February 23, 2024

VA Leased CLC Design Narrative

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# SECTION 1 - INTRODUCTION

* 1. The purpose of this Leased Community Living Center (CLC) Design Narrative is to consolidate the governing codes, standards, references, and guidelines in a document that provides performance-based standards for a VA leased CLC facility.
  2. The governing codes, standards, and references are based on VA affiliated CLC facilities.
  3. The design of the VA leased CLC facility is based on the Small House (SH) Model design guide PG-18-12 (SH Model DG). The SH Model DG PG18-12 references requirements in many other VA guides, manuals, and specifications. If the referenced document is listed in section 2 of this LDN under codes or standards, then it is a requirement. If it is not than it is a reference.
  4. This document, and the associated Room Data Matrix (RDM), provides performance-based standards for rooms/functions that are a part of the project’s Program for Design. If there are standards covered by this document, or room types in the RDM, that are not a part of a specific project’s Program for Design, those standards are considered not applicable to that specific project. However, standards added to the grey “additional requirements” boxes in this document are project specific and are applicable.
  5. Commonly Used Acronyms and Definitions:

CLC Community Living Center

SH Small House

PFD Program for Design

Net square feet (NSF) listing of all spaces and rooms that are to be included in a construction project.

VA Veterans Affairs

VHA Veterans Health Administration

VISN Veterans Integrated Services Network

# SECTION 2 – GENERAL REQUIREMENTS

* 1. General
     1. The codes, standards, and references listed below indicate minimum performance requirements. Minimum requirements or standards may be exceeded by site specific project design.
     2. Compliance is required with applicable codes and standards throughout the process of design, construction, acceptance, and on-going maintenance of the facility.
     3. Design and construction of the CLC facility shall be in compliance with the requirements of the GSA Form L100 Global Lease and the codes, standards, and references listed below. This Leased CLC Design Narrative covers construction materials and standards not fully addressed by the codes, standards, and references below.
     4. Use the most current edition at the date and time of bid submission.
  2. Codes
     1. All VA leased CLC facilities are to conform to the most recent applicable codes, which include but is not limited to following:
        1. National Fire Protection Association (NFPA), NFPA 99 Health Care Facilities Code, NFPA 70 National Electric Code, NFPA 70B Standard for Electrical Equipment Maintenance, NFPA 70E Workplace Electrical Safety, NFPA 75 Standard for the Fire Protection of Information Technology, NFPA 101 Life Safety Code, NFPA 110 Standard for Emergency and Standby Power Systems, current editions.
        2. Architectural Barriers Act Accessibility Standards (ABAAS), current edition.
        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.
           1. International Building Code
           2. International Energy Code
           3. International Mechanical Code
           4. International Plumbing Code
        4. State and local codes as required by the local Authority Having Jurisdiction (AHJ).

\*\*\*Note\*\*\* IPT should input number of patients incapable of self-preservation.

*Additional Code information:*

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* 1. Standards
     1. All leased CLC facilities are to conform to the following standards:
        1. FGI Guidelines for the Design and Construction of Residential Health, Care, and Support Facilities, current edition (referred to as FGI Guidelines herein).
        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.
        3. VA Small House (SH) Model Design Guide PG18-12.
        4. VA Signage Design Manual PG 18-12.
        5. VA Seismic Design Handbook H 18-8.
        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)
        7. ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality, current edition (referred to as ASHRAE 62.1 herein)
        8. ANSI/ASHRAE/IES Standard 90.1-2019 -- Energy Standard for Buildings Except Low-Rise Residential Buildings
        9. ANSI/ASHRAE Standard 188 Legionellosis: Risk Management for Building Water Systems.
        10. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Standard, HVAC Duct Construction Standards - Metal and Flexible.
        11. Association for the Advancement of Medical Instruments (AAMI) standards as applicable to SPS and RME storage
        12. Illuminating Engineering Society North America (IESNA) Handbook - latest edition
        13. ANSI Z358.01 Emergency Eyewash and Shower Standard
  2. References
     1. The following guides, manuals, and other references developed by VA are for reference only, however, they are applicable to VA leased CLC facilities:
        1. VA Infrastructure Standard for Telecommunications Spaces, most current.
        2. PG18-9 Space Planning Criteria, Chapter 106 – Small House (SH) Model
        3. Small House Model Prototype Home

<https://www.cfm.va.gov/til/Prototype/CLCPrototype.pdf>

* + - 1. VA Architectural Design Manual
      2. VA Plumbing Design Manual
      3. VA Lighting Design Manual
      4. VA Electrical Design Manual
  1. Pricing Standards
     1. Building Shell Definition
        1. Building shell is the complete enveloping structure, the base building systems, the complete HVAC system, and the finished common areas (building common and floor common) of a building that adjoin the occupant areas.
        2. Any demolition cost necessary shall be included in the building shell rental rate.
        3. Third-party green building certification do not change what elements are considered part of building shell or tenant improvements. Instead, building elements may be required to have certain attributes, such as low volatile organic compound emissions.
        4. Section 3 of the L-100 provides minimum requirements of the shell. Any further requirements identified in this LDN to items in Section 3 shall remain shell unless specifically designated as TI.
        5. The following table shows the Shell requirements of the Base Building and the Occupant Areas.

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| **Base Building** | **Occupant Areas** |
| Base structure and building enclosure components (windows with exterior finishes) and any required enhancements (canopies, progressive collapse, etc.) are complete. | Broom-clean concrete floor slab, with a flat and level floor. |
| Base building electrical and plumbing systems (e.g., central fire alarm, chiller plant, cooling tower) are complete and functional. | Gypsum wallboard, spackled and prime painted, on exterior perimeter walls and tenant demising walls, without suite entry door. |
| Entire HVAC system is complete and functional. | Conditioned space per the RDM. |
| All common areas, such as lobbies, elevators, fire egress corridors and stairwells, garages, and service areas are complete. | Suspended acoustical ceiling system including grid and lay-in tiles (or other building standard). Lighting luminaires should be installed in the ceiling grid for an open office plan at the rate of fixtures per 80 USF. Lighting controls with ambient lighting adjusted per daylight availability, occupancy, vacancy, or other building automation system signals. |
| Building common restrooms are complete and operational. |  |
| Tappable domestic water riser, service sanitary drain, sanitary vent, ready for extension to tenant demised areas. |  |
| All electrical power distribution panels and circuit breakers available in electrical closets, with capacities at 120/208 volt, 3- phase, 4-wire and 277/480 volt, 3-phase, 4-wire. |  |
| Any portion of a code required alternate power source (emergency generator, Essential Electrical System, etc.), required to support building life safety requirements including but not limited to transfer switches and distribution. |  |
| Designated connection point to the central fire alarm system for extension to tenant demised areas. | All fire alarm devices necessary required by tenant layout and AHJ. |
| Fire suppression system ready for extension to tenant demised areas. | Sprinkler mains and distribution piping in a protection layout (open plan) with heads turned down, concealed with an escutcheon or trim plate, are installed. |
| Conduit pathways to distribution backboard within a demarcation room for connection to tenant telecommunications MCR or TR. |  |
| All security requirements designated as “Shell” in the FSL Appendix are complete. |  |
| Proposed and required exterior site (property) improvements required for VA’s use of the premises and local municipality required off-site improvements are complete. |  |

* + 1. Tenant Improvement Definitions
       1. TIs are the finishes and fixtures that typically take space from the shell condition to a finished, usable condition. The resulting space is complete and meets applicable building codes.
       2. TIs are typically items in addition to the items listed in the table above.
       3. Section 5 of the L-100 provides minimum requirements of the TI. Any further requirements identified in this LDN to items in Section 5 shall remain TI unless specifically designated as Shell.
       4. Typical Tenant Improvements include:
          1. Electrical wiring, outlets, and horizontal conduit, including cable trays and hooks, within the demised premises. Telephone jacks, data, jacks, and horizontal conduit, including cable trays and hooks, within the demised premises.
          2. Carpeting or other floor covering; raised access flooring.
          3. Plumbing fixtures withing the demised premises and all lines connecting to the building core – except for common bathrooms.
          4. Partitioning and wall finishes
          5. Doors, sidelights, frames, and hardware.
          6. Millwork
          7. Window treatments
          8. Adjustments or repositioning of sprinkler heads to avoid conflict with partitioning; additional sprinklers required by local code to meet layout.
          9. VA required signage on site, in the common areas and within the demised premises.
          10. Additional lighting over the open office layout at a rate of fixtures per 80 USF.
          11. Exterior site amenities required such as therapy gardens, gait training therapy areas and dining areas (site amenities proposed as building improvements by the lessor shall be shell).
          12. Interior and exterior components of special systems required such as nurse call and duress systems.

**SECTION 3 – PLANNING AND DESIGN CRITERIA**

* 1. Background
     1. This LDN along with the SH Model DG establishes the design and construction standards to be used in the planning and design of leased U.S. Department of Veterans Affairs (VA) CLC facilities.
  2. CLC Guiding Principles
     1. The SH Model DG provides the guiding principles that shall be incorporated into the planning and design of this leased CLC facility.
  3. Room Data Matrix
     1. A collection of typical rooms within leased facilities. 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.
     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. 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.
     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.
     5. Additional Requirements in this LDN take precedence over the standard in the RDM.

**SECTION 4 – TECHNICAL NARRATIVE**

* 1. Site/Civil
     1. Pedestrian and Vehicle Access & Circulation
        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.
        2. 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.
        3. Service area shall accommodate vehicles that pick-up trash and recycled materials. Locate service area away from public and patient areas.
        4. Provide reflective traffic control signs as required for intersections, no parking lanes, and guidance of site traffic.
     2. Gardens and Landscaping (TI)
        1. Exterior spaces (gardens/balconies/patios) shall be provided for each House, Neighborhood Center and Community Center that meet the functional concept of the SH Model DG.
     3. Physical Security
        1. The SH Model DG references the VA Physical Security and Resiliency Design Manual (PSRDM), however the requirement for the leased CLC facility is to follow the ISC risk assessment process to determine the physical security requirements.
     4. Parking
        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.
        2. The total amount of accessible parking spaces provided shall be 1% greater than what is required by ABAAS.
        3. Maximum slope of parking spaces shall be 2%
        4. A five-foot-wide access aisle is required on each side of all accessible parking spaces.

*Additional Parking Requirements:*

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| Add project specific requirements here for number of parking at each house. |

* + 1. Site Grading
       1. Roads and walks should have a typical cross slope of 2% unless adequate surface drainage is provided by other slope conditions.

*Additional Site/Civil Requirements:*

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| Walkways, gardens etc. |
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* 1. Architecture
     1. General Criteria
        1. Refer to SH Model DG for conceptual architectural design requirements and the RDM for specific room requirements.
     2. Accessibility
        1. Accessible routes for residents shall have a minimum width of six feet (6’).
        2. Accessible route maximum slope (including parking spaces) shall be 1:50 (2%).
        3. When walkways are 1:50 (2%) or greater a rest area is required every 200’.
        4. Accessible route turning radius design consideration shall be a minimum of five and a half feet (5’ 6”). Bariatric spaces shall include a minimum of a six foot (6’) turning radius.
        5. Accessible route T-Shaped turning design consideration shall be a minimum of five and a half by five and a half feet (5’ 6” x 5’ 6”). Bariatric spaces shall include a minimum of six feet by six feet (6’ x 6’).
        6. Carpet cushion of padding is prohibited.
        7. Maximum slope of ramps shall be 1:20.
        8. Minimum clear width of ramps shall be four feet (4’).
        9. Minimum size of level ramp landings where a door swings into a landing shall be six feet by six feet (6’ x 6’).
        10. Handrail height shall be 34”.
        11. The maximum height of windowsills in patient bedrooms shall be 24”.
        12. The minimum accessible toilet stall size shall be five and a half feet by six feet (5’ 6” x 6’).
        13. The minimum size of all front transfer toilet stalls shall be three and a half feet by 6 feet (3’ 6” x 6’).
     3. Accommodations for Care of Patients of Size
        1. Refer to FGI Guidelines and the SH Model DG for accommodations for care of patients of size. A weight capacity of 650lbs shall be used for design consideration.
     4. Acoustics
        1. Refer to FGI Guidelines for acoustics requirements for enclosed rooms. Refer to the Room Data Matrix for information on rooms not covered by FGI or rooms with special acoustics requirements.
     5. Equipment/Accessories/Furnishings
        1. Refer to Project Room Contents List 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.
     6. Signage and Wayfinding
        1. Refer to SH Model DG for conceptual signage requirements and the VA Signage Design Manual for signage standards and requirements.

*Additional Signage Requirements:*

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* + 1. Elevators
       1. Refer to FGI Guidelines for additional elevator requirements when provided.
       2. The minimum width of elevator doors shall be four feet (4’) and a double set of handrails shall be provided.
    2. Doors and Frames
       1. Refer to the RDM for doors and frame requirements by room type.
       2. Finish: Prefinished in compliance with AWI Section 1500.
       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.
          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.
          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.
          3. Provide architectural paneled doors at resident rooms/spaces and public areas within Resident Homes, Neighborhood Centers, and the Community Center.
       4. Access Panels:
          1. Flush stainless steel at toilet areas.
          2. Flush gypsum board surface with concealed hinges at public and office areas.
          3. Fire rated steel at rated construction.
    3. Hardware
       1. General Note
          1. Hardware sets shall be provided as per RDM and Section 5 Hardware Groups and Modifiers. Provide extra heavy duty, Grade 1 hardware for all components.
       2. Major components and finishes are as follows:
          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.
          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.
          3. Electronic access control: 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. Refer to documents with Security Information for location(s) and type(s) of control(s). Connection by Electrical.

*Additional Architectural Requirements:*

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* 1. Interior Design
     1. General Criteria
        1. Refer to SH Model DG for conceptual interior design requirements and the RDM for specific room requirements.

*Additional Interior Design Requirements:*

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* 1. Structural Design
     1. Seismic Design Criteria
        1. The leased CLC facility shall meet the requirements in the SH Model DG and the VA Handbook 18-8, Seismic Design Requirements.
        2. CLCs are classified as Essential Facilities per the VA Handbook 18-8, the facility is intended to maintain essential functions with minor repairs after the design level earthquake or other natural disaster such as hurricane, tornado, etc.
  2. Mechanical
     1. General Criteria
        1. Mechanical systems for CLC facilities shall comply with ASHRAE 170, the requirements of the RDM and other applicable codes and standards. The SH Model DG references the VA HVAC Design Manual for many additional requirements that are not requirements of the VA leased CLC facility. The VA HVAC Design Manual can be referenced to resolve omissions of the ASHRAE Handbooks and municipality requirements.
     2. References
        1. The following publications shall be referenced for applicable systems calculations and design information.
           1. ASHRAE Handbooks.
     3. HVAC Design Basis
        1. Indoor design conditions:
           1. Design conditions shall be in compliance with the requirements of the ASHRAE 170 with the RDM taking precedence and/or indicating required space design conditions when ASHRAE does not fully address a space or room type.
           2. 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.

* + - * 1. Loading Docks:

Space shall have provisions to limit the intrusion airborne particulate and insects through dock door openings.

* + - 1. Outdoor design conditions:
         1. ASHRAE 99.6% (winter) and 0.4% (summer) conditions associated with the site-specific location.
    1. Air Handling Units (AHUs)
       1. Air handling units shall consist of, but not be limited to, the following:
          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).
          2. Incorporate supply, return and outdoor air flow measuring stations for proper control feedback and ensure minimum ventilation needs.
          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. 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.
       2. For overall building capacity needs greater than 50,000 cfm, multiple AHUs shall be provided.
       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.
    2. Exhaust Systems
       1. Provide exhaust fans to provide general exhaust for toilet rooms, janitor’s closets, soiled utility rooms and similar spaces.
       2. Dedicated exhaust fans shall be provided for Pharmacy, Sterile Processing Service (SPS), Laboratory, Kitchen/Cafeteria areas, and similar specialized spaces.
    3. Cooling System
       1. Chillers shall employ multiple, independent refrigerant circuits, and shall have capacity control provisions to achieve at least 4 to 1 turndown.
       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.
       3. DX systems:
          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.
          2. Provide spring isolated mounting curbs for vibration attenuation, if applicable.
       4. Provide unit supported screen wall panels, if roof supported structural screen wall elements are not incorporated.
       5. Variable Refrigerant Flow (VRF) systems shall not be considered for VA CLC facility 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. Heating System
       1. When using hot water heating, system shall be generated by direct vent, sealed combustion, condensing type boilers.
       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.
    5. Humidification System
       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.
       2. Water treatment shall be provided for humidifier feedwater as required by the humidifier equipment manufacturer.
    6. HVAC Piping Systems
       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.
       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.
       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.
    7. Air Distribution and Duct Systems
       1. Duct construction shall be as follows:
          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.
          2. Ductwork shall be rectangular, round or flat oval constructed to SMACNA standards.
          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.
       2. Grilles, registers and diffusers shall be steel, aluminum or extruded aluminum with appropriate finish.
    8. HVAC Insulation Systems
       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.
    9. Testing, Adjusting and Balancing
       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.
       2. The balance contractor shall review all plans, components, access, etc. to ensure balancing activities may be successfully performed.
    10. Automatic Temperature Control Systems
        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).
        2. Dedicated thermal control zoning (thermostats) shall be provided for the following:
* each corner space,
* each conference room (or similar),
* each Resident Bedroom,
* typical blocks of rooms arranged together, every 3 exterior offices or other rooms, or every 4 interior offices or other rooms shall be permitted on a single zone.

*Additional Mechanical Requirements:*

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* 1. Plumbing
     1. General Criteria
        1. The SH Model DG requires compliance with the VA Plumbing Design Manual; however, for the leased CLC facility the VA Plumbing Design Manual shall be considered a reference, not a requirement.
     2. References
        1. The following publications shall be referenced for applicable systems calculations and design information:
           1. ASPE Handbooks
     3. Materials
        1. The VA Plumbing Design Manual and the SH Model DG should be used for general plumbing requirements, however materials used shall be in compliance with local codes and standards required of the AHJ.
     4. Plumbing Fixtures
        1. Laminar flow devices are required.
     5. Medical Gases and Vacuum
        1. All medical gas and vacuum systems required for the VA leased CLC shall be provided and installed per NFPA 99.

*Additional Plumbing Requirements:*

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* 1. Electrical
     1. General Criteria
        1. The SH Model DG requires compliance with the VA Electrical Design Manual; however, for the leased CLC facility the VA Electrical Design Manual shall be considered a reference, not a requirement.
     2. Essential Electrical System (EES)

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| This CLC facility is considered a Category 1/Category 2/Category 3/Category 4 facility. |

* + - 1. An EES shall be provided in compliance with NFPA 110, 70 and 99 for the listed category above.
      2. When required the EES is permitted to serve the loads listed below.
    1. Standby Generator requirements in the absence of a code required EES.
       1. Packaged Engine Generator
          1. An exterior 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.
          2. Engine: NFPA 37 compliant.
          3. Cooling System: Closed-loop, liquid-cooled, radiator mounted on generator set base.
          4. Fuel Tanks: 96 hour run time at full load sub-base tank.
          5. Engine Exhaust System: Critical silencing muffler.
          6. Combustion Air-Intake System: Filter type air intake silencer, intake duct and connections.
          7. Starting System: Electric with negative ground.
       2. Automatic Transfer Switches: 4-pole switches are required.
       3. The following loads shall be included:
          1. All medical refrigerators/freezers and safes used to store medication.
          2. laboratory refrigerators/freezers
          3. HVAC for clean rooms (RME storage)
          4. Requirements of the OI&T appendix.
          5. Nurse Call System
          6. Patient Bedrooms:

Bathroom light

Lavatory mirror light

Patient bed service wall receptacles

*Additional Electrical Requirements:*

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* 1. Lighting
     1. General Criteria
        1. 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. In Addition, the SH Model DG includes specific CLC requirements that shall be followed.
     2. Indoor Lighting Specifics
        1. For specific room lighting requirements above IESNA’s guidance, refer to the Room Data Matrix.
        2. Type A t-LED fixtures are prohibited.

*Additional Lighting Requirements:*

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* 1. Telecommunications
     1. Scope of Work
        1. The Lessor shall provide the following:
           1. Telephone cabling, pathways (conduit and cable tray), outlets, faceplates, terminal blocks, backboards, cable terminations and cable testing.
           2. Data cabling (fiber optic and copper), pathways (conduit and cable tray), outlets, faceplates, patch panels, server cabinets, network equipment racks, cable terminations and cable testing.
        2. The VA IT department will provide the following:
           1. Telephone System hardware and electronics such as voice mail servers and telephone handsets.
           2. Data network electronics such as concentrators, Ethernet switches, servers, PCs, Wireless Access Points and other electronic equipment.
     2. Pathways
        1. Boxes and Conduits
           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 ¾” conduit routed up to an accessible ceiling space.
        2. Sleeves
           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.
           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.
           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.
        3. Cable Support
           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.
           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.
           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. 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.
     3. Spaces
        1. Entrance Room (AKA Demarcation Point- Demarc)
           1. The Entrance 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.
           2. The minimum size of the Entrance Room shall be 80 sq. ft. with an additional 20 sq. ft. for every additional rack required.
           3. The Entrance Room shall be separate from other telecommunications spaces in the facility and accessible by the Lessor and Service Providers without requiring access to VA spaces.
           4. The room shall not be located directly below or adjacent to kitchens, laundries, rest rooms, showers, or other facilities where water service is provided.
           5. 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.
           6. 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.
           7. 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.
           8. 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.
           9. 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.
           10. Protective cages shall be installed on all water-based fire protection sprinkler heads located within the room.
           11. The Service Provider IT equipment installed in the Entrance 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.
        2. Network Support Center
           1. IT equipment and telecommunications support for the leased CLC facility is provided out of a Network Support Center that supports the operational requirements of the local facility. Information technology support that is not required to be local will be provided to the facility over the VA network.
           2. The Network Support Center is a centralized space for telecommunications and computer equipment that serves the entire leased CLC facility. Typical equipment includes phone switches, voice mail servers, video surveillance storage, and core Ethernet switches. The leased CLC facility shall have one Network Support Center.
           3. The location of the Network Support Center 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. The room shall not be located directly below or adjacent to kitchens, laundries, rest rooms, showers, or other facilities where water service is provided.
           5. 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 Network Support Center installation.
           6. The Network Support Center 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 Equipment Room and its functions.
           7. The Network Support Center shall have physical access control (card and PIN), door contacts for intrusion detection, a fixed or pan-tilt-zoom dual technology passive infrared security camera, and a motion sensor.
           8. The minimum size of the Network Support Center shall be based on the gross VA-occupied space at the CLC facility as follows:

Up to 50,000 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.

Greater than 250,000 sq. ft. shall be 270 sq. ft

* + - * 1. All the walls of the Network Support Center 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.
        2. Flooring materials shall be used that have antistatic properties.
        3. Three 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. 12” wide wire basket 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 Network Support Center.
        5. 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.
        6. The door shall be 36 inches wide and 96 inches high and fitted with a card reader security lock.
        7. Protective cages shall be installed on all water-based fire protection sprinkler heads located within the Equipment Room.
        8. The IT equipment installed in the Network Support Center 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 64-81 degrees Fahrenheit and relative humidity of 6-60 percent non-condensing on a 24-hour basis.
      1. Telecommunications Room (TR)
         1. There shall be at least one Telecommunications Room on each floor and in each physically separate building. 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.

The Telecommunications Room is not required to be dedicated to telecommunications purposes for the leased CLC facilities.

The Telecommunications Room must be securable and have physical access control (card and PIN), a fixed or pan-tilt-zoom dual technology passive infrared security camera, and a motion sensor.

* + - * 1. The Network Support Center may act as the Telecommunications Room for the building or floor where it is located.
        2. In the leased CLC facilities, Telecommunications Enclosures shall be used for horizontal cabling and other telecommunications system distribution. The Telecommunications Enclosure shall be located in the designated Telecommunications Room.
        3. Provide a standard 26U Telecommunications Enclosure for each 25,000 sq. ft. of space on each floor, located in a secured space that is not necessarily dedicated to telecommunications purposes. For reference, see Sheet 54 of 57 of the v4 Appendix B of the Infrastructure Standard for Telecommunications Spaces, [Typical TE Cabinet](https://www.cfm.va.gov/til/dguide/OIT-InfrastrucStdTelecomSpaces-AppxB.pdf#nameddest=Typical%20TE%20Cabinet).

The Telecommunications Enclosure shall have door contacts for intrusion detection on both the front and rear sections.

* + - * 1. The Telecommunications Room shall not be located directly below or adjacent to kitchens, laundries, rest rooms, showers, or other facilities where water service is provided.
        2. 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.
        3. 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. 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.
        5. The Telecommunications 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.
        6. 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.
        7. All of the walls of the Telecommunications Rooms shall be constructed from drywall deck to deck, not just from floor to suspended ceiling height. The wall of the Telecommunications Room where the Telecommunications Enclosure is mounted shall be covered with a sheet of 3/4-inch exterior AC grade flame retardant plywood and painted a high gloss white with two coats of fire-resistant paint.
        8. If a dedicated telecommunications space, the floor shall be covered with light colored anti-static luxury vinyl floor tile to reflect the room light and reduce dust.
        9. If a dedicated telecommunications space, 12” wide wire-basket cable tray shall be provided and supported from the structure above to support the horizontal and backbone communications cables through-out the Telecommunications Room.
        10. 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.
        11. The door shall be hinged to open outward and fitted with a card reader security lock.
        12. 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 64-80 degrees Fahrenheit and relative humidity of 30-55 percent non-condensing on a 24-hour basis.
    1. Telecommunications Bonding and Grounding
       1. Telecommunications Primary Bonding Busbar
          1. Each Entrance Room shall contain a Telecommunications Primary Bonding busbar for providing a central location for bonding all telecommunications equipment in the Entrance 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.
          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.
          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.
       2. Telecommunications Secondary Bonding Busbar
          1. Each Network Support Center 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.
          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.
          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.
       3. Telecommunications Rack Bonding Busbar
          1. Racks located in the Entrance Room and Network Support Center, as well as Telecommunications Enclosures (TEs) shall have a horizontal Rack Bonding Busbar installed in the top of the rack/cabinet in rear 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.
          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.
          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. Telecommunications Bonding Backbone Cable
          1. The Telecommunications Primary Bonding Busbar in the Entrance Room and Telecommunications Secondary Bonding Busbars in the Equipment 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.
          2. The building structural steel shall not be used as a replacement for the bonding backbone cable.
       5. Bonding of Cable Tray and Equipment
          1. Cable tray 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.
          2. Bonding of other telecommunications equipment in the Telecommunications Rooms or Network Support Center to the bonding busbars shall be executed as required by the equipment manufacturer.
    2. Equipment Racks and Equipment Cabinets
       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:
          1. Style: Channel
          2. Height: 84 inches, Width: 24 inches, Depth: 30 inches minimum.
          3. Equipment Mounting Width: 19 inches.
          4. Equipment Mounting Height: 45 RUs.
          5. Front and Rear rails: EIA threaded or Square Holes for cage nuts.
          6. Rail Marking: Rack unit markings present on front and rear rails starting at one RU at the bottom.
          7. Weight Capacity: 2,500 lbs. minimum.
          8. Cable Management: Built-in overhead water fall and cable management strap attachment points.
          9. Seismic bracing where required by Code.
          10. Provide rack PDU brackets.
          11. Color: White.
       2. Equipment Cabinets shall be installed in the Network Support Center for the housing of server/storage equipment meeting the following requirements:
          1. Style: Enclosed equipment cabinet with side panels and front and rear doors.
          2. Height: 84 inches, Width: 24 inches, Depth: 48 inches maximum with all doors and accessories installed.
          3. Equipment Mounting Width: 19 inches.
          4. Equipment Mounting Height: 45 RUs.
          5. Front and Rear rails: Square Holes for cage nuts. Toolless adjustable.
          6. Rail Marking: Rack unit markings present on front and rear rails starting at one RU at the bottom.
          7. Weight Capacity: 2,500 lbs. minimum.
          8. Front Door: Single perforated, minimum of 63% open.
          9. Rear Door: Single solid OR Split, perforated where vertical exhaust ducts cannot be implemented.
          10. Latches: Keyed lock upgradeable to keyless system compression latch.
          11. Top panel: Vertical exhaust duct (heat containment) and high-capacity cable access with brush grommets.
          12. Side Panel: Solid, Locking.
          13. Bottom Panel: Solid with high-capacity cable access with brush grommets or air dam foam.
          14. Seismic bracing where required by Code.
          15. Accessories: Zero U vertical single mount PDU brackets, castors for safe movement of cabinet, leveling legs, and air dam/sealing kit.
          16. Color: White.
       3. Telecommunications Enclosures (TEs) shall meet the following requirements:
          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.
          2. Filters shall be commercially widely available and initially provided with the TE.
          3. Environmentally controlled enclosures are acceptable.
          4. 24” minimum width to allow for power and telecommunications cabling management to the sides of rack-mounted equipment.
          5. 24RU in height or larger.
          6. Unit mounts to ¾” plywood backboard via 16” OC mounting for standard stud construction.
          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.
          8. Adjustable 19” EIA/TIA rack rails. Rear rail kits are required.
          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.
          10. 115V fans to remove heat generated in TE are required. Whether these are used as exhaust, intake, or both is not specified.
          11. Provide TEs with fiber distribution cabinets, fiber cassettes, UTP patch panels, horizontal cable management units, and shelves as required for the specific implementation.
    3. Power Distribution Units (PDUs) and Uninterruptable Power Supplies (UPSs)
       1. Equipment Rack/Cabinet 120/208 Volt PDUs for Entrance Rooms
          1. Input: 20 Amp Three-phase; 120/208V, L21-20P Plug.
          2. Circuit Breakers: 3 x 2 Pole 20 Amp Hydraulic Magnetic breakers.
          3. Receptacles: (30) C13 receptacles 208 Volt, (6) C19 receptacles 208 Volt, (2) 5-20 receptacles 120 Volt.
          4. IP and Serial monitoring.
          5. Ethernet, USB, and Environmental sensor ports.
          6. Mounting: Vertically on the rear rails of the rack.
          7. Quantity: Provide two (2) PDUs in each equipment rack in Entrance Rooms.
       2. Equipment Rack and Equipment Cabinet 120/208 Volt PDUs for Network Support Centers
          1. Input: 20 Amp Three-phase; 120/208V, L21-20P Plug.
          2. Circuit Breakers: 3 x 2 Pole 20 Amp Hydraulic Magnetic breakers.
          3. Receptacles: (30) C13 receptacles and (6) C19 receptacles, 208 Volt.
          4. IP and Serial monitoring.
          5. Ethernet, USB, and Environmental sensor ports.
          6. Mounting: Vertically on the rear rails of the rack.
          7. Quantity: Provide two (2) PDUs in each equipment rack and each equipment cabinet in Network Support Center.
       3. Equipment Rack and Equipment/Cabinet UPSs for Entrance Facility and Network Support Centers
          1. Input: 20 Amp Three-Phase; L21-20P Plug.
          2. Output: One (1) L21-20R receptacle
          3. Capacity: 5 kW
          4. Run time at full capacity: Minimum of 10 minutes.
          5. Mounting: Rack or Cabinet 19-inch TIA-310 mounting width.
          6. Quantity: Provide one (1) UPS in each equipment rack and each equipment cabinet in Entrance Facility and Network Support Centers.
       4. Equipment Rack and Equipment/Cabinet UPSs for TEs
          1. Input: 30 Amp single-phase L5-30P Plug.
          2. Output: One (1) L5-30R receptacle
          3. Capacity: 2 KW minimum
          4. Run time at full capacity: Minimum of 10 minutes.
          5. Mounting: Rack or Cabinet 19-inch TIA-310 mounting width.
          6. Quantity: Provide one (1) UPS in each Telecommunications Enclosure (TE).
       5. Zone Power Distribution Units (PDUs)
          1. Network Support Centers shall be provided with Zone PDUs used for power distribution to the rack mounted and cabinet mounted PDUs and UPSs.
          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.
          3. Output: Four (4) L21-20R receptacles.
          4. Quantity: One (1) Zone PDU for every two (2) equipment racks/cabinets.
          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.
       6. Equipment Rack and Equipment Cabinet 120 Volt PDUs for TEs
          1. Input: 30 Amp 120 Volt, NEMA L5-30P Plug.
          2. Receptacles: Minimum of eight (8) 5-15/20R receptacles.
          3. Mounting: Horizontal in Rack or Cabinet 19-inch TIA-310 mounting width.
          4. Quantity: Provide 2 horizontal rackmount PDUs when a Telecommunications Enclosure (TE) is specified.
    4. Telecommunications Infrastructure Plant (TIP)
       1. Horizontal Cabling
          1. Cable

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.

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.

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.

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

* + - * 1. Workstation Outlets

Each Category 6A horizontal cable shall be connected to category 6A RJ45 jacks at work area outlets.

Each Category 6A horizontal cable shall be connected to category 6A RJ45 plugs at wireless LAN outlets.

The pin configuration for each RJ45 jack shall conform to the TIA/EIA T568B standard.

Refer to room matrix for work area outlet locations/quantities.

One (1) wireless LAN outlet shall be provided for each 625 square feet of floor space.

The typical standard density work area outlets will consist of two RJ45 interfaces. This provided connectivity for one IP telephone and one workstation.

* + - * 1. Patch Cords

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

* + - * 1. Cable Termination Hardware

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.

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

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.

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.

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.

* + - 1. Backbone Cabling
         1. Cable
         2. The backbone cable from the Network Support Center to each Telecommunications Room shall consist of a minimum of one 25-pair Category 5e UTP copper cableand 12 strands of single-mode fiber optic cable.
         3. The backbone cable from the Entrance Room to the Network Support Center shall consist of a minimum of 100 pairs of Category 5e UTP copper cable and 12 strands of single-mode fiber optic cabling and terminations.
         4. Provide plenum rated cable above ceilings used as a return air plenum.
         5. Provide indoor armored fiber optic backbone cable or provide unarmored fiber optic backbone cable installed in inner duct.
         6. Copper Backbone Cable Termination Hardware

The Category 5e UTP copper backbone cable shall be connected, in the Telecommunications Rooms, to 24-port rack mounted patch panels. (48-port 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).

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.

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.

* + - * 1. Fiber Optic Backbone Cable Termination Hardware

The 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, Network Support Center, or Entrance Room. The high-density fiber distribution cabinets shall have the capacity to terminate a minimum of 144 strands of fiber optic cabling. (Flat fiber distribution cabinets may be used in Telecommunications Enclosures.)

All fiber optic backbone cable strands shall be terminated on fiber optic connectors. No fiber strands shall be left unterminated. Fusion splicing to the pigtails of splice cassettes is specified.

The fiber distribution panels shall be rack-mounted in the equipment racks. Wall mounted racks and/or wall mounted fiber distribution panels shall not be used.

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.

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.

* + - 1. Installation Requirements
         1. All cabling shall be installed without twists and kinks. Cables should not be looped around themselves or other objects.
         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.
         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. 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.
         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.
         6. Label the cables, equipment cabinets and equipment racks as indicated in the VA [Infrastructure Standard for Telecommunications Spaces](https://www.cfm.va.gov/til/spclRqmts.asp#TelecomInfraStds).
      2. Cable Testing
         1. Horizontal Cable

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.

Replace and retest any cables that fail to pass the performance requirements.

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.

The VA Project Manager shall be immediately notified if any horizontal cable fails due to link length.

* + - * 1. Backbone cable

Copper cable

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.

Replace and retest any cables that fail to pass the performance requirements.

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.

Fiber Optic cable

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.

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.

Test backbone links in both directions at both operating wavelengths 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.

Replace and retest any cables with fiber strand(s) that fail to pass the performance requirements.

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.

* + 1. Special Systems
       1. TV Distribution System
          1. The Lessor will provide the following: Video cabling, pathways (conduit and cable tray), outlets, faceplates, amplifiers, splitters, backboards, cable terminations and cable testing.
          2. The VA will provide the following: Video recorders, video signal processors, and Monitors.
          3. 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.

Splitters and amplifiers shall be located in the Network Support Center and Telecommunications Rooms.

Locations: Refer to the SH Model DG.

* + - 1. Nurse Call
         1. Refer to the SH Model DG for Nurse Call requirements.
         2. Provide UL1069 nurse call system.
         3. Nurse Call equipment shall be located in Network Support Center and Telecommunications Rooms.
         4. Locations of devices, lights, and stations: Refer to the SH Model DG.
      2. Access Control System
         1. The Lessor shall design, install, and maintain an Access Control System for the facility IAW the Facility Security Level.
         2. Access Control equipment shall be located in Network Support Center and Telecommunications Rooms.
         3. Locations: Refer to the FSL Appendix.
      3. Video Surveillance System (VSS)
         1. The Lessor shall design, install, and maintain VSS for the facility IAW the Facility Security Level.
         2. VSS equipment shall be located in Network Support Center and Telecommunications Rooms.
         3. Locations: Refer to the FSL Appendix
      4. Intrusion Detection System (IDS)
         1. The Lessor shall design, install, and maintain an Intrusion Detection System for the facility IAW the Facility Security Level.
         2. IDS equipment shall be located in Network Support Center and Telecommunications Rooms.
         3. Locations/Partitions: Refer to the FSL Appendix.
      5. Duress Alarm
         1. The Lessor shall design, install, and maintain a Duress Alarm System for the facility IAW the Facility Security Level.
         2. Duress Alarm equipment shall be located in Network Support Center and Telecommunications Rooms.
         3. Locations: Refer to the FSL Appendix.
      6. Public Address (PA):
         1. 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 facility. 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 Houses, Neighborhoods and Community Centers listed in the PFD. Review zones with the government during design. The head-end equipment for the public address system shall reside within the Network Support Center and Telecommunications rooms.
      7. Intercommunication System
         1. Provide intercommunications system(s) and cabling as required. Intercom system shall be located at the loading dock in view of VSS 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.
      8. Wireless Communications
         1. The VA space shall be served by two (2) separate wireless networks. The Guest Wi-Fi and VA Wi-Fi networks are separate.
         2. 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 celling 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.
         3. 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.

# 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.