

# 4

## Other Health Care Facilities



# 4.1 Nursing Facilities

*Appendix material, which appears in shaded boxes at the bottom of the page, is advisory only.*

## 1 General Considerations

### \*1.1 Applicability

This chapter covers the continuum of nursing services listed below, which may be provided within freestanding facilities or as distinct parts of a general hospital or other health care facility.

#### 1.1.1 Continuum of Nursing Services

The continuum of nursing services and facilities may be distinguished by the levels of care, staff support areas, and service areas provided and classified as:

1.1.1.1. Nursing and skilled nursing facilities

1.1.1.2. Special care facilities. These include the following:

- (1) Subacute care facilities (Section 4.1-3.1)
- (2) Alzheimer's and other dementia units (Section 4.1-3.2)

#### 1.1.2 Minimum Standards for New Facilities

The text of this chapter represents minimum requirements for new construction and shall not be applied to existing facilities unless major construction renovations (see Section 1.1-3) are undertaken.

## 1.2 Auxiliary Services

When the nursing facility is part of, or contractually linked with, another facility, services such as dietary, storage, pharmacy, linen, and laundry may be shared insofar as practical. In some cases, all ancillary service requirements will be met by the principal facility and the only modifications necessary will be within the nursing facility. In other cases, programmatic concerns and requirements may dictate separate service areas.

## 1.3 Environment of Care

### 1.3.1 Flexibility

Nursing facilities shall be designed to provide flexibility in order to meet the changing physical, medical, and psychological needs of their residents.

### 1.3.2 Supportive Environment

The facility design shall produce a supportive environment to enhance and extend quality of life for residents and facilitate wayfinding while promoting privacy, dignity, and self-determination.

1.3.2.1 The architectural design—through the organization of functional space, the specification of ergonomically appropriate and arranged furniture and equipment, and the selection of details and finishes—shall eliminate as many barriers as possible to effective access and use by residents of all space, services, equipment, and utilities appropriate for daily living.

1.3.2.2 Design shall maximize opportunities for ambulation and self-care, socialization, and independence and minimize the negative aspects of an institutional environment.

### \*1.3.3 Long-Term Care Space Needs

While there are similarities in the spatial arrangement of hospitals and nursing facilities, the service requirements of long-term care residents require additional special design considerations.

## 1.4 Functional Program

The sponsor for each project shall provide a functional program for the facility (see Section 1.2-2).

## 1.5 Shared Services

Each nursing facility shall, as a minimum, contain the elements described within the applicable paragraphs

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**A1.1** Specific requirements for each of the special care facility types are addressed in the paragraphs noted. For basic requirements, see chapters 1.1 through 1.6. For requirements regarding swing beds, see Section 2.1-1.2.2. Related sections include the following: Chapter 4.2 for hospice care; Chapter 4.3 for assisted living; and Chapter 4.4 for adult day health care.

**A1.3.3.** When a section of an acute care facility is converted for use as a nursing facility, it may be necessary to reduce the number of beds to provide space for long-term care services.

## 4.1 NURSING FACILITIES

of this section. However, when a project calls for sharing or purchasing services, appropriate modifications or deletions in space and parking requirements shall be permitted.

### 1.6 Site

#### 1.6.1 Location

See Sections 1.3-2 and 1.3-4 for requirements regarding location and environmental pollution control.

#### 1.6.2 Roads

Roads shall be provided within the property for access to the main entrance and service areas. Fire department access shall be provided in accordance with local requirements. The property or campus shall be marked to identify emergency services or departments.

#### 1.6.3 Parking

In the absence of local requirements, each nursing facility shall have parking space to satisfy the needs of residents, employees, staff, and visitors. The facility shall provide a minimum of one space for every four beds.

### 1.7 Renovation

See Section 1.1-3.

### 1.8 Provisions for Disasters

See Section 1.1-5.

### 1.9 Codes and Standards

See Section 1.1-7.

### 1.10 Equipment

See Chapter 1.4.

### 1.11 Planning, Design, and Construction

See Chapter 1.5.

### 1.12 Record Drawings and Manuals

See Section 1.5-5.

## 2 Resident Units

Resident units are groups of resident rooms, staff support areas, service areas, and resident support areas whose size and configuration are based upon organizational patterns of staffing, functional operations,

and communications as provided in the functional program for the facility.

### 2.1 General

#### 2.1.1 Applicability

Each resident unit in a nursing or skilled nursing facility shall comply with the following.

#### 2.1.2 Resident Unit Size

In the absence of local requirements, consideration shall be given to restricting the size of the resident unit to 60 beds or a maximum travel distance from the staff station to a resident room door of 150 feet (45.72 meters).

#### \*2.1.3 Layout

2.1.3.1 Arranging groups of resident rooms adjacent to decentralized service areas, optional satellite staff work areas, and optional decentralized resident support areas is acceptable.

2.1.3.2 In new construction, resident units shall be arranged to avoid unrelated travel through resident units.

### 2.2 Typical Resident Rooms

Each resident room shall meet the following requirements:

#### \*2.2.1 Capacity

2.2.1.1 In new construction and renovations, maximum room occupancy shall be two residents.

2.2.1.2 Where renovation work is undertaken and the present capacity is more than two residents, maximum room capacity shall be no more than the present capacity with a maximum of four residents.

#### \*2.2.2 Space Requirements

##### 2.2.2.1 Area and dimensions

- (1) Room area and dimensions shall be determined by analyzing the needs of the resident(s) to move about the room in a wheelchair, gain access to at least one side of the bed, turn and wheel around the bed, gain access to a window and to the resident's toilet room, wardrobe locker, or closet and to the resident's possessions or equipment, including chair, dresser, and nightstand.

- (2) Room size and configuration shall permit resident(s) options for bed location(s) and make provision for visual privacy.

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### A2.1.3 Clusters and Staffing Considerations

**a.** Clustering refers to several concepts wherein the design of traditional nursing home floor plans (straight halls, double- or single-loaded corridors) is reorganized to provide benefits to both residents and to the effectiveness with which people care for them. Clustering is done to achieve better image, faster service, shorter walking/wheeling distances, and more subtle handling of linen. It can also afford more localized social areas and optional decentralized staff work areas.

**b.** A functioning cluster as described here is more than an architectural form where rooms are grouped around social areas without reference to caregiving. In a functioning cluster, the following will be accomplished:

–Utility placement is better distributed for morning care: Clean and soiled linen rooms are located closer to the resident rooms, minimizing staff steps and maximizing the appearance of corridors (carts are not scattered through halls).

–Unit scale and appearance reinforces smaller groups of rooms seen as being grouped or related: Clusters should offer identifiable social groups for both staff and older people, thereby reducing the sense of largeness often associated with centralized facilities.

–Geographically effective staffing: The staffing pattern and design reinforce each other so that nursing assistants can offer primary nursing care and relate to a given set of rooms. Their room assignments are grouped together and generally do not require unequal travel distances to basic utilities. Staff “buddying” is possible. Buddying involves sharing responsibilities such as lifting a non-weight-bearing person or covering for someone while the buddy provides off-unit transport or is on a break.

–Staffing that works as well at night as during the day: An effective cluster design incorporates multiple staffing ratios. A unit might have 42 beds, but with clustering, could staff effectively in various ratios of licensed nurses to nurses assistants: 1:7 days (six clusters); 1:14 or 1:21 nights (three or two neighborhoods).

**c.** Clustering can also have some other benefits:

–Cluster design can provide more efficient “gross/net area” when a variety of single and/or double rooms are “nested.”

–Cluster design can be useful when a project is to have a high proportion of private occupancy rooms, because it reduces distances to staff work areas or nursing stations.

### 2.2.2.2 Clearances

- (1) In multiple-bed rooms, clearance shall allow for the movement of beds and equipment without disturbing residents.

–Clusters provide a method of distributing nursing staff through a building, nearer to bedrooms at night, so they can be responsive to vocal calls for assistance and toileting. (Central placement of staff requires greater skill in using traditional call systems than many residents possess.)

–Cluster units of a given size may “stack” or be placed over each other, but might have different staffing for varying care levels.

–If digital call systems are used (such as those allowing reprogramming of what room reports to which zone or nursing assistant’s work area), then one unit might easily be changed over time, such as when client needs justify higher ratios of nursing assistants to older people. For example, a 48-bed unit might start at 1:8 staffing but also respond to 1:6 staffing needs. In some units, staffing might also be slightly uneven, such as where 60-bed units are comprised of clusters of 1:7 and 1:8 during days.

**d.** Architectural form and clustering: Clusters involve architectural form and may have an impact on overall building shape.

–The longer length of stay of nursing home residents compared with hospital clients is one factor that makes clustering rooms in more residential groups particularly appropriate. However, the visual advantages of units without long corridors has also attracted hospital planners. In both facility types, architectural clustering may help both staff and residents socially identify a space or sub-unit within a larger unit.

–Though architectural clustering may involve grouping rooms, this should not result in windowless social areas, or the incorporation of all social options in a windowless social area directly outside of the bedroom doorways.

**A2.2.1** Changes to the maximum number of residents per room may be made upon a determination by the authority having jurisdiction that such an alternate room configuration provides a preferable environment for residents with unusual care requirements. Single resident rooms with an individual toilet room are encouraged. In two-bed rooms, consideration should be given to creating room configurations that maximize individual resident privacy, access to windows, room controls, and equivalent space.

**A2.2.2** For purposes of planning minimum clearances around beds, unless specified otherwise by the functional program, the rectangular dimensions of the bed are width: 3 feet 4 inches (1.01 meters) and length: 8 feet (2.44 meters).

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- (2) Clear access to one side of the bed shall be provided along 75 percent of its length.
- (3) Mechanical and fixed equipment shall not obstruct access to any required element.
- (4) These guidelines shall allow arrangement of furniture that may reduce these access provisions, without impairing access provisions for other occupants.

### 2.2.3 Layout

Beds shall be no more than two deep from windows in new construction and three deep from windows in renovated construction.

### 2.2.4 Window(s)

Each room shall have a window that meets the requirements of Section 4.1-8.2.2.4.

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**A2.2.7.2** A mirror for resident use shall be provided in the toilet room.

**A2.2.7.4** While ADAAG, UFAS, and ANSI accessibility standards were all developed with the intention of providing greater access for individuals with disabilities, their standards are based upon assumed stature and strength, whereby dimensional and grab bar requirements are intended to facilitate wheelchair-to-toilet transfers by individuals with sufficient upper body strength and mobility to effect such a transfer. The typical nursing home resident is unlikely to have such capabilities, thus requiring the assistance of one or more staff. Insufficient clearance at the side of the toilet can restrict staff mobility and access, and can result in injury. There are ongoing efforts aimed at educating regulators and advisory panels to the difficulties caused by inappropriate standards required within environments serving frail and geriatric populations.

Alternative grab bar configurations should address the following scenarios:

- a. When a resident is capable of independent transfer facilitated by the grab bar and side-wall location required by accessibility standards, a removable/temporary wall structure and grab bar can be installed alongside the toilet.
- b. When a resident requires partial assistance in transfer, fold-down grab bars on one or both sides of the toilet would facilitate such transfers.

### 2.2.5 Resident Privacy

Visual privacy shall be provided for each resident in multiple-bed rooms. Design for privacy shall not restrict resident access to the toilet, room entrance, window, or other shared common areas in the resident room.

### 2.2.6 Hand-Washing Station

A hand-washing station shall be provided in each resident room. Omission of this station shall be permitted in a single-bed or two-bed room when a hand-washing station is located in an adjoining toilet room that serves that room only.

### 2.2.7 Toilet Room

Each resident shall have access to a toilet room without the need to enter the corridor area.

**2.2.7.1** One toilet room shall serve no more than two residents in new construction and no more than four beds or two resident rooms in renovation projects.

**\*2.2.7.2** The toilet room shall contain a water closet and hand-washing station and (where permitted) a horizontal surface for the personal effects of each resident.

**2.2.7.3** Doors to toilet rooms may be hinged or, where local requirements permit, sliding or folding doors may be used, provided adequate provisions are made for acoustic privacy and resident safety.

**\*2.2.7.4** Toilets used by residents shall be provided sufficient clearance on both sides of the water closet to enable physical access and maneuvering by staff, who may have to assist the resident in wheelchair-to-water closet transfers and returns. Where independent transfers are feasible, alternative grab bar configurations shall be permitted.

### 2.2.8 Resident Storage Locations

Each resident shall be provided a separate wardrobe, locker, or closet.

**2.2.8.1** This storage shall have minimum clear dimensions of 1 foot 10 inch (55.88 centimeters) depth by 1 foot 8 inch (50.80 centimeters) width.

**2.2.8.2** A clothes rod and shelf shall be provided at heights accessible to the resident. Accommodations shall

be made for storage of full-length garments. The shelf may be omitted if the unit provides at least two drawers.

#### \*2.2.9 Medical Gases

Resident rooms designated for ventilator dependency shall have provisions for the administration of oxygen and suction.

### 2.3 Support Areas—General

#### 2.3.1 Size and Features

The size and features of each staff support area shall depend upon the number and types of residents served.

#### 2.3.2 Space Requirements

Identifiable spaces are required for each indicated function, but consideration shall be given to multiple-use design solutions that provide equivalent, though unspecified, areas. Except where the word room or office is used, support functions may be accommodated in a multipurpose area.

#### 2.3.3 Location

Staff support areas may be arranged and located to serve more than one resident unit, but at least one such support area shall be located on each resident floor unless noted otherwise. The following staff support areas shall be located in or readily accessible to each resident unit.

### 2.4 Support Areas for Resident Units

#### \*2.4.1 Staff Work Area(s)

Resident units shall have staff work areas in central or decentralized direct care locations.

**2.4.1.1 Central staffing.** Where caregiving is organized on a central staffing model, such work areas shall provide for charting or transmitting charted data and any storage or administrative activities.

**\*2.4.1.2 Decentralized staffing.** Where caregiving is decentralized, supervisory work areas need not accommodate charting activities nor have direct visualization of resident rooms. Rather, such functions shall be accomplished at decentralized direct care staff work areas, which shall provide for charting or transmitting charted data and any storage or administrative activities required by the functional program.

#### 2.4.2 Medication Station

Provision shall be made for 24-hour distribution of medications. A medicine preparation room, a self-contained medicine-dispensing unit, or other system shall be used for this purpose.

##### 2.4.2.1 Medicine preparation room

- (1) The medicine preparation room, if used, shall be visually controlled from the staff work area.
- (2) It shall contain a work counter, sink, refrigerator, and locked storage for controlled drugs.
- (3) It shall have a minimum area of 50 square feet (4.65 square meters).

##### 2.4.2.2 Self-contained medicine dispensing unit

- (1) Location of a self-contained medicine-dispensing unit, if used, shall be permitted at the staff work area, in the clean workroom, in an alcove, or in other space convenient for staff control.

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**A2.2.9** When a dedicated unit is provided for ventilator-dependent residents, piped oxygen and vacuum should be provided. Refer to NFPA 99 for emergency power requirements and medical gas installation information.

**A2.4.1** Whether centralized or decentralized, staff work areas should be designed to minimize the institutional character, command-station appearance, and noise associated with traditional medical nursing stations, and should foster close, open relationships between residents and staff. Confidentiality or noisy staff conversations should be accommodated in an enclosed staff lounge and/or conference area. At least part of each staff work area should be low enough and open enough to permit easy conversations between staff and residents seated in wheelchairs.

**A2.4.1.2** Depending upon the type of service and care plan to be provided, direct care staff work areas need not be encumbered with all of the provisions for a supervisory administrative staff work area. In some decentralized arrangements, caregiving functions may be accommodated at a piece of residential furniture (such as a table or a desk) or at a work counter recessed into an alcove off a corridor or activity space, with or without computer and communications equipment, storage facilities, etc.

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- (2) Convenient access to hand-washing stations shall be provided. (Standard cup-sinks provided in many self-contained units are not adequate for hand-washing.)

### 2.4.3 Nourishment Area

**2.4.3.1** The nourishment area shall contain a work counter, refrigerator, storage cabinets, and a sink for serving nourishment between meals.

**2.4.3.2** The nourishment station shall include space for trays and dishes used for nonscheduled meal service and may also be used as a pantry for food service adjacent to a resident's dining room or area.

**2.4.3.3** Ice machine. Ice for residents' consumption shall be provided by ice-maker units. Where accessible to residents and the public, ice-maker units shall be self-dispensing. Ice makers shall be located, designed, and installed to minimize noise (and may serve more than one nourishment station).

**2.4.3.4** Hand-washing stations. Hand-washing stations shall be in or immediately accessible from the nourishment station.

### 2.4.4 Clean Workroom or Clean Supply Room

**2.4.4.1** Clean workroom. If the room is used for preparing resident care items, it shall contain a work counter, a hand-washing station, and storage facilities for clean and sterile supplies.

**2.4.4.2** Clean supply room. If the room is used only for storage and holding as part of a system for distribution of clean and sterile materials, the work counter and hand-washing station may be omitted.

### 2.4.5 Soiled Utility or Soiled Holding Room(s)

It shall contain a clinical sink or equivalent flushing-rim fixture with a rinsing hose or a bedpan sanitizer, hand-washing station, soiled linen receptacles, and waste receptacles in number and type as required by the functional program.

### 2.4.6 Equipment and Supply Storage

**2.4.6.1** Clean linen storage. A separate closet or designated area shall be provided. If a closed-cart system is used, storage may be in an alcove where staff control can be exercised.

**2.4.6.2** Supply storage. Storage space(s) for supplies and recreation shall be provided near their points of use, as required by the functional program.

**2.4.6.3** Wheelchair and other equipment storage. Space for wheelchairs and other equipment shall be provided away from normal traffic.

## 2.5 Support Areas for Staff

### 2.5.1 Staff Lounge Area(s)

These areas may be shared by more than one resident unit or service.

### 2.5.2 Staff Storage

Lockable closets, drawers, or compartments shall be provided for safekeeping of staff personal effects such as handbags.

### 2.5.3 Toilet Room(s)

These shall contain water closets with hand-washing stations for staff and may be unisex.

## 2.6 Support Areas for Residents

### \*2.6.1 Resident Bathing Facilities

**2.6.1.1** A minimum of one bathtub or shower shall be provided for every 20 residents (or major fraction thereof) not otherwise served by bathing facilities in resident rooms.

**2.6.1.2** Residents shall have access to at least one bathing unit (room) per floor or unit, sized to permit assisted bathing in a tub or shower.

- (1) The bathtub in this room shall be accessible to residents in wheelchairs.
- (2) The shower shall accommodate a shower gurney with fittings for a resident in a recumbent position.

**2.6.1.3** Other showers or tubs shall be in an individual room(s) or enclosure(s) with space for private use of the bathing fixture and, for drying and dressing, and

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**A2.6.1** Consideration should be given to privacy when locating entrances to bathing rooms.

for access to a grooming location containing a hand-washing station, mirror, and counter or shelf.

**\*2.6.1.4** A separate toilet shall be provided within or directly accessible to each resident's bathing facility without requiring entry into the general corridor.

### 2.6.2 Storage for Resident Needs

Storage space(s) for resident needs shall be provided near their points of use, as required by the functional program.

### 2.6.3 Resident Telephone

Provisions shall be made convenient to each nursing unit to allow residents to make and receive telephone calls in private, unless otherwise indicated by the functional program.

## 3 Special Care Facilities

### \*3.1 Subacute Care Facilities

### 3.2 Alzheimer's and Other Dementia Units

#### \*3.2.1 Safety

Safety concerns must be emphasized because of poor judgment inherent in those with dementia:

**3.2.1.1 Hazard avoidance.** Areas or pieces of furniture that could be hazardous to these residents shall be eliminated or designed to minimize possible accidents.

**3.2.1.2 Doors.** Resident security shall be addressed through systems that secure the unit and comply with life safety codes. Should the functional program (see Section 1.2-2) justify limiting the movements of any resident(s) for their safety, any door locking arrangements shall be in full compliance with applicable requirements of NFPA 101. A secure unit shall contain appropriate activity area(s), dining, bathing, soiled linen/utility, and staff work area.

#### 3.2.2 Windows

Operable windows shall be permitted and shall comply with Section 4.1-8.2.2.4.

#### \*3.2.3 Outdoor Spaces

Secure outdoor gardens and lounge areas shall be available for residents of the Alzheimer's/dementia resident unit.

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**A2.6.1.4** This toilet may also serve as the toilet-training facility.

**A3.1** Since subacute care comprises programs in various settings, the design of such units/facilities should focus on two major components:

**a.** The unit/facility should comply with all applicable nursing home requirements contained in this chapter to the extent these do not conflict with the clinical program.

**b.** The facility/unit should comply with the requirements dictated by the functional program required by Section 1.2-2.

**A3.2.1** The latest edition of the Life Safety Code recognizes the need to lock doors in Alzheimer's units. Consideration should be given to making locks on wardrobes, closets, or cupboards inconspicuous.

**A3.2.3** Outdoor spaces may include gardens on grade or on roof decks, or solaria, porches, balconies, etc. Lounge space may be a winterized sun room, a designated lounge space separate from the dining room, or a day room, where other residents may be sitting. Secure, accessible outdoor space can provide a calming change in environment and also a convenient place for agitated residents to walk.

**A3.2.4** Major characteristics of persons with Alzheimer's and other dementias are lack of attention span and an inability to orient

themselves within space. The environment should provide attention-grabbing landmarks and wayfinding cues and information to aid in navigation from point to point. Sensory cuing that is used in other long-term care resident areas should be incorporated for persons with dementia. Dementia program activities may include memory stimulation, music therapy, art therapy, horticultural therapy, etc. Space for dining and activities in dedicated dementia units may be provided within the unit or in a location directly accessible to the residents of the unit per the minimum standards described elsewhere in Chapter 4.1. Consideration should be given to:

**a.** Landmarks. Design elements that provide clear reference points in the environment (e.g., a room, a large three-dimensional object, large picture, or other wall-mounted artifact).

**b.** Signs. When appropriate, large characters and redundant word/picture combinations should be used on signs.

**c.** Environmental design challenge. Residents with mental impairment often find it difficult to sit for long periods of time or to sit at all without becoming restless. Although it is not a universal trait, it is so common and requires so much staff time that environmental solutions should be explored in all areas to give cognitively impaired people interesting places and things on which to focus their attention.

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### \*3.2.4 Activity Space

Activity space for resident use in dementia programs shall be provided.

## 4 Resident Living Areas

### \*4.1 Resident Dining and Recreation Areas

#### 4.1.1 Space Requirements

4.1.1.1 The space needed for dining and recreation shall be determined by considering the following:

- (1) The needs of residents to use adaptive equipment and mobility aids and receive assistance from support and service staff
- (2) The extent to which support programs shall be centralized or decentralized
- (3) The number of residents to be seated for dining at one time, as required by the functional program

**Note:** Nothing in these Guidelines is intended to restrict a facility from providing additional square footage per resident beyond what is required herein for dining rooms, activity areas, and similar spaces.

\*4.1.1.2 In new construction, the total area set aside for dining, resident lounges, and recreation shall be at least 35 square feet (3.25 square meters) per bed with a minimum total area of at least 225 square feet (20.90 square meters). At least 20 square feet (1.86 square meters) per bed shall be available for dining.

\*4.1.1.3 For renovations, at least 14 square feet (1.30 square meters) per bed shall be available for dining.

### \*4.2 Activity Areas

#### 4.2.1 Space Requirements

If required by the functional program, the minimum requirements for new construction shall include the following. However, nothing in these Guidelines is intended to restrict a facility from providing additional square footage per resident beyond what is required herein for activities.

#### 4.2.2 Activity Spaces

Space and equipment shall be provided for carrying out each of the activities defined in the functional program.

#### 4.2.3 Small Group Activity Space

A space for small group and “one-on-one” activities shall be readily accessible to the residents.

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**A4.1** It is important to provide outdoor views from dining, recreation, and living spaces.

**A4.1.1.2** While the guidelines provide a minimum requirement of 20 square feet (1.85 square meters) per bed for dining space, it is likely that facilities designed to this standard will be required to serve the resident population in more than one shift. In practice, the dining room should be sized at a minimum of 28 net square feet (2.60 square meters) per resident seated at one time. Additional space may be required for outpatient day care programs.

**A4.1.1.3** Additional space may be required for outpatient day care programs.

**A4.2** Activity programs focus on the social, spiritual, and creative needs of residents and clients and provide quality, meaningful experiences for them. These programs may be facility-wide or for smaller groups.

If included in the functional program, the activity department is

generally responsible for coordination of activities for large groups as well as small groups and personalized individual programs involving one resident and one therapist. These activities may be conducted in other portions of the building (e.g., dining rooms, recreation spaces, lounges, etc.), but dedicated spaces are preferred for efficient operation of quality programs. Large space requirements (e.g., libraries, chapels, auditoriums, and conference, classroom, and/or training spaces) depend upon the programming decisions of the sponsors as reflected in the functional program for the facility.

**A4.2.4** If required by the functional program, include space for files, records, computers, and administrative activities; a storage space for supplies and equipment; and a quiet space for residents to maximize conversations. This quiet space may be incorporated within space for administrative activities.

**Note:** Hearing loss in the elderly is well documented. Quiet space is very important to enable conversation.

**\*4.2.4 Activity Storage**

Storage for large items used for large group activities (e.g., recreation materials and exercise equipment; supplies for religious services) shall be placed near the location of the planned activity and at the point of first use.

**4.2.5 Resident Toilet Room(s)**

Toilet room(s) that are convenient to activity spaces shall be provided for residents.

**\*4.3 Personal Services (Barber/Beauty) Areas**

Facilities and equipment for resident hair care and grooming shall be provided separate from the resident rooms.

**4.3.1** These shall be permitted to be unisex and located adjacent to central resident activity areas, provided that location and scheduling preserve patient dignity.

**4.3.2** Resident toilets shall be located convenient to the hair and grooming area(s).

**5 Diagnostic and Treatment Locations****5.1 Rehabilitation Therapy**

Each nursing facility that provides physical and/or occupational therapy services for rehabilitating long-term care residents shall have areas and equipment that conform to program intent. Where the nursing facility is part of a general hospital or other facility, services may be shared as appropriate.

**5.1.1 Physical and Occupational Therapy Provisions for Residents**

As a minimum, the following shall be located on-site, convenient for use:

**5.1.1.1** Space and equipment for carrying out each type of therapy that may be prescribed

**5.1.1.2** Hand-washing stations. These shall be within the therapy unit.

**5.1.1.3** Provisions for resident privacy

**5.1.1.4** Provisions for wheelchair residents

**5.1.1.5** Support areas for rehabilitation therapy

- (1) Space for files, records, and administrative activities
- (2) Equipment and supply storage
- (3) Housekeeping rooms, in or near unit

**5.1.1.6 Support areas for residents**

- (1) Resident toilet room(s). These shall be usable by wheelchair occupants.

**5.1.2 Physical and Occupational Therapy Provisions for Outpatients**

If the program includes outpatient treatment, additional provisions shall include the following:

**5.1.2.1 Convenient facility access usable by the disabled****5.1.2.2 Support areas for patients**

- (1) Waiting area for outpatients and public. This shall be in addition to and separate from required resident support and activity areas. Public toilets shall be provided convenient to these waiting areas.
- (2) Facilities for dressing and lockers for storing patients' clothing and personal effects
- (3) Toilet facilities dedicated for outpatient use
- (4) Showers, if required by the functional program

**6 Service Areas****6.1 Dietary Facilities**

The following services shall be provided:

**6.1.1 General**

Food service facilities and equipment shall conform with these standards and other applicable food and sanitation codes and standards and shall provide food service for residents.

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**A4.3** Consideration should be given to the special ventilation and exhaust requirements of these areas.

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**6.1.1.1** Food receiving, storage, and preparation areas shall facilitate quality control.

**6.1.1.2** Provision shall be made for transport of hot and cold foods as required by the functional program.

**6.1.1.3** Separate dining areas shall be provided for staff and for residents.

**6.1.1.4** The design and location of dining facilities shall encourage resident use.

**6.1.1.5** Facilities shall be furnished to provide nourishment and snacks between scheduled meal service.

**6.1.1.6** The dietary facility shall be easy to clean and to maintain in a sanitary condition.

### 6.1.2 Functional Elements

If the dietary department is on-site, the following facilities, in the size and number appropriate for the type of food service selected, shall be provided:

**6.1.2.1** Control station. A control station shall be provided for receiving and controlling food supplies.

**6.1.2.2** Hand-washing station(s). Hand-washing station(s) shall be located in the food preparation area.

**6.1.2.3** Food preparation facilities. These facilities shall be provided to accommodate the method of food preparation specified in the functional program.

- (1) Conventional food preparation systems require space and equipment for preparing, cooking, and baking.
- (2) Convenience food service systems using frozen prepared meals, bulk packaged entrees, individual packaged portions, or those using contractual commissary services require space and equipment for thawing, portioning, cooking, and baking.

**6.1.2.4** Ice-making facilities. These may be located in the food preparation area or in a separate room. They

shall be easily cleanable and convenient to the dietary function.

**6.1.2.5** Assembly and distribution. Facilities for assembly and distribution of patient meals

**6.1.2.6** Dining space. Separate dining spaces shall be provided for residents and staff.

**6.1.2.7** Ware-washing space. Ware-washing space shall be provided in a room or an alcove separate from the food preparation and serving area.

- (1) Commercial-type ware-washing equipment shall be provided.
- (2) Space shall be provided for receiving, scraping, sorting, and stacking soiled tableware and for transferring clean tableware to the using areas.
- (3) Convenient hand-washing stations shall be provided.

**6.1.2.8** Pot-washing facilities

### 6.1.3 Support Areas for Dietary Facilities

**6.1.3.1** Offices(s). Office(s) or desk spaces for dietitian(s) and/or a dietary service manager.

**6.1.3.2** Storage

- \* (1) Food storage. Storage space, including cold storage, shall be provided for at least a four-day supply of food.
- (2) Storage areas and sanitizing facilities for cans, carts, and mobile-tray conveyors.
- (3) Waste, storage, and recycling facilities (per local requirements) located in a separate room easily accessible to the outside for direct pickup or disposal.

**6.1.3.3** Housekeeping room. A housekeeping room shall be located within the dietary department. It shall include a floor receptor or service sink and storage space for housekeeping equipment and supplies.

### 6.1.4 Support Areas for Staff

**6.1.4.1** Staff toilet. Toilet for dietary staff shall be provided convenient to the kitchen area.

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**A6.1.3.2 (1)** Facilities in remote areas may require proportionally more food storage facilities.

## 6.2 Linen Services

### 6.2.1 General

Each facility shall have provisions for storing and processing clean and soiled/contaminated linen for resident care. Processing may be done within the facility, in a separate building on- or off-site, or in a commercial or shared laundry. At a minimum, the following elements shall be included:

### 6.2.2 Laundry Facility

#### 6.2.2.1 General

- (1) Layout. Equipment shall be arranged to permit an orderly work flow and minimize cross-traffic that might mix clean and soiled operations.
- (2) If linen is processed in a laundry facility within the facility, the following shall be provided:

**6.2.2.2** Receiving, holding, and sorting room. A receiving, holding, and sorting room shall be provided for control and distribution of soiled linen. Discharge from soiled linen chutes may be received within this room or in a separate room adjacent to it.

**6.2.2.3** Washers/extractors. Washers/extractors shall be located between the soiled linen receiving and clean processing areas. Personal laundry, if decentralized, may be handled within one room or rooms, as long as separate, defined areas are provided for handling clean and soiled laundry.

**6.2.2.4** Supply storage. Storage shall be provided for laundry supplies.

**6.2.2.5** Inspection and mending area. An area shall be provided for linen inspection and mending.

### 6.2.3 Support Areas for Internal Processing

**6.2.3.1** Soiled holding room(s). Separate central or decentralized room(s) shall be provided for receiving and holding soiled linen for pickup or processing.

- (1) Such room(s) shall have proper ventilation and exhaust.
- (2) Discharge from soiled linen chutes shall be received in a separate room.

**6.2.3.2** Central clean linen storage. A central clean linen storage and issuing room(s) shall be provided in addition to the linen storage required at individual resident units.

### 6.2.3.3 Linen carts

- (1) Storage. Provisions shall be made for parking of clean and soiled linen carts separately and out of traffic.
- (2) Cleaning. Provisions shall be made for cleaning of linen carts on premises (or exchange of carts off premises).

**6.2.3.4** Hand-washing stations. Hand-washing stations shall be provided in each area where unbagged, soiled linen is handled.

### 6.2.4 Support Areas for Off-Site Processing

If linen is processed off-site or in a separate building on-site, the following shall be provided:

**6.2.4.1** Service entrance. A service entrance, protected from inclement weather, for loading and unloading of linen. This can be shared with other services and serve as the loading dock for the facility.

**6.2.4.2** Control station. A control station for pickup and receiving shall be provided. This can be shared with other services and serve as the receiving and pickup point for the facility.

## 6.3 Materials Management

### 6.3.1 Waste Management

Facilities shall be provided for sanitary storage of waste and recyclables using techniques and capacities acceptable to the appropriate health and environmental authorities.

**Note:** For waste treatment and disposal requirements, see Section 4.1-9.3.

## 6.4 Environmental Services

### 6.4.1 Housekeeping Rooms

**6.4.1.1** Location. Housekeeping rooms shall be provided throughout the facility as required to maintain a clean and sanitary environment.

## 4.1 NURSING FACILITIES

**6.4.1.2** Number. At least one housekeeping room shall be provided for each floor.

**6.4.1.3** Facility requirements. Each housekeeping room shall contain a floor receptor or service sink and storage space for housekeeping equipment and supplies.

### 6.5 Engineering Services and Maintenance

The following shall be provided as necessary for effective service and maintenance functions:

#### 6.5.1 Equipment Locations

Room(s) or separate building(s) shall be provided for boilers, mechanical, and electrical equipment.

#### 6.5.2 General Maintenance Area

A general maintenance area shall be provided for repair and maintenance.

#### 6.5.3 Receiving Areas

If required by the functional program, a loading dock and receiving and breakout area(s) shall be provided. These may be shared with other services.

#### 6.5.4 Equipment, Supply, and Facility Records Storage

**6.5.4.1** Provisions shall be made for protected storage of facility drawings, records, manuals, etc.

**6.5.4.2** Storage room for building maintenance supplies. **Note:** Storage for solvents and flammable liquids shall comply with applicable NFPA codes.

**6.5.4.3** General storage space(s) for furniture and equipment such as intravenous stands, inhalators, air mattresses, walkers, medical supplies, and housekeeping supplies and equipment.

**6.5.4.4** Yard equipment and supply storage areas, located so that equipment may be moved directly to the exterior.

## 7 Administrative and Public Areas

The following shall be provided:

### 7.1 Public Areas

#### 7.1.1 Vehicular Drop-Off and Pedestrian Entrance

This shall be at grade level, sheltered from inclement weather, and accessible to the disabled.

#### 7.1.2 Administrative/Public Lobby Area

This shall include the following:

**7.1.2.1** A counter or desk for reception and information

**7.1.2.2** Public waiting area(s)

**7.1.2.3** Public toilet facilities

**7.1.2.4** Public telephone(s)

**7.1.2.5** Provisions for drinking water

## 7.2 Administrative Areas

### 7.2.1 General or Individual Office(s)

**7.2.1.1** These shall be provided for business transactions, admissions, social services, medical and financial records, and administrative and professional staff. Provisions for private interviews shall be included.

**7.2.1.2** Space for clerical files and staff office space shall be provided as required by the functional program.

### 7.2.2 Multipurpose Room(s)

A multipurpose room for conferences, meetings, and health education purposes shall be provided as required by the functional program; it shall include provisions for the use of visual aids. One multipurpose room may be shared by several services.

### 7.2.3 Supply Room

Space for storage of office equipment and supplies shall be provided as required by the functional program.

## 8 Construction Standards

### 8.1 Applicable Codes

All parts of the nursing facility shall be designed and constructed to sustain dead and live loads in accordance with applicable building codes and accepted engineering practices and standards, including requirements for seismic forces and applicable sections of NFPA 101.

## 8.2 General Standards for Details and Finishes

### 8.2.1 General

**8.2.1.1** Resident facilities require features that encourage ambulation of long-term residents.

**8.2.1.2** Signage and other wayfinding features shall be provided to aid self-ambulating residents and avoid confusing or disorienting them.

**\*8.2.1.3** Potential hazards to residents, such as sharp corners, slippery floors, loose carpets, and hot surfaces shall be avoided.

**8.2.1.4** Renovations shall not diminish the level of compliance with these standards below that which existed prior to the renovation. However, features in excess of those for new construction are not required to be maintained in the completed renovation.

### 8.2.2 Details

#### 8.2.2.1 Corridors

(1) **Width.** The placement of drinking fountains, public telephones, and vending machines shall not restrict corridor traffic or reduce the corridor width below the minimum stipulated in NFPA 101.

**\*(2) Handrails.** Where corridors are defined by walls, handrails shall be provided on both sides of all corridors normally used by residents.

(a) A minimum clearance of 1-1/2 inches (3.81 centimeters) shall be provided between the handrail and the wall.

(b) Rail ends shall be returned to the wall or floor.

**8.2.2.2 Ceiling height.** The minimum ceiling height shall be 7 feet 10 inches (2.39 meters), with the following exceptions:

(1) Corridors, storage rooms, toilet rooms. Ceilings in these spaces shall be at least 7 feet 8 inches (2.34 meters). Ceilings in normally unoccupied spaces may be reduced to 7 feet (2.13 meters).

(2) Rooms containing ceiling-mounted equipment. These shall have the ceiling height required to

ensure proper functioning of the ceiling-mounted equipment.

(3) **Boiler rooms.** Boiler rooms shall have ceiling clearances of at least 2 feet 6 inches (76.2 centimeters) above the main boiler header and connecting pipe.

(4) **Clearances.** Building components and suspended tracks, rails, and pipes located along the path of normal traffic shall be not less than 7 feet (2.13 meters) above the floor.

(5) **Renovation.** In renovation projects, all new work shall comply, insofar as practical, with subparagraphs 8.2.2.2 (1) through (4) above. Where existing conditions make compliance impractical or impossible, exceptions shall be considered. However, in no case shall ceiling heights be reduced more than 4 inches (2.54 centimeters) below the minimum requirement for new construction.

(6) **Doorways and other openings.** Architecturally framed and trimmed openings in corridors and rooms shall be permitted, provided a minimum clear opening height of 7 feet (2.13 meters) is maintained.

**8.2.2.3 Doors.** Doors to all rooms containing bathtubs, sitz baths, showers, and toilets for resident use shall be hinged, sliding, or folding.

**8.2.2.4 Windows.** Resident rooms or suites in new construction shall have window(s).

(1) Operable windows or vents that open from the inside shall be restricted to inhibit possible resident escape or suicide.

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**A8.2.1.3** Hot surfaces are intended to include those surfaces to which residents have normal access that exceed 110°F (43°C). This requirement does not extend to medical or therapeutic equipment.

**A8.2.2.1 (2)** Consideration should be given to increasing clearances for arthritic residents and for mounting handrails lower than required by ADA to enable frail residents to lean on the handrails for support when ambulating.

## 4.1 NURSING FACILITIES

- (2) Windows shall have sills located above grade, but no higher than 36 inches (91.44 centimeters) above the finished floor.

**8.2.2.5** Screens. Windows and outer doors that may be left open shall have insect screens.

**\*8.2.2.6** Glazing materials

- (1) Glazing in doors, sidelights, borrowed lights, and windows where glazing is less than 18 inches (45.72 centimeters) from the floor shall be constructed of safety glass, wire glass, tempered glass, or plastic glazing material that resists breaking and creates no dangerous cutting edges when broken.
- (2) Similar materials shall be used in wall openings in activity areas (such as recreation rooms and exercise rooms) if permitted by local requirements.
- (3) If doors are provided for shower and tub enclosures, glazing shall be safety glass or plastic.

**8.2.2.7** Hand-washing stations

- (1) Clearances. Hand-washing stations shall be constructed with sufficient clearance for blade-type operating handles.
- (2) Mirror(s). Each resident hand-washing station shall have a mirror. Mirror placement shall allow

for convenient use by both wheelchair occupants and ambulatory persons. Tops and bottoms may be at levels usable by individuals either sitting or standing, or additional mirrors may be provided for wheelchair occupants. One separate full-length mirror may serve for wheelchair occupants.

- (3) Hand drying. Provisions for hand drying shall be included at all hand-washing stations. These shall be paper or cloth towels enclosed to protect against dust or soil and to ensure single-unit dispensing.

**8.2.2.8** Grab bars

- (1) Grab bars shall be installed in all resident toilets, showers, tubs, and sitz baths.

*\*(2)* For wall-mounted grab bars, a minimum 1-1/2 inch (3.81 centimeters) clearance from walls shall be provided.

- (3) Bars, including those which are part of fixtures such as soap dishes, shall have the strength to sustain a concentrated load of 250 pounds (113.4 kilograms).

*\*(4)* Toilets used by residents shall be provided sufficient clearance on both sides of the water closet to enable physical access and maneuvering by staff, who may have to assist the resident in wheelchair-to-water-closet transfers and return.

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**A8.2.2.6** Where local requirements permit, wire-free, fire-rated safety glazing should be used to enhance the home-like residential appearance preferred by residents and visitors.

**A8.2.2.8 (2)** Consideration should be given to increasing clearances for arthritic residents.

**A8.2.2.8 (4)**. While ADAAG, UFAS, and ANSI accessibility standards were all developed with the intention of providing greater access for individuals with disabilities, their standards are based upon assumed stature and strength, whereby dimensional and grab bar requirements are intended to facilitate wheelchair-to-toilet transfers by individuals with sufficient upper body strength and mobility to effect such a transfer. The typical nursing home resident is unlikely to have such capabilities, thus requiring the assistance of one or more staff. Insufficient clearance at the side of the toilet can restrict

staff mobility and access, and can result in injury. There are ongoing efforts aimed at educating regulators and advisory panels to the difficulties caused by inappropriate standards required within environments serving frail and geriatric populations.

Alternative grab bar configurations should address the following scenarios:

**a.** When a resident is capable of independent transfer facilitated by the grab bar and side-wall location required by accessibility standards, a removable/temporary wall structure and grab bar can be installed alongside the toilet.

**b.** When a resident requires partial assistance in transfer, fold-down grab bars on one or both sides of the toilet would facilitate such transfers.

When independent transfers are feasible, alternative grab bar configurations shall be permitted.

**8.2.2.9** Thresholds and joints. Thresholds and expansion joint covers shall be designed to facilitate use of wheelchairs and carts and to prevent tripping.

**8.2.2.10** Anchorage. Lavatories, hand-washing stations, and handrails that a resident could use for support shall be securely anchored.

**8.2.2.11** Insulation and ventilation. Rooms containing heat-producing equipment (such as boiler rooms, heater rooms, and laundries) shall be insulated and ventilated to prevent the floors of occupied areas overhead and the adjacent walls from exceeding a temperature of 10°F (6°C) above the ambient room temperature of such occupied areas.

### 8.2.3 Materials and Finishes

#### 8.2.3.1 Floors

- (1) Floor materials shall be readily cleanable and appropriate for the location.
- (2) Floors in areas used for food preparation and assembly shall be water-resistant. Floor surfaces, including tile joints, shall be resistant to food acids.
- (3) In all areas subject to frequent wet-cleaning methods, floor materials shall not be physically affected by germicidal cleaning solutions. Floors subject to traffic while wet (such as shower and bath areas, kitchens, and similar work areas) shall have a slip-resistant surface.

#### 8.2.3.2 Walls

- (1) Wall finishes shall be washable and, if near plumbing fixtures, shall be smooth and moisture-resistant.
- (2) Wall bases in areas subject to routine wet cleaning shall be coved and tightly sealed.
- (3) Wall construction, finish, and trim, as well as floor construction, in dietary and food storage areas shall be free from rodent- and insect-harboring spaces.

**8.2.3.3** Penetrations and joints. Floor and wall openings for pipes, ducts, and conduits shall be tightly sealed to resist fire and smoke and to minimize entry of pests. Joints of structural elements shall be similarly sealed.

#### 8.2.3.4 Ceilings

- (1) The finishes of all exposed ceilings and ceiling structures in resident rooms and staff work areas shall be readily cleanable with routine housekeeping equipment.
- (2) Finished ceilings shall be provided in dietary and other areas where dust fallout might create a problem.

**8.2.3.5** Signage. Directional and identification signage shall comply with Americans with Disabilities Act (ADA) guidelines.

#### 8.2.3.6 Furnishings

- (1) Applicable standard. Materials provided for finishes and furnishings, including mattresses and upholstery, shall comply with NFPA 101.
- (2) Carpet. Carpet and padding in resident areas shall be glued down or stretched taut and free of loose edges or wrinkles that might create hazards or interfere with the operation of wheelchairs, walkers, wheeled carts, etc.
- (3) Drapery. Cubicle curtains and draperies shall be noncombustible or flame-retardant as prescribed in both the large- and small-scale tests in NFPA 701.

## 9 Special Systems

### 9.1 General

#### 9.1.1 Testing

**9.1.1.1** Prior to acceptance of the facility, all special systems shall be tested and operated to demonstrate to the owner or designated representative that the installation and performance of these systems conform to design intent.

**9.1.1.2** Test results shall be documented for maintenance files.

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### 9.1.2 Documentation

**9.1.2.1** Upon completion of the special systems equipment installation contract, the owner shall be furnished with a complete set of manufacturers' operating, maintenance, and preventive maintenance instructions, a parts list, and complete procurement information, including equipment numbers and descriptions.

**9.1.2.2** Operating staff shall also be provided with instructions for proper operation of systems and equipment. Required information shall include all safety or code ratings as needed.

### 9.1.3 Insulation

Insulation shall be provided surrounding special system equipment to conserve energy, protect personnel, and reduce noise.

## 9.2 Elevators

### 9.2.1 General

All buildings having resident use areas on more than one floor shall have electric or hydraulic elevator(s).

### \*9.2.2 Number

Engineered traffic studies are recommended, but in their absence the following guidelines for minimum number of elevators shall apply:

**9.2.2.1** At least one elevator sized to accommodate a bed, gurney, and/or medical carts and wheelchair users shall be installed where residents are housed on any floor other than the main entrance floor.

**9.2.2.2** At least two elevators, one of which shall be of the hospital type, shall be installed where 60 to 200 residents are housed on floors other than the main entrance floor.

**9.2.2.3** At least three elevators, one of which shall be of the hospital type, shall be installed where 201 to 350 residents are housed on floors other than main entrance floor.

**9.2.2.4** For facilities with more than 350 residents housed above the main entrance floor, the number of elevators shall be determined from a study of the facility plan and from the estimated vertical transportation requirements.

**9.2.2.5** When the nursing facility is part of a general hospital, elevators may be shared and the standards of Section 2.1-9.2 shall apply.

### 9.2.3 Dimensions and Clearances

**\*9.2.3.1** Hospital-type elevator cars shall have inside dimensions that accommodate a resident bed with attendants. The clear inside dimension of such cars shall be at least 5 feet 4 inches (1.62 meters) wide by 8 feet 5 inches (2.43 meters) deep.

**9.2.3.2** Car doors shall have a clear opening of not less than 3 feet 8 inches (1.12 meters).

**9.2.3.3** Other elevators required for passenger service shall be constructed to accommodate wheelchairs.

### 9.2.4 Leveling Device

Elevators shall be equipped with an automatic two-way leveling device with an accuracy of  $\pm 1/4$  inch (7 millimeters).

### 9.2.5 Handrails

Elevators shall have handrails on all sides without entrance door(s).

### 9.2.6 Installation and Testing

Installation and testing of elevators shall comply with ANSI/ASME A17.1 (for new construction) or ANSI/ASME 17.3 (for existing buildings). (See ASCE/SEI 7 for seismic design and control system requirements for elevators.)

## 9.3 Waste Processing

Facilities shall be provided for treatment or disposal of waste and recyclables using techniques and capacities acceptable to the appropriate health and environmental authorities.

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**A9.2.2** These standards may be inadequate for moving large numbers of people in a short time; adjustments should be made as appropriate.

**A9.2.3.1** Handrail projections of up to 3.5 inches (8.89 centimeters) should not be construed as diminishing the clear inside dimensions.

**Note:** For waste collection and storage requirements, see Section 4.1-6.3.

## 10 Building Systems

### 10.1 Plumbing

#### 10.1.1 General

Unless otherwise specified herein, all plumbing systems shall be designed and installed in accordance with the International Plumbing Code.

#### 10.1.2 Plumbing and Other Piping Systems

##### 10.1.2.1 General piping and valves

- (1) All piping, except control-line tubing, shall be identified.
- (2) All valves shall be tagged, and a valve schedule shall be provided to the facility owner for permanent record and reference.

**10.1.2.2 Hot water systems.** See Section 1.6-2.1.2.1 and Table 4.1-3.

##### 10.1.2.3 Potable water supply systems

- (1) Capacity. Systems shall be designed to supply water at sufficient pressure to operate all fixtures and equipment during maximum demand. Supply capacity for hot- and cold-water piping shall be determined on the basis of fixture units, using recognized engineering standards. When the ratio of plumbing fixtures to occupants is proportionally more than required by the building occupancy and is in excess of 1,000 plumbing fixture units, a diversity factor shall be permitted.
- (2) Valves. Each water service main, branch main, riser, and branch to a group of fixtures shall have valves.
  - (a) Stop valves shall be provided for each fixture.
  - (b) Appropriate panels for access shall be provided at all valves where required.
- (3) Backflow prevention

- (a) Systems shall be protected against cross-connection in accordance with American Water Works Association (AWWA) Recommended Practice for Backflow Prevention and Cross-connection Control.
  - (b) Vacuum breakers or backflow prevention devices shall be installed on hose bibs and supply nozzles used for connection of hoses or tubing in housekeeping sinks, bedpan-flushing attachments, etc.
- (4) Potable water storage. Potable water storage vessels (hot and cold) not intended for constant use shall not be installed.

##### 10.1.2.4 Drainage systems

- (1) Piping. Insofar as possible, drainage piping shall not be installed within the ceiling or exposed in food preparation centers, food serving facilities, food storage areas, central services, electronic data processing areas, electric closets, and other sensitive areas. Where exposed overhead drain piping in these areas is unavoidable, special provisions shall be made to protect the space below from leakage, condensation, or dust particles.
- (2) Sewers. Building sewers shall discharge into community sewerage. Where such a system is not available, the facility shall treat its sewage in accordance with local and state regulations.
- (3) Grease traps. Kitchen grease traps shall be located and arranged to permit easy access.

#### 10.1.3 Plumbing Fixtures

In addition to the requirements of Section 1.6-2.1.3, the following standards shall apply:

**10.1.3.1 Clinical sinks.** Clinical sinks shall have an integral trap wherein the upper portion of the water trap provides a visible seal.

#### 10.1.4 Medical Gas and Vacuum Systems

Any installation of nonflammable medical gas, air, or clinical vacuum systems shall comply with the requirements of NFPA 99. When any piping or supply of medical gases is installed, altered, or augmented, the

## 4.1 NURSING FACILITIES

altered zone shall be tested and certified as required by NFPA 99.

### 10.2 Heating, Ventilating, and Air-Conditioning (HVAC) Systems

#### 10.2.1 General

##### 10.2.1.1 Mechanical system design

- (1) Efficiency. The mechanical system shall be subject to general review for operational efficiency and appropriate life-cycle cost. Details for cost-effective implementation of design features are interrelated and too numerous (as well as too basic) to list individually.
  - (a) Recognized engineering procedures shall be followed for the most economical and effective results. A well-designed system can generally achieve energy efficiency with minimal additional cost and simultaneously provide improved resident comfort.
  - (b) In no case shall resident care or safety be sacrificed for conservation.
  - (c) Facility design consideration shall include site, building mass, orientation, configuration, fenestration, and other features relative to passive and active energy systems.

##### (2) Air-handling systems

- (a) Where appropriate, controls for air-handling systems shall be designed with an economizer cycle that uses outside air to reduce heating and cooling system loads. Innovative design that provides for additional energy conservation while meeting the intent of these standards for acceptable resident care shall be considered. (Filtering will be necessary when outside air is used as part of the mechanical ventilation system.)

\* (b) Non-central air-handling systems (i.e., individual room units that are used for heating and cooling purposes, such as fan-coil units, heat pump units, etc.). These units may be used as recirculating units only. All outdoor air requirements shall be met by a separate central air-handling system with the proper filtration, as noted in Table 4.1-2.

- (3) System valves. Supply and return mains and risers for cooling, heating, and steam systems shall be equipped with valves to isolate the various sections of each system. Each piece of equipment shall have valves at the supply and return ends.
- (4) Renovation. If system modifications affect greater than 10 percent of the system capacity, designers shall utilize pre-renovation water/air flow rate

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**A10.2.1.1 (2)(b)** It is recommended that when practical, ventilation requirements be met by a central air-handling system with filtration and humidification provisions. This system may be designed for ventilation only, with heating and cooling accomplished by non-central air-handling equipment (e.g., fan coil units, heat pumps). For ventilation purposes, these units may be used as recirculating units only.

#### A10.2.1.2 (2) Humidity Control

**a.** ASHRAE Standard 55 recommends 30 to 60 percent relative humidity for comfort. In cold or arid climates, achieving relative humidities as high as 30 percent may not be practical. Where central ventilation systems are not utilized, these humidity requirements may not be achievable. Additional data are needed to establish a consensus on the cost/benefit of maintaining humidity within the recommended range.

**b.** If duct humidifiers are located upstream of the final filters, they should be at least 15 feet (4.56 meters) upstream of the final filters. Ductwork with duct-mounted humidifiers located downstream of the final filters should have a means of water removal. An adjustable high-limit humidistat should be located downstream of the humidifier to reduce the potential for condensation inside the duct. All duct takeoffs should be sufficiently downstream of the humidifier to ensure complete moisture absorption. Steam humidifiers should be used. Reservoir-type water spray or evaporative pan humidifiers should not be used.

**c.** For more information about humidity control, see Chapter 25, "Elder care Buildings," in Lew Harriman, Geoff Brundrett, and Reinhold Kittler, *Humidity Control Design Guide for Commercial and Institutional Buildings* (ASHRAE, 2001).

measurements to verify that sufficient capacity is available and that renovations have not adversely affected flow rates in non-renovation areas.

**10.2.1.2** Ventilation and space conditioning requirements. All rooms and areas in the facility shall have provision for positive ventilation.

- (1) Ventilation rates. The ventilation systems shall be designed and balanced, as a minimum, according to the requirements shown in Table 4.1-1. The ventilation rates shown in Table 4.1-1 do not preclude the use of higher rates as appropriate.
- \* (2) Temperature and humidity. Space temperature and relative humidity shall be as indicated in Table 4.1-1.
- (3) Air movement direction. To maintain asepsis control, airflow supply and exhaust should generally be controlled to ensure movement of air from “clean” to “less clean” areas.
- (4) Although use of natural window ventilation shall be permitted when weather and outside air quality permit, mechanical ventilation shall be provided for all rooms and areas in the facility.

## 10.2.2 Requirements for Specific Locations

### 10.2.2.1 Food preparation centers

- (1) Exhaust hoods handling grease-laden vapors in food preparation centers shall comply with NFPA 96.
- (2) All hoods over cooking ranges shall be equipped with grease filters, fire-extinguishing systems, and heat-actuated fan controls.
- (3) Cleanout openings shall be provided every 20 feet (6.10 meters) and at changes in direction in the horizontal exhaust duct systems serving these hoods. Horizontal runs of ducts serving range hoods shall be kept to a minimum.
- (4) Food preparation facilities shall have ventilation systems whose air supply mechanisms are interfaced appropriately with exhaust hood controls or relief vents so that exfiltration or infiltration to or from exit corridors does not compromise the exit

corridor restrictions of NFPA 90A, the pressure requirements of NFPA 96, or the maximum defined in Table 4.1-1.

**10.2.2.2** Fuel-fired equipment rooms. Rooms with fuel-fired equipment shall be provided with sufficient outdoor air to maintain equipment combustion rates and to limit workstation temperatures.

## 10.2.3 Thermal and Acoustical Insulation

In addition to the requirements of Section 1.6-2.2.1, the following requirement shall apply:

**10.2.3.1** In facilities undergoing major renovations, existing accessible insulation shall be inspected, repaired, and/or replaced as appropriate.

## 10.2.4 HVAC Air Distribution

**10.2.4.1** HVAC ductwork. See Section 1.6-2.2.2.1.

### 10.2.4.2 Exhaust systems

- (1) To enhance the efficiency of recovery devices required for energy conservation, combined exhaust systems shall be permitted.
- (2) Fans serving exhaust systems shall be located at the discharge end and shall be readily serviceable.

### 10.2.4.3 Air outlets and inlets

- (1) Fresh air intakes
  - (a) Fresh air intakes shall be located at least 25 feet (7.62 meters) from exhaust outlets of ventilating systems, combustion equipment stacks, medical vacuum systems, plumbing vents, or areas that may collect vehicular exhaust or other noxious fumes. (Prevailing winds and/or proximity to other structures may require greater clearances.)
  - (b) The bottom of outdoor air intakes serving central ventilating systems shall be as high as practical, but at least 6 feet (1.83 meters) above ground level or, if installed above the roof, 3 feet (91.44 centimeters) above roof level.

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- (2) Exhaust outlets. Exhaust outlets from areas that may be contaminated shall be above roof level, arranged to minimize recirculation of exhaust air into the building.

### 10.2.5 HVAC Filters

#### 10.2.5.1 Filter efficiencies

- (1) All central ventilation or air conditioning systems shall be equipped with filters with efficiencies equal to, or greater than, those specified in Table 4.1-2.
- (2) Noncentral air-handling systems shall be equipped with permanent (cleanable) or replaceable filters rated at a minimum efficiency of MERV 3 (68 percent arrestance). These units may be used as recirculating units only.
- (3) Filter efficiencies, tested in accordance with ASHRAE Standard 52.1, shall be average.

#### 10.2.5.2 Filter frames

- (1) Filter frames shall be durable and proportioned to provide an airtight fit with the enclosing ductwork. All joints between filter segments and the enclosing ductwork shall have gaskets or seals to provide a positive seal against air leakage.
- (2) Provisions shall be made to allow access for field testing.

### 10.2.6 Steam and Hot Water Systems

#### 10.2.6.1 Boilers. See Section 1.6-2.2.3.

## 10.3 Electrical Systems

### 10.3.1 General

#### 10.3.1.1 Applicable standards

- (1) All material and equipment, including conductors, controls, and signaling devices, shall be installed to provide a complete electrical system in accordance with NFPA 70 and NFPA 99.
- (2) Electrical systems for nursing facilities shall comply with applicable sections of NFPA 70.

**10.3.1.2 Testing and documentation.** All electrical installations and systems shall be tested to verify that the equipment has been installed and that it operates as designed.

### 10.3.2 Electrical Requirements for Specific Nursing Facility Locations

#### 10.3.2.1 Ventilator-dependent resident bedrooms

- (1) Dedicated circuit(s). This paragraph shall apply to both new and existing facilities serving ventilator-dependent patients.
  - (a) A minimum of one dedicated essential system circuit per bed for ventilator-dependent patients shall be provided in addition to the normal system receptacle at each bed location required by NFPA 70. This circuit shall be provided with a minimum of two duplex receptacles identified for emergency use.
  - (b) Additional essential system circuits/receptacles shall be provided where the electrical life support needs of the patient exceed the minimum requirements stated in this paragraph.
- (2) Essential electrical system connections
  - (a) Heating equipment provided for ventilator-dependent patient bedrooms shall be connected to the essential electrical system. This paragraph shall apply to both new and existing facilities.
  - (b) Task lighting connected to the essential electrical system shall be provided for each ventilator-dependent patient bedroom. This paragraph shall apply to both new and existing facilities.

### 10.3.3 Power-Generating and Storing Equipment

#### 10.3.3.1 Emergency electrical service

- (1) Applicable standards. At a minimum, nursing facilities or sections thereof shall have emergency electrical systems as required in NFPA 101 and Chapter 16, Nursing Home Requirements, of NFPA 99.
- (2) Shared service. When the nursing facility is a distinct part of an acute care hospital, it may use the emergency generator system for required emergency

lighting and power if such sharing does not reduce hospital services. Life support systems and their respective areas shall be subject to applicable standards of Section 2.1-10.3.

- (3) Lighting. An emergency electrical source shall provide lighting and/or power during an interruption of the normal electrical supply.
- (4) Stored fuel
  - (a) Where stored fuel is required, storage capacity shall permit continuous operation for at least 24 hours.
  - (b) Fuel storage for electricity generation shall be separate from heating fuels.
  - (c) If the use of heating fuel for diesel engines is considered after the required 24-hour supply has been exhausted, positive valving and filtration shall be provided to avoid entry of water and/or contaminants.

#### 10.3.3.2 Generators. Exhaust systems (including loca-

tions, mufflers, and vibration isolators) for internal combustion engines shall be designed and installed to minimize objectionable noise. Where a generator is routinely used to reduce peak loads, protection of patient areas from excessive noise may become a critical issue.

#### 10.3.4 Lighting

##### 10.3.4.1 General

- (1) Lighting shall be engineered to the specific application. Unless alternative lighting levels are justified by the approved functional program, Table 4.1-4 shall be used as a guide to minimum required ambient and task lighting levels in all rooms, spaces, and exterior walkways.
- (2) Recommended lighting design practices, including minimum lighting levels for nursing facilities and other senior living environments, developed by the Illuminating Engineering Society of North America (IESNA) shall be considered. Refer to ANSI/IESNA RP-28, Lighting and the Visual Environment for Senior Living.

\*(3) Approaches to buildings and parking lots, and all

## APPENDIX

### A10.3.4.1 (3)

**a.** Excessive differences in lighting levels should be avoided in transition areas between parking lots, building entrances and lobbies or corridors, in transition zones between driveways and parking garages, etc. As the eye ages, pupils become smaller and less elastic, making visual adaptation to dark spaces slower. Upon entering a space with a considerably lower lighting level, elderly residents may need to stop or move to one side until their eyes adapt to excessive lighting changes. Elderly pedestrians may need several minutes to adjust to significant changes in brightness when entering a building from a sunlit walkway or terrace.

**b.** Consideration should be given to increasing both indoor and outdoor illumination levels in such transition spaces to avoid excessive differences between electric lighting levels and natural daytime and nighttime illumination levels. In addition, it is very helpful for pedestrians to have conveniently located places to wait, giving them time to adjust their eyes to different lighting environments. Seating areas off busy lobbies or corridors can minimize the potential for accidents by giving them the time they need.

**c.** Care should be taken to minimize extremes of brightness within spaces and in transitions between spaces. Excessive brightness contrast from windows or lighting systems can disorient residents.

**d.** Research has established that older adults sleep best in total darkness. Therefore, to minimize resident sleep disruption, night lights should (1) provide very low levels of illumination; (2) be located so as to minimize light scatter and reflections on room surfaces; and (3) be switched off when not needed. However, even when properly specified, located, and operated, night lights often disturb resident sleep. Therefore, many providers prefer to have staff wear portable light sources instead of using night lights that were installed primarily to satisfy a code requirement.

**e.** Lighting that creates glare and colors that do not differentiate between horizontal and vertical planes, or between objects and their backgrounds (such as handrails or light switches from walls, hardware from doors, faucets from sinks, or control knobs from appliances) should be avoided, unless therapeutic benefits can be demonstrated. (For example, it has been demonstrated that deliberately camouflaged door hardware may help control wandering and elopements by some cognitively impaired residents in Alzheimer's care facilities.)

## 4.1 NURSING FACILITIES

occupied spaces within buildings, shall have fixtures for lighting. Consideration shall be given to both the quantity and quality of lighting, including the following:

- (a) Even and consistent lighting levels
- (b) Glare control
- (c) Special lighting needs of the elderly
- (d) Area-specific lighting solutions
- (e) Use of daylighting in all resident rooms and resident use areas
- (f) Life-cycle costs of lighting
- (g) Other lighting design practices as defined and described in ANSI/IESNA RP-28

### 10.3.4.2 Lighting requirements for specific locations

\*(1) Resident rooms. Resident rooms and toilet rooms shall have general lighting, task lighting, and night lighting.

- (a) At least one task light shall be provided for each resident.
  - (b) Task light controls shall be readily accessible to residents.
  - (c) At least one low-level night light fixture in each room shall be located close to the floor and controlled at the room entrance. When the approved functional program stipulates staff shall use portable light sources, omission of night lights in resident rooms shall be permitted.
  - (d) All light controls in resident areas shall be quiet-operating.
- (2) Resident unit corridors
- (a) Resident unit corridors shall have general illumination with provisions for reducing light levels at night. Corridors and common areas used by residents shall have even light distribution to avoid glare, shadows, and scalloped lighting effects.
  - (b) Highly polished flooring or floors with glossy sheen shall not be used.

## APPENDIX

### A10.3.4.2 (1)

**a.** Care should be taken to avoid injury from lighting fixtures. Light sources that may burn residents or ignite bed linen by direct contact should be covered or protected.

**b.** Ambient light levels are determined on a horizontal plane above the floor. The use of this method in the types of areas described should result in values of average illuminance within 10 percent of the values that would be obtained by dividing the area into 2-foot (0.6-meter) squares, taking a reading in each square, and averaging.

**c.** The measuring instrument should be positioned so that when readings are taken, the surface of the light-sensitive cell is in a horizontal plane and 30 inches (760 millimeters) above the floor. This can be facilitated by means of a small portable stand of wood or other material that will support the cell at the correct height and in the proper plane. Daylight may be excluded during illuminance measurements. Readings can be taken at night or with shades, blinds, or other opaque covering on the fenestration.

### 10.3.5 Receptacles

Receptacles (convenience outlets) shall be provided as follows:

**10.3.5.1** Receptacles in resident rooms. Each resident room shall have duplex-grounded receptacles. There shall be one at each side of the head of each bed and one on every other wall. Receptacles may be omitted from exterior walls where construction makes installation impractical.

**10.3.5.2** Receptacles in corridors. Duplex-grounded receptacles for general use shall be installed approximately 50 feet (15.24 meters) apart in all corridors and within 25 feet (7.62 meters) of corridor ends.

**10.3.5.3** Emergency system receptacles. Electrical receptacle coverplates or electrical receptacles supplied from the emergency system shall be distinctively colored or marked for identification. If color is used for

identification purposes, the same color shall be used throughout the facility.

**10.3.5.4** Ground fault interrupters. Ground fault interrupters shall comply with NFPA 70.

### 10.3.6 Call System

A nurse/staff call system shall be provided.

**10.3.6.1** General. Alternate technologies may be considered for emergency or nurse call systems. If radio frequency systems are used, consideration shall be given to electromagnetic compatibility between internal and external sources.

#### 10.3.6.2 Patient room call station

- (1) Each bed location and/or resident shall be provided with a call device. Two call devices serving adjacent beds or residents may be served by one calling station.
- (2) Calls shall be initiated by a resident activating either a call device attached to a resident's call station or a portable device that sends a call signal to the call station and shall either:
  - (a) Activate a visual signal in the corridor at the resident's door or other appropriate location. In multi-corridor or cluster resident units, additional visual signals shall be installed at corridor intersections; or
  - (b) Activate a pager worn by a staff member, identifying the specific resident and/or room from which the call has been placed.

**10.3.6.3** Emergency call system. An emergency call system shall be provided at each resident toilet, bath, sitz bath, and shower room.

- (1) This system shall be accessible to a resident lying on the floor. Inclusion of a pull cord or portable radio frequency pushbutton will satisfy this standard.
- (2) The emergency call system shall be designed so that a call activated by a resident will initiate a signal distinct from the regular staff call system and that can be turned off only at the resident's location.

- (3) The signal shall activate an annunciator panel or screen at the staff work area or other appropriate location and at other areas defined by the functional program. In addition, the signal shall activate either a visual signal in the corridor at the resident's door or other appropriate location or a staff pager indicating the calling resident's name and/or room location.

## 10.4 Communications Systems

### 10.4.1 Telecommunication and Information Systems

**10.4.1.1** Locations for terminating telecommunications and information system devices shall be provided.

**10.4.1.2** A space shall be provided for central equipment locations. Special air conditioning and voltage regulation shall be provided when recommended by the manufacturer.

## 10.5 Electronic Safety and Security

### 10.5.1 Fire Alarm System

Fire alarm and detection systems shall be provided in compliance with NFPA 101 and NFPA 72.

## 4.1 NURSING FACILITIES

**Table 4.1-1**  
**Ventilation Requirements for Areas Affecting Resident Care in Nursing Facilities<sup>1</sup>**

<i>Area designation</i>	<i>Air movement relationship to adjacent area<sup>2</sup></i>	<i>Minimum air changes of outdoor air per hour<sup>3</sup></i>	<i>Minimum total air changes per hour<sup>4</sup></i>	<i>All air exhausted directly to outdoors<sup>5</sup></i>	<i>Recirculated by means of room units<sup>6</sup></i>	<i>Relative humidity<sup>7</sup> (%)</i>	<i>Design temperature<sup>8</sup> (degrees F/C)</i>
<b>RESIDENT UNITS</b>							
Resident room	—	2	2	—	—	— <sup>7</sup>	70-75 (21-24)
Resident unit corridor	—	—	4	—	—	— <sup>7</sup>	—
Resident gathering areas	—	4	4	—	—	—	—
Toilet room	In	—	10	Yes	No	—	—
<b>RESIDENT LIVING AREAS</b>							
Dining rooms	—	2	4	—	—	—	75
Activity rooms, if provided	—	4	6	—	—	—	—
Personal services (barber/beauty)	In	2	20	Yes	No	—	—
<b>DIAGNOSTIC AND TREATMENT LOCATIONS</b>							
Physical therapy	In	2	6	—	—	—	75 (24)
Occupational therapy	In	2	6	—	—	—	75 (24)
<b>SUPPORT AREAS</b>							
Soiled workroom or soiled holding	In	2	10	Yes	No	—	—
Clean workroom or clean holding	Out	2	4	—	—	(Max) 70	75 (24)
Bathing rooms	In	—	10	Yes	No	—	75 (24)
<b>SERVICE AREAS</b>							
Sterilizer exhaust room	In	—	10	Yes	No	—	—
Linen and trash chute room, if provided	In	—	10	Yes	No	—	—
Laundry, general, if provided	—	2	10	Yes	No	—	—
Soiled linen sorting and storage	In	—	10	Yes	No	—	—
Clean linen storage	Out	—	2	Yes	No	—	—
Food preparation facilities <sup>9</sup>	—	2	10	Yes	Yes	—	—
Dietary warewashing	In	—	10	Yes	Yes	—	—
Dietary storage areas	—	—	2	Yes	No	—	—
Housekeeping rooms	In	—	10	Yes	No	—	—

<sup>1</sup>The ventilation rates in this table cover ventilation for comfort, as well as for asepsis and odor control in areas of nursing facilities that directly affect resident care and are determined based on nursing facilities being predominantly “no smoking” facilities. Where smoking may be allowed, ventilation rates will need adjustments. Areas where specific ventilation rates are not given in the table shall be ventilated in accordance with ASHRAE Standard 62, Ventilation for Acceptable Indoor Air Quality, and *ASHRAE Handbook—HVAC Applications*. Occupational Health and Safety Administration standards and/or National Institute for Occupational Safety and Health criteria require special ventilation requirements for employee health and safety within nursing facilities.

<sup>2</sup>Design of the ventilation system shall, insofar as possible, provide that air movement is from “clean to less clean” areas. However, continuous compliance may be impractical with full utilization of some forms of variable air volume and load-shedding systems that may be used for energy conservation. Areas that do require positive and continuous control are noted with “Out” or “In” to indicate the required direction of air movement in relation to the space named. Rate of air movement may, of course, be varied as needed within the limits required for positive control. Where indication of air movement direction is enclosed in parentheses, continuous directional control is required only when the specialized equipment or device is in use or where room use may otherwise compromise the intent of movement from clean to less clean. Air movement for rooms with dashes and nonpatient areas may vary as necessary to satisfy the requirements of those spaces. Additional adjustments may be needed when space is unused or unoccupied and air systems are de-energized or reduced.

<sup>3</sup>To satisfy exhaust needs, replacement air from outside is necessary. Table 4.1-1 does not attempt to describe specific amounts of outside air to be supplied to individual spaces except for certain areas such as those listed. Distribution of the outside air, added to the system to balance required exhaust, shall be as required by good engineering practice.

<sup>4</sup>Number of air changes may be reduced when the room is unoccupied if provisions are made to ensure that the number of air changes indicated is reestablished any time the space is being utilized. Adjustments shall include provisions so that the direction of air movement shall remain the same when the number of air changes is reduced. Areas not indicated as having continuous directional control may have ventilation systems shut down when space is unoccupied and ventilation is not otherwise needed.

<sup>5</sup>Air from areas with contamination and/or odor problems shall be exhausted to the outside and not recirculated to other areas. Note that individual circumstances may require special consideration for air exhaust to outside.

<sup>6</sup>Because of cleaning difficulty and potential for buildup of contamination, recirculating room units shall not be used in areas marked “No.” Isolation rooms may be ventilated by reheat induction units in which only the primary air supplied from a central system passes through the reheat unit. Gravity-type heating or cooling units such as radiators or convectors shall not be used in special care areas.

<sup>7</sup>See 4.1-A10.2.1.2 (2) for additional information.

<sup>8</sup>Where temperature ranges are indicated, the systems shall be capable of maintaining the rooms at any point within the range. A single figure indicates a heating or cooling capacity of at least the indicated temperature. This is usually applicable where residents may be undressed and require a warmer environment. Nothing in these Guidelines shall be construed as precluding the use of temperatures lower than those noted when the residents’ comfort and medical conditions make lower temperatures desirable. Unoccupied areas such as storage rooms shall have temperatures appropriate for the function intended.

**Table 4.1-2**  
**Filter Efficiencies for Central Ventilation and Air-Conditioning Systems in Nursing Facilities**

<i>Area designation</i>	<i>Minimum number of filter beds</i>	<i>Filter efficiencies in MERV (%)</i>	
		<i>Filter bed no. 1</i>	<i>Filter bed no. 2</i>
All areas for resident care, treatment, and/or diagnosis, and those areas providing direct service or clean supplies	2	7 (30%)	13 (80%)
Administrative, bulk storage, soiled holding, laundries, food preparation areas	1	7 (30%)	

Notes

1. MERV = minimum efficiency reporting value. MERVs are based on ASHRAE 52.2.
2. The filtration efficiency ratings are based on average dust spot efficiency per ASHRAE 52.1.

**Table 4.1-3**  
**Hot Water Use—Nursing Facilities**

	<i>Resident care areas</i>	<i>Dietary</i>	<i>Laundry</i>
Liters per hour per bed <sup>1</sup>	11.9	7.2	7.6
Gallons per hour per bed <sup>1</sup>	3	2	2
Temperature (°Centigrade)	35-43 <sup>2</sup>	60 <sup>3</sup>	60 <sup>4</sup>
Temperature (°Fahrenheit)	95-110 <sup>2</sup>	140 (min.) <sup>3</sup>	140 (min.) <sup>4</sup>

<sup>1</sup>Quantities indicated for design demand of hot water are for general reference minimums and shall not substitute for accepted engineering design procedures using actual number and types of fixtures to be installed. Design will also be affected by temperatures of cold water used for mixing, length of run and insulation relative to heat loss, etc. As an example, total quantity of hot water needed will be less when temperature available at the outlet is very nearly that of the source tank and the cold water used for tempering is relatively warm.

<sup>2</sup>The range represents the maximum and minimum allowable temperatures.

<sup>3</sup>Provisions shall be made to provide 180°F (82°C) rinse water at warewasher (may be by separate booster) unless a chemical rinse is provided.

<sup>4</sup>Provisions shall be made to provide 160°F (71°C) hot water at the laundry equipment when needed. (This may be by steam jet or separate booster heater.) However, it is emphasized that this does not imply that all water used would be at this temperature. Water temperatures required for acceptable laundry results will vary according to type of cycle, time of operation, and formula of soap and bleach as well as type and degree of soil. Lower temperatures may be adequate for most procedures in many facilities but higher temperatures should be available when needed for special conditions. Minimum laundry temperatures are for central laundries only.

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**Table 4.1-4**  
**Minimum Maintained Average Illuminance**

	Ambient Light in		Task Light in	
	Lux	Footcandles	Lux	Footcandles
Exterior entrance (night)	100	10		
Interior entry (day) <sup>1</sup>	1000	100		
Interior entry (night)	100	10		
Exit stairways and landings	300	30		
Elevator interiors	300	30		
Parking garage entrance	500	50		
Exterior walkways	50	5		
Administration (active hours)	300	30	500	50
Active areas (day only)	300	30	500	50
Visitor waiting (day)	300	30		
Visitor waiting (night)	100	10		
Resident room				
Entrance	300	30		
Living room	300	30	750	75
Bedroom	300	30	750	75
Wardrobe/closet	300	30		
Bathroom	300	30		
Makeup/shaving area	300	30	600	60
Shower/bathing rooms	300	30		
Kitchen area	300	30	500	50
Barber/beautician (day)	500	50		
Chapel or quiet area (active hours)	300	30		
Hallways (active hours)	300	30		
Hallways (sleeping hours)	100	10		
Dining (active hours)	500	50		
Medicine preparation	300	30	1000	100
Nurse station (day)	300	30	500	50
Nurse station (night)	100	10	500	50
Physical therapy area (active hours)	300	30	500	50
Occupational therapy (active hours)	300	30	500	50
Examination room (dedicated)	300	30	1000	100
Janitor's closet	300	30		
Laundry (active hours)	300	30	500	50
Clean/soiled utility	300	30		
Commercial kitchen	500	50	1000	100
Food storage (nonrefrigerated)	300	30		
Staff toilet area	200	20	600	60

<sup>1</sup> Use of daylight is encouraged in entryways to provide a transition between outside and inside illumination levels.

### Notes

1. Ambient light levels are minimum averages measured at 76 cm (30 in.) above the floor in a horizontal plane. Task light levels are absolute minimums taken on the visual task. For makeup/shaving, the measurement is to be taken on the face in a vertical position.
2. It should be understood that the values listed are minimums. The optimum solution for task lighting is to give users control over the intensity and positioning of the light source to meet their individual needs.

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