

Family Activity Space

1. The arrangement of space and equipment should be flexible enough to accommodate various activities.
2. The storage areas such as shelves, drawers, etc. should be located within the height and distance of reach of children.
3. Separate space should be provided for near task activities such as sewing, writing, ironing, etc. with the amount of space determined by anthropometric data concerning distance of reach and body movement while performing the task.
4. The near task work space should be sufficient in size or near a room opening to give visual relief. This distance should be approximately 10 feet for an arms length task and approximately 20 feet for a nearer task of about 16".
5. The visual relief area should be placed outside the central visual field while centered on the task. This central visual field is a cone 15° on either side of the sight line.
6. The lighting in the play area should be of a color temperature of approximately 2850° Kelvin to give accurate color recognition.
7. The lighting for a near task area should be no higher than 3200° Kelvin.
8. The contrast ratio on any wall or object should be in the range of 3:1 to 7:1 with $4\frac{1}{2}$:1 being an optimum. In other words, the brightest area of the wall should be approximately $4\frac{1}{2}$ times brighter than the darkest.
9. The lighting intensity for specific task areas should be higher than the general illumination. The ratio of specific to general lighting intensity should not exceed $4\frac{1}{2}$:1 with 3:1 being more desirable.
10. The color scheme in space used by children should not exceed four to six colors, including the furnishings and accessories.
11. Desaturated colors (adding white) should be used in this space.
12. The children's play area should have colors in the middle of the spectrum or slightly on the warm side.
13. White should be avoided as a dominant color.
14. The color and texture of any one activity center should form only background for another activity center.

SPECIFIC PERFORMANCE REQUIREMENTS

Bedroom

1. Sleeping areas should provide space to maneuver the body into a restful position without losing body balance.
2. The space directly around the sleeping area should allow for making the bed and for the circulation of air around the sleeping unit.
3. The sleeping area should provide a restful space that allows the human mechanism the ability to relax.
4. The study area should be oriented to surround in a manner that allows for visual relief while performing the task.
5. Supporting surfaces for the study task should allow the freedom of body movement during the task performance.
6. The surface which supports the reading and writing activity should be positioned at a 20 degree angle above the horizontal.
7. The height of the study unit should be based on the physical dimensions of the child or adult using the unit.
8. The position of the work surface should always allow complete freedom of leg and elbow movement while in a working position.
9. Children's study equipment should have the flexibility for changing heights.
10. Closets and storage objects should be located in areas directly related to the dressing and undressing task.
11. Closet dimensions should allow clothing to hang freely without being compressed when the door is closed.
12. Height of hanging rods should be established on the basis of physical reaching dimensions of both a child or adult, whichever is using the unit.
13. Natural light should enter the study area in a manner which distributes equally throughout the task area.
14. High contrasts on the work surface should be eliminated.
15. The placement of windows should not conflict with the near visual task.
16. The light and brightness levels within the space should be within the adaptation level limits of the eye (ideally, a ratio of 4 1/2:1).

SPECIFIC PERFORMANCE REQUIREMENTS

17. Central lighting for the study task should be approximately 50 foot candles with general lighting not less than 15 foot candles.
18. The central task lighting should be equally distributed across the study surface.
19. Artificial light sources should combine with natural light to give a continuous spectrum of illumination. (Incandescent light contains more of the color bands of white light than does fluorescent.)
20. Generally smooth surfaces, fine details and small scale visual patterns should be used to induce a restful feeling in the sleeping area.
21. Continuity in the use of materials should be considered for establishing a restful atmosphere.
22. Floor surface should allow freedom of movement with little or no sound.
23. Ceiling surfaces should be a smooth finish with a flat white color of fairly high reflectance.
24. Windows should provide vistas into generally private areas.
25. The location of windows should allow for natural air circulation throughout the sleeping area.
26. A color temperature of approximately 3200° Kelvin is most desirable for reading, writing and other close visual tasks.
27. General bedroom activity areas around the study area should have a slightly lower color temperature ranging from 3200° Kelvin to 2850° Kelvin.
28. Warm light gray to light tan colors should be used for the study area.
29. The general bedroom colors should range from warm pastels for a north orientation to cool pastels for a south orientation.
30. Color contrasts throughout the bedroom area should be relatively low.
31. Work surfaces in the study area should be non-porous and easy to clean and maintain.
32. The study surface contrast to immediate surround surface contrasts should be within the contrast limits of 3:1.
33. The color for work surface in study areas should be generally neutral in respect to surrounding surfaces.

SPECIFIC PERFORMANCE REQUIREMENTS

34. The work surface should visually appear at the height established by physical performance measurements for study tasks involved.
35. Sound transmission to bedroom areas should be reduced to a minimum.
36. Bedroom orientation should be considered as a means of reducing sounds from both interior and exterior surrounds.
37. Sleeping and study areas should be oriented toward quiet areas.

Kitchen

1. The kitchen should contain dominant visual verticals for the maintenance of body balance. These visual verticals may be obtained by kitchen equipment and room structure combined with the lighting. Room decoration should not conflict with this dominant geometric form.
2. Sufficient space should be provided in the area between the counters so that two or more persons may work in the space at a given time without causing a crowding situation or safety problem and allow for sufficient bending, rotating and transport movements involved in the preparation of a meal.
3. It is recommended that the corridor type kitchen be utilized in the design for this activity area.
4. An equilateral triangle (or as close as possible) should exist between the sink, the range and the refrigerator.
5. The various preparation areas should utilize different heights rather than one standard height. The unit should be planned if possible to be adjustable (by perhaps some type of floorboard arrangement) to satisfy the various anthropometric measurements of different sets of occupants.
6. Cupboard areas should be of a height that is within the eye-hand coordinate range of a standing human.
7. The window orientation of the kitchen should allow for visual relief and also look out on a major play area in units planned for families with children.
8. Minimum equipment for the kitchen should be one double sink with garbage disposal, four burner stove with oven and a refrigerator with freezer storage with accompanying storage and closet space.
9. The counter depth should be in the range of 18" to 24" for accurate visual identification and dimensional coordination with kitchen equipment units.
10. Since space is at a premium, no eating area should be provided in the kitchen area. This means that the dining area should be adjacent to the kitchen area for ease in serving.
11. The door on the refrigerator should open so that a counter space is provided for objects that are either going into or out of this storage unit. This means that linear counter space of not less than 10" be provided.

SPECIFIC PERFORMANCE REQUIREMENTS

12. Counter space near the range should be not less than 10" for the placement of objects that are going into or out of the oven unit or on and off the burner unit.
13. Counter space of not less than 12" should be provided on either side of the sink area to allow for food preparation as well as the washing and drying of dishes.
14. The light level in the kitchen area should provide a 3 1/2-4:1 contrast ratio. General lighting over the entire area should be provided as well as supplementary light over major preparation and care and maintenance areas.
15. A small scale decoration on the counter surfaces should be provided with little contrast ratio existing in the pattern, if a pattern is used. The floor surface should also have the same specifications and should not be much darker than the counter surface.
16. The contrast ratio between the cupboard, wall, floor and counter surfaces should be in the range of 3:1.
17. The color of the kitchen appliances should harmonize with the total surround and not be a dominant color contrast.
18. Counter surfaces around the range and oven unit should be of sufficient durability to withstand high temperatures.
19. A smooth, matte surface should be provided for the kitchen counter surfaces and should be as sound absorbing as possible. A laminated maple wood surface possesses many of these desired characteristics.
20. The ceiling treatment should be one that will reflect the general light and absorb some of the sound if possible.
21. A ventilation unit should be provided in the kitchen to allow for the dispersion of heat and odors. This unit should have a low noise level.
22. The surfaces utilized in the kitchen area should require a minimum of care and maintenance.
23. If units are to be purchased rather than rented, provision should be made for future installation of a dishwasher.
24. If not provided initially, provision should be made for installation of a clothes washer and/or dryer in the kitchen or family activity room.

Bathroom

1. Spatial requirements for task performance should be based on movement patterns and human body measurements derived by various human factor research studies.
2. The use of safety devices should be employed in areas wherever an unbalanced body position may be encountered while performing the task.
3. The visual distance to mirror surface should be reduced to a minimum for critical visual tasks. Movement directly up to the mirror surface is desirable in some areas of the bathroom (approximately 8" from face to mirror surface is required for shaving).
4. Unrelated visual elements and strong surface patterns should be minimized in the surround.
5. Natural light in the bathroom area should enter the space in a manner which distributes equally throughout the task area.
6. High contrasts and glare from trim and mirror surfaces should be eliminated.
7. The light and brightness levels within the space should be within the adaptation level limits of the human eye. (7:1 maximum and ideally, a ratio of 4 1/2:1.)
8. The light across the task area should be of equal distribution with transitional areas of contrast to adjacent areas that are no greater than 3:1.
9. Incandescent lights should be used in the bathroom area.
10. Balanced light conditions should be established for both day and night conditions.
11. The color temperature of the task area in the bathroom should be approximately 2850° Kelvin.
12. Central lighting for specific tasks should be increased slightly over general lighting.
13. The illumination levels must increase as the visual angle of the task decreases and decrease as the visual angle of the task increases.
14. Floor materials in areas where bathing tasks are being performed should support body movements safely over wet and slippery surfaces.

SPECIFIC PERFORMANCE REQUIREMENTS

15. Floor surfaces should be impervious to water and create sufficient friction to prevent slipping.
16. Colors and surface textures should not cause the floor plane to visually move toward or away from the observer.
17. Warm gray or tan colors should be considered for use on the floor surface.
18. Safety items such as grab-bars should not be of a highly reflective finish.
19. Water barriers should be used under shower stalls and floor areas where water might collect.
20. Colors used on the wall surface should combine with the light source to give an overall room color temperature of approximately 2850° Kelvin.
21. The use of light grays to warm pastels should be considered for bathroom wall surfaces.
22. Ceiling surfaces in the bathroom area should be a smooth finish with a flat white color of fairly high reflectance.
23. The number of different materials used in the bathroom area should be kept at a minimum.
24. Mortar color should blend or match color selection of large tile surfaces if ceramic tile is used.
25. Materials used for counter or work surfaces should be non-porous and easy to clean and maintain.
26. The color of counters or work surfaces should be generally neutral in respect to surrounding surfaces.
27. Counter surface contrasts to immediate surround surface contrasts should be within the contrast limits of 3:1.
28. The work surface should visually appear at the height established by physical performance measurements for tasks involved.
29. Sound transmission from bathroom areas should be reduced to a minimum.
30. Orientation of the bathroom should be considered for minimizing sound interference in other areas of the living unit.
31. Equipment that vibrates should be put in with flexible mounts, and pipe connections should be cushioned where they come into contact with the framework of the living unit.

32. Airborne sound should be controlled by use of materials and wall construction.

LISTING OF HUMAN ACTIVITIES PERFORMED IN A HOME

<u>AREA</u>	<u>ACTIVITY</u>	<u>FURNITURE-EQUIPMENT</u>	<u>MECHANICAL EQUIPMENT</u>
<u>Living</u>	*Conversation	Chairs	
	*Relaxation	Multiple seating units	
	Reading	Chairs Side Table (Magazines, ash trays, snack dishes, acces- ories) Storage Books, periodicals	Lighting General Specific
	*Communication and Information	Radio, TV Record player Record storage	Acoustical Control Electrical Outlets
	*TV, Radio Records		
	*Entertaining	Service Tables Card Tables Storage (Games, etc.) Extra Chairs	Ventilation
	Care & Maintenance	Wastebaskets	
	Miscellaneous		Telephone
<u>Dining</u>	*Eating	Table	Lighting
	Formal	Chairs	General
	Informal	Side Service Areas	Specific
	Storage	Dishes Silverware Linen Accessories Special Serving Dishes and Equipment	Electrical Outlets Ventilation
	*Conference and Discussions		
	Outdoor Dining	Table Leisure Chairs Side Tables	Lighting Electrical Outlets

(*The asterisks indicate the activities requiring consideration in low income housing)

<u>AREA</u>	<u>ACTIVITY</u>	<u>FURNITURE-EQUIPMENT</u>	<u>MECHANICAL EQUIPMENT</u>
<u>Kitchen</u>	*Preparation of Food		
	Cleaning	Sink	Ventilation
	Mixing	Counter Space	(Hoods, Fans)
	Baking-Broiling	Utensil Storage	Light
	Cooking	Appliances-small hand	General
	Preparation	Equipment	Specific
		Chopping Board	Electrical Outlets
		Range	Clock
		Oven	Timer
	*Food Storage		
	Perishable	Refrigerator	
		Freezer	
	Non-perishable	Cabinet Storage	
Dry			
Canned			
*Serving of Food	Counter Space		
*Indoor	Trays, roll carts		
Outdoor	Serving Utensils		
	(Hot mats)		
	(Hot Potholders)		
	Dish & Silverware storage		
Linen Storage	Napkins, tablecloths		
	Placemats, dishcloths		
	Dishtowels, etc.		
Outdoor Cooking	Paper products		
Storage	Bar-B-Que Equipment		
Menu Planning	Recipe Storage	Telephone	
	Writing Surface		
	Record Keeping Storage		
*Cleaning of dishes, utensils, etc.	Counter Surface		
	Sink/Dishwasher		
	Storage of cleaning sup- plies, soap, etc.		
Care & Maintenance	Garbage Disposal		
	Tool & Cleaning agents storage		
	Wastepaper Disposal		
Decorative Treatments	Flower containers, etc.		

<u>AREA</u>	<u>ACTIVITY</u>	<u>SUPPORTING EQUIPMENT</u>	<u>MECHANICAL EQUIPMENT</u>
<u>Bedroom</u>	*Sleeping	Bed	
	*Napping	Bed	
	Reading	Bedside Surface	Light
	Listening to Radio and TV	Supporting Surface	General Specific
	Communication		Electrical Outlets
*Dressing/Undressing	Dresser Storage Clothes Storage In Season Out-of-Season		Telephone Heating & Cooling (Air circulation)
*Personal Care	Storage		
*Personal Interests & Activities	Supporting Surfaces Storage (Books, Collections, accessories, etc.)		
*Study Space	Surface Space 2D Activities 3D Activities		Lighting General Specific
Care & Maintenance	Waste Disposal		Electrical Outlets
<u>Bathroom</u>	*Personal Hygiene		
	Bathing	Bathtub & Shower Towel Racks Linen Storage Soap Holder Clothing Hooks Safety Devices (Grab Bars)	Ventilation Light Natural Artificial
	*Washing hands & face	Washcloth & Towel Racks Soap Holder Lavatory	
	*Dental Care	Mirror Toothbrush Holder Glass Holder	
	*Care of Hair	Storage of hair supplies and equipment Lavatory Shelf Surface	
	*Personal Care (Cosmetics, manicure, etc.)	Storage Area Mirror	

<u>AREA</u>	<u>ACTIVITY</u>	<u>SUPPORTING EQUIPMENT</u>	<u>MECHANICAL EQUIPMENT</u>
<u>Bathroom</u> (Cont'd.)	*Shaving	Mirror Storage Area Shelf Surface	Electrical Outlets
	*Light Laundry	Lavatory Storage Shelf Surface Drip-Dry Facility	
	*Medical Care	Medicine Storage Drinking Facilities	
	Waste Disposal Maintenance & Care	Storage Facilities (Cleaners, Cleaning Utensils) Wastebasket	
<u>Play Area</u>	*Recreation Facilities Games Hobby Space Sewing Leisure Creative Activities as writing, painting music, etc.	Furniture Storage of card tables, tables, games, sewing supplies Counter Area Space and Surface Areas	Electrical Outlets Lights
<u>Child Care</u>	*Play Area Inside Outside Supervision (Access to play areas, visual control)	Storage Area for toys and equipment Developmental play equipment	Light General Specific Ventilation
<u>Education</u>	Study & Information Activity Business Affairs Record Keeping Audio-Visual Equipment, camera screens, etc.	Surface Area Chairs Storage (Files, records, writing equipment, etc.) Book Storage Periodical Storage Equipment Storage	Light Telephone Electrical Outlets

<u>AREA</u>	<u>ACTIVITY</u>	<u>SUPPORTING EQUIPMENT</u>	<u>MECHANICAL EQUIPMENT</u>
<u>Laundry</u>	*Clothes Collection	Storage of Laundry Supplies	
	*Washing Clothes	Washer	Electrical Outlets
	*Drying Clothes	Dryer	Ventilation
	Indoor	Dryer	
	Outdoor	Clothesline	
	*Preparation of Clothes for Cleaning		
	Sorting	Shelf Surface	
	Spot Cleaning	Cleaning Supplies	
	*Folding	Shelf Surface	
	*Ironing	Iron & Ironing Board	
	Storage of ironing supplies, starch, cleaning agents		
*Storing	Storage Area		
Mending	Sewing Equipment		
<u>Circulation</u>	*Arrival & Departure	Mirror and Shelf	Light
		Closet	General
	*Inter Area	Outer Garment Storage	Specific
	*Intra Area	Seating Equipment (umbrellas, boots, etc.)	Ventilation
			Electrical Outlets
	Maintenance & Cleaning		
<u>Maintenance</u>	Hand & Power Equipment	Hand & Power Equipment	Electrical Outlets
	Housing Maintenance	Storage Facilities	Lighting
		Screens	General
		Surface Work Area	Specific
	Yard Maintenance	Lawn Equipment (Mower, clippers, paint brushes, etc.)	
	*Interior Maintenance	Storage Facilities (Vacuum cleaner, mops, cleaning agents, etc.)	Electrical Outlets
	*Storage (Bottles, Bicycles, tricycles, magazines, suitcases, out-of season clothing)	Storage Area Dust pans, dust mops	
	*Environmental Control Unit		Heating & Air Cooli
			Water Heater
			Humidity Control
		Water Softener	

<u>AREA</u>	<u>ACTIVITY</u>	<u>SUPPORTING EQUIPMENT</u>	<u>MECHANICAL EQUIPMENT</u>
<u>Outdoor Private</u>	*Conversation	Chairs	
	Cooking	Grill, Barbeque, etc.	Electrical Outlets
	*Eating	Table, chairs	Lighting
	*Relaxation		
	*Entertaining		
	Gardening	Tools	
	*Maintenance	Storage of Equipment	
*Recreation, play	Space, play equipment		
<u>Outdoor Public</u>	*Arriving & Leaving	Access Roads	
		Car Storage	
		Pedestrian Access	
	*Walking	Pathways	
	Bicycling	Pathways	
	*Receipt of Deliveries	Vehicular Access	
		Pedestrian Access	
	*Social Groupings & Social Contact	Space	
	*Recreation/Play	Space, Play Equipment	
	Maintenance	Service Access	
	Storage		
	Garbage Disposal		
	Wet and Dry		

ZONE CONSIDERATIONS FOR HOUSINGFAMILY UNITS/AREA ZONES

	<u>Interior</u>	<u>Exterior</u>
OPERATIVE	Home Work Areas (Kitchen, Laundry, etc.)	Maintenance & Storage Areas
PUBLIC	Entrance, Living, Dining, Recreation, Kitchen, Half-Bath	Service Drives, Commons
PRIVATE	Bedroom, Bathroom, Leisure Areas, Hobby	Yard Space, Garden Area

HOUSING CLUSTER ZONE CONSIDERATIONS

Privacy

Sound Control

Landscaping

Communication

Service Roads

Car Storage

Pathways for bicycling and walking

Community Facilities and/or Activity Areas

Educational Facilities - Adult and Child

Laundry - Dry Cleaning

Medical Facilities

Recreation Facilities - Adult and Child

Social Facilities - Adult and Child