



**US Army Corps  
of Engineers**®  
Fort Worth District

**DEPARTMENT OF THE ARMY  
FACILITIES  
STANDARDIZATION  
PROGRAM**

**UNACCOMPANIED  
PERSONNEL HOUSING  
(UPH)**

**STANDARD  
DESIGN**

November 2023

## UPH Standard Design Guidance

### General TECHNICAL REQUIREMENTS

This contains technical requirements with general applicability to Army facilities. See also Part 2 for facility type-specific operational, functional, and technical requirements. Residential or similar grade finishes and materials are not acceptable for inclusion in these buildings, unless otherwise specifically allowed.

#### 1.1.1.1 SITE PLANNING AND DESIGN

- 1.1.1.1.1 Site Planning Objectives: Group buildings in configurations that create a sense of community and promote pedestrian use. See Part 2 for additional site planning requirements relating to building functions. The proposed building will be located within site extents shown in this document. Site plans and building footprint/shape shown in this Statement of Work are "concept only" for the purposes of RFP development and cost estimating. Site design to promote walkability, transportation efficiency and reduce vehicle distances traveled.
- 1.1.1.1.2 Enclosures and Visual Screens: Provide enclosures and or visual screening devices for Outdoor Utility such as dumpsters, emergency generators, fuel tanks, transformers, heating, ventilation, and air conditioning units from streetscape and courtyard views to limit visual impact. Enclosures must be compatible with the building they serve and accessible by the appropriate vehicle. The location of dumpsters can have a significant visual impact and should be addressed as part of an overall building design and incorporated in site planning.
- 1.1.1.1.3 Dumpster Pads: Where included in the project, dumpster pads must be concrete (minimum of 8-inches thick on 4-inch base course, unless site conditions dictate more conservative requirements) and directly accessible by way of a paved service drive or parking lot with adequate overhead clearance for collection vehicles. Provide space at dumpster areas for recycling receptacles. Coordinate with Installation on recycling receptacle types, sizes and access requirements and provide space at dumpster areas to accommodate them.
- 1.1.1.1.4 Vehicular Circulation: Provide vehicle clearances required to meet traffic safety for emergency vehicles, service vehicles, and moving vans. Provide required traffic control signage Site entrances and site drive aisles must maximize spacing between drives, incorporate right-angle turns, and limit points of conflict between traffic. Orient service drives to building entrances other than the primary pedestrian entry at the front of the building.

#### 1.1.1.2 SITE ENGINEERING

- 1.1.1.2.1 Pavement Requirements: Except in Department of Energy (DOE) Climate Zones 6, 7, and 8, meet International Green Construction Code, Section 5.3.5.1. If the project is located in DOE Climate Zones 6, 7, or 8, design procedures and materials must conform to one of the following: 1) the USACE Pavement Transportation Computer Assisted Structural Engineering (PCASE) program, 2) American Association of

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State Highway and Transportation Officials (AASHTO) or, 3) the applicable state Department of Transportation standards in which the project is located. The Government Geotechnical Report appended is for information purposes only. The recommendations and requirements provided in the Government Geotechnical Report must be met or exceeded. See Section 01 33 16.00 10 for required information for the Contractor's geotechnical evaluation report. The minimum flexible pavement section must consist of 2 inches of asphalt and 6 inches of base or as required by the pavement design, whichever is greater, unless specifically identified by the Government to be a gravel road. Design roads and parking areas for a life expectancy of 25 years with normal maintenance. Parking area for tactical vehicles (as applicable to the project) must be Portland Cement Concrete (PCC) rigid pavement design. For concrete pavements, submit joint layout plan for review and concurrence. Design pavements for military tracked vehicles (as applicable to the project) IAW USACE PCASE. Traffic estimates for each roadway area will be as shown on the drawings or listed in Section 01 10 00 Paragraph 6.4.4. Pavement markings and traffic signage in all DOE Climate Zones must comply with the Installation requirements and with the Manual on Uniform Traffic Control Devices. Develop a Transportation Management Plan that meets the requirements of International Green Construction Code.

- 1.1.1.2.2 Sidewalks: Design the network of walks throughout the complex (where applicable) to facilitate pedestrian traffic among facilities and minimize the need to use vehicles. Incorporate sidewalks to enhance the appearance of the site development, while creating a sense of entry at the primary patron entrances to the buildings. Minimum sidewalk requirements are in Part 2, where applicable and/or Part 3 and/or site plans, where applicable.

### 1.1.1.3 PERMITS

The CONTRACTOR will obtain all permits (local, state, and federal) required for design and construction of all site features and utilities.

### 1.1.1.4 ARCHITECTURE AND INTERIOR DESIGN

- 1.1.1.4.1 General: Overall architectural goal is to provide a functional high-quality and visually appealing facility that meets expected usable life standards generating a source of pride for the installation and be delivered within the available budget and schedule.
- 1.1.1.4.2 Computation of Areas: The procedures for calculation of building area measurements for compliance with the total scope limitations of Paragraph 3 of this document must follow UFC 3-101-01, Section 2-2, Building Area Calculations. The total gross square footage in Paragraph 3 must not be exceeded based on these calculations. The procedures for calculating building area for any other criteria must follow the procedures as defined in those criteria (e.g. building/life safety code compliance, LEED calculations, etc.). The procedures for calculation of building area measurements for specialized facilities such as Medical Facilities, Military Family

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Housing, or Unaccompanied Enlisted Personnel Housing are defined in their respective Unified Facility Criteria.

1.1.4.3 Building Exterior: Design buildings to enhance or compliment the visual environment of the Installation and reflect a human scale to the facility. Building entrance should be architecturally defined and easily seen. Exterior materials, roof forms, and detailing must be compatible with the surrounding development and adjacent buildings on the Installation and follow locally established architectural themes. Use durable materials that are easy to maintain. Exterior material(s) colors must conform to the Installation requirements and if brick or stone, have color that is throughout the material. See Paragraph 6 for project specific requirements.

1.1.4.4 Building Numbers: Permanently attach exterior signage on two faces of each building indicating the assigned building number or address.

### 1.1.5 BUILDING INTERIOR

#### 1.1.5.1 Surfaces and Color:

1.1.5.1.1 Surfaces: Appearance retention is the top priority for building and furniture related finishes. Provide low maintenance, easily cleaned room finishes that are commercially standard for the facility occupancy specified, unless noted otherwise. In daylight zones, meet the requirements of International Green Construction Code.

1.1.5.1.2 Color: The color, texture, and pattern selections for the finishes of the building must provide an aesthetically pleasing, comfortable, easily maintainable, and functional environment for the occupants. Coordinate the building colors and finishes for a cohesive design. Select colors appropriate for the building type. Use color, texture and pattern to path or way find through the building. Trendy colors that will become dated must be limited to non-permanent finishes such as carpet and paint. Select finishes with regards to aesthetics, maintenance, durability, life safety and image. Limit the number of similar colors for each material. Use medium range colors for ceramic and porcelain tile grout help hide soiling. Plastic laminate and solid surface materials must have patterns that are mottled, flecked, or speckled. Coordinate finish colors of fire extinguisher cabinets, receptacle bodies and plates, fire alarms / warning lights, emergency lighting, and other miscellaneous items with the building interior. Match color of equipment items on ceilings (speakers, smoke detectors, grills, etc.) to the ceiling color.

1.1.5.1.3 Signage: A comprehensive interior plan must be from one manufacturer. Include the following sign types: (1) Lobby Directory, (2) Directional Signs; (3) Room Identification Signs; (4) Building Service Signs; (5) Regulatory Signs; (6) Official and Unofficial Signs (7) Visual Communication Boards (8) NO SMOKING signage that conveys building smoking policy. Use of emblems or logos may also be incorporated into the signage plan.

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1.1.5.1.4 Window Treatment: All exterior windows and interior windows are to receive either blinds, mini- blinds or roller shades in a color selected by the architect from the manufacturer's standard range of colors. Color must compliment building's design theme. Maintain uniformity of treatment color and material to the maximum extent possible within a building.

### 1.1.6 COMPREHENSIVE INTERIOR DESIGN

1.1.6.1 SID and FF&E: Comprehensive Interior Design includes the integration of a Structural Interior Design (SID) and a Furniture, Fixtures and Equipment (FF&E) design and package. SID requires the design, selection and coordination of interior finish materials that are integral to or attached to the building structure. Completion of a SID involves the selection and specification of applied finishes for the building's interior features including, but not limited to, walls, floors, ceilings, trims, doors, windows, window treatments, built-in furnishings and installed equipment, lighting, and signage. The SID package includes finish schedules, finish samples and any supporting interior elevations, details or plans necessary to communicate the building finish design and build out. The SID also provides basic space planning for the anticipated FF&E requirements in conjunction with the functional layout of the building and design issues such as life safety, privacy, acoustics, lighting, ventilation, and accessibility. See Section 01 33 16.00 10 for SID design procedures.

1.1.6.2 FF&E Package: A Furniture, Fixtures & Equipment package is required for this project.

### 1.1.7 STRUCTURAL DESIGN

1.1.7.1 General: The structural system must be compatible with the intended functions and components that allows for future flexibility and reconfigurations of the interior space. Do not locate columns, for instance, in rooms requiring visibility, circulation or open space, including, but not limited to entries, hallways, common areas, classrooms, etc. Select an economical structural system based upon facility size, projected load requirements and local availability of materials and labor. Base the structural design on accurate, site-specific geotechnical information and anticipated loads for the building types and geographical location. Consider climate conditions, high humidity, industrial atmosphere, saltwater exposure, or other adverse conditions when selecting the type of cement and admixtures used in concrete, the concrete cover on reinforcing steel, the coatings on structural members, expansion joints, the level of corrosion protection, and the structural systems. Analyze, design and detail each building as a complete structural system. Design structural elements to preclude damage to finishes, partitions and other frangible, non-structural elements to prevent impaired operability of moveable components; and to prevent cladding leakage and roof ponding. Limit deflections of structural members to the allowable of the applicable material standard, e.g., ACI, AISC, Brick Industry Association, etc. When prefabricated construction is used or combined with wood construction, fully coordinate, and integrate the overall structural design between the

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two different or interfacing construction types. Modular Construction is prohibited. Wood construction is prohibited above 4 stories. All wall and floor structural members must be constructed of non-combustible materials. There must be no load bearing walls between the exterior wall and the interior corridor in any Unaccompanied Housing (barracks) to allow for future reconfiguration of the room modules. All wet areas, such as bathrooms, kitchens, laundry, corridors, pipe chases, etc., must have water resistant floor and wall assemblies. If the state that the project is located in requires separate, specific licensing for structural engineers (for instance, such as in Florida, California, and others), then the structural engineer designer of record must be registered in that state.

- 1.1.1.7.2 Termite Treatment And Green Cleaning: Provide termite prevention treatment in accordance with Installation and local building code requirements, using licensed chemicals and licensed applicator firm.

### 1.1.1.8 THERMAL PERFORMANCE

- 1.1.1.8.1 Air Barrier: The air barrier must be durable to last the anticipated service life of the assembly. Provide a motorized damper in the closed position and connected to the fire alarm system to open on call and fail in the open position for any fixed open louvers at elevator shafts. Coordinate the motorized elevator hoist way vent damper(s) with the Fire Protection System design. Ensure that the damper(s) is accessible to facilitate regular inspection and maintenance.
- 1.1.1.8.2 Thermal Bridge. A Thermal Bridge (or cold bridge) occurs when a thermally conductive material (such as a metal stud, steel frame or concrete beam, slab, or column) penetrates or bypasses the exterior insulation system. Design the building envelope to align all insulating elements, i.e., the continuous wall insulation, insulated glazing, insulated doors from top of footing to bottom of roof deck. Wrap insulation around roof overhangs. Disconnect window and door sills from interior construction. Utilize thermally broken window and door frames. Provide details to eliminate or substantially reduce thermal bridges particularly at floor slabs, roof/wall intersections, relief angles, and building corners. Loose steel lintels are not thermal bridges, and through-wall flashing is not a significant thermal bridge.
- 1.1.1.8.3 Damper and Control: Close all ventilation or make-up air intakes and exhausts, etc., when leakage can occur during inactive periods. Atrium smoke exhaust and intakes must only open when activated per IBC and other applicable Fire Code requirements.
- 1.1.1.8.4 Spaces Under Negative Pressure: Compartmentalize spaces under negative pressure such as boiler rooms and provide make-up air for combustion.

### 1.1.1.9 PLUMBING AND WATER CONSUMING EQUIPMENT

- 1.1.1.9.1 Precautions For Expansive Soils: Where expansive soils are present, include design features for under-slab piping systems and

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underground piping serving chillers, cooling towers, etc., to control forces resulting from soil heave. Some possible solutions include, but are not necessarily limited to, features such as flexible expansion joints, slip joints, horizontal offsets with ball joints, or multiple bell and spigot gasketed fittings. For structurally supported slabs, suspend piping from the structure with adequate space provided below the pipe for the anticipated soil movement.

- 1.1.1.9.2 Janitor Closets: In janitor spaces/room/closets, provide at minimum, a service sink with heavy duty shelf and wall hung mop and broom rack(s).
- 1.1.1.9.3 Floor Drains: As a minimum, provide floor drains in mechanical rooms and areas, janitor spaces/rooms/closets and any other area that requires drainage from fixtures or equipment, drain downs, condensate, as necessary.
- 1.1.1.9.4 Drinking Fountains: All drinking water fountains must include water bottle filling features and it must be filtered.
- 1.1.1.9.5 Drainage Systems: Do not use engineered vent or Sovent® type drainage systems.
- 1.1.1.9.6 Pipe Location and Insulation: Where the seasonal design temperature of the cold water entering a building is below the seasonal design dew point of the indoor ambient air insulate plumbing piping with a vapor barrier type of insulation to prevent condensation. Do not locate water or drainage piping over electrical wiring or equipment unless adequate protection against water (including condensation) damage is provided. Insulation alone is not adequate protection against condensation.
- 1.1.1.9.7 Pipe Protection During Construction: Cover all drain, waste, and vent piping to prevent mortar or other debris during such construction activities.

### 1.1.1.10 ELECTRICAL AND TELECOMMUNICATIONS SYSTEMS

- 1.1.1.10.1 Materials And Equipment: Wiring for branch circuits must be copper. Motors larger than one-half horsepower must be 3-phase. All electrical systems must be pre-wired and fully operational unless otherwise indicated. Wall mounted electrical devices (power receptacles, communication outlets and CATV outlets) must have matching colors, mounting heights and faceplates.
- 1.1.1.10.2 Power Service: Primary service from the base electrical distribution system to the pad-mounted transformer and secondary service from the transformer to the building service electrical equipment room must be underground.
- 1.1.1.10.2.1 Spare Capacity: Provide a minimum of 15% spare circuit breakers and 15% spare load capacity at all levels of the distribution.
- 1.1.1.10.3 Telecommunication Service: Connect the project's facilities to the Installation telecommunications (voice and data) system through the

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outside plant (OSP) telecommunications underground infrastructure cabling system per the USAISEC Outside Plant Design Criteria. Connect to the OSP cabling system from each facility main cross connect located in the telecommunications room.

### 1.1.11 TELECOMMUNICATION SYSTEM

- 1.1.11.1 An acceptable Building telecommunication cabling systems (BCS) encompasses, but is not limited to, copper and fiber optic (FO) entrance cable, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, workstation outlets, racks, cable management, patch panels, cable tray, cable ladder, conduits, grounding, and labeling. Items included under OSP infrastructure encompass, but are not limited to, manhole and duct infrastructure, copper cable, fiber optic cable, cross connects, terminations, cable vaults, and copper and FO entrance cable.
- 1.1.11.2 Testing: Design, install, label, and test all telecommunications systems in accordance with the USAISEC Outside Plant Design Criteria and ANSI/TIA/EIA 568, 569, and 606 standards. A Building Industry Consulting Services International (BICSI) Registered Communications Distribution Designer (RCDD) with at least 2 yrs. related experience must develop and stamp telecommunications design, and prepare the test plan.
- 1.1.11.3 Installation: The installers assigned to the installation of the telecommunications system or any of its components must be regularly and professionally engaged in the business of the application, installation and testing of the specified telecommunications systems and equipment. Key personnel: i.e., supervisors and lead installers assigned to the installation of this system or any of its components must be BICSI Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification for each of the key personnel. In lieu of BICSI certification, supervisors and installers must have a minimum of 5 years of experience in the installation of the specified copper and fiber optic cable and components. They must have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products.
- 1.1.11.4 End to End Test: Perform a comprehensive end to end test of all circuits to include all copper and fiber optic cables upon completion of the BCS and prior to acceptance of the facility. Provide adequate advanced notification to the COR to allow COR and Installation personnel attendance. The BCS circuits include but are not limited to all copper and fiber optic (FO) entrance cables, termination equipment, copper and fiber backbone cable, copper and fiber horizontal distribution cable, and workstation outlets. Test in accordance with ANSI/EIA/TIA 568 standards. Use test instrumentation that meets or exceeds the standard. Submit the official test report to include test procedures, parameters tested, values, discrepancies, and corrective actions in electronic format. Test and accomplish all necessary corrective actions to ensure that the government receives a fully operational, standards based, code compliant telecommunications system.



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### 1.1.12 FIRE PROTECTION

- 1.1.12.1 Inspection And Testing: Inspect and test all fire suppression equipment and systems, fire pumps, fire alarm and detection systems and mass notification systems in accordance with the applicable NFPA standards. The fire protection engineer of record must witness final tests. The fire protection engineer of record must certify that the equipment and systems are fully operational and meet the contract requirements. Two weeks prior to each final test, the contractor must notify, in writing, the installation fire department and the installation public work representative of the test and invite them to witness the test.

Fire Alarm and Detection System: Required fire alarm and detection systems must be the addressable type. Fire alarm initiating devices, such as smoke detectors, heat detectors and manual pull stations must be addressable. When the system is in alarm condition, the system must annunciate the type and location of each alarm initiating device. Sprinkler water flow alarms must be zoned by building and by floor. Supervisory alarm initiating devices, such as valve supervisory switches, fire pump running alarm, low-air pressure on dry sprinkler system, etc. must be zoned by type and by room location.

## PART 2 PRODUCTS - FACILITY REQUIREMENTS - UNACCOMPANIED ENLISTED PERSONNEL HOUSING (UPH)

### 2.1 GENERAL REQUIREMENTS:

- 2.1.1 FACILITY DESCRIPTION: The design must comply with the Army Standard for the facility. The Army Standard Design for Unaccompanied Enlisted Personnel Housing (UPH) is provided in Attachment - J Drawings. The Army requires an apartment complex of 4/2 module layout comprised of four-bedroom, two-bath dwelling units with kitchen and living room similar in features, standards and layout to apartment complexes in the surrounding community. Industry standards apply except where military standards are required to meet specific operational needs. Use appropriate methods and materials for occupancy to achieve economy while not sacrificing durability. The facility must not exceed **five-stories**. Building circulation is required to be through the use of interior corridors/breezeways, where circulation is minimized. When there is shared access to units through a single entrance and a set of hallways, building circulation must be through the use of interior corridors. Breezeways and exterior entry landings must be designed to prevent snow and ice infiltration and accumulation. Barracks must not have windows opening to an exterior corridor or landings that are accessible to common traffic areas. Exterior egress balconies are prohibited. Building spaces and areas are as indicated in the text below. Coordinate the site design with the building described in this Section. Specific site requirements that affect the design and construction of the site appear in 01 10 00-3.0

### 2.1.2 FACILITY RELATIONSHIPS: (NOT USED)

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### 2.1.3 ACCESSIBILITY REQUIREMENTS:

GENERAL: Able-bodied soldiers occupy and manage UPH facilities. The Architectural Barriers Act (ABA) requirements does not apply to UPH facilities, except as follows:

#### 2.1.3.1 SITE PLAN DESIGN AND CONSTRUCTION

(a) Provide ABA compliant access from the parking lot to the building.

(b) <PARKING\_256\_LESS>Provide two (2) ABA compliant vehicle parking stalls for each barracks building for visitor parking. </PARKING\_256\_LESS> <PARKING\_256\_512> Provide four (4) ABA compliant vehicle parking stalls for each barracks building for visitor parking, </PARKING\_256\_512> <PARKING\_512\_MORE> Provide a total of five (5) ABA compliant vehicle parking spaces for each barracks building. </PARKING\_512\_MORE>

(c) Provide handicapped vehicle parking signage and pavement markings.

#### 2.1.3.2 FACILITY DESIGN AND CONSTRUCTION

(a) The main building entrance on the ground level and at least one emergency egress, designed in accordance with applicable code, must be handicapped accessible. Electronic exterior door openers with push button control are required for handicapped accessibility.

(b) Provide ABA clearances and door accesses in the building main entry vestibule being used by visitors.

(c) If a lobby is required by the RFP, provide a handicapped accessible drinking fountain and public toilet(s), which may be unisex, in the lobby area.

### 2.1.4 BUILDING AREAS:

GENERAL: Calculate building areas in accordance with 011000-Par 2-GENERAL TECHNICAL section 2.4.4 COMPUTATIONS OF AREAS. Overall building gross area and gross square feet per occupant must be in accordance with the Army Standard and with section 2.2.1 FUNCTIONAL SPACES below.

#### 2.1.5 ADAPT BUILD MODEL: (NOT USED)

### 2.2 FUNCTIONAL AND OPERATIONAL REQUIREMENTS:

#### 2.2.1 FUNCTIONAL SPACES

##### 2.2.1.1 PRIMARY SPACES

##### 2.2.1.1.1 Dwelling Units:

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- (a) Bedroom: Each dwelling unit must have four bedrooms, each with a minimum net area of 140 square feet. Bedrooms must be equal in size and similar in configuration. Provide a minimum width of 10'-0" in the bedroom. Configure the bedroom area and the walk-in closet to maximize the amount of usable space. Bedroom must be able to accommodate one bed, chest of drawers, nightstand, desk and chair with adequate circulation for one occupant and must have a walk-in closet directly adjacent.

Walk-in-Closets: Provide each walk-in closet with a net area of 32 square feet and provide with hanger rods and shelves of solid steel or wood. Provide each closet door with a robe hook and full-length mirror. Provide mortised door hasps on closed door.

- (b) Kitchen: Each dwelling unit must have a full kitchen with adequate space and circulation to accommodate a full-size refrigerator 28 inches wide, ~~<UPH\_RANGE>~~an electric oven/~~induction range~~, with a built-in vent hood, a microwave oven on the counter or shelf. ~~</UPH\_RANGE><UPH\_FOURBURNER>~~a built-in electric four burner induction cooktop with a built-in vent hood and convection microwave oven on the counter or shelf~~</UPH\_FOURBURNER>~~, wall cabinet system with built-in countertop lighting under cabinets and countertops for food storage and preparation. Provide utility connections and casework to accommodate appliances listed in 3.19.2 Residential Appliances. Provide area for recyclables receptacle and kitchen waste receptacle.

- (c) Bathroom: Each dwelling unit must have two full bathrooms. Including a tub/shower enclosure and separate vanities with storage below. The tub/shower enclosure must include a water closet and tub/shower combo. Tub/shower walls must be solid surface material. Panels must be full width and full height, with seams occurring only at the inside corners and center of bathtub, if necessary. Configure the vanity area to provide a wing wall on each side of the vanity. Provide one recessed mounted medicine cabinet on each wing wall of the vanity, and one full-width mirror on the back wall. Center the lavatory and light fixture between the two recessed mounted medicine cabinets.

- (d) Dwelling Laundry: Provide dwelling unit laundry area in the kitchen and size to accommodate full-size side by side residential washers and dryers.

- (e) Living Room: Provide a living room for each apartment module in accordance with the required floor plans in Appendix J with seating for four. Provide a minimum width of 10'-0" in the living room.

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### 2.2.1.2 COMMON AREAS

#### 2.2.1.2.1 Lobby: Lobby must meet the ABA Accessibility Requirements Guidelines stated in 2.1.3 above.

- (a) CQ Station: Locate CQ station within the Lobby. Provide a net area of 70 square feet consisting of a built-in reception ABA compliant counter for visitors with space for two task chairs.

#### 2.2.1.2.2 Toilet(s): Provide a single unisex public toilet, that must be located adjacent to the lobby area and must comply with the ABA accessibility requirements.

#### 2.2.1.2.3 Entrances: Provide 10'-0" long entryway systems walk-off mats at exterior/interior building entrances. Provide 'No Smoking' signage within 10'-0" of building entrances.

#### 2.2.1.2.4 Vestibule: Provide an enclosed transition space between the exterior and the lobby or building interior. Provide a minimum of 10 feet clearance between interior and exterior doors.

#### 2.2.1.2.5 Corridors: Corridors must have a minimum width no less than 5'-0" and a maximum of 6'-0".

#### 2.2.1.2.6 Janitor Closet: Provide a minimum of one Janitor Closet per floor, with a minimum area of 30 square feet. Provide each Janitor closet with a mop sink, mop rack, and space for buckets, vacuum and storage for janitorial supplies. Where hazardous gases or chemicals are present, provide a minimum of 0.50 cfm per square foot to create negative pressure with respect to adjacent spaces when doors to Janitor's closet(s) are closed. Provide and install self-closing doors and deck-to-deck partitions or hard-lid ceilings.

#### 2.2.1.2.7 Mechanical, Electrical, and Telecommunications Rooms: Mechanical rooms must accommodate space for equipment maintenance/repair access without having to remove other equipment. Size corridor HVAC access doors for ease of service and maintenance of HVAC units. Filter changes and preventative maintenance must be performed without requiring access to the dwelling units. First floor exterior access is required for centralized mechanical and electrical rooms.

#### 2.2.1.2.8 Mail Access Area: ~~UPH MAIL NOT~~Not Used ~~UPH MAIL NOT~~~~UPH OUTDOOR MAIL KIOSK~~Design and construct a mail access area as part of this project. Mail access area must include one USPS-approved combination lock mailbox per resident, and a minimum of one USPS-approved two-key parcel locker per 40 residents. Coordinate the numbering sequence with the user for the Outdoor mail kiosk.~~UPH OUTDOOR MAIL KIOSK~~~~UPH OUTSIDE MAIL CONDO~~Design and construct a mail access area as part of this project. Mail access area must include one USPS-approved combination lock mailbox per resident, and a minimum of one USPS-approved two-key parcel locker per 40 residents. Coordinate the numbering sequence with the user for the ~~outside condo style personal~~ ~~mailboxes.~~~~UPH OUTSIDE MAIL CONDO~~~~UPH INSIDE MAIL CONDO~~Design and

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construct a mail access area as part of this project. Mail access area must include one USPS-approved combination lock mailbox per resident, and a minimum of one USPS-approved two-key parcel locker per 40 residents. Coordinate the numbering sequence with the user for the *inside condo style personal mailboxes.*  
</UPH\_INSIDE\_MAIL\_CONDO>

- 2.2.1.2.9 **Vending Area:** Provide a minimum of one vending area centrally located on each floor of the facility. Size each Vending Area to accommodate one ice cube machine-dispenser designed for hotel ice bucket filling and two full-size vending machines per 80 - 100 residents. Locate vending area on the first floor near the CQ and on other floors in a central location that is easily monitored.
- 2.2.1.2.10 **Recyclables Storage:** Provide recyclables storage areas as required by the stated sustainability requirements in Part 1.1 References.
- 2.2.1.2.11 **Boot Scraper/Brush Station:** Provide one cast iron, dry boot scraper station at the main building entrance. The station must be equipped with three boot scrapers/brushes.
- 2.2.1.2.12 *<UPH\_MUDROOM>* **Mudroom:** Provide an enclosed centralized location close to main building entry, with direct exterior access for soldiers to rinse mud off TA-50 field gear, boots and clothing before laundering. Provide one rinsing station per 30 persons. Provide each rinsing station with a utility sink and a hosed hot and cold running water faucet.  
</UPH\_MUDROOM>  
*<UPH\_BOOTWASH>* **Boot wash:** Provide outdoor areas for soldiers to rinse mud off field gear, boots and clothing before laundering. Provide one rinsing station per 30 persons, or a minimum of one boot wash area close to each entrance, whichever is greater. Provide each rinsing station with a pedestal mounted, hosed cold water faucet or hydrant. Faucet or hydrant must be non-freeze type.  
</UPH\_BOOTWASH>
- 2.2.1.2.13 **Centralized Laundry:** Provide at least one washer and one dryer near CQ desk for use by residents when module washer and/or dryer is not operational.
- 2.2.1.2.14 **Day Rooms:** Include a lounge and gaming room near the CQ Station in accordance with floor plans shown in Appendix J.
- 2.2.1.2.15 **Fitness Room:** Provide a fitness room near the CQ Station similar to a hotel in accordance with floor plans shown in Appendix J.

## 2.3 SITE FUNCTIONAL REQUIREMENTS

### 2.3.1 PARKING

- 2.3.1.1 **Privately Owned Vehicle (POV) Parking:** Design and construct the POV parking, within the designated construction area. Base the location and design of the POV parking area(s) on the Installation's site constraints. Provide POV parking spaces IAW UFC 3-201-01, Table A-2. ACCESS DRIVES AND LANES.

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- 2.3.1.2 **Access Drives:** Provide access drives to each building with a minimum width of 10 feet. Design and construct drives with curb and gutter when necessary for drainage purposes.
- 2.3.1.3 **Emergency Vehicle/Fire Access Lanes:** Provide fire access lanes. Drives designed to support emergency vehicle traffic must be a minimum of 20 feet wide in accordance with NFPA requirements. Design the fire access lanes in accordance with NFPA 1, UFC-3-600-01, and the installation's requirements.

### 2.4 SITE AND LANDSCAPE REQUIREMENTS

#### 2.4.1 SITE STRUCTURES

- 2.4.1.1 **Dumpster/Recycle Area:** Locate, design, and construct the dumpster/recycle enclosure area(s) and screening. Dumpster/recycle screening must be aesthetically and architecturally compatible with the building it serves and must be designed in accordance with the Installation's guidelines. Position the GFGI dumpsters outside of restricted areas to allow for servicing activities.

#### 2.4.2 LANDSCAPING/HARDSCAPING

- 2.4.2.1 **Non-Vehicular Walks:** Construct non-vehicular pedestrian sidewalks of Portland cement concrete having a minimum nominal thickness of 4 inches. Design joint patterns uniformly, symmetrical, and in accordance with the American Association of State Highway and Transportation Officials (AASHTO) standards. For joints, do not exceed the length to width ratio of 1.25 for non-reinforced pavements. Construct walks paralleling buildings beyond the eave drip line and at least 5 feet from the foundation.
  - (a) **Pedestrian Sidewalks:** Provide pedestrian walks within the designated construction area and connect to existing sidewalks, where applicable. Sidewalks must be a minimum of 6 feet wide. Provide pedestrian walks within the designated construction area and connect to existing sidewalks, where applicable. Sidewalks must be a minimum of 6 feet wide.
- 2.4.2.2 **Roadway Pavement:** Sidewalks designed to support emergency and service vehicle traffic must be considered roadway pavements and must be designed to meet the AASHTO standards. Construct vehicular supported walks of Portland cement concrete having a minimum nominal thickness of 7 inches. Design joints uniformly, symmetrical, and in accordance with AASHTO standards. Do not exceed the length to width ratio of 1.25 for non-reinforced pavements. Sidewalks designed to support emergency and service vehicle traffic must have minimum widths as stated in 2.3.1.2 Access Drives and Lanes.

### 2.5 ARCHITECTURAL REQUIREMENTS

- 2.5.1 **GENERAL:** Do not use exterior materials that require periodic repainting or similar refinishing processes. Material exposed to weather must be factory pre-finished, integrally colored or provided with intrinsic weathering finish.

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### 2.5.2 WALLS:

2.5.2.1 **Exterior Walls:** Where Exterior Insulation and Finish Systems, or EIFS (if found life-cycle-cost-effective per UFC 3-101-01), another material except CMU, or other Masonry material is used as exterior finish material, it must be in conjunction with a Masonry wainscot. Masonry units must be tested for efflorescence. Efflorescence testing must conform to the provisions of ASTM C 67. CMU construction must comply with the provisions of ASTM C 1400.

2.5.3 **MOLD AND MILDEW:** The Designer of Record must provide details in the design analysis and design showing steps taken to mitigate the potential growth of mold and mildew in the facility. Perform a wall and roof construction moisture analysis to verify appropriate thermal insulation and vapor permeability retardant assemblies to prevent condensation within the wall and roof under foreseeable climate conditions. Gypsum board must achieve a score of 10, the highest level of performance for mold resistance under the ASTM D 3273 test method. Gypsum board must be transported, handled, stored and installed in accordance with the GYPSUM ASSOCIATION - Guidelines for Prevention of Mold Growth on Gypsum Board (GA-238-03).

2.5.4 **ROOF SYSTEMS:** For membrane roof systems provide a minimum slope of 1/4 inch per foot and roof crickets with a minimum 1/2 inch per foot slope. Membrane roof systems must be fully adhered. Provide pitched roof systems with a minimum slope of 3 inches per foot. Structural standing seam metal roofs must comply with the requirements of ASTM E 1592. Roof system must be Underwriters Laboratory (UL 580 Class 90) rated or Factory Mutual Global (FM) I-90 rated and comply with applicable criteria for fire rating.

2.5.4.1 **Roof Mounted Equipment:** For roof mounted equipment, provide permanent access walkways and platforms to protect roof. Roof mounted equipment on pitched roof systems is generally unacceptable; exceptions must have prior government approval. Roof mounted equipment on membrane roof systems must be completely screened by the roof parapet to a distance of 400 feet.

2.5.4.2 **Roof Access:** Roof access from building exterior is prohibited.

2.5.4.3 **Personal Fall Arrest Systems:** Fall arrest system must be required for workers servicing roof-mounted equipment. All necessary anchorages for attachment of personal fall arrest equipment must be provided in accordance with applicable codes and criteria.

2.5.4.4 **Trim and Flashing:** Gutters, downspouts, and fascia must be factory pre-finished metal and must comply with SMACNA Architectural Sheet Metal Manual.

### 2.5.5 OPENINGS:

#### 2.5.5.1 **Storefronts/Curtain Walls & Entrances:**

2.5.5.1.1 Storefronts (Main Entrance Doors): Provide aluminum storefront doors and frames with Architectural Class 1 anodized finish, fully

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glazed, with medium or wide stile for entry into lobbies or corridors. Provide doors complete with frames, framing members, sub frames, transoms, sidelights, trim, applied muntins, and accessories. Provide framing systems with thermal-break design. Storefront systems must be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and must comply with applicable codes and criteria.

2.5.5.1.2 **Curtain Wall Systems:** Curtain wall systems must be capable of withstanding area wind loads, thermal and structural movement required by location and project requirements, and must comply with applicable codes and criteria.

2.5.5.2 **Windows:** Material and installation must comply with applicable codes and criteria.

2.5.5.2.1 **Exterior Windows:** Provide insulated, high efficient window systems, with thermally broken frames complying with applicable codes and criteria. Provide each bedroom with at least one exterior window which meets the egress requirements of NFPA 101 and the International Building Code. Design window sills to discourage bird nesting. <UPH\_OPERABLE> Bedroom windows must be operable windows. Provide operable windows with locks, and fiberglass or aluminum insect screens removable from the inside.</UPH\_OPERABLE><UPH\_SEALED>Bedroom windows must be fixed windows. Windows must not open to corridor, balcony or landing.</UPH\_SEALED>

2.5.5.2.2 **Interior Windows:**

2.5.5.2.2.1 **Centralized Laundry:** Picture window glazing must be laminated glass.

2.5.5.2.2.2 **Day Room and Fitness Room:** Picture window glazing must be laminated glass.

2.5.5.3 **Doors and Frames:** Door and frame installation must comply with applicable codes, criteria and requirements of labeling authority. Sound Transmission Class STC ratings must be of the sound classification required and must include the entire door and frame assembly.

2.5.5.3.1 **Exterior Insulated Hollow Metal Doors & Frames:** Provide insulated hollow metal exterior doors for entry to spaces other than corridors, lobbies, or reception/waiting rooms. Doors must be minimum Level 3 (Extra Heavy-Duty), Physical Performance Level A, Model 2 (Seamless). Frames must be Level 4, 14-gauge, with continuously welded mitered corners and seamless face joints. Doors and frames must be constructed of non-corroding, hot-dipped, zinc-iron alloy-coated, galvanized steel sheet, minimum A60 coating weight, complying with ASTM A653; and factory-primed. Use tamperproof screws for the attachment of door accessories.

2.5.5.3.2 **Interior Insulated Metal Doors:** Comply with ANSI A250.8/SDI 100 and applicable codes and criteria. Doors must be minimum Level 3 (Extra Heavy-Duty), Physical Performance Level A, Model 2



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(Seamless); factory primed. Interior insulated doors must be constructed of the same material as exterior insulated hollow metal doors.

2.5.5.3.2.1 Provide insulated metal doors at utility rooms, janitor closets, and stairwell doors.

2.5.5.3.2.2 **<UPH\_ENTRYDOORS\_HM>**Provide solid core insulated hollow metal doors with a wood grain finish at dwelling unit entry.  
**</UPH\_ENTRYDOORS\_HM><UPH\_ENTRYDOORS\_HM\_NOT>**Not Used**</UPH\_ENTRYDOORS\_HM\_NOT>**

2.5.5.3.3 **Solid Core Wood Doors:** Provide flush solid core wood doors with Grade A hardwood face veneer for transparent finish. Stile edges must be non-finger jointed hardwood compatible with face veneer.

2.5.5.3.3.1 **<UPH\_ENTRYDOORS\_WD>**Provide flush solid core wood doors at dwelling unit entry.  
**</UPH\_ENTRYDOORS\_WD><UPH\_ENTRYDOORS\_WD\_NOT>**Not Used**</UPH\_ENTRYDOORS\_WD\_NOT>**

2.5.5.3.4 Hardware:

2.5.5.3.4.1 Door Hardware: Hardware must be consistent and must conform to ANSI/BMHA standards for Grade 1. Provide closers for exterior doors, doors opening to corridors and as required by codes. Install exit devices on building egress doors.

2.5.5.3.4.2 Finish Hardware (Master Keying System/Cores): Coordinate requirements for hardware keying with the Contracting Officer. Provide extension of the existing Installation keying system, the Installation keying system is **«UPH\_KEYING\_SYSTEM»**. Provide key-removable type cylinder cores with no less than seven pins. Disassembly of knob or lockset to remove core from lockset is not permitted. Locksets for mechanical, electrical and communications rooms only must be keyed to the existing Installation Master Keying System. Provide HVAC terminal units that are accessed from a central corridor with a deadbolt to minimize protrusion into corridor.

2.5.5.3.4.3 Fire and Exit Door Labeling: Install hardware for fire doors in accordance with the requirements of applicable codes. Exit devices installed on fire doors must have a visible label bearing the marking "Fire Exit Hardware". Other hardware installed on fire doors, such as locksets, closers, and hinges must have a visible label or stamp indicating that the hardware items have been approved by an approved testing agency for installation on fire-rated doors. Hardware for smoke-control door assemblies must be installed in accordance with applicable codes.

2.5.5.3.4.3.1 Auxiliary Hardware: Provide other hardware as necessary for a complete installation.

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2.5.5.3.4.3.1.1 Door Stops: Provide wall or floor stops for exterior doors that do not have overhead holder/stops. Door hinge stops are not acceptable.

2.5.5.3.4.3.1.2 Peep Holes: Provide each dwelling unit entry door with a brass peephole door viewer with a viewing angle of 200 degrees minimum.

2.5.5.3.4.3.1.3 Door Latches: Provide each closet door with a functional, Grade 1 closet latch, and with padlock eyes so the occupant can provide his/her own padlock. One padlock eye must be mortised into and screw attached flush with door edge on the latch side of the door and the second padlock eye must be mortised and welded flush into the inside face of the door frame jamb. Fabricate padlock eye to accommodate padlock shackle up to 1/4" diameter. Padlock eye color must match door frame color. Locate padlock eye at between 4'-6" and 5'-6" AFF at the same height in modules.

2.5.5.3.4.3.1.4 Thresholds & Door-sweeps: Provide dwelling unit entry doors and exterior doors with thresholds and aluminum/rubber door-sweeps for a tight seal between door and threshold. Provide door-sweep with an aluminum anodized finish, color must match door frame.

2.5.5.3.4.3.1.5 Door Hasps: Provide mortised door hasps on closet doors.

2.5.5.3.4.3.1.6 Robe Hooks:

Closet Doors: Each closet door must have a Type 304 satin finished, stainless steel, robe hook mounted on the closet side of the door.

Dwelling Bathroom Doors: Each bathroom door must have a Type 304 satin finished; stainless steel double robe hook mounted on inside face of bathroom door.

2.5.5.3.4.3.2 Electronic Key Card Access System: A Programmable Electronic Key Card Access System must be provided on exterior entry/egress doors, dwelling unit doors, bedroom doors and centralized laundry doors. <UPH\_KEY\_NO>The Installation does not have a single manufacturer established for this equipment at this time</UPH\_KEY\_NO><UPH\_KEY\_YES>Provide extension of the existing Installation key card access system must be provided, the existing Installation key card access system is «UPH\_KEY\_MANUFACTURER»</UPH\_KEY\_YES>. The minimum operability requirement is a key card access system that provides a single key card for the individual soldier, programmable to open exterior entry/egress doors, the laundry room (if a centralized laundry is provided), the soldier's dwelling unit door, and the soldier's bedroom door. A Programmable Electronic Key Card Access System Manufacturer's Representative must install hardware and software necessary for the operation of the Electronic Key Card Access System and program locksets. Provide six (6) blank key cards for each personnel each building is designed to accommodate. Blank key

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cards must be serially numbered, and each key card must have its number permanently inscribed on it. Provide in three-ring binders, one full set of the system manufacturer's system training manual, system maintenance manual, and one training video (in format provided by the system manufacturer), with each system installed. The Programmable Electronic Key Card Access System Manufacturer's Representative must provide two (2) separate 4-hour classes of training for the user on software use, programming locks, encoding cards and printing reports. Provide each building with a complete stand-alone key card system package. System must be capable of being compartmentalized so that each building has only the capability to produce key cards for that building. Provide a two (2) year warranty on the system and components and locksets. Provide special tools, software, connecting cables and proprietary equipment necessary for the maintenance, testing, and reprogramming of the system. <UPH\_KEY\_YES>

### 2.5.5.3.4.3.2.1 Key Card Access System Accessories:

«UPH\_KEYCARD\_DESCRIPTION»</UPH\_KEY\_YES>

### 2.5.5.3.4.3.3 Non-Destructive Emergency Access System (KNOX Box):

<UPH\_KNOX\_NO>Not Used</UPH\_KNOX\_NO><UPH\_KNOX>Non-Destructive Emergency Access System «UPH\_LOCKBOX\_DESCRIPTION»</UPH\_KNOX>

### 2.5.5.3.5 Glass and Glazing: Material and installation must comply with applicable codes and criteria.

#### 2.5.5.3.5.1 Mirrors:

#### 2.5.5.3.5.2 Walk-in Closets: Each closet door must have 16 inches wide by 70 inches high by ¼ inch thick, select float glass, full length mirror, in a one-piece ½ inch by ½ inch by ½ inch Type 304 satin finished, stainless steel frame, with mitered corners, mounted on the bedroom side of the door. Locate bottom of mirror 6 inches above finish floor.

#### 2.5.5.3.6 Louvers and Vents:

#### 2.5.5.3.6.1 Exterior: Exterior louvers must have bird screens and must be designed to exclude wind-driven rain. Exterior louvers must be made to withstand wind loads in accordance with the applicable codes. Wall louvers must bear the Air Movement & Control Association (AMCA) International certified ratings program seal for air performance and water penetration in accordance with AMCA 500-D and AMCA 511. Louver finish must be factory applied.

### 2.5.6 EXTERIOR SPECIALITIES:

#### 2.5.6.1 Bird Habitat Mitigation: Provide details in the design necessary to eliminate the congregating and nesting of birds at, on, and in the facility.

### 2.5.7 ELEVATORS/CONVEYING SYSTEMS:

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- 2.5.7.1 Elevators: Provide elevators for buildings three stories and above. Provide elevator system that complies with the most current editions of ASME A17.1 and ASME A17.2 in their entirety, and additional requirements specified herein. The first elevator must be centrally located and must have a minimum rated load capacity of 3500 lb (1588 kg), with center opening doors and interior dimensions sized to accommodate a fully extended Emergency Medical Services (EMS) gurney and four average size adults. Gurney size must be based on the "STRYKER Power-PRO XT" gurney. Provide elevators as shown in the table below, unless a traffic analysis determines otherwise. Such traffic analysis must be included in the Design Analysis.

Population	# of Elevators
Up to 200	1
201 - 300	2
301 - 400	3
401 - 500	4
501 - 600	5
601 - 700	6
701 - 800	7
801 - 900	8
901 - 1000	9

- 2.5.7.2 Elevator Inspector: Elevator Inspector must be certified in accordance with the requirements of the most current editions of ASME A17.1 and ASME QEI-1 and licensed in elevator inspection by the State where project is located. The Certified Elevator Inspector must inspect the installation of the elevator(s) to assure that the installation conforms with contract requirements. The Elevator Inspector must be directly employed by the Prime Contractor and must be independent of the Elevator System Manufacturer and the Elevator System Installer. The Elevator Inspector must witness the acceptance inspections and tests, approve results and sign and certify the successful results. The Elevator Inspector, after completion of the acceptance inspections and tests, must certify in writing that the installation is in accordance with the contract requirements. The Elevator Inspector must bring any discrepancy, including any safety related deficiencies, to the attention of the Contracting Officer in writing, no later than three working days after the discrepancy is discovered.

- 2.5.8 ACOUSTICAL REQUIREMENTS: Design exterior walls and roof/floor/ceiling assemblies, doors, windows and interior partitions to provide for attenuation of external noise sources such as airfields in accordance with applicable criteria, but no less than the following:

- 2.5.8.1 Exterior Walls: STC 49
- 2.5.8.2 Interior Partitions: STC 49
- 2.5.8.3 Walls/Floors separating Module Spaces: STC 50 / IIC 55
- 2.5.8.4 Module Entry, Bedroom and Bathroom Doors: STC 25

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Sound conditions (and levels) for interior spaces, due to the operation of mechanical and electrical systems and devices, must not exceed levels as recommended by ASHRAE handbook criteria. Provide acoustical treatment for drain lines and other utilities to prevent noise transmission into the interior of dwelling units. Facility must comply with the noise-related land use compatibility requirements in AR 200-1, Chapter 14. If in the vicinity of an airfield project must comply with DODI 4165.57, Air Installations Compatible Use Zones.

### 2.5.9 THERMAL REQUIREMENTS:

2.5.9.1 Thermal Insulation: Provide exterior wall, floor, and roof/ceiling assemblies with thermal transmittance (U-values) required to comply with the proposed energy conservation requirements. Insulation must not be installed directly on top of suspended acoustical panel ceiling systems.

### 2.6 FINISHES AND INTERIOR SPECIALITIES

2.6.1 GENERAL: Provide sustainable materials that are easily maintained and replaced. Maximize use of day lighting. Provide interior surfaces that are easy to clean and light in color. Design barracks interior with a residential ambience.

2.6.2 FINISHES: Contractors are encouraged to offer higher quality finishes within the contract cost limitation.

2.6.2.1 Minimum Finish Requirements: Wall, ceiling and floor finishes must conform to the requirements of the IBC, NFPA and UFC 3-600-01. Where code requirements conflict, the most stringent code requirement must apply.

2.6.2.1.1 Walls: Wall finishes must be minimum 5/8" painted gypsum board, except where stated otherwise. Use impact resistant gypsum board in corridors, storage rooms, stairwells and activity rooms and centralized laundries (if centralized laundries are required by RFP). Provide a Level 4 Finish with an orange peel texture in accordance with USG Handbook, latest edition. Gypsum board must achieve a score of 10, the highest level of performance for mold resistance under the ASTM D 3273 test method. Gypsum board must be transported, handled, stored and installed in accordance with the GYPSUM ASSOCIATION - Guidelines for Prevention of Mold Growth on Gypsum Board (GA-238-03).

2.6.2.1.2 Ceilings: Ceiling finishes must be minimum 5/8" painted gypsum board, except where stated otherwise.

2.6.2.1.2.1 Acoustical Ceiling Tiles (ACT): Must be 24"x 24" Acoustical tile panels of 5/8 inch minimum thickness. Type as indicated, Class A. Light reflectance must exceed 75 percent, color, texture and finish must be as indicated. When not indicated provide white, fissured texture acoustical panels with a beveled tegular edge. Noise Reduction Coefficient not less than 0.60, Ceiling Attenuation Class not less than 35.

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- 2.6.2.1.2.2 Ceiling Grid: Provide a 9/16" suspension system - Type as indicated. Color, texture and finish must be as indicated. When not indicated provide white, hot-dipped galvanized steel, exposed tee grid with hold down clips for ceiling tiles.
- 2.6.2.1.3 Floors:
  - 2.6.2.1.3.1 Resilient Flooring: Resilient flooring must be a minimum 1/8 inch thick, conforming to ASTM F 1066, Class 2, through-pattern tile, Composition 1, asbestos free, with color and pattern uniformly distributed throughout the thickness of the tile.
  - 2.6.2.1.4 Counter Tops: Provide solid surfacing of cast 100 percent acrylic polymer to be used for countertops and backsplashes, 1/2-inch minimum thickness. Must meet ANSI/NEMA LD 3 and ASTM E 84. High-Pressure Laminate will not be allowed for countertops in restroom, toilet room, kitchen or break room applications. Provide countertops with waterfall front edge and integral coved backsplash, minimum 4" high.
    - 2.6.2.1.4.1 Bathroom & Public Toilet(s): Bathroom and public toilet vanity countertop must be minimum 1/2 inch thick cast 100-percent acrylic polymer solid surfacing material with waterfall front edge and integral coved backsplash.
  - 2.6.2.1.5 Window Stools: Provide solid material surfacing of cast 100 percent acrylic polymer 1/2-inch minimum thickness for window stools. Must meet ANSI/NEMA LD 3 and ASTM E 84.
  - 2.6.2.1.6 Elevator(s) Finishes: Elevator interior walls, ceiling, doors and fixtures must have a satin No. 4 stainless steel finish. Floor finish must be resilient flooring. Elevators must be provided with removable hanging protective pads and fixed hooks to facilitate conversion to use for moving freight.
- 2.6.2.2 Minimum Paint Finish Requirements: Paints used must be listed on the "Approved product list" of the Master Painters Institute, (MPI). Follow application criteria recommended by MPI guide specifications for the substrate to be painted and the environmental conditions existing at the project site. Except factory pre-finished material, provide surfaces receiving paint with a minimum of one prime coat and two finish coats. Paints having a lead content over 0.06 percent by weight of nonvolatile content are unacceptable. Paints containing zinc-chromate, strontium-chromate, mercury or mercury compounds, confirmed or suspected human carcinogens must not be used on this project.
  - 2.6.2.2.1 Exterior Surfaces: Exterior paints and coating products must be classified as containing low volatile organic compounds (VOCs) in accordance with MPI criteria. Provide an MPI Gloss Level 5 Finish (Semi-gloss), unless otherwise specified.
  - 2.6.2.2.2 Interior Surfaces: Interior paints and coating products must contain a maximum level of 150 g/l (grams per liter) of VOCs for non-flat coatings and 50 g/l of VOCs for flat coatings. Provide an

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MPI Gloss Level 5 Finish (semi-gloss) with orange peel or egg-shell finish.

2.6.2.3 Excluded Finishes: Carpet must not be used as a floor finish in the UPH.

2.6.2.4 Finish Table:

MINIMUM INTERIOR FINISHES														
	FLOORS					BASE			WALLS		CEILING			REMARKS
	Luxury Tile vinyl (LVT)	PORCELAIN OR QUARRY TILE	CERAMIC TILE	RECESSED ENTRY MAT	SEALED CONCRETE	RESILIENT BASE	SANITARY COVE CERAMIC BASE	PORCELAIN OR QUARRY TILE	GYPSUM BOARD PAINT	CERAMIC	GYPSUM BOARD PAINT	ACOUSTICAL CEILING TILE	MINIMUM HEIGHT	
COMMON AREAS														
LOBBY		•						•	•		•	•	9'-0"	SEE NOTE 6
PUBLIC TOILET			•				•		•	•	•		8'-0"	SEE NOTES 2 & 3
VESTIBULES		•		•				•	•		•		9'-0"	
MUDROOM (IF REQUIRED BY RFP)			•				•		•	•	•		8'-0"	SEE NOTE 2
BOOT WASH (IF REQUIRED BY RFP)					•								-	
DAY ROOM									•		•	•	9'-0"	SEE NOTE 6
FITNESS ROOM													9'-0"	
EXTERIOR MAIL ACCESS AREA					•								8'-0"	SEE NOTE 10
STAIRS	•				•	•			•		•		8'-0"	SEE NOTE 4
CORRIDORS	•					•			•		•	•	9'-0"	SEE NOTE 6
VENDING											•		8'-0"	SEE NOTE 1
RECYCLABLES STORAGE	•					•			•		•		8'-0"	SEE NOTE 1
JANITOR CLOSETS			•				•		•	•	•		8'-0"	SEE NOTE 2
MECHANICAL					•	•			•		•		-	SEE NOTE 7
ELECTRICAL					•	•			•		•		-	
TELECOMMUNICATIONS					•	•			•		•			SEE NOTE 8

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														& 12
CENTRALIZED LAUNDRY		•						•	•		•		8'-0"	
<b>DWELLING UNITS</b>														
KITCHEN	•					•			•		•		8'-0"	SEE NOTE 3
BATHROOM			•			•			•	•	•		8'-0"	SEE NOTES 2, 3 & 11
BEDROOM	•					•			•		•		9'-0"	SEE NOTE 9
LIVING ROOM													9'-0"	SEE NOTE 9
CLOSET	•					•			•		•		8'-0"	
1. FINISHES IN VENDING OR RECYCLABLES STORAGE AREA MUST MATCH FINISHES IN ADJACENT SPACE.														
2. WET WALLS MUST HAVE A MINIMUM OF 4'-0" HIGH CERAMIC TILE WAINSCOT.														
3. KITCHEN AND BATHROOM COUNTERS MUST HAVE A MINIMUM OF 4" HIGH BACKSPLASH.														
4. STAIR LANDING MUST BE RESILIENT FLOORING OR SEALED CONCRETE. TREADS MUST BE RESILIENT FLOORING OR SEALED CONCRETE, PROVIDE SLIP RESISTANT NOSING. RISERS MUST BE PAINTED STEEL OR RESILIENT FINISH AS REQUIRED FOR STAIR CONSTRUCTION.														
5. CERAMIC TILES MUST BE A MINIMUM OF 12" X 12"														
6. UP TO 50% OF CEILING AREA MAY BE ACOUSTICAL CEILING TILE. ACOUSTICAL CEILING TILE MUST BE INSTALLED WITH HOLD DOWN CLIPS TO PREVENT UPWARD MOVEMENT. CEILING LAYOUT MUST BE A BALANCED MIX OF GYPSUM BOARD AND ACOUSTICAL CEILING TILE, SUCH THAT ONE FINISH MATERIAL IS NOT CONCENTRATED IN OR RESTRICTED TO ONE AREA OF THE CEILING.														
7. CEILING MAY BE PAINTED EXPOSED STRUCTURE IF ALLOWED BY APPLICABLE CODE AND CRITERIA. THIS NOTE DOES NOT APPLY TO DWELLING UNIT MECHANICAL CLOSETS.														
8. COMPLY WITH THE REQUIREMENTS OF ANSI/TIA/EIA-569-B														
9. WHERE MASONRY WALLS ARE PROPOSED AS THE BEDROOM WALL FINISH SYSTEM, THE LONGEST WALL IN EACH BEDROOM MUST BE FINISHED WITH A TACKABLE MATERIAL. TACKABLE MATERIAL MUST BE GYPSUM BOARD.														
10. CEILING MUST BE PAINTED EXPOSED STRUCTURE														
11. TUB SURROUND MUST BE FIBERGLASS OR ACRYLIC.														
12. STATIC DISSIPATIVE TILE MUST BE USED														

### 2.6.3 INTERIOR SPECIALTIES:

#### 2.6.3.1 Signage & Directories: Signage must be mechanically attached.

2.6.3.1.1 Room Signage: Room signage must conform to the Housing Automated Management System, (HOMES4). At each dwelling unit, provide two (one on each side of entry door) mechanically fastened dwelling unit/room number and changeable two-line message strip signage. Dwelling units and must be sequentially numbered. For example, the first unit on the first floor must be "101", first unit on the second floor must be "201". Rooms must be designated using the letters "A and B". The room designation is determined by standing in the corridor facing the entry door of the dwelling unit, the bedroom on the left is "A" and the one on the right is "B". The complete dwelling unit/room numbering must be as in this example, first unit on the second floor "201A and 201B". Changeable message strip signs must be of same construction as standard room signs to include a



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clear sleeve that must accept a paper or plastic insert with identifying changeable text. The insert must be prepared typeset message photographically enlarged to size and mounted on paper card stock.

2.6.3.1.2 Stair Exit Door Signage: Each stair exit door on the first floor and other entry/exit doors not directly visually observable from the CQ Desk must each be provided with a hard-wired contact switch connected to an alarm system. Alarm system must sound an alarm (AFTER A THIRTY-SECOND DELAY IF DOOR IS LEFT OPEN) at the door location and the CQ Station. Switching OFF activated alarm must be by a key at the specific door and remotely at the CQ Desk. The inside face of each door must be provided with a photo-luminescent sign. Photo-luminescent signs must be manufactured and tested in accordance with the most current versions of ASTM E 2072 and ASTM E 2073. Sign must be minimum 14-inches wide by 10-inches high and must be made of anodized aluminum. Lettering must be red text on a yellow background. Lettering must be upper case and must read as follows: "EMERGENCY EXIT ONLY" (minimum 4-inches high letters) "SECURITY ALARM WILL SOUND IF DOOR IS OPENED" (minimum 3-inches high letters). Signs must be mounted centered on interior face of each door above the exit device. For doors with glazing panels, mount sign on wall directly on the lock side of door.

2.6.3.2 Visual Display Units/Cases:

2.6.3.2.1 Bulletin Boards: Bulletin board must be 4'-0" high and 6'-0" wide with a header panel and lockable, laminated, glazed doors.

2.6.3.3 Toilet Accessories: Provide the items listed below and other toilet accessories necessary for a complete and usable facility. Toilet accessories must be Type 304 stainless steel with satin finish.

2.6.3.3.1 Public Toilet(s): Public Toilets: Toilet accessories must conform to the requirements of the ABA and must include, but are not limited to the following:

2.6.3.3.1.1 Glass Mirrors- Glass mirror on stainless steel frame and with shelf - at each lavatory;

2.6.3.3.1.2 Liquid Soap Dispenser - Provide at each lavatory;

2.6.3.3.1.3 Combination Paper Towel Dispenser/Waste Receptacle - Provide recess-mounted, adjacent to lavatory;

2.6.3.3.1.4 Sanitary Napkin Disposal - Provide at each female stall or one in unisex toilet room;

2.6.3.3.1.5 Toilet Paper Dispenser - Provide recess-mounted, multi-roll, toilet paper dispenser;

2.6.3.3.1.6 Toilet Seat Cover Dispenser - Provide at each toilet stall;

2.6.3.3.1.7 Grab bars - Provide as required by ABA Accessibility Guidelines;

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- 2.6.3.3.1.8 Toilet Partitions - Provide solid phenolic, color through the core Finish 4A, floor mounted, overhead braced toilet partitions with three hinges, if toilet stalls are required.
- 2.6.3.3.2 Dwelling Unit/Bedroom Toilet(s): Must at a minimum include:
  - 2.6.3.3.2.1 Towel bars -Provide two, minimum 24 inches wide, heavy-duty towel bars per tub/shower.
  - 2.6.3.3.2.2 Medicine cabinets - Provide two, recess-mounted, mirrored medicine cabinet at each lavatory.
    - 2.6.3.3.2.2.1 A minimum of 16-inches wide by 24 inches high with adjustable shelves, and constructed of heavy gauge steel, welded, with a powder-coated.
    - 2.6.3.3.2.2.2 Mirror must be 1/4 inch thick, select float glass, set in a one piece, Type 304 satin finished, stainless steel channel frame with mitered corners;
  - 2.6.3.3.2.3 Soap Dish - Provide two soap dishes at each tub/shower.
  - 2.6.3.3.2.4 Toilet paper holder - at each water closet.
  - 2.6.3.3.2.5 Curved shower curtain rod - extra heavy duty.
  - 2.6.3.3.2.6 Shower curtain - white anti-bacterial nylon/vinyl fabric shower curtain.
  - 2.6.3.3.2.7 Soap Dish - Provide one soap dish at each lavatory.
  - 2.6.3.3.2.8 Towel bars -Provide two, minimum 12-inches wide, hand towel bars or hand towel rings per lavatory.
- 2.6.3.4 Wall Protection:
  - 2.6.3.4.1 Chair Rail: Install chair rails in corridors, lobby, and Day Room.
  - 2.6.3.4.2 Corner Guards: Provide surface mounted, high impact resistant, integral color, non-snap-on resilient corner guards, extending from floor to ceiling for wall/column outside corners in high traffic areas. Provide factory fabricated end closure caps for top and bottom of surface mounted corner guards.
- 2.6.3.5 Storage Shelving:
  - 2.6.3.5.1 Janitor's Closet: Provide a minimum of six linear feet of 18-inch deep, heavy-duty, stainless-steel shelving for storage of janitorial supplies.
  - 2.6.3.5.2 Walk-in-Closets: Closet shelf must be capable of supporting a minimum of 30 pounds per linear foot. Closet shelf must be 15 inches deep and top of shelf must be set at 70 inches above closet finish floor. Closet rod and bracket system must be capable of supporting a minimum of 30 pounds per linear foot. Provide a minimum

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of 78 linear inches of rod and shelf with no rod and shelf being less than 48 inches long.

2.6.3.6 Fire Extinguishers, Cabinets & Mounting Brackets: Provide a list of installed fire extinguisher cabinets and mounting brackets (including location, size and type) to the Contracting Office Representative. Provide a list of required portable fire extinguishers, with descriptions (location, size, type, e.g.) and total number per type. See also Section 01 33 16, Attachment D, "SAMPLE FIRE PROTECTION AND LIFE SAFETY CODE REVIEW", paragraph 1.14.

2.6.3.7 Interior Entrance Walk-Off Mat Systems: Provide permanent entryway systems at least 10'-0" (3 meters) long in the primary direction of travel. Acceptable entryway systems include permanently installed grates, grilles, slotted systems, or roll-out mats.

### 2.7 STRUCTURAL REQUIREMENTS:

#### 2.7.1 DESIGN LOADS:

2.7.1.1 Live Loads: Design live loads must be in accordance with the IBC but not lower than the following minimums.

2.7.1.1.1 Elevated floors: 60 pounds per square foot (psf) minimum

2.7.1.1.2 Slab on grade: 150 psf minimum

2.7.1.1.3 Centralized laundry area: 150 psf, (but not less than actual equipment loads).

### 2.8 SEE PARAGRAPH 3.7 THERMAL PERFORMANCE - NOT USED

### 2.9 PLUMBING REQUIREMENTS:

#### 2.9.1 DOMESTIC WATER:

2.9.1.1 Heating System: Size the domestic water heating system based on 20 gallons of 110 deg F hot water consumption per occupant during morning peak period. Peak period duration must be 30 minutes (10-minute duration for shower and lavatory use per occupant per dwelling unit plus a 10 minute transition period). Base hot water storage capacity on 75% usable storage and a storage temperature of 140 deg F. Domestic hot water distribution must be at 120 deg F from a central system mixing valve. Design domestic hot water distribution piping to handle up to 180 deg F water temperatures.

2.9.1.2 Pipe Sizing: For domestic hot water pipe sizing, base peak hot water flow rate on showers flowing simultaneously at a rate of 2.0 gpm per shower. Size waste stacks, building waste drains, and lift stations (if required) with consideration of increased flow rates as well.

#### 2.9.2 FIXTURE FLOW RATES:

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- 2.9.2.1 Shower heads: Must have a maximum flow rate not to exceed 1.5 gallons per minute (gpm).
- 2.9.2.2 Bathroom faucets: Must have a maximum flow rate not to exceed 0.5 gpm.
- 2.9.2.3 Kitchen faucets: Must have a maximum flow rate not to exceed 1.0 gpm.
- 2.9.2.4 Mop Sinks: Must have a maximum flow rate not to exceed 2.0 gpm.
- 2.9.3 DRAINS, INTERCEPTORS SEPARATORS & CLEANOUTS:
  - 2.9.3.1 Interceptors:
    - 2.9.3.1.1 Sand Interceptors:
      - 2.9.3.1.1.1 Mudroom/Boot wash: <UPH\_MUDROOM>Provide sand interceptors in drains for Mudroom and Boot Wash areas. </UPH\_MUDROOM><UPH\_BOOTWASH>Provide sand interceptors in drains from Mudroom/Boot Wash areas. </UPH\_BOOTWASH>
  - 2.9.3.2 Cleanouts:
    - 2.9.3.2.1 If Dryers vents are manifolded to a common exhaust, provide an easily accessible means of cleanout.
    - 2.9.3.2.2 Kitchen and Bathroom: Provide P-traps with cleanout at kitchen sinks and bathroom lavatories.
  - 2.9.3.3 Drains:
    - 2.9.3.3.1 Vending Area: Provide water and drain connections for ice cube machine-dispensers.
    - 2.9.3.3.2 Centralized Laundry: Provide water and drain connections for washer.
    - 2.9.3.3.3 Room Module Laundry: Provide water and drain connections for washer.
- 2.9.4 PLUMBING FIXTURES:
  - 2.9.4.1 Residential Plumbing Fixtures:
    - 2.9.4.1.1 Kitchen Fixtures (Dwelling Unit): Provide a stainless steel kitchen sink with minimum bowl inside dimensions of 16"x16"x7" deep.
    - 2.9.4.1.2 Bathroom Fixtures (Dwelling Unit):
      - 2.9.4.1.2.1 Water Closet: Provide an elongated floor mounted flush tank type vitreous china water closet.
      - 2.9.4.1.2.2 Tub/Shower Head: Must be of porcelain enameled cast-iron or enameled steel. Spray end of shower head must be set at 78 inches above finish height of tub drain.

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2.9.4.1.2.3 Floor Drains: Provide with a deep-seal trap consisting of a 4-inch (102 mm) seal or a trap seal primer valve.

### 2.10 COMMUNICATIONS AND SECURITY SYSTEMS:

2.10.1 TELECOMMUNICATION SYSTEMS: Provide telecommunications outlets in accordance with the applicable criteria based on functional purpose of the space within the building.

2.10.1.1 CATV: CATV outlet boxes, connectors, cabling, and cabinets must conform to applicable criteria unless noted otherwise. Horizontal cabling must be homerun from the CATV outlet to the nearest telecommunications room unless indicated otherwise.

### 2.10.2 SECURITY INFRASTRUCTURE/SYSTEMS:

#### 2.10.2.1 Door Status/Alarm Monitoring:

2.10.2.1.1 Stair Exit Doors: Provide each stair exit door on the first floor with a hard-wired contact switch connected to an alarm system. Alarm system must sound an alarm (after a 30 second delay if door is left open) at the door location and the CQ Desk (where provide) when a stair exit door is opened. Switching OFF activated alarm must be by key at the specific door and remotely at the CQ Desk.

2.10.3 MASS NOTIFICATION SYSTEMS: <UPH\_MASS\_YES>Integrated the MNS into the installation's area wide MNS (Giant Voice). See Part 3 for additional requirements. </UPH\_MASS\_YES><UPH\_MASS\_NO>Not Used</UPH\_MASS\_NO>

### 2.11 ELECTRICAL REQUIREMENTS:

2.11.1 General: Select electrical characteristics of the power system to provide a safe, efficient, and economical distribution of power based upon the size and types of loads to be served. Use distribution and utilization voltages of the highest level that is practical for the load to be served. Consider the effect of nonlinear loads such as computers, other electronic equipment and electronic ballasts and accommodate as necessary. Voltage drop must not exceed the maximum allowed in accordance with ASHRAE 90.1. Provide surge protective device on entrance service equipment and branch panelboard for communications and related system in accordance with UFC 3-520-01. Bedrooms must be considered to be living and sleeping rooms, therefore they are to be considered part of a dwelling unit in accordance with NFPA 70 definition. Provide individual lighting controls for 90% of individual spaces consisting of three lighting levels. Achieve illuminance levels between 300 lux and 3,000 lux for floor areas.

2.11.2 POWER: Provide power for installed equipment requiring power to include convenience receptacles and government provided government installed equipment.

2.11.2.1 Panels: Panelboards located in accessible areas, must be lockable and keyed to one master key.

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### 2.11.2.2 Outlets:

2.11.2.2.1 Dwelling Unit: In addition to the requirements of NFPA 70 for dwelling units, a duplex receptacle must be mounted adjacent to the CATV outlet.

2.11.2.2.2 Lobby: Provide a minimum of one 125-volt duplex receptacle in the lobby for housekeeping purposes.

2.11.2.2.2.1 Lobby-CQ Station: Provide two (2) 125-volt, duplex receptacles for CQ workstation. Receptacles must be on a dedicated circuit.

2.11.2.2.2.2 Day Room: *Under Development*

2.11.2.2.2.3 Fitness Room: *Under Development*

2.11.2.2.3 Corridors: Provide a minimum of one 125-volt duplex receptacle per corridor for housekeeping. No point along a corridor wall at 18" above finished floor must be more than 25 feet from a receptacle.

2.11.2.2.4 Mechanical & Electrical Room: Provide a minimum of two 125-volt duplex receptacles in mechanical rooms in addition to those required by NFPA 70. This requirement does not apply to the small mechanical rooms used for individual dwelling units. In addition, provide a minimum of one 125-volt duplex receptacle in each electrical room.

2.11.2.2.5 Vending Area: Provide power receptacles for vending machines and ice cube machine-dispensers.

2.11.2.2.6 Centralized Laundry: Provide power receptacles for washers, dryers and laundry supplies vending machines. Provide a minimum of one convenience duplex power receptacle on each wall.

2.11.2.2.7 Electrical service must be provided for electric dryers regardless of whether or not electric dryers are to be used.

2.11.2.3 c) Metering: Provide an electricity meter for serving the building in the standard unit of the measure. Where basewide energy and utility monitoring and control system exist, meter must be connected using the installation's advanced metering protocols. Meter configuration must be complied with requirements of UFC 4-010-06.

2.11.3 LIGHTING LEVELS, FIXTURES & CONTROLS: Provided lighting levels must be within +/- 10% of required lighting levels. Interior and exterior building lights must be provided with Lighting Emitting Diode (LED) lighting fixture. LED fixtures must have a Color Rendering Index of (CRI) of 82 or higher and Luminaire Efficacy (LE) must have a minimum of 80 LPW. Minimize bulb type variations and maximize use of A19 type LED bulbs.

### 2.11.3.1 Dwelling Units:

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- 2.11.3.1.1 Bedrooms: Lighting level in bedrooms must be 15 foot-candles. Vacancy sensor detection switching. Switching must be manual-on/automatic off.
- 2.11.3.1.2 Kitchen: Lighting level in kitchen areas must be 30 foot-candles with automatic vacancy sensor detection switching. Switching must be manual-on/automatic off. Countertop task lighting must be installed under cabinets with manual on/off switching. Task lighting switching must be separate from general lighting switching.
- 2.11.3.1.3 Living Room: Lighting level in bedrooms must be 15 foot-candles. Vacancy sensor detection switching. Switching must be manual-on/automatic off.
- 2.11.3.1.4 Walk-in-closet: Provide automatic vacancy sensor detection switching in each walk-in closet. Switching must be manual-on/automatic off.
- 2.11.3.2 Lobby: Lighting level in lobbies must be 10 foot-candles. Lighting in common areas such as corridors and lobbies must have automatic occupancy sensor detection switching. Wire sensors in corridors such that only the lighting fixtures within the activation range of a particular sensor must turn on.
- 2.11.3.2.1 Lobby-CQ station: Provide additional lighting over CQ station to obtain a 30-footcandle luminance level on desktop.
- 2.11.3.2.2 Day Room: *Under Development*
- 2.11.3.2.3 Fitness Room: *Under Development*
- 2.11.3.3 Centralized laundry: Lighting level in laundry room(s) must be 30 foot-candles. Lighting must have automatic occupancy sensor detection switching.
- 2.11.3.4 Mechanical, electrical, and telecommunication rooms: lighting level in mechanical and electrical rooms must be 20 foot-candles with manual on/off switching.
- 2.11.3.5 Mail access area: <UPH\_outdoor\_mail\_kiosk>if mail is distributed from an exterior kiosk or through an exterior wall provide a minimum illuminance level of 5-footcandles. </UPH\_outdoor\_mail\_kiosk><UPH\_outside\_mail\_condo>if mail is distributed from an exterior kiosk or through an exterior wall provide a minimum illuminance level of 5-footcandles.</UPH\_outside\_mail\_condo><UPH\_mail\_not> not used</UPH\_mail\_not>
- 2.11.3.6 Mudroom/boot wash: Provide an luminance level of 20-footcandles and automatic occupancy sensor detection switching to control fixture(s) in the mudroom.
- 2.11.3.7 Daylighting and lighting control: provide automated lighting controls, including occupancy/vacancy sensors with manual-off capability, provided for appropriate spaces in accordance with UFC

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3-530-01. Where the space having naturalize source, maximize the use of automatic dimming controls.

### 2.12 HEATING VENTILATING AND AIR CONDITIONING (HVAC) REQUIREMENTS:

#### 2.12.1 HVAC DESIGN CRITERIA:

##### 2.12.1.1 Unit location and access:

2.12.1.1.1 Dwelling unit: locate room/dwelling unit HVAC units in equipment closets accessible only through a corridor access door. Locate air filters in the equipment closet. Dwelling unit HVAC units must have piping and duct connections that allow quick and easy removal and replacement of individual units.

##### 2.12.1.2 Ventilation:

2.12.1.2.1 Dwelling unit: Provide positive ventilation for each dwelling unit using dedicated outdoor air units. Dedicated outdoor air units (DOAUS) must continuously supply dehumidified, tempered air ducted directly to each bedroom from DOAU. DOAU supply air ductwork must not connect to dwelling unit heating/cooling unit. Supply air conditions from DOAU must be between 68 and 75 degree F dry bulb and no greater than 48 degree F dew point. Supply quantity must be 45 cfm per bedroom for a total of 90 cfm per dwelling unit. (note: this exceeds ASHRAE 62.1 but provides compliance with IMC chapter 4 and maintains slight building positive pressurization with respect to dwelling unit exhaust rate of 75 cfm). DOAU unit must be direct expansion (dx) type and cooling/dehumidification must be available 24/7/365. DOAU units must be minimum 14 seer (3.52 cop) and equipped with hot gas reheat and auxiliary heat/ reheat coil. **Dwelling unit laundry area must provide: Under Development**

2.12.1.2.2 Corridors: Ventilate corridors in accordance with ASHRAE 62.1 by supply from the dedicated outdoor air unit.

2.12.1.2.3 Vending area: Provide additional ventilation/exhaust to maintain vending areas temperature at levels specified for corridors.

2.12.1.2.4 Centralized laundry: Makeup air for dryers in centralized laundries within the exterior wall insulation and air/vapor barrier must be conditioned and dehumidified or transferred from adjacent conditioned spaces.

##### 2.12.1.3 Exhaust:

2.12.1.3.1 Dwelling unit: Dwelling unit exhaust must be 25 cfm continuous through a bathroom exhaust and 50 cfm continuous through a kitchen exhaust. Kitchen and bathroom exhausts must be separate and make-up air to kitchen and bathroom must be ducted from bedrooms to kitchen and bathroom spaces. Make-up air for bathroom exhaust must not transfer from kitchen area. The number of exhaust fans and DOAUS must be the same, and exhaust fans and DOAUS must be arranged for and must include exhaust air energy recovery. Provide exhaust and DOAU systems with variable frequency drives (VFDS) and a control logic that provides reduced ventilation rates during periods of low



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interior humidity and still meets minimum ASHRAE 62.1 requirements.

**Dwelling unit laundry area must provide *Under Development***

2.12.1.3.2 Centralized laundry: Vent dryer to exterior according to applicable criteria and manufacturer's installation instructions. Locate dryer exhaust vent exterior terminations no closer than 15 feet from dwelling unit bedroom windows. Provide individual vent connections for dryers.

2.12.1.4 Ductwork:

2.12.1.4.1 Kitchen range hoods: <UPH\_ductless>Kitchen range hoods must be the U.L. listed ductless type. </UPH\_ductless><UPH\_ducted>kitchen range hoods must be the U.L. listed ducted type to building exterior</UPH\_ducted>

2.12.2 Temperature controls:

2.12.2.1 Dwelling unit: dwelling unit room temperature control must be through the direct digital control (DDC) system. Each dwelling unit must have a heating/cooling unit with thermostat/temperature control sensor located in common area. Occupant control must include fan selection (on/off) and an occupant temperature set point adjustment mechanism that allows +/- 2 deg f of adjustment from the DDC programmed set points (70 deg f heating, 75 deg f cooling). Additionally, the DDC controls must monitor each dwelling unit for sub-cooling. The DDC system must record an alarm event if the space temperature drops below 71-degree f (adjustable) when the outside air is greater than 85-degree f (adjustable). Occupant control must also include ability to select heating or cooling mode. HVAC system must be able to provide for year-round heating or cooling in individual dwelling units as selected by the occupants. Occupant controller must not have any provisions for occupant adjustment to occupant controller beyond that stated in this paragraph. Any further adjustments beyond as described must be by authorized personnel only.

2.13 ENERGY CONSERVATION REQUIREMENTS:

2.13.1 Energy performance: see section 1.2.10.1 for energy performance requirements.

2.13.2 Load & set point schedules: the following facility schedules must be used in facility energy simulations for purposes of documenting compliance with energy performance requirement. The peak values indicated for each schedule must be used for the baseline energy calculation. The hourly peak fraction values for various load components for each schedule must be used for both the baseline and proposed design energy calculations.

2.13.2.1 UPH COMMON AREA INTERNAL LOAD SCHEDULE

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HR	OCCUPANCY			LIGHTING			WASHER/DRYER USE 1			WASHER SHW 1		
	WK	SAT	SUN	WK	SAT	SUN	WK	SAT	SUN	WK	SAT	SUN
1-6	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
7-10	0.20	0.20	0.20	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
11-18	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.80	0.80	0.80	0.00	0.00	0.00	0.00	0.00	0.00
20-21	0.20	0.20	0.20	0.80	0.80	0.80	0.50	0.50	0.50	0.50	0.50	0.50
22-23	0.40	0.40	0.40	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00
24	0.20	0.20	0.20	0.80	0.80	0.80	0.50	0.50	0.50	0.50	0.50	0.50
PEAK	BLDG OCCUPANCY/12			.87W/FT <sup>2</sup>			0.16 KW/BLDG OCCUPANT			1.5 GAL/HR/BLDG OCCUPANT @ 110 °F		
NOTES:  1. DATA IN COLUMNS ARE ONLY APPLICABLE WHEN CENTRALIZED LAUNDRY ROOM ARE PROVIDED.												

## 2.13.2.2 UPH APARTMENT UNIT INTERNAL LOAD SCHEDULES

HR	OCCUPANCY			LIGHTING			PLUG LOADS			SERVICE HOT WATER		
	WK	SAT	SUN	WK	SAT	SUN	WK	SAT	SUN	WK	SAT	SUN
1-5	0.80	0.75	0.75	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00
6	0.70	0.65	0.75	0.40	0.30	0.20	0.20	0.20	0.20	0.10	0.10	0.10
7	0.60	0.60	0.70	0.70	0.50	0.30	0.40	0.35	0.20	0.40 (0.3) <sup>1</sup>	0.40 (0.3) <sup>1</sup>	0.40 (0.3) <sup>1</sup>
8	0.50	0.50	1.00	0.50	0.50	0.50	0.40	0.40	0.40	0.20	0.20	0.20
9	0.25	0.25	0.00	0.20	0.20	0.20	0.30	0.40	0.40	0.00	0.00	0.00
10-17	0.20	0.20	0.20	0.20	0.20	0.20	0.30	0.30	0.30	0.00	0.00	0.00
18	0.30	0.30	0.30	0.50	0.50	0.50	0.50	0.50	0.50	0.10	0.10	0.10
19	0.50	0.30	0.30	0.70	0.70	0.70	0.50	0.50	0.50	0.10 (0.2) <sup>1</sup>	0.10 (0.2) <sup>1</sup>	0.10 (0.2) <sup>1</sup>
20	0.50	0.50	0.50	0.70	0.70	0.70	0.60	0.50	0.50	0.10	0.10	0.10
21	0.70	0.50	0.50	0.70	0.70	0.70	0.60	0.50	0.50	0.00	0.00	0.00
22	0.70	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.00	0.00	0.00
23	0.80	0.75	0.75	0.40	0.40	0.40	0.40	0.50	0.50	0.00	0.00	0.00
24	0.80	0.75	0.75	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00
PEAK	2 OCC/UNIT			.87W/FT <sup>2</sup>			1.7 W/FT <sup>2</sup> WITH COMMON LAUNDRIES 3.5 W/FT <sup>2</sup> WITH INDIVIDUAL WASHER/DRYERS			40 GAL/HR/UNIT @ 110 °F WITH COMMON LAUNDRIES 63 GAL/HR/UNIT @ 110 °F WITH INDIVIDUAL WASHERS		
NOTES: 1. FACTORS FOR UNITS WITH INDIVIDUAL WASHERS.												

## 2.13.2.3 UPH APARTMENT UNIT INTERNAL LOAD SCHEDULES

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HR	REFRIGERATOR			RANGE AND OVEN		
	WK	SAT	SUN	WK	SAT	SUN
1-6	1.00	1.00	1.00	0.01	0.01	0.01
7-16	1.00	1.00	1.00	0.04	0.04	0.04
17-18	1.00	1.00	1.00	0.05	0.05	0.05
19-20	1.00	1.00	1.00	0.11	0.11	0.11
21-23	1.00	1.00	1.00	0.10	0.10	0.10
24	1.00	1.00	1.00	0.03	0.03	0.03
PEAK	76.36 W/UNIT			68.95 W/UNIT		

### 2.13.2.4 UPH APARTMENT UNIT THERMOSTAT SET-POINT SCHEDULES

HR	HEATING (°F)			COOLING (°F)		
>	WK	SAT	SUN	WK	SAT	SUN
1-24	68	68	68	75	75	75

### 2.13.2.5 UPH UNOCCUPIED ZONES (IE STAIRWELLS, MECHANICAL ROOMS) THERMOSTAT SET-POINT SCHEDULES

HR	HEATING (°F)		
>	WK	SAT	SUN
1-24	55	55	55

## 2.14 FIRE PROTECTION REQUIREMENTS

### 2.14.1 Fire detection and alarm systems:

2.14.1.1 Software: Software, software locks, special tools and any other proprietary equipment required to maintain, add devices to or delete devices from the system, or test the fire alarm system must become property of the government and be provided to the contracting officer's representative prior to final inspection of the system.

2.14.1.2 Smoke detectors: provide smoke detectors in bedrooms.

<UPH\_smoke1>smoke detectors in bedrooms must be monitored. Tampering with a smoke detector must send a trouble signal. Trouble signals must be transmitted to the fire department.</UPH\_smoke1><UPH\_smoke2>smoke alarm signals must not be transmitted to the fire department.</UPH\_smoke2><UPH\_smoke3>smoke alarm signals must be transmitted as a supervisory signal to the fire department.</UPH\_smoke3><UPH\_smoke4>smoke alarm signals must be transmitted as an alarm signal to the fire department.</UPH\_smoke4>

## 2.15 EQUIPMENT AND FURNITURE REQUIREMENTS

### 2.15.1 FURNISHINGS

#### 2.15.1.1 FURNITURE LIST/CHARTS:

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### 2.15.1.1.1 Dwelling Unit:

2.15.1.1.1.1 Bedrooms: Bedroom must be able to accommodate the following furniture with adequate circulation for one occupant:

2.15.1.1.1.1.1 One twin bed with headboard and footboard 40" wide x 85 long".

2.15.1.1.1.1.2 One chest of drawers 36" wide x 20" deep.

2.15.1.1.1.1.3 One nightstand 26" wide x 20" deep.

2.15.1.1.1.1.4 One desk 60" wide x 26" deep with retractable keyboard tray and overhead study carrel.

2.15.1.1.1.1.5 One desk chair 19 ½" wide by 18" deep.

2.15.1.1.1.2 Kitchens: If counter seating/dining is not provided, kitchen layout must have a dining/seating space which can accommodate the Providing listed below:

2.15.1.1.1.2.1 One dining table for four.

2.15.1.1.1.2.2 Four chairs for the dining table.

2.15.1.1.1.3 Living Room: *Under Development*

2.15.1.1.2 Day Room: *Under Development*

2.15.1.1.3 Fitness Room: *Under Development*

2.15.1.2 CASEWORK: Provide cabinets complying with AWI Quality Standards.

### 2.15.1.2.1 Dwelling Unit Casework:

2.15.1.2.1.1 Kitchens: Provided a minimum of 12 linear feet of base cabinet systems with 12 linear feet of standard height counter and 12 linear feet of wall cabinet systems. 12 linear feet of standard height counter includes required sink. In addition to the 12 linear feet of standard height counter, kitchen layout must accommodate a minimum of 36 linear inches of counter style seating and dining for two people or provide space for dining table outside of the kitchen area. Provide a minimum of two 18-inch-wide drawer units in the kitchen base cabinet system.

2.15.1.3 WINDOW TREATMENTS: Provide horizontal mini blinds at exterior windows. Uniformity of window covering color and material must be maintained to the maximum extent possible throughout each building. Blinds in barracks bedrooms must be room darkening mini blinds.

### 2.15.2 EQUIPMENT

#### 2.15.2.1 RESIDENTIAL APPLIANCES:

## UPH Standard Design Guidance

2.15.2.1.1 Kitchen Appliances: Each dwelling unit must have a full kitchen with adequate space and circulation to accommodate:

2.15.2.1.1.1 Refrigerator: A full size refrigerator 28 inches wide.

2.15.2.1.1.2 Range/Cooktop: <UPH\_RANGE>Range will be GFGI electric oven/induction range 30-inches wide, with a CFCI built-in 30-inch-wide vent hood. </UPH\_RANGE> <UPH\_FOURBURNER>Induction Cooktop must be CFCI built-in four-burner electric cooktop with a CFCI built-in vent hood and room for a separate convection microwave oven. </UPH\_FOURBURNER>

2.15.2.1.1.3 <UPH\_DISPOSAL>Garbage Disposal: Provide a garbage disposer at the kitchen sink.</UPH\_DISPOSER>

2.15.2.1.2 Dwelling Laundry: Washer and dryer must be GFGI full-size heavy duty residential side by side.

2.15.2.2 COMMERCIAL EQUIPMENT:

2.15.2.2.1 Laundry Equipment:

2.15.2.2.1.1 Washer: Washer must be GFGI commercial grade.

2.15.2.2.1.2 Dryers: Dryer must be GFGI commercial grade.

2.15.2.2.1.3 Fixed Tables: Each CFCI fixed heavy gauge stainless steel clothes folding/hanging table must be 2'-0" deep by 5'-0" wide.

2.15.2.2.1.4 Utility Sink: Utility sink must be CFCI.

2.15.2.2.2 Vending and Ice Machine Equipment:

2.15.2.2.2.1 Vending Machines: Vending Machines will be full-size and will be GFGI.

2.15.2.2.2.2 Ice Machines: Ice cube machine-dispenser will be capable of producing a minimum 250 pounds of regular ice cubes in 24 hours, with 180-pound storage capacity and will be GFGI.