



**US Army Corps
of Engineers®**



Department of the Army

Facilities Standardization Program

TRANSIENT TRAINING OFFICER'S QUARTERS

Standard Design

Revision 4.8

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3.0 TRANSIENT TRAINING OFFICERS QUARTERS (TOQ)

3.1 GENERAL REQUIREMENTS

The standard design drawings graphically integrate Army Standard requirements, including net square footage, functional adjacencies, and control zones. The designer of record must utilize regional and climatic criteria to influence the building design.

Functional floor plans and conceptual site plans are provided for this facility in the applicable appendices. Use of these plans for the interior functional arrangement is mandatory. However, the plans may be modified to accommodate local, regulatory, engineering, architectural, life safety, and/or construction requirements at time of proposal. Additional consideration will be given for innovative, creative, or cost-saving proposals which meet or exceed the minimum requirements as established in the RFP.

Minor variations in the basic design forms of the facility types are permissible to accommodate proposed construction processes and materials. Building durability must not be diminished with the use of such systems as compared to the systems and finishes indicated in this package.

Floor and Site plans may change after award with installation and the Center of Standardization (COS) approval to enhance design, comply with codes, or support constructability.

3.1.1 FACILITY DESCRIPTION

- A. TOQ: Each two-story transient training Officer' Quarters (Senior Leaders Quarters) contains forty semi-private senior leader sleeping rooms with baths to accommodate E7-E8 grade personnel.

3.1.2 FACILITY RELATIONSHIPS: (NOT USED)

3.1.3 ACCESSIBILITY REQUIREMENTS:

Officers' Quarters (Senior Leader Quarters) are intended to be occupied by able-bodied personnel only, therefore are not required to be accessible.

3.1.4 BUILDING AREAS:

- A. GENERAL: Area requirements for circulation space and utility rooms area to the discretion of the designer of record in accordance with applicable codes and requirements, counted in the gross square footage for each facility type. Coordinate column spacing and layout with the building floor plans concealing columns within or aligning with walls. Plan column placement to not interfere with the functionality of the space, providing clear spans for the larger open areas shown in the standard design plans.
- B. GROSS AREA: Maximum building gross areas must not be exceeded. A smaller overall gross areas is allowed if all functional relationships in the floor plans and mandated net areas indicated in the building finish schedules are met. Clearly indicate proposed overall building(s) gross area calculation, to include net areas, building gross area, and half scope areas.
- C. HALF SPACE: Half scope areas must be included in the gross area for balconies and porches; overhangs greater than 3'-0" in width, exterior covered loading platforms of facilities, either depressed, ground level, or raised; covered but not enclosed passageways or walks; covered and uncovered but open stairs; and covered ramps.
- D. EXCLUDED SPACE: The following must not be included in the gross building area; Crawl spaces; exterior uncovered loading platforms or facilities, either depressed, ground level, or raised; open paved terraces; roof overhangs and soffits for weather protection 3'-0" or less in width; uncovered ramps; uncovered stoops; and utility tunnels and raceways.

- E. **NET AREA:** The standard floor plans mandate authorized space allowances for the functional areas as indicated on the drawings in the building finish schedules. Net area is measured to the inside face of the functional requirements, overall gross area limitations, and other recognized design principles. If net area requirements are not indicated as mandated, the space must be sized to accommodate the required function, comply with code requirements, and comply with overall gross area.

3.1.5 **ADAPT BUILD MODEL:** (NOT USED)

3.2 **FUNCTIONAL AND OPERATIONAL REQUIREMENTS**

3.2.1 **FUNCTIONAL SPACES – OFFICERS’ QUARTERS (SENIOR LEADERS QUARTERS)**

- A. **GENERAL:** Refer to the Standard Design drawings for minimum net floor areas, space adjacencies, doors, and windows.

The Officers’ Quarters (Senior Leaders Quarters) is a two-story building housing up to 80 senior leaders in 40 living/sleeping rooms. The Officers’ Quarters are sized to accommodate a heavy armor BCT to include the E7 and E8 personnel that cannot be housed in the semi-private Senior Leader Quarters in the Barracks.

Each living module consists of two semi-private rooms. Each room has a bathroom with shower, a sink outside the bathroom, two closets, and a space for two beds. The rooms can be assigned as double or single occupancy consistent with space authorized by grade. Laundry rooms, activity rooms, and vending are available on each floor.

If two Battalion complexes are required, and two Officers’ Quarters (Senior Leaders Quarters) are required, the two buildings may be combined into a single facility. Methods for combining the buildings, including adding stories (requiring an elevator for buildings over two stories), must meet the design criteria set forth in this Standard Design as determined by the COS.

ATFP Building Occupancy Level: The Officers’ Quarters must be considered “billeting” with respect to ATFP requirements.

- B. **PRIMARY SPACES:**

1) **Senior Leaders’ Quarters (SLQ):**

- (a) **Sleeping Rooms:** The two built-in closets in each SLQ must include minimum 3’-0” wide doors. Each sleeping room must include at least one exterior window at 3’-0” above finish floor with blinds. Columns or pilasters along the walls must not be used to allow for an efficient furniture layout.
- (b) **Bath and Sink Areas:** Provide floor mounted toilets with full seats and seat covers. Provide minimum 2’-4” wide bath doors.

2) **Laundry Rooms:** Each laundry room must be provided 4 heavy duty clothes washers and 5 heavy duty clothes dryers as part of the FF&E Package which is not in this contract.

- 3) **Common Areas:** These spaces may be used for administration or conferencing. Provide spaces for casual seating to view a wall mounted television in each area. Assure adequate framing is provided to support a large flat screen television for training/briefings as well as entertainment. The television and mounting bracket must not be in the contract since it will be GFGI. Provide space for tables with seating.

Within the common area on the second floor, provide a kitchenette with space for a refrigerator/freezer as part of the FF&E, which is not part of this contract, stainless steel double

basin sink, and space for a microwave oven, which will be provided by others. Provide base and wall cabinets, 8'-0" minimum length.

C. COMMON AND UTILITY AREAS:

- 1) **Vestibule:** Provide an enclosed transition space between the exterior and lobby. Include a clearance between doors to accommodate a 10'-0" long walk-off grate to meet LEED credit requirements.
- 2) **Corridors:** Minimum corridor width is 5'-0".
- 3) **Stairs:** Provide circulation to the second floor near the front entrance and at the end of the corridor. Both stairs must be enclosed with windows included for light and view. The Installation may choose to use a covered, open stair at the end of the second floor corridor in lieu of an enclosed stair.
- 4) **Storage Rooms:** Provide a storage room on each floor, including full built-in adjustable shelving.
- 5) **Janitor's Closets:** Provide floor mop sink on each floor including service faucet with hose and bracket, mop rack, and floor drain.
- 6) **Mechanical, Electrical, and Telecommunications Rooms:** Size and locate utility rooms to allow equipment removal and maintenance. The second floor mechanical room must include an interior access door and double exterior doors (or removable louver) for equipment replacement. The main electrical room must be located on the first floor. Provide a single out swinging interior door with panic hardware for the electrical rooms when required by code. Provide dedicated interior rooms for telecommunications equipment, minimum 8'x10' on the first floor and minimum 6'x8' on the second floor.
- 7) **Vending/Recycle Areas:** Include space for one full size soft drink and one full size snack vending machine on each floor, which will be provided by others. Provide space and appropriate utilities for a GFGI ice machine, included in the FF&E Package. Provide space for five recycle bins to meet LEED credit requirements.
- 8) **Bootwashes:** Provide bootwashes at the two exterior entries. Bootwashes must accommodate boot washing, drainage, and grit/dirt removal. Each boot wash facility must include minimum two freeze-proof hose bibs, removable bar grating for sediment clean-out, mounted boot brushes, and drying rack/handrail. Coordinate bootwash drainage requirements with the Installation.

3.3 **SITE FUNCTIONAL REQUIREMENTS**

A. PARKING:

- 1) Provide paved and striped parking for privately owned vehicles (POV) as shown in the provided site layout in accordance with the Installation's requirements. Site layout includes handicap accessible parking spaces near buildings required to be handicap accessible 20 parking spaces to accommodate occupants for the Officers' Quarters (Senior Leaders Quarters).

B. ACCESS DRIVES AND LANES:

- 1) **Service Drives:** Provide service drives to each building for access to the mechanical room location. Restrict access as required for ATRP and the Installation. Service drives must be minimum 10 feet wide.

- 2) **Emergency Vehicle/Fire Access Lanes:** Provide fire access to each building as required by UFC 3-600-01 with access restricted as required for ATFP and the Installation. Required fire access lanes designed for emergency vehicle loads and widths must also be used as sidewalks. When Officers' Quarters are included, assure that access for fire trucks complies with fire protection requirements with access on three sides, including both long sides, of Officers/ Quarters (Senior Leader Quarters) within 33 feet or as determined by the Installation Fire Chief.

3.2.2 SITE AND LANDSCAPE REQUIREMENTS

A. SITE STRUCTURES:

- 1) **Dumpster Enclosures:** Provide screened or enclosed dumpster areas, architecturally compatible with the buildings served and as required by the Installation. Enclosures must be sized to the required number of dumpsters and recycle containers. Located dumpsters in accordance with ATFP standoff distance requirements.
- 2) **Service Yards:** Provided mechanical equipment enclosures, sized to allow clearances for maintenance as required by the equipment manufacturer. Locate enclosures in accordance with ATFP standoff distance requirements. Where top protection is required in accordance with ATFP requirements, assure adequate height is provided for maintenance without removal of top protection. Design top screening for removal in easily handled sections.
- 3) **Utility Pads:** Provided concrete exterior utility pads for any mechanical or utility device needed for the building operation. Include all necessary piping, wiring, or utility extensions for the device to function as designed. Locate mechanical equipment near existing or proposed sidewalks, access drives, or parking areas to eliminate the need to construct additional accesses.
- 4) **Bollards:** Provide 5-foot high, concrete-filled, schedule 80 galvanized steel pipe bollards, painted safety yellow at overhead motorized coiling/roll-up or sectional doors and adjacent to the service yards and building corners where frequent nearby vehicle movement increased the risk of damage by vehicle impact. Provide bollards 5 feet from the edge of electrical and mechanical equipment. Bollards must include concrete footings designed to withstand organization vehicular impact. Minimum required bollards are shown in the floor plans. Provide 6-inch diameter bollards.

B. LANDSCAPING/HARDSCAPING:

- 1) **Pedestrian Sidewalks:** Provide minimum 6-foot wide sidewalks connecting each building entrance with parking areas, other buildings in the complex, and as needed for fire exiting and site circulation..
- 2) **Landscaping:** Minimal landscaping must be provided as required by the Installation. All other areas must be seeded in lawn grasses acceptable to the climate and Installation. Landscape with materials indigenous to the area, eliminating requirements for irrigation and minimizing maintenance. Reference Installation planting lists.

3.5 ARCHITECTURAL REQUIREMENTS

- A. **GENERAL:** Provide durable and easily maintainable materials. Do not use exterior materials that require periodic repainting or refinishing processes. Material exposed to weather must be factory finished, integrally colored, or provided with intrinsic weathering finish.
- B. **ROOF ACCESS:** Provided lockable roof access hatches at the top of stairs as required by UFC 3-600-01 and Code for buildings over three stories. Include ladder, top ladder extension, and lockable ladder guard for each roof access.

C. **MINIMUM FINISH REQUIREMENTS:** Where concrete masonry units (cmu) are required as the room finish in the drawings on the finish schedules for Officer Quarters, alternative high impact finishes may be used, including high impact gypsum board and high impact plaster coating. Impact resistance must be as approved by the Installation.

D. **EXTERIOR OPENINGS:**

- 1) **Storefronts (Main Entrances):** Provide aluminum storefront doors and frames with Architectural Class 1 anodized finish, fully glazed with insulating glass units, having medium or wide stiles for entry into lobbies or corridors. Framing systems must have thermal-break design. Storefront systems must comply with wind load requirements of applicable codes and criteria including UFC 4-010-01.
- 2) **Windows:** The number of windows shown on the drawings illustrate the minimum number of windows required with the intent to include additional windows to balance building elevation aesthetics or achieve more day lighting or views. Provide insulated glass units in high efficiency window systems with thermally broken frames complying with applicable codes and criteria including UFC 4-010-01. Window sills must be designed for drainage and discouraging bird nesting. Where operable windows are used, aluminum framed insect screens must be provided. Window operability must be determined by the Installation.
- 3) **Exterior Doors and Frames:** All exterior doors must be minimum 3'-0" wide, including those used in double door openings.
 - a) **Exterior Insulated Hollow Metal Doors & Frames:** Provide insulated hollow metal exterior doors for entry to all spaces other than corridors or lobbies. Doors must be minimum Level 3, physical performance Level A, Model 2 flush, seamless. Frames must be Level 4, 12-gauge, with continuously welded mitered corners and seamless face joints. Doors and frames must be A60 galvanized, in compliance with ASTM A653 and must be factory primed for field paint.
 - b) **Exterior Overhead Doors:** Overhead doors, where required, must be insulated, motorized, coiling/roll up or sectional doors with factory finish.
- 4) **Hardware:**
 - a) **Door Hardware:** All door hardware must be Grade 1 for heavy duty use. Keying must be coordinated with the Installation. Cores must have not less than seven pins; cylinders must have key-removable type cores.
 - b) **Electronic Access System:** When the Installation requires electronic access, all main entry doors must be included.

E. **INTERIOR REQUIREMENTS:**

- 1) **Interior Doors:** All interior doors must be minimum 3'-0" wide, including those used in double door openings.
 - a) **Interior Wood Doors:** All interior doors for all facility types must be solid core wood unless otherwise indicated. Provide flush solid core wood doors conforming to WDMA I.S.-1A. Stile edges must be non-finger jointed hardwood compatible with face veneer. Provide Architectural Woodwork Institute (AWI) Grade A hardwood face veneer for transparent finished doors.
 - b) **Interior Insulated Hollow Metal Doors:** When indicated for use, hollow metal; doors for interior use must be factory primed and comply with ANSI A250.8/SDI 100. Doors must be minimum Level 2, physical performance Level B, Model 2, flush, seamless.

- c) **Interior Hollow Metal Frames:** All interior door frames must be hollow metal unless otherwise indicated. Interior hollow metal frames must be factory primed and comply with ANSI A250.8/SDI 100. Frames must be minimum Level 2, 16 gauge, with continuously welded mitered corners and seamless face joints.

F. ACOUSTICAL REQUIREMENTS:

- 1) Sound Transmission Reduction: Provide STC rated wall and door assemblies between spaces with minimums as shown on the drawings.
- 2) Room Noise Criteria and Testing: Building construction and installed equipment must accommodate room noise criteria limits.
 - a) Room Criteria (RC): Occupancy classification establishes acceptable background sound in rooms over the frequency range of 16 Hz to 4000 Hz, particularly measuring rumbling, rattling, buzzing, hissing, and humming from building mechanical and electrical systems. Rooms must not exceed the Room Criteria (RC) indicated below. All RC ratings must be neutral (N). Designers of Record must determine adequate construction requirements to achieve the following RC limits:

Open Offices:	RC 35 (N)
Private Offices:	RC 30 (N)
Conference Rooms:	RC 25 (N)
Sleeping Rooms/Bays:	RC 25 (N)
Common Rooms:	RC 25 (N)
 - b) RC Testing: Test all rooms with all building systems operating, including air compressors. Measure the sound pressure level in dB referenced to 20 micro Pascals. Report the results of the tests by plotting the sound pressure level in each octave band from 32-4000 Hertz on Room Criterion Curve sheets published by ASHRAE. Provide an individual plot for each room and a narrative discussion explaining the test results. Rooms exceeding the above RC must have either systems or sound attenuation altered until the RC rating is met.

3.5.1 FINISHES AND INTERIOR SPECIALTIES

- A. GENERAL: Minimum interior finishes must be as indicated in the finish schedules for each facility type on the drawings. Higher grade finishes may be proposed, however, due to durability issues with these transient facilities, may not be acceptable.
- B. INTERIOR FINISHES:
 - 1) **Walls:** All 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 wall finish must be minimum Level 4 or 5 finish in accordance with GA 214.
 - 2) **Countertops/ Vanities:** Provide solid polymer countertops/vanities and integral backsplashes. Include 4 inch solid polymer skirts for vanities and waterfall edges for countertops.
 - 3) **Window Stools:** Provide solid polymer window sills.
- C. INTERIOR SPECIALTIES:
 - 1) **Signage & Directories:** Provide a comprehensive signage package for each facility including changeable directories, way-finding signage, and room signage with room numbers and changeable room names.

- 2) **Restroom, Bath, and Shower Accessories:** Provide commercial grade, heavy duty toilet accessories with metal finish. (Type 304 stainless steel when available.) Coordinate for toilet accessories that may be provided by an Installation's maintenance contract.
- 3) **Wall Protection:**
 - a) **Chair Rail:** Provide chair rails in areas prone to chair height impacts including conference rooms, waiting areas, and common use areas.
 - b) **Corner Guards:** Provide surface mounted, high impact resistant, integral color, snap-on type resilient corner guards, extending from floor to ceiling for all column outside corners in high traffic areas such as corridors, waiting areas, lobbies, conference and common use rooms. Factory fabricated end closure caps must be provided for top and bottom of corner guards.
- 4) **Janitor's Closet:** Provide floor mop sink where shown in each facility with 4'-0" high stainless steel, tile, or solid polymer backsplash, service faucet with hose and bracket, mop rack for three mops, minimum 6'-0" of linear stainless steel shelving capable of supporting minimum 30 lb. per linear feet, and floor drain.
- 5) **Clothes Closets:** Provide a wire shelf the width of the closet with hanger bar capable of supporting minimum 30 lb. per linear foot in each clothes closet in senior leaders' quarters.
- 6) **Restrooms:** Provide vanity light fixtures above glass mirror for length of the vanity in each restroom. Provide a solid polymer countertop with integrally molded lavatories, minimum 16"x12", and 6" high coved back and side splash. The number of fixtures shown in the facility type plans must be considered the minimum requirement.
 - a) Men's Restrooms: Urinals must be wall hung. Provide floor mounted, 3/4-inch solid polymer toilet partitions and urinal screens, toilet tissue dispensers, liquid soap dispensers, paper towel dispensers, coat hooks, and waste receptacles.
 - c) Women's Restrooms: Provide floor mounted, 3/4-inch solid polymer toilet partitions, toilet tissue dispensers, napkin disposals, liquid soap dispensers, paper towel dispensers, coat hooks, and waste receptacles.
- 7) **Senior Leaders' Quarters Bath and Sink Area:** Provide a minimum 3'-0" wide solid polymer countertop with integral sink in each SLQ with base cabinet having hinged door(s). Provide one, minimum 3'-0" x 3'-0" fiberglass shower unit in each bathroom with curtain, curtain rod, and integral soap shelves. Towel pins and toilet tissue dispensers must be provided in each bath and sink area.
- 8) **Laundry rooms:** Provide a custom solid polymer clothes folding table with clothes rod above.
- 9) **Storage rooms:** Provide full built-in adjustable shelving with capability of supporting minimum 30 lb. per linear foot.
- 10) **Common area, second floor:** Provide a kitchenette, 8'-0" minimum length with base and wall cabinets and double stainless steel kitchen sink and gooseneck faucet.

3.6 STRUCTURAL REQUIREMENTS:

- A. **GENERAL:** System design and construction must meet all applicable criteria identified herein.
- B. **BUILDING CATEGORY (based on 2009 criteria per UFC 1-200-01)**
Officers Quarters: II
- C. **SEISMIC IMPORTANCE FACTOR (IE)**
Officers Quarters: 1.0

3.7 NOT USED

3.8 PLUMBING REQUIREMENTS

- A. GENERAL: System design and construction must meet all applicable criteria identified herein.
- B. DOMESTIC WATER:
 - 1) **Water Service**: The domestic water service to the building must enter the building in the mechanical room. The water service must be provided with a reduced pressure backflow preventer to isolate each building from the base water system. A main shut-off valve must be provided inside each building, coordinate location with the Installation.
 - 2) **Water Distribution**: A horizontal water distribution system must serve the building, with isolation valves at each branch to common areas serving two or more fixtures, and at each wall hydrant or equipment connection. Water connections for mechanical equipment systems make-up will be isolated from the domestic water system with a reduced pressure backflow preventer.
- C. SANITARY SYSTEM: A sanitary drain, waste and vent system will extend from the connection to the site utility system to all fixtures and equipment requiring service. Drainage and vent stacks must extend vertically and be vented through the roof. Trap primers must be provided for drains susceptible to loss of water seal by evaporation.
- D. FLOOR DRAINS: Floor drains must be provided in mechanical rooms, janitor rooms, vending machine areas, restrooms, laundries, and for equipment requiring drainage. All floor drains must be automatically primed by single trap primers.
- E. WALL HYDRANTS: Wall hydrants must be provided at a maximum spacing interval of 150 feet around the perimeter of the building. Wall hydrants must be box type, freeze-proof, with integral vacuum breaker/backflow preventer.
- F. WATER HAMMER ARRESTERS: Water hammer arresters will be provided for shock suppression. The placement of water hammer arresters must be as referenced in the IPC.
- G. GAS DISTRIBUTION: The design and installation of interior natural gas distribution systems must be in accordance with manufacturer's recommendations and the applicable sections of ASME B31.8, NFPA 54.
- H. LOBBY: Provide one standard electric water cooler in the lobby on each floor.
- I. LAUNDRY: Each laundry must include one solid polymer utility sink with gooseneck faucet and a floor drain. Water and sanitary lines must be provided to accommodate the washers and utility sink.
- J. LIVING/SLEEPING ROOM BATH: Locate shower heads such that spray is directed at opposite wall and not shower curtain.
- K. VENDING AREA: Provide adequate water supply for the ice machine.
- L. COMMON AREA: Within the counter, provide stainless steel double basin sink with gooseneck faucet. Provide adequate water supply for refrigerator ice maker.

3.9 COMMUNICATIONS AND SECURITY SYSTEMS

- A. GENERAL: System design and construction must meet all applicable criteria identified herein.
- B. TELECOMMUNICATIONS SYSTEMS:
 - 1) **Connectivity**:
 - a) **Officers Quarters, Senior Leader Quarters (SLQ)**: Provide each SLQ sleeping room with a single 8P8C voice outlet.

- b) **Officers Quarters, Common Areas:** Provide data/internet ports along walls and for television.
 - c) **Utility Rooms:** Provide each utility room with at least one wall phone outlet located near the entrance door including mechanical, electrical, and telecommunications rooms.
- 2) **CATV:**
- a) **Officers Quarters, Senior Leader Quarters (SLQ):** Provide each SLQ sleeping room with one CATV outlet.
 - b) **Officers Quarters, Common Areas:** Provide CATV for television.
- C. AUDIO/VISUAL SYSTEMS & INFRASTRUCTURE:
- 1) **Projectors:** Provide power where projectors will be installed. Projectors are GFGE by the Installation, not included in the FF&E Package.
 - 2) **PA Systems:** Provide power and conduit with pull wire where public address (PA) systems will be installed. PA systems are GFGE by the Installation, not included in FF&E Package.
- D. SECURED COMMUNICATIONS: (NOT USED)
- E. SECURED INFRASTRUCTURE/SYSTEMS: (NOT USED)

3.10 **ELECTRICAL REQUIREMENTS:**

- A. **GENERAL:** System design and construction must meet all applicable criteria identified herein.
- B. **INTERIOR ELECTRICAL SYSTEM:**
 - 1) **Transient Voltage Surge Suppression (TVSS):** Transient voltage surge suppression (TVSS) must be provided for all buildings. TVSS devices must parallel the operating devices in providing a path to ground for an electrical surge and thereby limiting the magnitude of the transient voltage surges on the system. TVSS devices must be mounted adjacent to or integral with the main distribution panel in accordance with the manufacturer's recommendation. TVSS devices must be hard wired into the electrical distribution system utilizing a circuit breaker connection. TVSS units must be tested in accordance with IEEE C62.45 using IEEE C62.41 Category B waveform. Units must be UL 1449 listed and labeled. The modes of protection must be the normal mode (L-N, L-L) and common mode (L-G, N-G). TVSS units must include self-diagnostic and self-testing capabilities, a resettable transient event counter, and a local audible alarm with mute capability.
 - 2) **Receptables:** Receptacles must be provided adjacent to all CATV and data jack locations.
 - 3) **Spare Capacity:** All switchboards, panelboard, load centers, and feeders must be designed with 15% spare capacity for future additions and changes.
- C. **EXTERIOR LIGHTING SYSTEM:** Exterior lighting systems must be provided in accordance with the site design contract. Areas include sidewalks, roadways, service yards, facility aprons, open storage areas, and parking areas. Poles located within the service yards, facility aprons, and hardstand parking areas must be located and protected to minimize damage from vehicles. Building mounted light fixtures may be used around the building perimeter to supplement pole mounted light fixtures. Coordinate the control of the exterior lighting with the Installation.
- D. **INTERIOR LIGHTING SYSTEM:**
 - 1) **Security Lighting:** Security lighting must be provided at service entrances and at utility rooms. Wall mounted security lighting fixtures must be shrouded to minimize glare.
 - 2) **Exit and Emergency Lighting:** Illuminated exit signs and egress/emergency lighting must be provided by self-contained emergency battery units for all emergency exits and passageways as required by NFPA 101. Exit signs must be LED type, letter color in accordance with Installation. If installed on a switched circuit, emergency lighting must be configured so that the emergency lamp is illuminated regardless of the position of the control switch.
 - 3) **Sensors:** Occupancy sensors (auto on with movement and auto off with no movement) must be utilized for lighting control in the public restrooms, latrine/showers and all vertical/horizontal circulation spaces. All other spaces must be provided with vacancy sensors (manual on or manual off and auto off with no movement).
- E. **GROUNDING:** Grounding points must be provided on 40-foot centers (maximum) and coordinated with the parking layout. Provide a minimum of one grounding point for every eight vehicles parked in a double row, and one grounding point for every four vehicles parked in a single row configuration.

3.11 **HEATING VENTILATING AND AIR-CONDITIONING (HVAC) REQUIREMENTS:**

- A. **GENERAL:** System design and construction must meet all applicable criteria identified herein.
- B. **HVAC DESIGN CONDITIONS:**
 - 1) **Outdoor Design Temperature, Cooling:** The outdoor design temperature for comfort cooling must be the 1% dry bulb and the corresponding wet bulb temperature for the locale or the 1% dehumidification dewpoint temperature and the corresponding dry bulb temperature, whichever produces the greater cooling load.

- 2) **Outdoor Design Temperature, Heating:** The outdoor design temperature for heating must be the 99% dry bulb temperature for the locale.
- 3) **Indoor Design Temperature, Cooling:** The indoor design temperature for comfort cooling must be 15 degrees F less than the 1% outdoor air temperature, but will be no lower than 75 degrees F, nor any greater than 78 degrees F.
- 4) **Indoor Design Temperature, Heating:** The indoor design temperature for comfort heating must be 68 degrees F. Winter humidification must be required where the indoor relative humidity is expected to fall below 20%.
- 5) **Indoor Design, Humidity:** The indoor design relative humidity must be 50%.

3.12 ENERGY CONSERVATION REQUIREMENTS: The building, including the building envelope, HVAC systems, service water heating, power, and lighting systems must meet the mandatory provisions and the prescriptive path requirements of ASHRAE 90.1.

Design the building including the building envelope, HVAC systems, service water heating, power and lighting systems to achieve a non-plug load energy performance that is at least 40% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA 90.1-2007. Plug/Process loads must be included in the building energy modeling but are subtracted in the final calculation for Energy Performance (Examples of Plug or Process loads are computers, elevator, and food service equipment).

3.13 FIRE PROTECTION CRITERIA:

A. **GENERAL:** System design and construction must meet all applicable criteria, using the most stringent in case of conflict. All facility types require full protection throughout by an automatic sprinkler system in accordance with NFPA and UFC documents. Suggested use and occupancy classifications are as follows:

1) **OFFICERS QUARTERS:** IBC, Group R-1 (Residential Transient). NFPA 101, New Hotels & Dormitories.

B. **FIRE PUMP:** A fire pump or fire booster pump must be provided if required, based on the available flow and pressure. (Prior to award, contractors must use the flow test data provided. After award, designer of record must be responsible for performing a hydrant flow test.) Data from this test must be used as the basis for design as indicated above for automatic sprinkler protection. When a fire pump is required, an additional room must be created, preferably within or near the mechanical room, changing the building floor plan without adding to the total floor area. These changes must be made during design and will require COS approval.

C. **FIRE DETECTION AND ALARM SYSTEMS:** In the following spaces, smoke detection devices must be individually monitored and addressed. Tampering with a smoke detector must transmit a trouble signal to the Fire Department. A smoke detector with sounder must be provided. The fire alarm system must be programmed so that the activation of the smoke detector must activate the sounder in the sleeping room, but must be connected to the FACP for supervision only and must not activate the general alarm.

1) Officers' Quarters, Senior Leaders Quarters and Sleeping Bays.

3.14 EQUIPMENT AND FURNITURE REQUIREMENTS:

3.14.1 FURNISHINGS: Reference the furniture layouts on the drawings and the specific requirements in this section.

3.14.2 EQUIPMENT: Reference the furniture layouts on the drawings and the specific requirements in this section.

3.15 FACILITY SPECIFIC REFERENCES: (NOT USED)

ATTACHMENT A: STANDARD DESIGN DRAWINGS

All Drawings are in compliance with Army Standard (AS) and the USACE A/E/C CADD Standards.

OFFICERS QUARTERS: TRANSIENT TRAINING

A-101 OFFICERS QUARTERS FIRST FLOOR PLAN
A102 OFFICERS QUARTERS SECOND FLOOR PLAN