



January 27, 2023

# Lecanto, FL - VA Leased OPC Design Narrative

1. [INTRODUCTION](#)
2. [GENERAL REQUIREMENTS](#)
  - 2.1 [General](#)
  - 2.2 [Codes](#)
  - 2.3 [Standards](#)
  - 2.4 [References](#)
3. [PLANNING AND DESIGN CRITERIA](#)
  - 3.1 [Background](#)
  - 3.2 [PACT Guiding Principles](#)
  - 3.3 [Community Based Outpatient Clinics \(CBOC\) Planning Approach](#)
  - 3.4 [Room Data Matrix](#)
  - 3.5 [Surgical Design Criteria](#)
4. [TECHNICAL NARRATIVE](#)
  - 4.1 [Site/Civil](#)
    - 4.1.1 [Pedestrian and Vehicle Access & Circulation](#)
    - 4.1.2 [Parking](#)
    - 4.1.3 [Site Grading](#)
  - 4.2 [Architecture](#)
    - 4.2.1 [General Criteria](#)
    - 4.2.2 [Accommodations for Care of Patients of Size](#)
    - 4.2.3 [Acoustics](#)
    - 4.2.4 [Equipment/Accessories/Furnishings](#)
    - 4.2.5 [Signage and Wayfinding](#)
    - 4.2.6 [Critical Dimensions](#)
    - 4.2.7 [Entry Canopies](#)
    - 4.2.8 [Elevators](#)
    - 4.2.9 [Slab Depressions and Thickened Slabs](#)
    - 4.2.10 [Millwork](#)
    - 4.2.11 [Joint Sealant Systems](#)
    - 4.2.12 [Doors and Frames](#)
    - 4.2.13 [Hardware](#)
    - 4.2.14 [Pharmacy Dispensing Windows](#)
    - 4.2.15 [Radiation Shielding](#)
    - 4.2.16 [Radio Frequency Shielding and Magnetic Shielding](#)
  - 4.3 [Interior Design](#)
    - 4.3.1 [General Criteria](#)
    - 4.3.2 [Acoustic Ceiling Tile](#)
    - 4.3.3 [Concrete Floor Treatment](#)
    - 4.3.4 [Fiberglass-Reinforced Panels](#)
    - 4.3.5 [Painting](#)
    - 4.3.6 [Wall Protection](#)
    - 4.3.7 [Window Shades](#)

- 4.3.8 [Privacy Curtains / Screens](#)
  - 4.3.9 [Flooring, Carpet](#)
- 4.4 [Mechanical](#)
  - 4.4.1 [References](#)
  - 4.4.2 [HVAC Design Basis](#)
  - 4.4.3 [Air Handling Units \(AHUs\)](#)
  - 4.4.4 [Exhaust Systems](#)
  - 4.4.5 [Cooling System](#)
  - 4.4.6 [Hot Water Heating System](#)
  - 4.4.7 [Humidification System](#)
  - 4.4.8 [HVAC Piping Systems](#)
  - 4.4.9 [Air Distribution and Duct Systems](#)
  - 4.4.10 [HVAC Insulation Systems](#)
  - 4.4.11 [Testing, Adjusting and Balancing](#)
  - 4.4.12 [Automatic Temperature Control Systems](#)
  - 4.4.13 [Special Conditions](#)
- 4.5 [Plumbing](#)
  - 4.5.1 [References](#)
  - 4.5.2 [Plumbing Design Basis](#)
  - 4.5.3 [Materials](#)
  - 4.5.4 [Special Conditions](#)
- 4.6 [Electrical](#)
  - 4.6.1 [Standby Generator](#)
- 4.7 [Lighting](#)
  - 4.7.1 [General](#)
  - 4.7.2 [Indoor Lighting Specifics](#)
  - 4.7.3 [Lighting Controls](#)
  - 4.7.4 [LED Drivers](#)
  - 4.7.5 [Special Conditions](#)
- 4.8 [Telecommunications](#)
  - 4.8.1 [Scope of Work](#)
  - 4.8.2 [Pathways](#)
  - 4.8.3 [Spaces](#)
  - 4.8.4 [Telecommunications Bonding and Grounding](#)
  - 4.8.5 [Equipment Racks and Equipment Cabinets](#)
  - 4.8.6 [Power Distribution Units and Uninterruptable Power Supplies](#)
  - 4.8.7 [Telecommunications Infrastructure Plant](#)
  - 4.8.8 [Special Systems](#)
- 5. [Hardware Groups and Modifiers](#)
- 6. [Agency Specific Requirements](#)
- 7. [Design Phase Requirements](#)
- 8. [Construction Phase Requirements](#)

## SECTION 1 - INTRODUCTION

- 1.1 The purpose of this Leased OPC Design Narrative is to consolidate the governing codes, standards, references, and guidelines in a document that provides performance-based standards for a VA leased CBOC.
- 1.2 The governing codes, standards, and references are based on a VA affiliated outpatient clinic.
- 1.3 The design of the VA leased CBOC is based on the Prototype for Standardized Design and Construction of Community Based Outpatient Clinics which is described in Part 3 Planning and Design Criteria.
- 1.4 Commonly Used Acronyms and Definitions:

PCMH	Patient Centered Medical Home A team based, comprehensive, coordinated patient care model (refer to PACT)
PACT	Patient Aligned Care Team Provides service to veterans that is patient-centered with the right care at the right time by the right person. A typical “teamlet” serving a veteran consists of four caregivers: A Primary Care Provider – physician (MD), physician assistant (PA) or nurse practitioner (NP); a Registered Nurse (RN); a clinical staff assistant (LPN or Medical Assistant) and an administrative staff member (Clerk).
CBOC	Community Based Outpatient Clinic Is VA-operated, VA-funded, or VA-reimbursed site of care which is located separate from a VA Medical Facility. A CBOC can provide primary, specialty, subspecialty, mental health, or any combination of healthcare delivery services that can be appropriately provided in an outpatient setting.
PFD	Program for Design Net square feet (NSF) listing of all spaces and rooms that are to be included in a construction project.
OPC	Outpatient Clinic. For the purposes of this LDN OPC and CBOC are used interchangeably.
VA	Veterans Affairs
VHA	Veterans Health Administration
VISN	Veterans Integrated Services Network

## **SECTION 2 – GENERAL REQUIREMENTS**

### **2.1 General**

- 2.1.1 The codes, standards, and references listed below indicate minimum performance requirements. Based on input from Owner representatives and recommendations from the architectural/engineering firm, minimum requirements or standards may be exceeded by site specific project design.
- 2.1.2 Compliance is required with applicable codes and standards throughout the process of design, construction, acceptance, and on-going maintenance of the facility.
- 2.1.3 Design and construction of the OPC shall be in compliance with the requirements of the GSA Form L100 Global Lease and the codes, standards, and references listed below. This Leased OPC Design Narrative covers construction materials and standards not fully addressed by the codes, standards, and references below.
- 2.1.4 Use the most current edition at the date and time of bid submission

### **2.2 Codes**

- 2.2.1 All VA leased OPC and CBOC facilities are to conform to the most recent applicable codes, which include but not limited to following:
  - 2.2.1.1 National Fire Protection Association (NFPA) 70 National Electric Code, NFPA 75 Standard for the Fire Protection of Information Technology (applicable when CBOC contains a Data Center), NFPA 99 Health Care Facilities Code and all standards referenced therein, NFPA 101 Life Safety Code, NFPA 110 Standard for Emergency and Standby Power Systems, current editions.
  - 2.2.1.2 Architectural Barriers Act Accessibility Standards (ABAAS), current edition.
  - 2.2.1.3 International Building Codes (IBC): 2018 or latest edition (within 2 years of release). The latest edition shall be used for structural and seismic design.
    - 2.2.1.3.1 International Building Code
    - 2.2.1.3.2 International Energy Code
    - 2.2.1.3.3 International Mechanical Code
    - 2.2.1.3.4 International Plumbing Code
  - 2.2.1.4 State and local codes as required by the local Authority Having Jurisdiction (AHJ).

### **2.3 Standards**

- 2.3.1 All leased OPC and CBOC facilities are to conform to the following standards:
  - 2.3.1.1 FGI Guidelines for the Design and Construction of Outpatient Facilities, current edition (referred to as FGI Guidelines herein).
  - 2.3.1.2 The Joint Commission (TJC) accreditation standards apply to the facility under the affiliated VA medical center license. Building construction and on-going maintenance procedures shall meet TJC standards. Lessor shall provide and submit all documentation that is required for TJC requirements. The following lists are location specific VA TJC standards that must be included in the construction and operation of the lease. (Lessor shall refer to all TJC standards to ensure they understand and apply all the requirements.)
  - 2.3.1.3 TJC requirements for Ambulatory Healthcare, Behavioral Health and Laboratory categories. submit all documentation that is required for TJC requirements within 30 days of inspection completion.
  - 2.3.1.4 Facility Security Level (FSL) shall be as outlined in GSA Form L100 Global

- 
- Lease.
- 2.3.1.5 Sustainability standards shall be as outlined in GSA Form L100 Global Lease.
  - 2.3.1.6 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 170, Ventilation of Health Care Facilities, current edition (referred to as ASHRAE 170 herein)
  - 2.3.1.7 ASHRAE Standard 12, Minimizing the Risk of Legionellosis Associated with Building Water Systems, current edition.
  - 2.3.1.8 ASHRAE Standard 188, Legionellosis: Risk Management for Building Water Systems, current edition.
  - 2.3.1.9 ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality, current edition (referred to as ASHRAE 62.1 herein)
  - 2.3.1.10 ANSI/ASHRAE/IES Standard 90.1-2019 -- Energy Standard for Buildings Except Low-Rise Residential Buildings
  - 2.3.1.11 Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Standard, HVAC Duct Construction Standards - Metal and Flexible.
  - 2.3.1.12 USP General Chapter 795 Pharmaceutical Compounding – Nonsterile Preparations
  - 2.3.1.13 USP General Chapter 797 Pharmaceutical Compounding – Sterile Preparations
  - 2.3.1.14 USP General Chapter 800 Hazardous Drugs - Handling in Healthcare Settings
  - 2.3.1.15 Association for the Advancement of Medical Instruments (AAMI) standards as applicable to RME storage
  - 2.3.1.16 Illuminating Engineering Society North America (IESNA) Handbook - latest edition
  - 2.3.1.17 VA Signage Design Manual PG 18-12
  - 2.3.1.18 Facility Dedication Plaques and Seals PG 18-13
  - 2.3.1.19 EISA Section 438 Stormwater Runoff

## 2.4 References

- 2.4.1 The following guides, manuals, and other references developed by VA are for reference only, however, they are applicable to VA leased OPC and CBOCs:
  - 2.4.1.1 VA Enterprise Facility IT Support Infrastructure Standard, most current.
    - 2.4.1.1.1 VA [Infrastructure Standard for Telecommunications Spaces](#)
  - 2.4.1.2 Prototype for Standardized Design and Construction of Community Based Outpatient Clinics <https://www.cfm.va.gov/til/prototypes.asp#CBOC>
  - 2.4.1.3 PACT Space Module Design Guide\_ <https://www.cfm.va.gov/til/dGuide/dgPACT.pdf>
  - 2.4.1.4 Room Templates, Leased Community Based Outpatient Clinics <https://www.cfm.va.gov/til/rTemplate/LeasingCBOCw.asp>
  - 2.4.1.5 VA Design Guides (PG18-12)
  - 2.4.1.6 VA Directive and Handbook 7545: Cultural Resources Management and 36 CFR Part 800 – Protection of Historic Properties
  - 2.4.1.7 Physical Security and Resiliency Design Manual
  - 2.4.1.8 <https://www.cfm.va.gov/til/PhysicalSecurity/dmPhySec.pdf>
  - 2.4.1.9 Directive 0730 Security and Law Enforcement [https://www.va.gov/vapubs/search\\_action.cfm?formno=730&SortBy=Pub\\_Type\\_Desc](https://www.va.gov/vapubs/search_action.cfm?formno=730&SortBy=Pub_Type_Desc)

## **SECTION 3 – PLANNING AND DESIGN CRITERIA**

- 3.1. Background
  - 3.1.1. VHA has committed to the development of a patient-centered medical home model for enhanced outpatient primary care services to veterans. The result was a patient care delivery model and a set of planning and design standards.
- 3.2. PACT Guiding Principles
  - 3.2.1. An operational and planning design guide was developed which identified key principles and objectives. Refer to PACT Space Module Design Guide under References Section 2.4.
- 3.3. Community Based Outpatient Clinics (CBOC) Planning Approach
  - 3.3.1. The development of the PACT Planning Module was complimented by the development of a Prototype for Standardized Design and Construction of Community Based Outpatient Clinics. Using the PACT Module as the building block, prototypes were developed for three types and sizes of outpatient facilities.
- 3.4. Room Data Matrix
  - 3.4.1. A collection of typical rooms within leased OPC and CBOCs. It lists the required finishes, STC ratings, ceiling heights, door size and type, hardware sets, HVAC space ventilation, number of electrical receptacles, lighting controls and fixture types, and number of standard density work area outlets for each room type.
  - 3.4.2. The Lessor shall associate rooms listed on the program for design with the room data matrix by room name. Use department level room names and types when available, otherwise use general room/space for like room function.
  - 3.4.3. FGI Equivalent for ASHRAE 170 – Where HVAC space ventilation requirements are omitted, ASHRAE 170 Tables 8-1 and 8-2 shall be followed. Column “FGI Equivalent for ASHRAE 170” lists the equivalent room name for use in the tables.
  - 3.4.4. FGI Equivalent for Table 1.2-5 “Minimum Sound Isolation” - Where Column “STC” in the Room Data Matrix states “See FGI”, Column “FGI Equivalent for Table 1.2-5 Minimum Sound Isolation” lists the equivalent room name for use in FGI Table 1.2-5.
  - 3.4.5. Additional Requirements in this LDN take precedence over the standard in the RDM.

## **SECTION 4 – TECHNICAL NARRATIVE**

### **4.1 Site/Civil**

#### **4.1.1 Pedestrian and Vehicle Access & Circulation**

- 4.1.1.1 Minimum traffic lane width is 12 feet, and minimum sidewalk width is 4 feet. Curves for traffic lanes and radii at intersections must be adequately sized to prevent vehicles from encroaching on an opposing lane of traffic. Provide driveway with vehicular drop off point with covered walkway extending to Main Entrance. Design patient exterior areas that are conveniently accessible from the building without vehicular crossings and are oriented to the most favorable site climatic conditions.
- 4.1.1.2 An accessible route must be provided from the public right-of-way abutting the site to the accessible building entrance.
- 4.1.1.3 Provide a service area with a loading dock designed to accommodate truck (WB-62) maneuverability. Loading dock shall be 4 feet above the driveway. Platforms shall have a minimum depth of 8 feet front to back or between dock lift/leveler and back wall. Provide canopy over the platform with 14 feet of clearance from grade to the underside of the canopy. Canopy shall extend minimum of 4 feet beyond the edge of the dock for weather protection. Provide stair or ramp to the platform. Provide hydraulic dock levelers with 25,000 pounds capacity for recessed installation at loading dock.
- 4.1.1.4 Service area shall accommodate vehicles that pick-up trash and recycled materials. Locate service area away from public and patient areas.
- 4.1.1.5 Provide reflective traffic control signs as required for intersections, no parking lanes, and guidance of site traffic.
- 4.1.1.6 Provide pathway for public transportation entering the site.

#### **4.1.2 Parking**

- 4.1.2.1 Parking lots with 90-degree stalls must have minimum parking stall dimensions of 9 feet by 18 feet, and a minimum drive aisle width of 24 feet. Angled parking must have one-way drive aisles with the same stall sizes as 90-degree parking. Angled parking drive aisle width must comply with a published design standard for a designated parking angle. Parking lot shall be minimum two-layer asphalt minimum with access drive to front entrance heavy duty asphalt for fire truck / City bus. Heavy duty asphalt must be used on ALL travel ways.
- 4.1.2.2 Provide locations and details of pavement striping and signage for parking, roadways, crosswalks, accessible parking and routes, and other special areas. Speed limit shall be marked on roadways. Actual speed limits will be provided by VA.
- 4.1.2.3 Provide accessible parking spaces for physically disabled people (handicapped) and locate near entrances for convenient access. The number of accessible parking spaces shall be 10% of the total provided spaces and all spaces shall be van accessible.
- 4.1.2.4 Provide a parking tabulation on the contract drawings indicating the total number of VA facility parking spaces with subtotals for standard spaces, accessible spaces, motorcycle spaces, and van accessible spaces. Provide 10 spaces for Government vehicles.
- 4.1.2.5 Provide twenty paved parking spaces for motorcycles. Motorcycle parking spaces shall be 4.5 feet [1.37 m] wide x 8 feet [2.44 m] long.
- 4.1.2.6 Provide one fixed bicycle rack with capacity for 10 bicycles. Coordinate location with Tenant.



---

4.1.3 Site Grading and Amenities

4.1.3.1 Roads and walks should have a typical cross slope of 2% unless adequate surface drainage is provided by other slope conditions. Refer to local DOT for guidelines.

4.1.3.2 Must meet ADA criteria for the entire site.

4.1.3.3 Stormwater runoff must comply with EISA Section 438.

4.1.3.4 Equipment Pads - Locate utility transformers, cooling towers, generators, generator fuel tanks, gaseous tank storage, and other equipment pads away from patient and visitor entries and outdoor activity areas, preferably adjacent to service area. To prevent injury to patients and personnel, enclose pad area with chain link fencing, and provide signage indicating warning to heart pacemaker patients. Barriers and fencing shall comply with the requirements of the serving electric utility and local codes where applicable.

4.1.3.5 Site Amenities

4.1.3.5.1 Exterior Yards - Provide exterior patio or yard areas for outdoor activities that include seating opportunities, including benches, tables, trash receptacles, and decorative fencing for VA staff space and other areas as appropriate. Outdoor areas shall be designed with a diversity of landscape and hardscape elements capable of supporting a variety of activities. Meditation gardens and walking trails are desirable.

4.1.3.5.2 Coordinate site lighting with walkways. Provide fixtures below canopies where necessary to maintain illumination levels for exterior walkways.

4.1.3.5.3 Provide mailbox and address to the facility.

4.1.3.6 Telecommunication Services

4.1.3.6.1 Provide telephone service from the serving telephone provider. Provide cable television service from the serving provider. Provide guest wireless system through public areas in entire clinic, includes installation/maintenance/service cost. Minimum T3 Service. System shall contain strict content filter and terms of agreement with renewable 24-hour IP lease. Refer to Section 4.8 Telecommunications for further definition.

4.1.3.7 Canopies and covered walkways

4.1.3.7.1 Provide drive-under type Canopy at Main Entrance, Women's Clinic, Staff Entrance, Bus Stop and Ambulance Pickup for patient drop off or pickup. Canopies are to accommodate high vehicle heights for vehicle clearances. Underside of canopies shall be enclosed to prevent bird roosting and shall be designed for high winds per code requirements. All canopies' structure and architecture shall match the building architecture. Bus Stop canopy to be coordinated with Public Transportation provider.

4.1.3.7.2 Coordinate site lighting with walkways. Provide fixtures below canopies where necessary to maintain illumination levels for exterior walkways.

4.1.3.7.3 Canopy is to be full-width of entrance vestibule, minimum, and shall extend out from the face of the building a minimum of 6'-0" to protect pedestrians from weather.

4.1.3.7.4 Clean driveways and parking areas of trash and debris on a weekly basis and within 24 hours of inclement weather that results in debris being deposited on paved surfaces. All street sweeping activities to be reported

---

to the Tampa Biomet VAMC Safety Department.

4.1.3.8 POW/MIA Flag

- 4.1.3.8.1 Provide one POW/MIA flag for display on the Flagpole required by the Lease. The size of the flag should be the same size as the flag of the United States of America and shall be replaced at all times during the Lease term when showing signs of wear. Appropriate illumination of the flags shall be provided.

4.1.3.9 Exterior Signage

- 4.1.3.9.1 Lessor shall develop and provide a complete exterior signage program to include identification, directional, informational, and regulatory signage including non-smoking. Signage must comply with local municipality's codes and specifications. Careful consideration of the location of monument signs shall be taken to avoid sight triangle encroachment. Signage on site must comply with VA Signage Design Guide, Exterior Signage Parts I and II, located in Design Guide PG-18-17, Environmental Planning Guide, available on VA Technical Information Library. Signage not located on site shall comply with local municipality's codes and standards, except for monument sign. At each roadway entrance to the site furnish and install a sign, nominal size 18" X 24" on square bronze post, that reads, "NOTICE NO FIREARMS OR WEAPONS ALLOWED ON THIS PROPERTY 18 USC 930", to include universal no weapons logo. Furnish and install on the building wall adjacent to each building entrance, two (2) signs. One sign, nominal size 12" X 18", that states, "Firearms Prohibited Violation of VA Regulation 1.218 (b) (037) Penalty \$500 Fine and Six Months Imprisonment". The second sign, nominal size 24" X 6", that states, "For Your Safety No Guns, Knives, or Other Weapons Allowed", to include universal no weapons logo
- 4.1.3.9.2 Lessor shall provide ground mounted, illuminated, horizontal monument sign to identify the HCC main entrance. Lessor shall provide foundations and electrical power as necessary. Base shall be concrete or masonry and shall be compatible with building design and landscaping scheme. Monument sign shall be a minimum of 5'-0" high x 12'-0" wide. VA will furnish message layout, content, and colors for the monument sign. Graphic process shall be routed out copy backed with white, translucent acrylic
- 4.1.3.9.3 Lessor shall provide illuminated wall mounted building identification signs of dimensional powder coated or anodized aluminum letters and numerals with VA logo. Letters and numerals shall be minimum 36 inches high. Logo shall be of design provided by VA and shall be 84 inches high. Sign messages shall be as follows:
- 4.1.3.9.4 Facility Name: "TBD" VA Clinic or as otherwise defined by the VA. VA logo shall precede facility name.
- 4.1.3.9.5 Address sign shall consist of numerals for the building street address.
- 4.1.3.9.6 Lessor shall coordinate the Authority Having Jurisdiction the relocation of existing facility signalization on roadways to the new location.

## 4.2 Architecture

---

4.2.1 General Criteria

4.2.1.1 Refer to Appendix A.1 and A.2: Room Data Matrix for Door, Hardware and Acoustic requirements listed by Room Type.

4.2.1.2 The Conceptual Block Diagram included in Appendix B provided in this Solicitation shall be used as the basis for the planning and functional layout of the facility. The completed building shall accommodate VA's space program and interior functional requirements. Offerors are advised that the conceptual plans have been developed using VA Space Planning Criteria and information from the Leased Based Outpatient Clinic Design Guide and the VA CBOC Prototype in conjunction with the parent Medical Center. The Block Diagram is a diagrammatic representation of the required spaces within the PFD with some consideration regarding departmental and interdepartmental adjacencies. The Block Diagram shall not be considered the required layout.

4.2.1.2.1 The Conceptual Floor Plan in Appendix B defines the basic elements of the interior circulation systems and their relation to the functional plan within VA occupied space. The Lessor is responsible for the final design of horizontal and vertical circulation systems including building support space and common areas within the Building during Design Development. Lessor shall integrate the design of circulation systems with building entrances, functional elements, wayfinding systems (refer to 4.4 INTERIOR FINISHES) and signage (refer to 4.2.5 INTERIOR SIGNAGE).

4.2.1.2.2 Circulation system components include entrances, lobbies, corridors, and vertical circulation (stairs and elevators if proposed project has multiple floors).

4.2.2 Accommodations for Care of Patients of Size

4.2.2.1 Refer to FGI Guidelines for Outpatient Facilities for accommodations for care of patients of size. Minimum requirements are to provide access to a Procedure Room and Procedure Room Toilet in one PACT Module using a 650lb capacity design requirement. Additional capacity may be required and listed in the project specific requirements.

4.2.3 Acoustics

4.2.3.1 Refer to FGI Guidelines for Outpatient Facilities for acoustics requirements for enclosed rooms. Refer to the Room Data Matrix-Interior Construction for information on rooms not covered under FGI or rooms with special acoustics requirements.

4.2.3.2 Mental Health Service - 4.2.6.5.1 Provide an electronic masking system in Consult Rooms OFDC1, EXPA1 and Group Rooms OPMH1. Provide both a Central system with ceiling speakers and a volume control in each room as well as a power outlet at 72" for a localized backup unit.

4.2.3.3 Consult Rooms OFDC1, EXPA1 and Group Rooms OPMH1 walls to have an STC rating of 50 – this exceeds FGI requirement for an electronically masked room.

4.2.4 Equipment/Accessories/Furnishings

4.2.4.1 Refer to OPC Project Contents List and Room Template sheets provided with the RLP for equipment, accessories, and furnishings descriptions and locations. Items

to be provided and/or installed by Lessor are noted on the list. Provide partitions, partition backing, and above ceiling structural support as required for wall and/or ceiling mounted equipment, accessories, and furnishings. Provide required utility connections for scheduled equipment.

4.2.4.2 Audiology Booth

- 4.2.4.2.1 Booth fitted with recessed sprinklers on interior.
- 4.2.4.2.2 Out **SINGLE** swinging doors in booths
- 4.2.4.2.3 Min. 7' clear interior.
- 4.2.4.2.4 Provide plug molding for additional power/data under custom counter. VA to provide details on counter and location with final booth layout
- 4.2.4.2.5 RT flooring – metal sound absorbent panel walls (no fabric).
- 4.2.4.2.6 Phones on both sides.
- 4.2.4.2.7 Provide power and data for Biomet NOAH workstation.

4.2.5 Signage and Wayfinding

- 4.2.5.1 Refer to VA Signage Design Guide in Section 2.4 for signage standards and requirements including dedication plaque in Facility Dedication Plaques and Seals PG 18-13.
  - 4.2.5.1.1 Lessor to provide an electronic wayfinding system utilizing current cell phone technology to guide patients to internal destinations.
  - 4.2.5.1.2 Lessor to coordinate with Authority Having Jurisdiction to relocate off site signage to new facility location.
  - 4.2.5.1.3 Additional signage by Lessor to include military medallions will be incorporated into the design in coordination with the Medical Center Interior Designer.

4.2.6 Critical Dimensions

- 4.2.6.1 Patient-use corridors are to be 6 feet minimum. Staff corridors for transport of supplies from loading dock area to services shall be 8 feet minimum.
- 4.2.6.2 Refer to Room Data Matrix – Interior Construction for required ceiling heights by room type.

4.2.7 Entry Canopies

- 4.2.7.1 Provide non-combustible lit canopies over the following locations: patient entry to clinic, ambulance building access point, receiving area/loading dock, medical water, medical gas storage doors and MRI pad with L shape canopy walkway to trailer.
- 4.2.7.2 At patient entry, provide a covered patient drop-off zone with space for at least two (2) full size passenger vehicle (19 feet long covering driver) and an accessible access aisle.
- 4.2.7.3 At ambulance building access point, provide a drive-under covered patient drop-off zone with space for at least one ambulance (typical size used in area) and an accessible access aisle.
- 4.2.7.4 Provide clearance from grade to underside of canopy with for typical emergency and transport vehicles used in the area of 14'-6" minimum and minimum Fire Lane of 20 feet. Canopy is to be full-width of entrance vestibule, minimum, and shall

- 
- extend out from the face of the building a minimum of 6'-0" to protect pedestrians from weather. Canopy at Women's entrance and ambulance pick-up shall be full length and extend 3'-0" beyond face of curb at driveway.
  - 4.2.7.5 At loading dock minimum 3' extension beyond edge of loading dock maintaining clearance height for semi-trucks.
  - 4.2.7.6 A covered canopy shall provide protection for pedestrians to the Mobile Medical pad.
  - 4.2.7.7 Provide canopy at exterior door into Medical Gas Storage SRGC1 and Medical Waste Storage UTMW1.
- 4.2.8 Slab Depressions and Thickened Slabs
- 4.2.8.1 At new construction, provide slab depression and thickened slabs as required to provide flush threshold installation at audiology booths, MRIs, at front vestibule matts and other equipment requiring recessed installation or additional structure as recommended by equipment manufacturer. At these equipment locations, concrete slab levelness shall be level and true to meet vendor requirements and shall have a minimum flatness and levelness of FF=45 and FL=35. At existing construction, provide ramp to meet ABAAS.
- 4.2.9 Millwork
- 4.2.9.1 Quality compliance to conform to Architectural Woodwork Institute (AWI) and Woodwork Institute (WI) quality standards.
    - 4.2.9.1.1 Minimum of three Color Schemes required for coordination with the Medical Center Interior Designer for final selection.
  - 4.2.9.2 Wood Veneer Casework Construction: Combination of custom wood casework and countertops to conform to program and functional requirements. (Location: Lobby, Reception)
    - 4.2.9.2.1 Construction: Flush overlay construction with concealed hinges. AWI custom grade.
  - 4.2.9.3 Plastic Laminate Casework Construction: Custom plastic laminate casework to conform to program and functional requirements. (Location: Typical).
    - 4.2.9.3.1 Construction: Flush overlay construction with concealed hinges, AWI Custom Grade.
    - 4.2.9.3.2 Cabinet Hardware:
      - 4.2.9.3.2.1 Concealed hinges, all metal, 110 degree opening, self-closing.
      - 4.2.9.3.2.2 Full extension drawer guides, 100 lbs.capacity.
      - 4.2.9.3.2.3 Door and drawer pulls: 4" center to center wire pull, 5/16" diameter round, 1 1/4" projection, satin chrome.
  - 4.2.9.4 Solid Surface Fabrications: Hard, solid, non-porous mineral-filled acrylic resin (methyl methacrylate) material in color to be selected by designer. Thickness: 1/2" minimum.
    - 4.2.9.4.1 Locations:
      - 4.2.9.4.1.1 Transaction tops at nurse stations and reception desks. Millwork for reception desk to be coordinated with the Medical Center Interior Designer during DID Development.
      - 4.2.9.4.1.2 All counters in patient treatment areas to have solid surface countertop with 4" high minimum integral coved side and backsplash.
      - 4.2.9.4.1.3 Where scheduled as wall protection, provide 1/4" thick material with welded seams.

---

4.2.10 Joint Sealant Systems

- 4.2.10.1 Joints at plumbing fixtures, ceramic tile to be mildew resistant silicone.

4.2.11 Doors and Frames

- 4.2.11.1 Refer to Room Data Matrix for door and hardware requirements by room type.
- 4.2.11.2 Finish: Prefinished in compliance with AWI Section 1500.
- 4.2.11.3 Automatic Sliding Doors: Single Slide Automatic Sliding Door, Class 1 Clean Room Certified, narrow stile, 84" wide w/ 35.3" nominal clear door opening, trackless, clear anodized finish, and touchless actuators.
- 4.2.11.3.1 Comply with BHMA Standard ANSI A156.10 (BHMA 1601), Power Operated Pedestrian Door Standard and UL Standard UL 325, Electric Door, Drapery, Gate, Louver and Window Operators and Systems.
- 4.2.11.3.2 Service Life: Provide automatic sliding doors capable of operating without failure of any component, for not less than 300,000 open and close cycles, with normal maintenance as defined in manufacturer's standard operating manual.
- 4.2.11.3.3 All TR doors are to swing out.
- 4.2.11.3.4 Entrance doors at Main Entry, PRRC Entry, Ambulance Pickup, and Staff Entry shall be automatic, sliding anodized aluminum construction with safety glazing and shall comply with energy and sustainability requirements. Where vestibules are provided, exterior and interior door assemblies shall match. Ambulance Pickup shall have 4'-0" minimum clear opening.
- 4.2.11.3.5 Swinging exterior doors and frames, except entrance doors, shall be heavy duty, insulated, continuously-welded, flush, hollow steel construction. Exterior doors shall be weather-stripped, self-closing, and open outward. Door hardware shall be selected from pertinent chapters of VA Document PG 18-14 Room Finishes, Doors & Hardware Schedule including Chapter 265. Provide latch guards and hinges with non-removable pins to deter tampering or unauthorized entry.
- 4.2.11.4 Automatic Doors
- 4.2.11.4.1 Design automatic doors to operate manually in event of power failure. Equip controls with safety devices for pedestrian protection. Provide door operator controls and equipment that are easily accessible for maintenance. Design automatic doors to open from both sides.
- 4.2.11.5 Roofs
- 4.2.11.5.1 Contractor shall provide a weathertight roofing system utilizing a low-slope, steep-slope, or combination of low and steep-slope systems that comply with all applicable Federal, State, and Local Codes & Ordinances and are installed in accordance with roof system manufacturer's approved instructions.
- 4.2.11.5.2 Roof system shall utilize roof drains, overflow drains, scuppers, or gutters & downspouts as appropriate to roof design and drain into an underground stormwater drainage system. All roofs shall slope to roof drains or gutters.
- 4.2.11.5.3 Coordinate roof drainage with site (storm) drainage. Where roof drain leaders do not connect directly to storm drains, provide scuppers under all sidewalks and flatwork to convey storm flow to site drainage system.
- 4.2.11.5.4 Use minimum 8-inch high base flashing at walls and penetrations. Do not use pitch pockets or similar penetration seals.
-



4.2.11.5.5 VA will require a rooftop mounted satellite system or other roof top antennas for the building. The roof shall be maintained in a watertight condition at all such mounting locations. Provide appropriately sized conduit sleeving and weatherproof box at roof end of conduit sleeve.

4.2.11.6 Access Panels:

4.2.11.6.1 Flush stainless steel at toilet areas.

4.2.11.6.2 Flush gypsum board surface with concealed hinges at public and office areas.

4.2.11.6.3 Fire rated steel at rated construction.

4.2.12 Hardware

4.2.12.1 General Note

4.2.12.1.1 Hardware sets shall be provided as per Section 5 Hardware Groups and Modifiers. Provide extra heavy duty, Grade 1 and shall match the current system utilized at the main VA Medical Center. Hardware for all components. Door hardware function shall be selected from pertinent chapters of VA Document PG 18-14 Room Finishes, Doors & Hardware Schedule including Chapter 265. Hinges shall be suitable for size and weight of provided doors. Verify all hardware selections and locking systems with the Resident Engineer prior to ordering and installation. Insert hardware shall be able to accept key core of Medical Center's choice.

4.2.12.2 Major components and finishes are as follows:

4.2.12.2.1 Cylinders and Keying: Key locks/cylinders in groups with new master key or grandmaster key system as directed by Owner. Provide three (3) keys per lock. Provide construction master keying. Cylinders shall meet the requirements of ANSI/BHMA A156.5-14.

4.2.12.2.2 Low Energy Automatic operators, ANSI A156.19-07. Heavy duty commercial grade. Provide complete with drop plates, bracket, or adapters for arms as required to suit details. Provide a terminal strip in an enclosed box near or above door that indicates connections for Security and Fire Alarm equipment and for electrified hardware items associated with proper door operation, as indicated by hardware group operational description. Refer to floor plans for type of actuation devices and bollards if required. Coordinate with Security Contractor for doors actuated by electronic access control system.

4.2.12.2.3 Electronic access control to be **C-Cure 9,000 V3.0 or newest**: Electronic access control system/device(s), power supplies (unless otherwise noted in hardware group) and monitoring/alarm(s) are provided with Security System. General Contractor to coordinate the provision and installation of the products to match the current system utilized at the main VA Medical Center. Refer to documents with Security Information for location(s) and type(s) of control(s). Connection by Electrical.

4.2.13 Pharmacy Dispensing Windows

4.2.13.1 Provide secure transaction drawer/pass through cabinet and window with amplified speak thru at Pharmacy Dispense/Consult windows for staff to patient transactions.

4.2.13.2 Provide stainless steel, type 304, #4 finish, pass-through cabinet with mechanical interlock doors with clear tempered safety glass windows to comply with USP 800 clean air requirements at Pharmacy pass-through windows. (location: Clean Room-Chemotherapy Compounding)

4.2.13.3 Provide protection for dispensing windows, and for walls around windows, window and the wall around a dispensing window shall meet U.L. Standard 752 for Class III

---

Ballistic level via the use of concrete block walls with cores filled with sand, or appropriately rated metal panels, and extension of perimeter walls to structure above.

- 4.2.13.4 SSTV must be used at entry points, exit points, service interaction areas and windows, and waiting areas.

#### 4.2.14 Radiation Shielding

- 4.2.14.1 For Radiology, Fluoroscopy, Mammography, Ultrasound Rooms, obtain the services of a physicist to design, specify the level of radiation protection required, test and certifies the installations.
- 4.2.14.2 Comply with requirements of the National Council on Radiation Protection and Measurement (NCRP) Report #49.
- 4.2.14.3 Provide lead lining of gypsum wall board, wood doors and hardware, hollow metal frames, and lead glass view window.
- 4.2.14.4 Lead sheet to be FS QQ-L-201, Grade C, thickness as required by physicist report but not less than 1/16 inch.

### 4.3 Interior Design

#### 4.3.1 General Criteria

- 4.3.1.1 Refer to Appendix: Room Data Matrix – Interior Construction for finish requirements listed by room type. Interior finishes shall be provided as indicated in VA Program Guide 18-14 Room Finishes, Doors & Hardware Schedule including Chapter 265. VA must review and approve any deviation from this document prior to start of final construction documents.
- 4.3.1.2 The Interior Design concept and materials, finishes, colors, patterns and textures must be approved by the Senior Resident Engineer in coordination with the Interior Designer of the main VA Medical Center.
- 4.3.1.3 The primary objective of the interior design is to provide a residential, therapeutic environment. Finishes, fixtures, and furnishings that maintain the safety and security of the facility need to be integrated into the design without detracting from this primary objective. A warm, welcoming and familiar environment can help calm patients and promote their participation in treatment and their rehabilitation and recovery. The facility 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 high quality design.
- 4.3.1.4 The design is to pivot from the facility's mission and its patient profile. This includes a working knowledge of the profile and characteristics of the veteran as a patient population and the distinct profile of the users of said facility and said project. VA patients are often long-term, high repeaters with multi-medical problems. Each user group will reveal the degree of need for the design to address aging, physical and mental disabilities, abusiveness, loss of function and perceptual ability.
- 4.3.1.5 Functional requirements dictate maintainable colors, textures, patterns, material selections, combination of materials, and installation techniques. Materials must be chosen for longevity and good appearance retention.
- 4.3.1.6 A "wayfinding" process shall be designed into the project. Patients, visitors, and



staff need to know where they are, what their destination is, how to get there, and how to return to their origination point. 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 set-up for separate contracted signage, artwork, with Directory. Refer to VA Signage Design Guide.

4.3.1.7 Design attention shall be given to all spaces. Areas which could initiate the design may be the lobby or administrative suite, but extensions of the same quality and variety are required for the corridors, staff areas, and patient areas. The design must offer a distinctive and clear lead for the planning and selecting of interior furnishings. Designs that narrow choices of procurement furnishings are inappropriate. A working understanding of the limits of government sources is to be considered. This consideration will produce a good environment for the furnishings.

4.3.1.8 Designs that use "lifetime 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.

#### 4.3.2 Acoustic Ceiling Tile

4.3.2.1 AT: Acoustical ceiling tile, standard size to be 24"x24"x 1".

4.3.2.2 AT-SP: Acoustical, scrubbable ceiling tile, standard size to be 24"x24"x 1", with vinyl- laminated or sealed face and sealed edges.

#### 4.3.3 Concrete Floor Treatment

4.3.3.1 Concrete Sealer (CS): 30 percent clear, non-yellowing, waterborne, membrane-forming curing and sealing compound: ASTM C1315, Type 1, Class A, minimum 30 percent total solids. Comply with ACI 301.

#### 4.3.4 Fiberglass-Reinforced Panels

4.3.4.1 Fiberglass-reinforced panels (FRP): Gelcoat-finished, glass-fiber reinforced plastic panels complying with ASTM D 5319. Fire-Rating per ASTM E 84: Class A. Nominal thickness: 0.09 inch.

#### 4.3.5 Painting

4.3.5.1 Interior painting: Paint (P) and Epoxy Paint (EP): Paint surfaces with primer and two finish coats that are compatible with one another as demonstrated by manufacturer or field experience, unless otherwise indicated.

4.3.5.2 Materials: Use low VOC, low odor latex top coats where indicated. Paint the following items and surfaces:

4.3.5.2.1 Ceilings: Flat latex.

4.3.5.2.2 Walls - gypsum wallboard: Satin latex.

4.3.5.2.3 Walls - concrete block: Semi-gloss latex with block filler.

4.3.5.2.4 Hollow metal doors and frames: Semi-gloss latex over alkyd primer.

4.3.5.2.5 Consult Rooms OFDC1, EXPA1 and Group Rooms OPMH1 to be painted "Flemish Blue" – coordinate final color with VA.

4.3.5.2.6 Office Enrolment – provide accent wall behind camera locations for photo IDs. Coordinate with VA final color.

---

4.3.6 Wall Protection

- 4.3.6.1 Rigid Wall Covering (RWC): Nominal thickness .060 inch, high-impact, PVC-free, standard texture, chemical and stain resistant, with vertical, inside and outside trims. To comply with ASTM E84, ASTM F476 and ASTM D543. Provide resilient materials with integral color with all colored components matched in accordance with SAE J 1545 to within plus or minus 1.0 on the CIE LCH scales.
- 4.3.6.2 Corner Guard (CG): Surface mounted assembly for angled corner consisting of a continuous stainless steel with ¼ inch corner radius. Size to be 2" width each way from corner. Height to be 7' from top of base.
  - 4.3.6.2.1 Location: Provide at all outside exposed corners in all clinic corridors outside of public areas as defined by FGI.
- 4.3.6.3 Corner Guard – Stainless Steel (CG-SS): Surface mounted stainless steel, 3-1/2" wing size, 7' height, 16 gauge in Kitchen and/or Standard Grade, #4 satin finish.
  - 4.3.6.3.1 Location: Provide at all outside exposed corners in food service areas, loading dock area and heavy use equipment storage areas.

4.3.7 Handrails and Corner Guards

- 4.3.7.1 Handrail/Wall Guard Combination shall consist of snap-on covers of resilient material, minimum 0.078-inch thick, free-floated on a continuous, extruded aluminum retainer, minimum 0.072-inch thick, anchored to wall at maximum 32 inches on center.
- 4.3.7.2 Wall Guards (Crash Rails) shall consist of snap-on covers of resilient material, minimum 0.110-inch thick, free-floated over a continuous extruded aluminum retainer, minimum 0.090-inch thick anchored to wall at maximum 24 inches on center.

4.3.8 Window Shades

- 4.3.8.1 Manually operated window shade, chain driven, vertical roll-up, stainless steel bead chain with hold down clips, extruded aluminum rollers, and bottom slats. Aluminum headbox with endcaps and fascia with powder coat finish. Light gap reduction channels available for black out shades. PVC-free shades, Flame-Resistance Ratings: NFPA 701. Comply with WCMA A100.1. Window treatments should not compromise patient safety. If out of reach, then it shall be electrically operated by keyed switch.
- 4.3.8.2 Locations:
  - 4.3.8.2.1 Semi-Transparent to be typical, unless otherwise noted.
  - 4.3.8.2.2 Black-out at conference rooms, tele-medicine rooms, optometry exam rooms and perimeter offices.

4.3.9 Clocks on rooms to be installed shall be hard wired.

4.3.10 Privacy Curtains / Screens

- 4.3.10.1 Provide curtain tracks with carriers and hooks (curtains shall be provided by the Lessor). Curtains are to be disposable type no launderable curtains allowed; coordinate with the Medical Center for specific type. Tracks shall be of extruded aluminum, ASTM B221, alloy 6063, temper T5 or T6, channel shaped, with smooth inside raceway for curtain carriers. End stop connectors, ceiling flanges and other accessories shall be fabricated from the same material with the same finish as the tracks or from nylon.
- 4.3.10.2 Provide privacy curtains/screens to encompass adequate space for the healthcare provider to perform examination unencumbered by the curtain and provide a visually private patient changing area that allows the provider to remain in the room.

- 
- 4.3.10.2.1 Locations shall be per the room contents list.
  - 4.3.11 Flooring, Carpet
    - 4.3.11.1 Rooms specified to receive carpet shall not have sinks in them. Rooms with sinks shall LVT installed.
  - 4.3.12 Police
    - 4.3.12.1 Reference and follow VA Handbook 0730 appendix B for wall construction and building compliance where accruable.
    - 4.3.12.2 Provide an exhaust in armory for discharge of weapons.
    - 4.3.12.3 Provide direct access to exterior from Police Suite.
    - 4.3.12.4 1 way glass between operations room and vestibule and lobby with micro shade.
    - 4.3.12.5 Overhead speaker system to function in the operations room.
    - 4.3.12.6 Provide a camera in armory.
    - 4.3.12.7 Provide pathway for antennae to roof for police systems.
    - 4.3.12.8 Camera head end to be located in a Systems Room in Police Area.
  - 4.3.13 Radiology Mobile Unit
    - 4.3.13.1 Provide Mobile Medical equipment pad adjacent to Radiology.
    - 4.3.13.2 Confirm there is adequate turning radius and access for size of vehicles.
    - 4.3.13.3 Concrete pad is on grade.
    - 4.3.13.4 Concrete pad is structurally sound for vehicle expected to be placed there.
    - 4.3.13.5 There shall be a Utility Pedestal to provide services to the Mobile Medical Unit. Services include but are not limited to data connections, electrical outlets, and hot and cold water.
    - 4.3.13.6 Pad to provide drainage/sanitary.
  - 4.3.14 Additional Lessor Space
    - 4.3.14.1 Office
    - 4.3.14.2 Cleaning Supplies
    - 4.3.14.3 Special Systems Room to include but not limited to:
      - 4.3.14.3.1 CCTV
      - 4.3.14.3.2 Duress
      - 4.3.14.3.3 Fire Alarm
    - 4.3.14.4 Lessor to provide vestibules at all entry points as required by the building code. These are Lessor spaces.

#### 4.4 Mechanical (SHELL)

- 4.4.1 References
  - 4.4.1.1 The following publications shall be referenced for applicable systems calculations and design information.
    - 4.4.1.1.1 ASHRAE Handbooks.
    - 4.4.1.1.2 The HVAC systems shall be designed in accordance with the IMC, state and local codes, ASHRAE 90.1-2013, ASHRAE 170, Joint Commission Standards and FGI (American Institute of Architects/Facility Guidelines Institute): Guidelines for Design and Construction of Healthcare Facilities. The HVAC systems be capable of providing year round comfort and proper ventilation during all weather conditions noted below.
      - 4.4.1.1.2.1 Outdoor Design Conditions (Reference: Latest Edition of ASHRAE Handbook of Fundamentals.)
      - 4.4.1.1.2.2 Cooling Mode – Air Handling Unit (Minimum Outdoor Air) 1%, Monthly Design Dry bulb and Mean Coincident Wet bulb Temperatures.
      - 4.4.1.1.2.3 Cooling Mode – Air Handling Unit (100% Outdoor Air):1%, Monthly Design Wet bulb and Mean Coincident Dry bulb Temperatures.
      - 4.4.1.1.2.4 Heating Mode 99%, Annual Design Dry bulb Temperature.

---

#### 4.4.2 HVAC Design Basis

- 
- 4.4.2.1 General: The following publications shall be referenced for applicable systems calculations and design information: ASHRAE Handbooks.
- 4.4.2.1.1 The HVAC systems shall be designed in accordance with the IMC, state and local codes, ASHRAE 90.1-2013, ASHRAE 170, Joint Commission Standards and FGI (American Institute of Architects/Facility Guidelines Institute): Guidelines for Design and Construction of Healthcare Facilities. The HVAC systems be capable of providing year-round comfort and proper ventilation during all weather conditions noted below.
- 4.4.2.1.1.1 Outdoor Design Conditions (Reference: Latest Edition of ASHRAE Handbook of Fundamentals.).
- 4.4.2.1.1.2 Cooling Mode – Air Handling Unit (Minimum Outdoor Air) 1%, Monthly Design Dry bulb and Mean Coincident Wet bulb Temperatures
- 4.4.2.1.1.3 Cooling Mode – Air Handling Unit (100% Outdoor Air): 1%, Monthly Design Wet bulb and Mean Coincident Dry bulb Temperatures.
- 4.4.2.1.1.4 Heating Mode 99%, Annual Design Dry bulb Temperature.
- 4.4.2.2 Indoor design conditions:
- 4.4.2.2.1 Health care function design conditions shall be in compliance with the requirements of the FGI Guidelines and ASHRAE Standard 170, with the Room Data Matrix taking precedence and/or indicating required space design conditions when the FGI Guidelines do not fully address a space or room type. System will operate year-round 24 hours 7 days a week without interruption. Lessor to provide additional cooling for sensitive areas to included but not limited to OIT and Pharmacy.
- 4.4.2.2.2 Imaging Equipment Space Design Conditions
- 4.4.2.2.2.1 Equipment manufacturer requirements shall be followed.
- 4.4.2.2.2.2 Provide a dedicated computer room type AC unit to cool and control humidity for separate equipment rooms for radiology equipment.
- 4.4.2.2.2.3 Provide a computer room type AC unit to cool UPS rooms when segregated from other spaces.
- 4.4.2.2.3 Basic MEP Equipment Room Design Conditions:
- 4.7.2.1.5.1 Design conditions shall be as required to ensure tenant space design conditions are maintained.
- 4.4.2.2.4 Loading Docks:
- 4.4.2.2.4.1 Space shall have provisions to limit the intrusion airborne particulate and insects through dock door openings. Provide air curtain and radian heater over roll-up heavy duty warehouse doors.
- 4.4.2.2.4.2 Two bay dock shall utilize one with recessed dock leveler and one with recessed scissor lift.
- 4.4.2.3 Outdoor design conditions:
- 4.4.2.3.1 ASHRAE 99.6% (winter) and 0.4% (summer) conditions associated with the site-specific location.
- 4.4.2.4 Miscellaneous Areas
- 4.4.2.4.1 Provide dedicated and thermostatically-controlled air-conditioning systems for the critical spaces identified below.
- 4.4.2.4.1.1 Server Rooms (OIT Communication Room and Telecom Rooms.)
-

- 4.4.2.4.1.2 CT Room
- 4.4.2.4.1.3 Demarc
- 4.4.2.4.1.4 Other equipment rooms as required
- 4.4.2.4.1.5 Pharmacy compounding area

4.4.3 Air Handling Units (AHUs)

4.4.3.1 Air handling units shall consist of, but not be limited to, the following:

- 4.7.3.1.1 The units shall be constructed of double wall, insulated metal panels with an overall U-value and necessary features to meet/exceed energy code (and prevent condensation based on the site-specific outdoor design conditions).
  - 4.7.3.1.2 Incorporate supply, return and outdoor air flow measuring stations for proper control feedback and ensure minimum ventilation needs.
  - 4.7.3.1.3 For AHU's that are in excess of 15,000 cfm, SA/RA Array fans (minimum 2 fans per system) with backdraft isolation dampers shall be employed.
  - 4.7.3.1.4 VSD controllers for fan array systems shall be provided in quantities that will provide no less than a 50% loss of nominal fan capacity if a single VSD were to fail.
- 4.4.3.2 For overall building capacity needs greater than 50,000 cfm, multiple AHUs shall be provided. Incorporate cross service of units for down-time repairs.
- 4.4.3.3 For building programs that have a Production Kitchen/Food Preparation, a dedicated air handling unit shall be provided capable of serving the conditioning and ventilation needs of the Kitchen space, including capability for a high percentage of outside air to accommodate the make-up air needs of the space.
- 4.4.3.4 The design criteria of the dedicated AHUs for Pharmacy Services, Pharmacy Compounding Suite, and the Surgical Suite shall be as required in the VA HVAC Design Manual. Where air handling units are combined the design shall be based on the aggregate of the most stringent requirements for the units being combined so that the selected unit meets all requirements of the combined units.

4.4.4 Exhaust Systems

- 4.4.4.1 Provide exhaust fans as defined in the room data matrix and FGI and provide general exhaust for toilet rooms, janitor's closets, soiled utility rooms and similar spaces.
- 4.4.4.2 Dedicated exhaust fans shall be provided for Pharmacy, Laboratory, Police, Kitchen/Cafeteria areas, and similar specialized spaces.

4.4.5 Cooling System

- 4.4.5.1 Chillers shall employ multiple, independent refrigerant circuits, and shall have capacity control provisions to achieve at least 4 to 1 turndown.
- 4.4.5.2 The pumping system for the chilled water supply shall consist of variable speed pumps providing variable primary flow, arranged in a headered approach. Variable speed pumps shall each have a variable speed drive controller.
- 4.4.5.3 DX systems:
  - 4.4.5.3.1 AHUs packaged with DX cooling sections shall have compressors/condensing units with direct drive scroll or screw compressors, all-aluminum microchannel condenser coils, and direct drive TEFC condenser fans. Units shall employ multiple, independent refrigerant circuits, and shall have capacity control provisions to achieve at least 4 to 1 turndown.

- 
- 4.4.5.3.2 Provide spring isolated mounting curbs for vibration attenuation, if applicable.
  - 4.4.5.4 Provide unit supported screen wall panels, if roof supported structural screen wall elements are not incorporated.
  - 4.4.5.5 Variable Refrigerant Flow (VRF) systems shall not be considered for VA CBOC projects due to various concerns such as inappropriate system type for healthcare facility applications due to higher amounts of fresh air requirement as well as safety risk to building occupants due to use of high refrigerant volumes and associated potential leaks.
  - 4.4.5.6 Provide dual air systems for TR and Computer rooms – building air is primary – backup is a split unit. All HVAC systems to be serviced without entering the computer room.
- 4.4.6 Hot Water Heating System
- 4.4.6.1 Hot water heating shall be generated by direct vent, sealed combustion, condensing type boilers.
  - 4.4.6.2 The heating water system distribution shall be a variable/primary pumping system. The pumping system will consist of variable speed pumps providing variable primary flow. Variable speed pumps shall each have a variable speed drive controller.
- 4.4.7 Humidification System
- 4.4.7.1 Centralized humidification shall be provided when necessary to maintain 20%-60% relative humidity in all seasons. Each air handling unit shall have a dedicated humidifier.
  - 4.4.7.2 Water treatment shall be provided for humidifier feedwater as required by the humidifier equipment manufacturer.
- 4.4.8 HVAC Piping Systems
- 4.4.8.1 Provide isolation valves on branch and lateral lines to reduce the amount of space that can be disrupted for maintenance and repair efforts. Provide isolation valves at each equipment connection.
  - 4.4.8.2 For hydronic systems utilized in specific sites with freezing climate considerations, use of propylene glycol and/or proven freeze protection methodologies must be incorporated.
  - 4.4.8.3 When propylene glycol is used, the freezing point of the glycol solution shall be at least 5°F lower than the minimum annual extreme daily temperature, to prevent the formation of crystals.
- 4.4.9 Air Distribution and Duct Systems
- 4.4.9.1 Duct construction shall be as follows:
    - 4.4.9.1.1 All supply return and exhaust air ductwork shall be constructed of G90 galvanized steel. Non-ducted Return Air Plenum is not allowed. Flexible duct is prohibited except for the last three feet to connect diffusers.
    - 4.4.9.1.2 Ductwork shall be rectangular, round or flat oval constructed to SMACNA standards.
    - 4.4.9.1.3 Ductwork shall be constructed and tested with leakage classifications and pressure ratings and based on at least 125% of the actual operating pressure of the duct system.
  - 4.4.9.2 Grilles, registers and diffusers shall be steel, aluminum or extruded aluminum with
-

- appropriate finish.
- 4.4.9.3 Return air to be ducted. No plenum return allowed.
- 4.4.10 HVAC Insulation Systems
- 4.4.10.1 All exposed (visible in space) supply and return ductwork in the occupied conditioned spaces shall be provided with rigid insulation with proper seals. Painting and finish requirements shall be coordinated with the finish schedule.
- 4.4.11 Testing, Adjusting and Balancing
- 4.4.11.1 An independent third-party NEBB, ABBC or TABB certified test and balance contractor shall be hired by the general contractor to balance and document all air and hydronic systems within project scope. All ductwork shall be constructed and properly sealed in accordance with applicable energy code requirements. All ducts operating at 2 inches water gauge (wg) or greater shall be pressure tested based on code requirements for 3 in wg or greater pressure classification.
- 4.4.11.2 The balance contractor shall review all plans, components, access, etc. to ensure balancing activities may be successfully performed.
- 4.4.12 Automatic Temperature Control Systems
- 4.4.12.1 The temperature controls shall be direct digital control (DDC) system with industry open protocol compatibility. The system shall provide control of the environment and other parameters and collect data on the performance and deviations (alarms).
- 4.4.12.2 Dedicated thermal control zoning (thermostats) shall be provided for the following:
- each corner space,
  - each conference room (or similar),
  - each Imaging room,
  - each Procedure room (or similar dedicated spaces),
  - each Pharmacy space,
  - Pharmacy Compounding Rooms.
  - For typical blocks of rooms arranged together, every 3 exterior offices or exam rooms, or every 4 interior offices or exam rooms shall be permitted on a single zone.
- 4.4.13 Special Conditions
- 4.4.13.1 Room Pressurization: Health care function design conditions shall be in compliance with the requirements of ASHRAE 170, with the Room Data Matrix taking precedence and/or indicating required space design conditions when ASHRAE 170 does not fully address a space or room type.
- 4.4.13.1.1 Positive air balance is designated as (+)
- 4.4.13.1.2 More positive air balance is designated as (++)
- 4.4.13.1.3 Negative air balance is designated as (-)
- 4.4.13.1.4 More negative air balance is designated as (--)
- 4.4.13.1.5 If the room is not indicated with a specific pressure relationship (blank) or is indicated with NR then there is no requirement.
- 4.4.13.1.6 Provide two negative pressure room EXRG6 – near ambulance entrance.
- 4.4.13.1.7 Meet FGI requirements for Airborne Infection Isolation Rooms.
- 4.4.13.2 Imaging Areas:
- 4.4.13.2.1 For HVAC ducts, pipes and devices penetrating shielded walls and ceilings,



- ensure coordination with the architectural discipline and provide treatment as specified by the equipment manufacturer and medical physicist.
- 4.4.13.2.2 Provide booster humidification systems as may be necessary to comply with acceptable environmental ranges as prescribed by equipment manufacturers.
- 4.4.13.2.3 Coordination with the Radiological Equipment vendor is critical, as the mechanical system requirements shall depend upon the actual make and model number. Obtain project-specific scope of work and ensure the HVAC system is compatible with Suite requirements.
- 4.4.13.3 Pharmacy Clean Rooms: Evaluate the use of dedicated or additional air moving equipment in lieu of a common AHU only, to isolate the stricter temperature/humidity needs and high-static branch circuit to avoid penalizing the entire air handling unit.

## 4.5 Plumbing

### 4.5.1 References

- 4.5.1.1 The following publications shall be referenced for applicable systems calculations and design information:
  - 4.5.1.1.1 ASPE Handbooks
- 4.5.1.2 All plumbing systems shall be designed in compliance with the IPC, state and local codes, ASHRAE 90.1-2013, ASHRAE 188, Joint Commission Standards, and FGI (American Institute of Architects/Facility Guidelines Institute): Guidelines for Design and Construction of Healthcare Facilities.
- 4.5.1.3 Legionella Mitigation
  - 4.5.1.3.1 Comply with ASHRAE Guideline 12-2000, Minimizing the Risk of Legionellosis Associated with Building Water Systems.
  - 4.5.1.3.2 There are currently no EPA enforceable regulations governing the levels of Legionella bacteria in potable water systems; however, EPA has issued a Maximum Contaminant Level Goal (MCLG) of 0 ppm [mg/L]. Municipal water supplies and wells can carry Legionella, so it is a given that the bacteria will be introduced into the facility potable water system at some time. The challenge is to limit the amplification of the bacteria to less than lethal levels.
  - 4.5.1.3.3 Legionella bacterial amplification occurs when bio-films exist in water storage tanks and dead-end piping legs which allow for growth sites, and when temperature and pH levels are optimum for growth. Infection can occur when patients inhale atomized droplets while showering, drinking or receiving respiratory treatment.

### 4.5.2 Plumbing Design Basis

- 4.5.2.1 Domestic Water Service
  - 4.5.2.1.1 Incoming service water pressure shall be ascertained to determine if adequate pressure is available on site to serve the facility without the use of booster pumps. Coordinate with the water supplier to provide and evaluate historical water data during all seasons.
  - 4.5.2.1.2 If booster pumps are required, they shall utilize variable speed drives for pressure control.
- 4.5.2.2 Domestic Water Heating
  - 4.5.2.2.1 If storage type heaters are utilized, they shall be set to 140 degrees F and a thermostatic mixing valve incorporated to temper the water to 115 degrees for domestic use.



- 
- 4.5.2.2.2 Provide point of use mixing valves to ensure water temperature is no greater than 110F.
  - 4.5.2.2.3 A looped hot water recirculation system with a bronze in-line recirculation pump shall be provided.
  - 4.5.2.3 Domestic Water Treatment
    - 4.5.2.3.1 The facility water system shall have a building program for risk assessment and Legionella mitigation provisions as needed to comply with ASHRAE Standard 188.
    - 4.5.2.3.2 Water systems supplying critical water for Dialysis shall meet the requirements of AAMI.
  - 4.5.2.4 Sump Pumps and Sewage Ejectors
    - 4.5.2.4.1 If required, 50/50 duplex submersible sump pump and/or sewage ejector systems shall be utilized.

#### 4.5.3 Materials

- 4.5.3.1 Domestic Water Piping:
    - 4.5.3.1.1 Provide isolation valves on branch and lateral lines to reduce the amount of space that can get disrupted for maintenance and repair efforts. Also provide isolation valves at each equipment connection.
  - 4.5.3.2 Sanitary, Storm, Vent, and Clear Water Waste Systems
    - 4.5.3.2.1 Aboveground:
      - 4.5.3.2.1.1 Cast-Iron pipe, with compatible joints and fittings.
      - 4.5.3.2.1.2 Type DWV Copper Tube, with compatible joints and fittings.
      - 4.5.3.2.1.3 Type 304 or 316 stainless steel pipe, with compatible joints and fittings.
      - 4.5.3.2.1.4 Schedule 40 PVC pipe, solid wall, with compatible joints and fittings.
    - 4.5.3.2.2 Underground:
      - 4.5.3.2.2.1 Cast-Iron pipe, with compatible joints and fittings.
      - 4.5.3.2.2.2 Type DWV Copper Tube, with compatible joints and fittings.
      - 4.5.3.2.2.3 Type 304 or 316 stainless steel pipe, with compatible joints and fittings.
      - 4.5.3.2.2.4 Schedule 40 PVC pipe, solid wall, with compatible joints and fittings.
  - 4.5.3.3 Provide overflow roof drain inlets and piping system independent to storm water piping serving roof drains.
  - 4.5.3.4 Floor drains shall not be provided in single user toilet rooms unless required by local or state code provisions.
  - 4.5.3.5 Plumbing Fixtures
    - 4.5.3.5.1 Fixtures shall be commercial or institutional grade.
    - 4.5.3.5.2 At Lab toilets provide bariatric toilets floor set with an 1000 lbs. capacity.
    - 4.5.3.5.3 Flushometers to be hard wired.
    - 4.5.3.5.4 Sink valve mixers to be hard wired.
  - 4.5.3.6 Hot Water Supply and Recirculation Piping:
    - 4.5.3.6.1 Insulation systems shall conform to applicable Energy Code requirements and current NAIMI standards.
    - 4.5.3.6.2 Insulation on hot piping shall have thickness sufficient to prevent skin injury due to excessive temperature.
  - 4.5.3.7 Cold Water Supply Piping: Insulation shall include vapor retarders and shall
-

- have thickness sufficient to prevent condensation.
- 4.5.3.8 Rainwater Piping: Insulation shall include vapor retarders and shall have thickness sufficient to prevent condensation.
- 4.5.3.9 Outdoor exposed insulation shall be protected from the elements with a fully sealed outer covering that is UV protected and has a minimum puncture resistance rating of 55 lbs.
- 4.5.4 Special Conditions
  - 4.5.4.1 Imaging Areas: For pipes and devices penetrating shielded walls and ceilings, ensure coordination with the architectural discipline and provide treatment as specified by the equipment manufacturer and medical physicist.
  - 4.5.4.2 Provide connections to and pipe distribution systems for high purity water systems for use in laboratory and other special use areas, as necessary to support the program.
  - 4.5.4.3 Provide connections to and pipe distribution systems for specialty gases for use in laboratory and other special use areas, as necessary to support the program.

#### 4.6 Electrical

- 4.6.1 The Electrical systems shall be designed in accordance with the NEC (NFPA 70), state and local codes, ASHRAE 90.1-2013, and FGI (American Institute of Architects/Facility Guidelines Institute): Guidelines for Design and Construction of Outpatient Facilities. The Lessor shall provide all the necessary electrical facilities for the project. Supply voltage for this facility shall be 480/277 volt, 3 phase, 4 wire. Lessor shall request for the local utility to provide the new service voltage. It is expected that electrical systems will meet their primary objective of providing appropriate and reliable interior and exterior electrical, lighting, and auxiliary systems and services necessary to the safety and comfort to the veterans, employees, and visitors. In addition, the systems shall be safe, easily accessible for repairs and maintenance, and energy-efficient.
- 4.6.2 Standby Generator requirements in the absence of a code required Essential Electrical System
  - 4.6.2.1 Packaged Engine Generator
    - 4.6.2.1.1 An exterior dual gas/diesel fuel generator, in weatherproof sound attenuated enclosure, kW/kVA size as determined for loads noted below, will be provided supplying emergency power for the facility. Emergency backup to include mobile equipment pad.
    - 4.6.2.1.2 Engine: NFPA 37 compliant.
    - 4.6.2.1.3 Cooling System: Closed-loop, liquid-cooled, radiator mounted on generator set base.
    - 4.6.2.1.4 Fuel Tanks: 96 hour run time at full load sub-base tank
    - 4.6.2.1.5 Engine Exhaust System: Critical silencing muffler.
    - 4.6.2.1.6 Combustion Air-Intake System: Filter type air intake silencer, intake duct and connections.
    - 4.6.2.1.7 Starting System: Electric with negative ground.
  - 4.6.2.2 Automatic Transfer Switches: 4-pole switches are required.
  - 4.6.2.3 Fuel piping shall be placed in pit vs tripping hazard.
  - 4.6.2.4 Loads shall be determined as per the requirements of the room data matrix. In addition to these, all medical refrigerators/freezers and safes used to store medication, laboratory refrigerators/freezers, HVAC for clean rooms (RME storage),
    - 4.6.2.4.1 VISON 8 required full building load backup. A/E to coordinate with utility supplier for uninterruptible utility service.

#### 4.7 Lighting

- 
- 4.7.1 General: At a minimum, lighting systems design and installation shall be designed based on latest edition of the IESNA Handbook, as well as applicable IESNA standards.
  - 4.7.2 Indoor Lighting Specifics
    - 4.7.2.1 For specific room lighting requirements above and beyond IESNA's guidance, refer to Room Data Matrix.
  - 4.7.3 Lighting Controls:
    - 4.7.3.1 Local dual level switching or dimming will be provided in work and office areas to allow occupant selection of lighting level. Refer to room matrix for lighting control requirements.
    - 4.7.3.2 Exterior lighting will be controlled by exterior photocell and astronomic timeclock input through the lighting control relay panel system.
  - 4.7.4 LED Drivers
    - 4.7.4.1 Minimum efficiency of 85%
    - 4.7.4.2 20% THD or less
    - 4.7.4.3 Dimmable in spaces where dimming controls are indicated in RDM.
  - 4.7.5 Lightning Protection
    - 4.7.5.1 Install labeled lightning protection system for the entire facility and separately grounded from the facility grounding system. All cables, Air Terminals, rods, and components shall be copper, and use exothermic weld joints. Master label shall be required for lightening protection system.
  - 4.8 Telecommunications: Cable Pathways, Wiring, Cables, Infrastructure Plant, and Special Telecommunications Systems
    - 4.8.1 General - Provide systems as determined by project requirements. Not all systems may be required, and not all required systems may be listed below. Refer to Appendix A for description of room contents.
    - 4.8.2 Scope of Work
      - 4.8.2.1 The Lessor shall provide the following:
        - 4.8.2.1.1 Telephone cabling, pathways (conduit and cable tray), outlets, faceplates, terminal blocks, backboards, cable terminations and cable testing.
        - 4.8.2.1.2 Data cabling (fiber optic and copper), pathways (conduit and cable tray), outlets, faceplates, patch panels, network equipment racks, network equipment cabinets, cable terminations and cable testing.
        - 4.8.2.1.3 Telephone System hardware and electronics such as voice mail servers and telephone handsets.
      - 4.8.2.2 The VA IT department will provide the following:
        - 4.8.2.2.1 Data network electronics such as concentrators, Ethernet switches, servers, PCs, Wireless Access Points and other electronic equipment.
    - 4.8.3 Pathways
      - 4.8.3.1 Boxes and Conduits
        - 4.8.3.1.1 Voice and data outlets shall be provided with a 4" square by 2-1/8" deep box with a single gang, telecommunication rated work box with a minimum of a 3/4" conduit routed up to an accessible ceiling space.
      - 4.8.3.2 Sleeves
-

- 
- 4.8.3.2.1 Where cables penetrate through walls, conduit sleeves with bushings on both ends, shall be provided. All penetrations through fire rated walls shall be fire stopped.
  - 4.8.3.2.2 Where cables penetrate through floors of telecommunications rooms, a minimum of four (4) 4-inch conduit sleeves with bushings on both ends, shall be provided. All penetrations through floors shall be fire stopped.
  - 4.8.3.2.3 Conduit sleeves shall be sized to be filled with cables to no more than 40 percent of the cross-sectional area of the conduit.
  - 4.8.3.3 Cable Support
    - 4.8.3.3.1 Wire mesh cable tray a minimum of 4" deep x 12" wide shall be provided and supported from the structural steel or concrete structure with a minimum of 3/8" diameter threaded rods to support the horizontal and backbone communications cables along the main pathways above the suspended ceiling space. In finished spaces without a suspended ceiling, provide a minimum of 4" deep x 12" wide Solid Bottom cable tray instead of Wire Mesh cable tray along the main pathways. Cable trays shall be sized to be filled with cables to no more than 50% of the cross-sectional area of the cable tray. Where the cable tray fill ratio exceeds 50% of the cable tray cross-sectional area, provide a larger cable tray or two cable trays. NO J HOOKS ALLOWED unless for short distances.
    - 4.8.3.3.2 A minimum of 12 inches of free access shall be provided and maintained above the cable trays and along one side of the cable trays.
    - 4.8.3.3.3 Where cables are routed in the open outside of the cable tray above the suspended ceiling space, adequate cable support via J-hooks shall be located at a maximum of 48" intervals.
    - 4.8.3.3.4 As per National Electrical Code and TIA-569 standard, the suspended ceiling support wires or support rods shall not be used as a means of cable support. Cables shall not be laid directly on the ceiling tile, ceiling grid rails, or on the structural steel (bar joists). An independent hanger system shall be used.

#### 4.8.4 Spaces

- 4.8.4.1 Entrance Facility Room (AKA Demarcation Point- Demarc)
    - 4.8.4.1.1 The Entrance Facility Room is the location where the Local Exchange Carriers and other communications Service Providers such as telephone, data, and MATV/CATV install their cabling and equipment to bring services into the building. It also establishes the physical point where the service provider's responsibilities for service and maintenance end.
    - 4.8.4.1.2 The minimum size of the Entrance Facility Room shall be 80 sq. ft. with an additional 20 sq. ft. for every additional rack required.
    - 4.8.4.1.3 The room shall not be located directly below or adjacent to laboratories, kitchens, laundries, rest rooms, showers, or other facilities where water service is provided.
    - 4.8.4.1.4 Any pipe or duct system foreign to the room installation shall not enter or pass through the room. The design professional shall ensure that foreign piping such as water pipes, steam pipes, medical gas pipes, sanitary waste pipes, roof drains, AC ducts, and other unrelated piping containing liquids or gases are not installed or pass through the room. Sprinkler piping shall not be routed through the room, unless it serves to protect the installation.
    - 4.8.4.1.5 A minimum of (2) 4" conduits shall be installed out to the property line to provide pathways for the services providers to install their cabling.
    - 4.8.4.1.6 All the walls of the room shall be constructed from drywall deck to deck, not just from floor to suspended ceiling height. All the walls of the room shall be covered from the floor to a minimum height of 8'-0" above the floor with 3/4-
-

- 
- inch exterior AC grade flame retardant plywood and painted a light color to reflect the room light and reduce dust.
- 4.8.4.1.7 The lighting shall be a minimum of 500 lux in the horizontal plane and 200 lux in the vertical plane when measured at 3 feet above the finished floor.
- 4.8.4.1.8 The door shall be a minimum of 36 inches wide and 96 inches high, hinged to open outward and fitted with a card reader security lock.
- 4.8.4.1.9 Protective cages shall be installed on all water-based fire protection sprinkler heads located within the room.
- 4.8.4.1.10 The Service Provider IT equipment installed in the Entrance Facility Room will be required to operate 24 hours a day and 365 days a year. The HVAC system shall be designed and installed to maintain a room temperature of 64-75 degrees Fahrenheit and relative humidity of 30-55 percent noncondensing on a 24-hour basis.
- 4.8.4.2 Main Computer Room (MCR)
- 4.8.4.2.1 The Main Computer Room is a centralized space for telecommunications and computer equipment that serves an entire building. Typical equipment includes phone switches, voice mail servers, file/application servers, video surveillance storage and Core Ethernet switches. The requirement for an MCR will be dependent upon the size and function of the OPC.
- 4.8.4.2.2 The location of the Main Computer Room should be determined after careful consideration. Locations should be avoided that restrict expansion of the room due to building construction such as elevators, mechanical rooms, core hallways, outside walls, or other fixed building walls. The location should consider accessibility requirements for the delivery of large equipment to the room and be located away from EMI sources that limit EMI field strength to no more than 3.0 V/m throughout the frequency spectrum.
- 4.8.4.2.3 The room shall not be located directly below or adjacent to laboratories, kitchens, laundries, rest rooms, showers, or other facilities where water service is provided.
- 4.8.4.2.4 Any pipe or duct system foreign to the room installation shall not enter or pass through the room. The design professional shall ensure that foreign piping such as water pipes, steam pipes, medical gas pipes, sanitary waste pipes, roof drains, AC ducts, and other unrelated piping containing liquids or gases are not installed or pass through the room. Sprinkler piping shall not be routed through the room, unless it serves to protect the Main Computer room installation. Back-up split A/C units shall be installed where the water drain piping is in an adjacent room.
- 4.8.4.2.5 The Main Computer Room shall be dedicated to telecommunications and computer equipment. The room shall not be shared with electrical equipment, heating/ventilating and air conditioning equipment, fire detection systems, or other mechanical systems unless these systems are specifically needed and dedicated to support the computer room and its functions.
- 4.8.4.2.6 The minimum sizes of the Main Computer Room shall be as follows:
- 4.8.4.2.6.1 For VA-occupied space less than 25,000 sq. ft. the Telecommunications Enclosure (TE) or Telecommunications Room (TR) will serve as the Main Computer Room.
- 4.8.4.2.6.2 For VA-occupied space between 25,001 sq. ft. and 3000,000 sq. ft.), no Main Computer Room shall be provided. Equipment will be placed in Telecommunications Rooms (TRs). This main Telecommunications
-

---

Room (TR) shall be sized as follows:

- 25,001 sq. ft. – 50,001 sq. ft. shall be 170 sq. ft.
- 50,001 sq. ft. – 100,000 sq. ft. shall be 190 sq. ft.
- 100,001 sq. ft. - 150,000 sq. ft. shall be 210 sq. ft.
- 150,001 sq. ft. – 200,000 sq. ft. shall be 230 sq. ft.
- 200,001 sq. ft. - 250,000 sq. ft. shall be 250 sq. ft.
- 250,001 sq. ft. – 300,000 sq. ft. shall be 270 sq. ft.

4.8.4.2.6.3 For VA-occupied space greater than 300,000 sq. ft. or clinics that include surgery, the Main Computer Room shall be 780 sq. ft. Follow the *Generic Extra Small Campus Support Center (Data Center) Design Portfolio*. The clear height for this Main Computer Room must be a minimum of 12 feet (16 recommended).

4.8.4.2.7 All the walls of the Main Computer Room shall be constructed of drywall deck to deck, not just from the floor to the suspended ceiling height. The floor, walls, and ceiling shall be sealed/painted to reduce dust and shall be light colored to reflect room light.

4.8.4.2.8 Flooring materials shall be used that have antistatic properties.

4.8.4.2.9 At least one of the walls of the room shall be covered from the floor to a minimum height of 8'-0" above the floor with 3/4-inch exterior AC grade flame retardant plywood and painted a light color to reflect the room light and reduce dust.

4.8.4.2.10 24" wide ladder racking cable tray shall be provided and supported from the structure above with a minimum of 3/8" diameter threaded rods over the rows of equipment racks/cabinets to support the horizontal and backbone communications cables through-out the Main Computer Room.

4.8.4.2.11 The lighting shall be a minimum of 500 lux in the horizontal plane and 200 lux in the vertical plane when measured at 3 feet above the finished floor in between all rows of equipment cabinets and equipment racks.

4.8.4.2.12 The door shall be 36 inches wide and 96 inches high and fitted with a card reader security lock. Where the *Generic Extra Small Campus Support Center (Data Center) Design Portfolio* has been specified, this shall be a double door 72 inches wide and 96 inches high, without a central mullion.

4.8.4.2.13 Protective cages shall be installed on all water-based fire protection sprinkler heads located within the Main Computer room.

4.8.4.2.14 The IT equipment installed in the Main Computer Room will be required to operate 24 hours a day and 365 days a year. The HVAC system shall be designed and installed to maintain a room temperature of 72-81 degrees Fahrenheit and relative humidity of 6-60 percent non-condensing on a 24-hour basis. And grounding system shall be separate independent of building grounding system.

4.8.4.2.14.1 Where a TE or TR is used as the Main Computer Room for the facility, the environmental condition requirements are 64-75 degrees Fahrenheit and relative humidity of 30-55 percent.

4.8.4.3 Telecommunications Room (TR)

4.8.4.3.1 There shall be at least one Telecommunications Room on each floor. Each work area shall be served by a Telecommunications Room that is located on the same floor that the work area is located. There shall be a minimum of one (1) Telecommunications Room in each building.

4.8.4.3.2 The Telecommunications Room shall not be located directly below or

---



- 
- adjacent to laboratories, kitchens, laundries, rest rooms, showers, or other facilities where water service is provided.
- 4.8.4.3.3 Any pipe or duct system foreign to the Telecommunications Room installation shall not enter or pass through the room. The design professional shall ensure that foreign piping such as water pipes, steam pipes, medical gas pipes, sanitary waste pipes, roof drains, AC ducts, and other unrelated piping containing liquids or gases are not installed or pass through the room. Sprinkler piping shall not be routed through the Telecommunications Rooms, unless it serves to protect the installation.
- 4.8.4.3.4 The location of the Telecommunications Rooms shall be as close as possible to the central core of the building floor to keep horizontal cable lengths to a minimum. Additional Telecommunications Rooms shall be provided where the horizontal cable length from the telecommunications room to the farthest workstation location exceeds 90 meters (295 feet).
- 4.8.4.3.5 Telecommunications Rooms located on the same floor shall be no farther than 150 meters (500 feet) apart to limit horizontal cable lengths to 90 meters (295 feet) or less.
- 4.8.4.3.6 The Telecommunications Room shall be dedicated to telecommunications facilities and function. The room shall not be shared with electrical equipment, heating/ventilating and air conditioning equipment, or other mechanical systems unless these systems are specifically needed and dedicated to support the Telecommunications Room and its functions.
- 4.8.4.3.7 The Telecommunications Rooms on each floor shall be vertically aligned between floors in a multistory building to allow for the ease of installing vertical backbone cabling.
- 4.8.4.3.8 The minimum sizes of the Telecommunications Rooms shall be as follows:
- 4.8.4.3.8.1 For facilities from 1 to 3,000 sq. ft., provide a standard 26U Telecommunications Enclosure located in a secured space that is not necessarily dedicated to telecommunications purposes. See sheets 16-19 of the *CBOC Inside Plant Information Transport Systems Specification*.
  - 4.8.4.3.8.2 For facilities from 3,001 to 6,000 sq. ft., provide a 1-rack TR (80sf, 10'x8' form factor). See sheet 6 of the *CBOC Inside Plant Information Transport Systems Specification*.
  - 4.8.4.3.8.3 For facilities from 6,001 to 10,000 sq. ft., provide a 2-rack TR (100sf, 10'x10' form factor). See sheet 6 of the *CBOC Inside Plant Information Transport Systems Specification*.
  - 4.8.4.3.8.4 For facilities from 10,001 to 25,000 sq. ft., provide a 3-rack TR (120sf, 10'x12' form factor). See sheet 6 of the *CBOC Inside Plant Information Transport Systems Specification*.
  - 4.8.4.3.8.5 For facilities greater than 25,000 sq. ft., provide TRs in addition to the MCR per the sizing and quantity determined by the *TR Design Checklist* in accordance with the serving zone size of each planned TR.
- 4.8.4.3.9 The above sizes should be confirmed with specific IT equipment sizes. The above sizes also assume there are no obstructions in the room such as columns and the rooms are a rectangular shape.
- 4.8.4.3.10 All of the walls of the Telecommunications Rooms shall be constructed from drywall deck to deck, not just from floor to suspended ceiling height. A
-

---

minimum of 3 of the walls of the Telecommunications Room shall be covered from the floor to a minimum height of 8'-0" above the floor with 3/4-inch exterior AC grade flame retardant plywood and painted a high gloss white with two coats of fire-resistant paint. Reserve a minimum of 12" dedicated space in front of the walls to accommodate equipment being mounted to the wall.

- 4.8.4.3.11 The floor shall be covered with light colored luxury vinyl floor tile to reflect the room light and reduce dust.
- 4.8.4.3.12 18" wide ladder racking cable tray shall be provided and supported from the structure above with 3/8" diameter threaded rods over the equipment racks and the side walls to support the horizontal and backbone communications cables through-out the Telecommunications Room.
- 4.8.4.3.13 The lighting shall be a minimum of 500 lux in the horizontal plane and 200 lux in the vertical plane when measured at 3 feet above the finished floor.
- 4.8.4.3.14 The door shall be a minimum of 36 inches wide and 96 inches high, hinged to open outward and fitted with a card reader security lock.
- 4.8.4.3.15 Protective cages shall be installed on all water-based fire protection sprinkler heads located within the telecommunications rooms.
- 4.8.4.3.16 The IT equipment installed in the Telecommunications Room will be required to operate 24 hours a day and 365 days a year. The HVAC system shall be designed and installed to maintain a room temperature of 64-75 degrees Fahrenheit and relative humidity of 30-55 percent non-condensing on a 24-hour basis.

#### 4.8.5 Telecommunications Bonding and Grounding

##### 4.8.5.1 Telecommunications Primary Bonding Busbar

- 4.8.5.1.1 Each Entrance Facility Room shall contain a Telecommunications Primary Bonding busbar for providing a central location for bonding all telecommunications equipment in the Entrance Facility Room per the TIA-607-D Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises, local codes, the VA Electrical Design Manual, and National Electrical Safety Code.
- 4.8.5.1.2 The Telecommunications Primary Bonding busbar shall consist of a predrilled copper busbar with TIA-607 standard sizing and spacing. It shall have minimum dimensions of ¼ inch thick, 4 inches wide, and the length shall be a minimum of 23 inches. The bonding busbar shall be insulated from its support by a minimum of a 2-inch separation.
- 4.8.5.1.3 Building structural steel (beams and/or columns) within 6 feet of the bonding busbar shall be bonded to the bonding busbar with a minimum of a 6 AWG copper conductor.

##### 4.8.5.2 Telecommunications Secondary Bonding Busbar

- 4.8.5.2.1 Each Main Computer Room and Telecommunications Room shall contain a Telecommunications Secondary Bonding Busbar for providing a central location for bonding all telecommunications equipment in the room per the TIA-607 standard.
- 4.8.5.2.2 The Telecommunications Secondary Bonding Busbar shall consist of a predrilled copper busbar with TIA-607 standard sizing and spacing. It shall have minimum dimensions of ¼ inch thick, 2 inches wide, and the length shall be a minimum of 12 inches. The bonding busbar shall be insulated from its



- 
- support by a minimum of a 2-inch separation.
  - 4.8.5.2.3 Building structural steel (beams and/or columns) within 6 feet of the bonding busbar shall be bonded to the bonding busbar with a minimum of a 6 AWG copper conductor.
  - 4.8.5.3 Telecommunications Rack Bonding Busbar
    - 4.8.5.3.1 Racks located in the Entrance Facility Room, Main Computer Room and the Telecommunications Rooms, as well as Telecommunications Enclosures (TEs) shall have a horizontal Rack Bonding Busbar installed in the top of the rack/cabinet in RU 45 (install in the top rear position in TEs) to provide effective bonding of the rack/TE to the Primary bonding busbar or Secondary Bonding Busbar and provide a central location for the bonding of all telecommunications equipment located in the rack/TE per the TIA-607 standard. The busbar shall consist of a pre-drilled copper busbar with TIA-607 standard sizing and spacing.
    - 4.8.5.3.2 The Rack Bonding Busbar shall be bonded to the Telecommunications Primary Bonding busbar or Telecommunications Secondary Bonding busbar in the room with a minimum of a 6 AWG copper conductor.
    - 4.8.5.3.3 Rack mounted IT equipment with integral bonding terminals shall be bonded to the Rack Bonding Conductor (RBC) or to a vertical/horizontal Rack Bonding Busbar (RBB). An RBC is a bonding conductor from the rack or RBB to the TEBC. Each cabinet or equipment rack will have a suitable connection point to which the bonding conductor can be terminated. Properly sized listed two-hole compression lugs or listed terminal blocks with two internal hex screw or equivalent torque characteristics shall be used at the connection point.
  - 4.8.5.4 Telecommunications Bonding Backbone Cable
    - 4.8.5.4.1 The Telecommunications Primary Bonding Busbar in the Entrance Facility room and Telecommunications Secondary Bonding Busbars in the Main Computer room and Telecommunications Rooms shall be bonded to the building grounding electrode system with a bonding backbone cable that is a minimum of a 3/0 AWG stranded copper conductor.
    - 4.8.5.4.2 The building structural steel shall not be used as a replacement for the bonding backbone cable.
  - 4.8.5.5 Bonding of Cable Tray and Equipment
    - 4.8.5.5.1 Cable tray and/or Ladder racking shall be bonded to the Primary Bonding Busbar or Secondary Bonding Busbar with a minimum of an insulated #6 AWG stranded copper conductor and connectors designed for the specific purpose.
    - 4.8.5.5.2 Bonding of other telecommunications equipment in the Telecommunications Rooms or Main Computer Room to the bonding busbars shall be executed as required by the equipment manufacturer.
  - 4.8.6 Equipment Racks and Equipment Cabinets
    - 4.8.6.1 Ensure that IT equipment racks are installed flush to one another without air gaps between the racks. Use appropriate materials to fill gaps between the racks to prevent recirculation of exhaust air to the cold aisle. Meet the following requirements:
      - 4.8.6.1.1 Style: Channel
      - 4.8.6.1.2 Height: 84 inches, Width: 24 inches, Depth: 30 inches minimum.
-

- 
- 4.8.6.1.3 Equipment Mounting Width: 19 inches.
  - 4.8.6.1.4 Equipment Mounting Height: 45 RUs.
  - 4.8.6.1.5 Front and Rear rails: EIA threaded or Square Holes for cage nuts.
  - 4.8.6.1.6 Rail Marking: Rack unit markings present on front and rear rails starting at one RU at the bottom.
  - 4.8.6.1.7 Weight Capacity: 2,500 lbs. minimum.
  - 4.8.6.1.8 Cable Management: Built-in overhead water fall and cable management strap attachment points.
  - 4.8.6.1.9 Seismic bracing where required by Code.
  - 4.8.6.1.10 Provide rack PDU brackets.
  - 4.8.6.1.11 Color: White.
  - 4.8.6.2 Equipment Cabinets shall be installed in the Main Computer Room for the housing of the Server equipment meeting the following requirements:
    - 4.8.6.2.1 Style: Enclosed equipment cabinet with side panels and front and rear doors.
    - 4.8.6.2.2 Height: 84 inches, Width: 24 inches, Depth: 48 inches maximum with all doors and accessories installed.
    - 4.8.6.2.3 Equipment Mounting Width: 19 inches.
    - 4.8.6.2.4 Equipment Mounting Height: 45 RUs.
    - 4.8.6.2.5 Front and Rear rails: Square Holes for cage nuts. Toolless adjustable.
    - 4.8.6.2.6 Rail Marking: Rack unit markings present on front and rear rails starting at one RU at the bottom.
    - 4.8.6.2.7 Weight Capacity: 2,500 lbs. minimum.
    - 4.8.6.2.8 Front Door: Single perforated, minimum of 63% open.
    - 4.8.6.2.9 Rear Door: Single solid OR Split, perforated where vertical exhaust ducts cannot be implemented.
    - 4.8.6.2.10 Latches: Keyed lock upgradeable to keyless system compression latch.
    - 4.8.6.2.11 Top panel: Vertical exhaust duct (heat containment) and high-capacity cable access with brush grommets.
    - 4.8.6.2.12 Side Panel: Solid, Locking.
    - 4.8.6.2.13 Bottom Panel: Solid with high-capacity cable access with brush grommets or air dam foam.
    - 4.8.6.2.14 Seismic bracing where required by Code.
    - 4.8.6.2.15 Accessories: Zero U vertical single mount PDU brackets, castors for safe movement of cabinet, leveling legs, and air dam/sealing kit.
    - 4.8.6.2.16 Color: White.
  - 4.8.6.3 Telecommunications Enclosures (TEs) installed shall meet the following requirements:
    - 4.8.6.3.1 NEMA-12 or equivalent construction. Dust seals and replaceable inlet/outlet filters for vents/airflow openings/fans provided. This is required regardless of planned installation environment.
    - 4.8.6.3.2 Filters shall be commercially widely available and initially provided with the TE.
    - 4.8.6.3.3 Environmentally controlled enclosures are acceptable.
    - 4.8.6.3.4 24" minimum width to allow for power and telecommunications cabling management to the sides of rack-mounted equipment.
    - 4.8.6.3.5 24RU in height or larger.
    - 4.8.6.3.6 Unit mounts to  $\frac{3}{4}$ " plywood backboard via 16" OC mounting for standard stud construction.
    - 4.8.6.3.7 Unit opens in rear (swings open) for access to rear of installed equipment.
-

- 
- Unit opens in front (swinging front door) for access to front of installed equipment. Both sections are able to be physically locked.
  - 4.8.6.3.8 Adjustable 19" EIA/TIA rack rails. Rear rail kits are required.
  - 4.8.6.3.9 Top and bottom knockouts for cable/conduit entry. All knockouts must be sealable and sealed for liquid and dust entry resistance. The use of a knockout kit to create larger penetrations is acceptable.
  - 4.8.6.3.10 115V fans to remove heat generated in TE are required. Whether these are used as exhaust, intake, or both is not specified.
  - 4.8.6.3.11 Provide TEs with fiber distribution cabinets, fiber cassettes, UTP patch panels, horizontal cable management units, and shelves as required for the specific implementation.
- 4.8.7 Power Distribution Units (PDUs) and Uninterruptable Power Supplies (UPSs)
- 4.8.7.1 Equipment Rack and Equipment Cabinet 120/208 Volt PDUs for TRs
    - 4.8.7.1.1 Input: 20 Amp Three-phase; 120/208V, L21-20P Plug.
    - 4.8.7.1.2 Circuit Breakers: 3 x 2 Pole 20 Amp Hydraulic Magnetic breakers.
    - 4.8.7.1.3 Receptacles: (30) C13 receptacles 208 Volt, (6) C19 receptacles 208 Volt, (2) 5-20 receptacles 120 Volt.
    - 4.8.7.1.4 IP and Serial monitoring.
    - 4.8.7.1.5 Ethernet, USB, and Environmental sensor ports.
    - 4.8.7.1.6 Mounting: Vertically on the rear rails of the rack.
    - 4.8.7.1.7 Quantity: Provide two (2) PDUs in each equipment rack in Telecommunications Rooms.
  - 4.8.7.2 Equipment Rack and Equipment Cabinet 120/208 Volt PDUs for MCRs
    - 4.8.7.2.1 Input: 20 Amp Three-phase; 120/208V, L21-20P Plug.
    - 4.8.7.2.2 Circuit Breakers: 3 x 2 Pole 20 Amp Hydraulic Magnetic breakers.
    - 4.8.7.2.3 Receptacles: (30) C13 receptacles and (6) C19 receptacles, 208 Volt.
    - 4.8.7.2.4 IP and Serial monitoring.
    - 4.8.7.2.5 Ethernet, USB, and Environmental sensor ports.
    - 4.8.7.2.6 Mounting: Vertically on the rear rails of the rack.
    - 4.8.7.2.7 Quantity: Provide two (2) PDUs in each equipment rack and each equipment cabinet in Main Computer Room.
  - 4.8.7.3 Equipment Rack and Equipment/Cabinet UPSs for TRs and MCRs
    - 4.8.7.3.1 Input: 20 Amp Three-Phase; L21-20P Plug.
    - 4.8.7.3.2 Output: One (1) L21-20R receptacle
    - 4.8.7.3.3 Capacity: 5 kW
    - 4.8.7.3.4 Run time at full capacity: Minimum of 10 minutes.
    - 4.8.7.3.5 Mounting: Rack or Cabinet 19-inch TIA-310 mounting width.
    - 4.8.7.3.6 Quantity: Provide one (1) UPS in each equipment rack and each equipment cabinet in Main Computer Room and Telecommunications Rooms. (No rack-mounted UPSs are installed in the Extra Small Campus Support Center (Data Center) specified for VA-occupied spaces greater than 50,000 sq. ft.)
  - 4.8.7.4 Equipment Rack and Equipment/Cabinet UPSs for TEs
    - 4.8.7.4.1 Input: 20 Amp single-phase L5-20P Plug.
    - 4.8.7.4.2 Output: One (1) L5-20R receptacle
    - 4.8.7.4.3 Capacity: 2 KW
    - 4.8.7.4.4 Run time at full capacity: Minimum of 10 minutes.
    - 4.8.7.4.5 Mounting: Rack or Cabinet 19-inch TIA-310 mounting width.
    - 4.8.7.4.6 Quantity: Provide one (1) UPS in each Telecommunications Enclosure (TE).
-

---

4.8.7.5 Zone Power Distribution Units (PDUs)

- 4.8.7.5.1 Telecommunications Rooms and Main Computer Rooms with more than one equipment rack and/or more than one equipment cabinet, shall be provided with Zone PDUs used for power distribution to the rack mounted and cabinet mounted PDUs and UPSs.
- 4.8.7.5.2 Input: Two (2) 30 Amp Three-Phase L21-30P plugs. Power cords on the Zone PDU shall be of sufficient length to reach the supply branch circuit receptacles suspended over the rack or cabinet.
- 4.8.7.5.3 Output: Four (4) L21-20R receptacles.
- 4.8.7.5.4 Quantity: One (1) Zone PDU for every two (2) equipment racks. One (1) Zone PDU for every two (2) equipment cabinets.
- 4.8.7.5.5 Supply Branch Circuits: Provide two (2) 30 amp 3-phase 120/208 Volt (Wye) circuits with L21-30R receptacles for each Zone PDU. If a Generator is installed at the site, connect the branch circuits to a Panelboard connected to the Generator. Suspend the receptacles over the equipment racks/cabinets from the ceiling for each Zone PDU.

4.8.7.6 Equipment Rack and Equipment Cabinet 120 Volt PDUs for TEs

- 4.8.7.6.1 Input: 20 Amp 120 Volt, NEMA L5-20P Plug.
- 4.8.7.6.2 Receptacles: Minimum of eight (8) 5-15/20R receptacles.
- 4.8.7.6.3 Mounting: Horizontal in Rack or Cabinet 19-inch TIA-310 mounting width.
- 4.8.7.6.4 Quantity: Provide 2 horizontal rackmount PDUs when a Telecommunications Enclosure (TE) is specified.

4.8.8 Telecommunications Infrastructure Plant (TIP)

4.8.8.1 Horizontal Cabling

4.8.8.1.1 Cable

- 4.8.8.1.1.1 The horizontal cabling shall consist of a minimum of two (2) Category 6A UTP LP rated cables to each work area outlet for voice and/or data. The color of the cable jacket shall be blue.
- 4.8.8.1.1.2 The horizontal cabling shall consist of a minimum of two (2) Category 6A UTP LP rated cables to each wireless LAN outlet. The color of the cable jacket shall be blue.
- 4.8.8.1.1.3 The length of the horizontal cables shall not exceed 90 meters (295 feet) from the telecommunications room to the work area outlet or the wireless LAN outlet.
- 4.8.8.1.1.4 Provide plenum rated cable above ceilings used as a return air plenum.

4.8.8.1.2 Workstation Outlets

- 4.8.8.1.2.1 Each Category 6A horizontal cable shall be connected to category 6A RJ45 jacks at work area outlets.
- 4.8.8.1.2.2 Each Category 6A horizontal cable shall be connected to category 6A RJ45 plugs at wireless LAN outlets.
- 4.8.8.1.2.3 The pin configuration for each RJ45 jack shall conform to the TIA/EIA T568B standard.
- 4.8.8.1.2.4 Refer to room matrix for work area outlet locations/quantities.
- 4.8.8.1.2.5 One (1) wireless LAN outlet shall be provided for each 625 square feet of floor space.
- 4.8.8.1.2.6 The typical standard density work area outlets will consist of two RJ45 interfaces. This provided connectivity for one IP telephone and

---

one workstation.

4.8.8.1.3 Patch Cords

4.8.8.1.3.1 Patch cords shall be factory terminated and shall match the category of the associated patch panel, work area outlet, and horizontal cable.

4.8.8.1.4 Cable Termination Hardware

4.8.8.1.4.1 The Category 6A UTP horizontal cables shall be connected, in the Telecommunications Room, to Category 6A RJ45 48 port rack mounted angled patch panels. Angled patch panels containing more than 48 ports shall not be used. The pin configuration for each RJ45 jack shall conform to the TIA/EIA T568B standard.

4.8.8.1.4.2 The horizontal cables shall be continuous from the angled patch panels to the work area outlet jacks and wireless LAN outlet plugs.

4.8.8.1.4.3 The 48 port angled patch panels shall be mounted in 19-inch floor mounted equipment racks that are 84 inches tall. Wall mounted racks shall not be used except in facilities under 3,000 sq. ft.

4.8.8.1.4.4 Front and rear six (6) inch wide vertical cable managers shall be installed on each side of the 19-inch equipment racks on the end of the row of racks and ten (10) inch wide vertical cable managers shall be installed between each rack.

4.8.8.1.4.5 No more than eight (8) 48 port angled patch panels shall be installed in a single 84-inch-tall equipment rack. This allows for the lower half of the equipment rack to be used to mount Ethernet switches, UPS equipment and other network electronics. If more than eight (8) 48 port angled patch panels are required to terminate the horizontal cabling, then another equipment rack shall be installed.

4.8.8.2 Backbone Cabling

4.8.8.2.1 Cable

4.8.8.2.2 The backbone cable from the Main Computer Room to each Telecommunications Room shall consist of a minimum of one 25-pair Category 5e UTP copper cable and 24 strands of 850 nm laser-optimized (OM4) 50/125 multimode fiber optic cable.

4.8.8.2.3 The backbone cable from the Entrance Facility Room to the Main Computer Room shall consist of a minimum of 100 pairs of Category 5e UTP copper cable and 24 strands of 850 nm laser optimized (OM4) 50/125 multimode fiber optic cabling and terminations.

4.8.8.2.4 For VA-occupied space greater than 50,000 sq. ft and for space between 25,001 sq. ft. and 50,000 sq. ft. where there are clinical services requiring dedicated medical equipment (e.g., radiology, or other imaging functions), two redundant, diversely routed paths for the fiber optic backbone between the Main Computer Room and the Entrance Facility Room and the Telecommunications Rooms are required.

4.8.8.2.5 Provide plenum rated cable above ceilings used as a return air plenum.

4.8.8.2.6 Provide indoor armored fiber optic backbone cable or provide unarmored fiber optic backbone cable installed in inner duct.

4.8.8.2.7 Copper Backbone Cable Termination Hardware

4.8.8.2.7.1 The Category 5e UTP copper backbone cable shall be connected, in the Telecommunications Rooms, to 24-port rack mounted angled patch panels. (48-port angled patch panels are acceptable if more

---

than one 25-pair backbone cable is specified.) Patch panels containing more than 48 ports shall not be used. One pairs of the backbone cable shall be terminated on each patch panel port (two pairs on port 24).

4.8.8.2.7.2 The RJ45 angled patch panels shall be mounted in 19-inch floor mounted equipment channel racks that are 84 inches tall. Wall mounted racks (TEs) shall not be used except in facilities under 3,000 sq. ft.

4.8.8.2.7.3 Front and rear six (6) inch wide vertical cable managers shall be installed on each side of the 19-inch equipment racks on the end of the row of racks and ten (10) inch wide vertical cable managers shall be installed between each rack.

4.8.8.2.7.4 No more than eight (8) 48 port angled patch panels shall be installed in a single 84-inch-tall equipment rack. This allows for the lower half of the equipment rack to be used to mount Ethernet switches, UPS equipment and other network electronics. If more than eight (8) 48 port angled patch panels are required to terminate the backbone cabling, then another equipment rack shall be installed.

4.8.8.2.8 Fiber Optic Backbone Cable Termination Hardware

4.8.8.2.8.1 The multimode fiber optic backbone cables shall be connected at each end to fiber optic cable connectors in one rack position height angled high density fiber distribution panels located in the Telecommunications Room, Main Computer Room, or Entrance Facility room. The high-density patch panels shall have the capacity to terminate a minimum of 144 strands of fiber optic cabling.

4.8.8.2.8.2 All fiber optic backbone cable strands shall be terminated on fiber optic connectors. No fiber strands shall be left unterminated.

4.8.8.2.8.3 All multimode fiber optic cables shall be factory pre-terminated with Multi-Fiber Push On (MPO) connectors in the Method A (straight through) polarity configuration. The MPO connector at each end of the cable shall be connected to a fiber optic cassette to provide duplex-LC connectors at both ends that will support one or two 12-strand cable assemblies or one 24-strand cable assembly for a total of 6 or 12 duplex-LC connectors. Cassettes can also be used, if directed by the VA IT department, to breakout a 24-strand backbone trunk into 3 MPO connectors of 8 fiber strands each to support 40 Gigabit Ethernet parallel transmission capabilities.

4.8.8.2.8.4 The fiber distribution panels shall be mounted in 19-inch floor mounted equipment racks that are 84 inches tall. Wall mounted racks and/or wall mounted fiber distribution panels shall not be used.

4.8.8.2.8.5 Front and rear six (6) inch wide vertical cable managers shall be installed on each side of the 19-inch equipment racks on the end of the row of racks and ten (10) inch wide vertical cable managers shall be installed between each rack.

4.8.8.2.8.6 No more than twelve (12) one rack position height angled high density fiber distribution panels shall be installed in a single 84-inch-tall equipment rack. This allows for the lower half of the equipment rack to be used to mount Ethernet switches, UPS equipment and other network electronics. If more than twelve (12) one rack position



---

height fiber distribution panels are required, then another equipment rack shall be installed.

**4.8.8.3 Installation Requirements**

- 4.8.8.3.1 All cabling shall be installed without twists and kinks. Cables should not be looped around themselves or other objects.
- 4.8.8.3.2 Use cable management components and techniques to maintain clean, clear, and safe work environment. Do not mount cabling in locations that block access to other equipment inside and outside of equipment racks and cabinets.
- 4.8.8.3.3 Route cables with gentle loops to avoid damage due to exceeding bend radius limitations. Fiber optic cabling can be easily broken with rough handling or tight bends.
- 4.8.8.3.4 Cable slack should be concealed within the equipment racks and cabinets either vertically or within cable managers. Slack should not be looped. With the use of correct length cables, there should not be enough slack to require looping.
- 4.8.8.3.5 Patch cables should follow the side of the IT equipment rack closest to the assigned Network Interface Connection (NIC). Use correct length patch cables.
- 4.8.8.3.6 Label the cables, equipment cabinets and equipment racks as indicated in the VA [Infrastructure Standard for Telecommunications Spaces](#).

**4.8.8.4 Cable Testing**

**4.8.8.4.1 Horizontal Cable**

- 4.8.8.4.1.1 Prior to the cut-over of the equipment, test 100% of the UTP category 6A horizontal cables for performance to TIA-568-C.2, category 6A, permanent link requirements. The test instrument shall conform to the TIA-1152 Level III-e, measurement accuracy.
- 4.8.8.4.1.2 Replace and retest any cables that fail to pass the performance requirements.
- 4.8.8.4.1.3 Record the results of each test with cable identification. The test results shall be given to the VA Office of Information Technology (OIT) for each horizontal cable in electronic format.
- 4.8.8.4.1.4 The VA Project Manager shall be immediately notified if any horizontal cable fails due to link length.

**4.8.8.4.2 Backbone cable**

**4.8.8.4.2.1 Copper cable**

- 4.8.7.4.2.1.1 Prior to the cut-over of the equipment, test 100% of backbone copper cable pairs for: DC loop resistance, opens, shorts between conductors, reversed pairs, split pairs, and transposed pairs.
- 4.8.7.4.2.1.2 Replace and retest any cables that fail to pass the performance requirements.
- 4.8.7.4.2.1.3 Record the results of each test with cable identification. The test results shall be given to the VA Office of Information Technology (OIT) for each backbone cable.

**4.8.7.4.2.2 Fiber Optic cable**

- 4.8.7.4.2.2.1 Prior to the cut-over of equipment, test one hundred percent (100 percent) of all terminated backbone fiber strands in both directions with an Optical Power Meter and Light source to

- 
- ensure the fiber strands meet or exceed the cable performance requirements of TIA/EIA-568.3-D.
        - 4.8.7.4.2.2.2 Test instruments shall meet or exceed applicable requirements in TIA-568.1-D. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
        - 4.8.7.4.2.2.3 Test multimode backbone links in both directions at both operating wavelengths of 850 nm and 1300 nm in accordance with TIA/EIA-526-14-C, Annex A, One Cord Reference Method. The tester shall be encircled flux compliant. The Channel loss shall be 2.5 dB or less for each fiber strand.
        - 4.8.7.4.2.2.4 Replace and retest any cables with fiber strand(s) that fail to pass the performance requirements.
        - 4.8.7.4.2.2.5 Record the results of each test with cable identification. The test results shall be given to the VA Office of Information Technology (OIT) for each backbone cable in electronic format.
  - 4.8.8 Special Systems
    - 4.8.8.4 General - All installed low voltage systems installed must be tested prior to request for Acceptance by the Lessor. Testing data results and certifications must be made available to the Lease Contracting Officer and Resident Engineer.
    - 4.8.8.5 TV Distribution System
      - 4.8.8.5.2 The Lessor will provide the following: Video cabling, pathways (conduit and cable tray), outlets, faceplates, amplifiers, splitters, backboards, cable terminations and cable testing.
      - 4.8.8.5.3 The VA will provide the following: Video recorders, video signal processors, and Monitors.
      - 4.8.8.5.4 A wired television distribution system connected to an antenna system or cable TV utility will be provided. Cabling will consist of 0.50" hardline or RG-11 trunk distribution cabling and RG6 horizontal cabling. Splitters and line amplifiers shall support 750 MHz minimum video bandwidth.
        - 4.8.8.5.4.1 Splitters and amplifiers shall be located in the Main Computer Room and Telecommunications Rooms.
        - 4.8.8.5.4.2 Locations: Waiting Rooms, Conference Rooms, Breakrooms, Police Operations.
    - 4.8.8.6 TV/Monitor
      - 4.8.8.6.2 In each conference room, provide an HDMI cable (nominal length 30') from the television location to a box, with cover plate, located 18" AFF, at location to be determined, in each conference room, to permit television to be used as a presentation monitor connected to a computer.
    - 4.8.8.7 Cable Television (CATV)
      - 4.8.8.7.2 Lessor to provide cable television distribution and outlets in the locations indicated below. VA will pay for cable service. Power outlets for CATV shall be integrated with room occupancy sensors to turn off during unoccupied
-



periods.

4.8.8.7.3 CATV Outlet Locations:

RECEPTION
Kitchenette
Each Waiting Area
GENERAL MENTAL HEALTH
Each Group Therapy Room
MHICM
Each Group Therapy Room
PRRC
Dayroom
Classroom
Group Room
PCT/PTSD
Each Group Therapy Room
OSAC
Each Group Therapy Room
STAFF SUPPORT
Staff Lounge
DIRECTOR'S OFFICE

4.8.8.8 Security Surveillance Television (SSTV)

4.8.8.8.2 Provide SSTV systems as required. System(s) shall be as manufactured by Access, Bosch, or Pelco, as updated to most current technology or manufacturer.

4.8.8.9 Security Management and Control, and Centralized Police Security Management Systems (aka Security Management Telecommunications System SMTS)

4.8.8.9.2 Provide SMTS systems as required. System(s) shall be as manufactured by Lockheed, Harris, Access Gold, Casi-Rusco, or approved equivalent, as updated to most current technology or manufacturer. Basis of design to be Harris.

4.8.8.9.3 Lessor provided, including installation, service and content. Pre and Post wireless survey to be provided by Lessor along with installation of AP's, for both guest wireless and VAMC wireless.

4.8.8.9.3.1 Electronic Access and Door Control – Tyco, compatible with existing system at VAMC.

- 
- 4.8.8.9.3.2 Motion Intrusion Detection – Security Metrics, Ademco, Honeywell, or approved equivalent, as updated to most current technology or manufacturer.
  - 4.8.8.9.3.3 Patient (also Staff) Annunciator/Locator System – Viking, Radiance, Secur Trak, Patient Central, or approved equivalent, as updated to most current technology or manufacturer.
  - 4.8.8.9.3.4 Duress Alarm and Emergency Notification System – Code Blue Pole Systems or approved equivalent, as updated to most current technology or manufacturer. Under no circumstance shall the telephone system be used to provide duress alarm functions. Provide a marquee display in the Police Operations Room and the telephone operators Call Center to display location where a duress alarm is initiated. Marquee shall be red letters/numbers on black background. Marquee nominal size shall be 4"H X 24"W.
  - 4.8.8.9.3.5 All security systems to be compatible with and connected to other facilities under supervision of the VA Police in this area currently using Software House C Cure 9,000 system.
  - 4.8.8.9.3.6 Panic alarms shall be included in providers and group rooms.
- 4.8.8.10 Nurse Call System
- 4.8.8.10.2 Provide tone/light nurse call system, including local audible alarm, with patient stations, toilet stations, emergency call stations, staff/duty stations, master station/annunciator, dome lights and area indicators, power supplies and additional accessories as required.
  - 4.8.8.10.3 Nurse Call equipment shall be located in Main Computer Room and Telecommunications Rooms. Lessor shall provide complete and usable system. Lessor shall provide fixed pricing for addition or deletion of pull stations during the design process.
- 4.8.8.11 Access Control System
- 4.8.8.11.2 The Lessor shall design, install, and maintain an Access Control System (ACS) for the facility IAW the Facility Security Level. ACS must be compatible and able to communicate with the servicing VA Medical Center.
  - 4.8.8.11.3 Access Control equipment shall be located in Police Systems Room and connected via fiber to Telecommunications Rooms. Lessor shall provide complete and usable system. Lessor shall provide fixed pricing for addition or deletion of card readers during the design process.
- 4.8.8.12 Closed Circuit Television System (CCTV)
- 4.8.8.12.2 The Lessor shall design, install, and maintain an CCTV system for the facility IAW the Facility Security Level. CCTV system must be compatible and able to communicate with the servicing VA Medical Center.
  - 4.8.8.12.3 CCTV equipment shall be located in Police Area and connected via fiber to Telecommunications Rooms. A minimum of 50 PTZ cameras and system is expected for this facility. Lessor shall provide fixed pricing for addition or

---

deletion of cameras during the design process.

**4.8.8.13 Intrusion Detection System (IDS)**

4.8.8.13.2 The Lessor shall design, install, and maintain an Intrusion Detection System for the facility IAW the Facility Security Level.

4.8.8.13.3 IDS equipment shall be located in Main Computer Room and Telecommunications Rooms.

**4.8.8.14 Duress Alarm**

4.8.8.14.2 The Lessor shall design, install, and maintain a Duress Alarm System for the facility IAW the Facility Security Level. Not installed in VA-IT rooms.

4.8.8.14.3 Duress Alarm equipment shall be located in Main Computer Room and Telecommunications Rooms. Lessor shall provide complete and usable system. Lessor shall provide fixed pricing for addition or deletion of duress buttons during the design process.

**4.8.8.15 Public Address (PA):**

4.8.8.15.2 Provide public address and mass notification (PA) system(s) covering the full VA space. Ceiling mounted speakers shall be located a maximum of 20 linear foot center to center throughout the clinic. The system shall be capable of being dialed into from any telephone for paging. System shall have the capability of paging each zone of the building separately, or to page the entire building. The minimum number of zones shall be equivalent to the number of functional areas listed in the PFD. Review zones with the government during design. The head-end equipment for the public address system shall reside within the Main Computer Room and Telecommunications rooms. Lessor shall provide complete and usable system. Lessor shall provide fixed pricing for addition or deletion of speakers and microphones during the design process.

**4.8.8.16 Radio Entertainment Distribution (RED)**

4.8.8.16.2 Provide radio entertainment distribution (RED) systems as required. System(s) shall be as manufactured by Bogen, JBL, Dukane, or approved equivalent, as updated to most current technology or manufacturer.

4.8.8.16.3 All loudspeakers shall be of the recessed or ceiling type in lieu of surface-mounted type, wherever possible. Lessor shall provide complete and usable system. Lessor shall provide fixed pricing for addition or deletion of speakers during the design process.

4.8.8.16.4 Loudspeakers in each day room, TV lounge, waiting room, and other designated areas that also contain PA speakers may be combined within the same speaker back box and grille, and use the same speaker cone, as long as each speaker function contains a separate matching transformer and voice coil for each service (i.e., one transformer and associated voice coil for RED and one transformer and associated voice coil for PA). This consolidation practice is an acceptable alternate to two individual speakers, back boxes, grilles, and mounts in these locations. Also, provide volume and selector

---

controls in each of the aforementioned RED only areas at their Reception Room desk.

- 4.8.8.16.5 Music should be piped into exam rooms, with switches outside of the room (located within work room) to help maintain privacy.

- 4.8.8.17 Intercommunication System

- 4.8.8.17.2 Provide intercommunications system(s) and cabling as required. Intercom system shall be located at the loading dock in view of CCTV camera. The intercom shall communicate with another intercom and be capable of dialing the front desk. The security office shall have a door release button for the loading dock entrance. Lessor shall provide complete and usable system. Lessor shall provide fixed pricing for addition or deletion of intercom units during the design process.

- 4.8.8.17.2.1 Intercom system shall be located at the ambulance entry. The intercom shall communicate with another intercom to security office. The security office shall have a door release button for the ambulance entrance.

- 4.8.8.18 Wireless Communications

- 4.8.8.18.2 The VA space shall be served by two (2) separate wireless networks. The Guest Wi-Fi and VA Wi-Fi networks are separate
  - 4.8.8.18.3 The Lessor shall provide and install the cabling infrastructure for the VA Wi-Fi network. The final location of the access points will be determined by the VA prior to the installation of said access point devices by the VA. The lessor shall provide one (1) Cat6a cable per 625 SF of ceiling space, one (1) cable in each corner (interior corners of exterior walls) and one (1) cable every 40 linear feet along the interior perimeter of the building. These cables shall be evenly spaced and distributed throughout the ceiling to provided adequate points of connections for the access points. Each cable shall be terminated in a biscuit jack. The VA may develop and provide a coverage area map noting where the Wi-Fi access points will go. In these cases, use the area map provided.
  - 4.8.8.18.4 The Lessor shall provide Guest Wi-Fi access including installation, design, service, and operational costs. The Guest Wi-Fi system shall be designed to provide 100% coverage with established signal strength and through heat maps as identified by a wireless pre and post area coverage survey and frequency coordination study. Ensure sufficient signal strength to provide "Excellent" signal strength in the Waiting and Reception areas, and "High" signal strength throughout the rest of the Clinic Proper. Guest Wi-Fi may be unsecured and may be from common or adjacent multi-tenant space, provided the system is managed by the Lessor and is not another tenant's signal. The guest Wi-Fi system should be separate from and with no access to VA network.

- 4.8.8.18.4.1 The VA Wi-Fi signal shall cover the Mobile Medical Unit area.

- 4.8.8.18.5 NVR (Network Video Recorder)

- 4.8.8.18.5.1 Room to be fitted the same as a TR room – sized for one rack.
    - 4.8.8.18.5.2 Lessor to provide CCTV.
    - 4.8.8.18.5.3 Provide access from Police.

- 
- 4.8.8.18.6 Climate and humidity check point sensors
    - 4.8.8.18.6.1 Provide 24/7 sensors in all Clean Supply spaces.
    - 4.8.8.18.6.2 Humidity check point will tie back to main hospital.
  - 4.8.8.19 Cell Phone Booster
    - 4.8.8.19.2 Install cell phone booster system to allow no drop calls in or out of the building.
  - 4.8.8.20 VA Low Voltage Minimum Commissioning requirements shall include but not limited to:
    - 4.8.8.20.2 CCTV System:
      - 4.8.8.20.2.1 Cameras:
        - 4.8.8.20.2.1.1 Confirm that cameras have been programed with proper IP address information.
        - 4.8.8.20.2.1.2 Confirm that all cameras are accessible at proper IP address and have a User/PW assigned (no blank or generic passwords).
        - 4.8.8.20.2.1.3 Cameras are numbered on patch panel and must have IP address spreadsheet updated with corresponding camera numbers.
      - 4.8.8.20.2.2 Network Video Recorder (NVR):
        - 4.8.8.20.2.2.1 Confirm that NVR has been programed with proper IP address information.
        - 4.8.8.20.2.2.2 Provide MAC address for NVR.
        - 4.8.8.20.2.2.3 Confirm that Server software is active and running properly and connected to cameras.
        - 4.8.8.20.2.2.4 Provide operating system admin username/pw
        - 4.8.8.20.2.2.5 Provide Server admin username/pw
      - 4.8.8.20.2.3 Access Control:
        - 4.8.8.20.2.3.1 Confirm that panels have been programed with proper IP address information.
        - 4.8.8.20.2.3.2 Reconnect panels from temporary switch back to patch panel
      - 4.8.8.20.2.4 Duress System:
        - 4.8.8.20.2.4.1 Confirm that panels have been programed with proper IP address information.
        - 4.8.8.20.2.4.2 Confirm that panels have network connection that is run from electrical room back to labeled port on MDF patch panel.
        - 4.8.8.20.2.4.3 Messenger should be setup and installed in Police Operations Room along with Lynx HDMI Monitor.
      - 4.8.8.20.2.5 Paging System
        - 4.8.8.20.2.5.1 Paging system must be finalized, wired to speakers and configured.
        - 4.8.8.20.2.5.2 Confirm that network connection has been run from paging head end unit back to labeled port on MDF patch panel. Paging Head End unit should be configured to accept analog trunk line from VA VOIP system.
      - 4.8.8.20.2.6 Ambulance Intercom:
        - 4.8.8.20.2.6.1 Confirm that outdoor speaker has been programed with proper IP address information.
        - 4.8.8.20.2.6.2 Provide MAC address for outdoor unit.
        - 4.8.8.20.2.6.3 Confirm that network connection has been run from outdoor
-

---

unit back to labeled port on MDF patch panel.

4.8.8.20.2.7 Police Workstation:

- 4.8.8.20.2.7.1 Confirm that workstation has been programed with proper IP address information.
- 4.8.8.20.2.7.2 Provide MAC address for workstation.
- 4.8.8.20.2.7.3 Confirm that wall mounted HDMI monitors and configured and active, desk mounted HDMI monitor configured and active
- 4.8.8.20.2.7.4 Confirm that Server Client is installed and connected to Server (running on NVR)
- 4.8.8.20.2.7.5 Confirm that PACS is installed and operating.
- 4.8.8.20.2.7.6 Confirm that Ambulance Intercom software is installed and functional (door opens).

4.8.8.20.3 Provide operating system admin username/pw.

4.9 Department Requirements

- 4.9.7 General, Provide (2) systems for WIFI; (1) System for public areas and another for clinical and staff areas. Items required to be on emergency power will be determined with assessment of NFPA 99.
  - 4.9.8 Partitions surrounding Patient Consult Rooms, Group Rooms, Shared Appointment Rooms and Conference Rooms shall be STC 55 minimum.
  - 4.9.9 Doors in patient path of travel shall be minimum 42" wide.
  - 4.9.10 Doors in patient path of travel to clinical areas (Radiology Procedure Rooms, Procedure Rooms, etc.) shall be minimum 48" wide.
  - 4.9.11 Doors to spaces dedicated as bariatric shall be minimum 48" wide.'
  - 4.9.12 Provide nurse call in Exam Rooms and provide pull cords for patient toilets.
  - 4.9.13 Provide purse shelf on public toilet stalls.
  - 4.9.14 Public female and family restrooms must have sanitary napkins dispensers and baby changing station.
  - 4.9.15 Provide IR sensors on lavatory faucets in all exams rooms.
  - 4.9.16 Provide handrail/crashrail installations in all circulation corridors.
  - 4.9.17 Developer shall provide webcam with live feed during construction.
  - 4.9.18 Comply with locally adopted codes for plumbing fixture count.
  - 4.9.19 Required Generator shall be separate from building. Provide External plug quick connect for second Emergency Generator.
  - 4.9.20 Partitions surrounding exam rooms and offices shall be STC 45 (single layer 5/8" GWB each side of metal studs with minimum 1 1/2" mineral wool sound attenuation insulation).
  - 4.9.21 Partitions surrounding Group Rooms, Conference Rooms and Shared Appointment Rooms shall be minimum STC 55 (double layer 5/8" GWB each side of metal studs with minimum 1 1/2" mineral wool sound attenuation insulation in stud cavity).
  - 4.9.22 Provide floor outlets for data and power at Conference, Group and Shared Appointment Rooms. Ensure floor outlets are completely flushed with adjacent floor finish.
  - 4.9.23 At all Break Rooms, provide base and wall cabinets and solid surfacing counters. Base cabinet shall accommodate double bowl stainless steel sink and shall be large enough for microwave. Provide space for 25 CU foot refrigerator.
  - 4.9.24 Use "View Point" for temperature and humidity monitoring. Provide on emergency power.
  - 4.9.25 Use "View Point" for temperature and humidity monitoring of clean/sterile storage areas and OR and clean/sterile procedural space. Provide on emergency power.
  - 4.9.26 All patient lifts shall be minimum 600 lb capacity; 1000lb capacity in bariatric areas.
  - 4.9.27 Provide Check-in and Check-out window at each department to be included in reception.
-

- 
- 4.9.28 Provide floor drains at emergency shower locations. Minimum two shower emergency shower locations are Logistics and Pharmacy.
  - 4.9.29 Provide PTZ cameras in the parking lots and (2) cameras in the vault.
  - 4.9.30 Provide two-way radio system, basis of design to be Harris.
  - 4.9.31 During design, there will be a list of rooms generated as needing to be completed 60 days before acceptance such as, but not limited to, CT, Radiology, Fluoroscopy, Mammography, OIT, Logistics, Canteen and some storage spaces.
  - 4.9.32 Provide emergency power for VA "View Point" system.
  - 4.9.33 Provide white noise system throughout the building.
  - 4.9.34 Provide exterior tables/seating directly adjacent to Veterans Canteen. Awnings/other coverage should be provided to provide shade and/or offset inclement weather
  - 4.9.35 Throughout the facility, patient lifts in spaces designated for bariatric patients should be designed for a 1,000 lb lift ( 2nrequired as directed). Spaces designated for patient lifts that are NOT bariatric should be designed for a 600 lb lift (8 required as directed).
  - 4.9.36 Provide RO water system 7500 gpd capacity for distribution throughout facility.
  - 4.9.37 SITE
    - 4.9.37.4 Provide Canopies for Loading Dock, main entrance patient drop off, Women's Clinic and ambulance pickup entrances with 14'-0" minimum overhead clearance.
    - 4.9.37.5 Provide Canopy at loading dock to extend 3'-0" beyond edge of loading dock and provide minimum of 14'-0" overhead clearance.
    - 4.9.37.6 Canopy at Women's entrance and ambulance pick-up shall be full length and extend 3'-0" beyond face of curb at driveway.
    - 4.9.37.7 Provide Code blue/assistance buttons in parking areas.
    - 4.9.37.8 Provide dedicated parking for government cars.
    - 4.9.37.9 This doesn't match our submission. Parking spaces should accommodate 350 cars. This includes 35 handicap spaces.
    - 4.9.37.10 Provide dedicated parking spaces for motorcycles, passenger vans and electric vehicles.
    - 4.9.37.11 Lessor shall provide trash compactor and (2) dumpsters with 7 days a week pickup.
    - 4.9.37.12 Provide designated space and utilities for VA provided Bailer.
  - 4.9.38 ADMINISTRATION
    - 4.9.38.4 At large Conference room, provide wall and base cabinets to accommodate refrigerator, sink, dishwasher and space for Microwave.
    - 4.9.38.5 Provide electrically operated movable wall to divide Conference Room into 2 spaces
  - 4.9.39 AUDIOLOGY
    - 4.9.39.4 Recess sound suites (booths) into floor structure so floor of sound suite is level with adjacent floor.
    - 4.9.39.5 Provide Repeater for WIFI in audiology. A strong Wi-Fi signal is required to calibrate and set up Bluetooth equipment.
    - 4.9.39.6 Provide (1) sink needed in each exam room.
    - 4.9.39.7 Lessor to order and install sound suites they shall order utility boxes for fire alarms and sprinkler heads, coordinate with Medical Center for basis of design. One of the booths shall be 7 feet of height of interior clearance.
    - 4.9.39.8 Provide recessed sprinkler heads in Audiology booths.
    - 4.9.39.9 Provide visual fire alarms (strobes) in Audiology booths.
    - 4.9.39.10 Provide electrical convenience outlets and data drops on ALL walls.
    - 4.9.39.11 Partitions surrounding fitting rooms shall be higher STC than normal partitions -
-



- noise interferes with calibration.
- 4.9.39.12 Provide closet for turbine vacuum pump.
- 4.9.39.13 Corridors shall be 8'-0" wide because audiology booth doors swing out.
- 4.9.39.14 Provide electrical convenience outlets and data drops on ALL walls.
- 4.9.39.15 Partitions surrounding fitting rooms shall be higher STC than normal partitions - noise interferes with calibration.
- 4.9.40 CANTEEN
  - 4.9.40.4 Provide upward coiling metal screens at serving counter to provide security before and after serving hours.
  - 4.9.40.5 Provide grease trap to accommodate waste volume in Canteen proper.
  - 4.9.40.6 Water required for Canteen/Coffee shop.
  - 4.9.40.7 Provide 3-compartment sink in coffee shop.
  - 4.9.40.8 Provide grease trap to accommodate waste volume of coffee shop.
  - 4.9.40.9 Provide slat wall display wall system.
- 4.9.41 CARDIOLOGY
  - 4.9.41.4 Provide recessed roll-on weight scale.
  - 4.9.41.5 Provide sensor control faucets in Exam Rooms.
- 4.9.42 CLINIC MANAGEMENT
  - 4.9.42.4 Provide Floor outlets for admin area secretary in front entrance to the Admin area.
  - 4.9.42.5 Locate Break Rooms on exterior wall to allow windows.
- 4.9.43 EDUCATION
  - 4.9.43.4 Provide floor and ceiling outlets for data and power in Conference/Classroom.
  - 4.9.43.5 Provide dimmable lighting system.
  - 4.9.43.6 Provide hard wired sensor control at toilets and lavatories.
  - 4.9.43.7 Provide data and power for (10) workstations in Conference Room.
  - 4.9.43.8 Provide movable wall system to divide Conference Room into 2 spaces.
  - 4.9.43.9 Provide for V-tell at each end of Conference Room.
  - 4.9.43.10 Provide (2) 70" mobile Smart Boards.
  - 4.9.43.11 Provide (2) Lecterns.
  - 4.9.43.12 Provide (2) spider phones.
  - 4.9.43.13 Provide power and data outlets in floor.
  - 4.9.43.14 Provide for (10) computer workstation in ACLS.
- 4.9.44 EMS/ENG/BIO MED
  - 4.9.44.4 Provide data drops, power outlets and air supply to accommodate adjustable height work tables.
  - 4.9.44.5 Provide casework at locksmith space.
  - 4.9.44.6 Ceiling in biomed room not required. Provide for racked storage by locating HVAC ducts and conduits at perimeter of space.
  - 4.9.44.7 Omit shower rooms in LLTS.
  - 4.9.44.8 Provide patient shower room.
  - 4.9.44.9 Provide dimmable lighting system in procedure rooms.

## **SECTION 5 - HARDWARE GROUPS AND MODIFIERS**

### **General Notes:**

- A. Refer to the Room Data Matrix – Doors and Hardware for hardware group and modifier(s) assigned to each door opening. Hardware group modifiers added to numeric hardware group assignments indicate a variation to the group.
- B. Refer to Design Narrative for door hardware general notes and product information.

### **Notes to detailer:**

- A. Add hardware group modifiers to hardware groups as required to meet program requirements.
- B. Add closers and kickplates (push side) at fire rated openings to assigned hardware group.
- C. Add overhead stops where stop condition does not allow for a wall stop.

### **HARDWARE MODIFIERS**

- "A" Add armor plate to push side of door(s) and edge guards to hinge and latch edges (both leaves of pairs and both sides of double-acting doors). Omit kickplate if previously scheduled. Confirm compliance with any/all fire-ratings.
- "B" Add mop plate to pull side of door. (both leaves of pairs and both sides of double-acting doors)
- "C" Add coat hook behind door. Note: Omit coat hook where glass lite prevents installation.
- "D" Add delayed-action feature to specified closer(s), if required to attain specified delay time. Set delay for specified closer(s) to 5 – 7 seconds, unless indicated otherwise. DO NOT exceed 10-second delay, unless specifically indicated otherwise.
- "E" Add Privacy deadbolt with thumb throws and occupancy indicators on both sides of door. (This is used on exam rooms with a staff entrance and a patient entrance. This additional deadbolt is on the staff entrance door.)
- "G" Add perimeter adjustable seals at jambs and head (self-adhesive).
- "J" Add latch protector to specified opening.
- "K" Add kick plate to push side of door. (both leaves of pairs and both sides of double-acting doors)
- "L" Add lead-lining to all mortise hardware, including roses/escutcheons on locks. Substitute for previously specified hinges, heavy-duty pivot set and intermediate pivots spaced per manufacturers' recommendations. Lead-lined astragal at pairs is provided by door supplier. Refer to Radiation Protection specification section. Provide adequate blocking in wall for wall stops where applicable. NOTE: Installation of hardware must not compromise/penetrate lead-lining in door(s) or frame. (Use appropriate fasteners.)
- "M" Add closer holder arm at non-rated openings only.
- "P" Add door position switch/contact for doors being monitored/alarmed (both leaves of pairs). Connection by Electrical.
- "S" Add perimeter adjustable seals at jambs and head, automatic door bottom (semi -mortised).
- "V" Add one-way door viewer at Mental Health rooms if vision lite/glazing is not provided in door.
- "W" Add weatherstrip, sweep(s) and rain drip (where applicable). For pairs with fixed astragal by door supplier, furnish/apply gasket strip. For pairs with both doors active, provide split astragal for each leaf. At aluminum assemblies, add rain drips (where applicable and not part of aluminum frame assembly – match door & frame finish), add thermally broken thresholds and sweep(s), integral weatherstrip is provided by door manufacturer.

## **HARDWARE SETS**

### **GROUP 1 – Hardware Included with Door/Frame Assembly**

Door(s)/frame/ hardware is provided as part of complete assembly, unless indicated otherwise. Refer to applicable specification section(s) as indicated for door type on door detail sheet.

Also apply hardware group "modifier" when/if specifically assigned.

### **GROUP 11 – Privacy Function Mortise with Occupancy Indicator**

Hinges as required

Spring Hinge

Note: Adjust spring hinge to partially close door without latching.

1 each Privacy Lockset w/occ. indicator

Function: Latchbolt is retracted by lever on either side unless inside thumb turn lever locks outside lever.

Operating inside lever or closing door unlocks outside lever. Outside indicator indicates occupancy when door is locked. Outside emergency release unlocks outside lever.

1 each Wall Stop

### **GROUP 12 – Office Function**

Hinges as required

1 each Office Lockset

Function: Latchbolt is retracted by lever on either side unless outside lever is locked by inside turn button.

Key outside retracts latchbolt. Deadlocking latchbolt.

1 each Wall Stop

### **GROUP 13 – Classroom Function**

Hinges as required

1 each Classroom Lockset

Function: Latchbolt is retracted by lever on either side unless outside lever is locked by key. Key outside locks or unlocks outside lever. Deadlocking latchbolt.

1 each Wall Stop

### **GROUP 14 – Storeroom Function**

Hinges as required

1 each Storeroom Lockset

Function: Latchbolt is retracted by inside lever only. Outside lever is always LOCKED. Key outside retracts latchbolt. Deadlocking latchbolt.

1 each Wall Stop

**GROUP 15 – Apartment/Entrance Function Mortise**

Hinges as required

1 each Apartment/Entrance Lockset

Function: Latchbolt is retracted by lever on either side unless outside lever is locked by key from inside. When locked, latchbolt is retracted by key outside or lever inside. Inside lever is always free for immediate egress. Deadlocking latchbolt.

1 each Wall Stop

**GROUP 17 – Apartment/Entrance Function Mortise with Hospital Paddles**

Hinges as required

1 each Apartment/Entrance Lockset with hospital paddles (both paddles mounted down)

Function: Latchbolt is retracted by hospital paddle on either side unless outside paddle is locked by key from inside. When locked, latchbolt is retracted by key outside or paddle inside. Inside paddle is always free for immediate egress. Deadlocking latchbolt.

1 each Wall Stop

**GROUP 18 – Single Holding Cell, Deadbolt with Outside Key & Pull Plate, No Closer**

1 each Continuous hinge

NOTE: Provide hospital tips for doors swinging into detention room.

1 each Deadlock (single-cylinder)

Function: Deadbolt is operated by outside key (no inside operation). Use only at compliant detention/holding cells.

1 each Pull Plate (3/4-in diam with 8-in ctrs and 4-in x 16-in plate, secured with Torx screws

1 each Overhead Stop (adjustable) secured with Torx screws

Note: Verify applicable building codes for impeding exit.

**GROUP 33 – Classroom Function**

Hinges as required

1 each Classroom Lockset

Function: Latchbolt is retracted by lever on either side unless outside lever is locked by key. Key outside locks or unlocks outside lever. Deadlocking latchbolt.

1 each Closer

1 each Kickplate

1 each Wall Stop

**GROUP 34 – Storeroom Function, with Closer**

Hinges as required

1 each Storeroom Lockset

Function: Latchbolt is retracted by inside lever only. Outside lever is always LOCKED. Key outside retracts latchbolt. Deadlocking latchbolt.

1 each Closer

1 each Kickplate

1 each Wall Stop

**GROUP 35 – Apartment/Entrance Function Mortise with Closer**

Hinges as required

1 each Apartment/Entrance Lockset

Function: Latchbolt is retracted by lever on either side unless outside lever is locked by key from inside. When locked, latchbolt is retracted by key outside or lever inside. Inside lever is always free for immediate egress. Deadlocking latchbolt

1 each Closer

1 each Kickplate

1 each Wall Stop

**GROUP 43 – Active/Inactive Pair with Automatic Flushbolts & Closers (Both Doors), Hospital Latch (Classroom Function)**

Hinges as required

1 each Hospital Latch/Lock (5-inch backset, unless indicated otherwise)

Function: Latchbolt is retracted by paddle, either side (both paddles mounted down), unless outside paddle is locked by key outside.

1 each Coordinator

1 set Flushbolts (automatic)

2 each Closers

2 each Kickplates

2 each Stops (as required by opening conditions)

Surface astragal provided by Door Manufacturer/Supplier (matching wood at wood doors, primed flat steel at hollow metal doors), unless indicated otherwise.

**GROUP 44 – Active/Inactive Pair with Automatic Flushbolts & Coordinator, Storeroom Lock with Closers**

Hinges as required

1 set Flushbolts (automatic)

1 each Lockset Storeroom Function

Function: Latchbolt is retracted by lever inside only. Outside lever is always LOCKED. Key outside retracts latchbolt. Deadlocking latchbolt.

1 each Coordinator

2 each Closers

2 each Kickplates

2 each Wall Stops

Surface astragal provided by Door Manufacturer/Supplier (matching wood at wood doors, primed flat steel at hollow metal doors), unless indicated otherwise.

---

**GROUP 45 – Active/Inactive Pair with Automatic Flushbolts & Coordinator, Apartment/Entrance Function Mortise with Closer**

Hinges as required

1 set Flushbolts (automatic)

1 each Apartment/Entrance Lockset

Function: Latchbolt is retracted by lever on either side unless outside lever is locked by key from inside. When locked, latchbolt is retracted by key outside or lever inside. Inside lever is always free for immediate egress. Deadlocking latchbolt.

1 each Coordinator

2 each Closers

2 each Kickplates

2 each Wall Stops

Surface astragal provided by Door Manufacturer/Supplier (matching wood at wood doors, primed flat steel at hollow metal doors), unless indicated otherwise.

**GROUP 96.01 – Pair Concealed Vertical Rod Exits/Panics (Metal Doors) with Locked Lever x Exit Only**

Hinges

1 each Exit Device

Function: Latchbolts are retracted by inside pushrail. No outside operation.

1 each Exit Device

Function: Latchbolts are retracted by inside pushrail and outside lever only when key is in cylinder and turned. Outside access by lever/pull when device is dogged. (at non-rated devices only)

2 each Closers

2 each Kickplates

2 each Wall Stops

1 each Split Astragal Set (if indicated or required by door manufacturer for label requirements)

**GROUP 121 – Pushbutton Access Control (Mechanical) with Closer**

Hinges as required

1 each Mechanical Pushbutton Lock (storeroom function)

Function: Latchbolt is retracted by inside lever at all times. Key outside retracts latchbolt. Outside lever is LOCKED except when valid user code is entered.

1 each Closer

1 each Kickplate

1 each Wall Stop

---

**GROUP 200 – Electric Lock (Fail-Secure Entry with Integral Request-to-Exit Switch) Via Electronic Access Control System (Refer to Security Documents), with Closer**

Hinges as required

1 each Electric Hinge

1 each Electric Lockset (fail-secure)

Function: Latchbolt is retracted by lever inside, key outside, and lever outside when unlocked electronically. Outside lever is LOCKED, unless unlocked electrically. Power off locks outside lever. Rotating inside lever connects/contacts signal switch.

1 each closer

1 each kickplate

1 each Wall Stop

1 each Door Position Switch/Contact Electronic access control system/device(s), power supplies, and monitoring/alarm(s) are provided with Security System. Contractor to coordinate the provision and installation of products. Refer to documents with Security information for location(s) and type(s) of control(s).

Connection by Electrical.

**OPERATIONAL DESCRIPTION:** Door is normally closed and latched. Manual exit is allowed at all times by rotating inside lever, though signal will be sent. Entry is controlled by electronic access control system which secures/locks and releases/unlocks outside lever for predetermined periods of time. When secured/locked, presenting authorization temporarily unlocks outside lever to allow entry. Interruption of power secures/locks outside lever requiring key for entry. (fail-secure entry)

**GROUP 404 – Storeroom Lock (with Integral Request-to-Exit Switch) Automatic Operator and Electric Strike (Fail-Secure Entry) via Electronic Access Control System (Refer to Security Documents)**

Hinges as required

1 each Electric Hinge

1 each Lockset Storeroom Function (with request-to-exit signal in lever)

Function: Latchbolt is retracted by inside lever only. Outside lever is always locked. Key outside retracts latchbolt. Deadlocking latchbolt. Rotating inside lever connects/contacts signal switch.

1 each Electric Strike (fail-secure)

1 each Automatic Operator

2 each Actuators

1 each Power Supply (for electric strike, if not included with automatic operator)

1 each Kickplate

1 each Wall Stop

1 each Door Position Switch/Contact Electronic access control system/device(s), and monitoring/alarm(s) are provided with Security System. Contractor to coordinate the provision and installation of products. Refer to documents with Security information for location(s) and type(s) of control(s).

Connection by Electrical.

**OPERATIONAL DESCRIPTION:** Door is normally closed. Exit is possible at all times – manually by rotating inside lever and automatically by depressing inside wall actuator switch. Electronic access control system/device(s) secures (locks) and releases (unlocks) electric strike and connects & disconnects outside wall actuator to control entry. When secured (locked), presenting authorization temporarily releases electric strike and connects outside actuator switch to allow manual entry by

---



outside lever and automatic entry by depressing outside wall actuator switch. Mechanical entry is also possible by outside key in lockset, but opening door will alert monitoring. Interruption of power (or fire alarm event at rated openings) disables automatic operator and secures electric strike to close and positively-latch door, resulting in door being locked for entry, requiring key.

**GROUP 710.02 – Aluminum pair push bars & pulls with automatic operators (both doors)**

2 each Continuous Geared Hinges (match door/frame finish)

2 each Push Bars 1-inch dia. ANSI J501

2 each Offset Pulls - 1-inch dia., 10-inch CTC ANSI J504

2 each Automatic Operators

2 each Actuators

2 each Heavy-Duty Concealed Overhead Stops

Connection by Electrical.

**OPERATIONAL DESCRIPTION:** Doors are normally closed (no latching). Manual passage through either door is possible at all times. Depressing either actuator will open both doors automatically.

**GROUP 850 – Interlocking Automatic Sliding Door System (with Break-Away) via Electronic Access Control System**

All mechanical and electrified door hardware is provided by door assembly supplier/manufacturer.

Electronic access control system, request-to-exit device(s), and monitoring/alarm(s) are provided by Security Contractor. Refer to security documents for locations and types of controls.

Connection by Electrical.

**OPERATIONAL DESCRIPTION:** Doors are normally closed. Manual exit is possible at all times by “breakaway” feature on operable door panel(s). Whenever any door in the system is opened, the remaining doors are automatically and electronically locked in the closed position until the original door is again closed. Consequently, only one door of the system may be open at any one time. Interruption of power and/or fire alarm event immediately releases locks to allow passage through any door.

**SECTION 6 – AGENCY SPECIFIC REQUIREMENTS (ASRs)**

- 6.1 General – Additional requirements by the Medical Center
- 6.2 Basis of Design Systems for this Medical Center
  - 6.2.1 Temperature and Humidity Control System to be View Point latest version.
  - 6.2.2 Radio system to be Harris.
  - 6.2.3 PACS – Software House C-Cure 9,000 system latest version, PIV 200 bit encryption.
- 6.3 Provide electrical convenience outlets and data drops on ALL walls.
- 6.4 Audio Booths to have Biomet NOAH workstations.
- 6.5 Wi-Fi requirements – Lessor shall provide, install and maintain Wi-Fi infrastructure to include wiring of Cat 6A, access points Mist AP43s and switchgear to be Juniper 4400 switches, quantities to be determined by DID. WiFi system to be designed for pervasive coverage at minimum of -60dbm Signal will be managed and provided by VA. Coordinate final design with VA Wifi Systems engineer.

## **SECTION 7 - DESIGN PHASE REQUIREMENTS**

### **7.1 DESIGN REVIEW DOCUMENTATION**

- 7.1.1** All design review comments shall be tracked in the Dr. Checks or agreed upon web-based system with same or better capabilities. Dr. Checks enables an actionable collaboration among the reviewers and Lessor's design team. This process allows project reviewers to enter their project review comments so that the design team may provide timely responses from a web browser into a database. The main function of Dr. Checks is to document and streamline the communication process between the project reviewers and the design team. This process provides transparency and consistency by tracking the review comments to assure timely response and resolution.
- 7.1.2** All design meeting shall be recorded and transcribed for purposes of verification, validation and records. All information is captured into a database and will remain in the system throughout the design and construction period and will be archived for future reference. Once the review period for a given phase of a project is ended, the designer(s) will be required to respond to all comments.
- 7.1.3** Lessor shall certify that all costs have been included and agreed upon per ALL the design meetings. Lessor shall not seek consideration for omitted or errors in pricing from the government.
- 7.1.4** ALL drawing development shall utilize actual AUTOCAD and **Revit model** construction drawings, making such drawings interactive on an on-line interface and organized by versions.
- 7.1.5** The SRE is responsible for assuring that access is available to all required users. The Lessor or designer can propose the use of an alternative web-based system as long as it provides equal or better functionality as that offered by Dr. Checks.

## **SECTION 8 – CONSTRUCTION PHASE REQUIREMENTS**

### **8.1 CONSTRUCTION OBSERVATION**

- 8.1.1 All costs associated with the Resident Engineer's office including, but not limited to, construction, demolition, hook-ups to utilities, furniture, fixtures, and equipment (RE Office Costs) shall be paid by the Lessor. Upon acceptance of the space, VA shall reimburse the Lessor for all RE Office Costs as part of the Tenant Improvement Cost. The RE shall have unlimited access to the construction site for construction observation.
- 8.1.2 Independent Office Space - The field office shall provide not less than 800 gross square feet of floor area in one trailer unit. Installation of the office shall meet all local codes.
  - 8.1.2.1 Provide office with three 36-inch wide exterior doors, including hardware and OSHA approved platform, handicap ramp, and stairs leading to grade. A stainless-steel lock guard shall be provided over deadbolts on exterior at each door. Provide accessible ramp in compliance with VA Barrier Free Design Guide, PG-18-13, 2007.
  - 8.1.2.2 Enclose the entire perimeter of the office from the floor to the ground and finish to match exterior. Provide R7 insulation and seal tight to ground with a painted ¾-inch exterior grade plywood skirt.
  - 8.1.2.3 Exterior finishes shall be manufacturer's standards. Provide roof canopy areas above entry doors approximately 6' x 6'. Provide HC ramp at one entry.
  - 8.1.2.4 Provide floor, wall, and roof with not less than R5 insulation.
  - 8.1.2.5 Provide floor, wall, and roof with not less than R5 insulation.
  - 8.1.2.6 Interior finishes shall consist of resilient flooring, plywood paneling or painted wallboard on walls, and acoustical tile lay-in ceilings. Interior doors may be either painted or stained.
  - 8.1.2.7 Interior shall be subdivided with full height partitions to provide two offices, one sample room, one conference room, two separate toilets. Provide each space with three-foot wide door with KIWI Smart locks. Section off an area with a low partition and counter for the administrative assistant's desk. Provide countertop space with sink, and upper/lower cabinets.
  - 8.1.2.8 Provide 2-1/2 ft wide x 3 ft high operable windows; two in each room (none required in sample room), except provide only one 2-foot high window with frosted glass in toilet room(s) and three windows in conference room. Provide steel mesh over all glass in doors and windows. The windows shall have mini-blinds.
  - 8.1.2.9 Provide sufficient fluorescent or LED lighting in each room to deliver 30-foot candles of light at desktop height without the aid of daylight. Provide one light switch in each room, except conference room shall have two 3-way switches. Provide one cord-connected, portable 24-inch fluorescent task light at each secretarial workstation and office desk.
  - 8.1.2.10 Provide one quadraplex receptacle in each wall of each room. If a wall is 10 feet long or more, provide two quadraplex receptacles for each 10 feet, or portion thereof, of wall. Provide two quadraplex receptacles in low partition at administrative assistant's desk.
  - 8.1.2.11 Provide one each telephone / data outlet adjacent to quad receptacle on two walls in each room.
- 8.1.3 Utilities and Services
  - 8.1.3.1 The Lessor shall provide the following:
    - 8.1.3.1.1 Electricity, hot and cold water, and necessary utility services (including telephone (5 lines) with dedicated VA Wi-Fi and LAN highest available speed internet services and cable service.
    - 8.1.3.1.2 All necessary piping, power circuits, electrical fixtures, lighting, and other items necessary to provide a habitable structure for the purpose

- 
- intended.
- 8.1.3.1.3 Thermostatically controlled, centralized heating and air conditioning system designed to maintain the temperature between 70 and 80 degrees F with 50% relative humidity. The relative humidity shall be uncontrolled.
- 8.1.3.1.4 One water closet(s), lavatory, with mirrors, exhaust fans, toilet paper dispensers, paper towel dispensers, trash cans, plastic trash can liners, soap dispensers, paper cups for water fountain, towel bars, and two-prong coat hooks for each toilet room. One toilet shall have shower with hot water.
- 8.1.3.1.5 Telephone and Internet connections: Provide five (5) telephone lines and one (1) high speed Internet cable service.
- 8.1.3.1.6 Telephones shall be provided with speaker phone and digital messaging.
- 8.1.3.2 Lessor shall, for the duration of the Resident Engineer's occupancy, provide the following:
- 8.1.3.2.1 Secure, safe, clean, and sanitary conditions in and around the field office and parking area.
- 8.1.3.2.2 Maintenance of gravel surfaced area, weed free, including the area for parking, in an acceptable condition for vehicle and foot traffic at all times.
- 8.1.3.2.3 Maintenance of utility services.
- 8.1.3.2.4 Daily janitorial services and supplies (toilet paper, paper towels, soap, trash removal, etc.).
- 8.1.3.2.5 Potable water, fuel, and electric power for normal office uses, including lights, heating, and air conditioning.
- 8.1.3.2.6 Lessor shall be responsible for all maintenance for field office and equipment including replacement of burned out light bulbs or tubes and changing of A/C filters.
- 8.1.3.2.7 Lessor will provide construction testing equipment as required not to exceed \$500 quarterly.
- 8.1.4 Furnishing and Equipment
- 8.1.4.1 The Lessor shall provide the following new or "like" new reconditioned items:
- 8.1.4.2 **QUANTITY REQUIRED**
- 1 Administrative assistant workstation with adjustable keying desk or drawer size 29-1/2" H x 60" W x 30" D
- 1 1.5 Cu. Ft. Microwave
- 1 18 Cu. Ft. Refrigerator
- 1 Xerox WorkCentre or approved equivalent Color / B&W copier, Printer/copier/scanner at 35 ppm and handles 8"x10", legal, and 11"x17"
- 1 Office desks, double pedestal, executive size
- 1 Conference tables, size 4' x 6'
- 1 Plan table 4' x 7'
- 1 Work tables, folding 30" x 72"
- 2 Cushion floor mats 40" x 72"
- 1 Secretary chair
- 4 Swivel chairs with arms
-

---

4 Conference chairs (armless with cushions and wheels)

8.1.5 Photographic Documentation

8.1.5.1 During the construction period through completion, a 3rd party shall provide photographic documentation of construction progress and at selected milestones including electronic indexing, navigation, storage and remote access to the documentation, as per these specifications. The commercial photographer or the subcontractor used for this work shall meet the following qualifications:

8.1.5.1.1 Demonstrable minimum experience of five (5) years in operation with at least 500 projects documented to date providing documentation and advanced indexing/navigation systems including a representative portfolio of construction projects of similar type, size, duration and complexity as the Project.

8.1.5.1.2 Demonstrable ability to service projects throughout North America with operational resources within 150 miles of project, which shall be demonstrated by a representative portfolio of active projects of similar type, size, duration and complexity as the Project.

8.1.5.2 Photographic Documentation elements:

8.1.5.2.1 Each digital image shall be taken with a professional grade camera with minimum size of 6 megapixels (MP) capable of producing 200x250mm (8 x 10 inch) prints with a minimum of 2272 x 1704 pixels and 400x500mm (16 x 20 inch) prints with a minimum 2592 x 1944 pixels.

8.1.5.2.2 Indexing and navigation system shall utilize actual AUTOCAD and Revit model construction drawings, making such drawings interactive on an on-line interface. For all documentation referenced herein, indexing and navigation must be organized by both time (date-stamped) and location throughout the project.

8.1.5.2.3 Documentation shall combine indexing and navigation system with inspection-grade digital photography designed to capture actual conditions throughout construction and at critical milestones. Documentation shall be accessible on-line through use of an internet connection. Documentation shall allow for secure multiple-user access, simultaneously, on-line.

8.1.5.2.4 Construction progress for all trades shall be tracked at pre-determined intervals, but not less than once every thirty (30) calendar days throughout the project upon commencement of vertical construction ("Progressions"). Progression documentation shall track both the exterior and interior construction of the building. Exterior Progressions shall track 360 degrees around the site and each building. Interior Progressions shall track interior improvements beginning when stud work commences and continuing until Project completion.

8.1.5.2.5 Miscellaneous events that occur during any Contractor site visit, or events captured by the Department of Veterans Affairs independently, shall be dated, labeled and inserted into a Section in the navigation structure entitled "Slideshows," allowing this information to be stored in the same "place" as the formal scope.

8.1.5.2.6 Customizable project-specific digital photographic documentation of other details or milestones. Indexing and navigation accomplished through interactive architectural plans.

8.1.5.2.7 Monthly exterior progressions (360 degrees around the project) and slideshows (all elevations and building envelope). The slideshows allow for the inclusion of Department of Veterans Affairs pictures, aerial photographs, and timely images which do not fit into any regular monthly photopath.

- 
- 8.1.5.2.8 Regular (5 max) interior progressions of all walls of the entire project to begin at time of substantial framed or as directed by the Resident Engineer through to completion.
  - 8.1.5.3 Images shall be taken by a commercial photographer and must show distinctly, at as large a scale as possible, all parts of work embraced in the picture.
  - 8.1.5.4 Coordination of photo shoots is accomplished through Resident Engineer or other designated on-site point of contact. Contractor shall also attend construction team meetings as necessary. Contractor's operations team shall provide regular updates regarding the status of the documentation, including photo shoots concluded, the availability of new Progressions or Exact-Built's viewable on-line and anticipated future shoot dates.
  - 8.1.5.5 Contractor shall provide all on-line domain/web hosting, security measures, and redundant server back-up of the documentation.
  - 8.1.5.6 Contractor shall provide technical support related to using the system or service.
  - 8.1.5.7 Upon completion of the project, final copies of the documentation (the "Permanent Record") with the indexing and navigation system embedded (and active) shall be provided in an electronic media format, typically a DVD or external hard-drive. Permanent Record shall have Building Information Modeling (BIM) interface capabilities.
  - 8.1.5.8 The developer shall provide a webcam for live feed during construction to be displayed on the VA webpage.