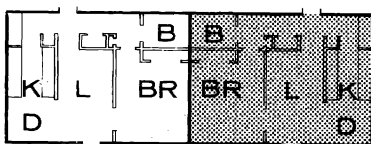
PLAN A

600 square feet



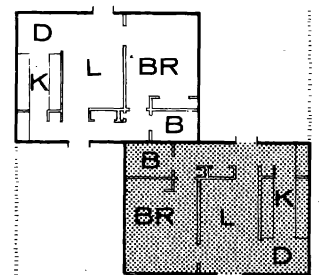
The kitchen in this plan could be located on the common wall between units, to economize on plumbing. Between-counter clearance of 3 feet is shown, but a clearance of 4½ feet is desirable. Access to the kitchen, although not directly across from the apartment entrance, is convenient. The dining area is on an outside wall so it can have natural light and perhaps a view. The living room has enough wall space for attractive

arrangement of furniture. One feature of this plan that might appeal to many is the door between the living room and bedroom. The bedroom closet is conveniently located for daytime use. The bedroom will accommodate a double bed, but for twin beds the room would need to be 14 feet 2 inches long (rather than 12 feet, as shown) to meet the recommended standards for space between beds and between beds and walls.

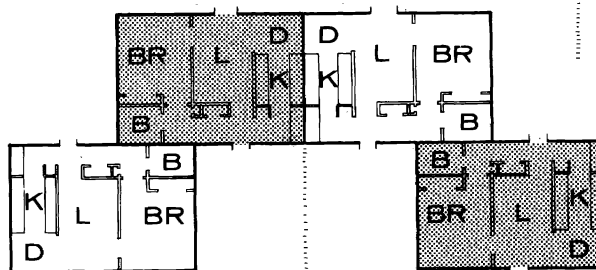


2 Units

Suggested Groupings for Multi-Unit Development



2 Units

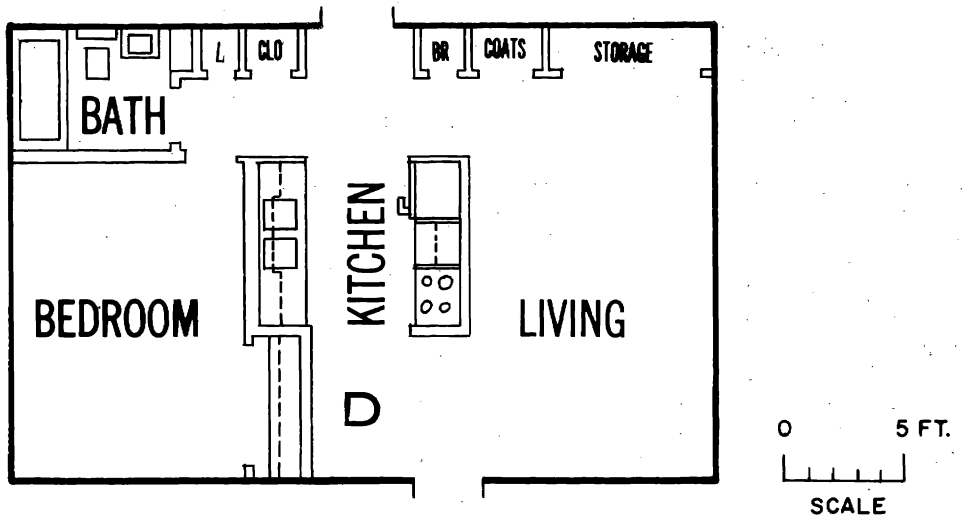


4 Units

ONE-BEDROOM UNIT

PLAN B

552 square feet

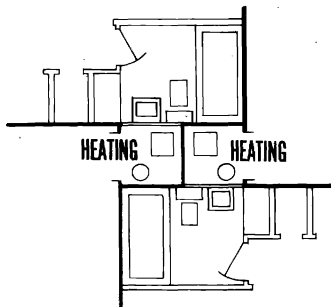


In this plan, the kitchen is located directly opposite one of the entrances. The clearance between facing equipment and counters should be increased to 4½ feet if the unit is planned for two persons.

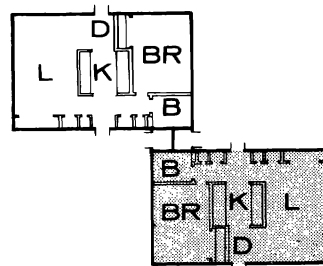
The dining area (D) is convenient to both the kitchen and living room. If additional space is needed for company meals, the table can be extended into the living room. The

dining area is on an outside wall so it could have a window.

Access to the bathroom from all areas of the unit is easy. In the bedroom, the dresser could be located on the bathroom wall, where it would be convenient for daytime use. The room is large enough to accommodate a double bed with the recommended amount of space around it.



Suggested Location for Heating Facilities Between Units

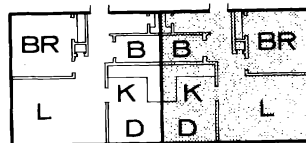
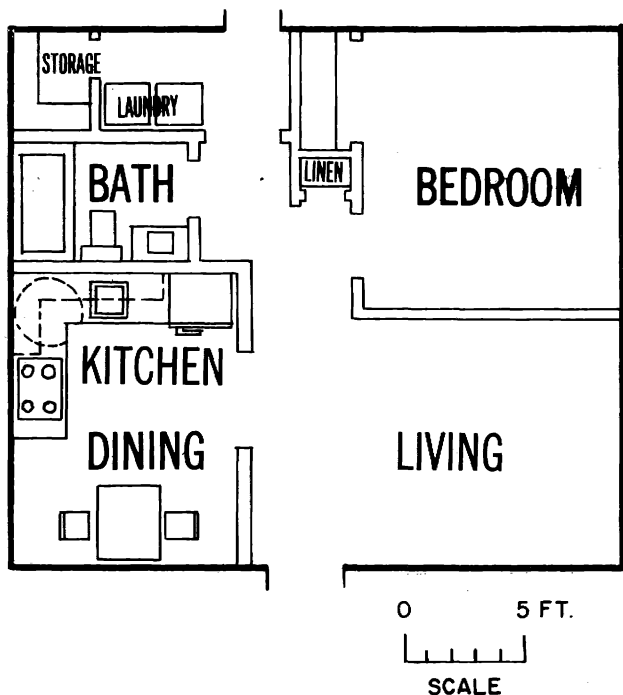


Suggested Grouping of Plan B for Multi-Unit Development

ONE-BEDROOM UNITS

PLAN C

440 square feet

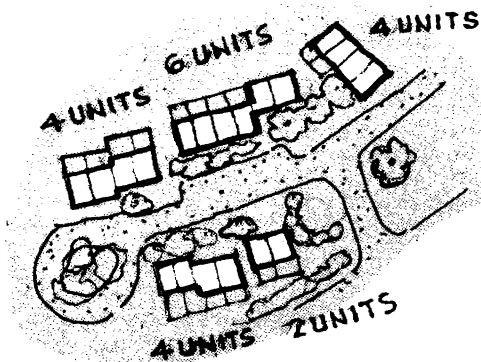
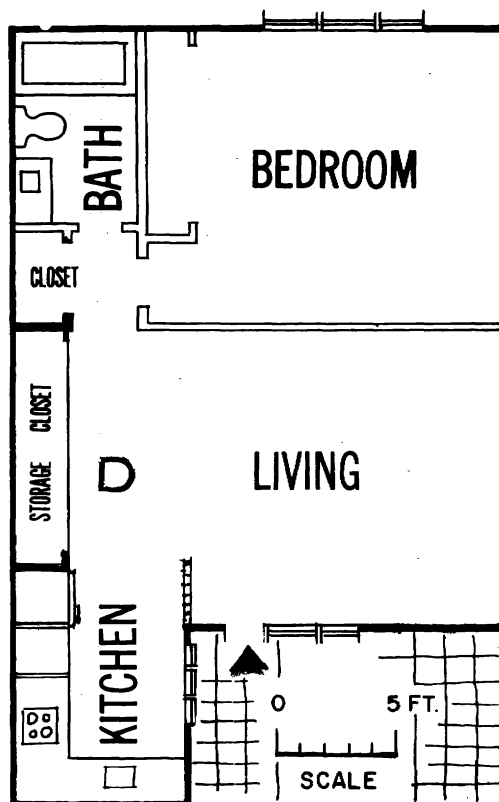


Suggested Grouping for Two Units of Plan C

The kitchen-dining room in this plan is separated from the living room. The location of the kitchen, bath, and laundry places the plumbing together and allows short runs of piping. The laundry-storage room is convenient at the rear door.

PLAN D

550 square feet



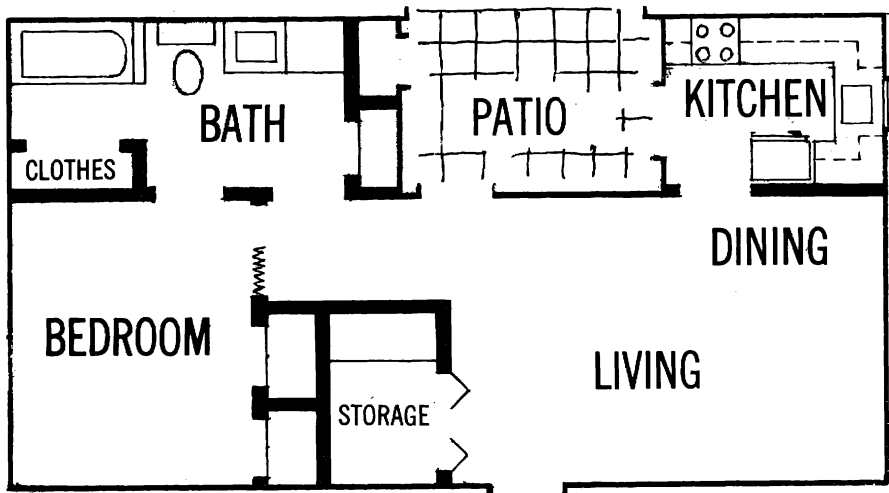
Suggested Garden-Type Development

A one-bedroom unit with a compact, well-lighted kitchen and the dining area nearby in the living area. One wall of the living area is taken over by a storage wall, which could be made attractive by sliding panel walls. The patio could be walled in to make it an outdoor private living or dining area in good weather. The bedroom could have sliding glass doors opening onto a patio garden or just for emergency use.

ONE-BEDROOM UNIT

PLAN E

684 square feet



0 5 FT.
SCALE

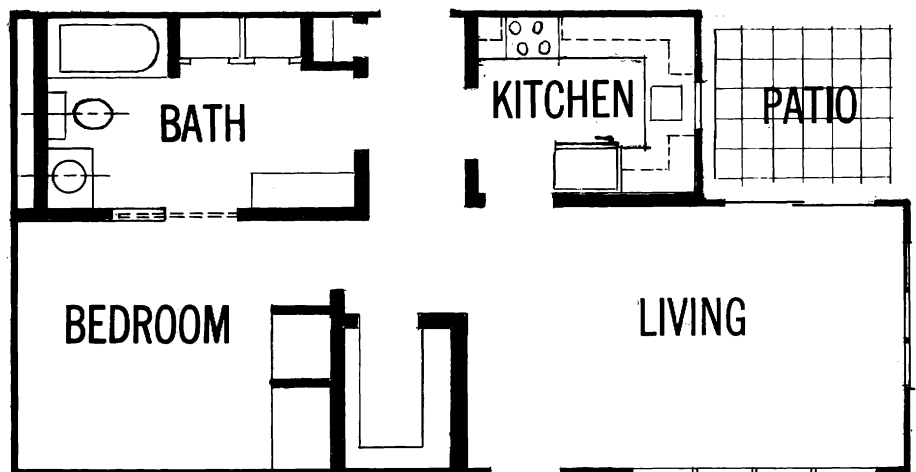
In this plan, the patio is so located that it serves as a covered entrance as well as a protected outdoor living area, easily accessible from all rooms.

The bathroom is large enough to serve as a dressing room also. Storage for some

clothing has been planned here. There is easy access from the living room and bedroom—an ideal arrangement for a wheelchair occupant. The large walk-in closet off the living room will accommodate bulk storage such as trunks, luggage, and card tables.

PLAN F

630 square feet



0 5 FT.
SCALE

This plan is similar to Plan E, except that the patio and kitchen are reversed. The opening to the bathroom directly from the bedroom could be kept closed when the bedroom is not occupied. The large walk-in closet is especially useful for large articles. With a sliding glass door, the patio becomes

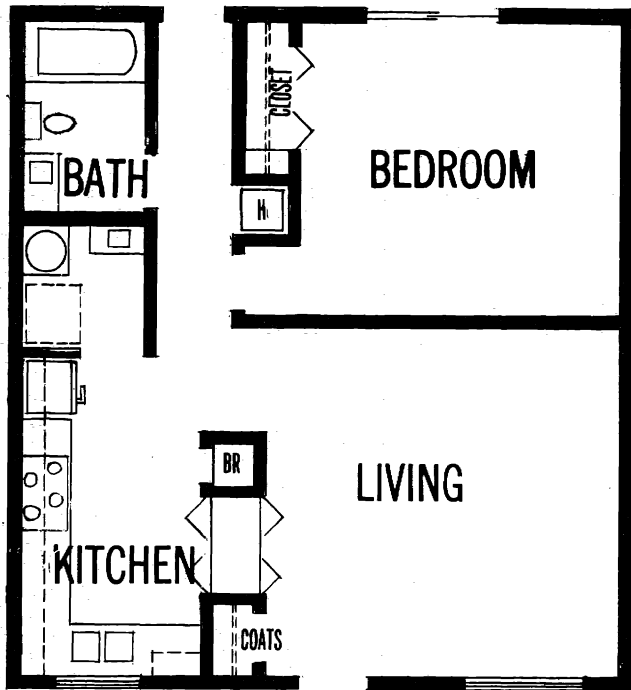
a warm-weather extension of the living room.

The location of the bathroom fixtures allows room to maneuver a wheelchair. Storage and dressing room are also provided, leaving the bedroom free as a sleeping area. The kitchen is near the rear door, convenient for delivery of groceries and household supplies.

ONE-BEDROOM UNIT

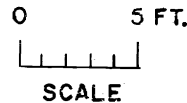
PLAN G

728 square feet



This unit with a roomy U-shaped kitchen with pass-through allows using a portion of the living room for dining. A small room adjacent to the kitchen makes a nice laundry area with sink, water heater, and space for automatic washer. The laundry can be taken directly outdoors via the rear entrance. The bedroom is shown with sliding doors, making a pleasant opening onto a patio or garden.

If possible, it is good to plan both a rear and a front entrance for convenience and safety.



TWO-BEDROOM UNIT

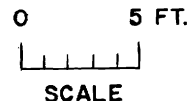
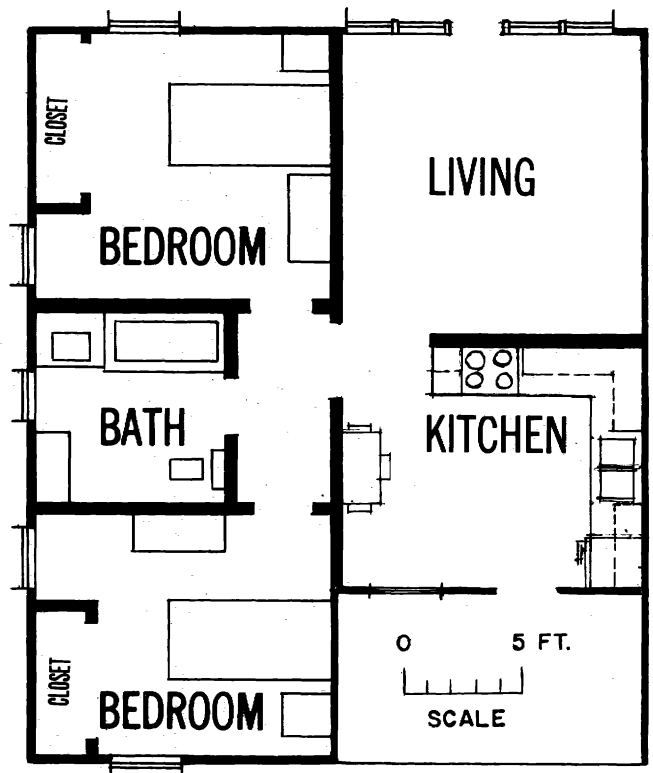
PLAN H

682 square feet

Often it is necessary to have a person living nearby to give assistance to an older person; this plan allows for such an arrangement.

The two-bedroom unit allows a husband and wife or two elderly ladies to live together with a certain amount of independence and yet be helpful to each other.

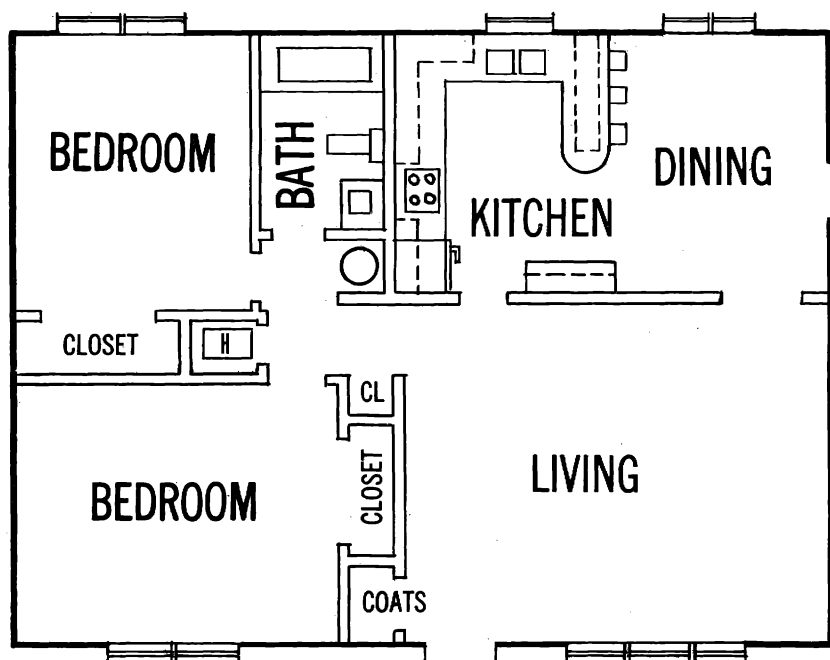
A high wall of ornamental masonry block or brick, or even a wood fence, helps to give the desired privacy in the patio off the kitchen.



TWO-BEDROOM UNITS

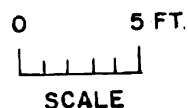
PLAN I

850 square feet



This rather spacious unit with a conveniently arranged kitchen and separate dining room should appeal to the retired couple who wish to continue the tradition of "family dinners" for children and grandchildren. Also, it could be used for working on a hobby near the kitchen and the clutter could be closed off from view from the living room.

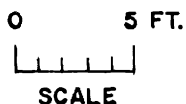
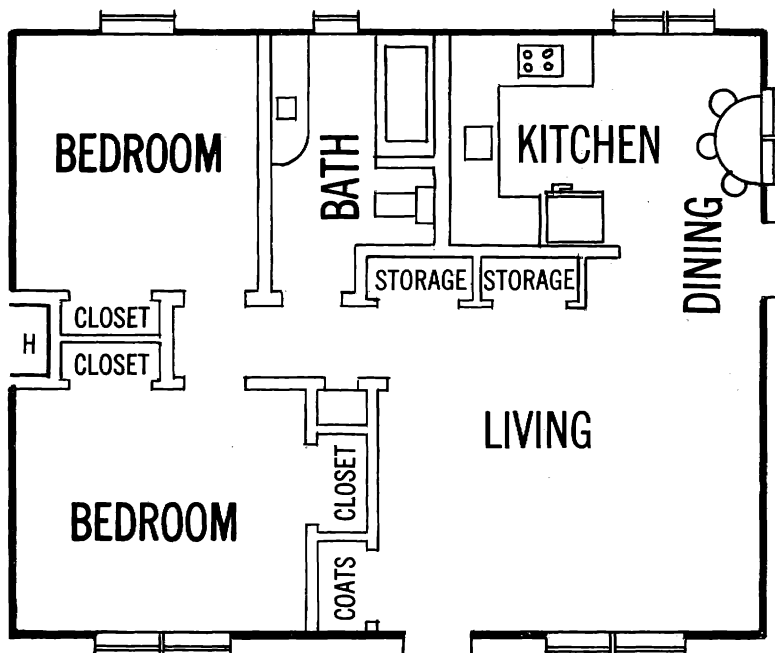
The extra bedroom will no doubt have many uses as a study or guest room. A two-bedroom unit also lends itself well to needs of two women living together.



PLAN J

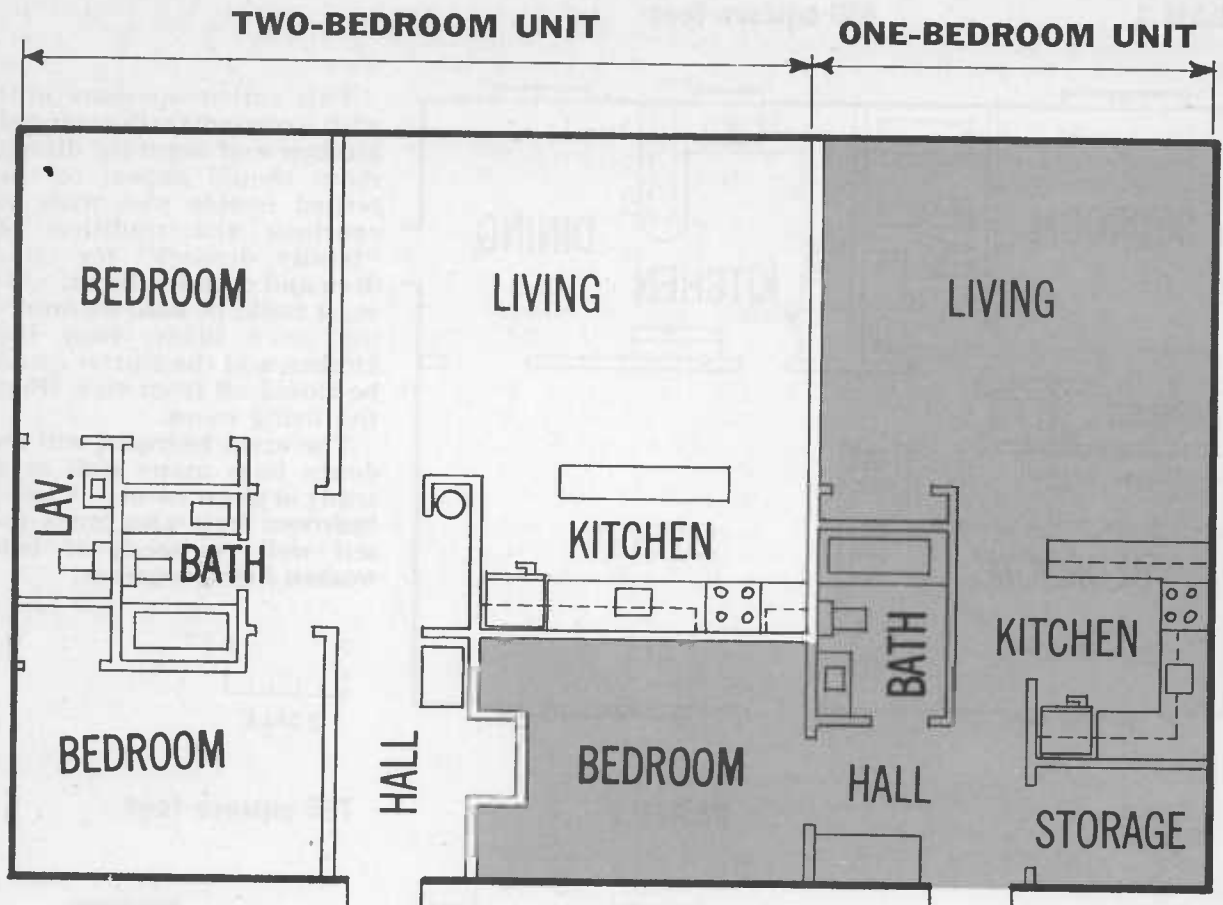
775 square feet

Although the area of this two-bedroom unit is only 775 square feet, the rooms are of comfortable size. The kitchen is compact but conveniently arranged. The dining area is large enough to accommodate up to six people comfortably when entertaining. Storage is particularly good in this plan. In addition to the bedroom and coat closets, there is a large general storage area so necessary for storage of bulk items like trunks and other luggage, extra bedding, and hobby materials.

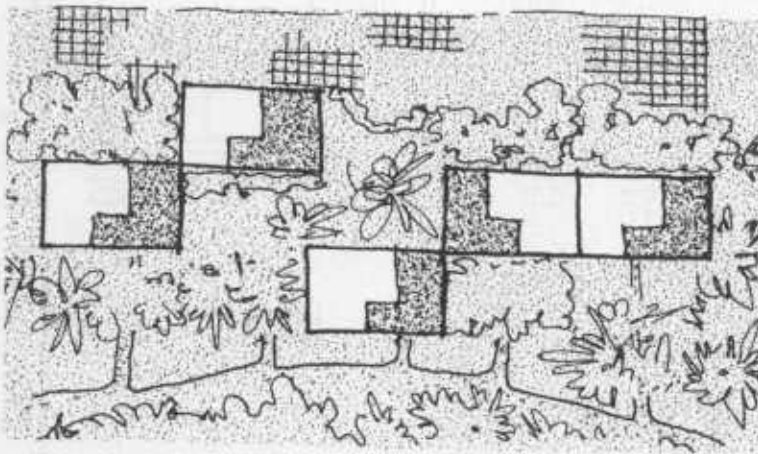


DOUBLE UNIT

1,520 square feet



5 FT.
SCALE



Suggested Grouping of Units

A double unit, one with two bedrooms and the other with one bedroom, is an economical way of providing versatile living space. Several can be effectively grouped together, as illustrated, to provide a view of the outdoors for each unit as well as some degree of privacy.

The open plan between the living room and kitchen gives a feeling of spaciousness. Bedrooms are well separated from the living room—a desirable feature particularly if there are two occupants. Provision has been made for storage of bulky possessions such as extra bedding, mementos, hobby materials, and luggage.

The bath and a half in the two-bedroom unit would be particularly appreciated by households consisting of two women or a brother and a sister living together.

BATHROOMS

Bathrooms for older people should be ample in size and planned for safety. Many of the elderly need assistance in the bathroom, so the room should be large enough to permit one person to help another. For a person in a wheelchair, the bathroom should be large enough that he can maneuver the chair, and the doorway must be 3 feet wide.

The location of the bathroom in relation to the bedroom, as well as other rooms of the house, must be given special consideration. If possible, the bathroom should be accessible without having to go around furniture or through other rooms.

In some multi-unit combinations, the plumbing fixtures will be located on an outside wall. In warmer climates, this will present no problems, but in the freezing zones the piping in the exterior wall should be well insulated from the cold. An exterior access panel could be used to check this plumbing from the outside.

Bathrooms without windows are acceptable and have some advantages for the older person.

Ventilation is easily controlled by a switch. In a bathroom with an outside wall and window, avoid—if possible—placing the bathtub under the window because it is difficult to open the window and to clean and curtain it. But if that is the only possible location, then select a crank-type window.

A lavatory installed at a height of 33 inches is more comfortable to use than one installed at the customary 31-inch height. For a person in a wheelchair, however, the 31-inch height is better.

The shower and tub faucets should be placed so that a person can reach them easily both before and after stepping into the tub.

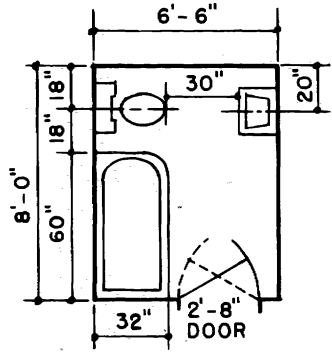
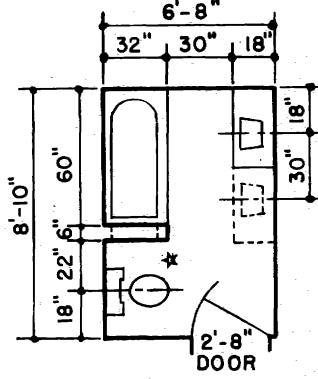
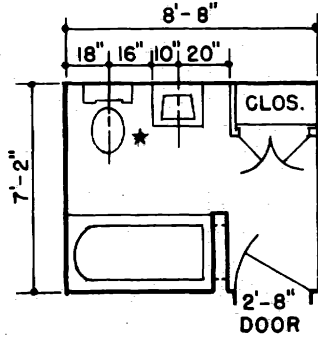
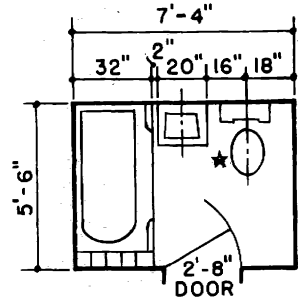
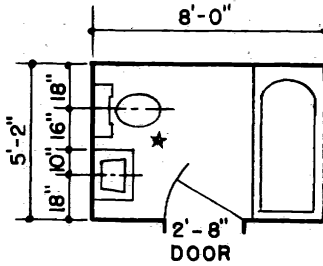
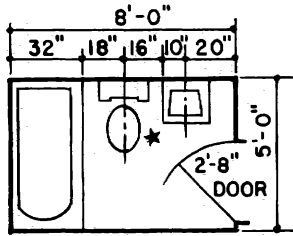
All grab bars and hand holds should be of noncorrosive material, $\frac{3}{4}$ inch to 1 inch in diameter, and mounted to withstand a pull of at least 500 pounds.

Towel racks and rods should also be strong and securely mounted because older people sometimes use them as grab bars to steady themselves. Glass towel rods should not be used.

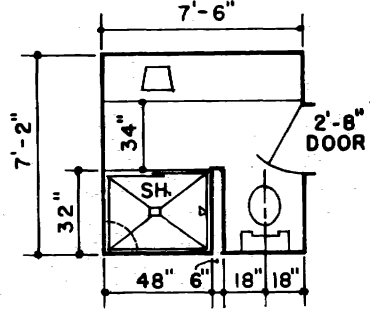
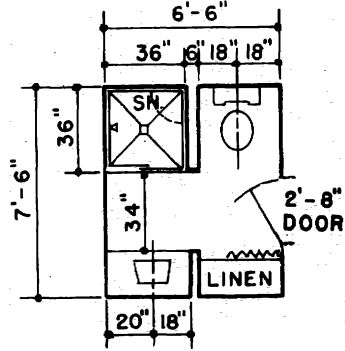
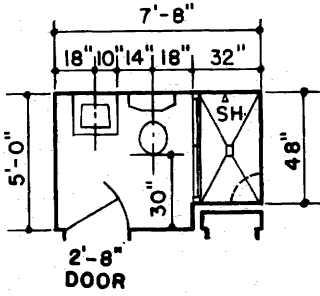
BATHROOM ARRANGEMENTS

Following are suggested arrangements for bathrooms with tubs and shower stalls. The star indicates where space has been provided for a helper.

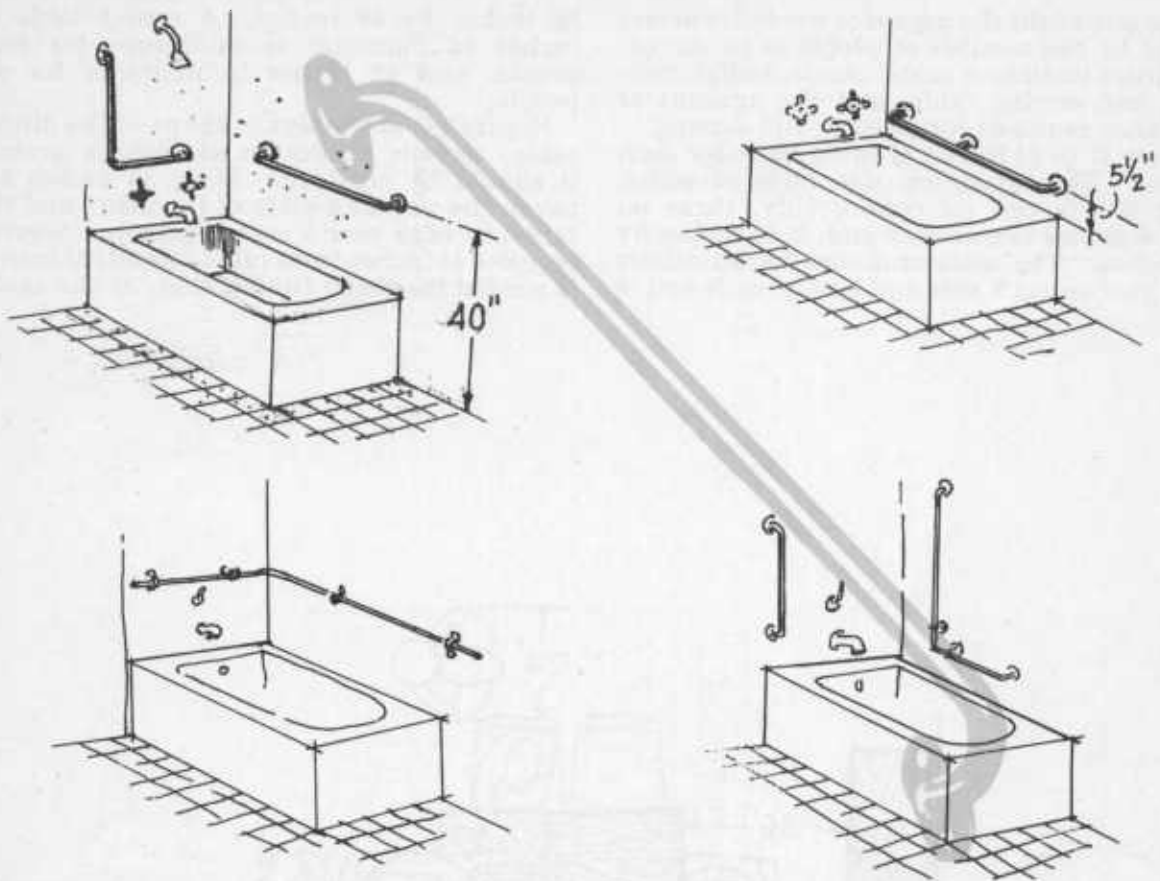
BATHROOMS WITH TUBS



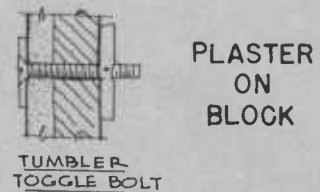
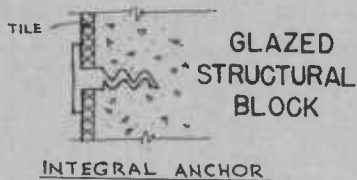
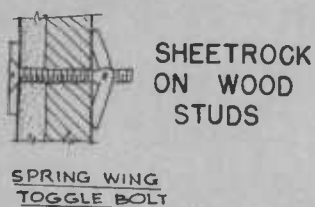
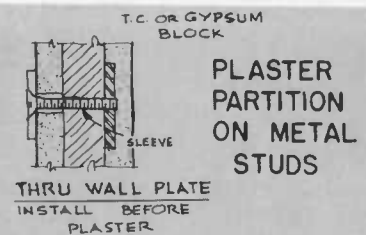
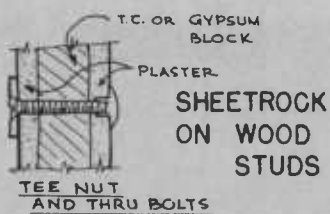
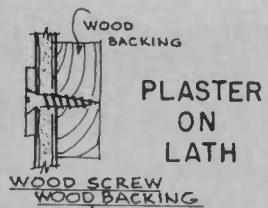
BATHROOMS WITH SHOWERS



Suggested Locations of Grab Bars at the Tub



Grab- and Towel-Bar Fastening Devices



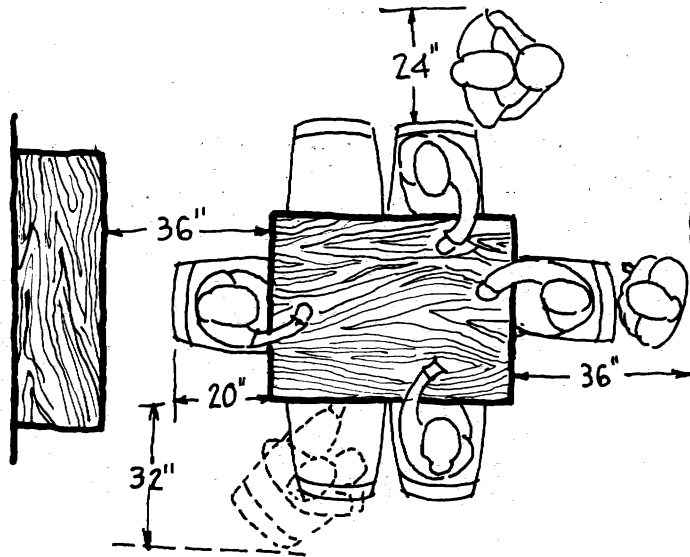
DINING AREAS

The size of the dining space needed is determined by the number of people to be served; furniture including table, chairs, buffet, cabinet, and serving table; and the amount of clearance required for passage and serving.

Allow 21 to 24 inches of table space for each person. The minimum size table at which eight adults can sit comfortably, three on each side and one at each end, is 40 inches by 72 inches. The minimum size for six adults with two on each side and one at each end is

36 inches by 60 inches. A round table 42 inches in diameter is minimum for four people, and 48 inches in diameter for six people.

Regardless of the size or shape of the dining table, certain minimum clearances around it should be provided. Allow 36 inches between the wall or a piece of furniture and the table, to edge past a seated person. Serving requires 44 inches from table to wall; 32 inches is needed for rising from a chair at the table.



KITCHENS

The following illustrations are shown as a guide to requirements in kitchen design for the elderly.

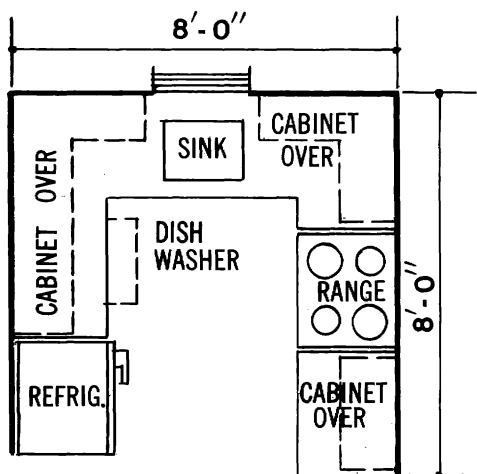
From these sketches, select or adapt an arrangement that will fit into the overall scheme of the design using clearances and counter widths as recommended on the next page, as a guide.

In locating the kitchen in the plan, provide easy access to the outside and direct access to the dining space, which could be a portion of the living room. In some plans, space can be provided in the kitchens for dining.

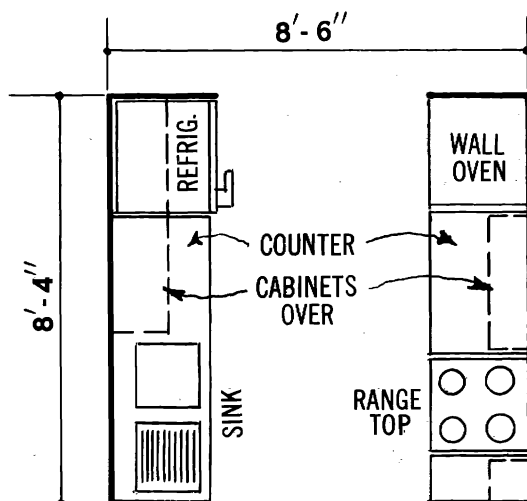
The recommended amount of counter space and storage area was considered in developing these designs on this page.

Clearance between facing equipment and counters should be a minimum of 3 feet for one person. To permit two people to work and pass each other, the between-counter clearance should be 4½ feet.

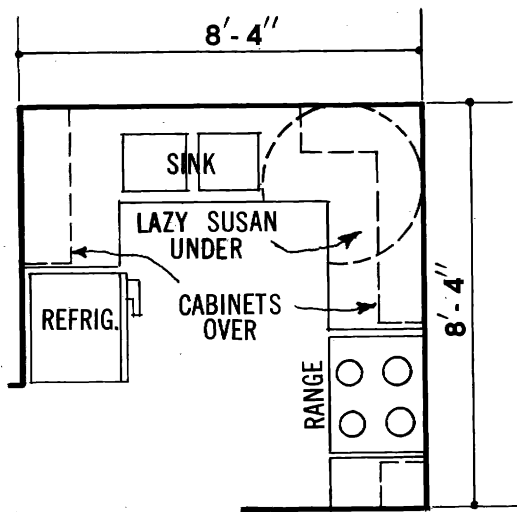
Do not plan extremely compact kitchens for older people; they desire and need ample work space. If the kitchen is too compact, storage space is limited and much of it is either too high or too low to be reached comfortably. Shelves should be no higher than 68 inches from the floor, and no lower than 12 inches. Too little counter space leads to crowded work surfaces, which in turn can create hazardous working conditions.



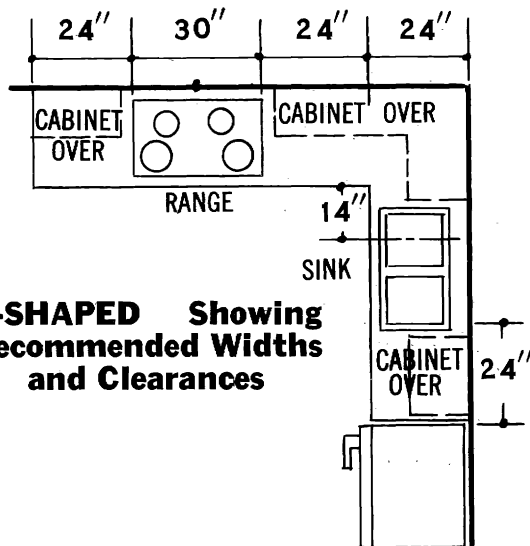
U-SHAPED (Minimum)



PARALLEL WALL With Wall Oven



U-SHAPED With Lazy Susan (Revolving) Cabinet



L-SHAPED Showing Recommended Widths and Clearances

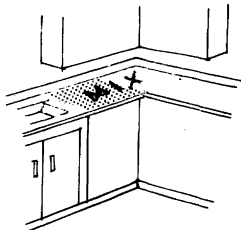
KITCHENS—Continued

CLEARANCES AND COUNTER WIDTHS

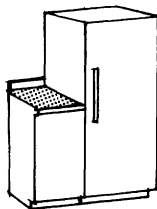
The following clearances and widths of counters can be used in developing kitchen arrangements to fit individual plans.

Allow at least 4 feet between facing equipment; 4 feet 6 inches would be better.

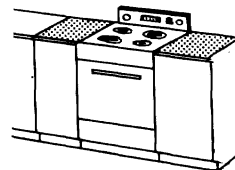
Storage of materials, utensils, etc. should be near the area where they are usually used—that is, the mix center, sink, range, or serve center.



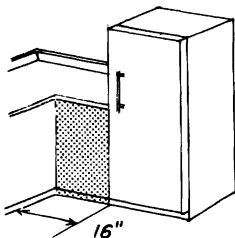
When the mix center extends around the corner, one arm of the counter should be 24 to 36 inches wide.



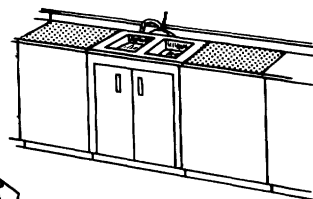
Provide a counter at the latch side of the refrigerator for foods being placed in or taken from it.



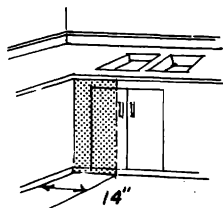
Provide counters 12 to 24 inches wide at both sides of the surface cooking area.



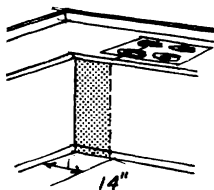
Provide a counter 18 to 36 inches wide to the left and 24 to 36 inches to the right of the sink. If a dishwasher is desired, allow 24 inches for it either to the left or to the right of the sink. Provide elsewhere for base storage lost.



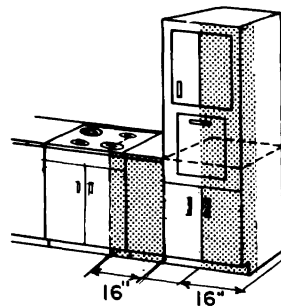
Provide at least 16 inches of clearance between the latch side of the refrigerator and the turn of the counter—the space needed to stand when opening the refrigerator.



Provide at least 14 inches of clearance between the center of the sink bowl and the turn of the counter for standing.



Provide at least 14 inches of clearance between the center of the front unit or burner and the turn of the counter for standing.

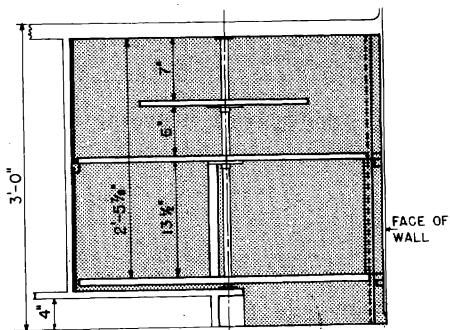


Provide at least 16 inches of clearance between the center of the front unit or burner and a wall or high equipment and between the center front of the wall oven and the adjoining wall.

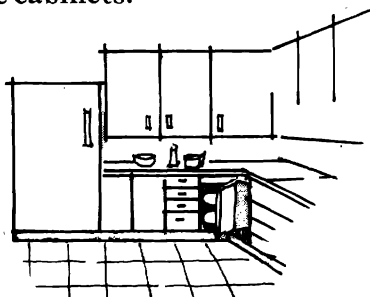
KITCHENS—Continued

It is particularly important in small kitchens not to waste storage space. Special planning is needed to make full use of the often wasted corner space in the base cabinets.

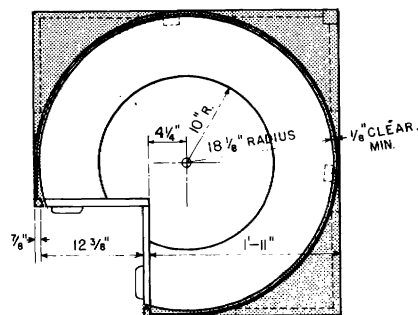
One of the best means to get the maximum use of corner space is to install lazy susan, or revolving, cabinets.



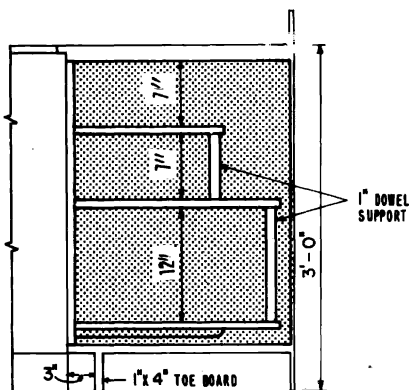
SECTION



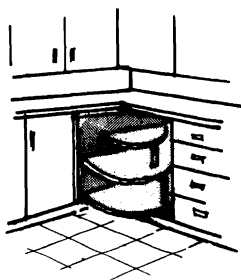
Revolving Base Cabinet



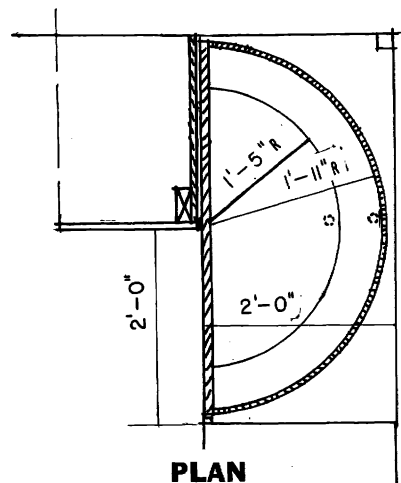
PLAN



SECTION

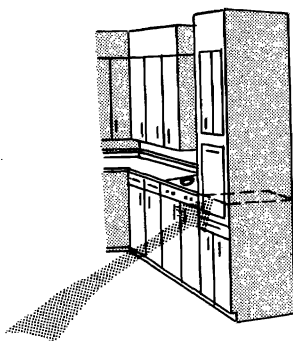


**Half-Circle
Revolving Shelves**



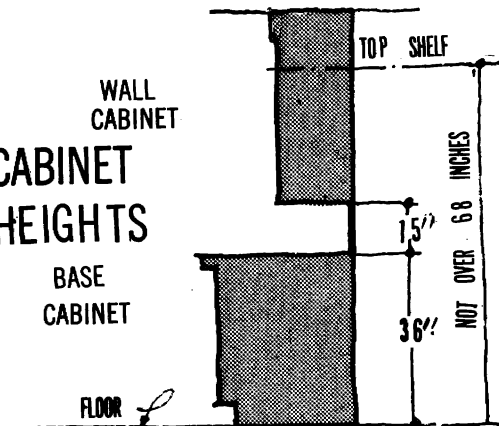
PLAN

**WALL
OVEN**



INSTALL OVEN SO LOWEST RACK
POSITION IS ABOUT 36" FROM THE FLOOR.

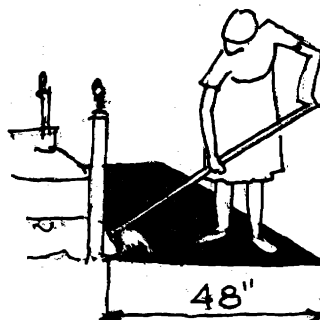
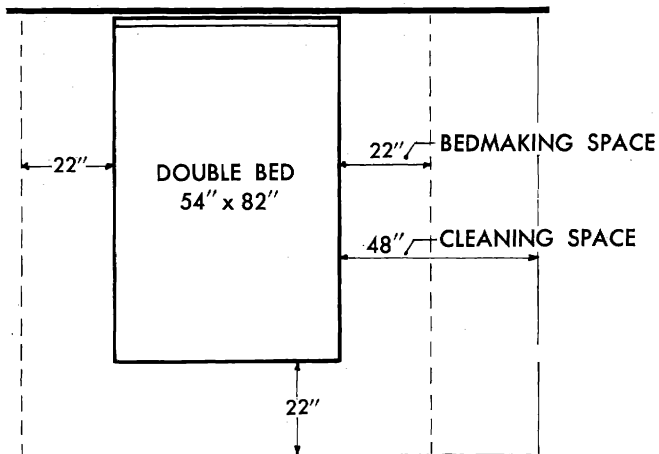
**WALL
CABINET**
**CABINET
HEIGHTS**
**BASE
CABINET**



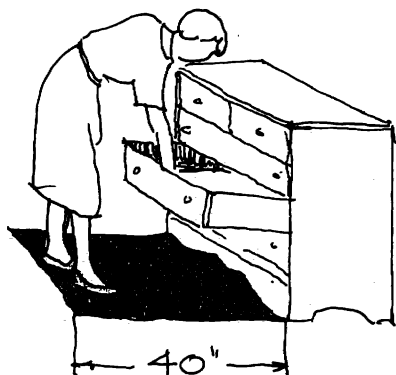
BEDROOMS

Adequate space should be provided in bedrooms for getting into bed from either side, making the bed, using the dresser or chest of drawers, cleaning the room, using the closet,

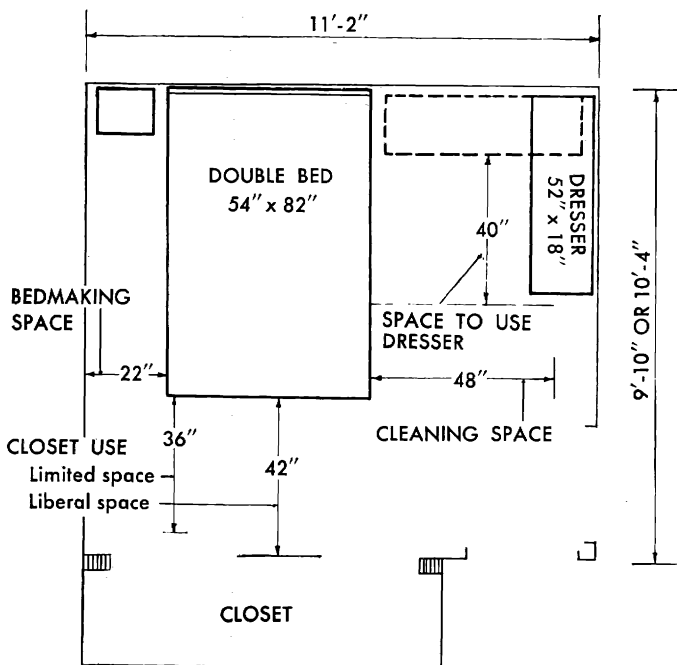
and dressing. In the following sketches, the recommended amount of space for these activities is given.



To provide for this degree of comfort and convenience, the bedroom must be about 11 feet 2 inches wide and 9 feet 10 inches or 10 feet 4 inches long, depending on whether space is provided at the foot of the bed for dressing or just for opening the closet door. If twin beds are to be used, the width of the room (with the furniture arranged as shown) would need to be increased to 15 feet. This would give space for two twin beds, each 39 inches wide, with 22 inches between them.



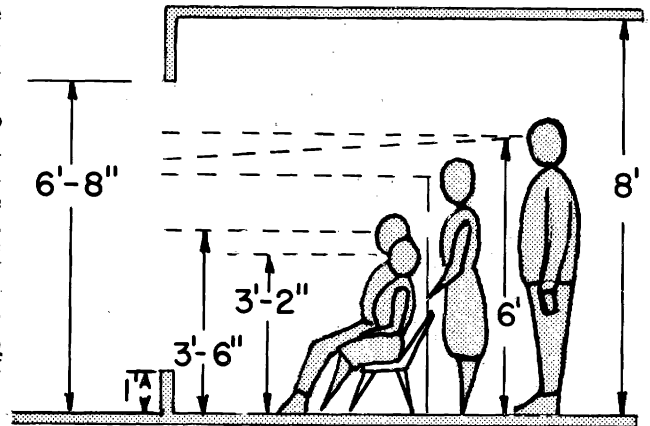
"Limited space" allows space to open closet door and remove garment. "Liberal space" allows space to open closet door, remove garment, and put it on.



WINDOWS

In housing for older people, the height of the windows is important, particularly in the living room, dining area, and bedroom. Sitting and looking out of the window is a daily activity for many elderly.

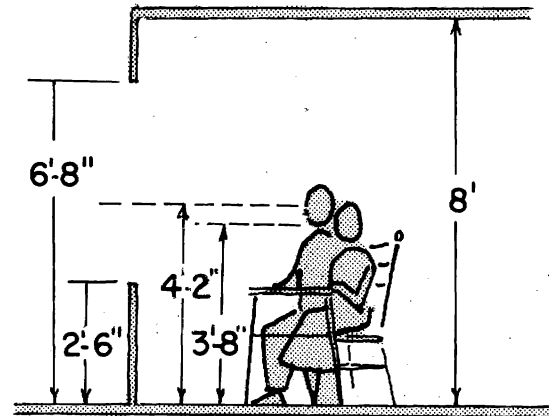
The living room windows should be low so that a person sitting in a lounge chair can see out. The bottom of the window should be no higher than 3 feet 2 inches from the floor, and can be as low as 1 foot. For window walls, it is desirable to include a guard rail, at a height that will not interfere with viewing but that will give a feeling of security. To permit viewing from a standing position, the window should extend to a height of 6 feet 8 inches.



Eye-Level Zone for Living Rooms

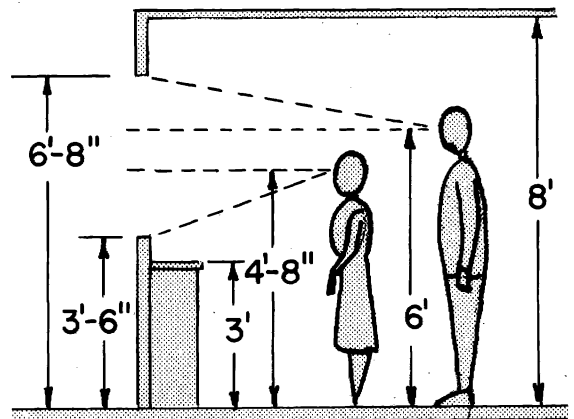
For dining areas, the eye-level zone is determined by the sitting height. The sill of the window can be 2 feet 6 inches from the floor. For the bathroom and kitchen, the eye-level zone is set by the standing height. The opening of the window should be between 3 feet 6 inches and 6 feet 8 inches from the floor.

For bedrooms, one window should be low enough to permit a person in bed to look out. In addition to making the room more pleasant, a low window provides an emergency exit. The eye-level zone suggested for the dining area could also apply to bedrooms.



Eye-Level Zone for Dining Areas

Choose windows that are easily operated. Except for over the bathtub and similar locations, double-hung windows are satisfactory. But in hard-to-reach places, windows that are opened and closed by turning a crank are easier to operate. Many windows have been designed to reverse so that the exterior side of the glass can be turned to wash from the inside. This is an important safety factor for those who find it difficult to reach or climb.



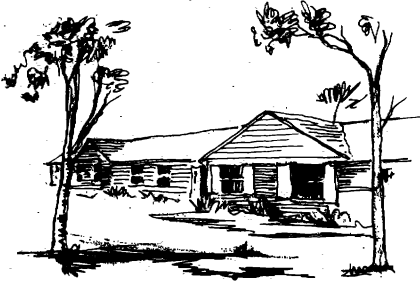
Eye-Level Zone for Kitchens and Bathrooms

OTHER DESIGN FEATURES

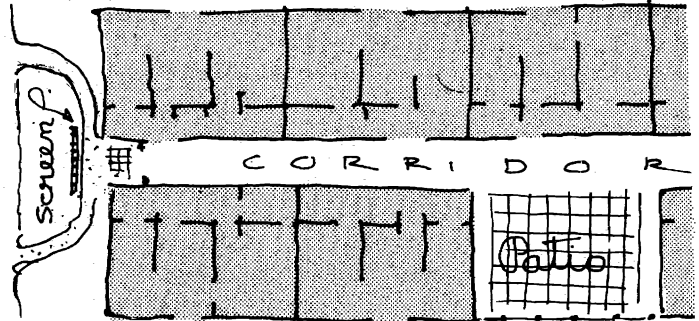
These sketches show some possible solutions to the elevation design problem, but these are not the only solutions. Variety in design is desirable so the senior citizens may choose housing fitted to their individual needs and desires. The designs will differ with location, building materials, price range, and other variables.

These suggestions should be helpful, but it is the architect or engineer who must be relied upon for the successful design solution to fit the individual need.

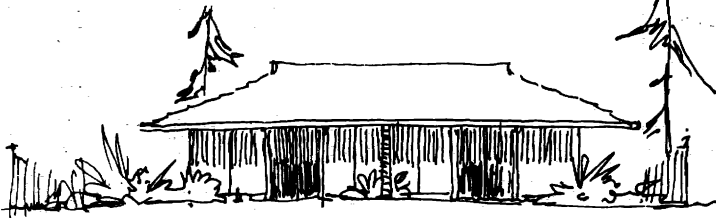
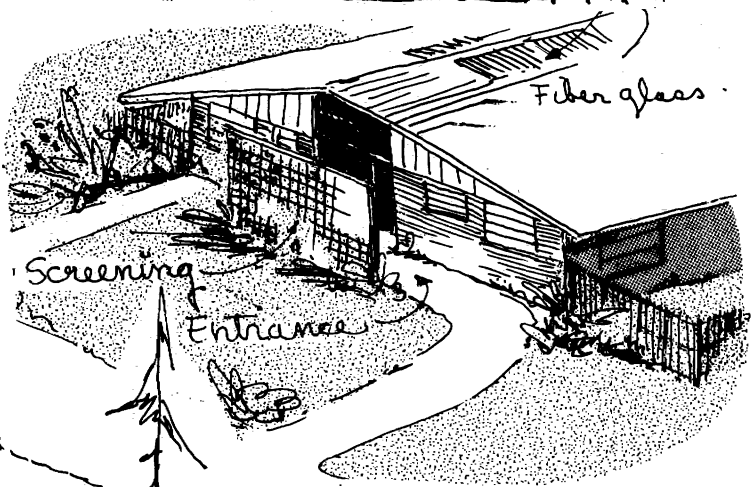
In northern areas where the winter conditions make it difficult to get about from one unit to another to visit, either an enclosed corridor between facing units or a connecting covered porch would be helpful. Avoid an institutional appearance in the corridor design. Have it well lighted; use plantings, paintings, hangings, etc. to decorate the wall areas.



Vary materials and roof lines.



Setback and changing grades give privacy.



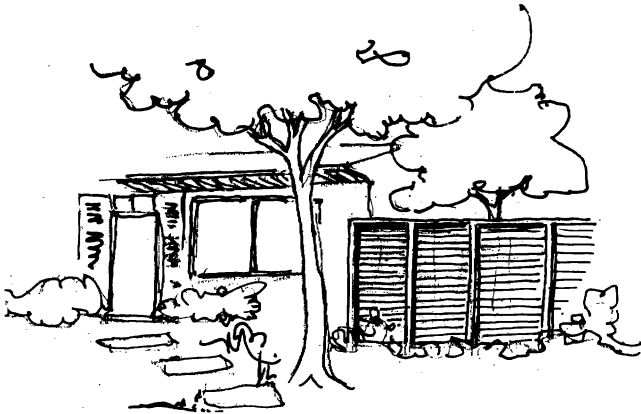
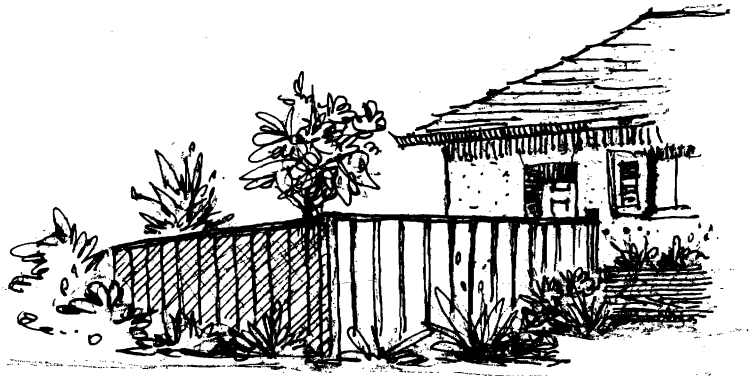
Oriental look to multi-units.



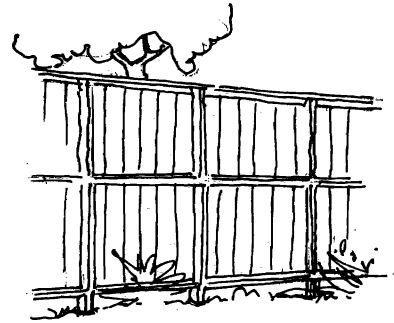
Combining styles of Southwest architecture adds interest to the row-house unit.

FENCING FOR PRIVACY

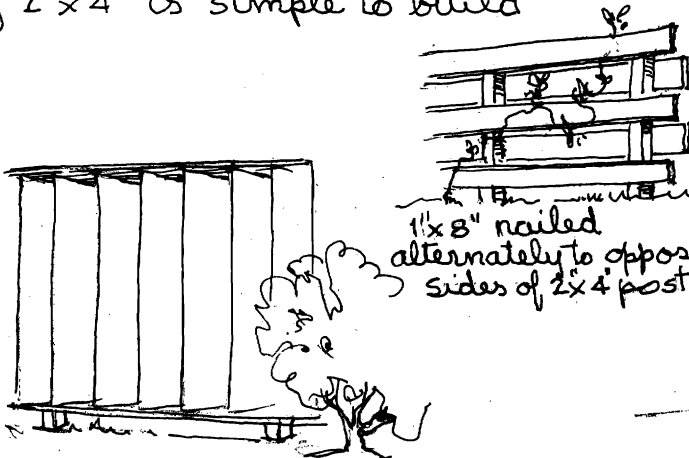
It is important to rural people in retirement housing, who are probably living in a more confined area than they have ever lived in before, to have privacy in their outdoor living. Fencing or masonry screen walls can be tastefully arranged to provide such privacy. A few suggestions are presented here. The type of fencing should be chosen to complement the style of building with which it is used.



Stock snow fencing hung vertically on a frame made of 2"x4" is simple to build



Redwood, fiberglass, or wire panels nailed to wood frames vertically.



1"x8" nailed alternately to opposite sides of 2"x4" post.

Wood louvered wall allows prevailing breezes to enter the screened area.



Wooden grill painted white with reed backing makes a good background for planting.

SAFETY FEATURES

General:

1. Avoid steps at entrance. If necessary, use ramp with flat slope not over 5 percent.

Kitchen:

1. In placing the range, consider allowing extra space for ease in making minor repairs and cleaning.
2. Do not place the refrigerator too low—as under a counter.
3. In choosing the conventional type of refrigerator, consider the amount of stooping and reaching that will be necessary.
4. Provide adequate lighting over all work surfaces.
5. Provide an exhaust fan to assure adequate ventilation and to carry out cooking odors.
6. Select floors or floor coverings that will not absorb grease and become slippery.
7. Provide a fire extinguisher for grease and electric fires.
8. Provide a fire-hose cabinet, centrally located in each multi-unit structure, with fire hose connected, ready for service, and long enough to reach each room.

Bathroom:

1. Install grab bars in shower stalls, above the tub, and perhaps at water closets. These bars should be heavy-duty and well anchored; towel bars should be designed for the same support.
2. Design shower stalls without curbs, using sliding door or other firmly installed and safe closure.

3. Install a seat in the shower.
4. The tub should have a low side and flat, non-slip bottom.
5. Lavatories should be well-supported, to hold a person's weight.
6. It would be well to have a testing spout where the mixture of hot and cold water could be tested for showers and tub baths.
7. Avoid sharp edges, especially on grab bars and towel rods; recess the soap dishes.

Electrical:

1. Wall switches should control all light fixtures.
2. Place a convenience outlet for use of a night light between bed and bath.
3. Consider locating the wall convenience outlet 18 to 20 inches above the floor.
4. Have the entrance well-lighted so that steps (if any) can be clearly seen and keyholes can be located.
5. Locate a telephone conveniently near the bed. Several outlets would be most helpful.

Doors:

1. Doorways to all rooms should be at least 2 feet 8 inches wide or, if possible, 3 feet wide—to allow for a wheelchair.
2. Eliminate thresholds.
3. Consider trip locks for entrance doors and have all entrance locks master-keyed.
4. Recommend use of lever-type door handles for all doors. (Under study by industry.)
5. Bathroom doors should not have locks. Provide easy latches instead.

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