



Section 2

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General Considerations

Patient Care Concepts

Following general trends in healthcare, VA continues to provide more and more services in outpatient settings. VA uses two principal settings to deliver outpatient care to Veterans: Hospital-Based Ambulatory Care facilities and freestanding Outpatient Clinics. Ambulatory care within both settings typically evolves around the following clinical services:

- Examination / Treatment Primary Care Clinic Modules
- Specialty Clinics
- Other Patient-Service Programs

Examination/Treatment Primary Care Clinic Modules are grouped into clusters of examination rooms and ancillary support services (refer to Section 3 for a typical Primary Care Module spatial configuration). Services are provided by physicians, nurse practitioners, and physician assistants specifically trained in first point contact with patients with an undiagnosed sign, symptom, or health concern.

Specialty Care Clinics support Exam/Treatment (Primary Care) when such specialized needs are prescribed by the provider. Specialty Care Clinics within the Hospital Based Ambulatory Care setting include Dermatology, Gastroenterology, Urology, and Oncology Clinics. Spatial definition of these clinic functions can be found in the VA [Space Planning Criteria, Chapter 262](#) Ambulatory Care (Hospital Based).

Other Patient-Service Programs are provided as required to supplement Primary and Specialty Clinic services. Service Programs include out-processing areas for scheduled and unscheduled patient visits, and Hospital Based Home Care services.

Ambulatory Care Clinics are hospital based patient care centers providing scheduled and unscheduled examination, treatment, and diagnostic services for acute and chronically ill patients. Primary Care services are provided as determined on a project basis. Because the Ambulatory Care Clinic is located at a Medical Center, Laboratory and Radiology are among the functions that may be shared with the Medical Center to avoid duplication of spaces and equipment or to improve efficiency. Although the majority of Ambulatory Care patients are outpatients, inpatients may also be treated in the ambulatory setting to eliminate duplication of services, facilities, and staff.

This Guide addresses Ambulatory Care Facilities that are connected to an existing hospital structure. Facilities that may be remotely located (such as part of a hospital's outreach program to a targeted population area) are addressed in the Outpatient Clinic Design Guide. This Guide includes material for functions or spaces listed in VA [Space Planning Criteria, Chapter 262](#) Ambulatory Care (Hospital Based). If the project-specific program includes functions or services not addressed in this Design Guide, refer to appropriate Guides or Manuals in the VA Hospital series for the service in question.

General Trends In Ambulatory Care

The continuing shift of selected diagnostic examinations and procedures from inpatient to an outpatient setting drives the on-going evolution of the Ambulatory Care Facility. These "hospitals without beds" may involve such diverse activities as surgery, sophisticated imaging systems, and both invasive and non-invasive diagnostic and therapeutic procedures. The changes in medical technology and protocol coupled with continuing readjustment of reimbursement patterns make ambulatory care a very volatile category of health services. For these reasons, **flexibility and expandability** are required attributes of the well-designed Ambulatory Care Facility.

Diagnostic Imaging Services and Surgical Services are two of the types of programs that will require specialized electrical, ventilation, and shielding construction. Changes within these areas are driven by rapid technological innovation. In other services, new programs may come into being as old programs are discontinued. A "modular" design which can accommodate evolving needs may be the most appropriate design solution.

VA Trends

VA funding has moved from a bed service orientated operation to an ambulatory care emphasis. VA evaluation of how patients should be served and how they should participate in their own care is on-going. New initiatives include tele-medicine programs.

In some markets, VA budget allocations for hospital based ambulatory care may diminish in favor of primary care centers outside the hospital setting. More accessible and convenient primary care may be provided by smaller, community based outpatient clinics (CBOC), free-standing facilities of 10,000 sf (930 m²) or less. However, in most markets Hospital Based Ambulatory Care is likely to remain comprised of highly specialized referral clinics, technologies, and staff that cannot afford to be duplicated in off-site Primary Care settings.

VA has increased focus on women's medicine in response to the increase in population of Veterans who are women.

The VA health care system will continue to maintain a significant focus on physical therapy, prosthetics, and rehabilitation services.

Level Of Care

Ambulatory Care Activity Profile (ACAP): The ACAP more accurately differentiates varying ambulatory care space requirements among highly affiliated tertiary care medical centers and less highly affiliated secondary, and primary care medical centers. ACAP Levels are based on the VA Medical Complexity Level as tabulated in VA [Space Planning Criteria, Chapter 262](#).

Hospital-based Ambulatory Care facilities may include limited inpatient use within Ambulatory Care Occupancy.

Market Segment

In the past the vast majority of Veterans served at VA Ambulatory Care facilities were older, retired males with multiple, chronic conditions. While a large percentage of the population served by the VA system will remain the retired Veterans, recent trends suggest continued

increases in participation by women and younger Veterans. Significant increases may be expected from Gulf War and Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) Veterans. The special needs of these Veteran groups may be the impetus for new developments in VA programs and facilities.

While the Veteran will remain the primary concern, other user groups may also be served. Under managed care, the Veteran may choose their health program which can be extended to the spouse and other family members. VA is actively seeking sharing agreements with private-sector (University) and Department of Defense (DoD) for Army, Navy and Air Force. Sharing agreements, joint ventures, and referrals will sometimes include active-duty military, dependents, and members from the general public.

Operational Concepts

The Ambulatory Care spaces represented in these Guide Plates provide flexibility to accommodate changing patient care concepts for both outpatients and inpatients.

Aspects of patient participation, patient-focused care, and other concepts need to be addressed by specific projects.

Ease of access and circulation for outpatients and their families is a primary planning objective. It is important to remember that patients are often experiencing a heightened sense of anxiety with regard to the status of their health. Finding their way around an unfamiliar facility should not contribute to this anxiety. This is particularly important for first-time visitors. Refer to VA [Interior Design Manual](#) and [Signage Design Guide](#) for guidance on incorporating wayfinding and signage.

Contemporary Advancements / Evidence-Based Design

Contemporary advancements in health care design and practices need to be considered within every design solution, as well as those design features and practices that improve patient confidentiality (HIPAA). Contemporary “state-of-the-art” design solutions in both private and institutional health facilities should be considered whenever and wherever advancements warrant and can be justified.

Evidence-based design, another contemporary design concept, offers potential advancements in both patient and staff health, safety, and welfare, and should result in demonstrated improvements in outcomes, economic performance, productivity, customer satisfaction, and cultural enlightenment. Evidence-based design components include:

- Accessibility / ease of access
- Infection control / operational protocol
- Daylighting / natural light potential
- Air quality / natural ventilation
- Noise abatement (possibly utilizing “White Noise” medium)
- Application of color, textures, and finishes
- Environmental / use of artwork, music, and plants

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Functional Considerations

Space Planning & Design / Space Allocation

Program Levels: Net square footage shown in this Design Guide are coordinated with Chapter 262 of VA Space Planning Criteria. Based on three ACAP levels, defined: S - M - L. Unless otherwise noted, the layouts in this Design Guide are based on Level M (complexity III) facilities.

Flexibility: The design of health facilities must respond to changing workloads, business objectives and technologies. To ensure continuing adaptability to changing workloads and technologies, designers should maximize the use of standard or universal spaces that are designed to accommodate a range of related functions. Use of a standard planning module (grid) throughout the entire clinic is encouraged. Spaces with special requirements, equipment, or of non-modular sizes should be grouped where possible and designed to accommodate change.

Efficiency: VA is committed to the efficient use of resources (including energy, materials, equipment, and staff). Factors to consider in the design of Ambulatory Care Facilities include:

- Efficient, or sustainable, use of resources in construction, operation, and maintenance
 - Group or combine functions with similar system requirements. Refer to [Sustainable Design and Energy Reduction Manual](#) on VA Technical Information Library (TIL).
- Efficiency in space and function
 - Share support spaces where possible,
 - Minimize duplication of facilities,
 - Accommodate inpatients and outpatients in the same setting.

Human Needs

Patient dignity and self-determination must be accommodated while considering operational efficiencies. Patients' vulnerability to stress from noise, lack of privacy, poor lighting and other causes, and the subsequent harmful effects it can have on the healing process is a well known and documented phenomenon.

An inherent opportunity exists in the design of Ambulatory Care Facilities to address the above issues and to put forth creative solutions that enhance patient comfort and contribute to positive outcomes. A prime architectural objective should be to de-emphasize the institutional image of health care facilities and to surround the patient (and family members) with finishes and furnishings that are familiar and non-threatening. Good planning and design appeal to the spirit and sensibilities of patients and care providers alike.

Ambulatory Care facilities should be healing environments that allow the building itself to become part of the therapy. Patient privacy (visual and acoustic) is accommodated without sacrificing facility utilization.

Physical Security

Security is addressed by planning, design, and detail considerations (refer to [VA Physical Security Design Manual](#)). Ambulatory Care Hospital-based facilities typically fall within the more stringent Mission Critical design criteria as part of the larger medical center.

Accessibility (ADA)

Accessibility is accommodated by the application of PG 18-13, [VA Barrier Free Design Guide; Architectural Barriers Act Accessibility Standards \(ABAAS\)](#), Appendices C and D to 36 CFR Part 1191 (adopted by GSA and supersedes Uniform Federal Accessibility Standards, UFAS); and [ADA Standards for Accessible Design](#) (28 CFR Part 36) to space and fixed equipment layouts.

Functional Areas

A Functional Area is the grouping of rooms and spaces based on their function within a clinical service. Major Functional Areas include the following:

Reception Areas—Health Administration Service (formerly MAS): Accommodates the initial processing (eligibility, admissions, etc.) of all unscheduled outpatients. It is composed of all activities necessary to accomplish the tasks associated with medical evaluation and treatment. For the purposes of this Guide, HAS denotes spaces for integral administrative functions of Ambulatory Care, and may have different administrative designations throughout VA facilities. Spaces within this functional area may include the following:

- General Waiting
- Public Restroom Facilities
- Patient Educational Services (kiosk, education conference room)
- Escort / Messenger Service
- Reception / Clerical space

Emergency Care / Urgent Care: Accommodates the examination and treatment of all outpatients determined to be in need of immediate medical care. The major function of Emergency/Urgent Care at most VA Hospitals is to assess conditions of walk-in and ambulance patients and to provide immediate treatment for stabilization, admission, or referral as required. The level of emergency services will depend upon analysis of community needs and other services to be provided by the specific facility. The facilities demonstrated in the Guide Plates provide for elementary emergency treatment including patient examination and stabilization but do not reflect the requirements to accommodate major trauma or surgical procedures. Spaces within this functional area may include the following:

- General Waiting (including separate Isolation wait area)
- Public Restrooms
- Nurse / Communication Station
- General storage for equipment (including secure medications area)
- Examination / Treatment Rooms
- Provider Office space
- Clean / Soiled Utility Space
- Support services (staff restrooms, lockers, lounge)

Patient Areas: Accommodates the examination and treatment of all non-emergency outpatients, scheduled and unscheduled, and inpatients in a variety of medical/surgical disciplines. Examination/Treatment Modules are generic clinical examination and treatment facilities which accommodate scheduled and unscheduled outpatient visits with variable assignment capability based on schedule and workload needs of the using departments. Modules are further subdivided in Core Space, Support Space, and Specialty Clinic Space. Spaces within this functional area may include the following:

- Reception / Waiting Space
- Public Restrooms
- Nurse / Communication Station(s)
- Examination / Treatment Rooms (by Module)
- Procedure / Specialty Rooms
- Consultation Room(s)
- Multi-purpose Room(s)
- Provider Office Space
- Clean / Soiled Utility
- Support services (staff restrooms, lockers, lounge)

Employee Health: Accommodates any examination, testing and treatment of VA employees. In addition to the treatment of on-the-job illnesses and injuries, this unit accommodates pre-employment physicals, annual screening tests (TB, hepatitis, etc.) and storage/administration of employees' personal medications (allergy shots, insulin injections, etc.) for all the Department of Veterans Affairs (VA) medical center employees or other Department of Veterans Affairs (VA) facilities (regional office, data processing center, etc.) that may be served by the Medical Center. Space for Employee Health is incorporated into a clinic exam module. Spaces within this functional area may include the following:

- Nurse / Support Clerk Offices
- Record Storage Space

Disposition Area: Accommodates activities such as travel pay, pharmacy, etc. for scheduled and unscheduled outpatients. Patients typically visit this area last before leaving Ambulatory Care. Spaces within this functional area may include the following:

- General Waiting Space
- HAS (formerly MAS) Clerk Offices (including Agent Cashier)

Support Areas: Accommodates diagnostic support functions such as satellite X-ray, blood specimen collection, etc. Typically these support services are provided within the larger hospital setting, and therefore not included in Ambulatory Care. Other support spaces may include;

- Clean / Soiled Utility Rooms
- General Storage
- Housekeeping Aids Closets

Staff and Administrative Areas: Accommodates administrative staff and professional staff whose primary responsibilities lie in emergency care and examination/treatment. Spaces within this functional area include:

- Provider and administrative offices
- Conference room(s)
- Restroom, locker and lounge facilities

Residency Program: Accommodates medical education functions in affiliated VA facilities. Spaces within this functional area may include:

- Study / Library space
- Conference Room
- Consultation space

Special Requirements: Special requirements must be evaluated and applied on a project basis. Such requirements may include teaching, program mission and coordination of hospital, clinical and support services.

Functional Relationships

Work Flow: The Functional Diagrams in Section 3 reflect function, organization, flow, and operational issues. They should not be interpreted as preconceived floor plans, as the diagrams do not correlate exactly to all the rooms and functions available in Space Planning Criteria, or required for every project.

VA patient triage, induction, and protocol require the following:

- Triage is located between Emergency and Clinic Facilities
- Walk-in Patients arrive at Triage / HAS interview.

Organizational Concepts: The Guide Plates (Section 4) and Functional Diagrams (Section 3) address modular construction including 10 foot (3000 mm) deep exam zones, 12 foot (3600 mm) deep special/treatment/support zones, and 6 foot (1800 mm) corridor widths.

A Modular Clinic Concept utilizes functional layering which includes spaces such as Waiting, Reception, Exam, Special and Support Zones. Overlapping zones of control are provided in both planning and communications to accommodate variable assignment of partial clinic modules, exam, and treatment facilities.

Utilization of modular concepts and functional layering assists in facilitating wayfinding and subsequent patient ease.

Operations: Services

An Ambulatory Care Clinic is a medical service that provides healthcare to scheduled and unscheduled outpatients in a hospital setting; emergency treatment walk-in evaluation; scheduled compensation and pension examinations; some specialty and sub-specialty services to hospitalized, nursing home and domiciliary patients; and employee health services. The organization of services in this Guide follows the categories established in VA [Space Planning Criteria, Chapter 262](#).

Technical Considerations

Natural Disasters

Hurricanes, tornados, earthquakes, and floods are natural phenomena that occur within regional areas of designated probability. Design solutions should address these probabilities where they occur, to mitigate building damage and loss of life wherever possible. Selection of building sites should avoid flood plane or flood prone areas. Regional areas susceptible to hurricanes should incorporate design features that mitigate damage associated with high winds, wind-driven rain and projectiles. Tornado design mitigation is similar to hurricanes, however much more localized and intensive in nature. Buildings in areas with probability of earthquakes need to be seismically restrained in accordance with [H-18-8 Seismic Design Requirements](#).

Architectural

Exterior Construction: Selection of building envelope and enclosure systems shall follow guidance in PG-18-10, [Architectural Design Manual](#) for New Hospitals, Replacement Hospitals, Ambulatory Care, Clinical Additions, Energy Centers, and Outpatient Clinics.

Interior materials and finishes and doors shall follow guidance in PG 18-10, [Architectural Design Manual](#) and PG 18-14, [Room Finishes, Door, and Hardware Schedule](#). The Guide Plate for each space includes a listing of design criteria applicable to that space. Where a specific guide plate is not provided for a space or function, refer to PG 18-14 and the general design information below. Coordinate selections with Interior Design and Wayfinding.

Interior Design: The goal of the design is to provide a supportive interior environment that is conducive to healing both the patient's mind and body, is respectful of the public monies, promotes staff performance, and expresses progressive high quality design. The design must offer a distinctive and clear lead for the planning and selecting of interior furnishings and art. Designs that narrow choices of procurement furnishings are inappropriate. Designs that use "life-time-of-the-building" materials in colors, patterns and designs that transcend time are endorsed. Trendy colors and patterns are to be restricted to cycle replacement materials, such as paint and wall coverings. Refer to PG 18-10, [Interior Design Manual](#) For Hospital/ Ambulatory Care/Clinical Addition/Satellite Outpatient Clinic/Domiciliary/Nursing Home Projects for additional information.

Wayfinding: A "wayfinding" process needs to be designed into every project. Patients, visitors and staff need to know where they are, what their destination is, how to get there and have the ability to return. Identification, personalization of occupied spaces and orientation are all to be addressed in the design. Wayfinding is to be thought of broadly as building elements, color, texture and pattern cues, as well as a coordinated concept established for signage and artwork. Refer to [Interior Design Manual](#) and [VA Signage Design Guide](#).

Partitions should primarily be gypsum wallboard on 4-inch metal studs. Provide sound attenuation in accordance with PG 18-3, [VA Design and Construction Procedures, Topic 11: "Noise Transmission Control"](#). Provide wall and corner guards in corridors and other areas where wall damage from cart traffic is anticipated.



Floors in most spaces, including exam rooms, treatment rooms, corridors, and supply/storage spaces, should be vinyl composition tile with a 4 inch (100 mm) high rubber base. Floors in procedure rooms, surgery, etc., should be welded sheet vinyl with integral coved base. Floors in offices, conference rooms and waiting areas should be carpet with a 4 inch (100 mm) high rubber base. Floors in toilet rooms should be ceramic tile with a ceramic tile base.

Ceilings in most spaces, including toilet rooms, are lay-in acoustic ceiling tile. Where required for sanitation or moisture resistance, acoustical ceiling tile shall have a washable plastic (mylar) finish.

Interior doors should be 1-3/4 inches (44 mm) thick, solid core, flush wood doors or hollow metal doors in hollow metal frames. Door jambs should have hospital type sanitary stops which do not extend to the floor, to facilitate mopping. Hollow metal doors should be used where high impact is a concern and where fire rated doors are required. Kick/mop plates should generally be applied to both sides of the doors.

Hardware: Accessible type should be used throughout. Refer to VA Handbook PG 18-14, "[Room Finishes, Door and Hardware Schedules](#)" and PG 18-4, [National CAD Standards and Details](#) Detail 08 00 00-1.dwg for additional information.

Security: Partitions, doors, and hardware for Agent Cashier, Pharmacy, and other sensitive spaces have special security requirements. Refer to PG 18-3, VA [Design and Construction Procedures, Topic 14: "Security;"](#) and [VA Physical Security Design Manual](#).

Structural

Structural design of VA facilities shall comply with the latest editions of the following:

- Reinforced concrete design - *Building Code Requirements for Reinforced Concrete* (ACI Standard 318-02) and Commentary (ACI-318R-02), American Concrete Institute.
- Structural steel design - *Manual of Steel Construction, Load and Resistance Factor Design*, Specifications for Structural Steel Buildings, American Institute of Steel Construction, Second Edition.
- *International Building Code* (IBC), International Conference of Building Officials.
- VA [Seismic Design Requirements \(H-18-8\)](#)

In compliance with Executive Order (EO) 12699, and EO 12941, all new and existing buildings constructed or leased by the Federal Government must be seismically safe.

Equipment

Equipment Lists are provided with the Guide Plates in Section 4. Additional general information and guidance is available on the VA [Technical Information Library](#) (TIL). Refer to [Equipment Guide List \(PG-7610\)](#) for list of equipment, furnishings, and utility requirements for each space in a functional area. Refer to [Equipment Reference Manual \(PG-18-6\)](#) for graphic representations of each piece of equipment to be purchased and installed by the construction contractor. Refer to equipment manufacturers' data for information specific to a particular equipment item.

Casework: For planning and utilization concerns, casework systems should be chosen for their flexibility. Casework systems should incorporate components dimensioned for ease of multiple re-use installation applications. Casework systems should be planned avoiding corner installations and filler panels.

Information Management Systems

Information Management Systems shall include elements of patient registration, patient charges, Physician's order entry, and patient/staff movement.

These system elements will require access to the main facility's "*information backbone*" as well as the departmental Local Area Network (LAN). All components should be planned for compatibility.

Headwall Equipment Management Systems

Equipment Management Systems should facilitate a generic setting for all similar treatment spaces to organize diagnostic equipment, support equipment, and supplies.

Heating, Ventilation and Air Conditioning

Operation: Air conditioning systems should be provided to heat, cool and ventilate the individual space, as required to satisfy the VA design criteria. Follow criteria in PG-18-10, [HVAC Design Manual](#) for New Hospitals, Replacement Hospitals, Ambulatory Care, Clinical Additions, Energy Centers, Outpatient Clinics, Animal Research Facilities, and Laboratory Buildings.

The air conditioning systems serving the Ambulatory Care Clinic should be designed to operate at occupied/unoccupied capacity to suit applicable schedule.

Capacities: The number of occupants and the air conditioning load noted on the room design standard sheets in the Guide Plates (Section 4) are for the purpose of establishing general planning parameters. The design A/E shall verify the actual occupant and air conditioning load for each specific project. Verify equipment loads for actual equipment to be furnished for a project.

The percent of outside air should be based on the space total supply air quantities.

Air Quality and Distribution: In general, clean areas shall have positive air pressure and soiled areas should have negative air flow with respect to the adjoining areas.

Corridors should not be used to supply or to exhaust/return air from rooms. Corridor air may be used to ventilate bathrooms, toilet rooms, HACs, and small electrical or telephone closets opening directly on corridors. Exfiltration/infiltration from positive/negative pressure rooms adjacent to a corridor should be considered in balancing air flow.

The transfer air should not be more than 100 CFM (2.8m³/min) per undercut door.

Care should be taken to minimize the short circuiting of air between supply and return/exhaust openings in rooms.

Negative pressurization is required at all locations where invasive procedures occur, as well as filtration of air supplied to the space. Filtration efficiency becomes more critical when provided at surgical procedure rooms.

Exhaust System: Follow criteria in PG-18-10, [HVAC Design Manual](#) for Hospital Projects for hoods located in the Ambulatory Care Clinic. Locate supply air diffusers as far away from the hood sash opening as possible, and sized to eliminate draft conditions and for proper air flow at the hood.

Energy Conservation: The need to conserve energy is mandated by the Federal Government by both Executive Order and Federal Law. In addition, 19 Federal Agencies have signed a Memorandum of Understanding (MOU) outlining specific goals and targets for energy conservation and sustainable design. The VA is one of the signatory agencies. The following references apply, with more detailed information found within the [HVAC Design Manual](#) for Hospital Projects:

- DOE Final Rule, and Energy Policy Act (EPACT 2005)
- Energy Conservation Executive Order No. 13423 Dated January 24, 2007

Center for Disease Control (CDC): CDC requirements for design of public areas within the building to accommodate Microbacterium Tuberculosis patients must be addressed by architectural and mechanical disciplines. Check current requirements for transmission of *mycobacterium tuberculosis* and TB Criteria in the [HVAC Design Manual](#) for Hospital Projects.

Seismic: Where required, install HVAC systems with seismic provisions as outlined in the PG-18-10, [HVAC Design Manual](#) for Hospital Projects and [Master Construction Specifications](#) MCS Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.

Noise Class: Select HVAC equipment, ductwork and listed distribution devices to achieve noise levels listed in the PG-18-10 [HVAC Design Manual](#) for Hospital Projects and [Master Construction Specifications](#) Section 23 05 41, NOISE AND VIBRATION CONTROL FOR HVAC PIPING AND EQUIPMENT.

Inside Design Conditions:

Commonly Used Inside Design Temperatures and Humidity Ranges: 70 F to 75 F [21 C to 24 C] and 30% to 50% RH have different implications depending upon the application and system configuration, as shown below:

Year Around Conditions: 70 F to 75 F [21 C to 24 C] and 30% to 50% RH as defined in 2007 ASHRAE Handbook of Applications, the system shall be capable of maintaining temperatures within the range during normal working conditions. The cooling load for these spaces shall be calculated to maintain 70 F [20 C] at 50% RH and the heating load shall be calculated to maintain 75 F [24 C] at 30% RH. The year around conditions can be used for variable air volume (VAV) or constant volume (CV) systems. Year around design conditions shall be used for all patient areas.

Variable Air Volume (VAV) with Dead-Band: 70 F to 75 F [21 C to 24 C] and 30% to 50% RH as defined in ASHRAE Standard 90.1 – 2007, the space thermostat shall be capable of providing the above range and a dead-band of 5 F [2.8 C] within which the supply of cooling and heating energy to the space is shut off or reduced to a minimum. See [HVAC Design Manual](#) for room applicability.

Constant Volume (CV) System: 70 F [21 C] to 75 F [24 C] and 30% to 50% RH

- The cooling capacity shall be based on 75 F [24 C] and 50% RH and the heating capacity shall be based on 70 F [21 C] and 30% RH.
- Cooling Mode: Generally, the space relative humidity is uncontrolled in cooling season. Specific applications may require high-humidity limiting control.
- Heating Mode: 30% RH shall be controlled and maintained at the zone (air-handling unit) level by providing a central humidifier, installed either in the air-handling unit or in the main supply air duct.
- The suggested set point is 75 F [24 C] + 0 F/- 3 F [+ 0 C/- 2 C]. The space temperature is allowed to drop to 72 F [22 C] before the reheat is activated. To ensure maximum energy conservation, the maximum offset can be selected as 5 F [2.8 C], where the maximum offset is defined as the difference between the summer and winter set points. Offset is not same as the dead-band which is defined in ASHRAE Standard 90.1 – 2007. See [HVAC Design Manual](#) for room applicability.

Individual Room Temperature Control: A space is defined as individually controlled only when a dedicated air terminal unit (with reheat) and a room temperature sensor/controller serve it. Individual room temperature control is required for all patient treatment and examination rooms, and other healthcare functions and other spaces so identified in the [HVAC Design Manual](#). Listed below are applications where group control can be provided in lieu of dedicated room temperature control:

Office Perimeter Spaces (Group): A single terminal unit can serve as many as three perimeter office rooms located on the same exposure and with identical functions and load characteristics. Exception: A corner office room with multiple exposures shall have its individual room temperature control.

Interior Spaces (Group): A single terminal unit can serve as many as four interior office or patient examination rooms that have identical functions and load characteristics.

Open spaces: Open spaces with exterior perimeter exposure and interior areas shall be zoned such that one dedicated air terminal unit serves the exterior perimeter exposure and another serves interior zones. The exterior perimeter exposure zone is defined as an area enclosing perimeter exposure length and 12 to 15 Feet [3.7 to 4.6 Meters] width. An interior zone does not have perimeter exposure walls.



Plumbing

Water and Waste Systems: Comply with PG-18-10, [Plumbing Design Manual](#) for New Hospitals, Replacement Hospitals, Ambulatory Care, Clinical Additions, Energy Centers, and Outpatient Clinics. Domestic cold and hot water should be piped to all plumbing fixtures and equipment requiring these utilities. A hot water return system should be provided to ensure the design temperature at the farthest fixture.

Plumbing fixtures and drains should be drained by gravity through soil, waste and vent stacks. Special waste should be drained through corrosion-resistant, flame-retardant piping into either a local or centralized acid dilution tank.

Medical Gas Systems: The Guide Plates (Section 4) indicate typical locations and quantities of medical gas outlets to establish the general planning parameters. The design A/E shall verify the medical gas locations and quantities for individual projects.

Seismic: Where required, the plumbing and medical gas systems should be installed with seismic provisions as outlined in the PG-18-10, [Plumbing Design Manual](#) for Hospital Projects and [Master Construction Specifications](#) MCS Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.

Electrical

Follow criteria in PG-18-10, [Electrical and Telecommunication's Design Manual](#) for New Hospitals, Replacement Hospitals, Ambulatory Care, Clinical Additions, Energy Centers, and Outpatient Clinics.

Illumination is typically provided utilizing recessed fluorescent luminaries with acrylic prismatic lenses. Recessed fluorescent fixtures with parabolic louvers may be used at the nurse/communication station or offices to control glare on monitor screens. Undershelf fluorescent downlights may be provided above the counter work surface for task lighting. The fixtures typically use F32T8 lamps in compliance with the Energy Policy Act (EPACT 2005). Lamps shall not be high output and shall have a minimum color rendering index (CRI) of 70 and a color temperature of 3500 degrees Kelvin (K), for optimum color rendering in most cases. Color corrected lamps having a CRI of 85 or above and correlated color temperature between 5000 degrees K and 6000 degrees K shall be used for selected areas such as surgery rooms. Low mercury fluorescent lamps should be used. Leachable mercury may form when fluorescent lamps are disposed of causing pollution of landfills and groundwater. The Environmental Protection Agency (EPA) has established a maximum mercury concentration level. Fluorescent lamps that meet the EPA criteria are known as Toxicity Characteristic Leaching Procedure (TCLP) compliant. Attention needs to be given to illumination as a function of reflectance off walls and ceilings, particularly with color applied, to ensure lighting levels comply with criteria.

VA building lighting energy expenditures are a significant component of overall building energy usage. The lighting systems shall comply with Federal energy policy, the VA Energy Conservation Policy, and [Sustainable Design and Energy Reduction Manual](#).

Lighting intensities shall conform to the VA design criteria, the IES Lighting Handbook and IES publication RP-29-06, "Lighting for Hospitals and Health Care Facilities". Reducing patient illumination levels below established levels is not recommended.

Lighting energy consumption can be reduced in several ways such as reducing lighting fixture count, using highly efficient fixtures, managing when lighting is used and the amount of illumination delivered, using task lighting, and selecting fixtures, lamps, and controls that best meet the needs of the staff and patient occupants. Fluorescent lamp lumen output can be increased by raising the CRI level without increasing lamp wattage. Specific methods may be used to reduce energy consumption including using occupancy sensors, time-clocks, photocells, daylight dimming, building-wide lighting control systems and replacing incandescent dimming with fluorescent dimming. Lighting is typically controlled by wall mounted switches located at the entrance to the room. Larger spaces may utilize multiple switching by separate switches for lighting of individual zones or areas.

- Use wet location light fixtures due to the high moisture and humidity of rooms with showers or tubs for bathing.
- Lighting load densities should be verified for the actual design, as they may vary depending on the room configuration, fixture types, lamps and ballasts used.
- Serve selected light fixtures from the critical branch of the emergency power system to allow for continued operation during a power outage. For facilities that do not require emergency generator, provide selected light fixtures with battery ballast.

Power: General purpose duplex receptacles are typically provided on each wall of a room or a space where power is required. Refer to Guide Plates in Section 4. Dedicated duplex or special receptacles are provided for selected pieces of equipment such as refrigerators. Workstations with personal computers (PC's) are typically provided with quadruplex receptacles for the PC, monitor and printer. Junction boxes are provided for equipment requiring a hardwired connection.

Provide prefabricated bedside patient units (BPBU's) where indicated in the life support unit, and observation and treatment rooms. The BPU's house receptacles for other electrical devices. The number of receptacles, the layout, and the wiring requirements should be coordinated with the specifications (PG-18-1, [Master Construction Specifications](#)).

Emergency power requirements are addressed in PG 18-10, [Electrical and Telecommunication's Design Manual](#) and the Guide Plates in Section 4. UPS systems should be provided by hospital and should not be specified in construction specifications.

Per VHA Directive 2008-011, operating rooms and cardiac catheterization rooms within VHA facilities are no longer designated as wet locations for electrical safety purposes; therefore, isolated power systems are not required.

Life Safety and Fire Protection

As stated in the VA [Fire Protection Design Manual](#), the Public Buildings Amendment Act (PL 100-678) requires all Federal agencies to follow the latest editions of nationally recognized fire and life safety codes. VA has adopted the National Fire Codes (NFC), except NFPA 5000, published by the National Fire Protection Association (NFPA). Life safety requirements are specifically addressed in the Life Safety Code, NFPA 101. Fire protection features not addressed by the NFC should be designed to comply with requirements of the latest edition of the International Building Code (IBC). For guidance on compliance with other Codes and Standards, refer to PG-18-3, [Design and Construction Procedures, Topic 1](#).

Occupancy classifications are defined in NFPA 101 and as follows:

Outpatient Clinic	New Business Occupancy, Chapter 38
Administrative Offices	New Business Occupancy, Chapter 38
Ambulatory Surgery	New Ambulatory Health Care, Chapter 20
Mixed Occupancies:	Buildings containing mixed occupancies which are not incidental to the primary occupancy shall comply with the most restrictive requirement of the occupancies involved, unless separated by barriers having fire resistance ratings for the occupancies involved as required by NFPA 101.

Use Business Occupancy unless there will be 4 or more patients incapable of taking action for self-preservation under emergency conditions as defined in NFPA 101. For more than 4 patients, all or part of the facility will have to be classified as an Ambulatory Health Care Occupancy. Examples of Ambulatory Health Care Occupancies include surgery centers, dialysis centers, imaging centers, and cardiac catheterization centers.

Alternatively, when the Ambulatory Care Clinic is contiguous with the hospital building, it may be advantageous to consider classifying the Clinic as a Healthcare Occupancy. This may be particularly true if the departmental boundaries will conflict with existing compartmentalization schemes.

Energy Conservation and Sustainable Design

The need to conserve energy is mandated by the Federal Government by both Executive Order and Federal Law. In addition, 19 Federal Agencies have signed a Memorandum of Understanding (MOU) outlining specific goals and targets for energy conservation and sustainable design. The VA is one of the signatory agencies. Refer to [Sustainable Design and Energy Reduction Manual](#) on VA Technical Information Library (TIL), and [HVAC Design Manual](#) for Hospital Projects for detailed information and requirements.

Communications / Special Systems

Follow criteria in PG-18-10, [Electrical and Telecommunication's Design Manual](#) for communications and special systems.

Telephone outlets are typically provided at each workstation or in each room.

Automatic Data Processing (ADP) or computer outlets are typically provided at each workstation with a personal computer (PC) and/or a printer.

Nurse call and code one system is provided for the ambulatory care department, and is PC based consisting of patient call stations, staff stations, duty stations, dome lights and head-end equipment located in signal closet. The actual system configuration is dependent on the overall layout of the department and should be coordinated with the functional design.

Television outlets are provided at selected areas such as waiting rooms and the chemotherapy treatment cubicles.

Physiological Monitoring: Outlets for physiological monitoring are provided at selected locations such as the life support unit, and observation and treatment cubicles.



Security Duress Alarms: Duress alarm systems are typically provided where staff comes in contact with a patient and are designed to provide emergency assistance, control, and monitoring.

Public Address: The Ambulatory Care clinic will not have an independent public address (PA) system. The department should be included as part of the hospital-wide PA system in accordance with [Master Construction Specifications](#), MCS Section 27 51 16, PUBLIC ADDRESS AND MASS NOTIFICATION SYSTEMS. Public address system is typically part of the telephone system. Speakers are typically located in corridors and public spaces. The actual system configuration will depend on the overall design layout and functional requirements.

Waste Management

Medical waste is generated in exam and treatment spaces where it is bagged, collected and transported to the soiled utility rooms. There it is held in separate containers pending transport to the medical waste handling facility or disposal by contract.

General waste is generated in all spaces and is held in containers for collection and/or sorting. Waste may be transported by carts or bagged and placed in a waste chute. Disposal is typically by contract service.

Recycling: Methods for sorting, collecting, transporting and disposing of recyclable products must be specifically analyzed for each facility and location. The optional use of disposable and reusable products is an important consideration in recycling and waste disposal alternatives.

Soiled linen: Soiled reusable linens are generated in exam rooms, treatment spaces and patient and staff gowning areas. Soiled linens are collected in carts or hampers (depending on volume) in the soiled utility or linen rooms, or they are bagged and transported to the hospital central collection area via the soiled linen chutes. Disposable linens are included with general recyclable waste or medical waste as appropriate.

Utensils: Reusable utensils may include bed pans, urinals, emesis basins and other stainless steel items which are used in exam and treatment areas and then transported to the soiled utility room where they are collected for transport to SPD for reprocessing.

Space requirements will vary with the selection of disposable vs. reusable supplies, and waste collection or recycling methods and systems. Space and utility requirements need to be analyzed for each optional method or system considered, including capacities in the existing hospital. While space needs are determined by VA Space Planning Criteria on a departmental basis, space provisions for waste collection need to be distributed and dedicated to a variety of uses to accommodate the implementation of the system and method selected.

Transportation

Outpatient: Patients arrive at their appointed clinic via private or public transportation. Convenient access from patient parking and ambulatory care entrance should be provided. Parking demand for number of spaces, both standard and handicapped, is governed by VA criteria. Consult appropriate VA management personnel for guidelines in this regard.

Wayfinding:

- Clear site and facility organization and directional signage assist in directing the patients to their destination.
- Emergency walk-in patients should be clearly directed to a dedicated entrance separated from ambulance traffic.
- If Pulmonary Medicine facilities are located on other than main entrance levels, direct access from public elevators should be provided.
- Techniques such as clear access routes, public spaces, landmarks and signage to facilitate wayfinding should be used.

Inpatient: Access for stretcher and wheelchair patients from inpatient areas should be provided.

- Inpatient and Outpatient traffic should be separated where possible.
- Inpatient access from hospital service elevators is required.
- Inpatients arrive at a control point common with outpatients.
- Inpatients access patient holding, if provided, through a dedicated route separated from outpatient waiting.

Staff access should be separated from patient entries, waiting, and holding areas. Staff lounge and locker areas should be located away from inpatient and outpatient traffic.

Records are centrally maintained and may be distributed by an automated distribution or electronic retrieval system to be selected on a project basis. Ambulatory Care volumes are determined by sub department and specialty clinic. Each clinic requires access to the pneumatic tube or automated box transport system to provide distribution of medical records and work orders. These transport modes are located where shared use is possible in order to provide economical access for all clinics.

Specimens are collected within the clinics and/or at a central Lab Collection Area and are transported to the Pathology Labs. The most effective means for maintaining specimen quality and providing efficient access must be incorporated.

Pharmaceuticals including narcotics are transported by pharmacy personnel to the individual clinics in locked carts. Narcotics are delivered to a narcotics locker, which is usually located in a clean supply or patient prep area and is remotely alarmed to the nearest nursing station.

Materials are transported via service elevators which access the clinic's clean and soiled utility rooms by service corridors to avoid mixing with patient traffic.

- Clean supplies may be transported by exchange carts which are stored in the Clean Supply Room.
- Supplies are transported by service elevators and through service corridors separated from patient traffic where possible.
- Deliveries are normally scheduled during hours when patient visits are not scheduled.

Linen: Linens are delivered as part of clean supplies.



Sterile supplies are transported from SPD on dedicated closed carts. Equipment is also dispatched from SPD following cleaning and sanitizing. Sterile supplies may also be accommodated by prepackaged or disposable items that are delivered with clean supplies.

Food: Nutrition and Food Service (Dietetics) deliveries to Ambulatory Care are limited to nourishments provided at holding areas (post anesthesia recovery) where patients who have undergone minor procedures are held for observation and/or recovery.

Canteen Service, if present in the Ambulatory Care Clinic space, is usually limited to vending areas. Prepackaged food and beverage items are delivered by cart or hand truck via service corridors.

Waste from food service is collected by housekeeping staff and transported to the Soiled Utility Rooms and trash collection areas where it is disposed of as indicated by the Waste Management narrative.

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