THE AMERICAN INSTITUTE OF ARCHITECTS

DESIGN FOR AGING:
An Architect's Guide

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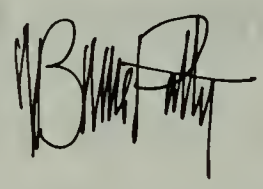
The American Institute of Architects

The American Institute of Architects advocates the design and construction of an environment in which people will be able to enjoy a full life span with a minimum of dependence on others.



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DESIGN FOR AGING:
An Architect's Guide

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"On behalf of the AIA Task Force on Aging, I wish to dedicate this publication to my friend, **Thomas O. Byerts, AIA, (1942-1984),** a pioneer in the field of design for aging. During his 10 years as the Director of Housing and Environment with the Gerontological Society of America in Washington and later as Director of the Gerontological Center of the University of Illinois in Chicago, he was an effective advocate for a physical environment sympathetic to the needs of older people. A recipient in 1983 of the American Institute of Architects Presidential Citation, Tom Byerts' contribution to the quality of life of the elderly population has been recognized by his peers."

Edward Henry Noakes, FAIA

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LITERATURE SOURCES
The annotated bibliography in this document indicates sources for much of the information presented here. Three volumes merit special citation because of their especially extensive use:

Joe J. Jordan, *Senior Center Design: An Architect's Discussion of Facility Planning* (Washington, D.C.: National Council on Aging, 1978).

J.A. Koncelik, *Designing the Open Nursing Home* (Stroudsburg, Pa.: Dowden, Hutchinson & Ross, 1976).

Michigan State Housing Development Authority, *Housing for the Elderly Development Process* (Lansing, Mich.: MSHDA, 1974).

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PREFACE

The demographic projections are clear: America's already sizeable elderly population is increasing dramatically both in numbers and as a percentage of the nation's overall population, and it will continue to do so for the next quarter-century and beyond. From an architectural viewpoint, such projections lead to at least one equally clear conclusion: The market for design services keyed to meeting the needs of aging Americans is quickly becoming a great deal more substantial.

But this conclusion raises a number of important questions for every architect who hopes to respond to this growing, specialized market. How specialized is it? Who are *the aging?* What are their environmental needs? And what do we know about meeting those needs?

This book is designed to answer those questions for the practicing architect. It is a ready-reference work, expected to occupy a place alongside the programmer's desk and the designer's drawing board. It is not a comprehensive treatment of the field; the literature on design for aging comprises many, many volumes, and the most pertinent and useful of them are cited here in an annotated bibliography to encourage and facilitate further research. Nor does this text anticipate the context of every design problem that will arise. Its recommendations have a general application that must, as all design guidelines must, be weighed with keen professional judgment. Written to be used in conjunction with current and applicable codes and standards, the standard architectural reference works and other, more detailed references, this book is a practical guide to the physical, psychological and social realities of aging, and to the design issues that an architect working with those realities will encounter.

The group of users typically called *the aging* is characterized by a broad spectrum of special needs, preferences and limitations. This book accepts that traditional understanding to a certain extent. It addresses the range of changes generally experienced by people in the later years of their lives; but it also recognizes, as should every architect, that exceptions are the rule in this user population. For example: The vast majority of elderly Americans typically experience only one or two of the many problems that threaten us all as we grow old; and unless specifically limited by one of those problems, the vast majority remain in many ways competitive with their younger colleagues well into their seniority. Further, the problems don't magically occur at 65, 70 or any other particular age. Their onset can result from any of an infinite number of variables, and can do so at almost any time—witness the midcareer architect who is, in all probability, only a few years away from needing the bifocals that serve as one of our earliest reminders of the inevitability of aging.

The aging are not fundamentally different from any other user group; their needs are subject to change over time, and characterized by tremendous variety. By the same token, design for aging is not fundamentally different from any other sort of design. It can be, however, substantially more challenging, precisely because the dynamism and variety of its user group tend toward extremes. In few

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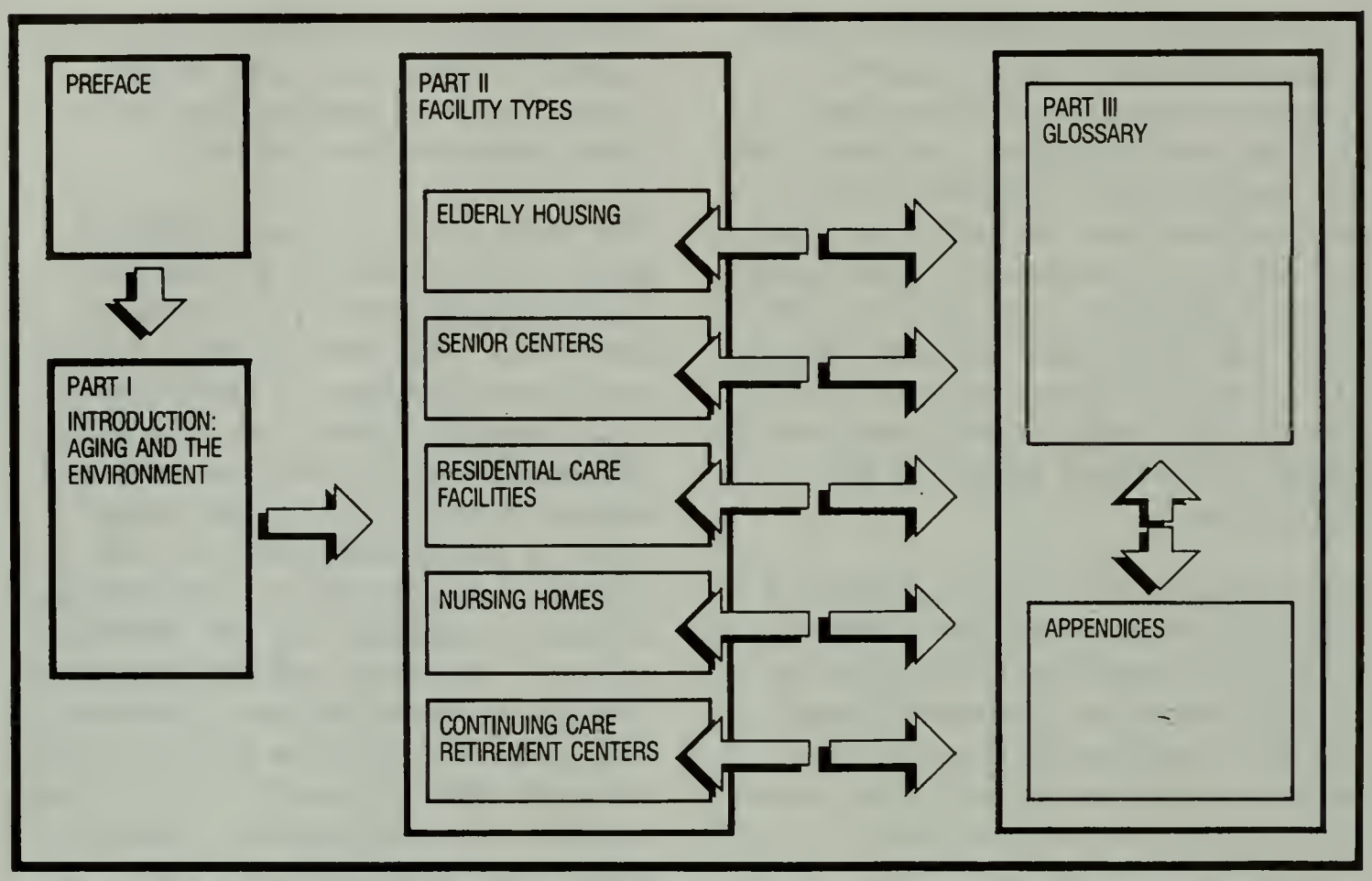

Using the Book. The book was designed to facilitate the cross referencing between the Glossary and Facility Types which will be necessary.

other fields of architecture, for example, does an architect know that within the same user population there may be individuals with no major limitations, and others who have partial limitations involving every sense, every decision, every movement.

Design for Aging: An Architect's Guide is divided into several parts. As a reading of Part I—an introduction to the aging and their environment—illustrates, design for aging poses a set of parameters that is simultaneously as vast and as narrow as any other an architect will encounter. Part I should be considered required reading by every user of this guide, because it both provides essential background on the elderly and sets out a design approach that differs sufficiently from traditional approaches to have provided the title of this book. This approach rests on the notion that a basic difference exists between *design for the aging* and *design for aging*. The former assumes a certain user population—the aging—with certain static behavioral patterns, needs and limitations to be addressed in design. The latter assumes a changing condition, not a user population per se but a process. This guide is entitled *Design for Aging* because a static user population simply does not exist. Aging is indeed a universal process; it affects each of us and continues for as long as we live, which is why good

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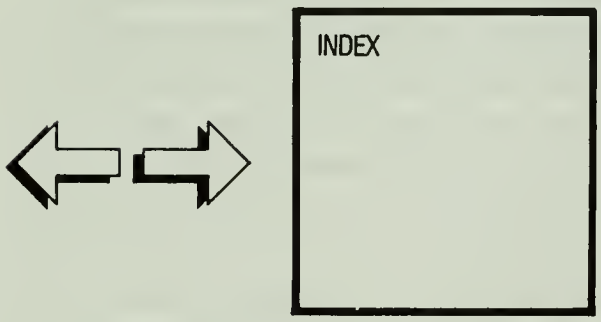

design for aging can and should be thought of as good design for *all* ages.

Parts II and III are specifically designed for use during programming and design. Part II defines the continuum of care required by the aging and identifies the important site, space, use and design considerations for the five most common facility types associated with older users:

- elderly housing
- community and senior centers
- residential care facilities
- nursing homes
- continuing care retirement centers

Part II also provides a typical plan for each facility type, an adjacency matrix, and a design and programming checklist. The checklists enumerate issues "from the outside in"—from the overall site to the individual user's space. In addition, Part II outlines "the continuum of care," and diagrams the spectrum of recognized facility types developed to date, so the architect may determine where a project fits in this spectrum and interpolate project-specific checklist and adjacency requirements accordingly.

The checklists also provide access to Part III, a detailed glossary that defines and discusses each aging-specific item listed in the checklists. Items deemed "nonaging specific" are not referenced in the glossary; these items should fall within the purview of the standard architectural references and are assumed to be part of the architect's general understanding and expertise.

Parts II and III are designed for quick, easy reference during programming and design; an architect charged with site design for an elderly-housing project, for example, will find aging-related site issues in the elderly-housing checklist, and find a definition and discussion of each issue at a specified location in the glossary.

Design for Aging: An Architect's Guide also includes an annotated bibliography and two appendixes. The bibliography is a guide to references selected for their particular relevance to design for aging references that contain information important to practitioners engaged in the field, but beyond the scope of this publication.

Appendix A lists the key words that provide access to the Design for Aging Information Network, the computerized data base developed by the AIA Foundation and accessed through the AIA Information Center, in which information about practice-relevant references on design for aging is maintained as a ready resource for architects.

Appendix B is an accessibility standard presented in the form of a replaceable insert, and located in a storage pocket

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located inside the back cover of this book. ANSI A117.1 is frequently referenced in this book. The architect should be aware that some clients (especially governmental clients), financing agencies and local jurisdictions have adopted other barrier-free standards, such as the Uniform Federal Accessibility Standards (UFAS). In addition, ANSI A117.1 itself is currently undergoing revision at the American National Standards Institute, and an update may become available shortly after publication of *Design for Aging: An Architect's Guide.* The architect should replace the original insert, to keep Appendix B current and pertinent to the project at hand. Familiarity with ANSI A117.1, and similar barrier-free standards, is essential for any architect. However, although ANSI A117.1 and similar barrier-free standards have great applicability to the design of facilities for older users, they do not constitute the complete body of reference for the field of design for aging. Barrier-free design is fundamental to design for aging, but there are many other issues involved as well.

The sheer challenge of designing for such a diverse user group—and the personal recognition that each of us will eventually either join its ranks or expire in the attempt—should prompt in every architect an approach to design for aging that is as vigorous and dynamic as life itself.

I INTRODUCTION

Aging and the Environment

The year 1980 was clearly a watershed year in this country: The United States elected the oldest president in its history, and, for the first time, the percentage of American heads of household aged 65 or older surpassed the number of those aged 30 or younger.

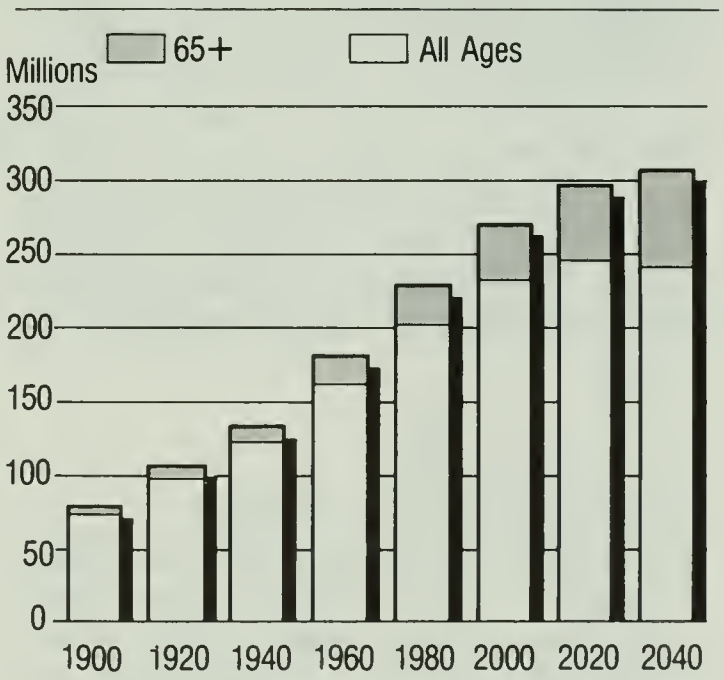
Whether or not a direct connection exists between them, these two facts are part of a growing body of evidence that establishes one point beyond argument: The age curve of American society is rapidly changing shape.

CONSIDER:

- The age of the average American jumped more than six months—from 31.3 years to nearly 32—in just two years, from 1980 to 1982.
- As of July 1, 1983, Americans over 65 outnumbered American teenagers for the first time in the nation's history.
- By 1990, there will be four million more Americans over 65 than there were in 1980. America's population will have tripled since 1900, but the number of Americans over 65 will have multiplied eight times.
- By the year 2030, after the last of the baby boom generation (the generation born between 1947 and 1964, when more than four million births were recorded every year) has passed age 65, Americans over 65 will have increased from 11 percent of 1980's population to 18.3 percent of a significantly larger population, and they may account for nearly one of every five Americans.

The U.S. Consumer Products Safety Commission recently estimated that the United States spends $2 billion a year on therapeutic and rehabilitative health care resulting from falls and burns suffered by the aging in their own homes. One of the conclusions prompted by that estimate is that architects should design the houses that most people purchase in their 30s with an eye toward the physical, mental and social changes those home buyers will experience in their later years.

That may be an unlikely architectural notion, to impose the limitations of age and infirmity on the youthful aspirations of home buyer and architect alike. After all, it's only human nature to defer consideration of those long-term "changes" for as long as possible. But that notion does a lot to expose the reality of aging and the environment—a reality that is always complex, often contradictory and largely obscured when we think of aging solely in terms of an elderly population with a fixed set of limitations for whom special environments must be designed.



Elderly As a Percentage of Total U.S. Population. By the year 2000, there will be 51 million more Americans than in 1980. The population of the United States will have increased 3.5 times since 1900. Moreover there will be 11.5 times more Americans over 65.

Introduction

Good design for the aging is good design for people of all ages, not only because it provides improved commodity as time passes by, but also because design for aging increases control over the built environment for users of any age or ability. All private and public spaces should be designed to accommodate aging, if for no other reason than to be more universally accessible.

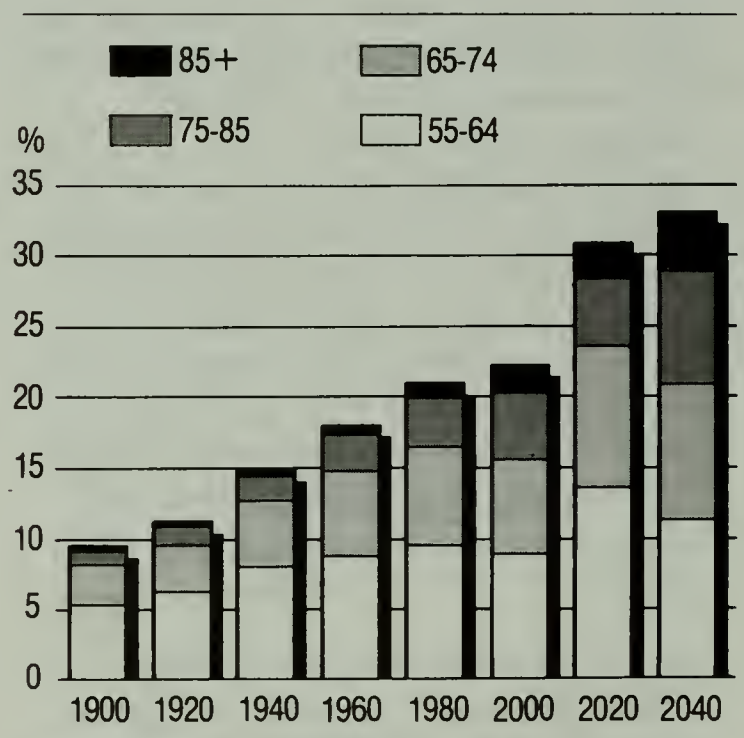
The reality of aging is, above all else, dynamic. Aging is a process that begins at birth and continues unabated until death. Who, then, are *the aging?* Statisticians tend to use age 65 as the line of demarcation, but many Americans in their late 60s are as vital and as healthy as people 20 years younger. Even if we limit our definition of *the aging* to those who have begun to feel the inevitable debilitating effects of time, we are still dealing with a vital, changing population of individuals who span an age range of 40 or 50 years, and who live and work in a wide range of environments with an even wider variance of functional capabilities. Yet stereotypical views of the elderly portray little of this dynamism or variety.

STEREOTYPES

Like the nation itself, America's stereotypical view of its elder citizens has changed radically over the past two centuries. Early in our history, people who lived to advanced age were rare; perhaps as a result, their advice and consent were sought and their wisdom generally respected. From roughly 1865 to the passage of the Social Security Act in 1935—and as longer life spans became more common—such negative attributes of age as infirmity, dependence and "senility" drew increased attention, and the image of the elderly tarnished.

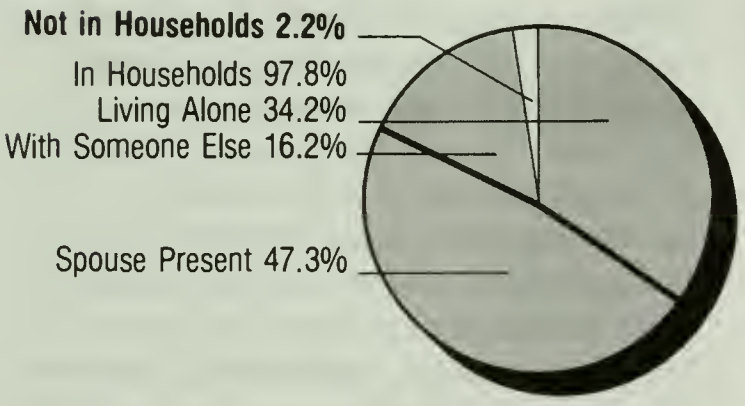
Since 1935, as the percentage of elderly Americans has continued to grow, so has interest and concern for both the problems and contributions of aging Americans. Yet the work ethic that places a premium on productivity and youth—and often dictates a policy of mandatory retirement at 70 or sooner—has worked steadily against the elderly. The image of aging in America today is still one of heightened infirmity and dependence.

It is problematic to extend this broad-brush portrait of our view of the elderly into the future, because so little can be projected with certainty. Some projections are certain: We know, for example, that the baby boom of 1947-64 will

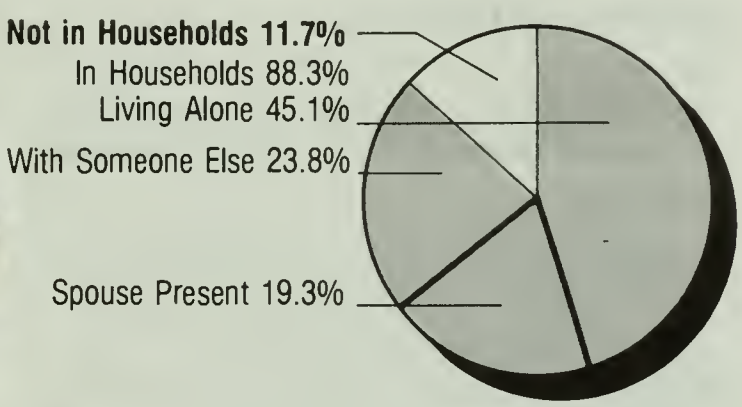


Percentage of Population over 65. The over 55 population increased from 9 percent in 1900 to 21 percent in 1980. It will take a dramatic leap early in the next century.

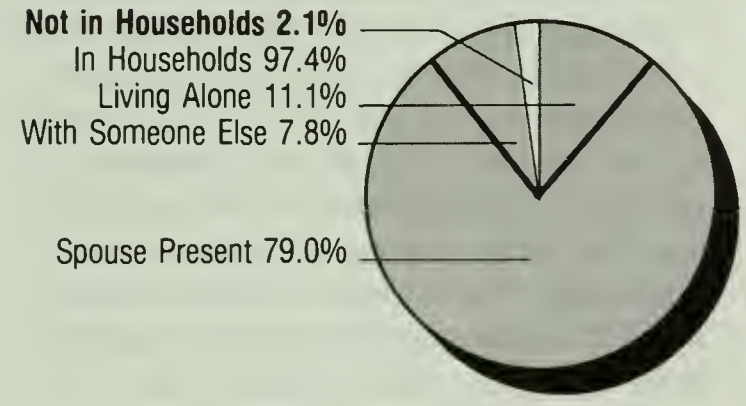
Stereotypes



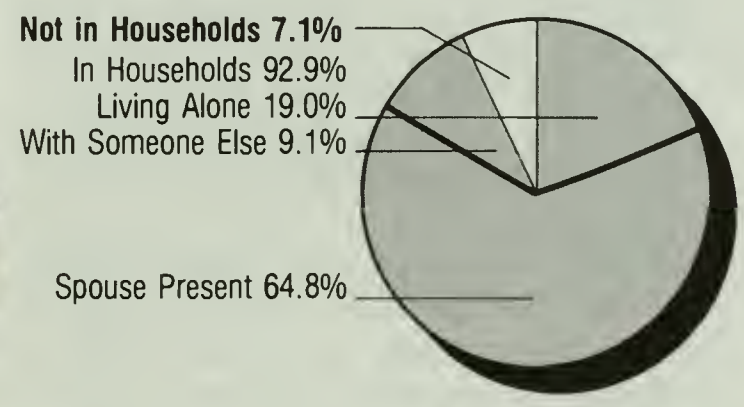
FEMALE 65-74



FEMALE 75+



MALE 65-74



MALE 75+

Living Arrangements of the Elderly (1981). Ninety percent of Americans 65 and over live in household settings; homes, town-homes and apartments. Variations occur between the sexes with increasing age; e.g., 45 percent of women over 75 live alone while only 19 percent of men over 75 do.

shortly become the aging boom of the early 21st century, with both the number and percentage of elderly Americans reaching unprecedented levels. Other projections are less certain: Although we know, for example, that life expectancy in America has increased substantially in the last half-century, we also know that that increase is due in large measure to our reductions of infant mortality and death from non-age-related diseases. Longer lives aside, we know very little about how healthy or capable the aging-boom generation will be, say, 20 years after it cashes its individual retirement accounts. The closest we can come is to take a statistical look at today's aging Americans and assume a degree of comparability for tomorrow's.

Demographics

DEMOGRAPHICS

A look at the research on America's aging provides a glimpse of a population at least as diverse as any other American subgroup.

- Eighty percent of Americans aged 65 and over live independently in their own houses and apartments.
- Eighty percent of those living independently own their own homes.
- More than 65 percent of Americans aged 65 and over live in family settings, with spouse, children or other relatives.
- Only five percent of Americans aged 65 and over are nursing home residents at any given time, and only 20 percent will live in a nursing home at any time during their lives. The average age at entry is 82.
- In 1980, there were 150 females aged 65 and over for every 100 males aged 65 and over. Older women are generally more likely to be widowed and living alone, and more likely to occupy facilities for the elderly; older men are more likely to be married and living with their wives.
- While still in the workplace, older workers are absent less frequently, use psychotropic drugs less often, show lower rates of admission to psychiatric facilities and report less stress than younger workers.
- Despite the facts that the median income of Americans aged 65 and over is half that of the average family, and that many live on fixed incomes, older Americans qualify as big consumers. Accumulated assets, regular retirement income and generally low financial responsibilities combine to produce generally high levels of discretionary income.

Clearly, the aging present as great a cross section of capabilities, perceptions and environmental expectations as Americans in any other group. Widely divergent characteristics of health, wealth, cognitive skills, strength, status, ego and social performance are all likely to be encountered; and an architect designing for such a remarkably heterogeneous population must recognize it as such.

Yet an architect designing for this population must also design for the "worst-case scenario"—for the individual user who is least able to adapt to his or her environment—as well as for individuals at the "better" end of the population's spectrum. The architect must recognize, too, that this population's users can move from the capable end of the spectrum to the incapable end in a relatively short time, and perhaps move back again. People change, as the saying goes, but buildings don't (at least not inexpensively); hence, the argument for flexible home designs that will be as efficient for aging users as they are for their youthful purchasers.

Some will argue that flexibility and adaptability are expensive. But is a satisfactory alternative available? If we do nothing, if we merely maintain the status quo and continue to generate throwaway living environments that individuals must abandon when they can no longer manage their daily lives in those environments, we will have perpetuated a system that is itself too expensive to survive. The premature and potentially unnecessary abandonment of traditional homes and neighborhoods in favor of "easy living" arrangements free of bar-

Narrowing Capabilities

riers and the introduction of support services from care-givers to compensate for the physical constraints of inflexible or unadaptable residential units drive up the costs of both housing and support services. Total replacement costs more than retrofit (see discussion on Page 64). and abandoned housing is a potential problem in any context, urban or rural. Thus, we will continue saddling the decreasing percentage of our population known as productive wage earners with the increasingly difficult and expensive task of providing for the needs of an expanding percentage of the population known as the elderly—an inherently bankrupt policy. Design for aging policies that aim at facilitating the independent-life-style aspirations of the elderly also serve the best interests of both the individuals contributing to and enjoying the benefits of a free society *and* of that society as a whole.

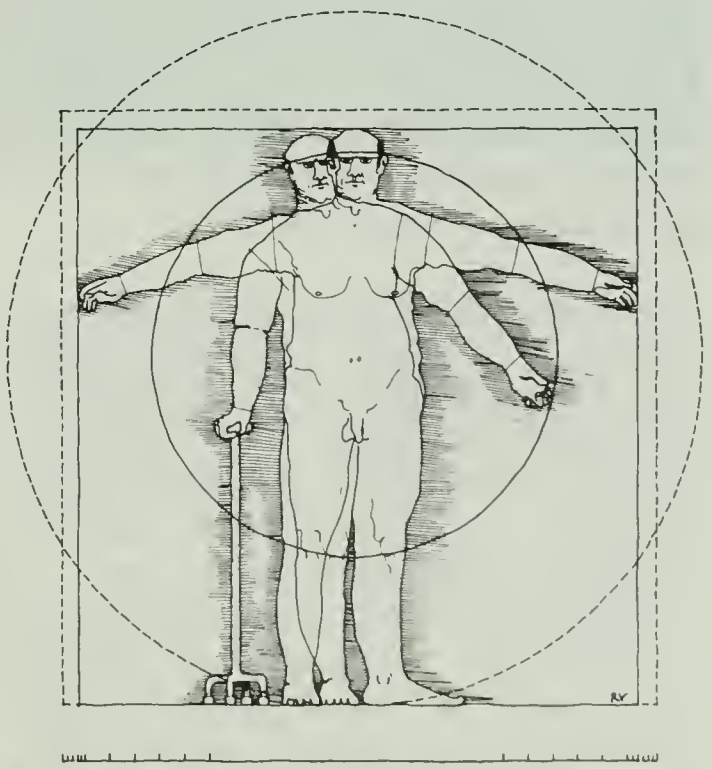
Essentially, the architect designing for the vast parameters of aging is called upon to create three basic kinds of environments:

- *Common spaces* that are sensitive to the changing needs of the aging in the workplace and in the community, and thus prolong the productive economic and social life of America's maturing population;
- *Residential spaces* that extend and maximize independent living, and thus heighten quality of life and reduce dependence on the nation's health care and social service resources, and
- *Care facilities* that are efficient and responsive to the needs of the elderly, and that improve care and perhaps even apply new concepts that may help to improve the quality of life and extend life itself.

NARROWING CAPABILITIES

Part of the dynamism of aging is the new-found opportunity for personal growth often discovered by older people who retire from daily work with the freedom to pursue long-delayed interests, and with the wisdom gained over a lifetime of experience that can make those pursuits more rewarding.

The other side of that dynamism is the very real toll taken by time. Our limitations grow as our years increase. With advanced age, our environmental needs become more complex. The likelihood of changes in familial, societal and occupational roles increases. Losses of health, sensory acuity, independence and physi-



Mobility and Reach. Physical capacities are diminished with advancing age, though in differing ways and at varying paces for each individual.

Narrowing Capabilities

cal capability may also accompany advanced age. In environments designed to suit the elderly's changed and changing needs, however, individuals of advanced age can overcome many of these obstacles. As the aging individual is able to tolerate less insult from the environment, the environment becomes progressively more important to the individual's personal sense of orientation, well-being and general ability. By the same token, the architect's design challenge grows as programmatic parameters narrow from the vast population of the aging to more-clearly defined kinds of individual users.

How are the aging classified? One leading specialist applies a nontechnical but entirely apt nomenclature to people in their later years. In this nomenclature, "go-gos" are people—perhaps recently retired—who are capable, active and eager to exploit their new-found freedom. "Go-slows" are less capable or less eager to be so active. "No-gos" are generally incapable, physically or in other ways, of major activity.

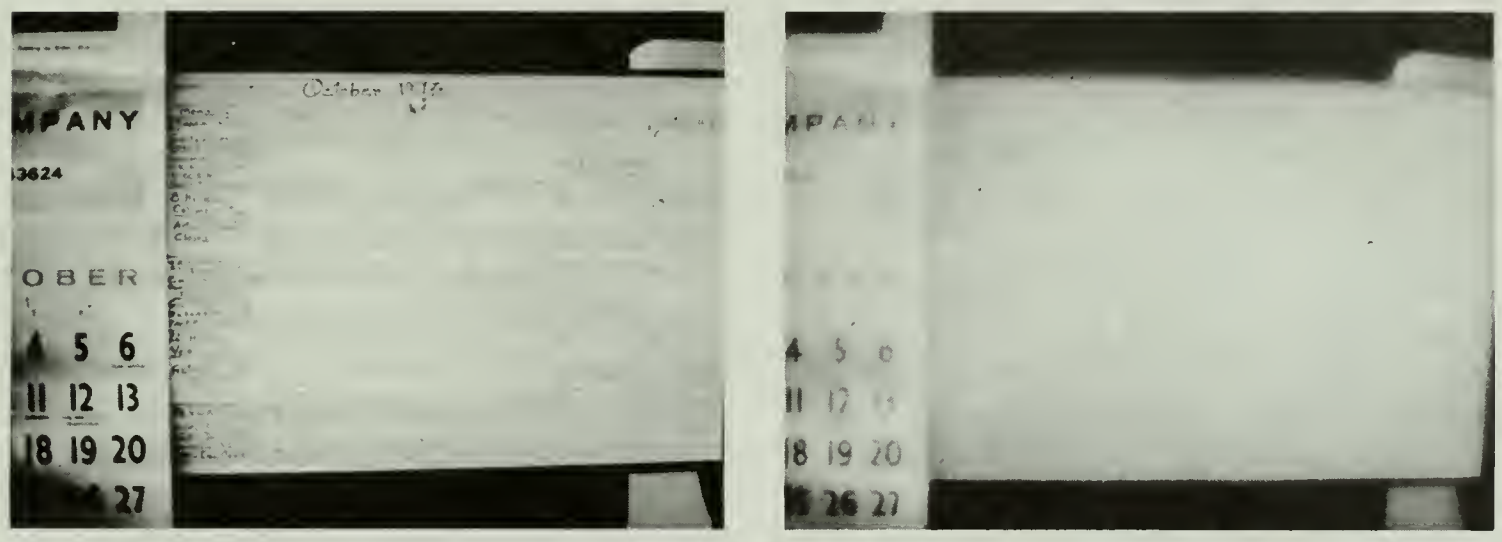
The beginning of this progression from "go-go" to "no-go" can occur at almost any time, depending on the individual. The order of the progression, however, is largely universal (though not irreversible), and transitions from one classification to another hinge on the age-related changes most of us experience in our later years. As an architect narrows his or her focus from the general aging population to the go-slows and no-gos, the need to make those transitions as smooth as possible for the user emerges as a key design goal. And to reach that goal, an architect needs to understand what those potential age-related changes—physical, psychological and social—may include.

PHYSICAL CHANGES

The physical changes experienced during the aging process generally involve mobility, strength and stamina, vision, hearing, and tactile and thermal sensitivity. The degree of change experienced in each of those areas can vary widely, but dysfunction itself—however limited—can start a downward spiral into a larger sense of disorientation and vulnerability. Design can do a great deal to diminish that sense of disorientation and vulnerability by providing the appropriate forms of physical support and behavioral cues. Sensory impairment, for example, does not necessarily mean that the elderly cannot absorb environmental information, but that they may require more reaction time and need clear, strong stimuli to compensate for the loss of sensitivity. The degree to which immediate surroundings promote or hinder appropriate action (and the sense of well-being that it imbues) depends in large part on the severity of sensory loss and on the combinations of impairments to more than one sense experienced by many older people.

Mobility. A number of factors—many of them products of a lifetime of physical wear and tear—force many older people to do things more slowly. Gravity, for example, can gradually overcome our ability to stand perfectly erect, and the stooped posture of aging can itself cause difficulty in walking, sitting down, standing up and turning. Reductions in ambulatory speed may be necessitated by a slowed reaction time; by low energy

Physical Changes



Visual Acuity (Pair of Photographs). These photographs illustrate how the world may appear to an older person with impaired vision.

levels resulting from such chronic conditions as heart disease; by inner-ear damage resulting in a loss of balance or poor feedback about the position of body and limbs; by losses of vision and hearing, which can decrease the information we need to move quickly and confidently through an environment, or simply as the result of a sedentary life style.
In American society, the automobile may be more essential to mobility than the foot—and many elderly Americans continue to drive very late in life. Thus, an architect must design not only interior environments that enhance mobilty (and decrease the likelihood of tripping or falling) but also building sites and roadways that take slowed reaction times into consideration, and sign systems keyed to limitations of sight.

Strength and Stamina. Our fascination with jogging has taught us that strength may decrease with age, but that endurance—or stamina—stays relatively strong. When mobility is hindered, though, reduced strength and stamina are commonplace. Joints normally become more rigid with advancing age. Muscle strength and coordination

Physical Changes

decrease. Overhead cabinets and shelves are suddenly beyond reach (which is why many interior walls in facilities for aging are designed with added support for mid-height storage). Round knobs may become hard to grasp and manipulate. And because movements that used to be simple may now require more exertion—more strength as well as stamina—distances in both interior and exterior layouts can become important considerations.

Visual Acuity. Vision begins to decline as early as age 40, and long-term impairment can include loss of visual field and acuity, reduced color sensitivity and increased sensitivity to glare. Older people may require up to twice as much light as younger people to achieve equal visual acuity. Colors of similar intensity are more difficult to differentiate from one another, especially when viewed against similarly textured or reflective surfaces and when viewed under uniform lighting conditions. Pastels, very dark shades and combinations of blues and greens can be particularly difficult. These problems can be addressed in architectural design through increased illumination levels, increased size for signs, heightened contrast between elements in all visually presented information, and the use of highly contrasting colors.

Other visual changes occurring in the elderly include declines in the ability to see fine detail, to distinguish depth and to adapt to changes in brightness. Glare is often a major problem; the distraction it causes can affect balance, orientation, attention span and short-term memory. Glare is often caused by unshielded artificial lighting or by direct sunlight when either beams into a reflective interior space.

Hearing. Our hearing ability begins to decline noticeably even earlier than visual acuity does. Older people frequently find it most difficult to hear higher frequency sounds, such as those emitted by bells, and fire and smoke sirens. Designers should always consider redundant-cueing safety systems—systems that issue alarms in both audible (in the right frequency) and visible modes, for example.

A decline in hearing also typically makes it difficult for an older person to discern one voice or one sound against a background of competing sounds or voices; thus, sound control becomes an important general design issue.

Tactile and Thermal Sensitivity. Sensitivity to touch naturally and normally declines with advanced age because skin becomes drier and less elastic. Thus, subtle changes in environmental texture can go unnoticed by the older user. Smell—though not a tactile issue—often declines with touch; sensitivity remains high enough, however, to make odor control important, particularly in environments in which incontinence may occur.

Also important among the common tactile losses of aging are declines in immediate sensitivity to pain and temperature. The latter poses a dual threat, because the elderly can be both less aware of dangerous changes in temperature and less able to tolerate such changes. Many older people have a significantly nar-

Psychological Changes

rower "comfort zone" than the young, a much-increased susceptibility to hypothermia (the lowering of overall body temperature to potentially fatal levels) and to frostbite at the extremities, and a reduced ability to recover from these conditions. Older individuals generally prefer more warmth in winter, are less able to endure extreme heat in summer and are particularly uncomfortable in a draft—especially when they are immobile and seated beside windows.

PSYCHOLOGICAL CHANGES

Research has suggested that the speed with which we process, store, summon and express information—not intelligence, per se—may decline with age. It requires little imagination to realize that such changes in perception, cognition and expression can have a depressing and perhaps debilitating psychological effect, even (or especially) when intelligence is still intact.

These difficulties often lead to a generalized sense of insecurity among older people. The reduced functioning of the senses forces one either to negotiate an environment with less information or to limit one's activity in that environment. Neither is an attractive option; the former increases insecurity, and the latter reduces the stimulation that we all find vital in daily life.

The ability to adapt to a new environment is related to one's capacity for exploring that environment and processing the new information it provides. Many older people have increasing difficulty creating new mental images—known as "cognitive maps"—of unfamiliar settings; their understanding of complex but familiar environments may be better than their understanding of less complex but unfamiliar environments.

Interestingly, older people may be more likely to find a cluttered spatial environment—one in which objects close at hand provide visual stimulation, tactile involvement and memories of experiences and attachments to other people—more satisfying than any open and orderly spatial configuration.

Most extreme cases of cognitive impairment used to be called "senility." Today, they are understood to fall into the range of organic dysfunctions that includes organic brain syndrome and Alzheimer's disease. A lengthy discussion of any of these dysfunctions —which are still being intensely researched—is arguably unnecessary for the designer, unless he or she is engaged in the design of highly specialized facilities. What is necessary for the designer is the realization that the vast majority of elderly people have little experience with such extreme dysfunction, and that the challenges of designing for this majority should be mastered before more extreme considerations come into play. This is not to dismiss what appears to be a significant problem for the elderly, however. When perception and cognition are impaired by organic disease, the elderly individual can feel at odds with even the most familiar elements and cues in the environment, and have severe problems dealing with large, noisy, busy, complex and unfamiliar places. Special and sensitively designed spaces for the elderly who face these problems will figure more highly in design for aging as more is

Psychological Changes

learned about both the problems and the dysfunctions that cause them.

SOCIAL CHANGES

At least as difficult as most of the physical and mental changes that confront the aging are the social adjustments we all face as we grow older. Retirement from the workplace, limitations in mobility in the larger world and separation from family and friends can place enormous psychological and emotional burdens on older people.

Aging does not change the nature of a human being. Most elderly continue to be vital, alert, sensitive people whose capacities for emotion and social relationships remain unchanged throughout their lives. Like younger people, they desire independence, control, choice, privacy, intimacy. These needs can be difficult to meet as the elderly require increasing levels of care; the fact that they often are not met probably accounts for the stubborn resistance an older individual may put up when faced with "going to the home." But these needs can be met if an architect refuses to let the clinical and technical demands of design for aging overwhelm his or her concern for the personal and social needs of the people for whom he or she is ultimately designing.

With this concern in mind, Joe J. Jordan, FAIA, a gerontological planning consultant and architect, developed a comprehensive set of a dozen rules of thumb for designers of facilities for aging:

- *Increase opportunities for individual choice.* One of the effects of aging is the dwindling number of options in many areas left open to the individual. The environment in a facility for aging can offset some of that effect by permitting the widest possible range of personal choices to the individual user, consistent with the needs of the group.
- *Minimize dependence and encourage independence.* Especially for the elderly, the ability to "do for oneself" instills pride and enhances self-esteem. Design supports in a facility for aging should reinforce a sense of independence, unobtrusively and without providing more support than a prideful user would consider necessary.
- *Compensate for sensory and perceptive changes.* An older person's inability to smell smoke, to hear a fire alarm or to see an obstacle in his or her path does not mean that person cannot absorb environmental information. Such changes, however, do require allowances for longer reaction time and a sensitivity to the fact that other stimuli can compensate for sensory and perceptive losses.
- *Recognize the probability of decreases in physical mobility.* Walking, carrying, climbing, lifting, gripping, pushing and pulling are all motor functions that may be performed less adeptly and less forcefully by the elderly.
- *Improve orientation and comprehension.* Because the physical ailments that often accompany aging can cause loss of memory and disorientation, an aging facility's spatial organization and circulation patterns should be simple and direct, and its materials and fixtures should be chosen with an eye to avoiding confusion in the environment.
- *Encourage social interaction.* Old friends—and the making of new acquaintances in group settings—are particularly impor-

Social Changes

tant to an older person whose social sphere shrinks when he or she retires, moves out of an old neighborhood or loses close friends to ill health or death.

- *Stimulate participation.* An older person whose self-esteem may be undercut by retirement from a life's work, a reduction in income or just the reality of aging in a youth-oriented world can need not only a variety of opportunities to actively rebuild that self-esteem, but also some stimulation to participate and take advantage of those opportunities.
- *Reduce conflict and distraction.* A successful facility for aging may have several activities going on simultaneously—and part of its success will be from a design that prevents the activities from interfering with one another and distracting users who can be easily distracted.
- *Provide a safe environment.* Because older people can be particularly sensitive to any threat of danger in the environment, facilities for aging should incorporate safety features that will be easy to use and comprehend, in daily life as well as in emergencies.
- *Make activities and services accessible.* A facility's location and design should render it readily accessible to outside services, and easily accessible for the greatest possible number of older people in its community, regardless of their physical condition.
- *Improve aging's public image.* Through its character and sheer esthetic quality, the architecture of a facility for aging can do a remarkable job of changing stereotypical conceptions of the elderly and improving the community's attitude toward, interest in and concern for its aging population.
- *Plan for growth and change.* Facilities for aging constitute a relatively new building type whose form is still evolving. That this evolution will continue well into the future is as certain as the fact that more and more Americans are growing older every day.

Finally, two more rules of thumb are available to help architects retain their perspective on the social requirements of design for aging. First, engage in the greatest possible dialogue with those elderly who actually use facilities for aging today, and work hard to share an understanding of their needs and experiences. Second, remember that aging is a universal process, and that the desire to live an independent, satisfying life burns as intensely in us when we are aged as it does when we are young. As future candidates for admission to America's facilities for aging, we owe it to ourselves, as well as to our users, to design environments that help sustain that independence and attain that satisfaction for as long as possible.

II FACILITY TYPES
The Continuum of Care

Like colors of the spectrum, the different types of environments used by the aging seem infinite in number, and they are often so closely overlapped that characterizing them distinctly can be next to impossible. In the subset of facilities designed specifically for aging, distinctions can be just as hard to come by; the range of available living environments, social environments and settings for the delivery of personal, social and health care services is broad. Such complexity characterizes the matrix that is most commonly used to differentiate facility types designed for aging.

The specific sets of services provided in particular facility types are drawn from the wide variety of different services needed for older people, a variety that ranges from simple information and referral services to complex health care services. To describe every combination of service options within this range would be virtually impossible, as would any attempt to identify all the permutations and combinations of facility types incorporating such service packages that imaginative architects and clients have invented. Instead, just as we isolate primary points along the color spectrum, we can isolate the most common facility types being developed today for older users, and treat them as landmarks along the spectrum of facilities designed for older people.

The five landmark facility types considered here (in ascending order of breadth of services provided)—

- elderly housing
- senior/community centers
- residential care facilities
- nursing homes
- continuing care retirement communities

—range across most of the facility-type spectrum and involve most of the programmatic and design issues with which an architect designing for older users must contend.

Each of these five landmark facility types is examined here in terms of its scale and scope, its principal form-generating elements, its special features, and the details and variations unique to it. Each description is illustrated with building diagrams that set out desirable relationships between spaces. Each is also accompanied by an adjacency matrix that further spells out specific functional area relationships.

Finally, each major facility type treated here is accompanied by a programming and design checklist that identifies all of the important design elements an architect engaged in design for aging must consider. The checklists are designed to be used from the outset of project programming and design, and to aid the architect in three distinct ways:

- As a comprehensive *starting point* that will, at the programming stage, enable

Continuum of Care

both architect and client to identify and put in priority order the major concerns of the facility at hand and the needs of its users. The involvement of the client (and perhaps of the users) can be vital at this stage, because so many of the facility types emerging today are shaped by clients' and users' reactions to older facility models. The kind of dialogue and review of key spaces, services, relationships and other issues that these checklists enable may prove provocative, suggestive and helpful to all involved in the design process.

- As a point of *access to design guidelines* for the architect, to be consulted as programming and design advance. Checklist items that are aging-specific are keyed to entries in **Part III: Glossary,** where the architect will find the specific design and detailing information needed to translate the checklists' programming and design issues into functional design elements.
- As a *quick reference* to ensure that all programmatic and design concerns have been addressed in the design process.

The checklists will *not,* however, serve as points of access to *all* of the information required to program, plan, design and detail a facility for aging—or even for one of the landmark facility types directly covered here. To achieve that end, the architect also must explore the literature referenced in the annotated bibliography, become familiar with the various aging organizations that will be involved in the project, and use the standard architectural practice references pertinent to the task at hand.

The architect should contact the local Area Agency on Aging to determine what groups and aging organizations may have involvment in the particular project at hand. The AAAs are responsible for coordinating local programs, including social programs (for example, senior centers), food services, elderly housing, and information and referral services. Additionally—because so many elderly facility types are regulated by state or municipal health, housing or social service agencies, or by financing and/or reimbursement agencies—the architect must become familiar with all relevant codes, standards and requirements of the agencies having jurisdiction, and then derive a specific design code for the project that reconciles often conflicting and overlapping requirements. The architect may also be required to persuade agencies that rigidly adhere to old concepts that new facility types may be needed, that traditional dividing lines between "housing," "health" and "social service" facilities for the elderly have become blurred. All of these steps may be necessary to properly advise the client and, ultimately, serve the user.

CONTINUUM OF CARE

Facilities designed for use by older people can usually be characterized by their specific supportive, living and/or social environments, and by the physical settings they provide for the delivery of personal, social and health care services. Not all personal, social and health care services must be provided in a specific facility, however. The services that older people need can range in level from very low—say, the provision of maintenance

Continuum of Care

on an other wise fully independent person's private home—to the high level of service that might be provided in a nursing home. Services commonly provided for older people include, for example:

- information and referral
- physical security
- home maintenance and repair
- leisure activities, including recreation, the arts, educational and social activities
- transportation
- counseling (personal, social, financial, insurance, legal, religious)
- companionship
- residential services (housekeeping, laundry, food shopping, meal preparation)
- housing assistance
- reimbursement assistance
- central food service
- assistance with medication
- adult day care
- personal care (assistance with such activities of daily living as bathing, toileting, grooming, dressing and eating)
- custodial care (24-hour supervision)
- therapy (rehabilitation, physical, occupational, mental health)
- health care (home, ambulatory or outpatient, long-term chronic, acute, emergency)

This list of services—some common in facilities designed for older people and some not—begins with the lowest, least intensive levels for a reason: The least service is generally deemed best, because it maintains the greatest level of independence for the aging user at the lowest cost.

Unfortunately, most older individuals do not fit neatly into this order of services; few require a specific maximum level of service plus all of the services below that level. Most older people need a little of this (low-level) service and a little of that (high-level) service on one day, and a different mix of services on the next day. The challenge of caring for the aging is to meet these diverse and changing needs through a network of different service providers, which together constitute a "continuum of care."

Certain care services are obviously best provided in a specific facility. The high cost of services usually prevents us from providing each aging person with an individually tailored environment. Therefore, to contain costs, heighten efficiency and increase the quality of care (as well as the quality of life), groups of older people with similar needs and requirements are accommodated in a facility type that offers a relatively fixed range of services. Thus, the great variety of individual service needs is met in a relatively limited spectrum of facilities designed for aging.

Key facility types in this spectrum appear in the following figure, again listed in an order that ascends from least- to most-intensive service levels. The landmark facility types (in **bold face** in the figure) are those covered in greater depth on the following pages. Requirements for facility types enclosed by parentheses closely resemble requirements for the preceding unbracketed facility type.

Continuum of Care

SPECTRUM OF FACILITY TYPES FOR AGING

Level of Dependence	Facility Type
Very Low	Single-Family Housing/Apartments Accessory Apartments (see Page 62) Granny Flats (see Page 95) • (Echo Housing)
Moderate-Low	Retirement Mobile Home Parks **Elderly Housing** (Multiunit) • (Retirement Subdivisions) • (Retirement Villages) • (Retirement Towns) (see Page 122) Group Homes (see Page 95) • (Small-Group Cooperative Housing) • (Shared Housing) **Senior Centers** • (Community Centers)
Moderate	Congregate Housing (see Page 81) • (Retirement Hotels) Adult Day Care Centers (see Page 64) Respite Care Centers (see Page 122) **Residential Care Facilities** • (Domiciliary Care Facilities) • (Board and Care Facilities) • (Personal Care Homes) • (Adult Foster Homes) • (Homes for the Aged) • (Rest Homes) • (Health-Related Facilities) Hospices (see Page 99)
Moderate-High	**Nursing Homes** • (Convalescent Homes) • (Health-Related Facilities) • (Intermediate Care Facilities) • (Skilled-Nursing Facilities) • **Continuing Care Retirement Community** • (Multilevel Facilities)
High	Rehabilitation Hospitals Acute-Care Hospitals

ELDERLY HOUSING

MAJOR BUILDING TYPES

In the discussions that follow for the five landmark facility types, items identified in **bold face** type appear as entries in **Part III: A Design for Aging Glossary.**

ELDERLY HOUSING

The term "elderly housing" refers to all types of independent and semi-independent housing facilities in which elderly residents are generally able to care for themselves without supervision and extensive medical attention. The range of elderly housing extends from resident-owned single-family houses to multiunit housing projects and **congregate housing.**

Major Spaces. The principal form generators in elderly housing are the dwelling units, each of which generally includes such familiar components as an **entry** area, **living/dining room, kitchen, bathroom, bedroom, storage** space and **balcony,** and each of which should be adaptable for use by handicapped persons.

Variations in this typical makeup can be dictated by a number of factors, including location, site, financing and the economics of rental mix (the mix of efficiency, studio and one- or two-bedroom units). Client involvement in programming is essential here, because the client's criteria are the most pertinent.

Programming and Design Considerations. The programming and design procedure considers the human needs and values of the elderly, and must start with a definition of the type and scope of development intended. The following considerations must be addressed to establish that definition:

- Consider how many dwelling units will be provided, and of what types and floor areas.
- Consider what type, number and magnitude of common service facilities (such as central dining spaces, activity rooms and lounges) will be provided.
- Consider what type, number and magnitude of ancillary services and facilities (such as house keeping, storage, maintenance, security and management) will be provided.
- Consider the location of the site, and its physical features, size, contours, constraints.
- Consider how much parking will be required.

Development Size and Dwelling-Unit Mix. Experience suggests the following general rules:

- The minimum sizes of housing developments solely for the elderly vary according to financing, program and location. Developments that are subsidized by public and/or private agencies may contain as few as six or 10 units targeted to

Elderly Housing

specific community needs. Market developments for the elderly generally should not be smaller than 90 to 100 dwelling units, to economically justify such programmed services as security, activities, transportation, counseling, residential services and central food services. Rural developments usually are smaller (10 to 45 units) in recognition of lower demand and lower density life-styles.

- A recommended maximum size of 200 to 350 dwelling units is based on the assumption that high concentrations of elderly people may tend to encourage isolation from the community and could possibly cause abnormal neighborhood development.
- Each development of elderly housing should offer a range of dwelling-unit types and sizes to accommodate a wide range of housing needs and life-styles. The specific dwelling-unit mix for each development of elderly housing must be determined with the client.

Density. The determination of site density should be considered as a process rather than as a set of preconceived density requirements. Both the site and the development program should be considered in the final determination of optimal site density. The number of units proposed, the size of the proposed site, the amount of common area, the parking required and the gross open space to be provided should be included. In many instances, livability is equated with density, resulting in the establishment of a prescribed limit for the maximum number of dwelling units per acre that will be permitted. Maximum density-ratios can limit creative approaches to the development of housing environments.

Other Factors. These special factors affecting the elderly should also be considered:

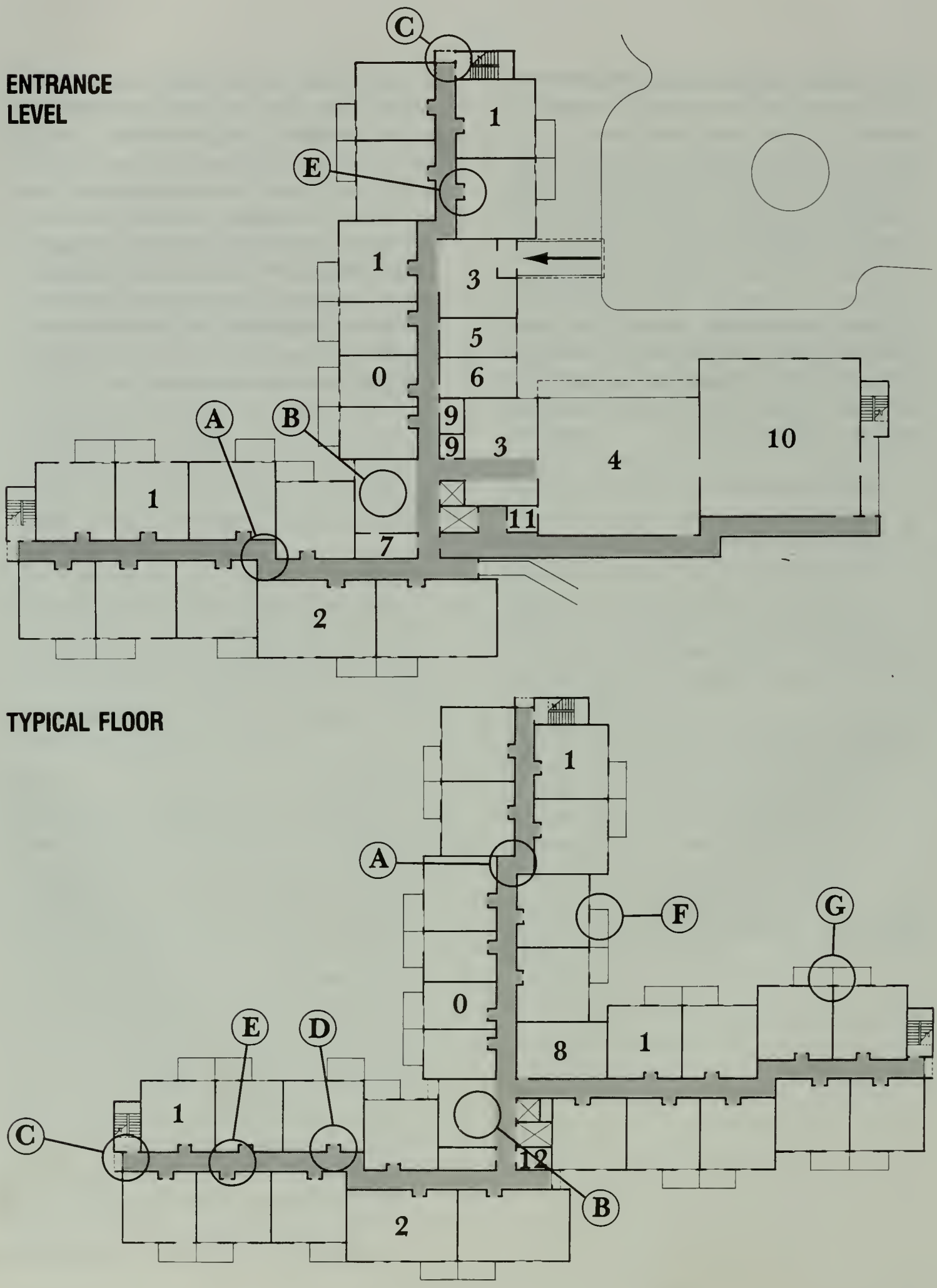
- Elderly people are less mobile than people in younger age groups. Therefore, the housing dwelling unit should be conceived of as a home, and not as transient housing.
- The elderly desire a choice in living situations, within a given community. Therefore, a variety of dwelling unit sizes and floor plans should be provided.
- Lack of mobility may limit an elderly resident's ability to reach community recreation and social service facilities. Providing the basic services and facilities within easy walking distance (or within immediate living environs) should be considered. Otherwise, the developer may have to offer transportation services to facilitate occupancy by elderly residents.
- The elderly desire a sense of autonomy, and they need an environment that extends and enhances the duration of independent living. Therefore, the architect should provide the special design features and details recommended under specific rooms and spaces in **Part III: A Design for Aging Glossary.**

Elderly Housing

- The elderly require as much floor area for their activities as younger people require for the same activities—or more, to accommodate life-time collections of furniture, furnishings and memorabilia. They also may require special design adaptations to accommodate possible physical limitations, such as support for potential future installations of lower counter tops, storage units and grab bars (see **adaptability**). Space for potential future wheelchair access should be provided in all areas of the dwelling unit (see ANSI A117.1).

- Except for a greater amount of time spent in the dwelling unit, activity patterns for elderly people are much the same as those for younger people, differing only in the way older people may wish to or be able to perform certain activities. This consideration may affect space dimensions, **materials, finishes,** colors, **lighting,** placement of **windows** and **doors, architectural hardware,** selection of equipment and fixtures (see **control),** and **sign systems.**

Elderly Housing

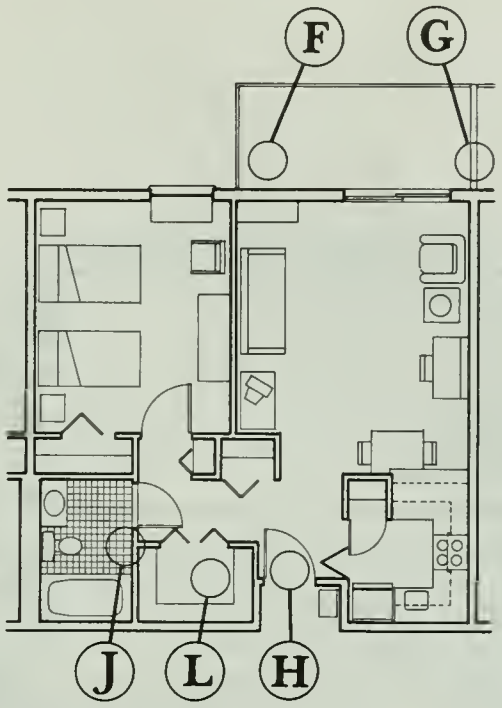


Elderly Housing

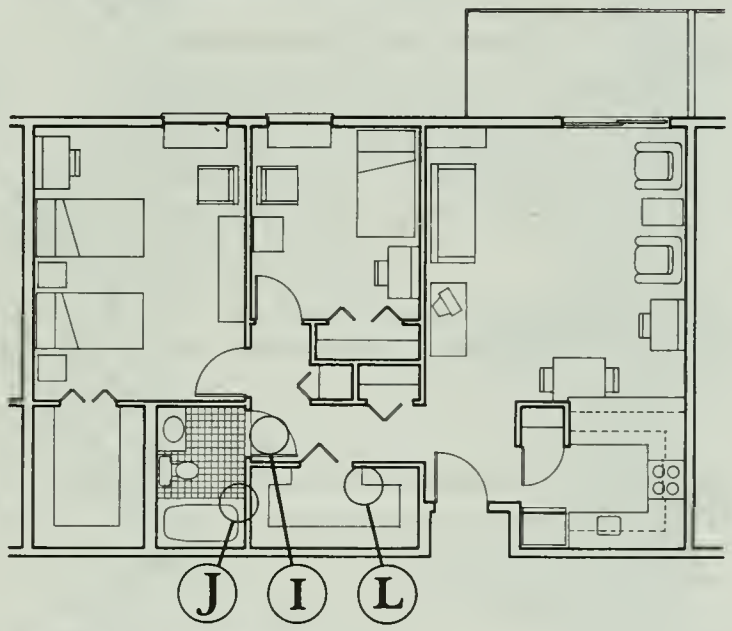
A Corridor—offset to reduce visual length and to provide vista termination.
B Lounge—adjacent to activity and circulation nodes; good for meetings or waiting for laundry.
C Overhang—helps to reduce sky glare if it is kept to 6 feet or 7 feet above the floor; potential glare problems require opaque curtains or external shading.
D Entrance Alcoves—relieve an otherwise "door-after-door" look to the corridor; mark transition and help to establish a hierarchy of spaces.
E Dwelling Unit Entries—offset to increase sense of privacy.
F Balconies—provide access to private outdoor spaces.
G Screen—desirable between private balconies and to provide more of a sense of security.
H Dimensions & Door Swings—permits wheelchair access.
I Bathroom Door—opens out for emergency access and to provide more maneuvering space in the bathroom.
J Emergency Call Device
K Windows & Interior Corners—located in increase variations in furnishability.
L Storage—substantial amounts of storage are required for accumulated personal possessions.

0 Efficiency Unit
1 One Bedroom Unit
2 Two Bedroom Unit
3 Lounge
4 Dining
5 Reception
6 Administration
7 Laundry
8 Residents' Storage
9 M/F Toilet
10 Kitchen
11 Mechanical
12 Trash

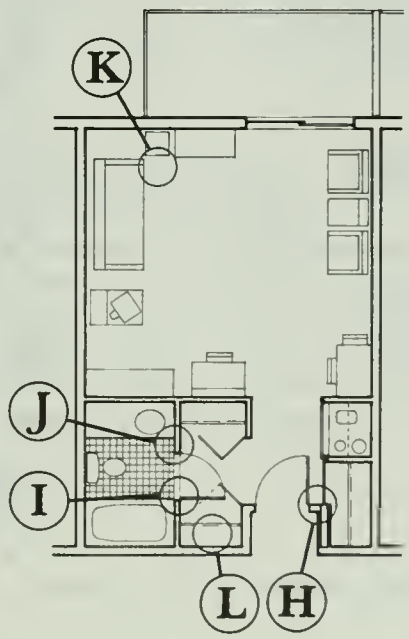
Credit:
Noakes and Associates, Bethesda, Maryland



ONE BEDROOM UNIT

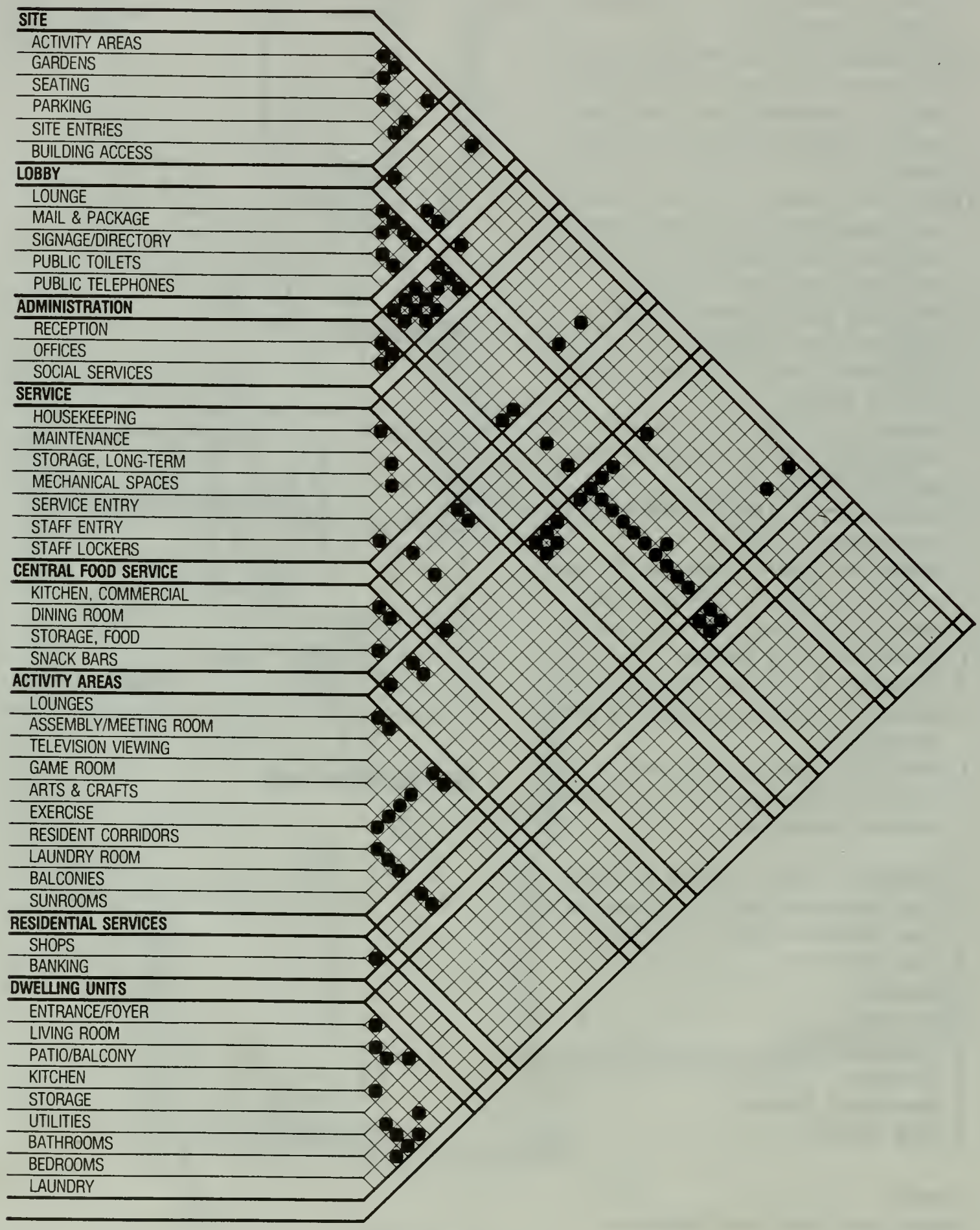


TWO BEDROOM UNIT



EFFICIENCY

Elderly Housing Adjacency Matrix



Elderly Housing Checklist

Elderly Housing Adjacency Matrix and Checklist. The adjacency matrix and checklist that follow are more comprehensive than may be required for most projects; they reflect an effort to include all possible elements that might figure in the programming process.

Similarly, the adjacency matrix shown is the matrix for congregate housing, used here to present one of the most elaborate combinations of relationships encountered in current elderly-housing facility types. The architect should modify this matrix to conform with the specific requirements of the client and the particular facility type being planned.

ELDERLY HOUSING: CHECKLIST

- Items on the checklist which are in **bold type** and have a page number are keyed to **Main Entries** in the Glossary.
- Items which are in normal type and have a page number are discussed in the Glossary on the specified page.
- Items which are in normal type and have no page number are not discussed in the Glossary, and the architect is expected to use other sources.

Site Analysis (see Page 128)
Public Transportation
Location (see Page 128)
Neighborhood (see Page 128)
Security (see Page 125)
Orientation
Selection
Topography (see Page 129)
Zoning (see Page 129)
Market (Needs) Analysis

Site Development (see Page 130)
Outdoor Spaces (see Page 132)
Circulation
- Emergency (police, fire, ambulance)
- Pedestrian
- Residents
- Delivery Service, Garbage Collection, Maintenance, Landscaping and Grounds-keeping Vehicles, Snow Removal and/or Storage
- Staff
- Vehicular
- Visitors

Landscaping (see Page 135)
- Gardens

Lighting (see Page 104)
Outdoor Recreation
- Checkers/Chess
- Swimming Pool
- Tennis
- Badminton
- Putting Green/Golf Course
- Croquet
- Horseshoes
- Boccie/Lawn Bowling

Parking (see Page 135)
- Barrier-Free (see Page 135)
- Residents (see Page 136)
- Staff
- Visitors

Patios (see Page 133)
Seating (see Page 123)
Security (see Page 125)
Shelter
Sign Systems (see Page 126)
Solar Orientation (see Page 136)
Water Supply and Sewage Systems

Elderly Housing Checklist

Entries, Building (see Page 89)
Barrier-Free (see Page 71)
Control
Emergency Exit (see Page 93)
Main (see Page 89)
Secondary
Service (see Page 92)
Visitors/Staff/Residents
Lounge (see Page 106)

Lobby/Reception Areas (see Page 106)
Control
Directory (see Page 127)
Front Desk
Seating (see Page 123)
Mail and Package Delivery (see Page 109)
Toilet Rooms, Public (see Page 142)
Sign Systems (see Page 126)
Storage
Telephones (see Page 79)

Office and Administrative Space (see Page 114)
Administrative Services
Communication Systems (see Page 78)
Control/Security
Social Services (see Page 138)

Housekeeping (see Page 99)
Janitors (see Page 99)
Linen
Maintenance
Receiving
Storage, Long-Term (see Page 140)
Trash (see Page 99)

Vertical Transportation
Elevators (see Page 88)
Elevator Lobbies
Ramps (see Page 117)
Stairs (see Page 139)

Central Food Service
Dining Areas (see Page 85)
Employee Lockers
Employee Rest Rooms
Kitchen (see Page 100)
Office—Dietitian
Service (Receiving)
Snack Bars (see Page 138)
Storage
Trash
Vending (see Page 138)

Activity Areas (see Page 63)
Arts and Crafts (see Page 67)
Assembly Areas (see Page 69)
Balconies, Common (see Page 69)
Chapel (see Page 147)
Corridors (see Page 83)
Exercise Areas, Health Club, Fitness Facilities (see Page 92)
Game Rooms
Lounges (see Page 106)
Multipurpose (see Page 110)
Performing Arts Areas (see Page 116)
Reading/Library Areas (see Page 118)
Sun Rooms (see Page 140)
Television Viewing Areas (see Page 141)
Swimming Pool

Residential Services (see Page 119)
Banking
Beauty/Barber
Consultation Room (see Page 82)
Housekeeping (see Page 99)
Laundry Facilities (see Page 103)
- Accessories (see Page 103)
- Adaptability
- Auxiliary Heat

Elderly Housing Checklist

SENIOR/COMMUNITY CENTERS

Senior centers are primarily neighborhood facilities, and thus should be designed to reflect the characteristics of a neighborhood's specific population. The ethnic background, social class, economic status, physical condition and age of a center's participants all contribute to its characteristics, and largely determine the activities carried out in it. Many senior centers are located in donated facilities. As a rule, these buildings—church halls; YMCAs; municipal buildings; storefronts, and surplus public buildings, such as post offices, schools, historic houses and libraries—have been only slightly and insufficiently renovated to provide for the special needs of elderly users.

Community centers are common components in Continuing Care Retirement Communities (CCRCs), and in many other types of retirement housing. They serve many of the same functions as senior centers, and provide residential services such as banking and pharmacy. In a CCRC, the community center often is the focal point of the community, serving as the main entrance to the total development and as the site of most group and administrative activities.

Senior/community centers are social, activity and communication centers for elderly people who enjoy coming together for common events and services, and who share similar interests, needs and aspirations. These centers are places in which older people can meet others of their own age, learn new skills, participate in cultural and recreational activities and receive counseling, health care and meals.

A community center is typically sponsored by the CCRC of which it is a part, but sponsorship for senior centers is equally divided between public and private sources. Most senior centers are small (with fewer than 50 members) and have a board of directors and a paid professional staff. The number of senior centers has grown to over 5,000 nationwide since their inception in 1943.

Major Spaces. The principal form-generating spaces in senior/community centers are highly variable—a result of highly variable programs, groups and activity schedules. Services (nutritional, health, social and educational), activities (recreational and social-cultural) and scheduled group sizes will determine the type and size of space to be designed.

Spaces often programmed for senior and community centers include **entries, lobby/reception areas, lounges, television viewing areas, libraries, classrooms, activity areas,** common **dining areas, snack bars,** outdoor recreation areas, individual service areas (for counseling and/or clinical services), meeting/**assembly areas** suitable for visual and performing arts, and music rehearsal and listening areas. Also included frequently are support areas such as commercial kitchens and administrative offices.

Programming and Design Considerations. The programming and design procedure considers the human needs and values of the elderly, and must start with a definition of the type and scope of development intended. The following

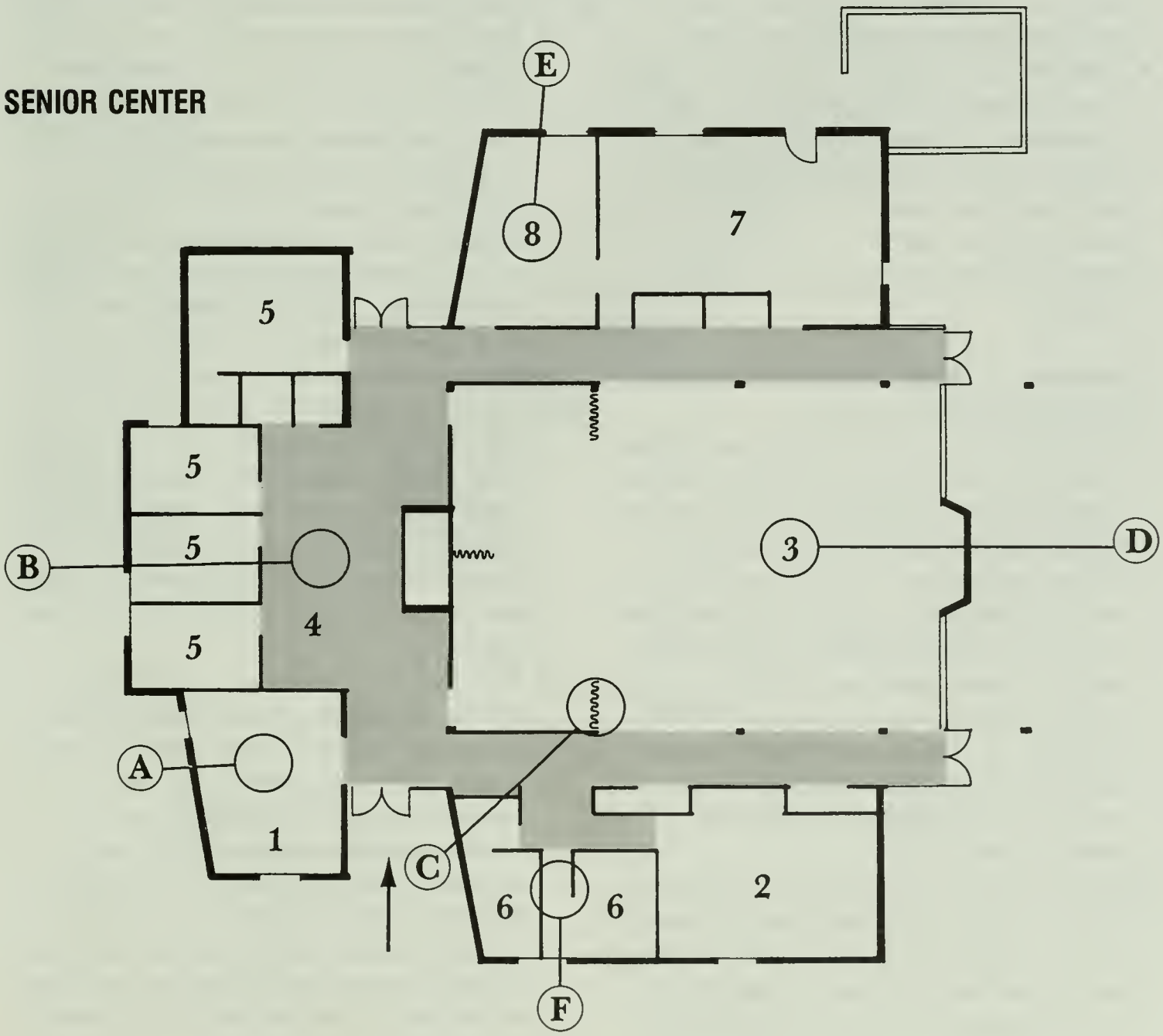
Senior/Community Centers

A Lounge—adjacent to activity and circulation.
B Reception Area—with visual control of major spaces.
C Dividers—can subdivide space into large and small areas with separate access.
D Multipurpose Room—space useable for performing arts, chorus.
E Storage Room—for multipurpose spaces' tables and chairs.
F Restrooms—accessible to wheelchairs

1 Lounge
2 Arts & Crafts Area
3 Multipurpose Room
4 Reception
5 Administration/Office
6 M/F Toilet
7 Kitchen
8 Storage

Credit:
Joe J. Jordan, FAIA, Philadelphia

SENIOR CENTER



Senior/Community Centers

considerations must be addressed to establish that definition:

- Consider what types of services and activities will be provided, for what group sizes and for what times of the day.
- Consider what type, number and magnitude of service facilities (such as central dining spaces, activity rooms and lounges) will be provided.
- Consider what type, number and magnitude of ancillary services and facilities (such as maintenance, storage, security and management) will be provided.
- Consider the location of the site, and its physical features, size, contours and constraints. If applicable, consider the physical characteristics of the existing building to be adapted to senior/community center use.
- Consider how much parking will be required.

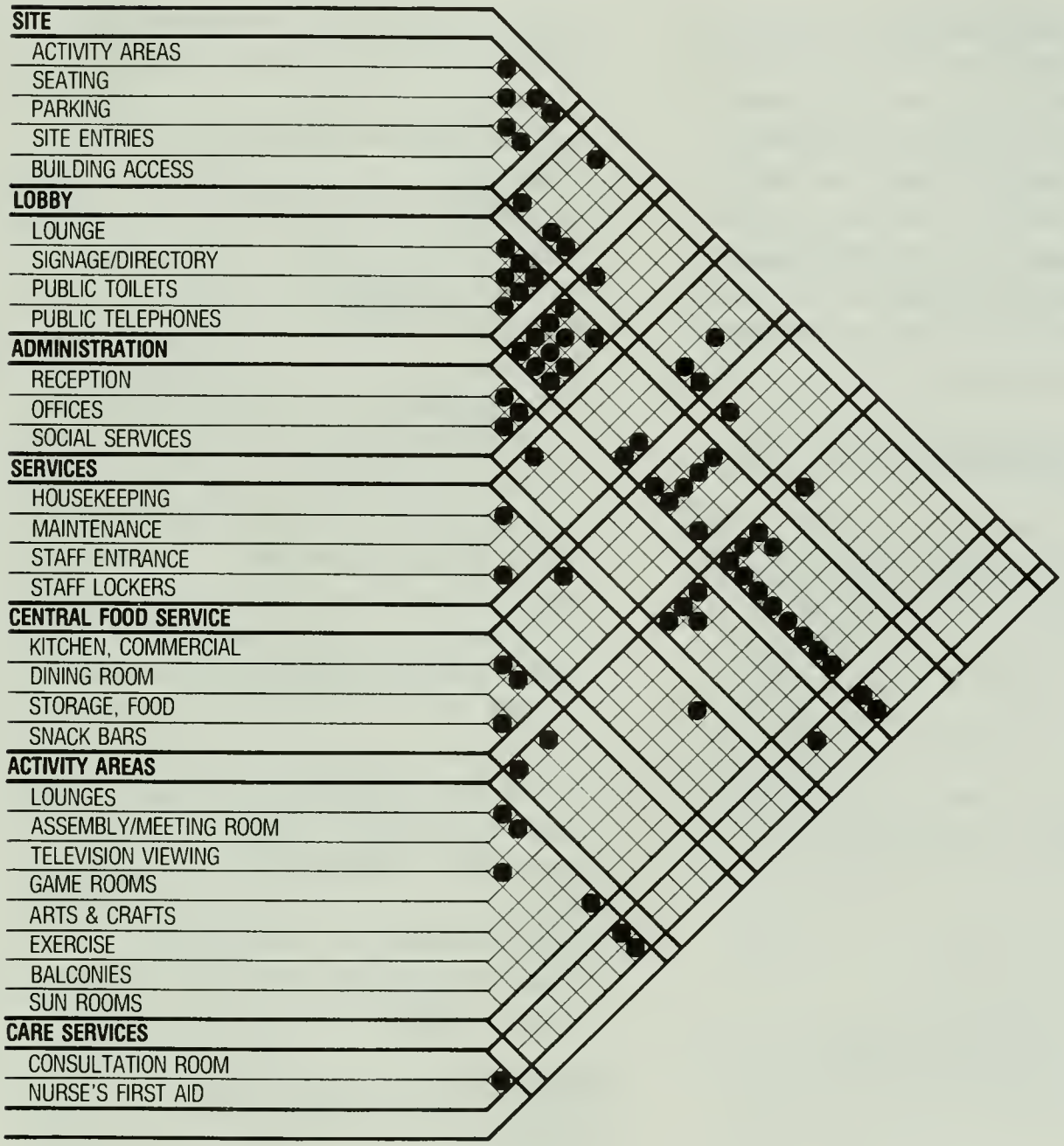
Development Size. Experience suggests the following general rules:

- Developments vary in size to accommodate 25 to 500 center members. Smaller developments typically are restricted to minor conversions of existing space. Larger senior/community centers often are freestanding, purpose-built facilities for 350 to 500 members. Senior/Community centers serving CCRCs are generally planned to serve on-site CCRC residents as well as participants in any outreach programs conducted in the center to strengthen ties with the broader community.
- Each senior/community center should offer a range (types and sizes) of service space and activity space, to accommodate a multitude of services and activities. The specific functional space mix of each development must be determined with the client.

Other Factors. These special factors affecting the elderly must also be considered:

- Image and ease of access are significant issues in senior/community center design. Generally, a strong visual image that announces the center's presence is desirable. Integration with public transportation and both pedestrian and automobile access is also important.
- **Assembly areas** should be located near **lobby** or **lounge** areas. Where fixed **seating** is provided, aisles should be five feet wide for the movement of **wheelchairs** and walkers, and sufficient wheelchair spaces should be provided. Spacing between rows (back-to-back) should be 40 inches. Seats should be 22 to 30 inches wide and upholstered, but firm (see **seating**).
- A good distortion-free public address system is important. If possible, headsets should be provided for a few seats near the front (to allow lipreading for those with hearing loss), as should a projection room to eliminate background noise from the projector, which can be particularly bothersome for the elderly.
- The provision of separate meeting spaces should be considered, especially in larger facilities. Small centers with lower daily attendance often use other rooms—**lounges, dining areas or multipurpose rooms**—rather than separate meeting spaces for assembly.
- Elderly people are less mobile than younger people, so the modes of transportation that center members will use, as well as passenger-loading platforms,

Senior Center Adjacency Matrix



Senior Center Checklist

parking and pedestrian access, must be carefully considered.
- The elderly desire a sense of autonomy, and they need an environment that extends and enhances the duration of independent activity. Therefore, provide the special design features and details recommended under specific rooms and spaces in **Part III: A Design for Aging Glossary.**

SENIOR/COMMUNITY CENTER CHECKLIST

- Items on the checklist which are in **bold** type and have a page number are keyed to **Main Entries** in the Glossary.
- Items which are in normal type and have a page number are discussed in the Glossary on the specified page.
- Items which are in normal type and have no page number are not discussed in the Glossary, and the architect is expected to use other sources.

Site Analysis (see Page 128)
Public Transportation
Location (see Page 128)
Neighborhood (see Page 128)
Security (see Page 125)
Orientation
Selection
Topography (see Page 129)
Zoning (see Page 129)

Site Development (see Page 130)
Outdoor Spaces (see Page 132)
Circulation
- Emergency (police, fire, ambulance)
- Pedestrian
- Residents
- Delivery Service, Garbage Collection, Maintenance, Landscaping and Groundskeeping Vehicles, Snow Removal and/or Storage
- Staff
- Vehicular
- Visitors

Landscaping (see Page 135)
- Gardens

Lighting (see Page 104)
Outdoor Recreation
- Checkers/Chess
- Swimming Pool
- Tennis
- Badminton
- Putting Green
- Croquet
- Horseshoes
- Boccie/Lawn Bowling

Parking (see Page 135)
- Barrier-Free (see Page 135)
- Residents (see Page 136)
- Staff
- Visitors

Patios (see Page 133)
Seating (see Page 123)
Security (see Page 125)
Shelter
Sign Systems (see Page 126)
Solar Orientation (see Page 136)
Water Supply and Sewage Systems

Entries, Building (see Page 89)
Barrier-Free (see Page 71)
Control
Emergency Exit (see Page 93)
Main (see Page 89)
Secondary
Service (see Page 92)
Visitors/Staff/Residents
Lounge (see Page 106)

Lobby/Reception Areas (see Page 106)
Coat Room/Storage/Lockers Control
Directory (see Page 127)
Front Desk
Seating (see Page 123)
Mail and Package Delivery (see Page 109)

Senior Center Checklist

Toilet Rooms, Public (see Page 142)
Sign Systems (see Page 126)
Storage
Telephones (see Page 79)

Office and Administrative Space (see Page 114)
Administrative Services
Communication Systems (see Page 78)
Control/Security
Social Services (see Page 138)

Housekeeping (see Page 99)
Janitors (see Page 99)
Linen
Maintenance
Receiving
Storage, Long-Term (see Page 140)
Trash (see Page 99)

Vertical Transportation
Elevators (see Page 88)
Elevator Lobbies
Ramps (see Page 117)
Stairs (see Page 139)

Central Food Service
Dining Areas (see Page 85)
Employee Lockers
Employee Rest Rooms
Kitchen (see Page 100)
Office—Dietitian
Service (Receiving)
Snack Bars (see Page 138)
Storage
Trash
Vending (see Page 138)

Activity Areas (see Page 63)
Arts and Crafts (see Page 67)
Assembly Areas (see Page 69)
Balconies, Common (see Page 69)
Chapel (see Page 147)
Corridors (see Page 83)
Exercise Areas, Health Club, Fitness Facilities (see Page 92)
Game Rooms
Lounges (see Page 106)
Multipurpose (see Page 110)
Performing Arts Areas (see Page 116)
Reading/Library Areas (see Page 118)
Sun Rooms (see Page 140)
Swimming Pool
Television Viewing Areas (see Page 141)

Existing Building Evaluation for Renovation
Accessibility
Adaptability of Spaces for:
- Acoustics
- Corridors
- Doors
- Elevators
- Finishes
- Flexibility
- Furniture and Furnishings
- Lighting
- Stairs
- Windows

Care Services (see Page 64, 112)
Consultation Room(s) (see Page 82)
Examination Room(s) (see Page 92)
Nurse/First Aid
Therapy Room(s) (see Page 141)
- Physical (see Page 142)
- Occupational (see Page 142)

Mechanical Facilities
Gross Area Requirements
Gross/Net Area Requirements
Airconditioning Requirements
Electrical Requirements
Fire-Protection Requirements
Plumbing Requirements
Security, Communication Systems and Alarms

RESIDENTIAL CARE FACILITIES

Residential care facilities provide a level of care for older people who can no longer live independently in elderly housing, but who do not need the level of medical services provided by nursing homes. Residential care residents are often characterized by a variety of disabling diseases (such as joint and cardiovascular diseases) and by various degrees of sensory and cognitive impairment. They frequently require assistance with bathing, laundry, cleaning, money management, shopping and medication.

Residential care facilities are similar to personal care homes, domiciliary care facilities and board and care homes; a wide range of services is typically provided in a residential setting that includes private or semiprivate "living units," a central meal service, help with personal needs, assistance with housekeeping chores, the administration of medication and supervision in the basic activities of daily living, such as bathing, dressing, grooming and personal hygiene. Medical and nursing care typically are not provided. Residential care facilities are usually licensed by state departments of social services; whereas, nursing homes are generally licensed by state departments of health and hygiene.

Although variations of the residential care facility concept have long been in operation (many were established in the form of domiciliaries to care for veterans after the Civil War), their development for use by older people has been widespread only in recent years. This development has been spurred by efforts to contain the costs of health care that restrict the development of new nursing home beds, which has created a new market opportunity offering lower levels of care for older people who cannot maintain themselves in elderly housing without special personal care. To reach this market, many continuing care retirement communities also provide residential care as a component of their services.

Major Spaces. Residential care facilities generally provide private or semiprivate living units, each with **bathroom,** but without private **kitchen,** in a building that is residential (as opposed to institutional) in character. The living units are more like hotel rooms than apartments, and thus typically combine **entry** area, **living room, bedroom** and **storage** in one room. Many of the functions required of the nursing home **resident's room** also must be served by the residential care private room. Living units and bathrooms should be accessible (see **ANSI A117.1)** and include the special design features discussed under the specific rooms and spaces listed above in bold face type.

Residential care facilities generally are divided into sections, with each section containing 30 to 40 living units, a **lounge, activity areas,** outdoor access through a **balcony** or patio, automatic **laundry facilities**, a kitchenette/snack/dining area, a **personal care** service area that includes a work area for support staff, and a **central bathing** room.

Central facilities that are typically available to all residents include the **central dining room(s),** a **medication**/screening/treatment room(s), a beauty/barber shop, a library, a gift shop, craft rooms, a small formal **lounge,** an all-purpose

Residential Care Facilities

assembly area, a **performing arts area,** a small **worship area,** and other spaces as defined by the client. Private central spaces generally include offices, central **laundry facilities,** a commercial kitchen, and building and grounds maintenance shop.

Programming and Design Considerations. The programming and design process considers the human needs and values of the elderly, and must start with a definition of the type and scope of development intended. The following considerations must be addressed to establish that definition:

- Consider how many living units, what range of floor areas, and what types of units will be provided.
- Consider what type, number and magnitude of common service facilities (such as central dining, activity rooms and lounges) will be provided.
- Consider what type, number and magnitude of ancillary services and facilities (such as housekeeping, maintenance, security and management) will be provided.
- Consider the location of the site, and its physical features, size, contours and constraints.
- Consider how much parking will be required.

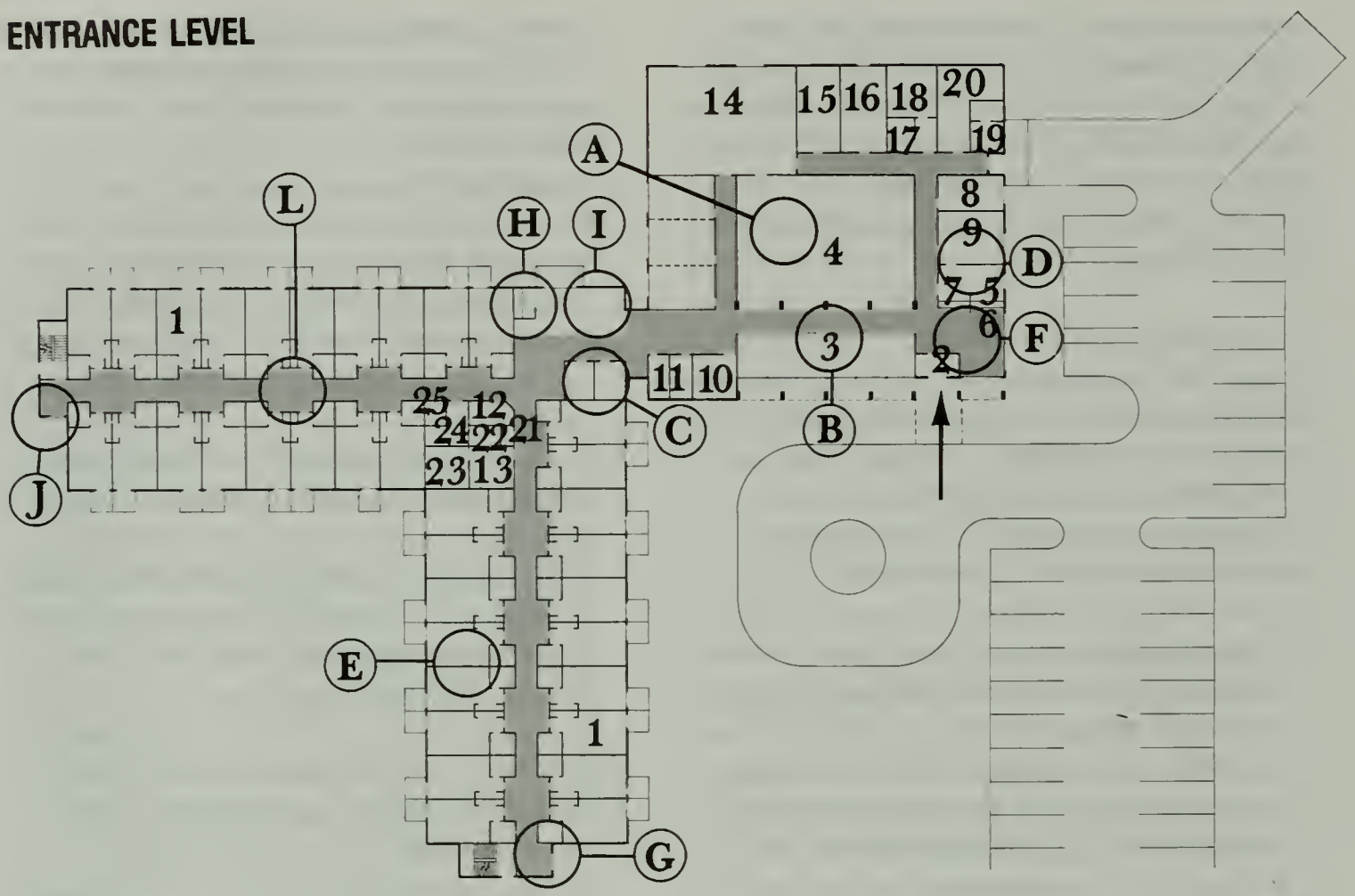
Development Size and Dwelling Unit Mix. Experience suggests the following general rules:

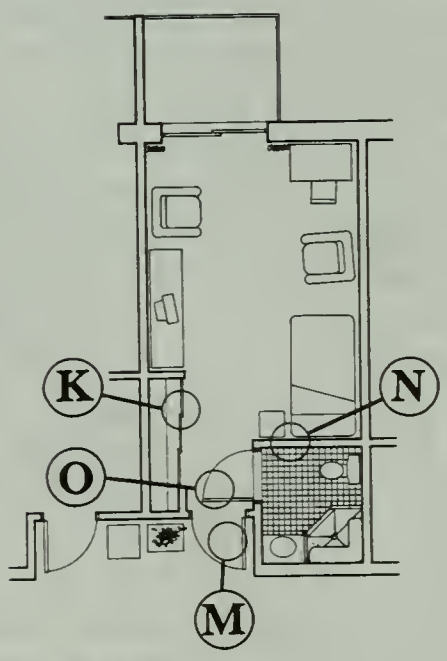
- The minimum size of residential care developments for the elderly varies according to financing, program, and location. Residential care generally is developed in multiples of 30 to 40 living units. A development of fewer than 100 units is typically part of a larger development, such as a CCRC, to economically justify the needed management, personal care, meal and social services and facilities.
- A recommended maximum size of 200 living units is based on the assumption that high concentrations of elderly people may tend to encourage their isolation from the community and could cause abnormal neighborhood development.
- Each development of residential care facilities should offer a range of living-unit types and sizes to accommodate a wide range of personal care needs and life-styles. The specific living-unit mix of each development must be determined with the client.

Other Factors. These special factors affecting the elderly in residential care facilities must also be considered:

- Frail elderly people have very limited mobility. Therefore, the residential care facility should be accessible and provide most community and residential services either within the building or on the site. Otherwise, the developer may have to offer transportation services to facilitate occupancy by elderly residents.
- Older people desire a choice in living accommodations. Therefore, a variety of living-unit sizes and floor plans should be provided.
- The elderly desire a sense of autonomy, and they need an environment that extends and enhances their independence. Therefore, the architect should provide the special design features and details recommended under specific rooms and spaces in **Part III: A Design for Aging Glossary.**

Residential Care Facilities





RESIDENTIAL CARE

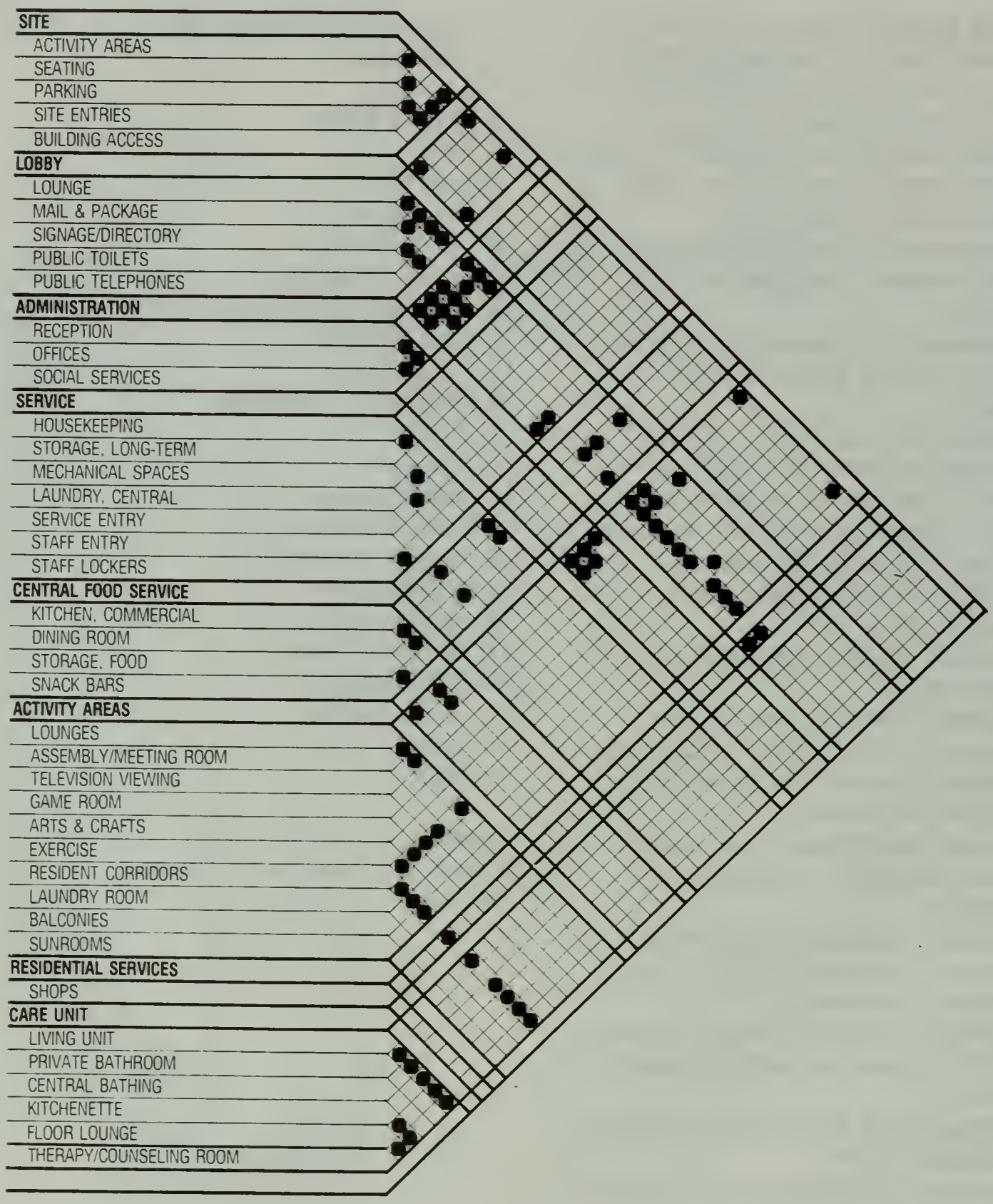
Residential Care Facilities

A Main Activity Areas—are centrally located; dining is the main activity of the day and thus has a primary location in the building.
B Lounge—offers view of outdoor activity and main entries and provides waiting area for dining.
C Elevator—at center of circulation path; compact plan shortens travel distance.
D Reception & Administrative Area—provides visual control of major spaces.
E Resident Rooms—Shown large enough for double or single occupancy; if all rooms are planned for single occupancy, resident wing areas can be reduced by 20 percent.
F Entry—see entry illustration in Glossary, Page 90.
G Corridor Vista—terminates in furniture alcoves.
H Kitchen Unit—for resident use.
I Lounge—located at the center of circulation to serve meeting, activities, promote circulation.
J Indirect Daylighting—provided at end of corridors to diminish glage problems.
K Storage—substantial amounts of storage are required for accumulated personal possessions.
L Clustered Entries—enhance a sense of private space and allow personalization.
M Dimensions & Door Swings—permit wheelchair access
N Emergency Call Device—should be placed in bathroom if only one is called for.
O Bathroom Door—opens out for emergency access.

1 Typical Single Bedroom
2 Vestibule
3 Lounge
4 Dining Room
5 Mail
6 Lobby
7 Reception
8 Conference
9 Administration
10 Beauty
11 M/F Toilets
12 Laundry
13 Bathroom, Attended
14 Kitchen
15 Storage
16 Staff Lounge
17 Male Lockers
18 Female Lockers
19 Maintenance
20 Mechanical
21 Janitor's Closet
22 Soiled Utility
23 Clean Utility
24 Trash
25 Bath

Credit:
Noakes and Associates, Bethesda, Maryland

Residential Care Facilities Adjacency Matrix



Residential Care Facilities Checklist

- Older residents of residential care facilities spend almost all of their time in their living units or in common building areas. This consideration may affect space dimensions, materials, **finishes,** colors, **lighting,** placement of **windows** and **doors, architectural hardware,** selection of equipment and fixtures (see **control**) and **sign systems.**

RESIDENTIAL CARE FACILITIES: CHECKLIST

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Site Analysis (see Page 128)
Public Transportation
Location (see Page 128)
Neighborhood (see Page 128)
Security (see Page 125)
Orientation
Selection
Topography (see Page 129)
Zoning (see Page 129)
Market (Needs) Analysis

Site Development (see Page 130)
Outdoor Spaces (see Page 132)
Circulation
- Emergency (police, fire, ambulance)
- Pedestrian
- Residents
- Delivery Service, Garbage Collection, Maintenance, Landscaping and Groundskeeping Vehicles, Snow Removal and/or Storage
- Staff
- Vehicular
- Visitors

Landscaping (see Page 135)
- Gardens

Lighting (see Page 104)
Outdoor Recreation
- Checkers/Chess
- Swimming Pool
- Tennis
- Badminton
- Putting Green/Golf Course
- Croquet
- Horseshoes
- Boccie/Lawn Bowling

Parking (see Page 135)
- Barrier-Free (see Page 135)
- Residents (see Page 136)
- Staff
- Visitors

Patios (see Page 133)
Seating (see Page 123)
Security (see Page 125)
Shelter
Sign Systems (see Page 126)
Solar Orientation (see Page 136)
Water Supply and Sewage Systems

Entries, Building (see Page 89)
Barrier-Free (see Page 71)
Control
Emergency Exit (see Page 93)
Main (see Page 89)
Secondary
Service (see Page 92)
Visitors/Staff/Residents
Lounge (see Page 106)

Lobby/Reception Areas (see Page 106)
Control
Directory (see Page 127)
Drinking Fountains
Front Desk
Seating (see Page 123)

Residential Care Facilities Checklist

Mail and Package Delivery (see Page 109)
Toilet Rooms, Public (see Page 142)
Sign Systems (see Page 126)
Storage
Telephones (see Page 79)
Wheelchair Storage
Waiting Room/Lounge—Visitors' Coat Storage

Office and Administrative Space (see Page 114)
Administrative Services
Communication Systems (see Page 78)
Control/Security
Social Services (see Page 138)

Housekeeping (see Page 99)
Janitors (see Page 99)
Linen
Maintenance
Receiving
Storage, Long-Term (see Page 140)
Trash (see Page 99)

Vertical Transportation
Elevators (see Page 88)
Elevator Lobbies
Ramps (see Page 117)
Stairs (see Page 139)

Central Food Service
Dining Areas (see Page 85)
Employee Lockers
Employee Rest Rooms
Office—Dietitian
Floor Kitchens
Kitchen (see Page 100)
Service (Receiving)
Snack Bars (see Page 138)
Storage
Trash
Vending (see Page 138)

Activity Areas (see Page 63)
Arts and Crafts (see Page 67)
Assembly Areas (see Page 69)
Balconies, Common (see Page 69)
Chapel (see Page 147)
Corridors (see Page 83)
Exercise Areas, Health Club, Fitness Facilities (see Page 92)
Game Rooms
Green Houses
Kitchenette/Snack/Dining Area
Lounges (see Page 106)
Multipurpose Rooms (see Page 110)
Performing Arts Areas (see Page 116)
Reading/Library Areas (see Page 118)
Skylights
Swimming Pool
Sun Rooms (see Page 140)
Television Viewing Areas (see Page 141)

Residential Services (see Page 119)
Banking
Beauty/Barber
Consultation Room (see Page 82)
Housekeeping (see Page 99)
Laundry Facilities (see Page 103)
- Accessories (see Page 103)
- Adaptability
- Auxiliary Heat
- Storage/Linen

Nurse/First Aid
Shops (see Page 126)
- Gift
- Grocery

Residential Care Facilities Checklist

Residents' Units
- **Bathrooms** (see Page 72)
  - • Accessories (see Page 75)
  - • Adaptability (see Page 72)
  - • Auxiliary Heat
  - • Fixtures/Controls (see Page 73)
  - • Storage/Linen
- **Bedrooms/Living Rooms** (see Page 75,105)
  - • **Beds** (see Page 76)
  - • Furniture/Furnishings
  - • **Furnishability** (see Page 95)
  - • Storage/Closets
  - • Storage/Furnishings
  - • Television
  - • Windows/Views (see Page 75)
- **Entries** (see Page 89)
  - • Door/Signage/Identification/Hardware (see Page 91)
  - • Storage (see Page 92)
- **Balcony,** Private (see Page 69)
  - • Seating (see Page 70)
  - • Outdoor Access (see Page 70)
- **Storage** (see Page 140)
- Utilities
- **Windows**/Views (see Page 145)
- Visitors' Coat Storage

Mechanical Facilities
- Gross Area Requirements
- Gross/Net Area Requirements
- Airconditioning Requirements
- Electrical Requirements
- Fire-Protection Requirements
- Plumbing Requirements
- Security, Communication Systems and Alarms

NURSING HOMES

Nursing homes are health care facilities licensed by a state to provide long-term **nursing care**—as well as custodial care, meal service, housing and housekeeping—within a complete living environment. Formal, **long-term care** facilities are the best alternative for the many older people who cannot manage in more autonomous living environments.

In 1980, approximately 20,000 nursing homes, with 1.4 million residents, were located in the United States. Eighty-five percent of nursing home residents are elderly individuals who, at any given time, constitute approximately five percent of the population of Americans aged 65 and over. The average nursing home resident is 82 years of age on entry; 72 percent of nursing home residents are over 85 years of age. Estimates show a 20-percent probability that a person will spend some time in a nursing home during his or her lifetime.

Nursing home residents require 24-hour nursing care and supervision as well as personal care, housekeeping and meal services. Residents are often characterized by multiple, chronic diseases and disabilities. The majority of nursing home residents require assistance with bathing, dressing, toileting and mobility. Assistance with eating, and bowel and bladder hygiene is also frequently required.

Residents of nursing homes tend to fall into three major groups:

- *Terminally ill* older people who have been discharged from a hospital
- Older people *recovering from surgery or fracture* who have been discharged from a hospital
- *Medically stable but functionally impaired* older people who usually have been admitted from their homes

One-third to one-half of nursing home residents remain only three months or less from the time of admission. These residents are primarily from the first two groups listed above. About half of these residents expire and about half return home or are transferred to another health care facility.

Long-stay nursing home residents constitute the majority of the nursing home population at any one time; these residents are primarily from the third group.

Major Spaces. The principal form generator in nursing homes is the nursing unit, which is typically an administrative unit that includes up to 60 beds (depending upon state regulations) in semi-private and private **residents' rooms.** The nursing unit also typically includes **central bath rooms**; **activity areas**, such as **lounges** or dayrooms; a group **dining area**, a floor kitchen or serving pantry, as required by the food service program, and/or a nourishment station; care service areas such as **examination and treatment rooms, consultation** and/or conference rooms; **housekeeping** areas; **residential service** areas; a **nursing station;** a **medication room; storage** and holding areas for medical equipment, **wheelchairs** and stretchers; circulation spaces **(corridors)**, and **office and administrative** support areas.

Space allocations, equipment and facilities are frequently controlled by the

Nursing Homes

requirements of state and/or federal codes for the reimbursement of patient care costs under the Medicare and/or Medicaid provisions of the Social Security Act. Governmental facilities (administered by local municipalities or counties, the Veterans Administration, the Department of Defense or the Public Health Service), proprietary facilities and those operated by chains may also have definitive program and space requirements, including specific space and equipment standards furnished by the client.

Programming and Design Considerations. In general, it is essential that the architect understand exactly how each space is to function, and who will be doing what with whom, using what equipment or supplies, requiring what storage space and critical dimensions, with what specific environmental requirements. The programming and design procedure considers the human needs and values of the elderly, and must start with a definition of the type and scope of development intended. The following considerations must be answered to establish that definition:

- Consider how many beds will be provided, in rooms of what type (private or semiprivate), of what floor layout and area.
- Consider what type, number and magnitude of common service facilities (such as central dining spaces, activity rooms and lounges) will be provided.
- Consider what type, number and magnitude of ancillary services and facilities (such as housekeeping, maintenance, security and management) will be provided.
- Consider the location of the site, and its physical features, size, contours and constraints.
- Consider how much parking will be required.

Development Size and Mix of Residents' Rooms. Experience suggests the following general rules:

- Developments should be in multiples of 40 to 60 beds, or in other nursing unit sizes that the client and regulatory agencies agree economically justify the management, social and nursing care services and facilities required for a quality level of care.
- A recommended maximum size of 180 beds is based on the assumption that a high concentration of elderly people may tend to encourage their isolation from the community, and could possibly cause abnormal neighborhood development.
- Each nursing home development should offer a variety of types and sizes of residents' rooms to accommodate different life-styles. The specific mix of residents' rooms for each development must be determined with the client, and based upon its specific marketing context. A high proportion of private rooms (up to 80 percent) is recommended. Residents' rooms with three beds or more are *not* recommended because of the resulting lack of privacy and personal control.

Other Factors. These special factors affecting the elderly should also be considered:

- The nursing unit should be planned for efficient organization, minimum staffing and cost, and maximum socialization

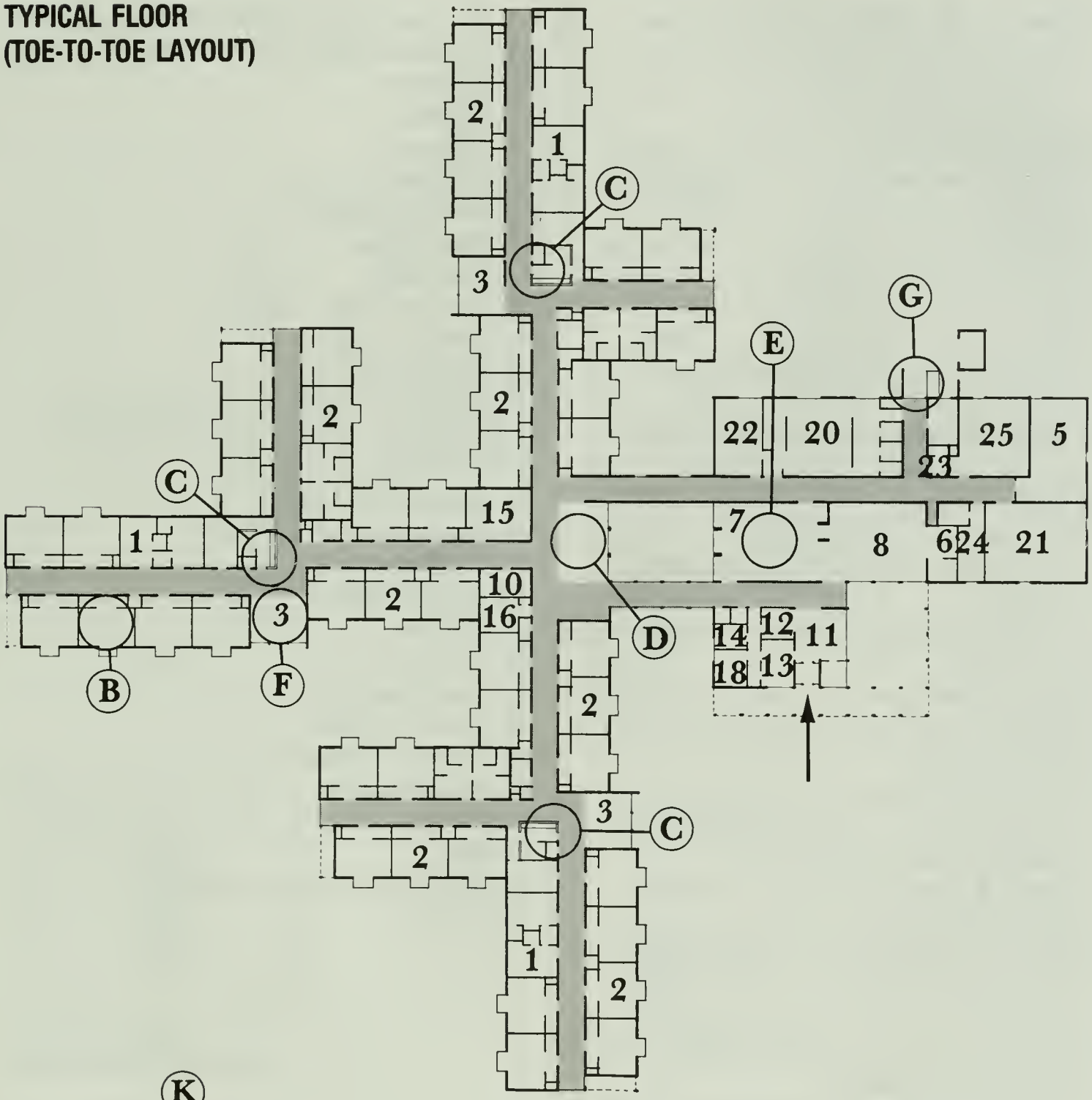
Nursing Homes

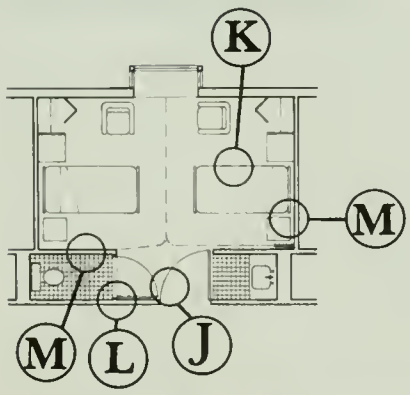
and interaction between residents and staff (see typical configurations). Maximum travel distances for staff are specified by state regulations. Layouts can be critical to both the quality of residents' daily experiences and the economics of the client's operation.

- The nursing unit compresses living and activity spaces into a much smaller area than most residents have experienced before. Elements of the normal residential space hierarchy, including front porch, entry area and living room spaces, are no longer available to separate private space from public space. Special design consideration must be given to mitigating the negative effects of the absence of these spaces, including careful space planning and detailing in the **corridors** and **residents' rooms.**
- The resident's room is where he or she spends the most time, and thus is the space of most importance to residents. To the greatest extent possible, **residents' rooms** should have a truly residential quality. Residents should have the maximum amount of control feasible over furniture and furniture arrangement; over lighting, heating and cooling levels, and over the furnishings within their rooms. See **residents' rooms** and **toilet rooms** in **Part III: A Design for Aging Glossary** for a more detailed discussion of design considerations.
- The elderly desire a sense of autonomy, and they need an environment that extends and enhances the duration of independent living. Therefore, the special design features and details recommended under specific rooms and spaces in **Part III: A Design for Aging Glossary** should be provided.
- The design of nursing homes must also be specially adapted to accommodate potential physical limitations. Space and dimensions for **wheelchair access** should be provided in all areas of the nursing unit (see **ANSI A117.1).**
- The activities of older people differ from those of younger people only in the ways that older people are able to perform them. This consideration may affect space dimensions, materials, **finishes,** colors, **lighting,** placement of **windows** and **doors, architectural hardware,** selection of equipment and fixtures (see **control**), and **sign systems**.

Nursing Homes

TYPICAL FLOOR
(TOE-TO-TOE LAYOUT)





TOE-TO-TOE ROOM LAYOUT

Single Room Layout

Nursing Homes

A Side-to-Side Bed Layout & Cross Plan—reduce corridor length but creates an asymmetrical territorial division of the resident room.

B Toe-to-Toe Room Layout—creates longer, narrow wings and longer corridors; each resident has a well-defined territory or space which others do not have to penetrate and a view of the outside which does not look through the other person's territory; a variety of bed placement alternatives are possible.

C Nursing Station—provides visual control of entire Nursing Units.

D Main Lounge—
- access to outdoor space
- adjacent to activity and circulation nodes
- provides queuing space for Main Dining

E Main Dining—is the main activity of day and thus has a central location in the building.

F Lounge/Dayroom—located adjacent to the activity of the Nursing Station provides visual interest.

G Staff & Service Entries—separate from main, formal entry.

H Alcoves—designed to provide indirect light and to help block glare in the corridor.

I Entry—set back to help establish hierarchy of spaces.

J Entry Vestibule—provides transition space.

K Personal Territory—delineated by ceiling curtain track, includes wardrobe, chest, chair and bedside stand.

L Bathroom Door—opens out for emergency access.

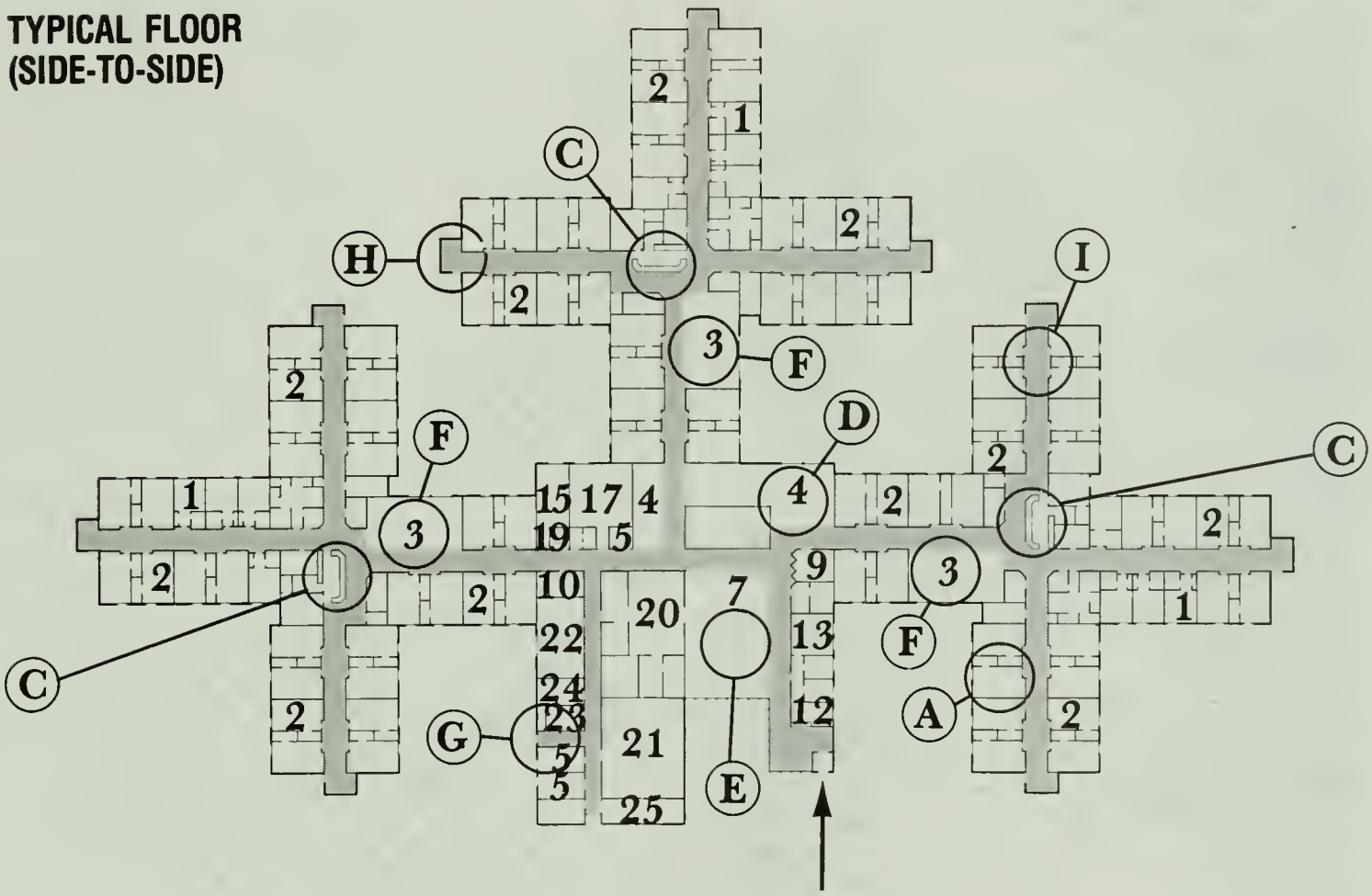
M Emergency Call Device—should be reachable from floor where the elderly person is likely to be.

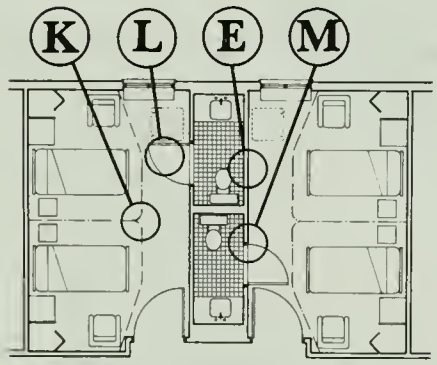
1 Typical Single Bedroom
2 Typical Double Bedroom
3 Dayroom
4 Lounge
5 Laundry
6 Chapel
7 Dining Room
8 Recreation
9 Gift Shop
10 Beauty Shop
11 Lobby
12 Reception
13 Administration
14 Office
15 Therapy
16 Treatment Office
17 Occupational Therapy
18 Conference
19 M/F Toilets
20 Kitchen
21 Storage
22 Staff Dining
23 Male Lockers
24 Female Lockers
25 Mechanical

Credit:
Noakes and Associates, Bethesda, Maryland

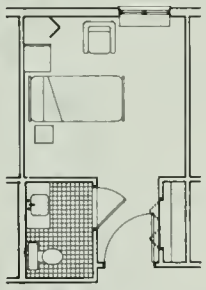
Nursing Homes

TYPICAL FLOOR (SIDE-TO-SIDE)



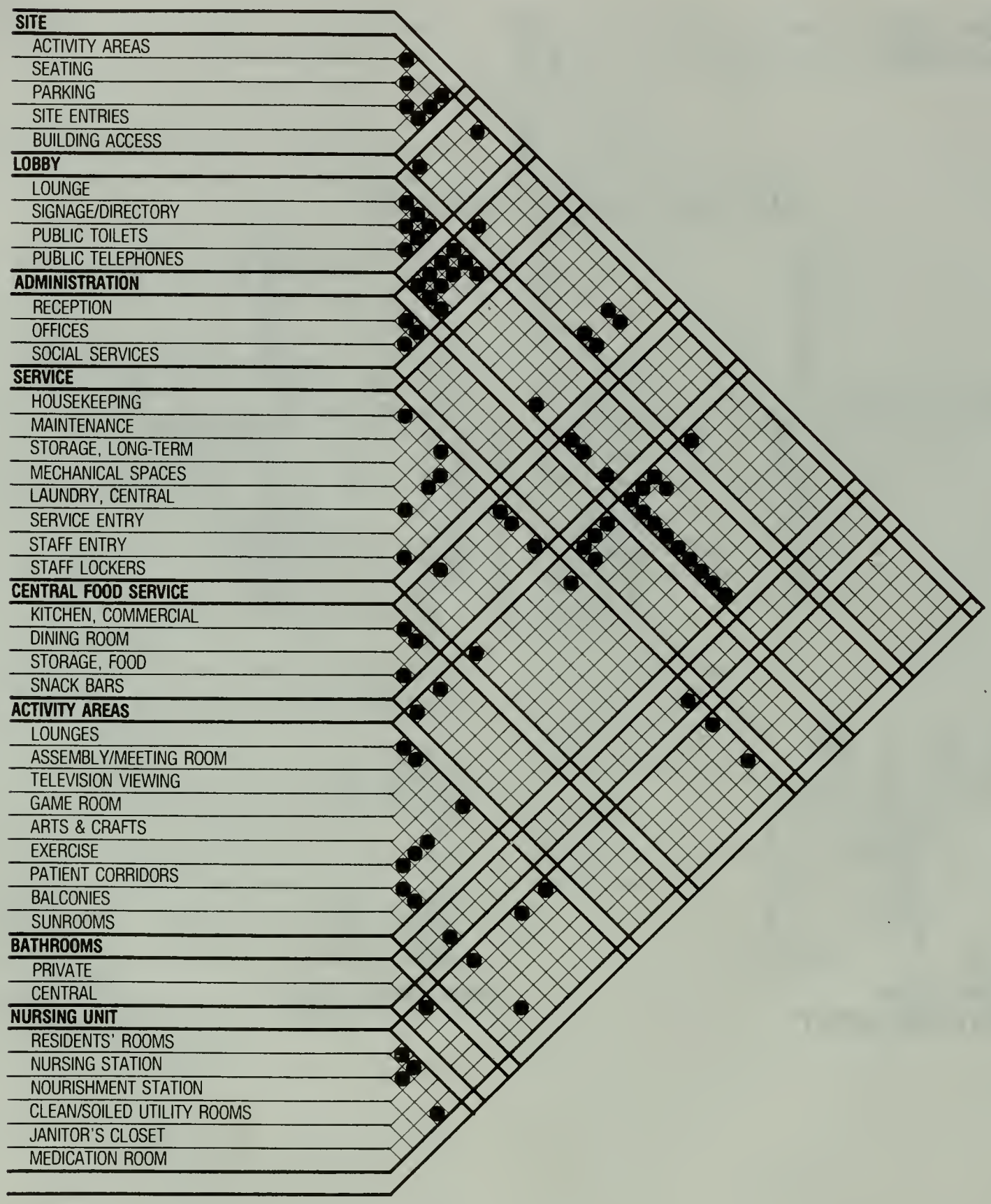


TYPICAL FLOOR (SIDE-BY-SIDE LAYOUT)



Single Room Layout

Nursing Homes Adjacency Matrix



Nursing Homes Checklist

NURSING HOMES: CHECKLIST

- Items on the checklist which are in **bold** type and have a page number are keyed to **Main Entries** in the Glossary.
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Site Analysis (see Page 128)
Public Transportation
Location (see Page 128)
Neighborhood (see Page 128)
Security (see Page 125)
Orientation
Selection
Topography (see Page 129)
Zoning (see Page 129)
Catchment Area and Population
Market (Needs) Analysis

Site Development (see Page 130)
Outdoor Spaces (see Page 132)
Circulation
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- Pedestrian
- Residents
- Delivery Service, Garbage Collection, Maintenance, Landscaping and Groundskeeping Vehicles, Snow Removal and/or Storage
- Staff
- Vehicular
- Visitors

Landscaping (see Page 135)
- Gardens

Lighting (see Page 104)
Outdoor Recreation
- Checkers/Chess
- Swimming Pool
- Putting Green
- Croquet
- Horseshoes
- Boccie/Lawn Bowling

Parking (see Page 135)
- Barrier-Free (see Page 135)
- Residents (see Page 136)
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Seating (see Page 123)
Security (see Page 125)
Shelter
Sign Systems (see Page 126)
Solar Orientation (see Page 136)
Water Supply and Sewage Systems

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Emergency Exit (see Page 93)
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Secondary
Service (see Page 92)
Visitors/Staff/Residents
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Lobby/Reception Areas (see Page 106)
Control
Directory (see Page 127)
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Storage
Telephones (see Page 79)
Wheelchair Storage

Nursing Homes Checklist

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- **Communication Systems** (see Page 78)
- Control/Security
- Nursing Services
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- **Storage,** Long-Term (see Page 140)
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- **Ramps** (see Page 117)
- **Stairs** (see Page 139)

Central Food Service
- **Dining Areas** (see Page 85)
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- Employee Rest Rooms
- Floor Kitchens/Pantries
- **Kitchen** (see Page 100)
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- Service (Receiving)
- **Snack Bars** (see Page 138)
- Storage
- Trash
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- Chapel (see Page 147)
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- Game Rooms
- Green Houses
- **Lounges** (see Page 106)
- **Multipurpose Rooms** (see Page 110)
- **Performing Arts Areas** (see Page116)
- **Reading/Library Areas** (see Page118)
- Skylights
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  - Accessories (see Page 103)
  - Adaptability
  - Auxiliary Heat
  - Storage/Linen
- Nurse/First Aid
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  - Gifts and Flowers
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- Chair (see Page 123)
- Clothing Closet/Storage
- Door/Signage/Identification/Hardware
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- **Furnishability** (see Page 95)
- Furniture (see Page 122)
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Nursing Homes Checklist

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Windows/Views (see Page 145)

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Nursing Station (see Page 112)
- Call Systems (see Page 78)
- Charting Counter
- Nurses' Toilet/Lounge (see Page 112)
- Reception/Control (mail, telephone, paging, staff)
- Security/Alarm Systems

Toilet Rooms (see Page 142)
Vigil and Visitation Room (see Page 144)

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Examination and Treatment Room(s) (see Page 92)
Consultation Room(s) (see Page 82)
Pharmacy/Health Aids
Therapy Rooms (see Page 141)
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- Hydro (see Page 141)

Mechanical Facilities
Gross Area Requirements
Gross/Net Area Requirements
Airconditioning Requirements
Electrical requirements
Fire-Protection Requirements
Plumbing Requirements
Security, Communication Systems and Alarms

CONTINUING CARE RETIREMENT COMMUNITIES

Continuing Care Retirement Communities (CCRCs) provide the broadest spectrum of services offered in facilities designed for older people. Based on the concept of **continuum of care**, these communities allow residents to live completely independent life-styles, while ensuring that social support, residential care and long-term health care will be available, whether needed occasionally or, at later stages in life, regularly. Typically, CCRCs provide independent housing, **residential care services, social services, a senior/community center and nursing home** care all within a single development.

The concept of CCRCs was formulated as a successor to the "life-care community." The life-care concept, under which the community sponsor undertakes full responsibility for all expenses for the resident's long-term care, often has proved not to be financially viable, largely because of the difficulty of predicting and underwriting long-term costs of care for small groups. CCRC sponsors have chosen to deal with this liability for long-term health care in a number of ways, some of which limit the sponsor's overall responsibility to provide lifetime care.

Older people typically begin to consider moving into a CCRC when they are relatively active, mobile and healthy. The factor that precipitates a decision to move usually involves temporary illness or disability, which makes the prospective residents apprehensive about their ability to sustain themselves in their present living arrangements. It is the CCRC's wide range of residential settings and services, available when and if they are needed, and the smooth transitions between levels of care that attract those older people who want a clear set of housing and care alternatives, come what may. Most CCRC residents move in with plans to stay for the rest of their lives, a period that may cover 30 to 40 years. Thus, a CCRC must provide for older people who vary greatly in activity, mobility and health, encompassing the full range from the "go-gos" to the "no-gos" described earlier.

Major Spaces. The major form-generating spaces for each of the typical components of a CCRC—**elderly housing, senior/community center, residential care facility** and **nursing home**—were presented previously. The general design problem for CCRCs is to develop each component in response to its own internal requirements and, at the same time, create relationships between the components that optimize their functions. In some CCRCs, residents are housed in a single highrise building. Other CCRCs offer a mix of residential structures, dining pavilions, meeting rooms and a medical facilities building. Where health care services are provided in a separate building (such as a nursing home), the location, siting and visual screening of that building becomes important. CCRC residents like to know a nursing home is available in the event they need it, but they often don't want to be constantly reminded of its presence in their daily activities.

Programming and Design Considerations. Development of a CCRC is a complex and manifold endeavor, involving the planning, financing, marketing and operation of housing, residential

Continuing Care Retirement Communities

care, senior/community center and nursing home facilities. The procedure for programming and design considers the human needs and values of the elderly, and must start with the definition of the type and scope of development intended. The following considerations must be answered to establish that definition:

- Consider how many elderly-housing dwelling units will be provided, of what types and floor areas.
- Consider what type, number and magnitude of ancillary services and facilities will be provided in **elderly housing.**
- Consider how many **residential care** living units will be provided, of what types and floor areas.
- Consider what type, number and magnitude of common and ancillary services and facilities will be provided for **residential care.**
- Consider how many **nursing home** beds will be provided, in spaces of what types and floor areas.
- Consider what type, number and magnitude of common and ancillary services and facilities will be provided for nursing care.
- Consider what type, number and magnitude of central common service facilities (such as central dining spaces, activity spaces and lounges) will be provided in the **senior/community center.**
- Consider what type, number and magnitude of ancillary services and facilities (such as housekeeping, maintenance, security and management) will be provided in the senior/community center.
- Consider the location of the site, and its physical features, size, contours and constraints.
- Consider the amount of parking to be required, and how it should be allocated among the various components on the site.

Development Size and Dwelling Unit Mix. CCRCs account for approximately one-third of all retirement communities nationwide. Each generally houses a total of 300 to 500 residents, which has proved to be an economically viable population range and which also allows for the design of a noninstitutional environment in which older people can live with comfort and dignity.

Experience suggests the following general rules:

- A CCRC should generally house a total of 300 to 500 residents, to economically justify the needed management, services and health care.
- The recommendations made for each landmark facility type presented in this section should be followed regarding maximum development size, range of dwelling/living/residents' room types and sizes. Quantities and distribution of services and facilities should be reviewed, however, in light of the centralization of services (except for health care) and the captive market provided by the other levels of care.
- The specific component mix for each CCRC development must be determined through market and demographic studies, and with the client. When a CCRC first opens, higher levels of care (residential care and the nursing home) may be underused if nonresidents are not allowed access to the facilities. Planning should be based on need for the various levels of care as that need is projected for five and ten years in the future, however, when

Continuing Care Retirement Communities

Continuing Care Retirement Communities—are the conglomeration of all the other facility types and services into one building or campus-like group of buildings.

A Ground Level—provides the services and functions of a community (senior) center for the CCRC.

B Main Lounge—
- access to outdoor space
- adjacent to activity and circulation nodes
- provides queuing space for Main Dining

C Main Dining—is the main activity of the day and thus has a central location adjacent to the elevators of the high-rise.

D Nursing Care—located on second floor because of heavy volume of visitor traffic and service delivery.

E Resident's Room—side-by-side except that two piece toilet is on corridor rather than between rooms; refer to side-by-side Nursing Home for room layout.

F Roof—of ground level portion of the building carefully designed to be aesthetic and attractive because of prominence in view from tower behind.

G Alcoves—end-of-corridor alcove designed to provide indirect light and diminish glare problems.

H Overhang—helps to reduce sky glare; potential glare problems may require curtains or external glazing.

I Dayroom—offers good views of outdoor activities.

J Corridor—width diminishes to 6 feet on residential floors from the 8 feet required on nursing level.

K One Bedroom Unit—refer to unit plans for Elderly Housing.

L Two Bedroom Unit—refer to unit plans for Elderly Housing.

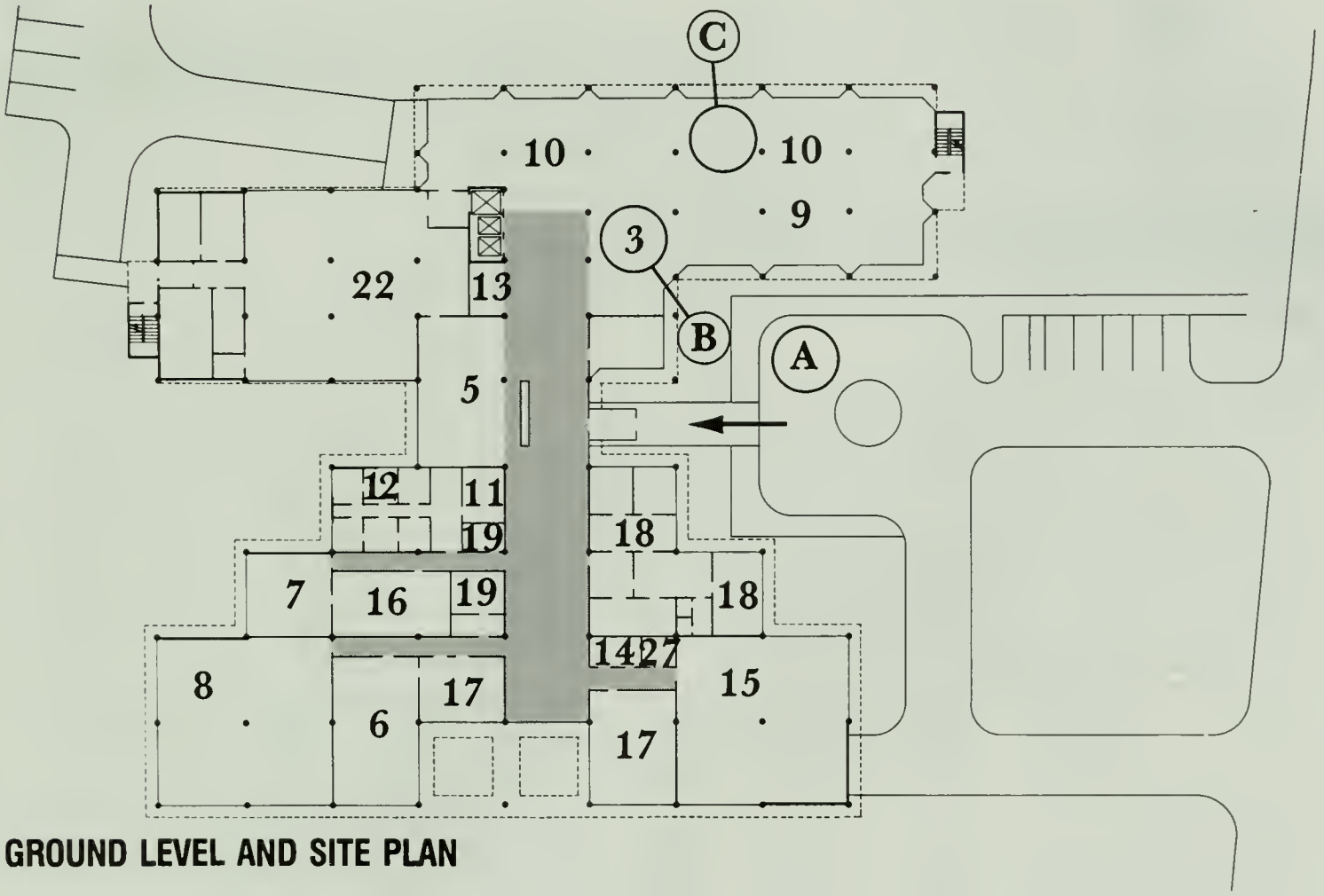
MStorage—Out of unit storage for accumulated personal belongings is essential.

N Residential Unit—refer to unit plan for Residential Care

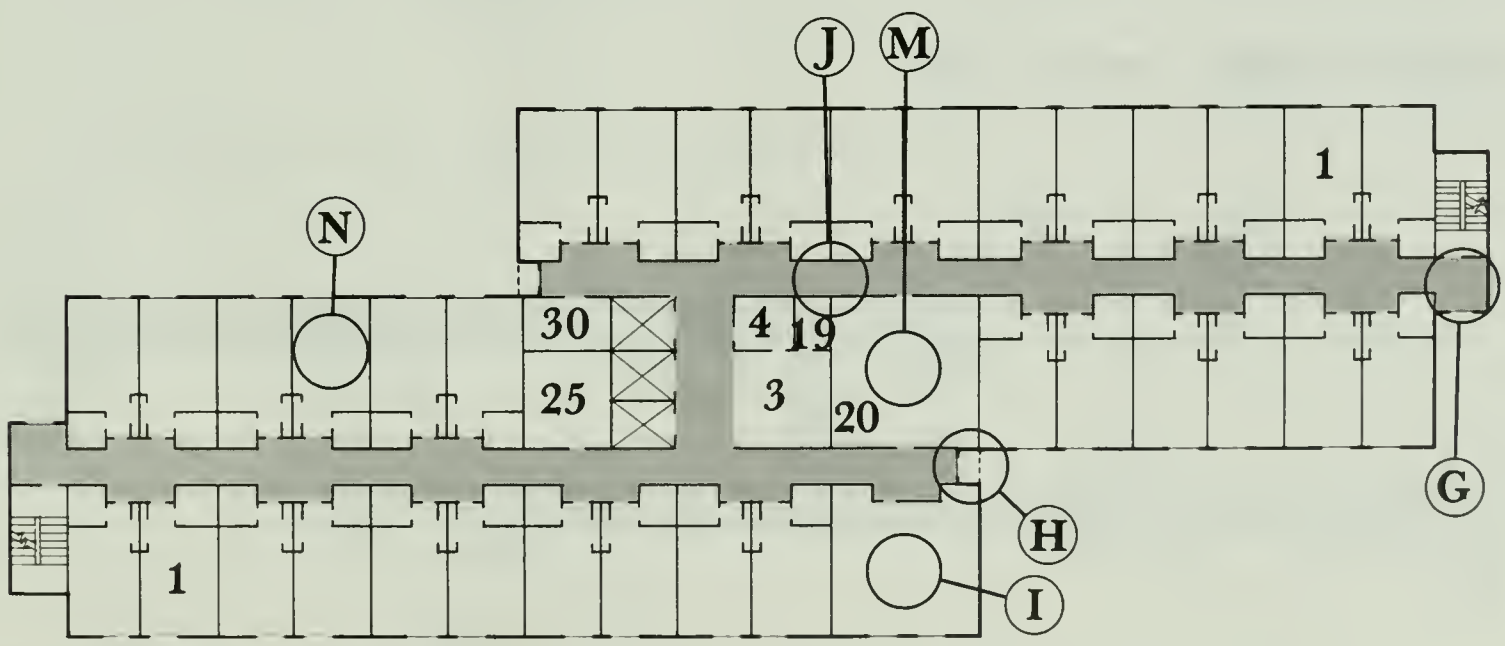
1 Single Bedroom
2 Double Bedroom
1*One Bedroom Unit
2*Two Bedroom Unit
3 Lounge
4 Laundry
5 Coffee Shop
6 Library
7 Exercise Area
8 Arts & Crafts Area
9 Games
10 Dining
11 Pharmacy
12 Clinic
13 Mail
14 Coats
15 Assembly
16 Therapy
17 Conference
18 Administration
19 M/F Toilets
20 Resident Storage
21 Medication Room
22 Kitchen
23 Soiled Utility
24 Clean Utility
25 Mechanical
26 Lockers
27 Storage
28 Nurses Lounge
29 Central Bath
30 Trash

Credit:
Noakes and Associates, Bethesda, Maryland

Continuing Care Retirement Communities



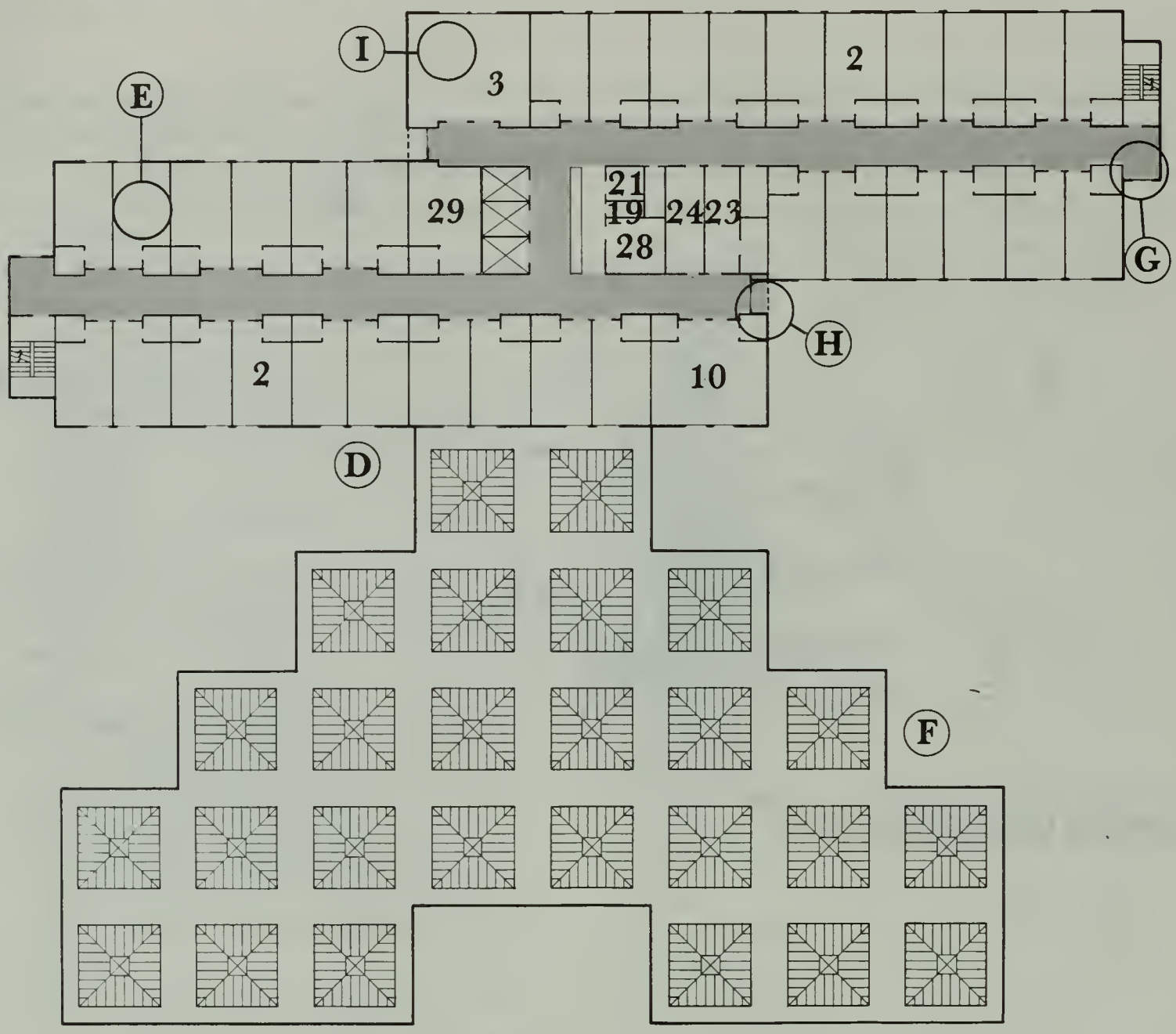
GROUND LEVEL AND SITE PLAN



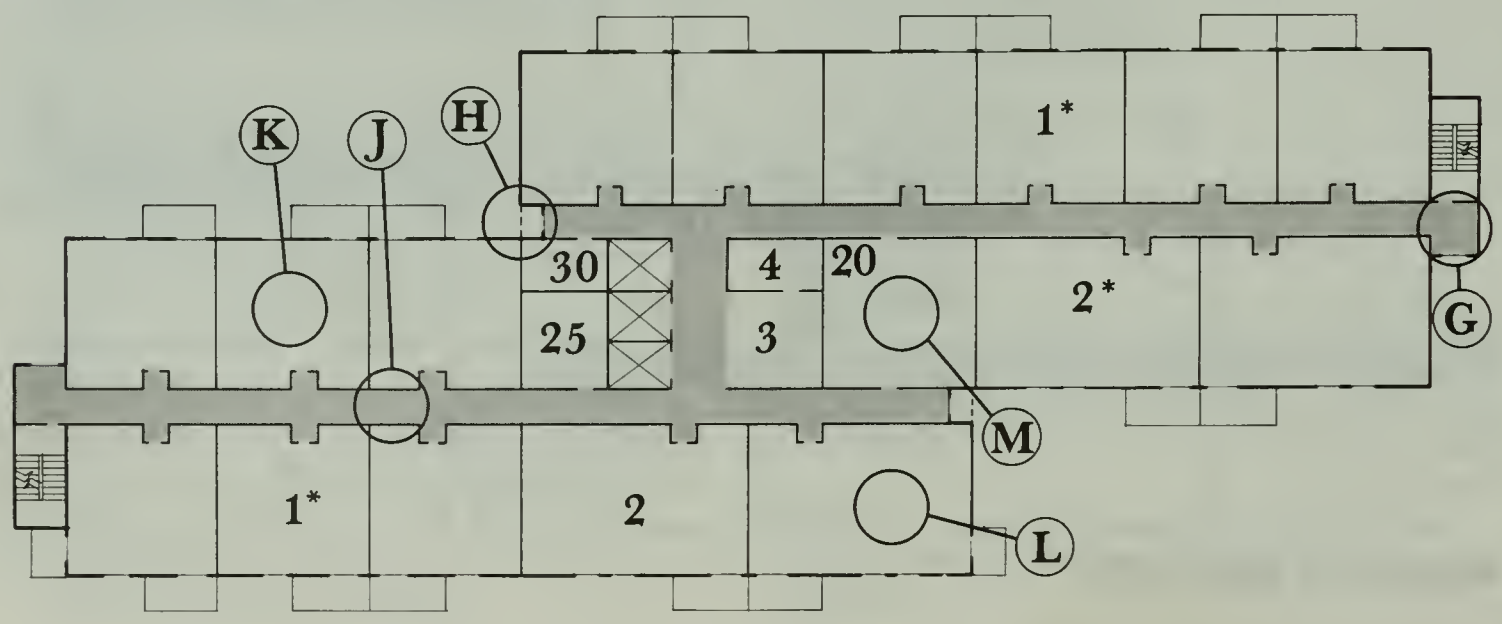
RESIDENTIAL CARE FLOOR

Continuing Care Retirement Communities

NURSING CARE FLOOR



ELDERLY HOUSING—TYPICAL FLOOR



Continuing Care Retirement Communities

many of the presently active residents will require higher levels of care.

Other Factors. These special factors affecting the elderly should also be considered:

- All of the recommendations for the landmark facility types described in Part II also apply to those facilities when they are components of a CCRC.
- In the interests of financial success and stability, many of these multilevel-care facilities are working to attract younger residents who will stay for a number of years without requiring extensive medical services. Two-bedroom detached units of 1,000 to 1,300 square feet are generally built to attract this clientele, although such single-family dwellings and cottages currently (1985) constitute less than two percent of the housing offered in continuing care facilities.
- One major component of the typical CCRC is the community center. It serves many of the functions of a senior center; it also provides such **residential services** as a bank and a pharmacy. And depending upon the size of the CCRC and the market in the surrounding community, it might also furnish space for medical offices or an adult day care center, and/or a wellness clinic. The community center is often the focal point of the community, providing the main entrance to the total facility and serving as the site of most group activities. Other elements do not differ substantially from those described in the other sections of this chapter, although the site considerations can be significantly different.

Continuing Care Retirement Communities Checklist

CONTINUING CARE RETIREMENT COMMUNITIES: CHECKLIST

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Site Analysis (see Page 128)
Public Transportation
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Topography (see Page 129)
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Circulation
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- Pedestrian
- Residents
- Delivery Service, Garbage Collection, Maintenance, Landscaping and Groundskeeping Vehicles, Snow Removal and/or Storage
- Staff
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- Visitors

Landscaping (see Page 135)
- Gardens

Lighting (see Page 104)
Outdoor Recreation
- Checkers/Chess
- Swimming Pool(s)
- Tennis
- Badminton
- Putting Green
- Golf Courses
- Croquet
- Horseshoes
- Boccie/Lawn Bowling

Parking (see Page 135)
- Barrier-Free (see Page 135)
- Residents (see Page 136)
- Staff
- Visitors

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Seating (see Page 123)
Security (see Page 125)
Shelter
Sign Systems (see Page 126)
Solar Orientation (see Page 136)
Water Supply and Sewage Systems

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Emergency Exit (see Page 93)
Main (see Page 89)
Secondary
Service (see Page 92)
Visitors/Staff/Residents
Lounge (see Page 106)

Lobby/Reception Areas (see Page 106)
Control
Directory (see Page 127)
Drinking Fountains
Front Desk
Gift Shop, Waiting Room Area/Lounge
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Storage

Continuing Care Retirement Communities Checklist

Telephones (see Page 79)
Wheelchair Storage

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Receiving
Storage, Long-Term (see Page 140)
Trash (see Page 99)

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Ramps (see Page 117)
Stairs (see Page 139)

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Sun Rooms (see Page 140)
Television Viewing Areas (see Page 141)

Mechanical Facilities
Gross Area Requirements
Gross/Net Area Requirements
Airconditioning Requirements
Electrical Requirements
Fire-Protection Requirements
Plumbing Requirements
Security, Communication Systems and Alarms

**SEE OTHER MAJOR BUILDING TYPE CHECKLISTS FOR BUILDING-RELATED ITEMS.

Elderly Housing Checklist
Residential Services (see Page 24)
Dwelling Units (see Page 25)

Senior Center Checklist
Existing Building Evaluation for Renovation (see Page 31)
Care Services (see Page 31)

Residential Care Facilities Checklist
Residents' Units (see Page 38)

Nursing Homes Checklist
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III GLOSSARY
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Accessory Apartments

ACCESSORY APARTMENTS

An accessory apartment is typically a rental unit created by subdividing the space of an existing dwelling owned by an older person, and providing a separate kitchen and bathroom for the newly created unit. Accessory apartments provide many older homeowners with the means and support they need to continue living in their existing homes and neighborhoods; the rental unit provides the homeowner with both additional income and the security of having others close by in case of emergency. Renters may also help maintain the property as a part of their rent—help that can be especially useful to older people who have difficulty taking care of their own homes.

Frequently, middle-aged family members will accommodate an older relation by creating an accessory apartment in their own dwelling unit—by remodeling a garage for example, or constructing an addition to a single-family house. This kind of accessory apartment is similar to a granny flat—a temporary, free standing unit erected on the site of an existing house for use by older family members.

Many local jurisdictions have revised their zoning ordinances to allow the development of accessory apartments in single-family housing zones. The zoning ordinance sections dealing with accessory apartments usually contain special requirements, such as a minimum lot size, on-site parking, separate entries, above-grade windows and other basic facilities. They may also require special applications, hearings, inspections, fees and reviews.

Some local jurisdictions oppose accessory apartments because they permanently increase previously planned densities. In such instances, granny flats may be more attractive to local authorities because typical zoning requires that they be removed when the elderly occupant of the unit dies or leaves permanently. Also see **Granny Flats** and **Site Analysis.**

ACTIVITY AREAS

Given the substantial quotient of leisure time available to users in many facilities for aging, activities are second only to physical care as a main determinant of the quality of life for those users. What do they do—or wish to do—with their leisure time? A recent survey (see page 163, NCCNHR) sought that information from 455 residents of 107 nursing homes across the country, and collated answers that may be helpful to facility programmers. "More and better choices" among activities was a leading response to the survey, as was the request for "increased activities during the evenings and on weekends."

Asked what activities they favored, the surveyed users put social activities at the head of the list, and included the arts (fine arts, crafts and music) and intellectually stimulating activities in the top 10. Among the other kinds of activities requested were sports, exercise programs, swimming, religious programs, more programs involving community participation and more programs conducted outside the facility. The users also voiced an interest in growing their own vegetables, cooking their own food, raising chickens and fishing.

Adaptability

Though pets were not mentioned in the study, the companionship they provide can often contribute significantly to the overall well being of the elderly. This is, however, more a programming than design issue.

As for other preferences, these nursing home residents stressed their need for privacy, and for full accessibility (citing accessible vans and buses for transportation, accessible walkways outdoors and ramps indoors and out); they wanted more control over the television's on-off switch and its volume, and, finally, they sought to exercise the choice of whether or not to live in a nursing home.

Facilitating group activities is often an important program goal in buildings designed for the elderly. Unfortunately, the activity spaces designed for this purpose often go unused because elderly residents reject them for their architectural failure to accommodate user needs or perceptions. In perhaps no other specific area is it more important for the architect to communicate with users and research the problems and successes experienced elsewhere before initiating design.

The basic reason behind the inclusion of activity areas in facilities for the elderly: Many activities commonly undertaken at multiple remote sites by younger people are provided on a single site for older people to assure accessibility and to stimulate participation. Activity areas vary according to building types and facility sizes.

See the following glossary entries for specific rooms or spaces: **Alcoves, Arts and Crafts Areas, Assembly Areas, Balconies, Corridors, Exercise Areas, Laundry Facilities, Lounges, Multipurpose Rooms, Performing Arts Areas, Outdoor Access, Reading/ Library Areas, Sun Rooms, Television Viewing Rooms, Worship and Meditation Areas,** and **Senior Centers** in **Part II: Facility Types.**

ADAPTABILITY

Older people experience a wide variety of age-related impairments over time. As a result of this great variety among different elderly people, and the changes they can undergo, a single room design seldom fits exactly the specific requirements of different older people. Their individual differences create design requirement differences that are especially important in the dwelling unit kitchens and bathrooms.

Adaptability is a design concept developed to address these problems of individual differences and individual changes in capability over time. ANSI A117.1 defines *adaptability* as "the ability of certain building elements, such as kitchen counters, sinks, and grab bars, to be added to, raised, lowered, or otherwise altered so as to accommodate the needs of either the disabled or nondisabled, or to accommodate the needs of persons with different types or degrees of disability."

In addition to adjustable building elements, adaptable dwelling units are wheelchair accessible (see ANSI A117.1) and offer special features such as lever handles on all doors, larger bathrooms,

Adaptability

flexible shower hoses, grounds for future grab bars, antiscald shower controls, front-loading washers and dryers, 24-inch-high electrical outlets, 48-inch-high light switches, side-by-side refrigerator/freezers, front range controls, sliding or casement windows and loop cabinet hardware.

The average additional costs of these items—over and above the costs of items normally specified for housing—amount (in 1985) to less than $700 per dwelling unit. If and when grab bars, a strobe-light doorbell and a flashing smoke alarm are added in the future, further added costs will be approximately $500. These costs are insignificant when compared with the costs of relocating an older person who must move from unadaptable housing as a result of minor or temporary impairment.

Also see **Bathrooms** and **Kitchens.**

ADAPTIVE REUSE

This design guide has been written with new construction in mind but virtually all of the information contained within is appropriate for architects to use in the process of adapting aging facilities into existing structures.

A recent survey by the U.S. Conference of Mayors on elderly housing found adaptive reuse projects underway in over 100 cities. Former schools and hotels appeared to be the most popular building types. Other types found were hospitals, factories, warehouses, office buildings, convents, churches, retail stores, banks, large residences, dormitories, armories, parking garages, firehouses, children's homes, and a car wash.

ADULT DAY CARE

Adult day care centers provide health and social services for elderly people who are ill and/or disabled (as opposed to community and senior "wellness" centers, which focus on exercise, nutrition and other activities for the healthy elderly). Typically, the older person is transported to the adult day care center by his or her primary care-giver (often an adult relative) in the morning and picked up again in the late afternoon. However, many adult day care centers also provide transportation to and from the facility.

Limited studies of adult day care participants have found that more than half need assistance with eating, transferring from bed to chair and/or toileting. Services vary among different programs but frequently include supervision, personal care, group and individual activities, meals, recreation and exercise, in addition to medical and related services such as physical therapy and speech therapy.

Two general types of adult day care have been identified:

- *Medically oriented programs,* designed primarily to provide intensive health care and physical therapy, and
- *Recreationally and educationally oriented programs,* designed to provide activities as well as social and intellectual stimulation for impaired and isolated elderly individuals, in addition to respite for the families who have been caring for them.

Some adult day care programs operate within facilities designed for other purposes, such as nursing homes, where the environment, staff and services are related and may be shared. This

ANSI A117.1

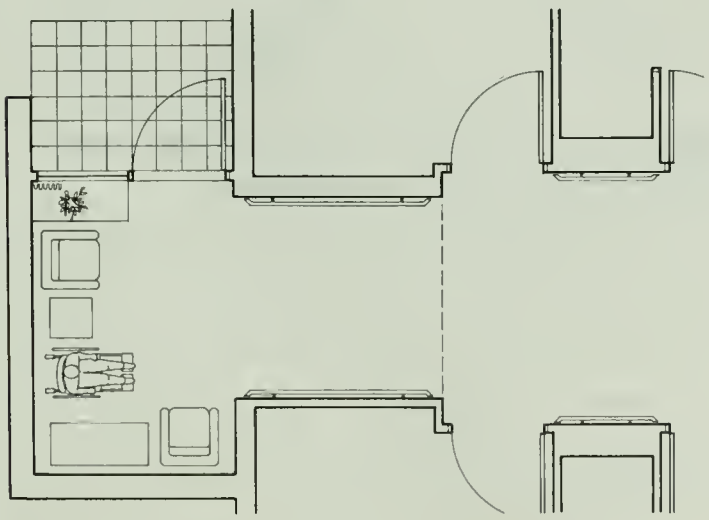
arrangement is one way for a nursing home to extend its programs by using existing expertise to provide an alternative to institutional care.

Also see **Personal Care.**

ALCOVES
Alcoves in activity areas, corridors, lobby/reception areas and lounges provide semiprivate spaces where people can meet and converse. By helping to divide larger spaces into niches that may better facilitate small group-activities, alcoves can be especially important in nursing homes and other facilities that provide reduced semiprivate space.

Wide or multiple alcoves along a corridor can be detrimental to independent mobility by breaking up the continuity of the handrails. Freestanding handrails along the perimeter of a corridor alcove should be provided wherever a major break in the continuity of the handrails would otherwise occur.

Also see **Corridors, Lobby/Reception**



Alcoves provide semi-private space for social interaction.

Lafayette Place
Fall River, Massachusetts

Boston Architectural Team, Inc.

Hresko Associates, Boston
Phillip Hresko, Principal
David Clark, Job Captain

Nick Wheeler, Photographer

Areas, Lounges, Space Hierarchy, and **Nursing Homes** in **Part II: Facility Types.**

ANSI A117.1
The *American National Standard Specifications for Making Buildings and Facilities Accessible To and Usable By Physically Disabled People* (ANSI A117.1) is published by the American National Standards Institute. Scheduled for revision every five years, this consensus standard focuses on minimum design requirements for physically disabled people of all ages; it should not be construed as

ANSI A117.1

presenting the optimal criteria for buildings serving *severely* disabled users on an everyday basis.

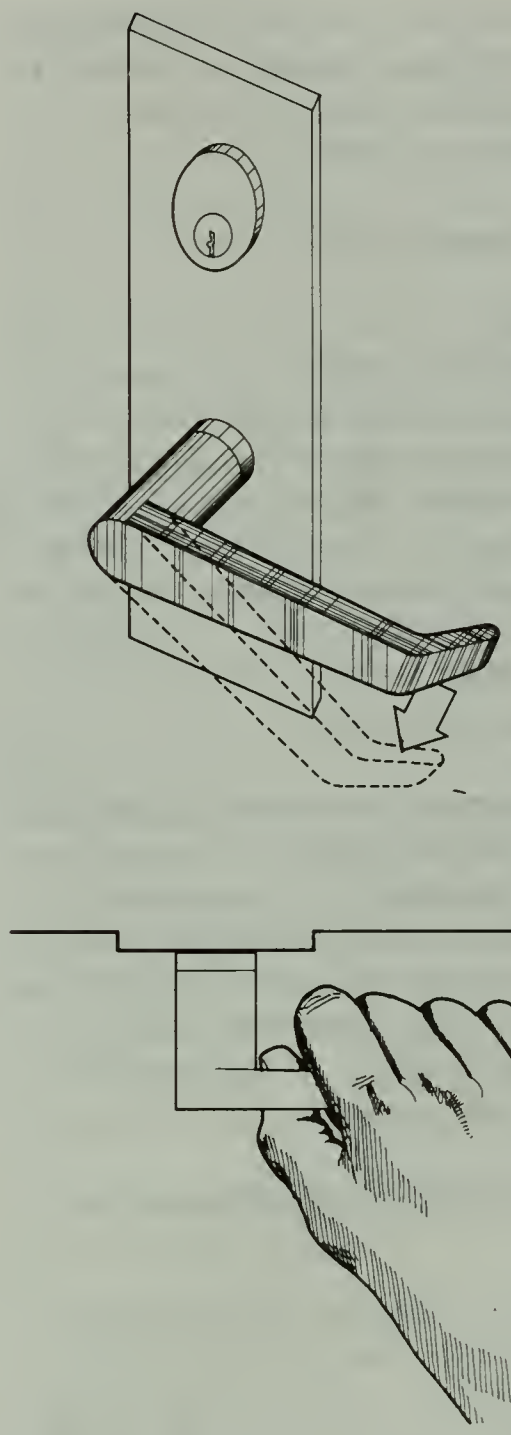
While most older people are *not* physically disabled, multiple age-related physical impairments of a more minor nature are common. Therefore, accessibility and usability are prerequisites for design for aging, and that is why ANSI A117.1 and similar standards are referenced in this guide.

Also see **Barrier-Free Design, Bathrooms, Uniform Federal Accessibility Standards (UFAS).**

ARCHITECTURAL HARDWARE

Architectural hardware for doors and windows should be operable with one hand and not require excessive strength or a tight grip for twisting or turning. Lever handles, push plates, and U-shaped pulls are recommended, mounted between 15 and 48 inches above the floor. Limit the pressure required to open doors controlled by spring hinges and door-closers to 3 to 5 foot-pounds and provide door closers with a check-action delay of 4 to 6 seconds before starting to close.

Also see **Barrier-Free Design, Doors, Control, Security, Windows** and refer to barrier-free design standards.



Levers are far more manageable than round knobs as grip strength diminishes.

Arts and Crafts Areas

AREA REQUIREMENTS

As a result of the prominence of low-income elderly housing programs, there has been a tendency to adopt minimum standards that assume older people somehow require less floor area to carry out their daily activities, tasks and entertainments than do younger people. On the contrary, elderly people often need more space to support their life styles.

Older people spend more time inside fewer spaces and buildings than do younger people, and they frequently utilize mobility aids that require more clearance in circulation spaces. In private and semiprivate space, older persons may require the assistance of another person to carry out common activities of daily living, and often own large collections of artifacts—and oversized furniture—to which they are strongly attached. At the same time, in semipublic and public spaces, older persons often gather in small groups; overly large areas can cause them to feel lost or overwhelmed in excessive space, as well as give the appearance of underactivity. The architect should recognize the elderly's use of indoor spaces as well as their special mobility problems, assistance requirements, life styles and group sizes when planning space and setting area requirements.

In the past, governmental agencies have published guidelines for low-income housing, such as the U.S. Department of Housing and Urban Development's Minimum Property Standards, to establish minimum area requirements for governmentally financed projects. Today such standards are often obsolete, and yet still enforced as maximums by cost conscious regulatory agencies. Architects have to convince project sponsors that the needs of the elderly are bona fide, and that long-term competitive advantages can be realized by project sponsors and operators whose amenities and adequate spaces help attract and maintain full occupancy, even when a market becomes saturated by competition.

Also see **Space Hierarchy.**

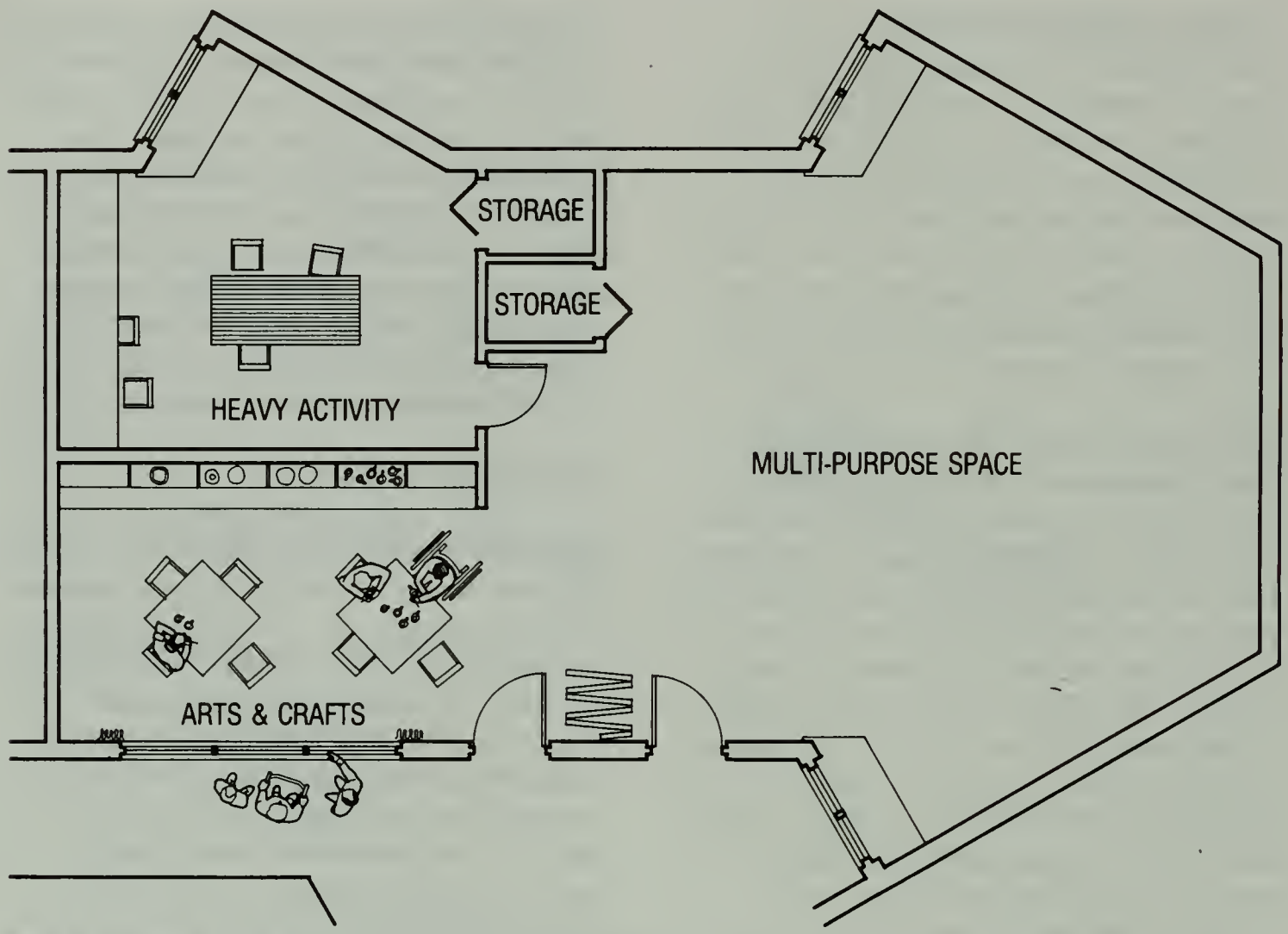
ARTS AND CRAFTS AREAS

Spaces devoted to arts, crafts and other creative hobbies can be difficult to plan because of the wide variety of activities that may take place. Arts and crafts activities such as painting and sketching require little space and few provisions beyond adequate task lighting and storage. Arts and crafts—woodworking, ceramics, china painting and photography—can require more space as well as special furniture, equipment, electrical service, plumbing fixtures, exhaust ventilation systems and storage.

Consider locating some arts and crafts spaces where visitors and others can view the activities. Although participants should be able to control this visual access with curtains or other means, such visibility for arts and crafts activities can encourage wider participation.

Isolate and contain noisy and dirty activities. Crafts such as weaving and woodworking, which require fixed equipment, can be confined to single-use rooms.

Arts and Crafts Areas



Arts & Crafts Areas are important and much used spaces.

Provide adequate safety devices for dangerous equipment such as woodworking tools and kilns.

The design of storage is important. Storage for works-in-progress should be accessible (mounted at a height between shoulder and knee) and of a size appropriate to the stored objects; the space might also serve to display works completed or in progress. Shelving and cubicles should not be so deep that participants cannot reach to the back. Storage for works-in-progress, materials and tools belonging to individuals should be both accessible and secure. Communal material, tool and equipment storage should be separate from individual storage and provide convenient, controlled access. Movable storage units can be used as flexible space dividers.

Also see **Activity Areas** and **Lighting.**

Balconies

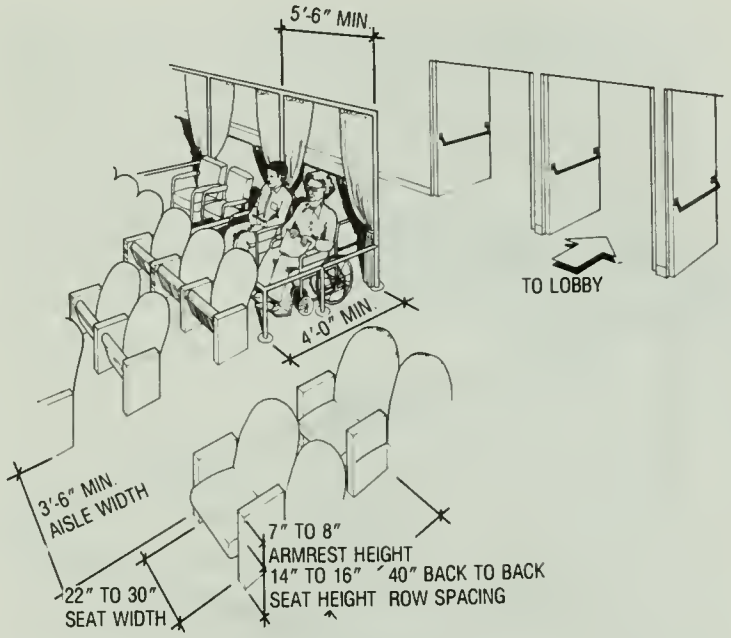
ASSEMBLY AREAS

Locate assembly rooms near lobby or lounge areas. Where seating is fixed, provide aisles that are a minimum of 42 inches wide to allow for the movement of wheelchairs and walkers, and sufficient wheelchair spaces should be provided (see ANSI A117.1 or applicable barrier-free design standards). Provide a minimum of 40 inches for back-to-back row spacing. Provide firm, upholstered seating that is 14 to 16 inches high in the front and 22 to 30 inches wide, with armrests 7 to 8 inches above the seat and extending beyond the seat front.

Provide an accessible stage or other performing arts area usable for dance, theater and music. A good, distortion-free public address system is important. Provide a listening system for hearing impaired older users that utilizes an FM, infrared, induction or other equally effective interior transmission system with individual headsets. A projection room is recommended to eliminate background noise from a projector, which can be bothersome to many older people.

In senior centers and particularly in larger facilities, consider the need for a space devoted solely to meetings; small centers with lower daily attendance can often utilize other rooms, including lounges, dining areas or multipurpose rooms, as meeting spaces.

Also see **Activity Areas, Barrier-Free Design, Dining Areas, Lounges, Multipurpose Rooms, Seating, Senior Centers** in **Part II: Facility Types,** and refer to barrier-free design standards.



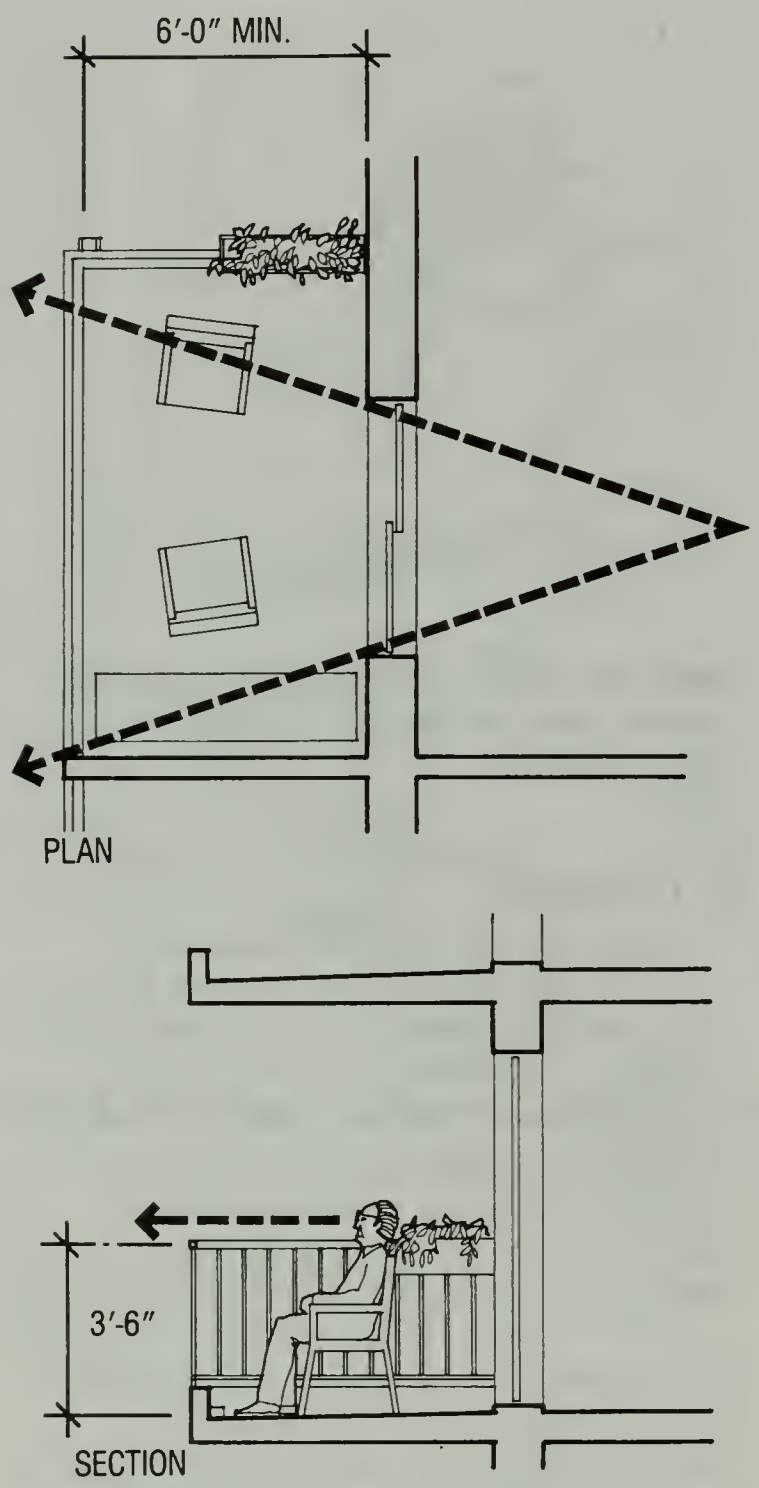
Assembly Areas—Flexible spaces in public theaters allow families and friends to sit with elderly patrons.

BALCONIES

Balconies can be valuable sources of access to the outdoor environment for older people in buildings above one story in height. Depending on the level of security desired, balcony functions can be fulfilled by glassed-in sunrooms, screened porches or private balconies separated from living units by glass doors.

Provide balconies that look and feel safe, but that don't block views from the building's interior or from a seated position on the balcony itself. Provide guardrails 42 inches in height, with openings small enough to prevent a baby from slipping through. Design balustrades and rails with narrow-profile materials to minimize impact on views. Avoid solid parapets that block views. Provide guardrails and mountings with sufficient strength to meet the requirements of

Balconies



Balconies provide the valuable amenity of access to the outdoors.

applicable building codes and ANSI A117.1 (generally a force of 250 pounds applied in any direction for rail bending and shear stress, as well as for fastener shear and tensile force).

Common Balconies. Provide an area of sufficient size to accommodate both group and individual activities; a general rule of thumb is to provide 60 square feet, plus an additional five-square feet for each anticipated occupant. Plan the space to accommodate the furniture and equipment required for anticipated activities. Design access so that users can visually survey all areas of the common balcony before entering. Provide control for lighting from an inside switch. Isolate the common balcony, both visually and audibly, from private interior spaces.

Private Residential Balconies. Provide sufficient space to accommodate two chairs and a table—usually 50 to 60 square feet. Minimum dimensions are critical: Less than five feet in any dimension means that two people will be forced to sit side-by-side, rather than in the much preferred face-to-face seating arrangement.

Primary design goals are to provide visual and audible privacy and good views of site activity and esthetic amenities to the balcony users. A built-in ledge for supporting potted plants and flowers (located away from the main view) can

Barrier-Free Design

be helpful. Private balconies often are used by older residents to store seldom-used items, especially when storage space inside the unit is limited; storage space built into the balcony can help to protect these possessions from the elements while reducing balcony clutter.

Also see **Activity Areas, Outdoor Access, Site Development,** and **Elderly Housing** in **Part II: Facility Types.**

BARRIER-FREE DESIGN

Barrier-free design refers to both the discipline of and the principles involved in the selection and design of sites, buildings, fixtures, equipment and furniture that are accessible to and usable by all people, including those with physical impairments. Parts of the built environment that are not accessible to and usable by physically impaired people are viewed as having "barriers."

The American National Standards Institute (ANSI) has established standards for barrier-free design that have been incorporated into most state and local codes. In addition, the U.S. Architectural and Transportation Barriers Compliance Board (ATBCB) has established minimum guidelines and requirements for use by federal standard-setting agencies in developing standards for application under the Architectural Barriers Act of 1968. Each agency of the federal government is required by the Barriers Act to adopt accessibility standards. To fulfill this requirement, the *Uniform Federal Accessibility Standards* (UFAS) have been developed to serve as the sole accessibility standard to be referenced by the federal government.

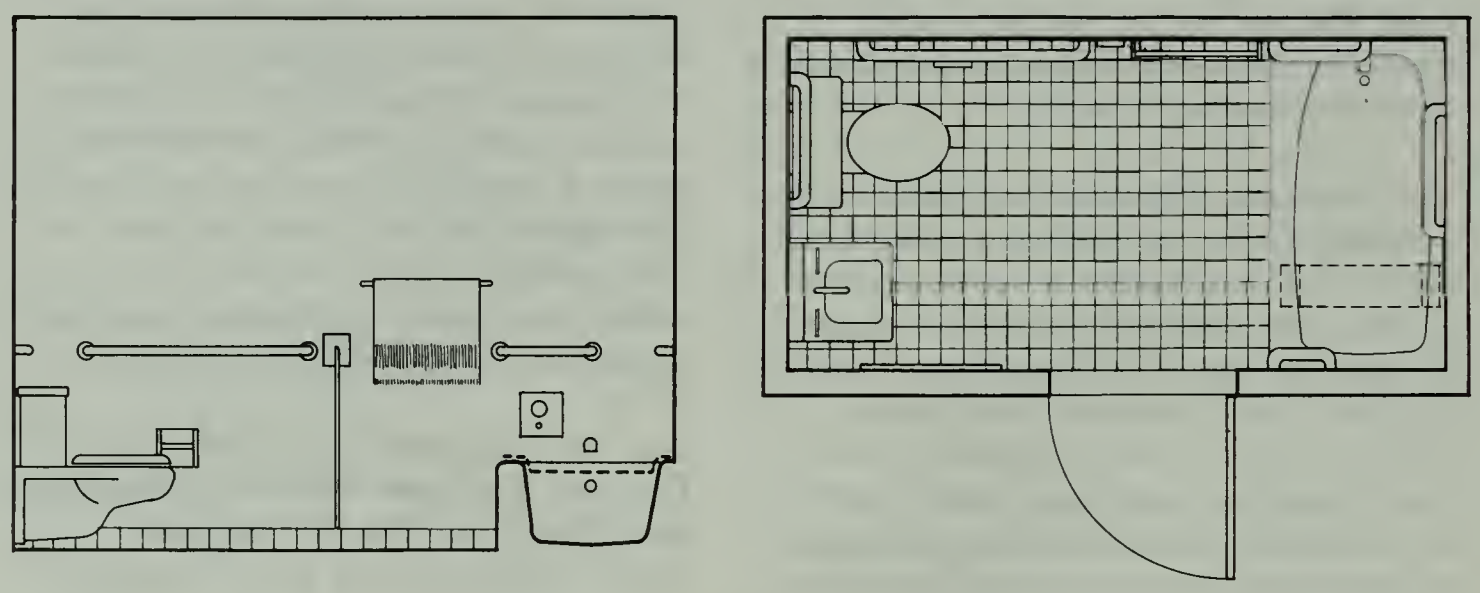
Barrier-free design is a necessary component of design for aging. The principles, standards and guidelines of barrier-free design are essential to any architect interested in ensuring accessibility and usability for older users. When designing for older users, however, the architect must also attend to the many other design requirements of the elderly, requirements that often go beyond barrier-free design and stem from cognitive, social and psychological as well as physical impairments. In addition, the elements, fixtures, equipment and furniture selected by the architect to create a barrier-free environment for the older person should blend into the normal ambience of the building type, rather than create the image of an overly supportive or prosthetic environment.

Also see **Adaptability, ANSI A117.1, Control, Uniform Federal Accessibility Standards,** and **Part I: Introduction—Aging and the Environment.**

Bathrooms, Private

BATHROOMS, PRIVATE
The general design considerations of private bathrooms for older users hinge on a wide range of issues. Among them:

- **Accessibility.** Design the bathroom to avoid floor level changes and to accommodate a second person who might provide assistance. Provide bathroom plumbing fixtures that are accessible from a wheel chair (see ANSI A117.1 or applicable barrier-free design standards). Provide bathroom doors that swing out (or are capable of swinging out in an emergency), so that the door can be opened when an incapacitated person is lying on the floor and blocking the inward swing of the door.
- **Adaptability.** An adaptable bathroom provides the flexibility and support required for continued usage by older people as they experience age-related diseases or disabilities, and yet does not intrude with such support when it is not needed. Reinforced mounting points for potential grab bar installation and sufficient space for wheelchair access and bathing assistance are among the basic provisions for adaptability.
- **Emergency Call Systems.** A high proportion of calls for assistance originate in the bathroom, in part because the bathing-drying-dressing activities that take place there increase the likelihood



(Plan & Section) Bathrooms, Private—This bathroom is shown generously large to illustrate the features described. Other bathroom layouts are shown in Part II: Facility Types.

Bathrooms, Private

of accident, and in part because the bathroom is where many people go when they feel ill. Provide an emergency communication system in all bathrooms in facilities designed for older users. Provide a call system that, when activated, alerts parties capable of responding quickly to the call at any time the bathroom might be in use. Consult with the client to program a viable location for alarm monitoring, that will facilitate an appropriate response 24 hours a day.

In private bathrooms, the emergency call system should be within the reach of a person seated on the toilet, in the bathtub, in the shower or lying on the floor. A simple switch, mounted on the wall 36 inches above the floor, with a 3/8-inch rod attached, and extending within four inches of the floor serves well. The rod should be of a color that contrasts highly with the wall, and should not be located where it can be obscured by hanging towels or drying clothes.

- **Showers and Tubs.** There is controversy concerning the choice between programming bathtubs or showers. Either can be more costly, depending upon specific bathroom layouts, fixtures, controls, finishes and accessories.

Bathtubs are more likely to lead to falls than are showers, because of the need to step over the side and stand on a wet surface while off-balance. However, many older people enjoy baths, and movable seats and special tubs are available that can facilitate transferring in and out of the tub without standing and stepping over the side.

Showers are recommended in congregate housing and residential care facilities, where the older user is likely to be more frail and have difficulty in ambulation. When showers alone are provided in private bathrooms, bathtubs can be provided in common bathrooms for those older residents who prefer to bathe in a tub, or whose health care requires soaking. Where bathtubs are provided in common bathrooms, provide at least one bathtub on each apartment floor.

Locate controls for tubs and showers in positions accessible both from inside and outside the fixture. Provide controls of the single-lever mixing valve type, with temperature limiting controls (to prevent scalding), and shower heads that are adjustable in both height and intensity of water-stream pressure.

Bathrooms, Private

- **Water Closets.** The water closet can present a design dilemma to the architect and specifier: A seat height high enough to facilitate an older person's getting on and off the toilet may cut off blood circulation to the legs and prevent the user's attainment of the best position for moving the bowels (a full squat). On the other hand, a seat height that is too low may facilitate movement of the bowels but prevent the user from getting off the fixture. "Handicapped toilets" (also see ANSI A117.1 or applicable barrier-free design standards) are not recommended for general use by older people.

  Standard height water closets—15 inches to the top of the seat—are recommended for general use by the elderly, with appropriately placed grab bars that help in getting on and off the fixture. Toilet seat covers are recommended to facilitate use of the fixture as a seat for grooming activities.

- **Grab Bars.** Grab bars should be included in bathrooms to provide solid handholds for the user entering and exiting the tub or shower, and getting on and off the toilet. The use of a grab bar as a towel bar or drying rack defeats its purpose; this common use cannot be prevented, but the provision of adequate and accessible towel bars and drying racks in addition to grab bars helps minimize it.

  In adaptable bathrooms, provide for the solid mounting for grab bars so that occupants may add them later as circumstances and tastes require. Materials that avoid an institutional, "stainless steel" appearance should be considered.

- **Privacy.** Locate the bathroom so that a door left open will not provide direct views into the bathroom from the entry, living/dining room or kitchen.

- **Safety.** Provide bathrooms that are safe, convenient and free of sharp corners, projections and slippery surfaces. Locate bathroom fixtures and equipment so that excessive bending, leaning, and twisting will not be necessary for their operation. Lay out the bathroom so that users need not reach across counters in order to access storage cabinets or electrical outlets. Locate electrical outlets adjacent to the lavatory, but not above sinks or tubs where electrical appliances might fall into standing water. Protect outlets with ground-fault interruption devices. Temperature-limit controls should be provided on domestic hot water in the bathroom to keep temperatures at the fixture below 115 degrees F. and prevent accidental scalding.

- **Storage.** Provide bathroom storage for toiletries, medicine and towels.

Bedrooms, Housing

- **Toilet Accessories.** Consider locating a mirror in front of the toilet to permit shaving and other grooming activities while the user is seated. Wall-mounted mirrors behind lavatories are often too distant for older users, requiring them to stand and bend over the lavatory in order to get close to the mirror; a mirror located on a wall that can be approached directly is recommended. Illuminate mirror areas with warm colors.

  Locate towel bars where they will not likely be used as grab bars (for example, four feet above the floor), but still within easy reach of the tub or shower and lavatory. Coordinate the location of towel bars with the location of the emergency call switch to minimize false alarms caused by grabbing for towels, and to prevent obstruction of the switch by towels or drying clothes. Anchor towel bars firmly so that they will break a fall if they are grasped in an emergency situation.

Also see **Barrier-Free Design, Central Bathing, Communication Systems, Congregate Housing, Doors, Toilet Rooms, Elderly Housing** in **Part II: Facility Types**, and refer to barrier-free design standards.

BEDROOMS, HOUSING

In addition to sleeping and dressing in the bedroom, many older people also spend time there while pursuing their crafts and hobbies, reading, watching television and resting, and also in times of illness. For any user, the bedroom should afford privacy as well as protection from noise and drafts.

Furnishability is a major concern in the bedroom. Select room dimensions and location of doors and windows to allow alternative furniture arrangements, especially alternative bed placements. Provide sufficient space for two twin beds, side tables, dresser, chair, television and stand, and circulation. Locate windows to afford good views for the individual in bed, with sills low enough (15 to 20 inches above the floor) to allow the resident to see outside from the bed. Locate windows to create useful corners, so that furniture can be backed by walls rather than by windows.

Also see **Furnishability, Privacy, Television Viewing Areas** and **Elderly Housing** in **Part II: Facility Types.**

Beds

BEDS

Older people spend a significant portion of time in bed, especially when they are physically incapacitated or ill. Provide beds with sufficient width to facilitate resting, sitting, sexual activity and getting into bed, with sufficient height to facilitate getting out of bed and seeing out of the window while in bed.

Call systems, telephones and controls for lights and television should be accessible and controllable from the bed without excessive twisting, reaching or having to get out of bed. Injuries from falls near the bed can be minimized through the use of round-edged furniture.

Nursing homes should provide more than one type of bed to accommodate different personal and nursing care requirements. The standard hospital bed is too narrow for general nursing home use. The beds manufactured by health care suppliers often are over 7 feet 6 inches in length; these beds should be avoided or additional space should be provided in resident's rooms to accommodate their excessive length.

Also see **Residents' Rooms** and **Safety.**

CENTRAL BATHING (NURSING HOMES)

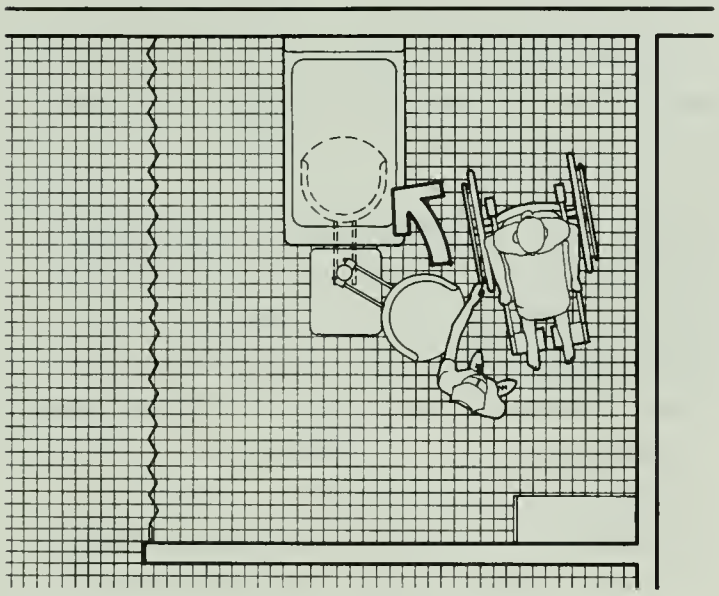
Most nursing home residents require assistance with bathing that is usually accomplished in a central room equipped with special lifts and other equipment. Even though most nursing home residents must give up their personal control of bathing to staff, the bathing room should bear some resemblance to a residential bathroom. Provide a central bathroom design that maintains a relationship to previous bathing experiences, as well as privacy while bathing, drying and dressing. Avoid the portentous appearance of a surgical suite. General design recommendations are:

- Provide individual rooms or enclosures for privacy.
- Provide space for bathing, drying, dressing, assistance, wheelchair use and wheelchair parking.
- Provide temporary storage for personal bathing and grooming items, as well as clothing.
- Provide doors with the 34 inches clear opening required for wheelchair access (see ANSI A117.1 or applicable barrier-free design standards) as well as hardware that permits access from the outside in case of emergency.
- Provide floors with nonslip surfaces.

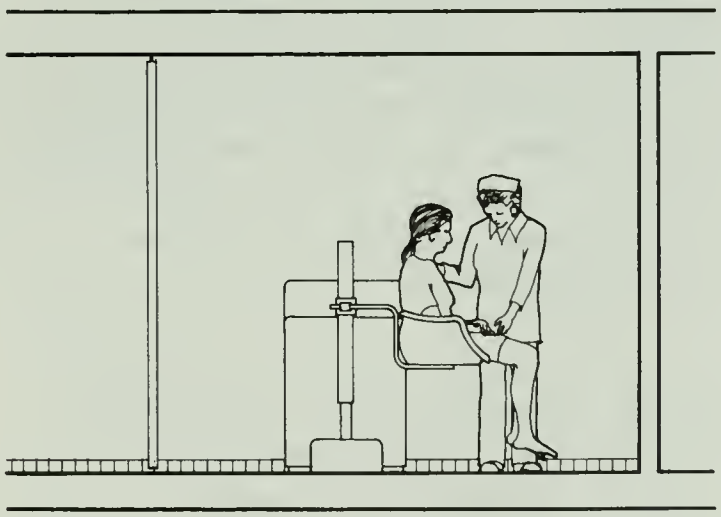
Central Bathing

- Provide walls with washable finishes and, in fixture areas, moisture resistance.
- Provide a minimum ceiling height of 7 feet 8 inches with cleanable surfaces.
- Provide adequate light levels and highly contrasting colors for changes in plane. Control reflections and glare.
- Provide grab bars at all patient toilets, showers, tubs and sitz baths (see ANSI A117.1 or applicable barrier-free design standards).
- Provide recessed soap dishes in showers and bath.

Also see **Bathrooms-Private, Toilet Rooms, Nursing Homes** in **Part II: Facility Types,** and refer to barrier-free design standards.



PLAN



SECTION

Central Bathing Areas should allow sufficient space for bathing activities, special equipment, wheelchair maneuvering, and attendants.

Communication Systems

COMMUNICATION SYSTEMS

Alarm Systems. Special attention must be given to the design of any alarm system intended to warn older people of emergencies. The key is to both communicate the appropriate information about the emergency and stimulate an appropriate response.

Many older people have visual and/or hearing impairments. Thus, redundant cueing, such as providing signals that can be seen as well as heard, is essential in the design of alarm signaling systems for older users.

In addition, the architect should consider the action that an alarm signal is intended to initiate. Often the typical response of a building occupant who hears or sees a fire alarm signal is to leave the building; there are many situations, however, in which older residents may risk greater injury by trying to evacuate than by seeking refuge and awaiting assistance.

Specific emergency responses for older persons must be developed for specific buildings, and different alarm signals should be designed for different responses. For example, a "less alarming" tone-and light combination might be used to signal an older person to close doors and wait for assistance, while a "more alarming" signal combination would dictate evacuation.

Call Systems. Should sickness, accident or another contingency render an elderly person helpless in his or her unit, a call system can alert others of the need for assistance. Call systems range from simple monitoring devices—"flags" on mailboxes that are turned each day to indicate that one is up and about, for example—to small radio transmitters carried or worn by the older person at all times.

The call system might sound an alarm in a central staff facility (manager's office or apartment, lobby switchboard or nursing station), be linked to a fire alarm voice-communication system or activate a hallway light outside the unit. To avoid panic, buzzers indicating that the call system has been activated should not be used in public areas.

Telephone-based call systems can provide two-way communication if 24-hour staffing is not provided. Consider telephones that will ring a preset series of phone numbers—say, for a neighbor and a family member or staff member—if a button is not pushed before a preset time each day, as well as those with wireless "slaves" that will ring the same set of numbers if a button is pushed in an emergency.

Communication Systems

For fixed-station call systems, two alarm stations should be provided—one in the bathroom, reachable from the shower, toilet and floor, and one in the bedroom, reachable from the bed. Locate each call station 30 to 36 inches above the floor and attach to its switch a wood or plastic rod that can be reached from the floor. Locate call systems where they will not be activated accidentally. If provision of only one call station is feasible, locate it in the bathroom.

Newer technologies in personal call systems are also available. For example, a resident can wear a necklace or "pen" with a small transmitter inside; if an emergency arises, he or she can activate the transmitter, sending a signal to a central monitoring unit. These systems are now in communitywide use in some areas, and are much more flexible than building-dependent systems.

In nursing homes, more sophisticated nurse-call, medical monitoring, telemetry, beeper and remote diagnostic systems may be required.

Telephones. The telephone is a major medium of communication for most older people, and it should always be accessible and usable. Private telephones should be located near the bed, in the bathroom and in the kitchen in residential settings.

Placement of telephones in nursing homes should be similar, but will depend upon the administrative and accounting practices of the facility. Telephone charges, for example, may not be reimbursed by governmental or third-party payers. Thus, facilities may choose to furnish phones (so they maintain the integrity and use of intercom and nurse paging/call systems) and charge each resident for them separately, or they may choose to make residents' phones optional equipment, to be furnished and maintained by the resident. The architect should review the client's intent before preparing the pertinent construction documents and specifications.

Public telephones should be located near waiting and activity areas. Places to sit comfortably while talking should be provided, as should the lighting needed for looking up telephone numbers and dialing. See ANSI A117.1 or the applicable barrier-free design standards for mounting height and wheelchair clearance requirements.

Among the large variety of telephone instruments on the market today, those with familiar touch-tone dialing and amplifiers for the hearing-impaired are generally most useful to older people. Telephones that offer one-button dialing for emergency and frequently used numbers are also popular and appropriate.

Also see **Barrier-Free Design, Bathrooms, Lighting, Nursing Station, Redundant Cueing, Nursing Homes** in **Part II: Facility Types,** and refer to barrier-free design standards.

Community Spaces

Michael R. Koury Terrace
Torrington, Connecticut
Ulrich Franzen & Associates, Architects

COMMUNITY SPACES

Community spaces, such as activity areas, corridor alcoves and lounges provide the primary forum for social interaction among nursing home residents. Community spaces must be designed to facilitate such interaction without compromising the residents' privacy requirements.

In community spaces, provide furniture and furnishings that are residential in nature, rather than institutional, to establish a link with the residents' previous living environments.

Provide direct access from community spaces to primary circulation paths, and

Congregate Housing

indirect access to administrative offices. Provide access to residential zones without forcing residents to pass through community spaces, so that they can come and go without being under constant surveillance. Locate building entries convenient both to outside activities and to service areas, with good visual control.

Residents can be given the opportunity to participate in community activities (and the choice not to) by allowing them to see into the space before committing themselves to enter and by locating the community space near mailboxes, the laundry room and other high-traffic areas. Connecting areas that link different community spaces can also be used as separate community spaces in themselves, offering alternative levels of privacy and noise.

The space requirement for community areas generally is 35 square feet per unit or, with more than 200 units, 30 square feet per unit.

Also see **Activity Rooms** and **Space Hierarchy.**

CONGREGATE HOUSING
Congregate housing is elderly housing in which ancillary services are also provided. A congregate meal service (for people who choose not to cook for themselves or who prefer not to eat alone) is usually the nucleus of a service package that may also include housekeeping services and organized group activities.

Also termed "service-supported" housing, congregate housing is designed to keep residents' life styles as independent as possible for as long as possible. This goal has both a social and an economic aspect. The social goal is to sustain a higher quality of life; the economic goal is to provide a less costly alternative to a nursing home, as long as the full level of nursing home services is not needed. Frequently, congregate housing is one of several options provided in a continuing care retirement community.

Congregate housing—both highrise and lowrise—is designed to allow efficient, protected access to services and to encourage participation in community social activities. Individual living units include bathrooms, may offer more than a single bedroom and generally include a minimal kitchen.

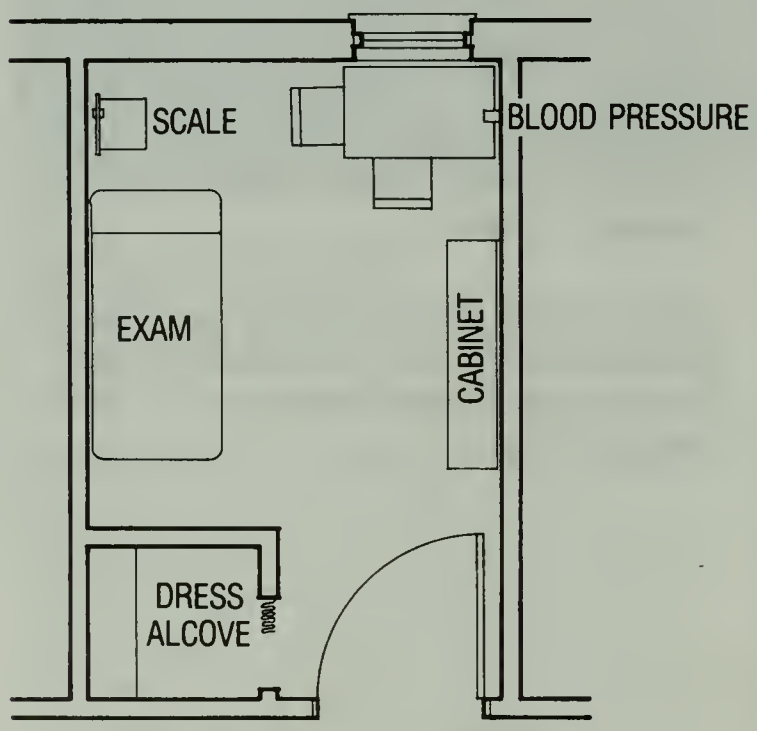
Also see **Bathrooms; Emergency Care; Housekeeping,** and **Continuing Care Retirement Communities** in **Part II: Facility Types.**

Consultation Room

CONSULTATION ROOM
Consultation rooms are often provided in elderly housing and senior centers for use by residents and visiting health care professionals. Doctors and nurses come to these facilities to screen for particular diseases and disabilities, and to consult individually with residents or members regarding health concerns.

Consultation rooms require space for the storage or permanent placement of examining equipment, including an examination table, desk, chair and side-chair, and supply cabinet. A multipurpose room can be used if health consultations are infrequent, and if equipment storage is provided. The consultation room should be located near a lounge or waiting area in which patients can sit comfortably while awaiting service.

Also see **Emergency Care, Examination and Treatment Room, Nursing Care** and **Senior Centers** in **Part II: Facility Types.**



Consultation Room provides space for examinations and individual consultation.

CONTINUUM OF CARE
The goal of long-term care is to maintain or improve an elderly individual's ability to function as independently as possible. The complete range of long-term care services available to older people comprises many different services, usually delivered by a large number of different service agencies, care-givers and private organizations. This diversity of long-term care services and multiplicity of providers can make it very difficult for an older individual to obtain the services required to meet changing needs.

The continuum-of-care concept addresses this problem over the entire time span that support and services are required, and it pays particular attention to facilitating the transitions between levels and degrees of care. The continuum of care can be provided through coordination of local services by area agencies on aging or other local agencies, and by continuing care retirement communities.

Also see **Long-Term Care,** and **Continuum of Care, Residential Care** and **Continuing Care Retirement Communities** in **Part II: Facility Types.**

Corridors

CONTROL

A sense of control over one's surroundings, activities and relationships is important to people of all ages. Because of a propensity for physical impairment, and the losses of health, friends and family, many elderly persons find it difficult to achieve a sense of control.

The built environment can help maximize the control older people feel they have over their surroundings by minimizing dependency and the sense of helplessness. Two major areas of environmental control can be addressed by the architect: the ability to operate and use the built environment, and the ability to control interactions with others.

Ensuring an elderly user's ability to operate and use the built environment is based on the same principle as barrier-free design. Building equipment that is normally under occupant control in buildings designed for younger people should also be under occupant control in buildings designed for the aging. Environmental controls for HVAC equipment, as well as windows, lights, draperies and blinds, should all be usable by the older occupant.

Equipment controls that are habitually manipulated by elderly users in an inefficient or dangerous manner can be overridden by the facility management as necessary. The architect, however, should not approach the design and specification of equipment controls with the attitude that older people are not competent to control their own environments.

The user's ability to control interactions with others can be facilitated by the architect through the creation of a space hierarchy and provision of appropriate security locks and hardware such as view ports in doors.

Also see **Barrier-Free Design, Doors, HVAC, Security** (for "control" in terms of the monitored and/or regulated passage of residents, visitors and others into or through a facility), **Space Hierarchy, Windows,** and refer to barrier-free design standards.

CORRIDORS

In buildings designed for older people, corridors serve a variety of functions beyond providing access and egress to various building spaces. Corridors are used for meeting other people, for displaying personal items, for identifying rooms and spaces and for other activities as well.

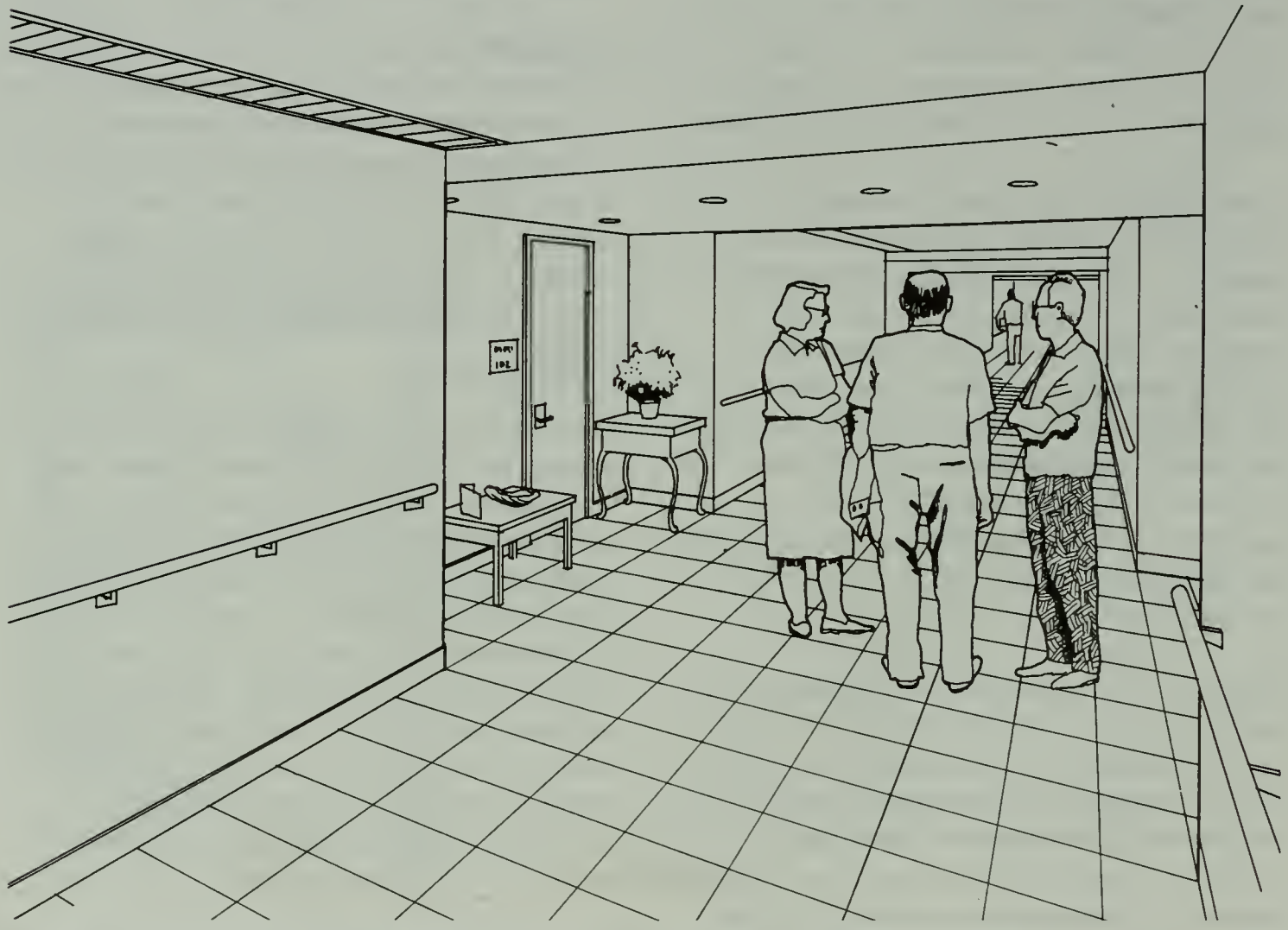
Avoid repetitious, disorienting corridor designs with uniformly spaced doors and light fixtures. Provide corridors with a residential character and scale, and with lengths limited to 75 feet. Break up long corridors by changing direction, recessing doorways and varying color, texture, lighting and ceiling heights. Repetitious corridor patterns can make one corridor indistinguishable from another; windows, planters and other distinctive features can serve as important location markers for easily disoriented users.

One of the most significant aspects of corridor design is the treatment of lighting. Plan for the use of indirect lighting,

Corridors

and a careful selection of light quality. Color-coding corridors to promote ease of identification is advisable, as is corridor numbering. Avoid windows across the ends of corridors, to reduce glare and reflection. Daylighting, views and orientation can all be accomplished by sidelighting the ends of corridors with windows; this may be especially helpful where corridors are offset or change direction and/or width to accommodate elevation, stairs or common rooms.

In all facilities designed for older people, design corridor handrails in accordance with the limited ranges of movement, low energy levels and losses of hand-grip strength that can characterize the elderly. Provide handrails on both sides of corridors so that older people with impairments in one hand or arm can still utilize a handrail to negotiate the corridor. A mounting height of 33 to 36 inches from the floor to the top of the handrail is recommended. Provide cor-



Corridors are social areas which should help to establish a spatial hierarchy.

Dining Areas

Maple Knoll Village
Springdale, Ohio

The Gruzen Partnership
New York

ridors at least five feet wide in residential facilities, and usually eight feet wide in nursing homes, with handrails on each side (handrails may project into corridors). Take care to avoid an institutional appearance when designing or specifying corridor handrails.

Remember, however, that corridors also serve as the principal means of egress in case of fire. Corridor walls, doors, hardware, ceilings, finishes and openings must therefore be selected to protect against fire and smoke as required by applicable codes.

Also see **Activity Areas, Alcoves, Doors, Exits, Handrails, Lighting, Wayfinding** and **Windows.**

DINING AREAS

Meals are often the most formal events of an elderly person's day. For some, they are also eagerly anticipated highlights of the day. Design dining areas with restaurantlike or homelike, rather than institutional, atmospheres. Provide table service whenever possible, as many older persons find it difficult or impossible to carry the food trays required by cafeteria service.

Dining Areas

Dining can take place in a single room or several smaller rooms. If a single multipurpose room is used for dining, provide adequate storage for tables and chairs.

Two- and four-place tables help easily distracted people concentrate on table conversation; they also facilitate conversation through the reading of lips and expressions. Provide a variety of table sizes and shapes to accommodate different and changing needs.

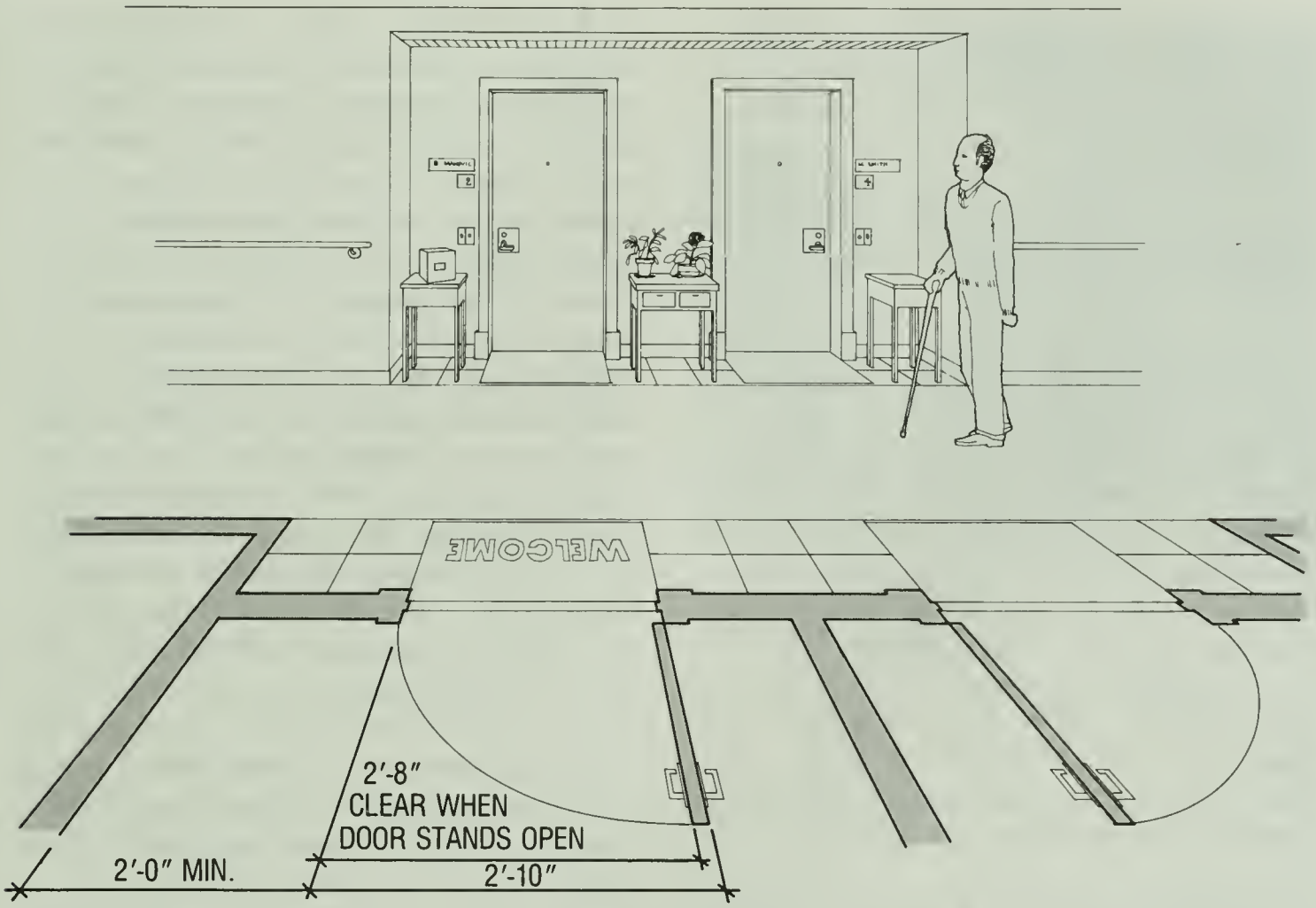
Space requirements for dining areas can be difficult to determine. The wheelchairs, walkers and other ambulation aids used by many elderly people require more than the standard circulation spaces. Yet not all elderly facility residents may dine in the dining area; in some nursing homes, as many as half of the residents eat in their rooms. In most cases, 20 square feet per dining seat provides adequate maneuvering room and a margin for error in estimating the number of diners. Meals can be served in

Duncaster Life Care Center
Bloomfield, Connecticut

Stecker LeBau Arneill McManus Architects, Inc.
Hartford, Conn.

Maris/Semel New York, Photographer

Doors



Doors—Entry doors to dwelling units should reinforce the sense of personalization and privacy.

two sittings, if necessary. Depending upon the philosophy and program of the particular nursing home, mentally impaired residents may take their meals with other residents, or may eat at a different time or in a separate space (for example, in the residents' rooms or in lounges).

Space with seating for waiting prior to meals may be required. If so, locate the dining area near a lounge, and near public toilet rooms.

Also see **Assembly Areas, Finishes, Kitchens, Lounges, Outdoor Access, Residents' Rooms, Seating** and **Toilet Rooms.**

DOORS

All doors should have minimum clear openings of 32 inches, which means standard door bucks should be 34 inches wide, to provide 32 inches clear when the door stands open at 90 degrees (unless throw-clear hinges are used to reduce the required door buck opening).

Doors

Larger clear openings may be required by applicable standards and building codes for the primary building entrance, dwelling unit doors and nursing home resident's room doors. Dwelling unit doors should have security features and fire and smoke ratings as required by code.

Bathroom doors are a concern because an ill or injured person lying on a bathroom floor may block a door that opens inward. Use doors that open outward or inward-opening doors with two-way jambs and hinges for emergencies. Use bathroom door locks that can be unlocked from the outside in emergencies.

Thresholds should be flush with the door. Doors should require no more than five pounds of pressure to open. Revolving doors should be avoided.

View windows should be placed in doors or adjacent side lights across corridors so as to comply with applicable codes and reveal a resident approaching the other side of the door in a wheelchair.

Also see **Architectural Hardware, Barrier Free Design; Bathrooms; Central Bathing; Control; Entries; Residents' Rooms; Sign Systems;** and refer to barrier-free design standards.

ELEVATORS

Provide handrails in elevator cabs on three sides, 32 inches above the floor. Intercom systems inside elevator cabs are recommended. Provide controls and other features in conformance with ANSI A117.1 or the applicable barrier-free design standards, with particular attention given to the perceptibility of signs and signals, and to the timing of signals and automatic doors. Many older people require additional time to realize a cab is arriving, decide in which direction it is going, find which elevator shaft the cab is in, stand up, gather belongings, move to the door, enter, find the control panel and select a floor—all before the door closes.

Provide at least one elevator with a minimum cab size of 67 inches to accommodate stretchers and large furniture. Despite users' knowledge of the inevitability of illness and death, it is still very disturbing to see friends and neighbors taken out on stretchers; provide this elevator cab, therefore, with a separate service level or with rear doors, so that stretchers and gurneys (as well as furniture) need not be moved through the main entry.

Provide an elevator lobby with a bench and table on each floor, so that residents may rest and put down packages.

Also see **Barrier-free design** and refer to barrier-free design standards.

Entries

EMERGENCY CARE
Elderly residents of congregate housing and other residential facilities frequently need first aid or observation after accidents, falls, strokes, or episodes of illness, pending their transfer to a nursing home or acute medical care facility. An emergency treatment room (which can also be used as a consultation room and/or examination and treatment room) may be provided to stabilize and hold a resident awaiting transfer to another facility. Depending on the nature of the facility and its anticipated resident profile, such a room might be equipped as an exam and treatment room, except that it should also provide a hospital bed, toilet, oxygen, good lighting (patient examination light) and electrical power for the possible use of respirators, defibrilators or other life-saving emergency equipment.

Also see **Congregate Housing,** and **Nursing Home** in **Part II: Facility Types.**

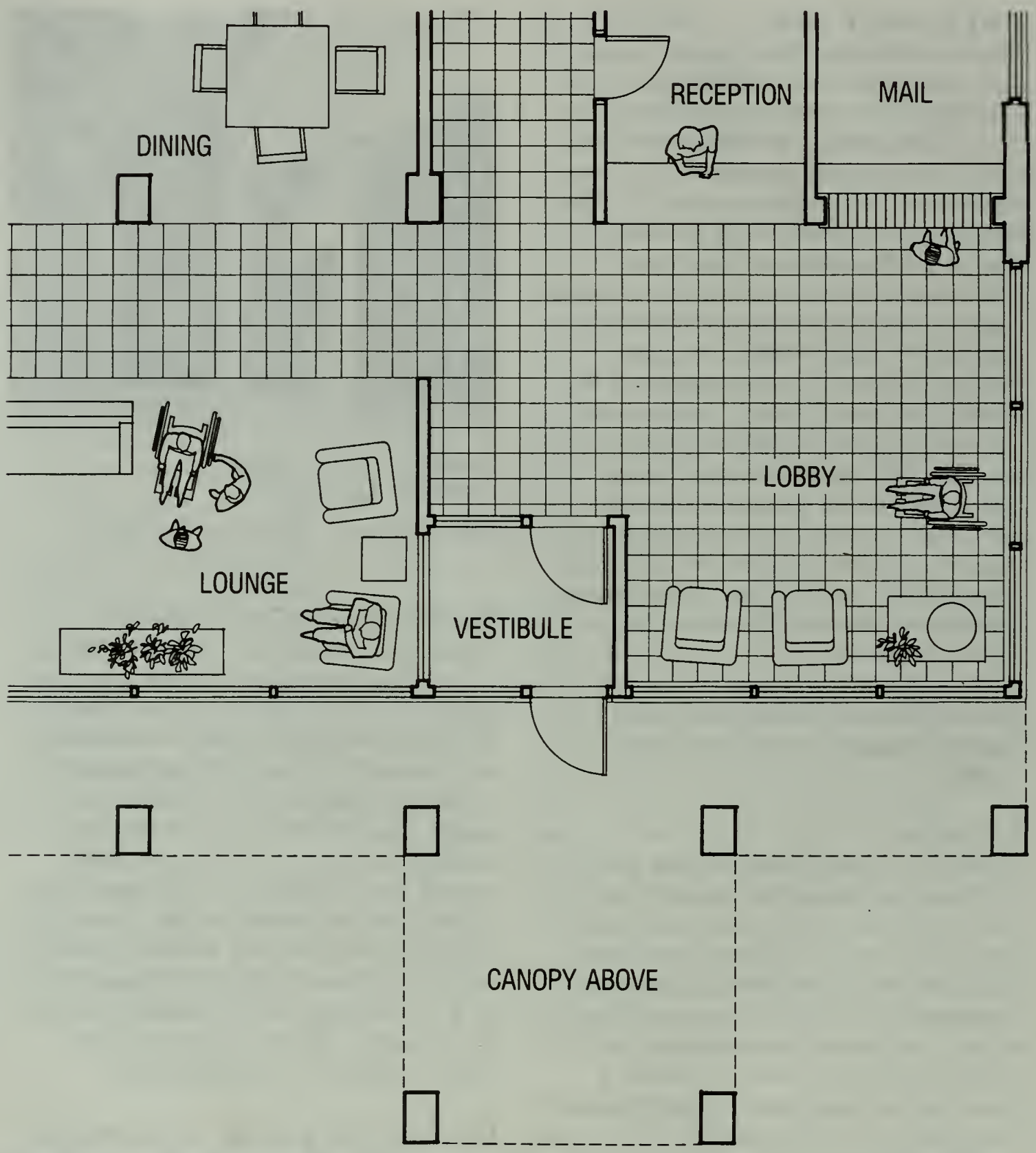
ENTRIES
A building's main lobby or front porch can be an important community space, particularly in a facility where the comings and goings of residents and visitors can be watched. However, some residents prefer to be able to come and go without the constant surveillance that occurs at the main entry. Consider a secondary entrance for building residents that does not include space for the ''watchers.''

Michael R. Koury Terrace
Torrington, Connecticut
Ulrich Franzen & Associates, Architects

Building Entries. Protect building entries from precipitation with canopies or building projections. Design signs and other visual cues in the entry and lobby to facilitate wayfinding. The entry should be convenient to vehicular pick-up and drop-off points and, if possible, to a public transit stop. Utilize a vestibule to keep cold air out of the main lobby and to protect people waiting inside from drafts. The building entry also is a key element in any security system, providing both a location for security guards and/or concierge and a common location for a security office, including closed-circuit entrances and parking lots.

Dwelling Unit Entries. Locate dwelling unit entries with convenient physical access both to the unit and to a point of

Entries



Building Entries play a crucial role in the functional success and quality of life which an aging facility affords.

Entries

Lafayette Place
Fall River, Massachusetts

Boston Architectural Team, Inc.

Hresko Associates, Boston
Phillip Hresko, Principal
David Clark, Job Captain

Nick Wheeler, Photographer

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transition between public and private areas. Consider providing an alcove in the corridor outside the unit with space for a small table or shelf on which the resident can place packages while opening the door. Provide entry area lighting that adequately illuminates the door keyhole. If all the dwelling unit entries along a corridor look alike, consider using nonuniform hallway furnishings as place markers, or allowing residents to decorate their doors. Provide a security peephole in the entry door 56 inches above the floor.

Entries

Provide the dwelling unit entry vestibule with a coat closet and enough space in which to greet visitors and put on hats and coats. Design this area so that visitors at the front door cannot view the more private spaces of the unit.

Service Entries. Facilities designed for older users usually include service entries that are separate from main entries, so that service circulation will not interfere with the circulation of primary building users. Service and delivery activities can be of great interest to older people and they provide another lively connection to the broader world. When planning entries and circulation, consider providing for some delivery and service circulation through the front door. When a separate service entry is necessary, consider an activity area or lounge overlooking this (traditionally screened) area.

Also see **Control, Corridors, Doors, Lobby/Reception Areas,** and **Site Development.**

EXAMINATION AND TREATMENT ROOM

The nursing home examination and treatment room is the area within a nursing unit where medical care that cannot be given at the resident's bedside can be provided. State codes and regulations usually require the provision of particular items of furniture and equipment in the examination and treatment room, which should be located close to the nursing station for easy access by the nursing staff. Visiting medical personnel may also use the examination and treatment room, so it should be located near a lounge or alcove where residents can wait comfortably and interact with others.

Also see **Consultation Room, Nursing Care,** and **Nursing Homes** in **Part II: Facility Types.**

EXERCISE AREAS

Exercise areas in elderly housing can be underutilized if they are placed in an isolated location within the facility and furnished with unfamiliar, medical-looking equipment. Design exercise rooms and equipment with a recreational, rather than therapeutic, appearance. Commercial health spas provide a good example of exercise areas that are stimulating and social, rather than depressing and lonely. Provide carpeting (without pad) to soften impacts and dampen noise. Plants, mirrors, warm colors, small rest areas, music and PA systems, and conversational groupings of exercise equipment help enliven the atmosphere.

Locate exercise rooms or areas directly off well-used corridors with previewing opportunities that will enable residents to see activity taking place in the room. Locate exercise areas in close proximity to other recreational facilities and activity areas that may be provided, such as swimming pool, lockers, showers, hydrotherapy facilities and outdoor game areas.

Exits

Exercise areas often have unique heating, ventilating and airconditioning requirements because of the activity taking place in them. Whenever possible, locate exercise areas with a link to the outdoors, and avoid putting the rooms in a basement where they will be little used.

Also see **Activity Areas** and **Outdoor Spaces.**

EXITS

Provide fire and emergency exits in accordance with local building codes. Many state codes govern the construction of nursing homes and health-related facilities, but the architect must also be aware that many older occupants are unable to move quickly out of a building, even via an accessible route (see ANSI A117.1 or the applicable barrier-free design standard), and that trying to do so might put them at greater risk. The provision of safe refuge areas within the building, smoke detectors and sprinkler systems should be carefully considered.

Reference to such model codes as the NFPA *Life Safety Code* (No. 101) is recommended, even if not required by local jursidictions. In addition, the architect should be aware that conformance with NFPA 101 and its related codes is required because nursing homes and other care facilities may seek reimbursement for patient care under either the Medicare or Medicaid provisions of the Social Security Act.

The general approach taken by all of the model codes regarding life safety in facilities having sleeping rooms is a "defend in place" approach, which establishes the sleeping room as the first level of protection (with rated openings, walls, etc., plus smoke detectors and/or sprinklers and alarms). Horizontal evacuation to an adjacent smoke compartment (area of refuge) is the second level of protection, and vertical evacuation using stairs is the third.

To succeed, this approach requires that low fuel and hazard levels (for combustion and smoke products) be maintained in the selection of interior finishes, materials, furniture and furnishings. The facility must also be operated safely (with corridors and exits unobstructed, proper placement and testing of fire extinguishers, hoses, etc.). In addition, facility personnel must be trained and residents well rehearsed in what to do in case of fire.

Also see **Safety.**

Finishes

FINISHES
Conformance with the recommendations of a model code such as NFPA 101 is recommended when selecting floor finishes, carpeting, and wall finishes such as vinyl wall covering and cabinetry made of wood or plastic laminates.

Floors. Carpeting should be used in lounges, corridors and other spaces used by residents to provide a pleasant walking surface and to reduce glare and noise. A level-loop carpet should be used. Use direct-glue carpet without a pad to avoid tripping and to reduce wheelchair rolling resistance. The architect should consider the fire ratings of carpet and backing; many backings give off noxious fumes and thick smoke during fires, even at slow burn rates. Jute backing is safer, but it is also water-absorbent—a problem when urinary incontinence is common.

Patterned, easily-cleanable carpet should be used in dining areas, where food spillage can be a problem. Water spillage in bathrooms discourages the use of carpets there.

Where sheet vinyl or tile flooring is used, the surface should be nonslip and nonreflective. A change in floor-finish type, texture or color at corridor intersections can be helpful for way finding.

Walls. Corridor wall finishes should be designed to withstand high levels of traffic, including contact with wheelchairs, walkers and carts where necessary. Brick, concrete block and tile resist abuse, but must be smooth enough to avoid abrading or cutting elderly people as they brush against walls; rough-textured paint should not be used for the same reason. On the other hand, slick surfaces that reflect glaring light should be avoided.

Ceilings. Ceilings in residents' rooms—especially rooms for the bedridden—can be textured, pattern painted or fabric-covered to provide visual relief and serve as aids to orientation.

Also see **Central Bathing, Corridors, Residents' Rooms,** and **Part I: Introduction—Aging and the Environment.**

Group Homes

FURNISHABILITY
Furnishability is the capacity to furnish a space or room in a variety of arrangements. Living/dining rooms, bedrooms and particularly residents' rooms should be designed so that each key piece of furniture can be located in more than one place. A fixed position for the television set (dictated, perhaps, by the provision of only one antenna outlet) or the failure to provide space for bed or couch on at least two different walls may eliminate the flexibility required to furnish spaces according to older people's needs and tastes.

Also see **Bedrooms, Living/Dining Rooms** and **Residents' Rooms.**

GRANNY FLATS
A granny flat is a small, detached, self-sufficient dwelling unit typically erected on the grounds of an existing house for use by an older relative—thus "granny." As originally developed in Australia, a granny flat was a prefabricated unit owned by the local government and erected on the land of any citizen in need of accommodation for an older relation.

The granny flat concept enables an older relative to live with a high degree of independence, with occasional support from the main household. When the granny flat is no longer needed for this specific use, local government may repossess the unit, thus avoiding conflict with zoning regulations that may prohibit such occupancy of outbuildings on a permanent basis.

In the United States, granny flats are often referred to as ECHO (elder cottage housing opportunity) housing.

Also see **Accessory Apartments** and **Site Analysis.**

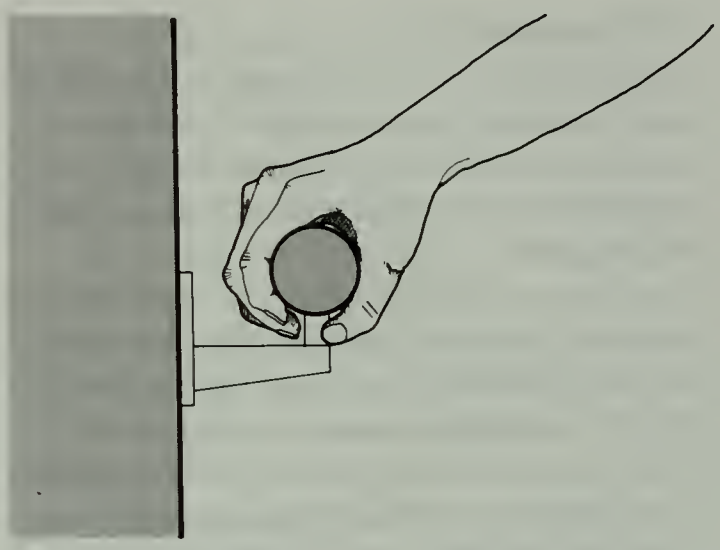
GROUP HOMES
While group homes are similar to boarding homes—both feature private bedrooms and shared bathrooms, living areas and kitchens—group homes are operated by the members of the group, with household tasks and responsibilities assigned among the members. The group home concept provides a physical and administrative environment that enables older people to help each other live independently. Several group homes have been designed with this specific concept in mind, and with special attention paid to the needs and interactions of the residents. Group homes are also referred to as "shared housing."

Also see specific rooms and spaces, such as **Kitchens.**

Handrails

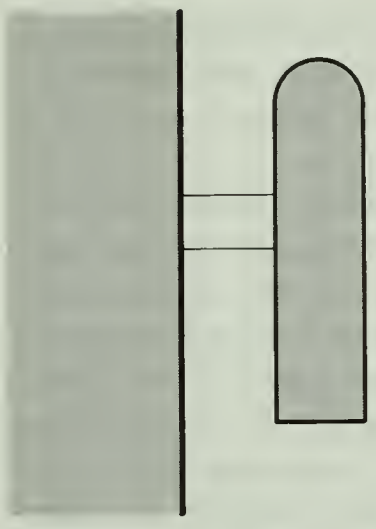
HANDRAILS
Provide handrails that are easy to grasp and free of sharp edges. Recommended dimensions include a minimum edge radius of 1/8 inch and a diameter of 1¼ to 1½ inches. Mount handrails 33 to 36 inches from the floor to the top of the rail. If mounted to a wall, provide a 1½ inch space between wall and handrail. Recessed rails should be avoided, and all handrails should return to the wall.

Since many facilities for the elderly also require guardrails to protect walls from wheelchairs, carts and other wheeled traffic, architects have frequently attempted to provide a single rail to serve as both handrail and guardrail. Although such economy may seem reasonable, the architect should carefully consider whether the dual-purpose rail serves either purpose well. For example, to be easily grasped with a strong enough grip to keep an elderly person from falling, the handrail form must per-



Handrails—The two handrails above are acceptable designs. The third rail does not allow sufficient grasp and is not recommended. Handrail surfaces should be nonslip and all edges should have a minimum radius of ⅛ inch.

Heating, Ventilating and Airconditioning



mit the fingers of the hand to encompass virtually the full circumference of a railing. Integrated hand and guardrails must be carefully designed to serve their handrail function properly.

Also see **Alcoves, Barrier-Free Design, Corridors, Elevators, Ramps, Stairs** and refer to barrier-free design standards.

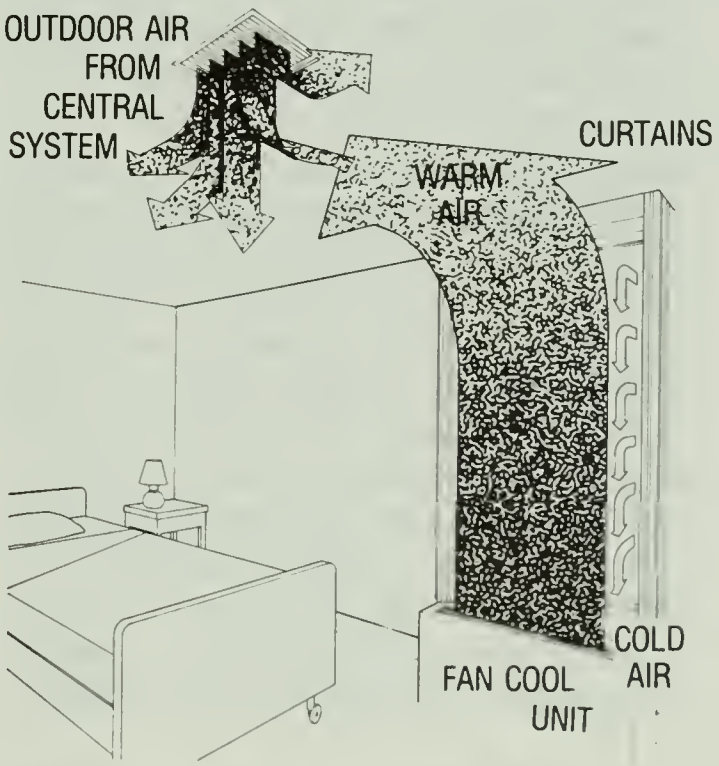
HEATING, VENTILATING AND AIRCONDITIONING

Heating, ventilating, and airconditioning (HVAC) systems are often designed to meet the conditioned-air needs of people who are young and active. Many older people are less active and more susceptible to respiratory ailments and colds than younger people, and they require HVAC systems designed to narrower ranges of comfort than those designed for the average population. Moreover, many elderly people are so susceptible to the loss of body heat that they risk lowered body temperature (hypothermia) and thus have little tolerance even for transient swings in ambient temperature throughout an entire facility.

Consult local codes (or a model building code such as NFPA 101 and its related codes) for smoke exhaust, smoke and fire control damper, and fire and smoke zoning and control requirements. Pay special attention to exhaust systems, filters and air recirculation in residents' rooms, particularly where odor control and the filtration of airborne particles may be of concern (in nursing homes, for example).

Good design criteria include the following:

- **Heating and Cooling.** In areas normally occupied by older people, provide a design capacity for a temperature of 75 degrees (F); in nursing homes, special reserve capacity requirements may apply (see applicable codes and standards). Provide each nursing home



HVAC—The mixing of outdoor air from a central system and warm air from window units helps to diminish drafts.

Heating, Ventilating and Airconditioning

resident's room with at least one thermostat. Consider providing auxiliary heat lamps or heaters in toilet rooms, as well as in elderly-housing bathrooms.

- **Ventilation.** In most cases, a combination of natural and mechanical ventilation is preferred because elderly people frequently experience a feeling that there is "insufficient air" in buildings with sealed windows. Provide residents with some control over supply and exhaust air. Avoid drafts, especially at floor level.

  In areas normally occupied by older people, mechanical ventilation systems should provide a minimum of two air changes of outdoor air per hour. In areas where odors are produced, such as toilet rooms and bathrooms, provide a minimum of 10 total air changes per hour (two of which are outdoor air). Other specific rooms and spaces may have different requirements. Refer to applicable codes and regulations.

- **Energy Conservation.** Passive solar design techniques including daylighting, thermal mass storage and orientation to the sun can be appropriate for communal spaces in all types of facilities. In units where the elderly, many of whom are on fixed incomes, pay utility costs directly, care should be paid to the design and maintenance of all building systems that use energy, including building mechanical equipment and lighting. Simple improvements such as weatherization (caulking and weatherstripping) and careful energy management practices are also cost-effective when adequate ventilation is assured.

- **Maintenance.** HVAC mechanical breakdowns have a greater impact on elderly people because the elderly frequently have difficulty maintaining a normal body temperature. Thus, provision of reliable equipment and of subsequent preventive maintenance are high priorities in facilities designed for older people. Safety is also a concern, especially when dwelling units contain individual heating/cooling units and water heaters. Consider all appropriate safety devices; and to avoid accidental burns all exposed heating and hot water risers should be insulated.

Also see **Control**.

HOME CARE

Home care is the delivery of long-term care services in the older person's own home. These include medical, social and supportive services designed to maintain the individual in the community and to compensate for impaired functions. In communities where home care is offered, most of the medical and social services that are typically available in nursing homes are also available to individuals at home.

Housekeeping

Recent programs have demonstrated high rates of success in helping elderly residents who need long-term care to maintain quasi-independent lives at home, without the dependence of long-term occupancy in expensive nursing homes. For example, in a demonstration program designed to care for people at home until nursing home beds became available, not one home care recipient has entered a nursing home in the four years the program has been operating.

Also see **Nursing Homes** in **Part II: Facility Types.**

HOSPICE CARE
Hospice programs provide supportive services for individuals with terminal illness, and for their families. Hospice care focuses on the control of pain and on easing the personal and social aspects of death and dying. Families are helped to live out this process with dignity and mutual support in a noninstitutional setting.

The hospice care concept has yet to develop its own building type, although facilities have been specially designed for this purpose. Hospice care often is provided in hospitals, in nursing homes and in patients' homes. The contemporary hospice strives to provide care at home; relocation to centralized facilities is reserved for temporary situations or the last resort. Hospice services may include nursing care, medical and social services, homemaker and home health aide services, and counseling for both patient and family.

Also see **Nursing Homes** in **Part II: Facility Types.**

HOUSEKEEPING
Levels of housekeeping service vary widely by facility type and building configuration. Housekeeping spaces include clean supply rooms and soiled utility rooms for waste collection on each floor, central supply and equipment rooms, pickup and delivery spaces for central laundry, janitorial closets and employee locker rooms.

All housekeeping spaces should be located to avoid disruption of the residents' daily living patterns. Central housekeeping areas should be oriented away from major exit/entry points and outdoor common spaces, and be grouped together adjacent to a service entrance. Provisions to avoid unauthorized access should be made.

Small janitorial rooms should be locked and marked—for safety as well as to avoid confusion with living spaces. In highrise residential facilities, trash chutes should be easily accessible (See ANSI A117.1 or applicable barrier-free design standards) and clearly marked on each floor. Separate rooms for trash chutes are not necessary unless required by code, and may pose security and sanitation problems. Housekeeping services may also be provided as a support service to elderly residents who need such assistance to continue quasi-independent living in their own homes, congregate housing or group homes.

Housekeeping

In nursing homes, separate clean supply and soiled utility rooms are often required by code, as are specific spaces for linen supply and disposal (chutes), waste collection and/or incinerator chutes, and janitorial services.

Also see **Entries, Laundry Facility, Residential Services** and **Residential Care** in **Part II: Facility Types.**

KITCHENS

Commercial kitchens used by staff to prepare food for elderly people can be designed using the standard specifications for institutional kitchens—depending upon the specific food service program. If, for example, the food service program of a nursing home calls for the use of prepared frozen meals, a separate kitchen may be required on each nursing unit to store the frozen meals and to cook them in microwave ovens. Such floor kitchens are normally designed for use by staff, using institutional kitchen specifications, and are not often designed for use by the residents.

Senior centers, nursing homes, and congregate housing facilities may serve as bases of operations for such meal preparation and delivery services as "meals-on-wheels." If meals-on-wheels are to be provided, special requirements for storage and vehicle access and loading must figure in the design program.

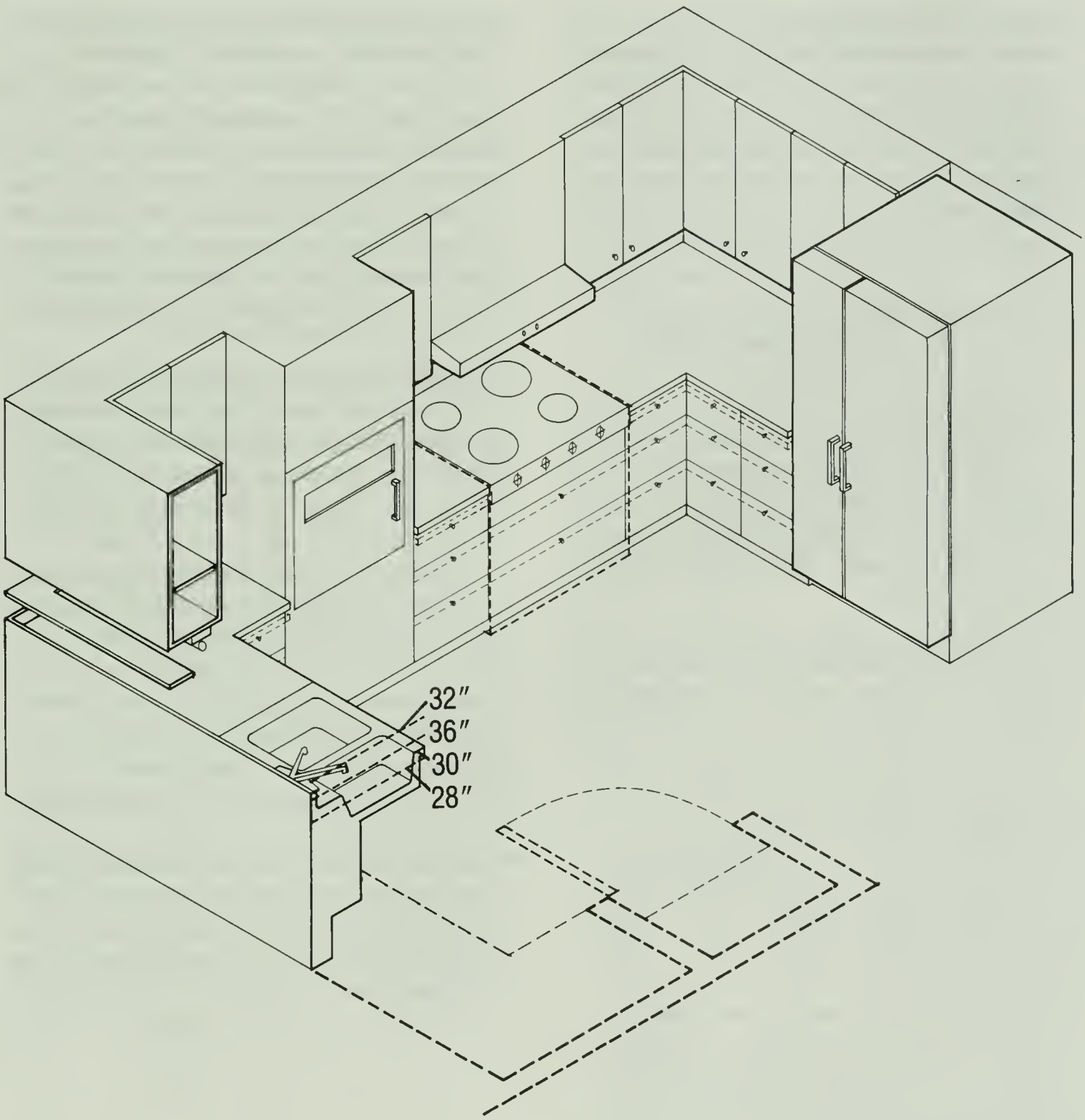
Residential kitchens in dwelling units should be screened from other living spaces, and be directly adjacent to the entryway to facilitate the depositing of packages; access to living spaces should not be through the kitchen. Provide adaptable kitchens, with clearances, controls, appliances, storage and adjustable counter and sink, as defined below and in ANSI A117.1.

In specifying kitchen equipment, the following should be considered:

- **Counter Tops.** Provide at least 12 square feet of surface area, 30 inches in height and adjustable or replaceable as a unit to provide alternative heights of 28 inches, 32 inches and 36 inches measured from the floor to the top of the counter surface. Where space permits, provide 4 to 6 square feet at table height for kitchen dining (see ANSI A117.1 on adaptable kitchens).

- **Sinks.** Provide a counter-mounted sink that is adjustable or replaceable as a unit to provide alternative heights of 28, 32 and 36 inches, measured from the floor to the top of the counter surface. Design base cabinets with the flexibility to provide knee space below the sink, to accommodate the potential use of a stool or wheelchair. To avoid burns, insulate exposed hot water lines and traps (see ANSI A117.1 on adaptable kitchens).

Kitchens



Kitchens—This kitchen is shown generously large to illustrate the features described. Other layouts are shown in Part II: Facility Types; Elderly Housing. Kitchen design should allow for future adaptability.

Kitchens

- **Shelves and Cabinets.** Provide as much shelving as possible, 12 inches or deeper, 48 inches or less from the floor when mounted above a counter. Undercounter storage should be provided in deep drawers mounted on roller guides. Shallower shelving is appropriate if it is less than 27 inches from the floor. Allow at least 15 inches of clearance between the underside of the counter and the top of the first shelf below.

  Provide swing-type cabinet doors that are 15 inches or less in width. Corners and edges should be rounded. An additional six-inch-deep shelf located in the 15-to-16 inch space between the counter and upper cabinet can be very useful and convenient.

- **Cooking Range/Oven.** Provide a counter-mounted range that is adjustable or replaceable as a unit to provide alternative heights of 28, 30, 32 and 36 inches, measured from the floor to the top of the cooking surface. Provide a separate, wall-mounted oven, with the bottom no lower than 27 inches above the floor. Electric stoves with front controls are recommended for safety. Provide controls that feature contrasting shapes as well as sharply contrasting colors and large numerals. Avoid under counter ovens, unless they are self-cleaning (see ANSI A117.1 on adaptable kitchens).

- **Refrigerator/Freezers.** Provide a vertically divided, two-door refrigerator/freezer that allows for variable access and reach. If a standard one door model must be used, provide 50 percent of the freezer space and all of the refrigerator space 54 inches or less above the floor. Avoid undercounter refrigerators; they are difficult to access for many older people and could invite falls and injuries (see ANSI A117.1).
- **Lighting.** Provide strong overhead lighting, particularly over the sink and range, and task lighting where necessary. Daylighting is always desirable in a kitchen space. Provide task lighting for the work counter, with fixtures attached to the underside of the upper cabinet; such fixtures should have lenses and glare shields to protect shorter residents from direct glare.
- **Ventilation.** If possible, provide both natural and mechanical ventilation, including exhausts. Recirculating fan/filter systems are not recommended.

- **Other.** Provide space for wall-mounted cooking utensils and make allowances for the placement of kitchen plants. If possible, provide windows for a view to the outdoors.

Laundry Facilities

Storage in the kitchen should always be designed with consideration for the physical limitations of the elderly, many of whom find it difficult to reach high or to stoop. A good rule of thumb is to locate all short-term storage at heights between the knee and shoulder. A full-height pantry is desirable, as are wall cabinets, cupboards, drawers and a broom closet. Avoid cabinets over stoves.

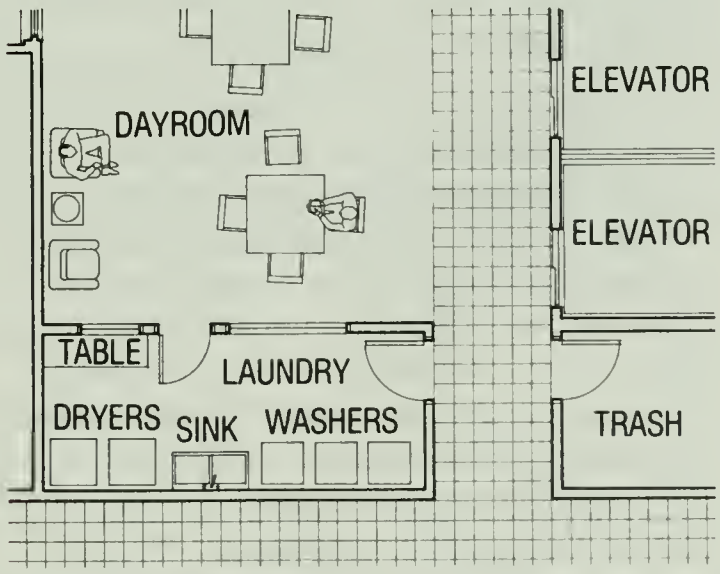
Also see **Congregate Housing, Group Homes, Snack Bars** and **Senior Centers, Nursing Homes, Continuing Care Retirement Communities** in **Part II: Facility Types.**

LAUNDRY FACILITIES

In much elderly housing, private washer/dryers often are provided in individual dwelling units. These washer/dryers are unarguably convenient, but common laundry facilities in elderly housing serve the important additional function of providing social gathering spaces. When designing these less private but more social spaces, consider providing comfortable seating that is adjacent to the common laundry room and acoustically, but not visually, separated from the machine room. Provide adequate lighting, including task lighting for ironing and sewing areas, as well as reading lamps in the lounge area. Plan for views to the outdoors and to nearby toilet rooms; visual connections to adjacent spaces are desirable. Also consider double sinks for hand washing, ironing boards, layout and sewing tables, and drying rods.

In highrise facilities, a laundry room should be provided on each floor. In lowrise or scattered facilities, provide weather protection if residents must go outside to reach the laundry facility. Consider smaller, scattered laundry rooms rather than a centralized facility. Allow one washer/dryer for every 20 dwelling units.

Also see **Activity Areas** and **Housekeeping,** and refer to barrier-free design standards.



Laundry Facilities and their adjacent lounges can increase the likelihood of social interaction.

Lighting

LIGHTING

Although only one person in three has a measurable eye defect at graduation from college, about eight adults in ten have such a problem at the age of 60. Several age-related factors contribute to difficulties with seeing:

- Visual acuity declines with increasing age. The level of illumination required to see forms, symbols and objects increases with advancing age.
- The eye's ability to accommodate itself to seeing near objects, as well as distant objects declines with increasing age.
- The amount of time required to adapt to changes in illumination level increases with advancing age.
- Sensitivity to glare increases with advancing age.
- The total visual field narrows with increasing age.
- Cataracts become more common with increasing age.
- Defects in color vision become more common with increasing age.

The architect can help mitigate the effects of many of these age-related vision problems through careful lighting design. First, provide a higher level of illumination. The Illuminating Engineering Society recommends that, for people 60 years of age (who have normal vision for their age), about twice the level of illumination should be provided as would be required for normal 20-year-olds.

However, no single level of illumination can be recommended; visibility depends more on the specific *task* being performed under a certain lighting condition than the lighting itself. For example, reading handwriting in pencil requires more than twice the level of illumination than reading printed material. Thus, for people 60 years of age and using double the illumination level required by grammar school lighting standards, a minimum of 60 footcandles is recommended for reading printed matter, and 140 footcandles is recommended for reading pencil writing.

Second, control the range of brightness in the visual field. When all objects within the cone of vision all appear equally bright, visual acuity increases in direct proportion to the quantity of light that falls on the viewed surface. A general rule of thumb is to keep the brightness of walls, furniture and other reflecting surfaces in a space within a 3-to-1 ratio. For example, the following recommended reflectance values would provide the 3-to-1 ratio for the tasks of writing on white paper or eating from white dinnerware (both with about 80-percent reflectance), and thus help reduce fatigue and eyestrain:

- **Ceilings.** Reflectances should be as high as possible (70 to 90 percent) to bring the ceiling lightness close to the brightness of ceiling light fixtures.

Living/Dining Room

- **Walls.** Reflectances should range from 40 to 60 percent.

- **Floors.** The floor is well within the range of vision of a person who is working at a desk or table. Thus the floor should be relatively light (about 30 to 50 percent reflectance).

- **Furniture.** Desk and table tops should have light (but nonglare) finishes with a reflectance range of 35 to 50 percent. Most light wood furniture falls in this range.

In all lighting schemes for the elderly, a special sensitivity to glare should be taken into account; highly reflective surfaces and end-of-corridor windows should be avoided. Glare can be a problem wherever sunlight enters, and the architect should provide screens, baffles and/or shades and curtains to be used as desired by residents.

An increased illumination level at the intersection of two or more hallways can increase awareness of the area and also make signage more visible. Effective changes in illumination should be gradual, to accommodate a slower dark/light adaptation rate. Changes in planes, the intersections of walls and floors for example, should be marked by highly contrasting colors.

In general, indirect lighting should be used whenever possible. It can increase the overall illumination level with less chance of inducing glare. Task lighting should be provided for such close work as arts and crafts activity, food preparation, eating and reading. Task lighting fixtures that can be adjusted by the older user—adjusted in intensity, location and direction—should be provided. Wherever older residents are expected to change their own light bulbs, provide table-top or wall-mounted light fixtures to avoid possible falls.

Lighting design must always accommodate the eye level of wheelchair-bound as well as ambulatory residents. Resident control of illumination levels is almost always desirable.

Also see **Arts and Crafts Areas, Corridors, Site Development, Windows** and specific room or space.

LIVING/DINING ROOM

The basic uses of the private living/dining room include reading, watching television, playing table games, working on hobbies, dining, and entertaining family, friends and guests—all relatively active, semiprivate uses.

Furnishability is a major concern in the living space. Room dimensions, doors and windows should allow alternative furniture arrangements, and particularly alternative television placements (see Television Viewing Areas). Sufficient

Living/Dining Room

space should be provided for a broad range of furniture types and styles; many older people move into elderly facilities from larger, older houses where they have accumulated many items of furniture—furniture that has special significance to them and may tend to be full or oversized.

Windows should afford good views from chairs and couches. Consider locating windows away from room corners so that chairs can be placed in spaces backed by walls rather than by windows. Cul-de-sac living rooms offer more space for furniture than walk-through living rooms, that require extra circulation space at doorways. Balconies can supply good outdoor access.

Also see **Balconies, Furnishability, Outdoor Access, Television Viewing Areas, Windows** and **Elderly Housing** in **Part II: Facility Types.**

LOBBY/RECEPTION AREAS

The lobby or reception area in a facility designed for older residents is an area of great interest to those residents; it's a connection to the outside world (see **Outdoor Access**) and a center of high activity. Elderly people often congregate to monitor all the comings and goings there, just as they might on the traditional front porch with rocking chairs overlooking the passing scene. Alcoves or lounges located near the lobby or reception area provide places from which to watch the hubbub without being directly in the path of circulation. Public toilet rooms, telephones and drinking fountains should be located nearby.

Also see **Alcoves, Communication Systems, Entries, Lounges, Mail and Package Delivery, Outdoor Access, Sign Systems** and **Toilet Rooms.**

LONG-TERM CARE

Long-term care includes the range of services, provided continuously or intermittently, that address the health, social and personal care needs of individuals who have lost the capacity for self-care.

Functional status, rather than diagnosis of disease, is the important factor in determining an individual's need for long-term care. About seven percent of the U.S. population between 65 and 74 years of age, and more than 40 percent of those over 85, have functional impairments that indicate a need for long-term care.

Also see **Continuum of Care, Home Care, Nursing Care,** and **Nursing Homes** and **Continuing Care Retirement Communities** in **Part II: Facility Types.**

LOUNGES

In facilities designed for older people, the lounge is a focal point for informal activities and casual social encounters involving small groups. Lounges—sometimes known as day rooms in nursing homes—should be adaptable to a wide range of uses, from individual television viewing to card games, parties and other entertainments. Corners and alcoves can serve as minilounges in which people can either be alone or pursue private conversations. When space permits, creation of two or more lounges with different atmospheres, but in close proximity to each

Lounges

Duncaster Life Care Center
Bloomfield, Connecticut

Stecker LeBau Arneill McManus Architects, Inc.
Hartford, Conn.

Maris/Semel New York, Photographer

other, is recommended. Furniture clusters that can be rearranged allow an extra dimension of flexibility. Movable chairs are more acceptable than built-in, fixed elements, since many older people like to adjust chair locations to control their seating arrangements.

Television can become a dominating element in a lounge because of the space taken up by the viewing area and the dissonance that TV sound juxtaposed with other activities can create (see **Sound Control**). Whenever possible, the television should be located in a mini-

Lounges

lounge that is acoustically isolated from other activity spaces (see **Television Viewing Areas**).

It is important that toilet rooms be easily and quickly accessible from lounge spaces.

A nursing home lounge can house a variety of activities, including group programs and, more commonly, casual encounters or card playing in small groups, visiting or watching television. The lounge serves as a social center and should be near points of high activity.

Lafayette Place
Fall River, Massachusetts

Boston Architectural Team, Inc.

Hresko Associates, Boston
Phillip Hresko, Principal
David Clark, Job Captain

Nick Wheeler, Photographer

Medication Room

Lounges should be open and inviting, and should provide good views of the social goings-on.

The location of the lounge or day room in a nursing unit can be critical to its success. Locating the lounge at the end of a long circulation path, where it will be "out of the action," will probably cause residents to abandon it, no matter how pleasant its outlook or environment, in favor of congested hallways located in the thick of things.

The corridor is often a natural lounge space in a nursing home. Many older residents enjoy sitting on the "front porch" just outside their residence room doors, where they can enjoy the activity of the corridor while keeping an eye on the personal possessions in their rooms (see Space Hierarchy). The provision of alcoves in corridors facilitates this activity and minimizes the disruption of corridor circulation (see **Corridors**).

Also see **Activity Areas, Alcoves, Assembly Areas, Consultation Room, Corridors, Dining Areas, Finishes, Lobby/Reception Area, Nursing Station, Outdoor Access, Sound Control, Space Hierarchy, Television Viewing Areas, Toilet Rooms,** and **Nursing Homes** in **Part II: Facility Types.**

MAIL AND PACKAGE DELIVERY
Provide resident mail and package facilities in conformance with U.S. Postal Service requirements. Make the facilities convenient to both horizontal and vertical resident circulation. The "post office" space should have a residential quality. Combination mailbox locks are not recommended; some elderly people may have difficulty remembering combinations or manipulating dials. If economically feasible, design mailboxes to be opened by dwelling-unit keys. Provide a secure system for handling large packages. Facilities for the insertion of mail in boxes from the rear is preferred, so that the mailperson can perform his or her work without constant surveillance by (and questions from) the residents. Mailrooms should have shelves where residents can place packages while accessing their mailboxes.

Also see **Lobby/Reception Areas.**

MEDICATION ROOM
The medication room is a component of the nursing unit in a nursing home. It should not be accessible to the residents and should be secure from unauthorized entry. Special equipment is generally required for the storage, preparation and dispensing of medications by the nursing staff. Many state and local codes contain specific requirements for medication rooms, especially in regard to the storage of drugs and narcotics. Sometimes a medication station (work area, sink and storage) can be incorporated into the design of the nursing station and/or its equipment, without dedicating an entire room to this function.

Also see **Nursing Homes** in **Part II: Facility Types.**

Mobile Homes

MOBILE HOMES
Significant numbers of older Americans live in mobile homes and "manufactured housing." Although most standard mobile-home models are inaccessible to the handicapped and may be difficult to use and maintain by some people, new and accessible manufactured houses are becoming available. Many of these newer units are being sited in mobile home parks designed specifically for older residents. Manufactured houses are also being promoted for use as granny flats.
Also see **Granny Flats.**

MULTIPURPOSE ROOMS
Multipurpose rooms are spaces designed to facilitate several activities, each of which may carry different area furniture, equipment and lighting requirements. Multipurpose rooms appear in facility programs for older people because the elderly's anticipated activities do not justify expenditures for separate rooms. The design of this space should always be evaluated on a life-cycle cost basis, however, because the personnel costs of making and breaking arrangements of partitions and furniture, plus the cost of the systems and the storage facilities

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required for them, may outweigh the cost of separate facilities having lower utilization rates.

The most important feature of a multipurpose room is the ease and rapidity with which it can be transformed from one activity format to another. This feature requires generous and convenient storage for furniture and equipment, as well as good control of light and sound.

The versatility of the space can be increased with a system of sound-proofed partitions that create two or more smaller spaces. Good, effective partitions are expensive, but less costly installations may be wasteful since they may defeat the ability to use the subdivided spaces simultaneously. Provide a separate entrance and flexible lighting for each subdivision. Avoid floor tracks that might trip older users, some of whom may have a shuffling gait. Motor-operated partitions enable users to rearrange their own spaces.

Provide an accessible area easily adapted for performing arts, such as dance, theater and music. Consider arrangements of spaces that can be used for dressing and staging, as well as secure storage space for costumes, props and instruments. Also provide for the projection of films by including floor outlets, storage for audiovisual equipment and a projection surface.

A multipurpose room often becomes the center of activity in a senior center or community center. Provide sufficient space to accommodate the largest group of people expected in the facility (but not necessarily all the tenants or members).

Locate the multipurpose room prominently, near the lobby and the main lounge and adjacent to the kitchen.

If the room's capacity qualifies it as a place of public assembly, per the applicable codes, provide the necessary means of egress, emergency lighting, fire and smoke alarm and extinguishment systems. If the cost of such systems seems excessive, consider whether dedicated low-utilization space might be preferable to the multipurpose room.

Also see **Activity Areas, Assembly Areas,** and **Senior Centers** in **Part II: Facility Types.**

Nourishment Station

NOURISHMENT STATION

The nourishment station, a component of the nursing unit, is for the preparation of food, drinks and snacks for the residents by the nursing staff. Counter space, storage cabinets, a double sink and a refrigerator are required to serve these functions. Complete, prefabricated units are available for this purpose; most are efficient and compact, and less costly than the separate purchase and installation of the various components would be. Note that portable food- and drink-heating appliances will be used on the counter and may often remain there permanently, leaving little work space.

In many situations, the nourishment station is not open for use by residents. When this is the case, a separate kitchen can be provided for residents who enjoy exercising their cooking skills.

Also see **Kitchens** and **Nursing Homes** in **Part II: Facility Types.**

Nursing Care

NURSING CARE

Nursing care is a component of long-term care, as are personal care and social services. Nursing care is provided under the supervision of licensed personnel in a variety of facilities, ranging from residential settings (see **Home Care**) to nursing homes.

In a nursing home, the nursing unit is where both nursing care and personal care services are provided. Although nursing care services are provided throughout the nursing unit, certain aspects of nursing care require special areas or rooms in the nursing unit, including an examination and treatment room, a medication room, a nursing station and therapy rooms.

Also see **Consultation Room, Examination and Treatment Room, Home Care, Long-Term Care, Medication Room, Nursing Unit, Nursing Station, Personal Care, Social Services, Therapy Rooms** and **Nursing Homes** in **Part II: Facility Types.**

NURSING STATION

The nursing station is the communication and control center of the nursing unit. Nursing care staff use the station to monitor call and alarm systems (see **Communication Systems**), to update records and care orders, and often to observe and/or interact with residents. Medical staff may also use a distinct part of the nurses' station to work on charts, medication orders or medical records.

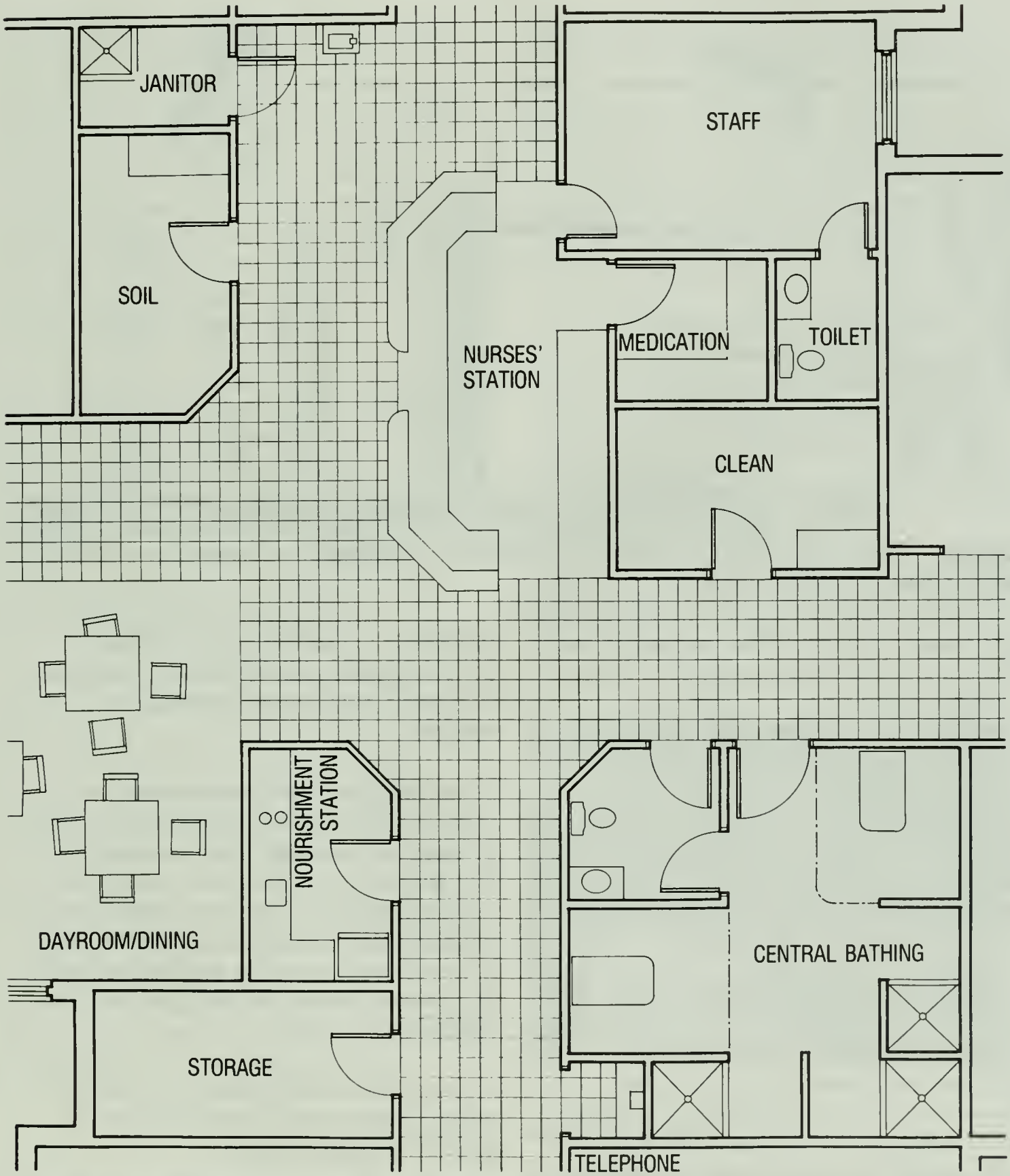
In a teaching facility, medical residents, interns and students (or nursing students) may also require a separate charting area for their work. Increasingly, charts, orders and medical records are becoming computerized, so counters must be designed to accommodate CRTs for clerical and medical functions. However, most institutions still retain paper routines, so work counters must be designed to accommodate the requirements of the specific institution's manual and automated systems.

Nursing care staff in a nursing home can find it difficult to function effectively if residents constantly congregate around the nursing station, seeking attention. If residents are provided with comfortable alcoves near but distinctly separate from the nursing station, they can watch the activity that takes place around the nursing station without interfering.

Provide clear views of all residents' corridors from the nursing station, as well as easy access to the medication room, clean and soiled utility rooms and linen supplies. A nurses' lounge and toilet room should be available without requiring nurses to leave the nursing unit. Some nursing stations also provide head nurse's and resident physician's offices and a teaching/conference facility; these provisions will depend upon the nursing home's programs and affiliations.

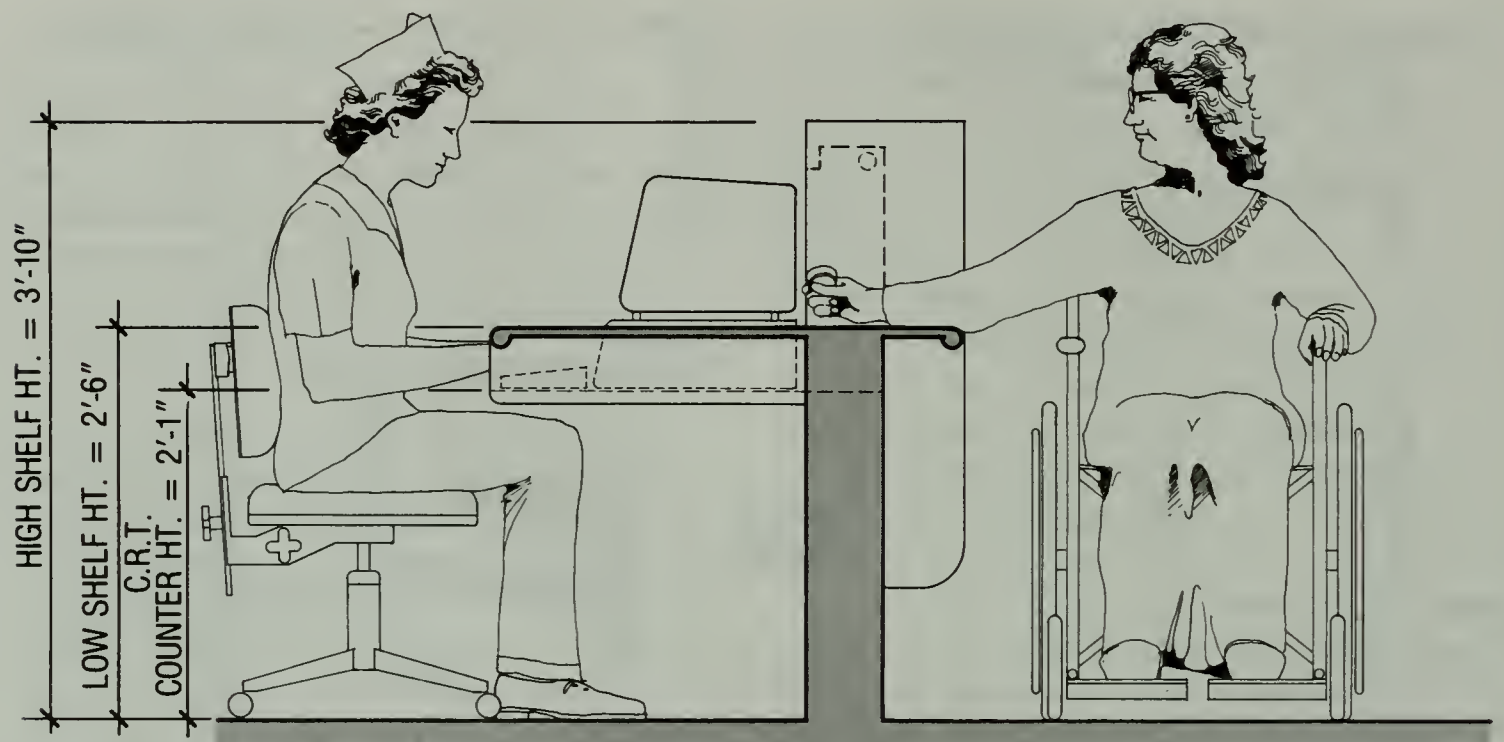
Design the working surfaces of the nursing station to be 29 to 30 inches above the floor, with typing or CRT surfaces lowered to 25 to 26 inches. The public

Nursing Station



The Nursing Station is a central planning and operational element in the design of nursing homes.

Nursing Station



Counter—The nursing station counter must both function efficiently and provide humane interaction between staff and patients.

side should be 42 to 48 inches above the floor to allow nurses a sense of privacy as they sit and work; with this dual counter height, nurses need only lift their heads to communicate with residents and others who approach the station on foot. A section of the counter limited to 30 inches in height will allow nurses to have face-to-face contact with residents seated in wheelchairs or geriatric chairs.

Lighting and sound control are critical to the successful design of a nursing station. Task lighting is needed to concentrate light on work areas, but it must not cause glare on CRT screens or be excessive during the evening and night hours, when residents may be sleeping. Similarly, the noise of telephone communications, dictation, typing, staff conversations and the clatter of dishes, food service trays and dropped bedpans must be muffled by sound-absorbing surfaces and/or partitions with doors, to enhance the restful environment needed by residents.

In an effort to make nursing homes more homelike, some nursing home programs have eliminated the nursing station from the corridor and provided a separate office for updating records and filing orders. In this plan, someone can be on duty at a regular desk in the corridor, where interaction with residents can readily take place.

Also see **Medication Room, Vigil/Visitation Room** and **Nursing Homes** in **Part II: Facility Types.**

OFFICE AND ADMINISTRATIVE SPACE

Staff in a variety of facilities utilized by older people need spaces where they can

work effectively, have private meetings and telephone conversations, and leave unfinished business unattended and secure. In larger community and senior centers, where elderly users need occasional access to office space, office areas should be separated from main activity areas. In small facilities, unobtrusive office space can be centrally located adjacent to the lounge, lobby/reception or multipurpose spaces.

In multi-unit residential facilities, staff in the central management office are generally responsible for visitor reception, control of resident and visitor access, coordination of services and general administration. Communication systems for contact with visitors and for emergency contact with elevators and with each dwelling unit should be provided here.

Nursing home office functions require all of the above administrative facilities, plus accounting space and office spaces for medical staff, nursing staff, dieticians, social services staff and the manager of ancillary medical and support services—plus medical residents, interns and/or students, where appropriate. When a nursing home is a component of a continuing care retirement community, state and local codes often require office and administrative spaces to be separate from management areas serving the non-health components of the community.

The administrative area should have an open, welcoming quality, and give residents a sense of security without being overbearing. The office should have direct access to the building's main entrance/exit, lobby and main-floor common facilities, especially the mail room. It should also, whenever possible, have a view of critical areas of the site.

Also see **Activity Areas, Communication Systems, Community Spaces, Elevators, Lobby/Reception Areas, Lounges, Multipurpose Rooms,** and **Elderly Housing** and **Senior Centers** in **Part II: Facility Types.**

OUTDOOR ACCESS

Access to the out-of-doors is essential for most people young and old. Many elderly people, however, have reduced

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Outdoor Access

mobility or must stay indoors as a result of ill health or other physical impairments. For them, creating access to the outdoors can become a problem.

The architect must be careful, when designing environments that are both supportive and protective of older people, not to create totally internal environments. People of any age become disoriented when they cannot see and feel the outdoors and its changes of light, weather and season.

Activity areas and dining areas should not be located in internal environments, completely surrounded by other rooms or corridors. Nursing homes with central lounges and nursing stations encircled by residents' rooms are especially disorienting to nursing home residents, who find they must go to their rooms to see outside.

Windows with views of the activities that surround a facility help to provide visual access to the outdoors. Sunrooms and greenhouses also contribute an outdoor feeling without exposing their viewers to the elements. Balconies provide ready access to outdoor spaces, while limiting exit opportunities to those older people who may have a history of wandering; patios and porches may provide a greater wandering and security problem.

Also see **Balconies, Lounges, Site Development, Sunrooms, Windows** and specific room or space.

Josephine Lum Lodge
San Leandro, California
Whisler Patri
San Francisco
William Helsel, Photographer

PERFORMING ARTS AREAS

Music, theater and dance groups, including elderly performers, frequently practice and perform in elderly facilities. Locate practice and rehearsal rooms next to areas where the sound of practicing will not be disturbing, or provide effective soundproofing. Design assembly areas or multipurpose rooms to facilitate public performances. Where musical instruments are used, secure storage spaces are required.

Also see **Activity Areas, Assembly Areas, Multipurpose Rooms** and **Senior Centers** in **Part II: Facility Types.**

PERSONAL CARE

Personal care services assist older people who have difficulty with the normal

Ramps

activities of daily living—bathing, dressing, preparing meals, eating and toileting. Personal care is not health care, and thus is not regulated by health-planning agencies; it usually comes under the authority of state departments of social services.

Personal care services can be delivered in an older person's home, or be provided in specially designed facilities for groups of elderly people with similar needs. Such facilities, often called residential care facilities, can be found freestanding in communities, and as components of continuing care retirement communities, where they provide an intermediate level of care that falls between that provided in elderly housing and that provided by nursing care.

Also see **Adult Day Care,** and **Residential Care Facilities** and **Continuing Care Retirement Communities** in **Part II: Facility Types.**

PRIVACY
People of all ages need opportunities to be alone, and to be left alone. Unfortunately, observation and supervision are important parts of higher-level care for older people who face the risk of life-threatening disease or accident. When assistance is required in a person's most private activities—bathing, toileting and dressing—other opportunities to enjoy private moments are lost.

Design for privacy involves more than visual screening. Resident embarrassment during such private activities as toileting frequently stems from the lack of acoustic privacy and odor control—amenities that are afforded by spaces with doors on them (such as private rooms, baths, toilets, etc.).

In nursing homes, the privacy offered by a normal space hierarchy is also disrupted by the absence of lockable doors, vestibules, private hallways and often private bedrooms.

Provide physical opportunities for privacy in facilities designed for older people by limiting views into private spaces, and by restoring a normal space hierarchy through the use of "front porches," vestibules and other kinds of space that make up the sequence from "public" to "private."

Also see **Bathroom-Private, Bedrooms, Central Bathing, Residents' Rooms, Space Hierarchy,** and **Nursing Homes** in **Part II: Facility Types.**

RAMPS
Through good design, ramps can be avoided in facilities used by the elderly. Eliminating ramps alleviates the hazards that ramps pose to the many elderly who walk with an off-balance, shuffling gait, and removes the barrier that ramps present to those who lack the strength or stamina to negotiate an incline. Many ambulatory people find wheelchair ramps uncomfortable and even impossible to use, so stairs should be included to provide an alternative to ramps for some level changes. In many facilities, however—and particularly in nursing homes—wheelchairs are used by the majority of occupants, either full-time or occasionally. Accommodating both ambulatory people and wheelchair users may therefore require multiple paths

Ramps

wherever a level change is required. Wheelchair users must also enjoy easy access to tables, counters and building controls.

If the use of a ramp is unavoidable, a maximum gradient of 1 to 20 is recommended; this is a more gradual slope than the 1 to 12 maximum gradient allowed by ANSI A117.1 under limited conditions. To accommodate wheelchair users as well as ambulatory individuals, provide level landings at the top and bottom of the ramp, and at every 40 feet of horizontal travel. Provide ramps at least six feet long and five feet wide, free of door swings, and with smooth, non-slip surfaces. Provide handrails on both sides of the ramp, extending a minimum of one foot beyond the ramp's terminals. Gradients less than 1 to 20 are not required to be considered as "ramps," and thus do not require landings and handrails.

Ambulatory users will also appreciate benches or other opportunities to rest and regain stamina and strength at stair and ramp landings.

Also see **Barrier-Free Design, Handrails, Site Development,** and refer to barrier-free design standards.

READING/LIBRARY AREAS

Locate reading and library areas away from—or shielded from—noise and other distractions. Older readers often need higher levels of illumination. Those higher levels may be best provided with variable-luminance or variable-position task lighting that can be individually controlled by the user. Avoid peripheral glare, and provide appropriate seating.

Michael R. Koury Terrace
Torrington, Connecticut
Ulrich Franzen & Associates, Architects

Also see **Activity Areas, Lighting** and **Seating.**

REDUNDANT CUEING

Redundant cueing is utilized to communicate with older people who have sensory or cognitive impairments, by sending the same message in more than one sensory mode, or in more than one way in the same sensory mode, or more than once in different times and/or places. Alarms, for example, are generally required to emit visual as well as audible signals in case of fire.

Many visual alarms incorporate white strobe lights in addition to red flashing lights to communicate warning signals. The redundant cueing concept also applies to helping older people with wayfinding in a building by, for example, changing the texture of the floor covering at an intersection in a corridor as well as changing the color and lighting schemes, and continuing those patterns throughout the defined area.

Also see **Communication Systems** and **Wayfinding.**

Residents' Rooms (Nursing Homes)

RESIDENTIAL SERVICES

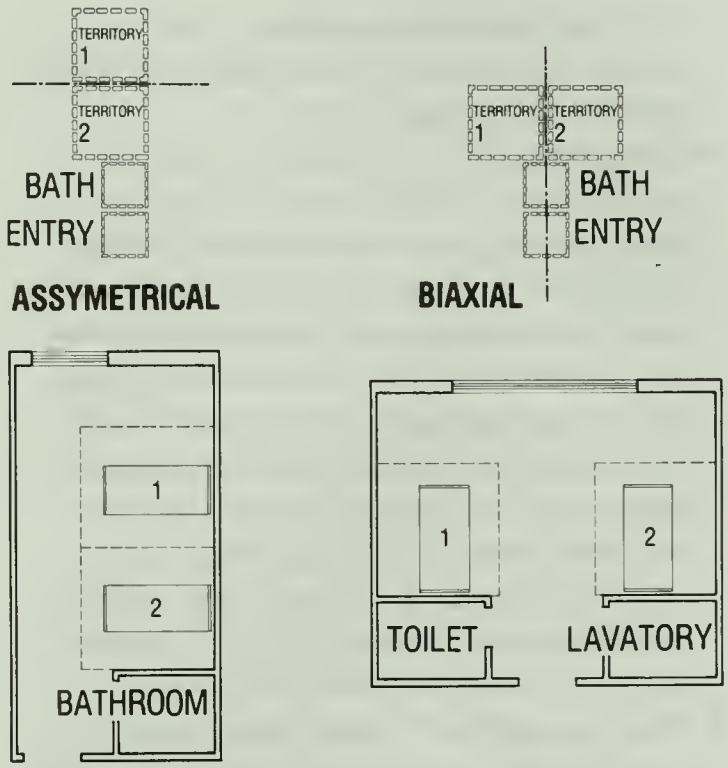
Reidential services are simply those services provided in the home. Many older people, for example, could live independently except for the difficulty they have with food shopping, cooking or cleaning house; residential services in these areas are delivered to the elderly person's private home—as are meals-on-wheels—or provided in specifically-designed residential facilities, such as congregate housing.

Residential services range from housekeeping services and food services—including central food services, snack bars, and private kitchens and dining areas—to such retail-oriented services as beauty, barber, gift, sundry and snack shops.

Also see **Congregate Housing, Dining Areas, Housekeeping, Kitchens, Nourishment Stations, Shops, Snack Bars,** and **Senior Centers and Continuing Care Retirement Communities** in **Part II: Facility Types.**

RESIDENTS' ROOMS (NURSING HOMES)

A resident's room in a nursing home is the place of greatest importance to the resident—the place in which most of his or her time is spent. Residents' rooms should provide a truly residential quality to the greatest extent possible. Each resident should have maximum feasible control over the furniture and its arrangement; over lighting, heating and cooling levels; over the furnishings within the room. And each resident should be able to exercise other forms of personal control, including choice of company and activity, of social interaction and privacy. He or she should feel a sense of



Territory—A sense of personal space or one's own territory is very important to the overall well being of nursing home residents.

personalization, of identity and belonging; of control of territory and expression of ownership, and finally of full accessibility, including maneuvering and transferring to bed from a wheelchair. The number of beds that should be in residents' rooms is a highly controversial subject. Some policy makers who are trying to reduce the costs of nursing home care view the multibed room as an opportunity to save money. Senior citizens' groups and other advocates view the multibed room as an unnecessary deprivation of privacy and environmental control. Consider the following recommendations:

- Limit maximum capacity to two beds per room; more than two beds per room makes it extremely difficult, if not impossible, to provide for the needs listed above.

Residents' Rooms (Nursing Homes)

- Provide a high proportion of *private* residents' rooms—up to 80 percent of facility occupancy.
- Design double-occupant rooms to permit both a clear demarcation of personal space and a measure of privacy. Proponents of biaxial plans (see illustration) cite advantages based upon satisfaction of residents' criteria and needs. Proponents of axial (or assymetrical) plans cite both initial capital cost and operating cost savings, because the resultant nursing unit layouts are smaller in area, perimeter and staffing requirements (advantages that increase in proportion to distances traveled).
- Provide sufficient floor area to accommodate the relationships, activities and furniture described below.

Five distinct uses of space have been identified within the typical resident's room. Each functional area must facilitate a different type of activity:

- *Privacy resting/sleeping space,* which includes the bed, is also the space from which the resident can control the rest of the room. Provide four feet of clearance between the bed and all other objects and walls wherever wheelchair access is to be provided. Plan for alternatives for bed location to allow the resident to arrange the room according to personal preference. Consider bed locations that offer views out of the windows and that provide good positions for television watching. Provide ceilings with visually stimulating surfaces, textures and patterns, especially in areas visible from the bed. Consider double-track drapery fixtures to accommodate both consistent outer drapes and residents' personal interior drapery choices.
- *Controlled social space* is used for personal activities and for private interaction with family and friends. Plan for flexibility in furniture arrangements. Provide two armchairs, a 28-to-30-inch-high table and a reading lamp. Provide for visual and aural privacy with lighting, partial walls, planters, partitions, hangings and/or panels that can be arranged by the resident.
- *Open social space* functions as a vestibule or transition space connecting to the corridor, the resident's toilet room and the personally controlled social space. Nursing home staff and visitors may enter here and be recognized before penetrating the personal space of the resident.
- *The resident's toilet room* is often the only private space for occupants of multibed rooms. Toileting activities, however, are often carried out with the assistance of nursing home staff (see **Toilet Rooms**). Provide enough space to accommodate a wheelchair as well as an assistant.
- *The threshold area* is located at the resident's door to the corridor. Provide space for decoration of the entry with plantings, mailboxes, chairs and other personal items. These artifacts help mark the space as belonging to the resident; they also provide variety to the corridor.

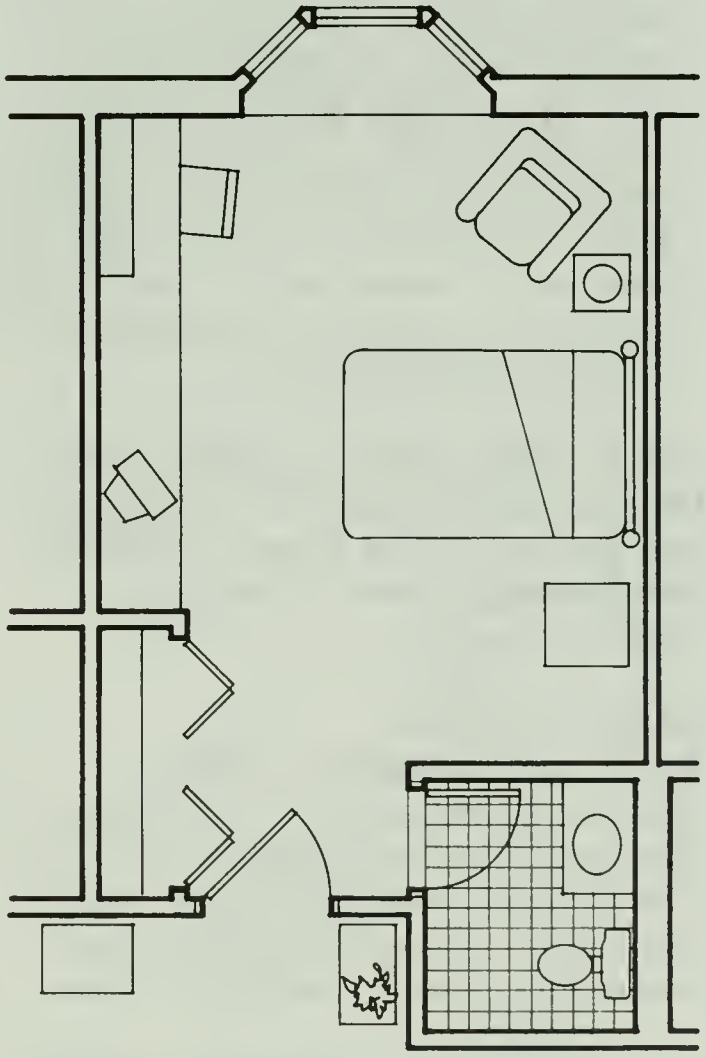
Other areas and attributes of the resident's room also require special design attention:

- *Display space,* which gives the resident the opportunity for self-expression and personalization in the room. Provide display space in all areas of the resident's room. Provide strip mouldings or other devices for the suspension of wall hang-

Residents' Rooms (Nursing Homes)

ings, especially in the privacy (bed) and controlled social spaces, and provide moveable shelving units to increase the horizontal surface area available for displaying personal items.

- *Storage space* for personal belongings and effects. Provide drawer-type storage and cabinet storage for personal effects used daily, and for possessions important to previous life styles. Closet storage is required for in-season clothing and larger items. Locate long-term storage for occasionally used artifacts and furniture outside the resident's room, where they will be readily accessible to the resident.
- *Thermal comfort.* Older residents are highly vulnerable both to drafts and to swings in temperature. Thermostats that are operable by the residents allow self-regulation for thermal comfort (see **Heating, Ventilating, and Airconditioning).**
- *Lighting.* Provide adequate light levels for specific tasks and high contrasts for changes in surface (see **Lighting**). Control reflection and glare. Flexibility in the positioning of light sources and the changing of illumination levels will allow residents to adjust lighting to suit their conditions and activities. Many older nursing home residents require up to twice the task-specific illumination levels required by younger people with "normal" vision.
- *Sound control and attenuation.* Most nursing home residents have difficulty hearing. Age-related hearing loss is often frequency-specific; only small segments of the total range of audible frequencies are lost, most often in the higher frequencies. This makes conversation difficult because parts of words may be "clipped" when the speaker's voice moves into an inaudible frequency. Within the room, provide sound attenuation for the lower frequencies and provide a more "live" or reflective environment for the higher frequencies. Isolate sound and noise between rooms to reduce transmission of the high sound levels created by television or conversation (see **Sound Control**).
- *The resident's bed* is the total environment for some nursing home residents. Do not provide a hospital bed. The provision of more than one type of bed in



The Resident's Room should provide a residential quality to the greatest extent possible.

Residents' Rooms (Nursing Homes)

the nursing home is recommended, so that different beds can be utilized for different personal and nursing care requirements. Provide residents' beds that can be personalized, with top coverings supplied by the residents. Provide beds and surrounding furniture with rounded corners and/or soft surfaces, to minimize injury from slips and falls in the bed area (see **Beds**).

- *Furniture* provided by the facility for resident use should have a residential—as opposed to institutional—look and feel. Provide adequate space for the resident who wishes to bring in a piece of his or her own furniture (although some states prohibit the use of residents' nonstandard beds). Room furniture should (minimally) include a bed, a dresser or chest of drawers, night tables, a television, two armchairs, a 30-inch-high table and a reading lamp. Design rooms to allow for a variety of personalized furniture arrangements.

Also see **Beds, Control, Dining Areas, Doors, Furnishability, HVAC, Lighting, Seating, Toilet Rooms, Windows** and **Nursing Homes** in **Part II: Facility Types.**

RESPITE CARE

Respite care is temporary care for impaired elderly people. Its main goal is to relieve the primary care-givers—usually family members. Respite care is available in nursing homes, board and care facilities, and in individual homes.

Also see **Residential Care Facilities** and **Nursing Homes** in **Part II: Facility Types.**

RETIREMENT COMMUNITIES

The first retirement communities in the United States were built in the 1920s, but the majority have been constructed since World War II. Several terms are used to denote communities of different size:

- *Retirement towns* generally house more than 5,000 inhabitants.
- *Retirement villages* generally house 1,000 to 5,000 inhabitants.
- *Retirement subdivisions* generally house any number from 100 to 500 and up to 1,000 inhabitants.
- *Elderly housing* generally encompasses 100 to 500 separate dwelling units.

Retirement towns and villages usually include various groupings of detached houses, townhouses, multistory apartment buildings and/or mobile homes, and usually feature recreational facilities and accommodations for social gatherings. The typical retirement subdivision is planned as a part of the surrounding environment; it usually contains only limited services and facilities for resident use, and consists of lowrise structures.

Elderly housing, which characterizes approximately half of all retirement communities, is generally provided in mid- or highrise buildings and located in urban areas, near public transportation, shopping and medical services. Its construction is often financed under the sponsorship of nonprofit groups such as churches, unions or benevolent organizations.

Also see **Continuing Care Retirement Communities** and **Elderly Housing** in **Part II: Facility Types.**

Seating

SAFETY

Accidents. The multiple diseases and disabilities of aging render some older people particularly vulnerable to accidents. Injuries from falls present a major problem. A single fall can result in a radical change in an older person's life. For example, an older woman living alone who breaks her hip in a fall may suddenly be forced to move into a nursing home because she can no longer care for herself. This situation, which may be temporary, leads to the sale of her house or the loss of her apartment, because of her inability to keep up the maintenance or afford rent.

Fire Safety can also be a problem with older people. They may forget to turn off the stove, may not smell gas or smoke, may be unable to quickly evacuate a building in an emergency or, if forced to move quickly, may fall and injure themselves. For preventive as well as emergency protection, stoves can be fitted with timing or thermal-protection devices, and gas and smoke alarms can be installed.

Also see **Balconies, Bathrooms, Beds, Communication Systems, Exits,** and **Heating, Ventilating and Air Conditioning.**

SEATING

The selection of seating for facilities used by older people is of great importance. It is typical for elderly people to sit for extended periods, to have poor blood circulation and to have difficulty transferring into and out of seats. These conditions are especially characteristic of nursing home residents.

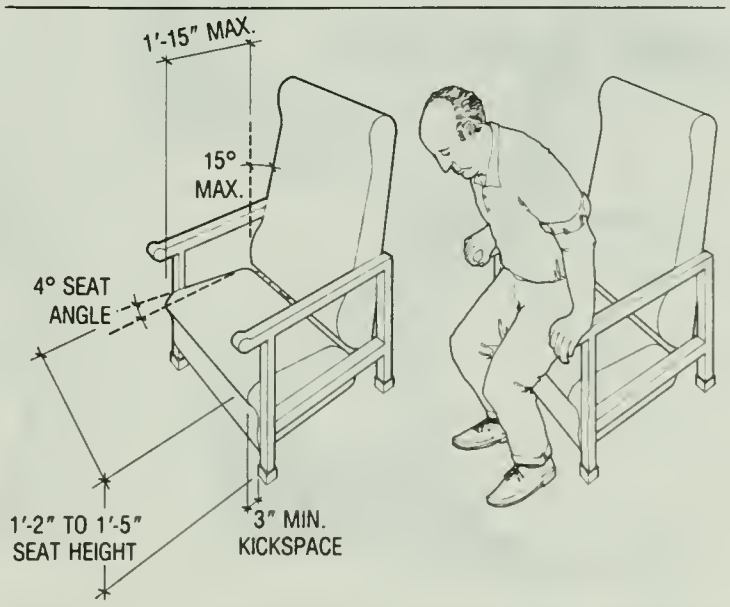
Chairs. Good chairs for elderly users are hard to find and should be carefully researched by the specifier. A manufacturer's designation of a chair as a "geriatric chair" or as being "for use by the elderly" is no guarantee of suitability.

The major functional considerations that are central to chair selection are:

- Ease of getting into the chair,
- Comfort and support while sitting or reclining in a dignified position,
- Ease of getting out of the chair.

A prospective chair can best be tested for its performance in these areas *personally,* by an architect who is aware of the infirmities of the particular older-user group involved; such testing is always preferable to relying on pictures and descriptions.

- Chairs that are not too heavy to move are recommended so that seating arrangements can be easily adapted by older users for good eye contact, and listening.

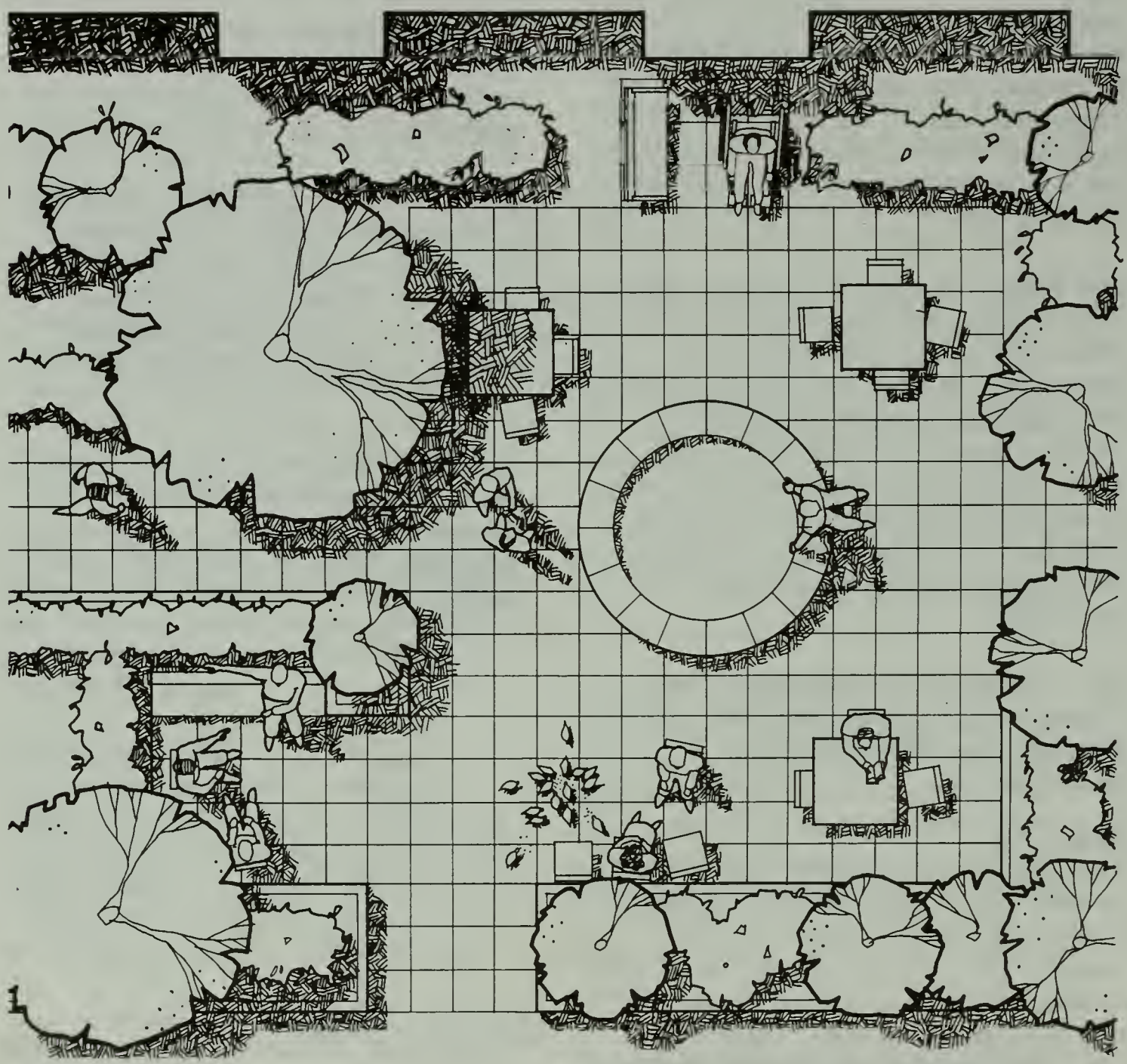


Chairs—Selection of good seating deserves careful attention from the architect.

Seating

Fixed and Movable Seating. In semi-public outdoor spaces, movable seating is preferred by many older persons. Elderly residents want to control their own seating arrangements and make their own choices of location, orientation, view and conversation group.

When fixed seating is provided in public outdoor spaces, it should be located approximately every 200 feet. Locate benches within 20 feet of pathways, where they will not interfere with traffic. Alignment of seating areas and walkways with sun lines and existing trees can



Outdoor Seating should provide a combination of fixed and movable arrangements.

Senile Dementia

Amistad House
Berkeley, California
Whisler Patri
San Francisco
Michael E. Bry, Photographer

maximize sun in the winter and shade in the summer.

Also see **Activity Areas, Assembly Areas, Dining Areas, Lounges, Ramps, Site Development** and **Stairs.**

SECURITY

Many older people are especially vulnerable to assault, robbery and burglary. Older people are generally likely to offer less resistance and to incur greater injury in an attack. Some severely limit their activities because they fear being attacked.

The architect can help reduce these fears (and their cause) by making sure that spaces are well illuminated and provide no hiding places, and that areas can be surveyed by older users before they commit themselves to entering. Other "defensible space" design features that increase observation, limit access and facilitate communication and apprehension are extremely effective in elderly housing projects and communities because the residents are usually there all the time. These include view-ports or "peepholes" and security locks in residents' entrance doors.

Sophisticated security communications and alarm systems that are becoming available incorporate intercom, television monitoring, telemetric and medical diagnostic and monitoring capabilities; these increase both the real and perceived security of elderly residents.

Also see **Communication Systems, Site Analysis** and **Site Development.**

SENILE DEMENTIA

Senile dementia, or simply "dementia," is one of the two major types of mental illness affecting older people (the other being depression). Dementia is a clinical syndrome characterized by the progressive deterioration of cognitive function, usually accompanied by changes in emotions and personality. The causes of dementia are varied and ill-defined at this time.

The prevalence of severe dementia among elderly people is estimated to range from one percent to six percent. The prevalence of dementia increases markedly with age, so that by the age of 80 the prevalence of severe dementia increases to 20 percent.

Alzheimer's disease is the most statistically significant kind of dementia, accounting for an estimated 50 percent

Senile Dementia

to 75 percent of dementia cases. The remainder are due to arteriosclerotic brain disease and other specific organic brain disorders. The prevalence of Alzheimer's disease at age 80 is estimated to be 17 percent, rising to 30 percent by age 85.

The effects of dementia can include the inability to recall who or where one is, who one's family and friends are or where one lives, as well as the inability to attend to such everyday tasks as dressing, toileting and eating. Aimless wandering, extreme emotions and violent behavior also characterize many dementia patients.

Dementia has proven difficult to diagnose because many of its symptoms resemble mild disorientation. It is important, however, *not to assume* that all older people who are slow to make decisions, who are a little forgetful or who are unsure of themselves are "senile" or suffering from Alzheimer's disease.

From an architect's point of view, dementia presents many surprises. Many dementia patients tend to misinterpret architectural elements or visual cues; for example, mistaking sliding glass doors for windows and becoming frustrated when failing to find a door that opens "the way doors should" (that is, swinging on hinges instead of sliding). Since architectural frustrations can seriously anger some dementia patients, sometimes even triggering physically damaging episodes of outrage, facility design for these patients should be undertaken only by experienced architects working in close consultation with specialized medical and nursing staffs.

Also see **Part I: Introduction—Aging and the Environment.**

SHOPS

Space for small shops—flower, gift, beauty, barber, sundry and convenience food shops—is often provided in the community centers of continuing care retirement communities, as well as in nursing homes and larger congregate housing projects. For many older people, reduced mobility can severely limit access to off-site shops, and thus limit their ability to care for themselves. On-site shops also help to create activity within a building (especially when some of the shops are run by residents) and can foster among residents a greater pride in their personal appearance and independence.

Design on-site shops for accessibility (see ANSI A117.1 or the applicable barrier-free design standards), with good illumination (see **Lighting**). The development of alcoves or sidewalk cafelike table-and-chair settings in shop-front corridors can provide places to sit, watch, meet, greet and even enjoy an ice cream cone in good company.

Also see **Barrier-Free Design, Congregate Housing, Lighting, Residential Services,** and **Senior Centers, Nursing Homes** and **Continuing Care Retirement Communities** in **Part II: Facility Types.**

SIGN SYSTEMS

Every facility should have identifying, directional and informational signs (see **Wayfinding**) located at the main entry. Signs, if they are to be seen by visually impaired people, should be color-con-

Sign Systems

Signs should have large lettering, contrasting background, and be without glare.

trasted to their backgrounds and feature large letters. Non-glare accent lighting or backlighting to highlight signs also aids visibility.

Directories. Finding one's way to, into and within a building can present many difficulties for some older people. A building directory can be of assistance if it is prominent and readable. Directories should contain information on tenant locations within the building, as well as floor plan diagrams in both visual and tactile formats. When there is no reception desk, the directory should be the first thing one comes to inside the main entry.

A major problem with many directories is that they function more as mirrors than as signs. "Mirror" directories are those covered with glass and located near glass doors and windows that create glare and reflect multiple images on the directory's glass cover plate. Many elderly people simply cannot read at all

Sign Systems

in high-glare situations; thus, the architect should either not use a reflective cover on the directory or locate and/or shield the directory so as to eliminate glare and reflection from the cover plate. White letters on a black background are recommended. Backlighting of directories also helps to present highly readable characters.

Signs. In facilities for the elderly, interior signs should use white symbols on a dark or black background.

Floor numbers should be clearly readable when viewed from an open elevator door. Signs should be located at wheelchair eye-level (48 to 52 inches from the floor) for easy reading from both a standing or sitting position. Visual emergency-exit signs should be located 48 to 52 inches from the floor, so that they can be seen either from a wheelchair or from the floor when smoke has collected at the ceiling.

Nonsign Markers. Landmarks, plants, pictures, changes in color schemes, noises and smells all help to identify places. Color-coding and supergraphics should be used with care, to preserve a residential atmosphere.

Also see **Barrier-Free Design, Entries, Lighting, Lobby/Reception Area, Wayfinding,** and refer to barrier-free design standards.

SITE ANALYSIS

The selection of a site to accommodate facilities for the elderly involves many factors, among them area requirements, location, available transportation, shopping, social services, neighborhood, parking, solar orientation, topography, utilities and zoning, water supply and sewage facilities, as well as cost.

Location of any facility designed for older users depends upon a number of factors—availability, cost and zoning among them. These are considerations that may be beyond the control of the architect, yet the client will want the architect's advice regarding their potential impact on facility planning and design.

A retirement facility should be located where its older users want it to be, and where they will have easy access to off-site friends, services (doctors, dentists, libraries, stores, etc.) and activities without encountering traffic hazards or steep grades. The vast majority (80 percent) of the elderly retire to locations within eight miles of their preretirement homes, where they are familiar with the community and its resources, and can sustain contacts with friends and relations.

Neighborhoods often have a special significance to older people because of the many friendships they have formed in their long years there (nearly half of all owner-occupants of elderly housing in America have lived in their neighborhoods for 25 years). When older people move from their homes and neighborhoods to elderly housing or to a retirement community, many of those long-standing relationships are weakened or severed.

In selecting a site for a new facility for the elderly, it can be important to locate,

Site Analysis

Hebrew Home for the Aged
The Gruzen Partnership
New York
Elliot Fine, Photographer

whenever possible, near the existing neighborhoods of many of the prospective tenants. Close proximity to services and amenities that the residents are accustomed to using, such as shops, clinics and places of worship, is also important.

Security is a primary concern for many older people, and for facility location as well. Neighborhoods already populated by many older people—people who may utilize the facility—are preferable to younger or transitional neighborhoods.

Topography. Most older people have some difficulty climbing or descending steep slopes and the stairs and long ramps used to traverse high grades. The optimal site for an elderly facility will have relatively flat topography, or topography that can be effectively stepped, with relatively level areas for outdoor activities. Consider planning site circulation through the buildings so that elevators can be utilized to change grade while crossing the site.

Transportation. Visual impairments and other health risks often reduce or eliminate the elderly person's opportunities for driving, so the availability of public transportation is an important factor in site analysis.

Zoning. The problems and opportunities presented by zoning regulations can have special significance for facilities designed for older people. In residential projects, in particular, parking and density requirements can prevent the efficient use of a site.

Site Analysis

Michael R. Koury Terrace
Torrington, Connecticut
Ulrich Franzen & Associates, Architects

Depending on the characteristics of potential residents and the location of the project, a parking requirement as low as ¼-space per dwelling unit may be sufficient. In many jurisdictions, special density-multiplication factors are allowed for elderly housing; they allow higher densities than for general housing. Special treatment in other zoning aspects is often available because authorities recognize that the impacts of elderly housing on neighborhoods and service structures—schools for example—is different from that of general housing.

Also see **Accessory Apartments, Area Requirements, Security** and **Site Development.**

SITE DEVELOPMENT

Facilities designed for the elderly present special site development concerns. First, older people may have difficulty finding their way to the site entry, into the site and to the main building entry, as well as difficulty finding their way once inside the building. Second, many older people cannot walk long distances or up and down steep grades and steps. These problems call for special design solutions that will help older users identify site, site entrance and building entrance, and enable them to move around inside and outside the building.

Consider sign systems, views onto the site and the visual readability of buildings and site. In sequence, the entrance

Site Development

Lafayette Place
Fall River, Massachusetts

Boston Architectural Team, Inc.

Hresko Associates, Boston
Phillip Hresko, Principal
David Clark, Job Captain

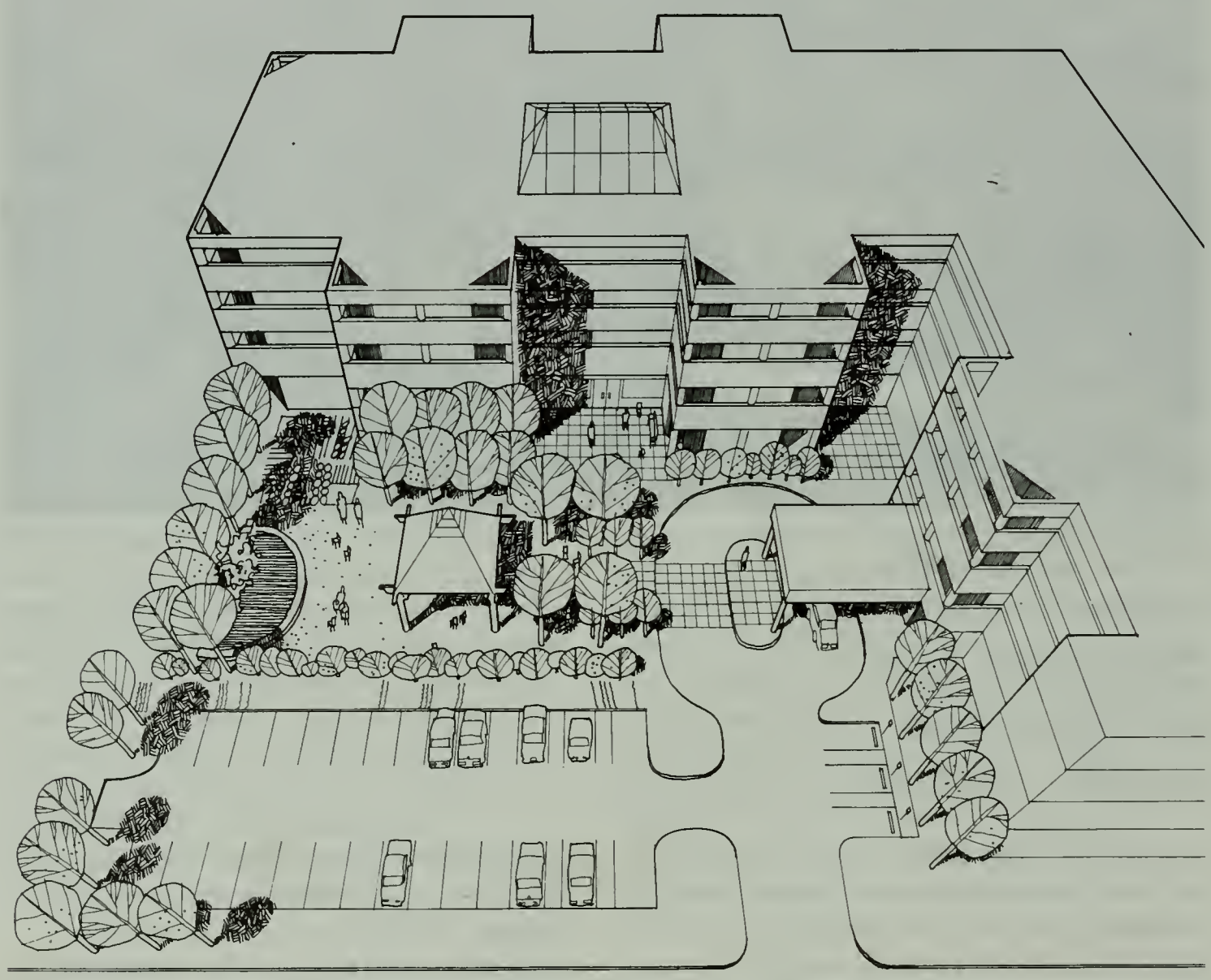
Nick Wheeler, Photographer

to the site should follow a clear announcement of the identity of the facility, and be clearly marked. The building containing the main entry should be visible from the site entrance or a point close to it and the road should clearly flow to the front of that building. The main entry should be easily identifiable (by its all-weather loading area) and be the opening element of an accessible route into the building (see ANSI A117.1 or the applicable barrier-free design standards).

Site Development

Outdoor Spaces. The provision of well planned outdoor common spaces for residents can help alleviate the isolated feeling often associated with facilities for the elderly, and particularly associated with highrise facilities. A variety of activities can be provided for the out-of-doors, ranging from quiet conversation to games and swimming.

When planning outdoor spaces (and indoor activity areas), the architect should attempt to recreate a sense of neighborhood. The spaces should attract people to opportunities for socialization, recreation and passive rest, and promote their positive participation by evoking a warm and familiar environment.



Outdoor Spaces—The design of good outdoor spaces is equally as challenging as the design of the building plans.

Site Development

Outdoor Spaces—Landmarks play a role in orientation both outdoors and in.

For sitting areas, paved terraces with moveable seating are recommended. Locate seating with a view of circulation arteries and other activity areas, but without interfering with the circulation path. Clearly differentiate outdoor private spaces from communal spaces in elderly housing and continuing care retirement communities. Ensure that wind protection is provided either by buildings or by supplementary wind barriers. When necessary, provide acoustic barriers to reduce street and background noises.

Patios can provide the kind of controlled outdoor access that is often important for older people. A patio can be planned to accommodate such group activities as barbecues and picnics, and it can provide seating for individuals and small groups who simply enjoy sitting outdoors.

Site Development

Park Glen, Housing for the Elderly
Taylorsville, Illinois

Nagle, Hartray & Associates/Ltd.
Chicago

Howard N. Kaplan HNK Architectural Photography

Provide barrier-free access from building interior to patio without steps and without a threshold. Utilize smooth, slip-resistant paving materials, with a slope of no more than 1/8 inch to the foot. Seating should be moveable.

A good location for a patio is next to a lounge or other activity area where people who enjoy watching, but prefer not to go outside, can find a vantage point.

Site Development

Locate outdoor recreation areas where they will receive daily sunlight in the fall and winter and shade in the summer. Provide clearly defined spaces for games (particularly horseshoes) to be played in actively used areas, and include accommodations for any locally popular games and activities. If pets are allowed, the designer should consider where they will be walked and where dogs will be curbed. Both HUD and the Farmer's Home Administration have rules governing pet ownership in federally assisted housing. Some nursing homes provide exterior kennels.

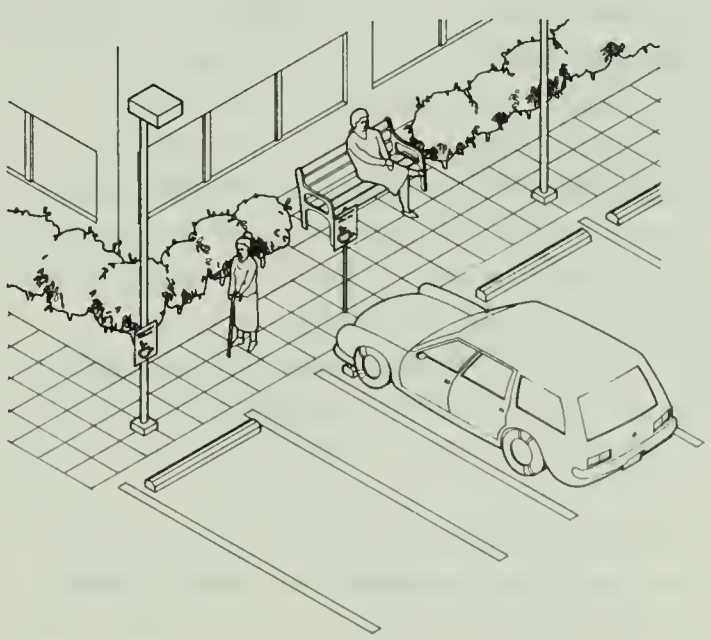
Locate equipment storage and a shaded sitting space for spectators adjacent to game spaces. If outdoor eating, picnic and barbecue areas figure in the design of the outdoor space, locate them close to indoor kitchen and bathroom facilities. Consider the inclusion of individual garden spaces (or a greenhouse) to allow residents to raise their own flowers and vegetables.

Landscaping. Utilize orientation cues and devices in the design of landscaped areas (see **Wayfinding**). Design walkway grades and surfaces for wheelchair accessibility, and to allow the elderly stroller to visually explore a series of landscapes from the walkway.

Plantings located at waist height are more easily seen, touched and smelled than those at ground level. Landscapes that present high contrasts between and among landforms and plantings are more visible to many older people; subtle changes in color or form may not be perceived. Many older people are quite fond of colorful flowering plants. Flowering trees and fruit trees also are preferred, though many of these species tend to be messy from a housekeeping or grounds maintenance point of view.

Parking. Design parking areas for ease of circulation and a minimum of confusion. Provide good lighting and minimize concealment for intruders. Clearly mark drop-off points, and make them visible from both community areas and living units. In elderly housing, provide a minimum of two accessible parking spaces, with additional accessible spaces provided on an as-needed basis (see ANSI A117.1 or applicable barrier-free design standards).

Depending on the location of the project and the particular characteristics of its residents, a parking requirement as low as 1/4-space per dwelling unit may be



Parking Areas should be designed for optimum circulation and accessibility.

Site Development

sufficient. For new elderly-housing and continuing care retirement communities, parking for a one-car-to-one-dwelling-unit ratio may be required initially, because most residents may still be driving when they move into the facility. After the facility is several years old, parking spaces for 25 to 50 percent of the units may be sufficient, depending on location and access to shopping and public transportation. Locate parking close to the unit rather than in one large lot, and avoid blocking or dominating views.

For community and senior centers, adequate parking is often crucial, and increasingly so when public transportation is limited. Locate parking no farther than 200 feet from the entrance to the center or from a shelter or enclosure. A minimum of one route from the parking area, bus stop, loading zone or sidewalk must be wheelchair accessible.

In many urban areas, security is a vital function both for parking areas and for the route from parking to the facility. Provide a higher level of uniform illumination in these areas to enable older people to notice intruders. In urban centers, free and secure parking may be an essential recruiting device in order to attract staff to a less than ideal neighborhood, even if public transportation is available.

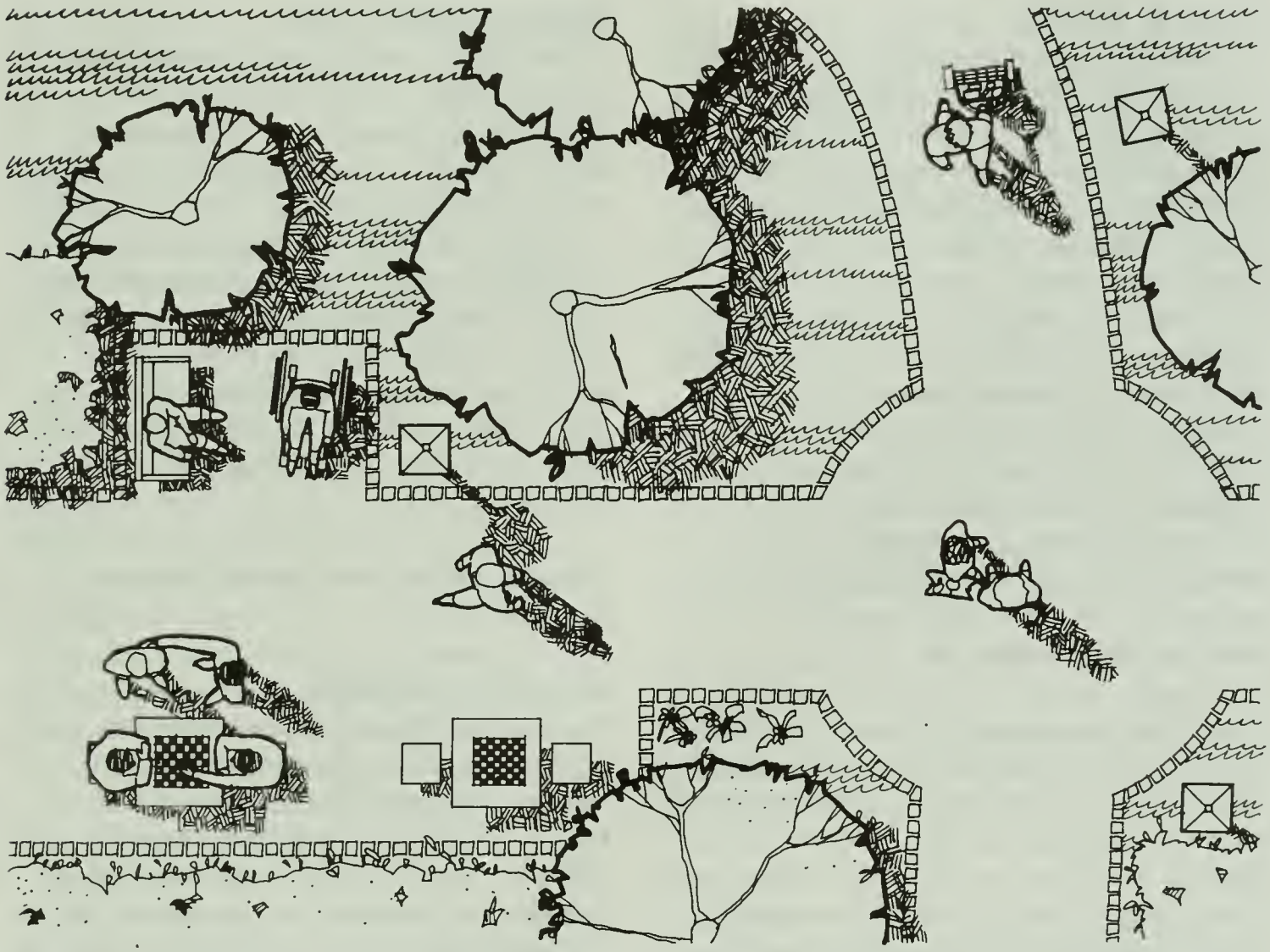
A loading area of at least 5 feet by 30 feet will accommodate unloading from cars and minibuses. Curbs are not recommended in this area; the walk should be feathered to the pavement with a slope of 1/8 inch to the foot. Provide bollards to separate auto/pedestrian circulation. Provide a direct view of the loading area from the main entry and the lobby/reception area.

Solar Orientation. Most of the spaces in any facility designed for the elderly would benefit from sunlight at some time during the day. Buildings should be oriented to maximize the number of different private spaces—including residents' rooms and dwelling units—that can receive sunlight; community spaces should provide sunlight for all residents. Careful building orientation can also extend the seasons outdoors by maximizing solar exposure for such outdoor areas as patios and common balconies, and by reducing snow and ice accumulation on walks at entrances.

Heat gain from direct insolation can be a greater problem for older people than for younger (see HVAC); provide solar controls (such as dropped window heads) and mechanical systems adequate to maintain proper room temperatures.

Walkways. For major walkways on any elderly facility site, provide a minimum width of six feet. Provide a minimum width of five feet for walkways in outdoor common areas with heavy traffic. Other walks can be three feet in width if periodic passing areas are provided. Concrete walkways with a broomfinished, non-slip surface are recommended. Consider a special band of textured, nonslip paving at building entrances. Provide good lighting for all

Site Development



Walkways can provide opportunities for social interaction.

paths, utilizing lighting fixtures that will not present a hazard to the residents.

Plan walkways that are easily accessible from residential units, with one major pathway connecting major on-site and off-site activities. Design walkways to provide a variety of stimuli to residents—perhaps with games located alongside to encourage chance encounters. Plan intersections to accommodate greater concentrations of traffic and social interaction. Avoid locating walkways in areas subject to heavy icing and snow drifting.

Also see **Activity Areas, Balconies, Barrier-Free Design, Community Spaces, Entries, Exits, Lighting, Outdoor Access, Seating, Sign Systems, Site Analysis, Wayfinding, Major Building Types** in **Part II: Facility Types,** and refer to barrier-free design standards.

Snack Bars

SNACK BARS

A snack bar provides a place where facility residents, staff, and their guests can go for coffee, pastries and other light food and drink items at any time of the day or night. Snack bars usually contain a coffee maker, a cook top or hot plate, drink/candy/pastry vending machines, dry and cold storage, a kitchen sink and a counter top where simple dishes might be prepared. Snack bars are for the use of older residents who are capable of using them in a safe and responsible manner. Provide keys to the snack bar for residents who are capable. Those residents who prove to be unsafe or irresponsible will have to be supervised in the use of the snack bar.

Snack bars are especially useful in facilities that do not provide private kitchens or private cold storage. In cases such as these, a snack bar might be designed as part of a full-featured kitchen that is provided for occasional use to the residents, who take most of their regular meals in a central dining room.

Storage, preparation and dispensing equipment in the snack bar—including vending machines—should be fully accessible to and useable by the residents (see **ANSI A117.1, Barrier-Free Design** and **Kitchens**). The snack bar should be centrally located in the residential area of the building, where the space can also be used for meeting, greeting and watching.

Also see **Barrier-Free Design** and **Residential Services.**

SOCIAL SERVICES

Information, referral and counseling are services often provided in facilities designed for the elderly. These social services help older people adapt to retirement, lowered income, the loss of friends or family, ill health, impairment, and the other eventualities of aging—including moving to new housing and health care environments. The provisions of social services may require permanent office space with file storage and an area for conferences with individual older persons.

Also see **Office and Administrative Space.**

SOUND CONTROL

Age-related hearing loss is often frequency-specific, with only small segments of the audible frequency spectrum—usually in the higher range—affected. Elderly people with hearing difficulties can be aided by attenuation of the lower frequencies and control of background noise.

General background noise can be reduced by using carpeting or other floor, wall and ceiling materials and finishes that reduce sound reflection. In large open spaces, background noise can be reduced with baffling, wall hangings, banners and panels. Eliminating unnecessary sources of background noises at entries, crowded areas and intersections will also ease the orientation and wayfinding process.

Stairs

Privacy can be enhanced through proper sound control, particularly in residents' rooms, bathrooms and toilet rooms. Doors should be provided without sound passing air-transfer grilles, to isolate sounds of private functions, such as bowel movements, that tend to embarrass residents who believe they're being overheard by roommates or staff.

Also see **Residents' Rooms.**

SPACE HIERARCHY

Research into residential facilities has shown that categories of space range from "public," where strangers as well as residents may enter, to "private," where only one's closest intimates are allowed entry. To separate and protect these different uses of space, the spaces themselves are generally arranged along a hierarchy ranging from "private" through "semiprivate" and "semipublic" to "public." This arrangement—a space hierarchy—allows movement from such public spaces as the street or sidewalk into such semipublic spaces as the front walk and front porch, and then into semiprivate (entry vestibule and living room) and private spaces (bedroom and bathroom).

Elderly facilities that do not have the elements of a traditional space hierarchy can confuse older residents; they may not know what behavior is appropriate to a particular space. In a nursing home, for example, the "entry vestibule," "living room" and "bedroom" spaces normally found in housing may all be provided within one room, with no physical or visual barrier to separate the different levels of use; thus, a stranger can walk from the public "street" (the corridor) directly into the private bedroom. Some congregate housing and some residential care facilities pose similar problems.

The architect can mitigate the lack of a traditional space hierarchy by recreating a front porch and entry vestibule with an alcove and a decorating concept, as well as by using privacy screens. Many of the other interior elements that help identify and protect different levels of privacy can also be included by the architect.

Also see **Alcoves, Community Spaces, Congregate Housing, Control, Residents' Rooms** and **Residential Care Facilities** and **Nursing Homes in Part II: Facility Types.**

STAIRS

Stairs and stepdowns pose potential hazards to people with visual impairments as well as to those who have difficulty walking. Different colors and surfaces should be used to differentiate tread edges. Risers and treads of contrasting colors are particularly helpful to the visually impaired, although patterns with a hypnotic effect should be avoided. Toe guards (without nosing) and side curbs are also essential safety aids, as are handrails (see ANSI A117.1 or the applicable barrier free design standards).

Perception difficulties and reduced stamina among the elderly make it important

Stairs

to provide at least three but no more than 10 risers of uniform height per flight. Studies have shown that a high percentage of the falls that occur within the elderly's own residences can be traced to a single riser whose height is different from the other uniform riser heights on the stair. This problem is common in builders' houses with prefabricated stairs (see **Safety**). Stairs should be designed with runs that are as straight and as short as possible. If a stair is enclosed, it should be lighted to a higher intensity than normal, day and night.

Consider providing seats on top, bottom and intermediate landings to enable users to rest and regain strength in the midst of a strenuous climb or descent. This feature can be particularly attractive on open stairways leading to congregate facilities, offering both rest and preview opportunities.

Also see **Barrier-Free Design, Handrails** and refer to barrier-free design standards.

STORAGE

Dwelling units for the elderly require long-term storage space for items that are not used on a daily basis. Space can be provided within the unit, on a balcony or patio outside the unit or in a central, convenient location in the building. Interstitial spaces between rooms can also be used for storage of unused wheelchairs, seasonal clothing and artifacts.

In nursing homes, space should be provided outside residents' rooms for facility-provided furniture not being used by the residents. Access should not require removal of stored items. When located outside a living unit, personal storage space should be lockable and visually observable before entry. Adequate storage and holding space for supplies, medical equipment, wheelchairs, walkers and stretchers must also be provided to ensure that corridors will not be obstructed by these items.

In elderly housing, provide a minimum of 12 square feet of floor storage area or 100 cubic feet of storage volume for each dwelling unit, in addition to the more frequently accessed storage areas—the standard size guest closet, utility closet, linen closet and wardrobe closet that should be provided in each dwelling unit.

Avoid stacked storage units or other arrangements that require stooping or reaching. Provide lighting for storage areas and specify surface treatments that are easily maintained. Avoid exposed, untreated concrete, which is dusty and difficult to maintain.

Also see **Arts and Crafts Areas, Kitchens, Residents' Rooms, Elderly Housing** and **Nursing Homes** in **Part II: Facility Types.**

SUN ROOMS

A sun room can provide an excellent "outdoor" opportunity for the older person who has been confined indoors for a long period of time. With a good southern exposure, a sun room can provide the warmth of the sun and the changing light of the day—positive experiences for people of any age.

Therapy Rooms

A sun room can be a high-glare environment, which can make it difficult for an older person to perform tasks that require fine visual discrimination; for the same reason, the sun room is not a good place for television viewing or for game and assembly activities. Nor should the best views—usually of outside activity rather than pastoral scenes—be reserved for the sun room; glare may make watching difficult. Sun control shades or blinds should be provided to maximize utilization of this space.

Also see **Activity Areas, Balconies, Outdoor Access** and **Site Development.**

TACTILE CUES
Tactile cues are differentiations in texture used to alert visually impaired people to such potential hazards as floor-level changes, stairways and the approach of a pedestrian walk or intersecting vehicular traffic. They can also be utilized in the design of handles and levers, as well as controls for appliances and fixtures. Tactile cues can also reinforce the visual or aural messages received by cognitively impaired individuals, and take varying forms—raised grooves, exposed aggregate concrete and rubber strips are all examples.

A change in the surface texture of a handrail can be used to warn that a ramp is about to begin or end. Such tactile cues must be used consistently to be effective, and the generally lower tactile sensitivity of older people's fingers and hands require gross, rather than fine, differences in texture to ensure effective tactile cues.

Also see **Redundant Cueing, Stairs** and refer to barrier-free design standards.

TELEVISION VIEWING AREAS
Television watching is a major activity for many older people. Televisions are usually located in private living rooms (and often in bedrooms too) and common lounges. Television antenna outlet locations in these rooms often determine entire furniture layouts. Therefore, an outlet (or better, two or more) should be located to allow furniture arrangments that work for television viewing as well as for other activities. The television screen should also be located in a glare-free position—neither in front of windows, nor where it will reflect window images.

Also see **Activity Areas, Bedrooms, Living/Dining Room, Lounges** and **Residents' Rooms.**

THERAPY ROOMS
Therapy rooms are utilized in nursing homes to help restore lost functional abilities and to stimulate the regeneration of tissue and organ systems. Hydrotherapy, physical therapy and occupational therapy are all practiced in nursing homes.

Hydrotherapy may occur in the central bathing area, in special institutional tubs fitted with water jets, but is usually made part of a specific physical and hydrotherapy area. Some facilities may incorporate more-elaborate pools for patient treatments involving both therapist- and patient-immersion.

Therapy Rooms

Physical therapy is often conducted in a separate room outfitted with special exercise equipment. This frequently underutilized room should be prominently located and accessible to the nursing unit, where its use can be promoted. The ambience in a physical therapy room should not be biomechanical or prosthetic, but suggest and promote activity and involvement.

Occupational therapy in the nursing home often takes the form of group activity focused on improving manipulative skills and hand-eye coordination. Occupational therapy requires space for the storage of supplies and of nearly-finished or finished products that will go on display. When special occupational therapy equipment is not required, general activity areas can be utilized for these therapeutic activities.

Also see **Nursing Care,** and **Nursing Homes** in **Part II: Facility Types.**

TOILET ROOMS

The variety of toilet rooms provided in facilities for older users includes residential bathrooms, nursing home residents' private toilet rooms, nursing home assisted toilet rooms (or "training toilet rooms") and, in all types of specially designed facilities as well as in buildings used by the general public, public toilet rooms. See **Bathrooms** for a discussion of residential private toilet rooms. All toilet rooms should be mechanically ventilated and have mechanical exhausts. Air-transfer grilles should not be used.

Nursing home residents' private toilet rooms should each (optimally) serve only one private resident's room; where shared facilities and spaces are necessary, it is better to preserve privacy in the residents' rooms and provide for shared toilet rooms. Shared toilet rooms should never serve more than two residents' rooms or more than four beds. Provide an isolated space with direct access from the resident's room; the space should contain a lavatory (with mirror and storage) and a toilet (see **Bathrooms** for a discussion of toilet fixture selection). Private residents' rooms should be provided with combination toilet-bathrooms, containing shower or tub/shower (see the discussion of tubs and showers under **Bathrooms**). Wherever tubs or showers are provided in a nursing home, bathing assistance will be required. Avoid locating lavatories in a resident's room itself whenever possible, to provide a measure of privacy.

Provide space and clearance for wheelchair access to the toilet room and its fixtures, and for nursing staff assistance (also see ANSI A117.1 or the applicable barrier-free design standard). Doors should have minimum clear widths of 2 feet 8 inches, and permit emergency access from the outside either by swinging outward or with hardware that allows doors to swing outward in an emergency. Mirrors should be arranged for convenient use by both wheelchair-bound and standing residents; canted mirrors can be disorienting and are not recommended.

Uniform Federal Accessibility Standards (UFAS)

Provide ready-access storage for washcloths, soap, toothbrushes, and other toileting and grooming items, and closed storage for bottles, tubes, jars and similar objects. Shared toilet rooms should be larger than private toilet rooms, and should provide separate storage for each resident.

Water closets (see the discussion under **Bathrooms**) should be standard height (15 inches to the top of the seat) and the flushing mechanism should be easy to use by the resident. Provide grab bars at all water closets (see ANSI A117.1 or the applicable barrier-free design standards), as well as toilet seat covers. Locate mirrors where they will enable use of the water closet as a seat and as a site for grooming activities.

Properly located wall-mounted grab bars are more useful than fixture-mounted arms (which resemble the arms of a chair) for assisting a resident on and off the toilet; however, the wall next to the toilet must not be too far away to make a wall-mounted grab bar useful.

Toilet room floors should be nonslip. Wall finishes should be washable and moisture resistant in fixture areas. Ceilings should be at least 7 feet 8 inches high and easily cleanable. Provide adequate lighting levels and high contrast for changes in surface. Control reflections and glare.

Nursing home attended toilet rooms should include all of the features of a resident's private toilet room, except storage, plus space for nursing assistance and for transferring to and from a wheelchair on both sides of the toilet. The attended toilet room should be adjacent to the central bathing area.

Public toilet rooms should be located near activity areas and lounges. Public toilets should be accessible to and usable by the handicapped (see ANSI A117.1 or the applicable barrier-free design standards) and include all of the features of the resident's private toilet, except bathing fixtures and storage. Provide paper towel dispensers in addition.

Also see **Barrier-Free Design, Bathrooms, Dining Areas, Doors, Lighting, Lounges, Residents' Rooms** and refer to barrier-free design standards.

UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS)

The Uniform Federal Accessibility Standards (UFAS), published in August 1984, constitute *the sole accessibility standard referenced by the federal government* for compliance with the Architectural Barriers Act of 1968. Thus, UFAS is now the federal standard for design, construction and alteration of facilities subject to the Barriers Act. In addition, the U.S. Department of Housing and Urban Development has proposed revising the Minimum Property Standards to reference UFAS instead of ANSI A117.1, and the U.S. Department of Justice is encouraging the application of UFAS in the regulations implementing Section 504 of the Rehabilitation Act of 1973.

Uniform Federal Accessibility Standards (UFAS)

This new standard is based upon ANSI A117.1 (1980) and utilizes the same format and similar illustrations. Text that is different from ANSI is underlined in UFAS; tables and illustrations (and portions thereof) that are different from ANSI are italicized.

Overall, UFAS standards do not vary greatly from ANSI A117.1. The chief differences are as follows:

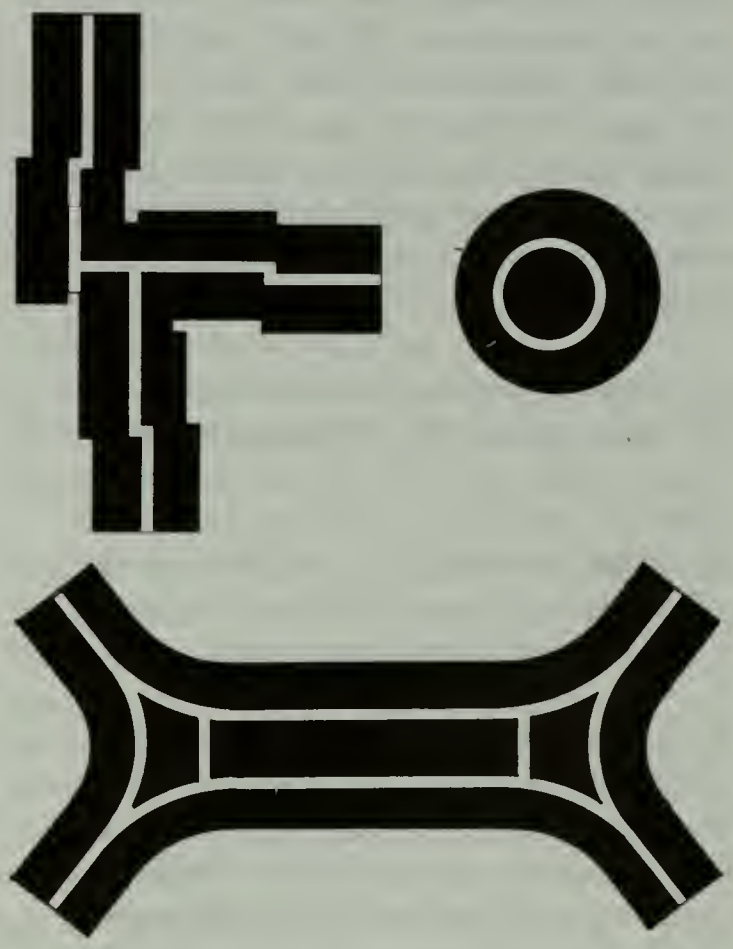
- Extensive scope provisions are stated for all buildings funded or owned by the federal government.
- UFAS contains accessibility standards for building types not covered by ANSI, including restaurant and cafeteria, health care, mercantile, library, and postal facilities.
- Accessible dwelling units may be designed for either permanent accessibility or adaptability.

Also see **Adaptability, ANSI A117.1** and **Barrier-Free Design.**

VIGIL/VISITATION ROOM
In a nursing home, it can be helpful to provide a small, quiet room off the nursing station for agitated residents or for residents who wish to have private discussions with family members or others. Such a room can also provide a private space for family members when a resident is in critical condition.

Also see **Nursing Homes** in **Part II: Facility Types.**

WAYFINDING
Age-related changes in sensory and cognitive abilities, as well as the loss of short-term memory, contribute to the difficulty some older people have with knowing where they are, and where they want to go and how to get there. The physical environment can add to this "disorientation" when it presents complex routes through buildings lined with repetitive architectural elements, fixtures



The overall *"footprint"* of a facility can either help or hinder older people in finding their way. Simple, straight-forward building plans, rectilinear organizations with nodes, and views to the outdoors all help. Circles and other curvilinear plans can disorient.

Windows

and finishes. Among the worst interior designs for orientation are long sequences of undifferentiated repetitive elements, or mazes and circles that don't quickly inform one of a wrong turn already made. Obscure or unreadable signs also contribute to disorientation among older building users.

A key objective in design for aging is to enable elderly people to read their surroundings at any point on a site or in a building, thus allowing them to know where they are and, if they are going somewhere, make the appropriate decisions about how to reach their destination.

Views to the outside provide a principal architectural (and psychological) mode of orientation relative to interior circulation systems. These cues to location (as well as to time of day and weather conditions) should be to the side of the path and not at ends of corridors, where they can create glare and confusion. Creating small seating areas in alcoves with windows to the outside can enhance the experience potential (and the use) of interior corridors.

A simple, straightforward building plan of right angles minimizes many of the orientation problems that result from circular-plan buildings and from encounters with multiple obtuse angles. Readable map and sign systems should be provided, along with such other orienting devices as redundant cueing, landmarks, "neighborhood" decorating schemes, personalizable "porches" and doorways, and changes in illumination levels, floor surfaces, sounds and smells.

Landmarks are physical features of the environment that stand out and are memorable. Landmarks aid wayfinding in and around buildings by helping users to know where they are and to decide how to reach their destinations. Water features, artwork, decorating schemes and dramatic spatial changes often serve as landmarks within buildings.

Also see **Corridors, Redundant Cueing, Sign Systems** and **Site Development.**

WHEELCHAIR ACCESSIBILITY

Wheelchair users must also be accommodated in terms of accessibility to tables, counters and building controls.

Also see **Barrier-Free Design, Bathrooms, Ramps, Site Development, Stairs** and refer to barrier-free design standards.

WINDOWS

Many elderly people need a high level of illumination that is free of painful, distracting glare. Minimize daylight glare by using light colors around windows, providing blinds, shades or curtains and avoiding the use of windows across the ends of corridors and hallways.

Provide low sills (15 to 20 inches above the floor) for living/dining room and bedroom windows, to allow seated or bedridden people to see outside. When

Windows

Windows provide view, illumination, and a connection to the outdoors.

low sills are used—particularly in high-rise buildings—install sturdy mullions or guardrails to ensure safety and instill a sense of security. Locate mullions so that they do not obscure the views of older occupants, particularly at seated eye-level. Ground-floor windows that create exposure to passers-by require special design attention to provide for both outdoor views and security. Provide interior window sills that are wide enough to accommodate potted plants.

In a given space, provide a minimum window area of 15 percent of the room floor area for natural lighting. The operable window area required for natural ventilation in dwelling units is five per-

Worship and Meditation Room

cent of the floor area. Because the elderly are particularly vulnerable to drafts, do not introduce fresh air directly across sitting areas, or in a way that it cannot be quickly brought to room temperature. Do not rely on sliding doors or windows as the sole sources of fresh air, because of the possibility of floor-level drafts.

Provide window-opening mechanisms that are easy to operate by the physically handicapped. Mount operable parts 30 to 48 inches above the floor for easy access.

Also see **ANSI A117.1** or the applicable barrier-free design standards, **Architectural Hardware, Barrier Free Design, Bedrooms, Corridors, Lighting, Outdoor Access,** and specific rooms or spaces.

WORSHIP AND MEDITATION ROOM

The worship and meditation room can provide a place for facility residents, their families and their friends to withdraw momentarily from worldly activities and concerns, and to focus on their religious beliefs or contemplative practices. In facilities for aging, the worship and meditation room is usually designed for individuals and groups of 4 to 6 people, rather than for organized worship. This may not be true, however, for facilities sponsored by religious organizations that may call for such uses as organized chapel services.

Also see **Activity Areas.**

APPENDIX A:
Selected Annotated Bibliography

Following a review of literature on design for the aging, the following references have been selected for inclusion in an annotated bibliography. Selections are representative of information available covering a broad spectrum of design considerations. An additional set of unannotated references has been compiled for further research.

The annotated bibliographic information is presented followed by a notation on the availability of the reference. All references are available from the AIA Information Center by loan to AIA members and their employees. The Information Center is open to the public for reference use. Notation is made if the book can be purchased through the AIA Bookstore. Some references can be obtained from associations listed at the end of the bibliography. Unless noted as being out of publication, references can be ordered from the publisher.

The Information Center is located in AIA Headquarters, 1735 New York Avenue, N.W. Washington, D.C. 20006. The AIA Bookstore is located at the same address.

American National Standards Institute. *American National Standard Specifications for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped.* **New York: ANSI, A11.71, 1980, 68 pages.** Available: AIA Information Center: AIA Bookstore; AARP; NCOA; USGPO; HUD

Standards presented are intended to make public facilities and residences accessible to and usable by people with walking inabilities or difficulties, for those who rely on walking aids, or those with hearing or visual disabilities, incoordination, reaching and manipulation disabilities, lack of stamina, difficulty interpreting and reacting to sensory information, and extremes of physical size. The standard applies to the design and construction of new buildings and facilities, site improvements, and public walks, the remodeling, alteration, and rehabilitation of existing construction, and permanent, temporary, and emergency conditions. Most standards are presented graphically as well as verbally.

Architectural & Transportation Barriers Compliance Board. "Minimum Guidelines and Requirements for Accessible Design," *Federal Register,* **47(150) August 4, 1982, 33 pages.** Available: AIA Information Center; ATBCB

This publication presents accessibility guidelines and requirements for buildings funded, guaranteed or used by HUD, the Department of Defense, the U.S. Postal Service, and the General Services Administration. Standards have been revised to be more cost effective and consistent with Federal and nationally recognized guidelines while still providing ready access and use. ANSI standards are referenced and applied when appropriate. General building considerations, the scope of buildings covered, and technical provisions are included in the guidelines. Detailed graphics are included.

Bibliography

Aranyi, Lazlo and Goldman, Larry L. *Design of Long-term Care Facilities.* **New York: Van Nostrand Reinhold, 1980, 210 pages.** Available: AIA Information Center; AARP; NCOA; Publisher

Information is provided on starting, designing, and running an institution best serving the needs of the elderly. The first sections of the book give special attention to financing when starting an institution. Space planning, color, odor control, lighting, security and acoustics are some of the many design areas specifically covered. Photographs and floor plans are included.

Byerts, T.O. & Taylor, P.S. (eds.). "Curriculum Development in Environments and Aging." *Journal of Architectural Education,* **1977 31(1), 48 pages. (entire issue)** Available: AIA Information Center

This entire issue of the JAE reports on a two-year program on curriculum development by The Gerontological Society of America aimed at developing a short-term understanding and a long-term perspective among students, educators, and practitioners relating to design for the elderly. The first section of the issue presents background content and detail useful to programming, design and evaluation of facilities for the aging. The second section highlights reports of experience gained in testing teaching materials and developing course directions including course content in several design schools across the country.

Byerts, T.O., Howell, S.C., Pastalan, L.A. (eds.). *Environmental Context of Aging: Life Styles, Environmental Quality, and Living Arrangements.* **New York: Garland STPM Press, 1979.** Available: AARP; AIA Information Center; Publisher.

This book is comprised of three major sections dealing with the effects of the environment on people during the aging process. Each section focuses on specific topics: 1) how the elderly live, what we know and need to know; 2) negotiating the environment; and 3) specialized environments. Each topic contains articles important to services and housing in the aging field. The material is based on The Gerontological Society of America's environment and aging program integrating the results of seven years of research.

Currie, Leonard, and others. *Designing Environments for the Aging: Policies and Strategies.* **Urbana-Champaign: University of Illinois, 1977, 104 pages.** Available: AIA Information Center; Publisher

A collection of articles prepared by the Jane Addams College of Social Work and College of Art, Architecture and Urban Sciences of the University of Illinois at Chicago Circle, the book covers a wide range of topics relating to design for the elderly. Starting with background information on the general problems of aging, the book progresses to social considerations of aging, to barrier-free environments for the

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handicapped-many of whom are elderly, and to an abbreviated form of planning a skilled nursing facility including examples of student projects. Section V concerns the need for and feasibility of congregate housing followed by a proposed plan for a congregate facility. Section VI is on planning for the reuse of unused facilities of the Chicago Tuberculosis Sanitarium for housing for the elderly. A description of the program, and the opportunities and potential economics afforded by adaptive reuse is presented along with part of a solution proposed by a team of two students. Section VII summarizes the experience of a group of architectural students who visited a variety of housing and health care facilities for the elderly, gathered data, and undertook individual projects for planning and design of several different types of facilities in different localities. Section VIII highlights some of the experiences of other countries in providing for the aging. The final section treats energy conservation and the elderly.

Federal National Mortgage Association. *Forum III: Housing for the Retired.* **Washington, D.C.; author, 1979, 48 pages.** Available: AIA Information Center; AARP

Forum III was made up of 120 people, selected to represent a cross-section of the national retiree population, who attended a symposium in Washington, D.C. The purpose of the forum was to learn directly from middle-income retired people more about the human motivations and other factors affecting their housing decisions. Changing life styles and social patterns, economic factors affecting retirement housing, and design discussions of housing for the elderly were included on the agenda. Based on responses to 1,350 questionnaires sent to retirees prior to the forum relating to their housing needs, the "Options" house was designed. Its flexibility affords the opportunity to satisfy many individual needs and preferences; several examples of this are included in the case study.

Gelwicks, Louis E. & Newcomer, Robert J. *Planning Housing Environments for the Elderly.* **Washington, D.C.: National Council on the Aging, 1974, 120 pages.** Available: AIA Information Center; NCOA; Publisher.

This text provides the reader with theoretical backgrounds as well as practical implications and applications for design. Chapter titles include: Demographic and Policy Trends; Environment and the Elderly; Coping With the Environment: Competence, Need and Satisfaction; and Planning for the Future. Even though this book has been in publication since 1974, the information is appropriate to the design process today.

General Services Administration, Department of Defense, Department of Housing and Urban Development, and U.S. Postal Service. *Uniform Federal Accessibility Standards.* **Federal Register, Vol. 49 No. 153). Washington, D.C.: Federal Register, 1984.** Available: AIA Information Center, GSA, DOD, HUD, USPS.

Bibliography

This document presents uniform standards for the design, construction and alteration of buildings so that physically handicapped persons will have ready access and use of them. UFAS is based upon ANSI A117.1 (1980) and utilizes the same format and illustrations. Text that is different from ANSI is underlined in UFAS; tables and illustration (and portions thereof) that are different from ANSI are italicized.

Harkness, Sarah P. and Groom, James N. Jr. *Building without Barriers for the Disabled.* **New York: Watson-Guptill Publications, 1976, 79 pages.** Available: Information Center; Publisher

The handbook begins with a discussion of the needs associated with various disabilities including those of the blind, deaf, and the manipulatory-, ambulant-, and chairbound-disabled. Included is information on signs, sounds, signals; type and surface of handrails; angles of ramps and walks; areas of reach; and wheelchair transfer space. Section Two relates to architectural planning, covering such areas as site development and the interior planning of corridors, doors, bathrooms, and kitchens. The book is thoroughly illustrated with drawings, diagrams and photographs and includes a chart comparing recommended dimensions for different architectural elements compiled from 14 sources.

Hoglund, J. David. *The Intangible Qualities of Housing.* **J. David Hoglund, 1983, 118 pages.** Available: AIA Information Center; available from author

Based on his travels in Europe, the author has concluded that Europeans are "far ahead of the United States in their concerns for such social issues as independence and privacy." Chapter 1 focuses on the difficulty that design professionals have in translating social/behavioral goals into a design vocabulary. Arbitrarily applied accessibility standards are not always appropriate to the daily needs of the elderly. Chapter 2 is an overview of the aging process. Chapter 3 establishes a conceptual framework of the relationship between privacy and independence and their influence on the individual. The provision of housing care in Sweden, Denmark and Great Britain are analyzed in Chapters 4-6. Current themes and future directions in housing for the elderly are discussed in Chapter 7. Case studies of 16 buildings are illustrated with photographs and drawings and a verbal description and commentary. Several of these projects are designed to allow for multiple levels of care within one building. The publication received an award from *Progressive Architecture.*

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Howell, Sandra C. *Designing for Aging: Patterns of Use.* **Cambridge, MA: MIT Press, 1980, 329 pages.** Available: AIA Information Center: AIA Bookstore; AARP; Publisher

Responses from a large national FHA sample of residents living in apartment buildings across the United States that conform to government standards were analyzed as a basis for this book. In addition, an in-depth analysis of carefully selected specific spaces and their use by tenants was conducted on sites in Cambridge, Massachusetts. Howell notes "the most important point this material should convey is that older people need variations in the space in which they live. This can be accomplished with careful spatial definition." The book is organized into six major sections. Chapter 1 attempts to place the residential aspects of American aging in the meaning of "habitat." Chapter 2 is an extension of design and aging into production, program, and practice and their influence on new living environments. Chapter 3 details the methodology of the study. Chapters 4 and 5 are intended to be a user's manual for programming and design review of housing for some aggregations of aging people. Chapter 6 is a summary and a discussion of future directions for collaborative work in designing for habitability across the human life cycle. Included are numerous photographs, drawings, and floorplans.

Jordan, Joe J. *Senior Center Design: An Architect's Discussion of Facility Planning.* **Washington, D.C.: National Council on Aging, 1978, 104 pages.** Available: AIA Information Center; NCOA

A design manual for planning senior centers, this book is addressed to architects and design professionals, funding agency personnel, board members and staff, providing technical assistance to anyone providing a facility to accommodate senior citizens. Planning issues of concern to the sponsoring agencies are covered in the early chapters, while the later ones deal with issues of space planning essential to the architect. Typical activities that might be expected to occur in a senior center, characteristics of the elederly affecting design decisions, and planning the space to create the optimum environment are discussed. Included are 37 checklists for design of various areas, rooms, systems, and activities along with reference charts of space required for specific areas.

Jordan, Joe J. "Recognizing and Designing for the Subtle and Special Needs of the Elderly." *AIA Journal,* **1977, September, pages 50-55.** Available: AIA Information Center.

The author cites the importance of design features which keep in mind that older people as individuals possess "an even greater diversity in terms of health, personality, intellect, and overall competence than other segments of society." Based on this assertion, several design

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goals are outlined as being applicable to any congregate facility, nursing home, domiciliary housing, day care center, and retirement community. Three facilities, the Dayton, Ohio Senior Citizens' Center, the Philadelphia Center for Old People, and the Waxter Center for Old People in Baltimore, are evaluated by the author in terms of meeting design goals. Ways in which the facilities could better meet the needs of older adults are discussed.

Koncelik, J.A. *Aging and the Product Environment.* **Stroudsburg: Dowden, Hutchinson & Ross, 1982, 201 pages.**
Available: AIA Information Center; AARP; Publisher

The author suggests that environments and products created for the elderly are largely inadequate and do not reflect user conditions and requirements. Specific suggestions for the design of rooms, furniture, fixtures, appliances, vehicles and other products used by the elderly are presented.

Koncelik, J.A. *Designing the Open Nursing Home.* **Stroudsburg: Dowden, Hutchinson & Ross, 1976, 175 pages.**
Available: AIA Information Center; AIA Bookstore; AARP; NCOA; Publisher

The purpose of the text is to provide designers, administrators, and others involved in the design of the actual living space of the patient-resident with readable, imageable, jargonless information on "the inhabitants and their problems, the character of accessibility and possible alternatives for outfitting the interior environment." Although the book has been directed toward nursing homes, the information should prove helpful in planning any facility for the elderly. Background on the aging population is presented first and is followed by a section on planning. A large segment of the book relates to the actual design of space and architectural details plus selection of furnishings and consumer products.

Lawton, M. Powell. *Community Planning for an Aging Society: Planning Services and Facilities.* **Stroudsburg: Dowden, Hutchinson & Ross, 1976, 340 pages.**
Available: AIA Information Center; AARP; Publisher

Designed to stress the concept that physical planning and social planning can work together to create a positive, supportive environment for the elderly, this book contains basic gerontological information. That knowledge is translated into social and environmental prescriptions, a number of applications of population data used in planning, and reports on some research methods. The collection of papers is divided into four sections. Part 1 provides basic facts about aging, highlighting planning related aspects. Part 2 presents a conceptualization of several issues in community planning and policy decisions affecting the life style of the older person. Part 3 relates to programming aspects of housing for the elderly, and examines issues

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such as demand estimation, housing preferences and satisfaction, and site-selection criteria. Part 4 considers community service for the elderly presented within the context of a social planning process.

Lawton, M. Powell. *Environment and Aging.* **Monterey, CA: Brooks/Cole Publishing Co, 1980, 186 pages.** Available: AIA Information Center; AARP; HUD; Out of Print

The framework of the book is called an ''ecological model of adaptation and aging''; and enables readers to view a variety of environmental situations and serves as examples of a more general phenomenon called ''environmental press.'' It also discusses competence in adaptation. Details of how older people live in, enjoy, and cope with the stresses of community, neighborhood, the domicile, planned housing, institutions, mobility, and transportation are presented. Chapter titles are: Environment in Human Behavior; Where Older People Live: The Macroenvironment; Where Older People Live: The Microenvironment; Planned Housing; Institutions for the Aged; Older People on the Move; and Conclusion: Increasing the Impact of Environmental Research.

Lawton, M. Powell. *Planning and Managing Housing for the Elderly.* **New York: Wiley-Interscience, 1975, 336 pages.** Available: AIA Information Center; Publisher

This book is designed to provide assistance to both laymen and professionals at various stages in the conception, planning, and management of housing environments for older people. The first part of the text relates to background on the elderly and housing. Part 2 deals with the planning and design phase. Part 3 concerns management, tenants, and programs. The appendices include information on organizations with an interest in housing, references, a sample pre-occupancy medical examination form, and a community survey of housing preferences. Photographs are included to illustrate socially positive environments.

Raschko, Bettyann Boetticher. *Housing Interiors for the Disabled and Elderly.* **New York: Van Nostrand & Reinhold, 1982, 360 pages.** Available: AIA Information Center; AIA Bookstore: AARP; NCOA; Publisher

Subjects explored by the author include anthropometrics, spatial relationships, body mechanics, product design, security, furniture design, silent alarms, and mechanical systems. Selection and construction of furniture, furniture arrangements, floor coverings, and hardware illumination are discussed to show how rooms can be made more accessible. Included are many illustrations, charts, and drawings.

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Sanoff, H., Adams, G., Andrews, R. & Walker, C. *Senior Center Design Workbook.* **North Carolina State University School of Design, 1979, 110 pages.** Available: AIA Information Center

Participants in senior center programs, administrators and sponsors can use this workbook in the planning of senior centers to select the appropriate features reflecting the unique characteristics of the community that will be served. The technique begins with an examination of the activity areas that may be included in a senior center and their constituent environmental settings. It then proceeds to determine the objectives, the activities, the spatial layout, and the visual quality of the center through use of worksheets, floor plans, photographs, charts, and text.

Sorenson, Robert James. *Design for Accessibility.* **New York: McGraw Hill Book Co., 1979, 264 pages.** Available: AIA Information Center; AIA Bookstore; Publisher

Designed primarily for use by architects, the annotated drawings in this book illustrate design requirements for handicapped access for both the interior and exterior areas of buildings. Building elements are covered, from site design to selection of materials, hardware, and special appliances. The appendix provides the text of basic federal laws and covers the status of state laws governing access requirements up to time of publication.

Steinfield, Edward *Barrier-free Design for the Elderly and the Disabled.* **Syracuse, NY: Syracuse University, 1975.** Available: AIA Information Center; AARP; Publisher

This is a self-instructural four-part learning module prepared for practicing professionals interested in environments for the aged. Part 1 included definitions, discussion of important concepts, historical background, and a bibliography. Part 2 is an audio-visual presentation of older persons' own observations about barriers in their environment. Part 3 is a workbook which includes presentations of anthropometric and other human factors information, and a series of analysis problems designed for users of the module to instruct themselves about specific barrier-free design features. Part 4 provides evaluation problems allowing users to choose the one best suited to their background and interest.

Sumichrast, Michael and others. *Planning Your Retirement Housing.* **Glenview, Ill.; Scott Foresman & Co., 1984, 259 pages.** Available: AIA Information Center; AARP; Publisher

Although written primarily to present housing options to the person who is considering retirement, this reference should prove helpful to the architect as well. Many special amenities and design features are described. Checklists, charts, tables, and annotated floor plans draw attention to the details to be considered when making a move. Included is information on renting or buying property along with descriptions of alternative liv-

Bibliography

ing environments such as mobile home parks, granny flats, co-ops or retirement communities. The renovation of present living space is also discussed.

Urban Land Institute. *Housing for a Maturing Population.* **Washington, D.C.: Urban Land Institue in cooperation with the Housing Committee, American Institute of Architects, 1983, 246 pages.** Available: AIA Information Center; AIA Bookstore; AARP; NCOA

Articles prepared for this book relate to planning for the full life cycle needs of a community and its residents. The book begins with a general discussion of demographic and housing issues, followed by a review of design considerations. A detailed study of a variety of housing types and community alternatives are also included. Case examples concentrate on the needs of the majority of older persons and their adaptability to their living environment.

Welch, P., Parker, V., and Zeisel, J. *Independence Through Interdependence: Congregate Living for Older People.* **Boston, Massachusetts: Reprographics Inc., 1984, 203 pages.** Available: AIA Information Center; Office of Policy and Planning—Department of Elder Affairs, Boston, MA

This book explains the many interrelated tasks involved in the development and operation of congregate housing. Feasibility analysis involves evaluating the congregate program's needs and resources, establishing community support, and organizing the planning team. The planning phase of a congregate project includes programming, developing operational procedures, designing and constructing the facility, developing management and services, and marketing. The occupancy phase of the project relates to the creation and evaluation of a community quality. Two appendices, photographs, and floor plans are also included.

Zeisel, J., and others. *Low-rise Housing for Older People: Behaviorial Criteria for Design.* **Washington, D.C. USGPO, 1978, 141 pages.** Available: AIA Information Center; AARP; NCOA; HUD; USGPO

Available research on the housing needs of older people is translated into performance criteria for designers. Information is divided into six categories: inside the housing unit; unit edge; places for interaction with neighbors; community activity; spaces on the site; and links to town. Each category has performance criteria, possible design solutions in both words and pictures, several annotated plans and a set of design review questions. *Progressive Architecture* presented the report an award for being "the best single-volume summary of design and program guidelines for low-rise housing for the elderly."

Zeisel, J. and others. *Mid-rise Elevator Housing for Older People: Behaviorial Criteria for Design.* **Washington, D.C.: HUD, 177 pages.** Available: AIA Information Center; AARP; NCOA; HUD

Mid-rise housing is defined as having more than 2 and less than 6 or 7 stories.

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The text deals primarily with design questions arising after the basic building concept has been chosen, but before construction documents can be produced. Emphasis is on how the use of elevators changes the context of all other building elements. Zones, sites, entrances, entry lobby, community spaces, the elevator core, and passageways are given special attention. The appendix includes a list of 120 questions relating to design of mid-rise housing that should be helpful to planners of such buildings.

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APPENDIX B:
Design for Aging Information Network

This appendix lists the **Keywords** which access the Design for Aging Information Database.

If any of the **Keywords** are of particular interest, pertinent references may be obtained by sending a request for a computer search—combinations of 2 to 4 keywords—to:

AIA Information Center
1735 New York Ave, N.W.
Washington, DC 20006

or call: (202) 626-7493

(There will be a minimal charge for the computer search.)

AARP
ACCESSIBILITY
ACCESSORY APARTMENTS
ACOUSTICS
ACTIVITY AREA
ADMINISTRATION
AGENCIES
AGING
AIA
AIDS & ASSISTIVE DEVICES
ALARMS
ALZHEIMERS
ANSI
ANTHROPOMETRICS
APARTMENTS
ARCHITECT
ARCHITECTURE
ARTS
ATRIUM
AUDITORY IMPAIRMENT
AUTHOR
BATHROOM
BEDROOM
BEHAVIORAL REQUIREMENTS
BIBLIOGRAPHY
CASE STUDY
CHAIRS
CHECKLIST
CODES AND STANDARDS
COLOR
COMMUNITY
COMPETENCE
COMPUTER SEARCH
CONGREGATE HOUSING
CONTINUING CARE
CONTINUING EDUCATION
CONVERSIONS
CURRICULUM
DATA BASE
DAY CARE
DEATH
DEMOGRAPHICS
DESIGN CONSIDERATIONS
DESIGN GUIDELINES
DESIGN STUDIO
DINING ROOM
DIRECTORIES
DISASTER
DISPLACEMENT
DWELLING UNITS
DYING
ECHO HOUSING
ELDERLY
ELDERLY POOR
ENVIRONMENT
EQUIPMENT
EQUITY
ERGONOMICS
EVALUATION
FALLS
FAMILY CAREGIVERS
FINANCING
FIRE SAFETY
FLOOR PLANS
FLOORING

Information Network

FURNISHINGS
GERONTOLOGY
GLARE
GRANNY FLATS
HALLWAYS
HEALTH CARE
HEALTH CARE FACILITY
HEARING IMPAIRMENT
HOME CARE
HOME EQUITY CONVERSION
HOME SHARING
HOSPICE
HOSPITALS
HOUSE-MATCHING
HOUSING
HOUSING OPTIONS
HOUSING SATISFACTION
HUD
INDEPENDENT LIVING
INSTITUTIONS
KITCHEN
LEGISLATION
LICENSING
LIFE-CARE
LIGHTING
LIVING ROOM
LOCATION
LONG-TERM CARE
LONGEVITY
LOUNGE
MAINTENANCE
MARKET
MEDICINE
MENTAL HEALTH
MENTAL IMPAIRMENT
MIXED OCCUPANCY
MOBILITY IMPAIRMENT
MULTI-USE FACILITY
NEIGHBORHOOD ENVIRONMENT
NURSERY SCHOOL
NURSES STATION
NURSING HOME
ORGANIZATIONS
ORIENTATION
OUTDOOR SPACES
PERIODICALS
PERSONALIZATION
PHILOSOPHY OF DESIGN
PHYSICAL IMPAIRMENT
PLANNING
POLICY
PRIVACY
PRODUCT DESIGN
PRODUCTS
PROFESSIONAL DEVELOPMENT
PROGRAMMING
PSYCHIATRIC TREATMENT
PSYCHOLOGY
PUBLIC HOUSING
PUBLIC SPACES
PUBLICATIONS
RECREATION
REDUNDANT CUING
REFERENCE
REFUGE AREAS
REGULATION
REHABILITATION
RENOVATION
REPORT
RESEARCH
RESOURCES
RETIREMENT
RETIREMENT COMMUNITY
SAFETY

Information Network

SECURITY
SENIOR CENTERS
SENSORY IMPAIRMENT
SERVICES
SHARED HOUSING
SHARED SPACES
SHOPS
SIGNAGE
SINGLE FAMILY DWELLINGS
SITE
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Bold entries are keyed to **Main Entries** in **Part III: Glossary, Part I: Aging and the Environment,** or **Part II: Facility Types. Normal type entries refer to the Main Entries and barrier-free design standards.**

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NOTE: TEAR OUT ALL PERFORATED PAGES

NOTE: All perforated pages should be removed to allow room for the barrier-free design standard insert to be placed in the pocket on rear cover.

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