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Ambulatory Care Facilities

3.1 Outpatient Facilities

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

1 General Considerations

1.1 Applicability

1.1.1 This part of the Guidelines applies to the outpatient unit in a hospital, a freestanding facility, or an outpatient facility in a multiple-use building containing an ambulatory health care facility as defined in the NFPA 101 Life Safety Code occupancy chapters.

*1.1.2 The general standards set forth in Sections 1 through 5 of this chapter (General Considerations, Diagnostic and Treatment Locations, Service Areas, Administrative and Public Areas, and Construction Standards) shall apply to each of the facility types below. Additions and/or modifications shall be made as described in this chapter and in the chapters for the specific facility types. Consideration shall be given to the special needs of anticipated patient groups/demographics as determined by the functional program.

- Primary Care Outpatient Centers (Chapter 3.2)
- Small Primary (Neighborhood) Outpatient Facilities (Chapter 3.3)
- Freestanding Outpatient Diagnostic and Treatment Facilities (Chapter 3.4)
- Freestanding Urgent Care Facilities (Chapter 3.5)
- Freestanding Birthing Centers (Chapter 3.6)
- Ambulatory Surgical Facilities (Chapter 3.7)
- Gastrointestinal Endoscopy Facilities (Chapter 3.9)
- Renal Dialysis (Acute and Chronic) Centers (Chapter 3.10)
- Psychiatric Outpatient Centers (Chapter 3.11)

1.1.3 Specialty facilities not identified above may have needs that are not addressed in this chapter. Development of such specialty facilities shall rely on a detailed and specific functional program to establish physical environment requirements beyond the general requirements identified in this chapter.

1.2 Outpatient Facility Classification

1.2.1 The outpatient facilities described in this part of the Guidelines are used primarily by patients capable of traveling into, around, and out of the facility unassisted. This group includes the disabled confined to wheelchairs. Occasional facility use by stretcher patients shall not be used as a basis for more restrictive institutional occupancy classifications.

1.2.2 Where patients are rendered incapable of self-preservation due to the care process, facilities shall comply with the Ambulatory Health Care Occupancies section of NFPA 101 in addition to details herein. The Business Occupancy section of NFPA 101 applies to other types of outpatient facilities. Outpatient units that are part of another facility may be subject to the additional requirements of the other occupancy.

1.2.3 References are made to Chapter 2.1, General Hospitals, for certain service spaces. Those references are intended only for the specific areas indicated.

1.3 Functional Program

Each project sponsor shall provide a functional program for the facility. (See Section 1.2-2.)

1.4 Environment of Care

1.4.1 Patient Privacy

Each facility design shall ensure appropriate levels of patient acoustical and visual privacy and dignity throughout the care process, consistent with needs established in the functional program. See Sections 1.1-6 and 1.2-2.1.2.5 (4).

1.5 Shared/Purchased Services

When services are shared or purchased, modification or elimination of space and equipment to avoid unnecessary duplication shall be permitted.

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A1.1.2 The applicability of Sections 3.1-6 (Special Systems) and 3.1-7 (Building Systems) generally are specified in these sections and/or in the text of the individual facility type chapters.

1.6 Facility Access

1.6.1 Where the outpatient occupancy is part of another facility, separation and access shall be maintained as described in NFPA 101.

1.6.2 Building entrances used to reach the outpatient services shall be at grade level, clearly marked, and located so patients need not go through other activity areas. (Lobbies of multi-occupancy buildings may be shared.)

1.6.3 Design shall preclude unrelated traffic within the unit.

1.7 Site

*1.7.1 Location

1.7.2 Parking

1.7.2.1 In the absence of a formal parking study, parking for outpatient facilities shall be provided at the rate noted for each type of unit.

1.7.2.2 On-street parking, if available and acceptable to local authorities having jurisdiction, may satisfy part of this requirement unless described otherwise.

1.7.2.3 If the facility is located in a densely populated area where a large percentage of patients arrive as pedestrians, or if adequate public parking is available nearby, or if the facility is conveniently accessible via public transportation, adjustments to this standard may be made with approval of the appropriate authorities.

2 Diagnostic and Treatment Locations

Clinical and support areas shall be provided to support the functional program. The following spaces are common to most outpatient facilities:

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A1.7.1 Community outpatient units should ideally be conveniently accessible to patients via available public transportation.

A2.1.1 Door swings should be oriented to provide patient privacy.

A2.1.2 Door swings should be oriented to provide patient privacy.

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2.1 Examination and Treatment Rooms

*2.1.1 General Purpose Examination Room(s)

2.1.1.1 Space requirements

(1) Area. Rooms for medical, obstetrical, and similar examinations, if provided, shall have a minimum floor area of 80 net square feet (7.43 square meters) excluding vestibules, toilets, closets, and fixed casework.

(2) Clearances. Room arrangement shall permit a minimum clearance of 2 feet 8 inches (81.28 centimeters) at each side and at the foot of the examination table.

2.1.1.2 Hand-washing station. A hand-washing station shall be provided.

2.1.1.3 Documentation space. A counter or shelf space for writing shall be provided.

*2.1.2 Special Purpose Examination Rooms

2.1.2.1 Space requirements

(1) Area. Rooms for special clinics such as eye, ear, nose, and throat examinations, if provided, shall have a minimum floor area of 80 net square feet (7.43 square meters). This square footage shall exclude vestibules, toilets, closets, and fixed casework.

(2) Clearances. Room arrangement shall permit a minimum clearance of 2 feet 8 inches (81.28 centimeters) at each side and at the foot of the examination table, bed, or chair.

2.1.2.2 Hand-washing station. A hand-washing station shall be provided.

2.1.2.3 Documentation space. A counter or shelf space for writing shall be provided.

*2.1.3 Treatment Room(s)

2.1.3.1 Space requirements

(1) Area. Rooms for minor surgical and cast procedures, if provided, shall have a minimum floor area of 120 square feet (11.15 square meters). This square footage shall exclude vestibule, toilet,

closets, and fixed casework. The minimum room dimension shall be 10 feet (3.05 meters).

(2) Clearance. Room arrangement shall permit a minimum clearance of 3 feet (91.44 centimeters) at each side and at the foot of the bed.

2.1.3.2 Hand-washing station. A hand-washing station shall be provided.

2.1.3.3 Documentation space. A counter or shelf for writing shall be provided.

2.1.4 Observation Room(s)

***2.1.4.1** Location. The room shall be convenient to a nurse or control station.

2.1.4.2 Space requirements. If provided, observation rooms for the isolation of suspect or disturbed patients shall have a minimum floor area of 80 square feet (7.43 square meters). This square footage shall exclude vestibule, toilet, closets, and fixed casework.

2.1.5 Airborne Infection Isolation Rooms

2.1.5.1 Applicability. In facilities with a functional program that includes treatment of patients with known infectious disease, the need for and number of such rooms shall be determined by an infection control risk assessment (ICRA).

2.1.5.2 Standards. Where airborne infection isolation room(s) are required, they shall comply with the general requirements of Section 2.1-3.2.2, except that a shower or tub shall not be required.

2.1.6 Protective Environment Rooms

2.1.6.1 Applicability. The need for and number of required protective environment rooms shall be determined by an infection control risk assessment.

2.1.6.2 Standards. When required, the protective environment room(s) shall comply with the general requirements of Section 2.1-3.2.3, except that a toilet, bathtub, or shower shall not be required.

2.1.7 Support Areas for Examination and Treatment Rooms

2.1.7.1 Nurse station(s). A work counter, communication system, space for supplies, and provisions for charting shall be provided.

2.1.7.2 Drug distribution station. This may be a part of the nurses station and shall include a work counter, sink, refrigerator, and locked storage for biologicals and drugs.

2.1.7.3 Sterilizing facilities. A system for sterilizing equipment and supplies shall be provided. Sterilizing procedures may be done on- or off-site, or disposables may be used to satisfy functional needs.

2.1.7.4 Clean storage. A separate room or closet for storing clean and sterile supplies shall be provided. This storage shall be in addition to that of cabinets and shelves.

2.1.7.5 Soiled holding. Provisions shall be made for separate collection, storage, and disposal of soiled materials.

2.1.7.6 Wheelchair storage space. Such storage shall be out of the direct line of traffic.

2.1.8 Support Areas for Patients

2.1.8.1 Toilet(s) for patient use. These shall be provided separate from public use toilet(s) and located to permit access from patient care areas without passing through publicly accessible areas.

*2.2 Imaging Facilities

Basic diagnostic procedures (these may be part of the outpatient service, off-site, shared, by contract, or by referral) shall be provided and shall include the following:

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A2.1.4.1 This is to permit close observation of patients. An examination room may be modified to accommodate this function. A toilet room with lavatory should be immediately accessible.

A2.2 Imaging Facilities

a. Access. Stretchers should have ready access to and from other areas of the facility. The emergency, surgery, cystoscopy, and outpatient clinics should be accessible to the imaging suite.

b. Layout. Particular attention should be paid to the management of outpatients for preparation, holding, and observation.

c. Location. Imaging should be located with consideration of ceiling height requirements, proximity to electrical services, and future expansion considerations.

2.2.1 Access

2.2.2 Radiographic Room(s)
See Section 2.1-5.5 for special requirements.

2.2.3 Support Areas for Imaging Facilities
2.2.3.1 Viewing and administrative areas(s)

2.2.3.2 Film and media processing facilities. These shall be provided as indicated in the functional program and as technology requires.

2.2.3.3 Storage facilities for exposed film. These shall be provided as indicated in the functional program and as technology requires.

2.2.4 Support Areas for Patients
2.2.4.1 Dressing rooms or booths. These shall be provided as required by the functional program, with convenient toilet access.

2.2.4.2 Toilet rooms. Toilet rooms with hand-washing stations shall be accessible to procedure room(s) if procedures provided may result in the need for immediate access to patient toilet facilities.

2.3 Laboratory
Facilities shall be provided within the outpatient department, or through an effective contract arrangement with a nearby hospital or laboratory service, for hematology, clinical chemistry, urinalysis, cytology, pathology, and bacteriology. If these services are provided on contract, the following laboratory facilities shall also be provided in (or be immediately accessible to) the outpatient facility:

2.3.1 Laboratory Work Counter(s)
These shall have sink, vacuum, gas, and electric services.

2.3.2 Hand-washing Station(s)
Hand-washing stations or counter sink(s) equipped for hand washing shall be provided.

2.3.3 Support Areas for the Laboratory
2.3.3.1 Storage cabinet(s) or closet(s)

2.3.3.2 Specimen collection facilities

(1) These shall have a water closet and lavatory.

(2) Blood collection facilities shall have seating space, a work counter, and hand-washing station.

3 Service Areas

3.1 Environmental Services

3.1.1 Housekeeping Room(s)
3.1.1.1 Number. At least one housekeeping room per floor shall be provided.

3.1.1.2 Facility requirements. Each housekeeping room shall contain a service sink and storage for housekeeping supplies and equipment.

3.2 Engineering Services and Maintenance
The following shall be provided (sharing of these with other services shall be permitted provided capacity is appropriate for overall use):

3.2.1 Equipment Rooms
Equipment room(s) for boilers, mechanical equipment, and electrical equipment shall be provided.

3.2.2 Equipment and Supply Storage
Storage room(s) for supplies and equipment shall be provided.

3.3 Materials Management

3.3.1 Waste Management
For information on treatment or disposal of waste, see Section 3.1-6.3.

3.3.1.1 Collection and storage

(1) Space and facilities shall be provided for the sanitary storage of waste in accordance with the functional program.

(2) These facilities shall use techniques acceptable to the appropriate health and environmental authorities.

3.3.1.2 Trash chutes. The design and construction of trash chutes shall comply with NFPA 82.

4 Administrative and Public Areas

4.1 Public Areas

The following shall be provided:

4.1.1 Entrance

This shall be located at grade level and be able to accommodate wheelchairs.

4.1.2 Reception. A reception and information counter or desk shall be provided.

*4.1.3 Waiting Space(s)

4.1.4 Public Toilets

Toilet(s) for public use shall be conveniently accessible from the waiting area without passing through patient care or staff work areas or suites.

4.1.5 Public Telephones

Conveniently accessible public telephone(s) shall be provided.

4.1.6 Provisions for Drinking Water

Conveniently accessible provisions for drinking water shall be provided.

4.1.7 Wheelchair Storage

Conveniently accessible wheelchair storage shall be provided.

*4.2 Administrative Areas

4.2.1 Interview Space(s)

Space(s) shall be provided for private interviews related to social service, credit, etc.

4.2.2 General or Individual Office(s)

Space providing adequate work area for business transactions, records storage, and administrative and professional staffs shall be provided.

4.2.3 Medical Records

Provisions shall be made for securing medical records.

4.2.4 Equipment and Supply Storage

General storage facilities for supplies and equipment shall be provided as identified in the functional program.

4.2.5 Support Areas for Staff

Special storage for staff personal effects with locking drawers or cabinets (may be individual desks or cabinets) shall be provided. Such storage shall be convenient to individual workstations and shall be staff controlled.

5 Construction Standards

5.1 Design and Construction, including Fire-Resistant Standards

5.1.1 Building Codes

5.1.1.1 Construction and structural elements of free-standing outpatient facilities shall comply with recognized building code requirements for offices (business occupancies) and the standards contained herein.

5.1.1.2 Outpatient facilities that are an integral part of a hospital or that share common areas and functions with a hospital shall comply with the construction standards for general hospitals. See applicable sections of Chapter 2.1.

5.1.2 Provision for Disasters

5.1.2.1 Earthquakes. Seismic force resistance of new construction for outpatient facilities shall comply with Section 1.1-5 and shall be given an importance factor of one. Where the outpatient facility is part of an existing building, that facility shall comply with applicable local codes.

5.1.2.2 Other natural disasters. Special design provisions shall be made for buildings in regions that have sustained loss of life or damage to buildings from hurricanes, tornadoes, floods, or other natural disasters.

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A4.1.3 Consideration should be given to special needs of specific patient groups in a shared/general waiting area, such as separation of adolescent and geriatric patients.

A4.2 Multipurpose room(s) should be provided for private interviews, conferences, meetings, and health education purposes. Where health education is accommodated, the room(s) should be equipped for audiovisual aids.

5.2 General Standards for Details and Finishes

5.2.1 Details

Details shall comply with the following standards:

5.2.1.1 Corridor width

(1) Minimum public corridor width shall be 5 feet (1.52 meters). Staff-only corridors shall be permitted to be 3 feet 8 inches (1.12 meters) wide.

(2) Items such as provisions for drinking water, telephone booths, vending machines, etc., shall not restrict corridor traffic or reduce the corridor width below the required minimum.

(3) Out-of-traffic storage space for portable equipment shall be provided.

5.2.1.2 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, etc. Ceiling height in corridors, storage rooms, toilet rooms, and other minor rooms shall not be less than 7 feet 8 inches (2.34 meters).

(2) Rooms with ceiling-mounted equipment/light fixtures. Radiographic and other rooms containing ceiling-mounted equipment shall have ceilings of sufficient height to accommodate the equipment and/or fixtures.

(3) Boiler rooms. Boiler rooms shall have ceiling clearances not less than 2 feet 6 inches (76.20 centimeters) above the main boiler header and connecting piping.

(4) Clearances. Tracks, rails, and pipes suspended along the path of normal traffic shall be not less than 6 feet 8 inches (2.03 meters) above the floor.

5.2.1.3 Exits

(1) Each building shall have at least two exits that are remote from each other.

(2) Other details relating to exits and fire safety shall comply with NFPA 101 and the standards outlined herein.

5.2.1.4 Door width

(1) The minimum nominal door width for patient use shall be 3 feet (0.91 meter).

(2) If the outpatient facility serves hospital inpatients, the minimum nominal width of doors to rooms used by hospital inpatients transported in beds shall be 3 feet 8 inches (1.12 meters).

5.2.1.5 Glazing materials

(1) Doors, sidelights, borrowed lights, and windows glazed to within 18 inches (45.72 centimeters) of the floor shall be constructed of safety glass, wired glass, or plastic glazing material that resists breakage and creates no dangerous cutting edges when broken.

(2) Similar materials shall be used in wall openings of playrooms and exercise rooms unless otherwise required for fire safety.

(3) Glazing materials used for shower doors and bath enclosures shall be safety glass or plastic.

5.2.1.6 Hand-washing stations

(1) Hand-washing stations shall be located and arranged to permit proper use and operation.

(2) Particular care shall be taken to provide the required clearance for operation of blade-type handles.

(3) Provisions for hand drying shall be included at all hand-washing stations except scrub sinks.

5.2.1.7 Thresholds and joints. Threshold and expansion joint covers shall be flush with the floor surface to facilitate use of wheelchairs and carts.

5.2.1.8 Radiation protection. Radiation protection for x-ray and gamma ray installations shall comply with Section 2.1-5.5.

5.2.1.9 Protection from heat-producing equipment. Rooms containing heat-producing equipment (such as boiler or heater rooms) shall be insulated and ventilated to prevent occupied adjacent floor or wall surfaces from exceeding a temperature 10°F above the ambient room temperature.

5.2.2 Finishes

Finishes shall comply with the following standards:

5.2.2.1 Fire-retardant materials

(1) Cubicle curtains and draperies shall be noncombustible or flame-retardant and shall pass both the large- and small-scale tests required by NFPA 701.

(2) The flame-spread and smoke-developed ratings of finishes shall comply with Section 2.1-8.1. Where possible, the use of materials known to produce large amounts of noxious gases shall be avoided.

5.2.2.2 Floors

(1) Floor materials shall be readily cleanable and appropriately wear-resistant.

(2) In all areas subject to wet cleaning, floor materials shall not be physically affected by liquid germicidal and cleaning solutions.

(3) Floors subject to traffic while wet, including showers and bath areas, shall have a nonslip surface.

(4) Wall bases in areas frequently subject to wet cleaning shall be monolithic and coved with the floor, tightly sealed to the wall, and constructed without voids.

5.2.2.3 Walls. Wall finishes shall be washable and, in the proximity of plumbing fixtures, shall be smooth and moisture resistant.

5.2.2.4 Penetrations. Floor and wall areas penetrated by pipes, ducts, and conduits shall be tightly sealed to minimize entry of rodents and insects. Joints of structural elements shall be similarly sealed.

6 Special Systems

6.1 General

6.1.1 Applicability

As required by the functional program, special systems shall be installed in accordance with the following standards:

6.1.2 Testing

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

6.1.2.2 Test results. Test results shall be documented for maintenance files.

6.1.3 Documentation

6.1.3.1 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 lists, and complete procurement information, including equipment numbers and descriptions.

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

6.1.4 Insulation

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

6.2 Elevators

6.2.1 Dimensions

Cars shall have a minimum inside floor dimension of not less than 5 feet (1.52 meters).

6.2.2 Leveling Device

Elevators shall be equipped with a two-way automatic level-maintaining device with an accuracy of ±1/2 inch (±12.7 millimeters).

6.2.3 Elevator Controls

6.2.3.1 Elevator call buttons and controls shall not be activated by heat or smoke. Light beams, if used for operating door reopening devices without touch, shall be used in combination with door-edge safety devices and shall be interconnected with a system of smoke detectors. This is so the light control feature will be overridden or disengaged should it encounter smoke at any landing.

6.2.3.2 Elevator controls, alarm buttons, and telephones shall be accessible to wheelchair occupants and usable by the blind.

6.2.4 Installation and Testing

6.2.4.1 Standards. Installation and testing of elevators shall comply with ANSI/ASME A17.1 for new construction and ANSI/ASME A17.3 for existing facilities. (See ASCE/SEI 7 for seismic design and control system requirements for elevators.)

6.2.4.2 Documentation. Field inspections and tests shall be made and the owner shall be furnished with written certification stating that the installation meets the requirements set forth in this section as well as all applicable safety regulations and codes.

6.3 Waste Processing

Space and facilities shall be provided for the treatment or disposal of waste.

Note: For information on collection and storage of waste, see Section 3.1-3.3.1, Waste Management.

6.3.1 General

6.3.1.1 The functional program shall stipulate the categories and volumes of waste for disposal and shall stipulate the methods of disposal for each.

6.3.1.2 These facilities shall use techniques acceptable to the appropriate health and environmental authorities.

6.3.2 Medical Waste Disposal

6.3.2.1 General

(1) Medical waste shall be disposed of by incineration or other approved technologies. Two or more institutions shall be permitted to share incinerators or other major disposal equipment.

(2) Use of incinerators or other major disposal equipment to dispose of other medical waste shall be permitted where local regulations permit.

6.3.2.2 Space requirements

(1) Incinerators with capacities of 50 pounds per hour or more shall be in a separate room or outdoors; those with lesser capacities shall be permitted to be in a separate area within the facility boiler room.

(2) Rooms and areas containing incinerators shall have adequate space and facilities for charging and cleaning incinerators, as well as necessary clearances for work and maintenance.

(3) Provisions shall be made for operation, temporary storage, and disposal of materials so that odors and fumes do not drift back into occupied areas.

(4) Existing approved incinerator installations that are not in separate rooms or outdoors may remain unchanged provided they meet the above criteria.

6.3.2.3 Equipment

(1) Incinerators or other major disposal equipment shall be designed for the actual quantity and type of waste to be destroyed.

(2) Equipment shall meet all applicable regulations.

(3) The design and construction of incinerators, if used, shall comply with NFPA 82 and conform to the standards prescribed by area air pollution regulations.

Note: For information about refuse chutes, see Section 3.1-3.3.1.2.

***6.3.2.4** Recovery of waste heat

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A6.3.2.4 When incinerators are used, consideration should be given to the recovery of waste heat from on-site incinerators used to dispose of large amounts of waste materials.

*6.3.2.5 Environmental/health risk assessments

6.3.3 Nuclear Waste Disposal

See Code of Federal Regulations, title X, parts 20 and 35, concerning the handling and disposal of nuclear materials in health care facilities.

7 Building Systems

7.1 Plumbing

7.1.1 General

7.1.1.1 Applicability. These requirements do not apply to small primary (neighborhood) outpatient facilities or outpatient facilities that do not perform invasive applications or procedures. See Section 3.3-6.1 for requirements for small primary (neighborhood) outpatient facilities.

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

7.1.2 Plumbing and Other Piping Systems

7.1.2.1 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.

(3) No plumbing piping shall be exposed overhead or exposed on walls where possible accumulation of dust or soil may create a cleaning problem or where leaks would create a potential for food contamination.

7.1.2.2 Hemodialysis piping

(1) Where the functional program includes hemodialysis, continuously circulated filtered cold water shall be provided. Piping shall be in accordance with AAMI RD62.

(2) In new construction and renovation where hemodialysis or hemoperfusion are routinely performed, a separate water supply and drainage facility that does not interfere with hand-washing shall be provided.

7.1.2.3 Potable water supply systems. The following standards shall apply to 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. Where 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 is 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.*

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A6.3.2.5 Incinerators should be designed in a manner fully consistent with protection of public and environmental health, both on-site and off-site, and in compliance with federal, state, and local statutes and regulations. Toward this end, permit applications for incinerators and modifications thereof should be supported by environmental assessments and/or environmental impact statements (EISs) and/or health risk assessments (HRAs) as required by regulatory agencies. Except as noted below, such assessments should utilize standard U.S. EPA methods, specifically those set forth in U.S. EPA guidelines, and should be fully consistent with U.S. EPA guidelines for health risk assessment. Under some circumstances, however, regulatory agencies having jurisdiction over a particular project may require use of alternative methods.

(b) Vacuum breakers or backflow prevention devices shall be installed on hose bibs and supply nozzles used for connection of hoses or tubing in laboratories, housekeeping sinks, etc.

(4) Potable water storage vessels (hot and cold) not intended for constant use shall not be installed.

(5) Emergency eyewash and showers shall comply with ANSI Z358.1.

7.1.2.4 Hot water systems. See Section 1.6-2.2.1.

7.1.2.5 Drainage systems. The following standards shall apply to drainage systems:

(1) Piping

(a) Drain lines from sinks used for acid waste disposal shall be made of acid-resistant material.

(b) Drain lines serving some types of automatic blood-cell counters shall be of carefully selected material that will eliminate the potential for undesirable chemical reactions (and/or explosions) between sodium azide wastes and copper, lead, brass, solder, etc.

(c) Insofar as possible, drainage piping shall not be installed within the ceiling or exposed in operating and delivery rooms, nurseries, 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) Floor drains

(a) Floor drains shall not be installed in operating and delivery rooms.

*(b) If a floor drain is installed in cystoscopy, it shall contain a nonsplash, horizontal-flow flushing bowl beneath the drain plate.

(c) Dietary area floor drains and/or floor sinks

(i) Type. These shall be of a type that can be easily cleaned by removing the cover. Removable stainless steel mesh shall be provided in addition to grilled drain covers to prevent entry of large particles of waste that might cause stoppages.

(ii) Location. Floor drains or floor sinks shall be provided at all "wet" equipment (as ice machines) and as required for wet cleaning of floors. Location of floor drains and floor sinks shall be coordinated to avoid conditions where locations of equipment make removal of covers for cleaning difficult.

(3) 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.

(4) Kitchen grease traps

(a) Grease traps shall be of capacity required.

(b) These shall be located and arranged to permit easy access without the need to enter food preparation or storage areas.

(c) These shall be accessible from outside the building without need to interrupt any services.

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A7.1.2.5 (2)(b) Floor drains in cystoscopy operating rooms have been shown to disseminate a heavily contaminated spray during flushing. Unless flushed regularly with large amounts of fluid, the trap tends to dry out and permit passage of gases, vapors, odors, insects, and vermin directly into the operating room. For new construction, if the users insist on a floor drain, the drain plate should be located away from the operative site and should be over a frequently flushed nonsplash, horizontal-flow type of bowl, preferably with a closed system of drainage. Alternative methods include (1) an aspirator/trap installed in a wall connected to the collecting trough of the operating table by a closed, disposable tube system or (2) a closed system using portable collecting vessels. (See NFPA 99.)

(5) Plaster traps. Where plaster traps are used, provisions shall be made for appropriate access and cleaning.

7.1.2.6 Condensate drains. See Section 1.6-2.1.2.2.

7.1.3 Plumbing Fixtures

In addition to the requirements of Section 1.6-2.1.3, the following standards shall apply to plumbing fixtures in outpatient facilities:

7.1.3.1 Clinical sinks

(1) Handles on clinical sinks shall be at least 6 inches (15.24 centimeters) long.

(2) Clinical sinks shall have an integral trap wherein the upper portion of the water trap provides a visible seal.

7.1.3.2 Scrub sinks. Freestanding scrub sinks and lavatories used for scrubbing in procedure rooms shall be trimmed with foot, knee, or ultrasonic controls; single-lever wrist blades shall not be permitted.

7.1.4 Medical Gas and Vacuum Systems

7.1.4.1 Medical gas systems. If piped medical gas is used, the installation, testing, and certification of nonflammable medical gas and air systems shall comply with the requirements of NFPA 99. Station outlets shall be provided consistent with need established by the functional program. (See also Table 3.1-2.)

7.1.4.2 Vacuum systems. Central vacuum systems. Where the functional program requires, central clinical vacuum system installations shall be in accordance with NFPA 99.

7.2 Heating, Ventilating, and Air-Conditioning (HVAC) Systems

7.2.1 Applicability

These requirements do not apply to small primary (neighborhood) outpatient facilities or outpatient facilities that do not perform invasive applications or procedures. See Section 3.3-6.2 for requirements for small primary (neighborhood) outpatient facilities.

7.2.2 General

***7.2.2.1** Mechanical system design

(1) Efficiency. The mechanical system shall be designed for overall efficiency and life-cycle costing. 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 at minimal additional cost and simultaneously provide improved patient comfort.

(b) Different geographic areas may have climatic and use conditions that favor one system over another in terms of overall cost and efficiency.

(c) In no case shall patient care or safety be sacrificed for conservation.

(d) Facility design features such as site, building mass, orientation, configuration, fenestration, and other features relative to passive and active energy systems shall be considered.

(e) Use of recognized energy-saving mechanisms such as variable-air-volume (VAV) systems, load shedding, programmed controls for unoccupied periods (nights and weekends, etc.), and use of natural ventilation shall be considered, site and climatic conditions permitting.

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A7.2.2.1 Mechanical system design

a. Remodeling and work in existing facilities may present special problems. As practicality and funding permit, existing insulation, weather stripping, etc., should be brought up to standard for maximum economy and efficiency. Consideration should be given to additional work that may be needed to achieve this.

b. Insofar as practical, the facility should include provisions for recovery of waste cooling and heating energy (ventilation, exhaust, water and steam discharge, cooling towers, incinerators, etc.).

c. Systems with excessive installation and/or maintenance costs that negate long-range savings should be avoided.

d. Use of mechanically circulated outside air does not reduce the need for filtration.

(2) Air-handling systems

*(a) Air-handling systems shall be designed with an economizer cycle where appropriate to use outside air.

(b) VAV systems. The energy-saving potential of VAV systems is recognized, and the standards herein are intended to maximize appropriate use of such systems. Any system used for occupied areas shall include provisions to avoid air stagnation in interior spaces where thermostat demands are met by temperatures of surrounding areas.

(c) Non-central air-handling systems (i.e., individual room units used for heating and cooling purposes, such as fan-coil units, heat pump units, etc.) shall meet the following requirements: 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 3.1-1.

(3) Vibration isolators. Mechanical equipment, ductwork, and piping shall be mounted on vibration isolators as required to prevent unacceptable structure-borne vibration.

(4) 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.

7.2.2.2 Ventilation and space conditioning requirements. All rooms and areas used for patient care shall have provisions for ventilation.

(1) Ventilation rates. The ventilation rates shown in Table 2.1-2 shall be used only as minimum standards; they do not preclude the use of higher, more appropriate rates.

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A7.2.2.1 (2)(a) It may be practical in many areas to reduce or shut down mechanical ventilation during appropriate climatic and patient care conditions and to use open windows for ventilation.

(2) Air change rates. Air supply and exhaust in rooms for which no minimum total air change rate is noted may vary down to zero in response to room load. For rooms listed in Table 2.1-2 , where VAV systems are used, minimum total air change shall be within limits noted.

(3) Temperature and humidity. Space temperature and relative humidity shall be as indicated in Table 2.1-2 .

(4) Air movement direction. To maintain asepsis control, airflow supply and exhaust shall be controlled to ensure general movement of air from "clean" to "less clean" areas, especially in critical areas. The ventilation systems shall be designed and balanced according to the requirements in Table 2.1-2 and in the applicable notes.

(5) Natural ventilation. Although natural window ventilation for nonsensitive and patient areas shall be permitted, mechanical ventilation shall be provided for all rooms and areas in the facility.

(6) Renovation. For renovation projects, prior to the start of construction and preferably during design, airflow and static pressure measurements shall be taken at the connection points of new ductwork to existing systems. This information shall be used by the designer to determine if existing systems have sufficient capacity for intended new purposes, and so any required modifications to the existing system can be included in the design documentation.

7.2.2.3 Testing and documentation

(1) Upon completion of the equipment installation contract, the owner shall be furnished with a complete set of manufacturers' operating, maintenance, and preventive maintenance instructions, parts lists, and complete procurement information, including equipment numbers and descriptions. Required information shall include energy ratings as needed for future conservation calculations.

(2) Operating staff persons shall also be provided with written instructions for the proper operation of systems and equipment.

7.2.3 Ventilation Requirements for Specific Locations

***7.2.3.1** Operating rooms

(1) Air supply

(a) In new construction and major renovation work, air supply for operating rooms shall be from non-aspirating ceiling diffusers with a face velocity in the range of 25 to 35 fpm (0.13 to 0.18 m/s), located at the ceiling above the center of the work area. Return air shall be near the floor level, at a minimum. Return air shall be permitted high on the walls, in addition to the low returns.

(b) Each operating and delivery room shall have at least two return-air inlets located as far from each other as practical.

(c) Turbulence and other factors of air movement shall be considered to minimize the fall of particulates onto sterile surfaces.

(2) Temperature. Temperature shall be individually controlled for each operating room.

(3) Ventilation rates

(a) Operating room ventilation systems shall operate at all times, except during maintenance and conditions requiring shutdown by the building's fire alarm system.

(b) During unoccupied hours, operating room air change rates may be reduced, provided that the positive room pressure is maintained as required in Table 2.1-2.

7.2.3.2 Cough-inducing procedure rooms. Rooms used for sputum induction, aerosolized pentamidine treatments, or other cough-inducing procedures shall meet the requirements of Table 2.1-2 for airborne infection isolation rooms. If booths are used, refer to Section 2.1-5.8.1.

7.2.3.3 Anesthesia storage rooms. The ventilation system for anesthesia storage rooms shall conform to the requirements of NFPA 99, including the gravity option. Mechanically operated air systems are optional in this room.

7.2.3.4 ETO sterilizer space. The ventilation system for the space that houses ethylene oxide (ETO) sterilizers shall be designed as follows:

(1) A dedicated (not connected to a return air or other exhaust system) exhaust system shall be provided. Refer to 29 CFR Part 1910.1047.

(2) All source areas shall be exhausted, including the sterilizer equipment room, service/aeration areas, and the space above the sterilizer door, as well as the aerator.

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A7.2.3.1 Ventilation for operating rooms

a. The operating and delivery room ventilation systems should operate at all times to maintain the air movement relationship to adjacent areas. The cleanliness of the spaces is compromised when the ventilation system is shut down. For example, airflow from a less clean space such as the corridor can occur, and standing water can accumulate in the ventilation system (near humidifiers or cooling coils).

b. The recommended air change rate in an operating room is 20 to 25 air changes per hour (ACH) for ceiling heights between 9 feet (2.74 meters) and 12 feet (3.66 meters). The system should provide a single directional flow regime, with both high and low exhaust locations. A face velocity of around 25 to 35 fpm (0.13 to 0.18 m/s) is sufficient from the non-aspirating diffuser array provided that the array size itself is set correctly. The non-aspirating diffuser array size should be set so that it covers at least the area footprint of the table plus a reasonable margin around it. In the cited study, this margin is 21 inches (0.53 meter) on the short side and 12 inches (0.3 meter) on the long side. If additional diffusers are required, they may be located outside this central diffuser array. Up to 30% of the central diffuser array may be allocated to non-diffuser items (medical gas columns, lights, etc.).

The recommended ventilation rates in the previous paragraph were derived from studies conducted by the National Institutes of Health titled "Comparison of Operating Room Ventilation Systems in the Protection of the Surgical Site" (Memarzadeh 2002) and "Effect of Operation Room Geometry and Ventilation System Parameter Variations on the Protection of the Surgical Site" (Memarzadeh 2004).

(a) If the ETO cylinders are not located in a well-ventilated, unoccupied equipment space, an exhaust hood shall be provided over the cylinders.

(b) The relief valve shall be terminated in a well-ventilated, unoccupied equipment space or outside the building.

(c) If the floor drain to which the sterilizer(s) discharges is not located in a well-ventilated, unoccupied equipment space, an exhaust drain cap shall be provided (coordinate with local codes).

(3) General airflow shall be away from the sterilizer operator(s).

(4) A dedicated exhaust duct system for ETO shall be provided. The exhaust outlet to the outside shall be at least 25 feet (7.62 meters) away from any air intake.

(5) An audible and visual alarm shall activate in the sterilizer work area, and in a 24-hour staffed location, upon loss of airflow in the exhaust system.

7.2.3.5 Food preparation centers. Exhaust hoods handling grease-laden vapors in food preparation centers shall meet the following requirements:

(1) Hoods 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. Each horizontal duct run shall have at least one cleanout opening. Horizontal runs of ducts serving range hoods shall be kept to a minimum.

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A7.2.5.3 (2) See Industrial Ventilation: A Manual of Recommended Practice, published by the American Conference of Governmental Industrial Hygienists (www.acgih.org), for additional information.

7.2.3.6 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.

7.2.4 Thermal Insulation and Acoustical Provisions

See Section 1.6-2.2.1.

7.2.5 HVAC Air Distribution

7.2.5.1 Return air systems. All return air ventilation systems in patient care areas of outpatient surgery facilities shall be ducted.

7.2.5.2 HVAC ductwork. See Section 1.6-2.2.2.1.

7.2.5.3 Exhaust systems

(1) General

(a) To enhance the efficiency of recovery devices, required for energy conservation, combined exhaust systems shall be permitted.

(b) Local exhaust systems shall be used whenever possible in place of dilution ventilation to reduce exposure to hazardous gases, vapors, fumes, or mists.

(c) Fans serving exhaust systems shall be located at the discharge end and shall be readily serviceable.

(d) Airborne infection isolation rooms shall not be served by exhaust systems incorporating a heat wheel.

*(2) Anesthesia scavenging system. Each space routinely used for administering inhalation anesthesia and inhalation analgesia shall be served by a scavenging system to vent waste gases.

(a) If a vacuum system is used, the gas-collecting system shall be arranged so that it does not disturb patients' respiratory systems.

(b) Gases from the scavenging system shall be exhausted directly to the outside. The anesthesia evacuation system may be combined with the room exhaust system, provided that

the part used for anesthesia gas scavenging exhausts directly to the outside and is not part of the recirculation system.

(c) Where anesthesia scavenging systems are required, air supply shall be at or near the ceiling. Return or exhaust air inlets shall be near the floor level.

(d) Scavenging systems are not required for areas where gases are used only occasionally, such as the emergency department, offices for routine dental work, etc.

7.2.5.4 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-surgical 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 requirement for a 25-foot (7.62-meter) separation also pertains to the distance between the intake and the exhaust and/or gas vent off packaged rooftop units.

(c) Plumbing and vacuum vents that terminate at a level above the top of the air intake may be located as close as 10 feet (3.05 meters).

(d) The bottom of outdoor air intakes serving central 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 (0.91 meter) above roof level.

(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 and directed away from personnel service areas.

(3) Gravity exhaust. Where conditions permit, gravity exhaust may be used for nonpatient areas such as boiler rooms, central storage, etc.

(4) Construction requirements. The bottom of air distribution devices (supply/return/exhaust) shall be at least 3 inches (7.62 centimeters) above the floor.

7.2.5.5 Ventilation hoods

(1) Exhaust hoods and safety cabinets

(a) Hoods and safety cabinets are permitted to be used for normal exhaust of a space provided minimum air change rates are maintained.

(b) If air change standards in Table 2.1-2 do not provide sufficient air for proper operation of exhaust hoods and safety cabinets (when in use), makeup air (filtered and preheated) shall be provided around these units to maintain the required airflow direction and exhaust velocity. Use of makeup air will avoid dependence upon infiltration from outdoor and/or from contaminated areas.

(c) Makeup systems for hoods shall be arranged to minimize "short circuiting" of air and to avoid reduction in air velocity at the point of contaminant capture.

(2) Laboratory fume hoods. Laboratory fume hoods shall meet the following general standards:

(a) General standards

(i) Average face velocity of 75 feet per minute (0.45 to 0.56 meters per second).

(ii) Connection to an exhaust system to the outside that is separate from the building exhaust system

(iii) Location of an exhaust fan at the discharge end of the system

(iv) Inclusion of an exhaust duct system of noncombustible corrosion-resistant material as needed to meet the planned usage of the hood.

(b) Special standards for use with strong oxidants

(i) Fume hoods, and their associated equipment in the air stream intended for use with perchloric acid and other strong oxidants, shall be constructed of stainless steel or other material consistent with special exposures.

(ii) These hoods and equipment shall be provided with a water wash and drain system to permit periodic flushing of duct and hood.

(iii) Electrical equipment intended for installation within such ducts shall be designed and constructed to resist penetration by water. Lubricants and seals shall not contain organic materials.

(iv) When perchloric acid or other strong oxidants are only transferred from one container to another, standard laboratory fume hoods and the associated equipment may be used in lieu of stainless steel construction.

(c) Special standards for use with infectious or radioactive materials. In new construction and major renovation work, each hood used to process infectious or radioactive materials shall meet the following requirements:

(i) Each hood shall have a minimum face velocity of 90 to 110 feet per minute (0.45 to 0.56 meters per second) with suitable pressure-independent air-modulating devices and alarms to alert staff of fan shutdown or loss of airflow.

(ii) Each hood shall have filters with a 99.97 percent efficiency (based on the DOP test method) in the exhaust stream, and be designed and equipped to permit the safe removal, disposal, and replacement of contaminated filters. Filters shall be as close to the hood as practical to minimize duct contamination.

(iii) Fume hoods intended for use with radioactive isotopes shall be constructed of stainless steel or other material suitable for the particular exposure and shall comply with NFPA 801, *Facilities for Handling Radioactive Materials.* **Note:** Radioactive isotopes used for injections, etc., without probability of airborne particulates or gases may be processed in a clean-work-bench-type hood where acceptable to the Nuclear Regulatory Commission.

7.2.6 HVAC Filters

7.2.6.1 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 3.1-1.

(2) Non-central air handling systems shall be equipped with permanent (cleanable) or replaceable filters with a minimum efficiency of MERV 3 (68 percent weight arrestance).

(3) Filter efficiencies, tested in accordance with ASHRAE 52.1, shall be average.

7.2.6.2 Filter bed location. Where two filter beds are required, filter bed no. 1 shall be located upstream of the air conditioning equipment and filter bed no. 2 shall be downstream of any fan or blowers.

7.2.6.3 Filter frames. Filter frames shall be durable and proportioned to provide an airtight fit with the enclosing ductwork. All joints between filter segments and enclosing ductwork shall have gaskets or seals to provide a positive seal against air leakage.

7.2.6.4 Filter manometers. A manometer shall be installed across each filter bed having a required efficiency of 75 percent or more, including hoods requiring HEPA filters. Provisions shall be made to allow access for field testing.

7.2.7 Steam and Hot Water Systems

See Section 1.6-2.2.3.

7.3 Electrical Systems

7.3.1 General

7.3.1.1 Applicable standards

(1) All electrical material and equipment, including conductors, controls, and signaling devices, shall be installed in compliance with applicable sections of NFPA 70 and NFPA 99.

(2) All electrical material and equipment shall be listed as complying with available standards of listing agencies or other similar established standards where such standards are required.

7.3.1.2 Testing and documentation. Electrical installations, including alarm and communication systems, shall be tested to demonstrate that equipment installation and operation is appropriate and functional. A written record of performance tests on special electrical systems and equipment shall show compliance with applicable codes and standards.

7.3.1.3 Power disturbance safeguards. Data processing and/or automated laboratory or diagnostic equipment, if provided, may require safeguards from power line disturbances.

7.3.2 Electrical Distribution and Transmission

7.3.2.1 Switchboards

(1) Location

(a) Main switchboards shall be located in an area separate from plumbing and mechanical equipment and shall be accessible to authorized persons only.

(b) Switchboards shall be convenient for use and readily accessible for maintenance but away from traffic lanes.

(c) Switchboards shall be located in dry, ventilated spaces free of corrosive or explosive fumes or gases or any flammable material.

(2) Overload protective devices. These shall operate properly in ambient room temperatures.

7.3.2.2 Panelboards

(1) Panelboards serving normal lighting and appliance circuits shall be located on the same floor as the circuits they serve.

(2) Panelboards serving critical branch emergency circuits shall be located on each floor that has major users.

(3) Panelboards serving life safety emergency circuits may also serve floors above and/or below.

7.3.2.3 Ground-fault circuit interrupters

7.3.3 Power Generating and Storing Equipment

7.3.3.1 Emergency electrical service. Emergency lighting and power shall be provided for in accordance with NFPA 99, NFPA 101, and NFPA 110.

7.3.4 Lighting

7.3.4.1 General. See Section 1.6-2.3.1.1.

7.3.4.2 Lighting for specific locations in the outpatient facility

(1) Exam/treatment/trauma rooms. A portable or fixed examination light shall be provided for examination, treatment, and trauma rooms.

(2) Operating and delivery rooms. Operating and delivery rooms shall have general lighting in addition to special lighting units provided at surgical and obstetrical tables. General lighting and special lighting shall be on separate circuits.

7.3.4.3 Emergency lighting. See Section 1.6-2.3.1.2.

7.3.5 Receptacles (Convenience Outlets)

7.3.5.1 Duplex grounded-type receptacles (convenience outlets) shall be installed in all areas in sufficient quantities for tasks to be performed as needed.

7.3.5.2 Each examination and worktable shall have access to a minimum of two duplex receptacles.

7.3.6 Equipment

7.3.6.1 X-ray equipment. Fixed and mobile x-ray equipment installations shall conform to articles 517 and 660 of NFPA 70.

7.3.6.2 Inhalation anesthetizing locations. At inhalation anesthetizing locations, all electrical equipment and devices, receptacles, and wiring shall comply with applicable sections of NFPA 99 and NFPA 70.

7.3.6.3 Special electrical equipment. Special equipment is identified in the subsections of Section 2, Diagnostic and Treatment Locations, of this chapter. These sections shall be consulted to ensure compatibility between programmatically defined equipment needs and appropriate power and other electrical connection needs.

7.4 Telecommunications and Information Systems

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

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

7.5 Fire Alarm System

Any fire alarm system shall be as required by NFPA 101 and installed per NFPA 72.

Table 3.1-1
Filter Efficiencies for Central Ventilation and Air Conditioning Systems in Outpatient Facilities

Area designation	*No. filter beds*	*Filter bed no. 1 (MERV, %)*	*Filter bed no. 2[1] (MERV, %)*
All areas for patient care, treatment, and/or diagnosis, and those areas providing direct service or clean supplies such as sterile and clean processing, etc.	2	8 (30%)	14 (90%)
Laboratories	1	13 (80%)	–
Administrative, bulk storage, soiled holding areas, food preparation areas, and laundries	1	8 (30%)	–

[1]These requirements do not apply to small primary (neighborhood) outpatient facilities or outpatient facilities that do not perform invasive applications or procedures.

Notes
1. Additional roughing or prefilters should be considered to reduce maintenance required for main filters.
2. MERV = minimum efficiency reporting value. MERVs are based on ASHRAE 52.2.
3. The filtration efficiency ratings are based on average dust spot efficiency per ASHRAE 52.1.

Table 3.1-2
Station Outlets for Oxygen, Vacuum, and Medical Air in Outpatient Facilities

Section	*Location*	*Oxygen*	*Vacuum*	*Medical Air*
3.1-2.1.1/2.1.2	General/special purpose examination	0	0	–
3.1-2.1.3	Treatment	0	0	–
3.1-2.1.5	Isolation	0[1]	0[1]	–
3.6-2.1	Birthing room	2	2	–
3.7-2.2	Examination in outpatient surgical facility	0[1]	0[1]	–
	Ambulatory operating rooms			
3.7-2.3.1.1	Class A–minor surgical procedure room	1	1	–
3.7-2.3.1.2	Class B–intermediate surgical procedure room	2	2	–
3.7-2.3.1.3	Class C–major surgical procedure room	2	3	–
3.7-2.4.1	Post-anesthesia recovery	1	1	–
3.7-2.4.2	Phase II recovery	0[1]	0[1]	–
–	Cysto procedure	1	3	–
	Urgent Care			
	Procedure room	1	1	1
–	Cast room	0[1]	0[1]	–
–	Catheterization room	1	2	2
	Endoscopy			
3.9-2.3	Procedure room	1	3	–
3.9-2.3.2	Holding/prep/recovery area	0[1]	0[1]	–
3.9-3.2.2	Decontamination area	–	–	–

[1]Portable source shall be available for the space.