Technical Criteria
Non-Commissioned Officer Academy
Catcode: 171XX
February 9, 2017

CENTER OF STANDARDIZATION:
Primary CoS (Campus, Operations, DFAC, and Instruction)
Norfolk District
Supporting CoS (Barracks):
Fort Worth District
Technical Criteria for
Non-Commissioned Officer (NCO) Academy (NCOA) Complexes

1.0 EXECUTIVE SUMMARY

1.1 PURPOSE

The Non-Commissioned Officer Academy (NCOA) is part of the Non-Commissioned Officer Education System (NCOES) which provides an Academy environment for educating Non-Commissioned Officers (NCOs) in the United States Army. At the Academy, NCOs receive individual and collective training in a segregated campus setting that promotes operational efficiency while maximizing Command and Control (C2).

The NCOA has a defined course document that outlines the Academy’s curriculum; that document is the Program of Instruction (POI). Because the POI describes the academic timeline, administrative support requirements, and the materials and equipment necessary to conduct the NCOA course(s), the selected approved POI will determine the facility requirements.

The following describes the courses that are typically offered at an NCOA:

**Basic Leader Course (BLC):** The BLC is a branch-immaterial course that provides basic leadership training. The BLC provides Soldiers an opportunity to acquire the leader skills, knowledge, and experience needed to lead team-level size units. It is the foundation for further training and development. Scope of tasks/competencies addressed in the BLC will provide both the team and squad-level perspective, where appropriate, and build upon experience gained in previous training and operational assignments.

**Advanced Leader Course (ALC):** The Advanced Leader Course is a branch-specific course that provides Soldiers selected for promotion to Staff Sergeant (SSG) with an opportunity to enhance leadership, technical skill, tactical expertise and experience needed to lead squad-size units. Training builds on experience gained in previous training and operational assignments. Branch schools and selected training battalions conduct this course in a live-in learning environment, where possible.

**Senior Leader Course (SLC):** The SLC is a branch-specific course that provides an opportunity for Soldiers selected for promotion to E-7 to acquire the leader, technical, and tactical skills, knowledge, and experience needed to lead platoon-size units. Training builds on experience gained in previous training and operational assignments. Branch schools and selected training battalions conduct this course in a live-in learning environment, where possible.

**Master Leader Course (MLC):** The MLC is a branch-immaterial course that provides an opportunity for Soldiers selected for promotion to Master Sergeants (MSG) to acquire the leader skills required for success at both troop and staff assignments throughout the defense establishment.

1.2 OVERALL CONCEPT

The concept behind the standard and this technical criteria is to provide an economical modular and scalable academic campus and building solution responsive to small, medium, or large NCO student populations on a variety of sites of varying supporting features. These solutions are included as appendixes drawings to the standard design criteria. The standard flexibly accommodates a wide variety of conditions, including:

1) NCO Academic Building alone, supported by existing nearby barracks and DFAC
2) NCO Academic Building with attached or detached (contiguously located) barracks, with or without a contiguously located DFAC, or
3) In the case of no TDY requirement (or when TDY students can otherwise be accommodated), an NCO Academic Building appropriately located to provide efficient access and use of a separate DFAC.

For the Academic Building and the Barracks, economies of scale and operational efficiencies point to a single story solution for all but the larger NCOAs. The important functional relationships between the spaces of the Academic Building – and between the building spaces and other facilities - is an important organizing element of the standard design solution. Quads have more or less direct access to outdoor training. Lockers/showers are convenient to the perimeter adjoining the outdoor covered training, as well as to the multipurpose room where they will support in/out processing, and PT activities and related instruction. The multipurpose room itself remains centralized; convenient for students access, and as it fronts the main entrance, accommodates large and/or visiting instructor lectures and, in a pinch, smaller POI-required graduation activities. Flanking the main entrance, Administration is bifurcated between staff and support and positioned for ease of command and control, in processing/out-processing, and the day to day operational mission of the academy…The organization of the spaces of the facility have been optimized for efficient conveyance, and in almost every case designed to accommodate a multiplicity of functions.

The NCOs day to day academic time (0900-1700) is largely spent in the perimeter academic “quads”; 4 classroom clusters with their related supporting instructor (Small Group Leader) space. The configuration of the quad clusters reflects optimal class size, the pedagogical objectives of leadership instruction, and distraction-free ingress/egress – a microcosm of the “academic campus” concept. The required internal circulation element of these quads double as pre-function hubs supporting the important instructor-instructor and instructor-student collaboration within …quads are connected by academic hallways, “learning streets”, in a barbell arrangement - which efficiently circulate students to/from classrooms and supporting areas like the multi-purpose space, centralized break areas, outdoor training and the toilet/shower/locker facilities IAW with the POI. These hallways are in turn anchored by a larger central lobby space accommodating circulation of staff, students, visitor ingress/egress. Scalability is another critical driving organizational element; the number of classrooms and their supporting instructor spaces are driven by throughput (instructor TDAs are based on established Instructor/Student ratios) and are most easily increased or reduced in whole number increments of 4-classroom quads which correlates with the vast majority of anticipated NCOAs. But incremental classroom additions/subtractions of other than 4 can also be accommodated within the same conceptual organization. ‘Front of the house’ operations – executive staff, administration, logistics, course management, duty desk, etc. – flank the main entrance and again scale easily by TDA algorithm. The Core spaces of the building – Multipurpose and flanking support spaces like lockers/showers, scale by extending the footprint IAW student population towards the rear of the building. The net effect of the modularized organization of the building is scalability throughout the size spectrum, while maintaining intact not only the functional relationships, but also the consistent overall look, feel, and professional learning environment commensurate with the aim of leadership training of the Army’s future leaders.

An NCOA will generally fall within three primary sizes: Small, Medium or Large. The size of the NCOA and the facility requirements are based on the annual throughput (enrollment) of Soldiers for a given NCOA course(s); through-put is captured from the Army Training Requirement and Resources System (ATRRS) which is derived from the Program of Individual Training (ARPRINT) during the Structure Manning Decision Review (SMDR) process. The three NCOA sizes are identified in Diagram 1.2 below by converting the annual throughput to an average daily student load by PN.

<table>
<thead>
<tr>
<th>NCOA Sizes</th>
<th>Annual Load (PN)</th>
<th>Avg. Daily Load (PN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>0 to 1,536</td>
<td>0 to 128</td>
</tr>
<tr>
<td>Medium</td>
<td>1,537 to 3,072</td>
<td>129 to 256</td>
</tr>
<tr>
<td>Large</td>
<td>3,073 to 4,608</td>
<td>257 to 384</td>
</tr>
</tbody>
</table>

Table 1.2
1.3 DESCRIPTION

DA PAM 415-28: The Non-Commissioned Officer Academy (NCOA) is comprised of a dedicated campus of buildings for conducting individual and collective training for Non-Commissioned Officers (NCOs). The Non-Commissioned Officer (NCO) Academy (NCOA) is required by the Army to accommodate administration, instruction, living, dining, outdoor training, an equipment storage, related site amenities and parking. The NCOA is comprised of several facility types to meet the Army’s needs; the Academy Building which houses the Administration and Instruction functions, Barracks Building (when applicable), Dining Facility (when applicable), Covered training, and Lawn Equipment Storage Buildings (LEB). These facilities, along with a running track and additional support facilities, are arranged on the site as a unit to allow the students to live, eat, learn, and work together.

Academy Building:

Operations/Administration: This space is comprised of offices, special functions, locker/shower rooms, storage, and multi-purpose room components. The Operations/Administration areas are adjacent to the Instruction area.

Instruction: Instruction areas are comprised of classrooms, instructor offices, Instructor break/huddle rooms, and Student break rooms.

Barracks:

Living: Barracks are comprised of living quarters, toilets, laundry, lounge, storage, and other support spaces. The barracks building can be separated or attached to the Academic building. However, it must be within 1,680 feet of the academic building. It is preferable that it be located contiguously within the academic building’s site footprint.

Dining: DFAC is comprised of delivery, storage, preparation, cleaning, serving and seated dining. See the section on DFAC within this document for special considerations as part of an NCO Academy. NCOA will generally not warrant an entire DFAC, but rather may share a DFAC facility. Siting of a NCOA needs to be in close proximity to a DFAC.

Covered Training: A covered training area is included to provide a sheltered exterior space for training and instruction. The covered training structure can be separated or attached to the Academic Building. It is much preferred however to be attached.

Lawn Equipment Building: The LEB provides storage for maintenance equipment and materials for use by the Facility. This building is detached from all NCOA buildings.

Site/Parking: The site amenities includes a running track, physical training (PT) pits, vehicular and service access drives, dumpster area, and parking areas.

The following diagram, 1.3, illustrates the Core Activities for the NCO Academy and provides a layout that maximizes internal campus functions. The core facility requirements are represented in Square Foot (SF), unless other units are specified. Per Technical Instructions (TI) 800-01, the net to gross factor is 1.45.
2.0 STANDARD FACILITY PLANNING CRITERIA

2.1 OVERVIEW

The NCOA supports the training and education of NCOs as developed by the NCO Education System (NCOES). The courses provided at each NCOA are leader-centric, leveraging technological and conventional face-to-face teaching and delivery methods to train future leaders in the United States Army.

The facility requirements are generated by the approved POI and the space is defined utilizing the following facility planning tools:
- Web Based Real Property Planning and Analysis System (WebRPLANS)
- Army Space Planning and Criteria Manual (ASPCM)
- Approved Department of the Army (DA) standard designs, developed by the U.S. Army Corps of Engineers, Center of Standardization (COS)

2.2 NCOA REQUIREMENTS

The NCOA consists of seven core Academy activities: Instruction, Operation/Administration, Living, Dining, Covered Training, Parking and Outdoor Physical Training. Ideally, all seven activities are located in a campus setting and in close proximity to one another to enable the Soldier to walk between activities in a reasonable time. While the specific facility requirements for the NCOA are based upon the approved POI, every facility on campus shall be American Disabilities Act (ADA) compliant to accommodate Warrior in Transition (WT) Soldiers and must follow approved Anti-Terrorism/Force Protection (AT/FP) standards.

The NCOA requirement includes the following functional spaces:

1. Academy Building
   a. Instruction
      - Classrooms
      - Instructor Offices
      - Senior Instructor Offices
      - Instructor Huddle/Break rooms
      - Student Break Rooms
   b. Administration
      - Offices and cubicle workstations
      - Conference Room
      - Staff Work Room
      - Reception
      - Staff Break Room
      - Staff Toilets
      - Staff Duty Office
   c. Special purpose Space
      - Records Storage
      - Computer Maintenance Room
      - General storage Space
      - Locker Rooms
      - Multi-Purpose Room
      - In-processing space
   d. Support Spaces
Technical Criteria Non-Commissioned Officer (NCO) Academy (NCOA)

Vestibules
Corridors
Stairs
Elevators
Restrooms
Janitor Closets
Recycling Rooms
Telecommunications Rooms
Fire Pump Rooms
Electrical Rooms
Mechanical Rooms

2. Barracks Building
   a. Sleeping Rooms
   b. Laundry Room
   c. Lounge
   d. Storage

3. Dining Facility

4. Covered Training Facility

5. Outdoor Training Area
   a. Running Course
   b. Physical Training Pits and Pull

6. Site and Parking

7. Lawn Equipment Building
2.3 ACADEMY BUILDING

The Academy building is comprised of all Administration, Instruction and associated support spaces required to support the approved POI.

The following table 2.3.1 represents the Gross Square foot requirements for the Academy building.

<table>
<thead>
<tr>
<th>Type</th>
<th>Gross Square Feet (GSF)</th>
<th>Number of People (PN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>58,000</td>
<td>(each, 128 PN)</td>
</tr>
<tr>
<td>Medium</td>
<td>62,300</td>
<td>(each, 256 PN)</td>
</tr>
<tr>
<td>Large</td>
<td>86,200</td>
<td>(each, 384 PN)</td>
</tr>
</tbody>
</table>

Table 2.3.1

The main elements to the Academy Building are:
- Administration Suite
- Special Purpose Spaces
- Instructional Quads
- Support Spaces

Diagram 2.3.2 below represents, in schematic format, the main elements listed above:
2.3.1 Administration Suite

**Description:** The Administration Suite is the headquarters element for the Academy. The NCOA administration space allocations are based partly on the Utilization of Real Property, AR 405-70, (appendix D Administrative Space) to the extent applicable. Within the building, this activity is segregated from the Instruction activities and contains open and private offices for the Academy Headquarters Staff, i.e. the Commandant, Deputy Commandants, Chief of Training, Course Manager, and other support Staff Authorized by the approved TDA. This portion of Administrative space does not include instructor space; Both Senior and Small Group Leader (SGL) instructor offices are provided for within the Instruction portion of the building, i.e.: the academic “Quads”.) This space is required in accordance with the approved TDA for Authorized personnel.

The administrative suite is for the use of non-instructor staff within the approved TDA. The space is required for the efficient logistical administration of student activities and course instruction. The Staff oversees the Instructors, senior instructors and other authorized personnel required to maintain the facility.

**Criterion:** The administrative space criterion is based on AR 405-70 and TI 800-01 planning figure, but no more than 162 SF per approved TDA Authorized Staff members. This space does not include allowances for storage and special space. Office space is provided for approved TDA Authorized personnel only. The size of the Administration element will vary based on the approved TDA.


The Administration Suite shall consist of the following spaces:

- Private and Semi-Private Offices
- Waiting
- Staff Work Room
- Conference Room

2.3.1.1 Staff Private and Semi Private Offices

Offices are provided based on the approved TDA. Allocation of private and Semi-private offices shall be confirmed by the installation.

Staff offices shall be arranged to form an administration suite.

Provide private offices:

- One (1) Commandant (150 NSF each);
- One (1) Deputy Commandant (110 NSF each);
- One (1) CRS Manager (100 NSF each)

Small facility: One (1) Office (100 NSF each)
Medium facility: Two (2) Offices (100 NSF each)
Large facility: Three (3) Offices (100 NSF each)

Provide semi-private offices:

- One (1) receptionist-type 6’x8’ workstation and;
- Small facility provide: Three (3) Standard 6’x8’ workstations.
- Medium facility provide: Four (4) standard 6’x8’ workstations
- Large facility provide: Six (6) standard 6’x8’ workstations
2.3.1.2 Waiting

Provide a waiting area within the administration suite, adjacent to the reception desk to accommodate NCOA visitors. Waiting area shall be sized based on 10 SF per person to be served but shall not be less than 100 SF. Provide as follows:

- Small facility: eight (8) guests
- Medium facility: ten (10) guests
- Large facility: twelve (12) guests

Provide a minimum 20 NSF coat closet adjacent to and accessible from the waiting area.

2.3.1.3 Staff Work Room

Provide a minimum 200 NSF staff work room within the administration suite, capable of accommodating copiers, work tables, mail room equipment, and mail slots.

2.3.1.4 Conference Room

Provide a Conference room within the administration suite.

The conference room is used for Staff/Instructor meetings which occur at least twice during a course term and Staff meetings with visitors. The conference room shall be equipped with a large conference table to accommodate half of the intended people. Additional seating shall be made available by the use of chairs along the conference room walls.

Conference room shall be sized based on the following allowance: 150 SF + 10 SF per person;

- Small facility: 28 person = 430 NSF
- Medium facility: 50 person = 650 NSF
- Large facility: 72 person = 870 NSF

Conference room shall be equipped to provide video teleconferencing capability. Provide a minimum 20 NSF A/V control closet accessed from within the conference room.

Government furnished equipment includes conference tables (reconfigurable table is preferred), seating, and credenza. Provide in a speaker system. Government shall provide an interactive lectern and “smart” board system that shall be placed at one end of the room. Government shall provide a ceiling mounted projector in all size rooms. Consider coat/cap closet or rack for ½ of the occupants.

2.3.2 Special Purpose Spaces

**Description:** The NCOA special purpose spaces support the Administration suite and Instruction activities and enables the staff to conduct daily Academy operations. These spaces utilize approved DA standards. The activities identified below are required. Existing NCOAs will require a sub-set of these spaces to support the Academy personnel. The special purpose space is ideally located adjacent to the Administration suite. The special purpose space criterion must be justified and validated by TRADOC.

**Criterion:** Special purpose spaces are provided based on the size of the facility and will scale in reference to throughput and the approved TDA.

Special Purpose Space consists of the following:

- Staff Break Room
2.3.2.1 Staff Break Room

Provide a Staff Break Room. Locate within close proximity of the administration suite. Provide space based on 40 NSF per person based on the approved TDA of staff. Break Room shall include a sink, countertop, upper and lower storage cabinets, space for a refrigerator, space for a microwave, and tables and chairs to accommodate the Staff.

2.3.2.2 Record Storage

Provide a 400 NSF minimum secured lockable room, near the administration suite, with controlled access to store test material and other files.

2.3.2.3 Computer Maintenance Room

Provide a Computer Maintenance Room in close proximity to the administration suite. Calculate the space requirement based upon AR 405-70 Space allowances or established industry space planning standards.

2.3.2.4 Storage

A. General Storage: Provide storage space adjacent to and accessible from within the Multi-Purpose Room for storage of tables, chairs, military paraphernalia, and other miscellaneous equipment required to meet the POI. Storage shall be sized based on 1 NSF per PN.

B. Multi-Purpose Audio/Video Storage: Provide a minimum 50 NSF storage room located adjacent to and accessible from within the Multi-Purpose room for Audio/Video equipment and controls.

C. General Storage: Provide a secure storage room at 5 NSF per PN.

2.3.2.5 Locker Rooms

The following functions are mandatory in the general area referred to as “Locker Room” for both men and women.

- Locker/Dressing Area
- Shower Area with individual shower stalls. Gang showers are NOT allowed.
- Restroom facilities

A separate men’s and women’s locker room shall be provided with all functions listed above provided. Locker Rooms must be arranged so that the restroom functions are close to the entrance of the locker room, and do not require that people needing to use the restroom must pass through the locker and/or shower area. See Diagram 2.3.2.5.1 below for typical Men’s Locker Room Layout.
The number of lockers shall be based on the number of soldiers to be served. The Male/Female ratio for lockers shall be 80/20.

Toilets provided within the Locker Room shall count toward the total required number of fixtures for the Academy building as calculated per IBC based on the occupant load. Male/Female ratio for toilet fixtures shall be 60/40.

Showers shall be provided based on the following table 2.3.2.5.2:

<table>
<thead>
<tr>
<th>FUNCTION</th>
<th>FACILITY SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small</td>
</tr>
<tr>
<td>Men’s Showers</td>
<td>8</td>
</tr>
<tr>
<td>Women’s Showers</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 2.3.2.5.2
2.3.2.6 Multi-Purpose Room

Provide one (1) multi-purpose room capable of accommodating the approved average daily load of soldiers plus the TDA for staff and instructors. The Multi-Purpose room shall be centrally located as well as visible from the main entrance. The multi-purpose room shall be sized based on 17 NSF per person. See Table 2.3.2.6.1 for typical Multi-purpose room sizes based on academy size.

<table>
<thead>
<tr>
<th>Multipurpose Room Sizes</th>
<th>Min (NSF)</th>
<th>Max (NSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>-</td>
<td>2,652</td>
</tr>
<tr>
<td>Medium</td>
<td>3,043</td>
<td>5,202</td>
</tr>
<tr>
<td>Large</td>
<td>5,593</td>
<td>7,752</td>
</tr>
</tbody>
</table>

Table 2.3.2.6.1

A raised, removable/disassemblable platform shall be provided along the wall opposite the main entrance doors. The platform and gathering area must accommodate persons with disabilities. The minimum depth of the platform shall be 10 feet. The top of platform shall be 12 to 18 inches above finished floor. A recessed ceiling mounted, electrically operated, projection screen shall be located at the back of the platform. Minimum ceiling heights above the top of the platform based on room size and projection screen size are presented in Table 2.3.2.6.2 below.

<table>
<thead>
<tr>
<th>Distance to Last Row of Seats (feet)</th>
<th>Minimum Screen Size (16:10 Aspect Ratio)</th>
<th>Minimum Ceiling Height (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 35</td>
<td>Up to 112” W x 70” H</td>
<td>11</td>
</tr>
<tr>
<td>35-40</td>
<td>128” W x 80” H</td>
<td>12</td>
</tr>
<tr>
<td>40-45</td>
<td>12’ W x 7.5’ H</td>
<td>12.5</td>
</tr>
<tr>
<td>45-50</td>
<td>13.5’ W x 8.5’ H</td>
<td>13.5</td>
</tr>
<tr>
<td>50-55</td>
<td>14.5’ W x 9’ H</td>
<td>14</td>
</tr>
<tr>
<td>55-60</td>
<td>16’ W x 10’ H</td>
<td>15</td>
</tr>
<tr>
<td>60-70</td>
<td>19’ W x 12’ H</td>
<td>17</td>
</tr>
<tr>
<td>70-80</td>
<td>22’ W x 14’ H</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 2.3.2.6.2

Provide Sound-absorbing materials on ceilings and on the upper levels of walls in the rear of the room to ensure a calculated reverberation time target of 0.75 (generally acceptable range, 0.6 to 1.2).

2.3.2.7 In-processing

Provide two (2) rooms, minimum 100 NSF each accessed from within the Multi-purpose room. Rooms will be used for separation of Men and Women during in-processing activities.

2.3.2.8 Staff Duty Office

Provide a 110 NSF minimum Staff Duty Office with a counter station adjacent to the Lobby and main Corridor. Additional shelving and storage shall be built-in to accommodate holding of pre-screened packages and letters. Serves as security office and has monitors for the security cameras that are located throughout the facility.

The Barracks facility will be remotely monitored from this office. All authorized TDY students will use the Staff Duty Office within the Academy Building as a “check-in” point for the Barracks. Linens and room key cards for the Barracks will be issued from this office.
2.3.3 Instructional Spaces

Instructional spaces include the following:

- Classrooms
- Instructor (SGL) Offices
- Senior Instructor (SSGL) Offices
- Instructor Huddle/Break Rooms
- Student Break Rooms

Instructional spaces shall be arranged in a “quad” type configuration that allows for scalability of the Academic Building based on addition or subtraction of classrooms in groups of four (4). The quad will also include the senior instructor (SSGL) offices in close proximity and an adjacent student break room. See Diagram 2.3.3 below for typical quad arrangement.

Diagram 2.3.3
2.3.3.1 Classrooms

Description: The Classroom activity follows the Army Standard for a General Instruction Building (GIB). This space provides a General Instruction Classroom with digital capabilities to effectively conduct individual and collective training, multiuse/multipurpose training, Soldier instruction and examination. The classroom offers computer technology for presentation and student interaction. This space can be scheduled by Academy personnel for additional training when the classroom is not in use.

A classroom typically includes eight (8) 2-person desks (sixteen (16) Soldiers total), One (1) 2-person desk (two (2) Instructors total) and one (1) visitor desk, along with open classroom storage for standard supplies and instruction aides. The Instructor to Soldier ratio is 1/8. An U-shaped desk layout is preferred, specific room accommodations will be provided at the design stage. Consult with INCO PD for current design standards and examples. Instructor and Soldier desks shall be served by electrical and data systems.

The number of Classrooms is determined both by the specific POI and the average daily load for the NCOA. e.g. (256 PN/16 PN per classroom = 16 classrooms)

Classrooms shall be a maximum of 990 S.F. Provide a minimum 36 S.F. open storage space within each classroom.

Diagram 2.3.3.1
2.3.3.2 Instructor (SGL) Offices

Provide one (1) 100 NSF office per instructor. Each classroom shall have two (2) instructor offices. Instructor offices shall be accessed from within the classroom. The instructor office space follows the utilization of Real Property, AR 405-70, and the U.S. Army Corps of Engineers TI 800-01. This space is required in accordance with the approved TDA for authorized personnel. The instructor to soldier ratio is 1/8. e.g. (16 students/8 students per instructor) = 2 instructors per classroom.

2.3.3.3 Senior Instructor (SSGL) Offices

Provide one (1) 100 NSF office per Senior Instructor. Senior instructors are provided at a ratio of 1 SSGL per 4 SGLs.

e.g. (16 classrooms X 2 SGL = 32 SGL), (32 SGL / 4 SGL per SSGL = 8 SSGLs)

SSGL Offices shall be located near the classroom clusters along a main corridor.

2.3.3.4 Instructor Huddle/Break Rooms

Provide a combined Huddle/Break Room for instructor and senior instructor use. Huddle Break rooms shall be provided for each group of 4 classrooms at a minimum 40 SF per Instructor/senior instructor. Locate adjacent to the classrooms.

2.3.3.5 Student Break Rooms

Provide Student Break Rooms at 13 NSF per PN. The space shall be accessible from a main corridor and located in close proximity to classrooms and toilet rooms. The student break room will include tables, chairs, bar-type seating along walls, and space for recyclables and vending machines. This space shall be connected to a fenced, exterior student break area.

2.3.4 Support Spaces

Support spaces include the following:

- Vestibules
- Corridors
- Stairs
- Elevators
- Restrooms
- Janitor Closets
- Recycling Rooms
- Telecommunications Rooms
- Fire Pump Rooms
- Electrical Rooms
- Mechanical Rooms
2.3.4.1 Vestibules

A vestibule or air lock shall be provided at primary and secondary building entrances. Vestibules shall have walk-off mats at least 10 feet long in the direction of travel. Vestibules shall be provided as required by code.

2.3.4.2 Corridors

Provide as required for circulation. Minimum corridor width shall be as required by applicable codes, but not less than 8 ft. for classroom corridors. Main corridors shall be 10 to 12 ft. wide. Secondary corridors shall be 6 ft. minimum.

Overhang or recess at exterior doors is desirable for weather protection. Coordinate user requirements for access control of exterior corridor doors. Where equipment on carts or dollies is regularly moved through corridors, add requirement for wall guard and corner guard protection.

2.3.4.3 Stairs

Provide as required for circulation and egress in multi-story buildings. Interior stairs are preferable in most climates. A stair shall be conveniently located near the Lobby/Elevator/Public Entrance to the building. Minimum stair width shall be as required by applicable codes, but not less than 48 inches.

2.3.4.4 Elevators

Provide at least one passenger elevator in each multi-story building. An elevator is required for handicapped accessibility to floors not on ground level.

The passenger elevator shall be located adjacent to the main corridor, near the main entry for public use. If provided, a freight elevator shall be located near the receiving areas.

Provide one elevator machine room in each multi-story building adjacent to the elevator and adjacent corridor. Size to comply with equipment and code requirements.

2.3.4.5 Restrooms

Provide separate Male and Female Common Toilet Restrooms. Provide per IBC. Male/Female ratio for toilet fixtures shall be 60/40. Common Toilet Restrooms shall be along a main corridor, near the multi-purpose room, classrooms, student break rooms, Instructor huddle/break rooms, and the administration suite.

2.3.4.6 Janitor Closets

Provide a minimum of one (1) janitor closet on each floor of the building. Room shall be minimum 50 S.F. Room shall be accessed from the corridor.

2.3.4.7 Recycling Rooms

Provide a dedicated recycling room for storage of full and excess collection bins. Room size shall be based on the minimum square footage prescribed per USGBC LEED Criteria.

2.3.4.8 Telecommunications Rooms

A Telecommunications Room is required to manage building connection to telephone, fiber optic, cable television, and other infrastructure. For NCOAs larger than 10,000 square feet, multiple Communications
Rooms are required and are to be arranged in accordance with UFC 3-580-01 and (ANSI/TIA/EIA) 568 and 569 requirements. In the event of conflicts, the most stringent guidance shall apply.

Telecommunications rooms shall have a combined gross square foot area of approximately 10% of the building gross area.

2.3.4.9 Fire Pump Room

When required, provide a room for fire pump equipment. Fire pump room shall be located based on the availability of site distribution systems. Room shall be sized to accommodate the required equipment.

2.3.4.10 Electrical Room

Provide dedicated interior spaces and exterior areas for electrical equipment. Size and locate rooms (including doorways) to allow equipment removal and maintenance. Provide floor openings and vertical shaft spaces as necessary. Provide minimum of one electrical room per floor. Locate main electrical equipment room on ground floor. Electrical rooms on upper floors should be located to allow efficient distribution. Electrical rooms shall not be used for storage or other purposes; access to electrical rooms will be limited to authorized personnel.

The area is part of the gross area factor calculation. Total net area equal to 5% of the gross building area subtotal for planning purposes. Actual required area shall be determined during programming based on Installations and environmental requirements.

Electrical service to the building shall be underground. Locate exterior electrical equipment to comply with ATFP standards. Outdoor electrical equipment shall be located within a screened enclosure, preferably within the mechanical screened equipment yard.

2.3.4.11 Mechanical Room

Provide dedicated interior spaces and exterior areas for plumbing, fire protection, and HVAC equipment. Size and locate rooms (including doorways) to allow equipment removal and maintenance. Provide floor openings and vertical shaft spaces as necessary.

Locate main mechanical room on ground floor with doors opening to exterior. Mechanical support spaces shall not be used for storage or other purposes; access to mechanical spaces will be limited to authorized personnel. Locate exterior mechanical equipment and air intake and openings in exterior walls to comply with AT/FP standards.

The area is part of the gross area factor calculation. Total net area equal to 5% of the gross building area subtotal for planning purposes. Actual required area shall be determined during programming based on Installations and environmental requirements.

Provide plumbing as required for functions of the space.

Space shall be heated independently from the remainder of the building. Space shall be ventilated.

Provide convenience receptacles as required for equipment.

Provide telephone service for energy management system and maintenance use.

Exterior mechanical equipment shall be located in a screened equipment yard. Locate mechanical equipment yard to meet all AT/FP requirements. Equipment yard enclosure shall match the main building in appearance and comply with the Installation Design Standards. Provide lockable metal access gates.
2.3.5 Facility Systems

Facility Systems include the following:

- Telecommunications Systems
- Voice Systems
- Data Systems
- Information Systems Equipment
- Outside Cable Plan Infrastructure
- Cable and Jacks
- Paging Systems
- Electronic Security Systems
- CCTV
- Clock Systems
- Mass Notification Systems
- Electrical Requirements
- Mechanical Requirements
- Fire Detection and Alarm Systems

2.3.5.1 Telecommunications Systems

Information systems will consist of a complete end-to-end voice, data, and telemetry cable based functional design accomplished IAW UFC 3-580-01 Telecommunications Interior Infrastructure Planning and Design, with change 1. Information system equipment provided to satisfy the service requirements of this design will meet the technical specifications and planning guidance found in ANSI/TIA/EIA-568-B and 569-A, as appropriate. Functional requirements will be developed and implemented based upon the UFC criteria to satisfy both the near-term as well as the growth potential of this US Army facility. The UFC 3-580-01 standard dual jack voice/data outlet will be used throughout this facility with the following exceptions: wall telephone outlets will be single jack configuration. System provisions will be compliant with the requirements of the Americans with Disabilities Act (ADA), as directed for the facility.

2.3.5.2 Voice Systems

The telephone/voice system provided in this project will meet all the UFC 3-580-01 objectives using standard state-of-the-art equipment and installation practices. The telephone/voice system provided with this facility will receive dial tone from a US government controlled telephone switching system. Special requirements for telephone circuits receiving dial tone from other sources, i.e., pay-telephone, etc., will be coordinated with installation’s local commercial provider - see NEC for contact information. The telecommunications cross-connect scheme for this project will utilize a combination of 110-punch down blocks and category rated patch panels as shown in the UFC 3-580-01 standard; this is not a “small facility” for cross-connect purposes. Coordinate minimum essential service requirements with the NEC; use these requirements in conjunction with the UFC 3-580-01 standard to develop the design based upon planned functional usage of the various spaces. Plan for wall telephone outlets to satisfy an intelligent design based upon safety, courtesy, and convenience: as a minimum, wall telephone outlets will be provided in all equipment rooms (electrical room, HVAC room, telecommunications room, CATV/CCTV/surveillance room, etc.); in all “break” areas.

2.3.5.3 Data Systems

Data jacks will be terminated on patch panels located on racks in the telecommunications rooms(s). Coordinate with the NEC for special data requirements. Wireless Technology: The use of wireless technology for data transfer shall be in accordance with AR 25-1 Army Information Management at http://www.army.mil/usapa/epubs/25_Series_Collection_1.html as well as the latest memorandum and letters regarding this quickly evolving issue.
2.3.5.4 Information System Equipment

Information System Equipment All equipment provided for the Barracks will meet the functional standards found in the UFC 3-580-01 standard. The building's interior copper cabling will be TIA/EIA 568B Category 6. Installation will be in accordance with (IAW) applicable UFGSs.

2.3.5.5 Outside Cable Plan Infrastructure

Extend the information system infrastructure from the nearest existing information system node having sufficient capacity to satisfy the facilities requirements -- coordinate with the NEC on this location. New underground conduits will be multiple 100-mm [4-inch] PVC ducts (or equivalent) and will be sized, designed and installed in the underground manhole and duct system IAW the installation's current approved UFC 3-580-01 standard Plan to ensure maximum flexibility for future growth. Place outside plant information systems cabling, both copper cable(s) and fiber optic cable(s), from the servicing nodes into the new facility; extend and terminate the OSP information system cabling on the building's entrance facility per applicable fire and safety code.

2.3.5.6 Cable and Jacks

Provide in accordance with the I3A Criteria UFC 3-580-01 standard using the latest technical standards in TIA/EIA-568-B. Connect all information system (voice/data) outlets from the equipment room's equipment rack with two 4-pair, Category 6, unshielded twisted pair (UTP) solid copper station cable terminated on 8-position insulation displacement connector (IDC) type connectors and extended to the servicing equipment room's equipment rack. Connect all single 8-position type walls, and pay telephone outlets with one 4-pair, Category 6, unshielded twisted pair (UTP) solid copper station cable terminated on 8-position IDC type connectors and extended to the servicing equipment room's equipment rack. For specialized circuits, such as pay phones, coordinate with the local telephone company for electrical requirements and Americans with Disabilities Act (ADA) design features. Use a combination of multimode and single mode fiber optic cable (12 strands of each at a minimum) for backbone data service, unless expanding an existing site where other backbone cable types are required or requested by user. Refer to the “Installation Information Infrastructure Architecture (I3A) Technical Criteria UFC 3-580-01 Telecommunications Interior Infrastructure Planning and Design, with change 1”.

2.3.5.7 Paging Systems

A paging system is not required.

2.3.5.8 Electronic Security System

Coordinate the requirement for any security system including provisions for the CCTV system with the User and the Installation local security authority. Design of security systems shall also be coordinated with the Mandatory Center of Expertise (MCX) Electronic Security Center, US Army Installation Support Center, Huntsville, Alabama.

2.3.5.9 CCTV

For large facilities, an alarm and CCTV system shall be provided. Alarm monitoring will be performed in the Building Manager's Office at a console where the public cannot view the alarm and CCTV monitors. Every exterior door shall have at a door position switch. CCTV camera shall be installed in corridors, public spaces, and the loading dock. Facilities shall have their alarms reported to the Installation security office.
2.3.5.10 Clock Systems

Clocks shall be provided in public spaces. When requested by the Activity, this requirement may be met by providing an integrated clock system that provides adjustment of all clocks from one central point.

2.3.5.11 Mass Notification System

Provide a mass notification system conforming to UFC 4-010-01 and UFC 4-021-01 for the purpose of providing real-time announcements in the immediate vicinity of the building during emergency situations. Coordinate specific system requirements with the User and Installation.

2.3.5.12 Electrical

2.3.5.12.1 General

The electrical design for all facilities shall be in accordance with the current editions of the National Electrical Code and the National Electrical Safety Code, and any other applicable criteria. Lighting design shall conform to the Illuminating Engineers Society of North America (IESNA) Lighting Handbook and recommended practices.

Facility Energy Conservation Requirements. The entire facility design, including interior and exterior lighting and power systems shall be in compliance with ASHRAE 90.1.

Design Calculations. Provide analysis throughout the design to document selection of equipment and wiring in accordance with applicable criteria. Calculations as a minimum shall include load analysis, voltage drop, arc fault device coordination, short circuit calculations, interior and exterior lighting.

Space Requirements. Provide electrical space for all electrical equipment. Space shall provide clearances and working areas as required by the National Electrical Code. Coordinate location to consider factors such as aesthetics, ease of maintenance, proximity to loads being served, and accessibility.

Materials and Equipment. All materials and equipment shall be the standard catalogued products of manufacturers regularly engaged in the production of such equipment and material, and shall be the manufacturer’s latest design. All equipment and material shall conform to the requirements of American National Standards Institute (ANSI), American Society of Testing and Materials (ASTM), National Electrical Manufacturer’s Association (NEMA), National Fire Protection Association (NFPA) or other national trade association as applicable. Where standards exist, materials and equipment shall bear the label and be listed by Underwriters Laboratories, Inc. (UL) or other recognized testing organization.

2.3.5.12.2 Power

Power service to the facility will be fed underground from the base electrical distribution system via a pad-mounted transformer located near the primary building. Secondary power service to buildings will be fed underground from the transformer to building service entrance equipment located in the main electrical equipment room.

Special Power Requirements. Electrical power outlets for special power shall be coordinated with the requirements in Chapter 2, Space Design Criteria.

Grounding. Facilities will have in addition to the grounding requirements of the National Electrical Code a ground grid or counterpoise around the building perimeter for connection to incoming service, building steel, lightning protection, telephone service, piping, and internal grounding requirements.
Lightning Protection. Facilities shall be protected from lightning in accordance with the National Electrical Code. Where recommended by the Standard for installation of Lightning Protection Systems, NFPA 780, Annex L, the facility shall be protected by a building lightning protection system.

2.3.5.12.3 Lighting Levels, Fixtures and Control

Interior and exterior lighting design shall conform to the recommendations of the IESNA Handbook, RP-1-12 - Office Lighting, and RP-3-13. – Educational Facilities. Provide variable/multilevel switching and/or dimming systems in interior spaces as defined by ASHRAE 90.1, and as indicated in Chapter 2, Space Design Criteria. Provide occupancy sensors in spaces where use is intermittent such as conference rooms, corridors, restrooms, and storage spaces. Sleeping Room lighting shall be accomplished by ceiling mounted fixtures or switch controlled receptacles. General purpose receptacles shall be provided in sleeping rooms.

2.3.5.13 Mechanical

2.3.5.13.1 General

Design Standards and Codes. The mechanical design for all facilities shall be in accordance with the current versions of Army Design Guides, UFC, International Mechanical codes, and applicable codes and standards. The building including the building envelope, HVAC systems, service water heating, power, and lighting systems shall meet the Mandatory Provision and the Prescriptive Path requirements of ASHRAE 90.1

Design all building systems and elements to meet the minimum requirements of ANSI/ASHRAE/IESNA 90.1. Design the building, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 30% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standards 90.1. Energy calculation methodologies used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with the exception that receptacle and process loads may be omitted from the calculation.

The equipment shall be Energy Star or FEMP designated products. The term “Energy Star” means a product that is rated for energy efficiency under an Energy Star program. The term “FEMP designated product” means a product that is designated under the Federal Energy Management Program of the Department of Energy as being among the highest 25 percent equivalent products for energy efficiency. When selecting integral sized electric motors, chose NEMA PREMIUM type motors that conform to NEMA MG 1, minimum Class F insulation system. Motors with efficiencies lower than the NEMA PREMIUM standard may only be used in unique application that require a high constant torque speed ratio (e.g., inverter duty or vector duty type motors that conform to NEMA MG 1, Part 30 or Part 31).

Design Calculations: Heat loss and heat gain calculations. Heating and cooling loads shall be in accordance with the current edition of the ASHRAE Handbook of Fundamentals, International Mechanical Code and UFC 3-410-01FA – Design: Heating, Ventilating, and Air Conditioning. Computer-generated load calculations shall be provided, and shall include complete input and output summaries. Equipment may be oversized to no more than 115 percent of the computer-generated load. Design shall be based on weather data from UFC 3-400-02, Engineering Weather Data; from ASHRAE Handbook of Fundamentals; or from other recognized and authoritative sources of weather data. Values for internal cooling loads shall be included in the computerized load calculations in accordance with ASHRAE recommendations. Minimum space heating and ventilation shall be provided in spaces normally unoccupied, such as storage and equipment rooms. Any industrial ventilation requirement, other than that required per human occupant, may be considered process load when selecting supplemental heating equipment for the bay area.

Load Design Criteria. Internal loads shall be included for each space. Lights shall be included for the actual quantity provided. Any additional equipment furnished or planned under the design shall also be included in the appropriate space.
Ventilation Air Calculations. Calculations determining minimum outside ventilation air shall be provided for each building space. Ventilation rates shall be in accordance with the current edition of the International Mechanical Code, and the current ASHRAE Standard 62.1. Outside air quantities will be sufficient to meet ventilation requirements and maintain a positive pressure relative to the outdoors.

Exhaust Air Calculations. Calculations determining minimum exhaust shall be provided for each exhaust system. Exhaust rates shall be in accordance with the current edition of the International Mechanical Code and the current ASHRAE 62.1.

Piping Calculations. Calculations shall be provided for pressure drop calculations for all piping systems, including head loss calculations for all pumps.

Duct Calculations for Medium Pressure Duct Systems. Calculations shall be provided for sizing all duct systems, including static pressure drop calculations for all fans. Ductwork layout drawings shall also be provided to indicate all fittings and devices to substantiate calculations.

2.3.5.13.2 HVAC

Mechanical Systems. Each building core area shall be provided with a central heating and air conditioning system. Systems shall be designed, installed, balanced, and adjusted to distribute heat and cooling in proportion to the calculated load requirements of these spaces. A detailed investigation of the treatment of outdoor ventilation air shall be provided. Special problems requiring special solutions occur when the outdoor air is at a high relative humidity condition and/or the spaces are only partially occupied or unoccupied. Systems such as a dedicated VAV outdoor air handling unit and carbon dioxide sensing controls (Demand Ventilation) shall be investigated and considered. Provide means for determining when rooms are partially occupied or unoccupied to modulate outdoor air supply. Each space shall be provided with a separate system with occupancy sensors and/or other override to change status from ‘unoccupied’ to ‘occupied’. The Designer in close coordination with the installation shall determine the allowable system types and fuel options to be used. Also coordinate unit locations with Installation facilities engineering personnel (DPW). Consider systems utilizing energy efficient equipment, providing additional space in the mechanical room, and other features, which contribute to ease of system operation and maintenance.

Air Distribution Systems. Provide duct systems conforming to the recommendations of the SMACNA Duct Construction Standards including seal class requirements. Fire dampers shall be provided where required by NFPA 90A. Balancing dampers shall be provided at all branch takeoffs and for all supply outlets. Permanent access to dampers shall be provided. Air intakes shall be placed at least 10 feet above ground to meet the requirements of UFC 4-010-01 – DoD Minimum Antiterrorism Standards for Buildings. Intakes shall be covered with screens to prevent insects and foreign objects from entering.

Humid Air Design. Where applicable, the special criteria for humid areas in UFC 3-410-01FA – Design: Heating, Ventilating, and Air Conditioning shall be used.

Building Automation System. Provide a building Automation System consisting of a building control network, and integrate the building network into the existing base wide EMCS/UMSC (if present).

2.3.5.13.3 Temperature Controls

The building control network shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of the heating, ventilating, and air conditioning (HVAC) systems. The building control network shall be an Open implementation of LonWorks® technologies using ANSI/EIA 709.1B as the only communications protocol and use only LonMark Standard Network Variable Types (SNVTs), as defined in the LonMark® Resource files, for communication between DDC hardware devices to allow multi-vendor interoperability. The building automation system shall be open in that it is designed and
installed such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without further dependence on the original contractor.

Perform all necessary actions needed to integrate the building DDC system into the base wide EMCS/UMCS. These actions shall include but are not limited to: configure M&C Software functionality including: graphical pages for System Graphic Displays including overrides, alarm handling, scheduling, trends for critical values needing long-term or permanent monitoring via trends, and demand limiting. Install IP routers or ANSI/CEA-852 routers as needed to connect the building network to the EMCS/UMCS IP network. Routers shall be capable of configuration via DHCP and use of an ANSI/CEA-852 configuration server but shall not rely on these services for configuration. All communication between the EMCS/UMCS and building networks shall be via the ANSI/CEA-709.1B protocol over the IP network in accordance with ANSI/CEA-852.

Provide air distribution emergency shutoff switch as required by UFC 4-010-01.

**2.3.5.14 Fire Detection and Alarm Systems**

**2.3.5.14.1 Fire Protection**

The fire protection design for all facilities shall be in accordance with the current versions of the Unified Facilities Criteria 3-600-01 Design: Fire Protection Engineering for Facilities, International Building Code and the National Fire Protection Association (NFPA) standards and codes.

**2.3.5.14.2 Fire Suppression**

**Sprinkler System.** Provide a wet and/or dry type sprinkler as required by the project. Design shall be provided by a qualified Fire Protection Engineer as defined in UFC 3-600-01 and shall be in compliance with UFC 3-600-01 and NFPA 13, Standard for the Installation of Sprinkler Systems.

**Hydrant Flow Data:** A hydrant flow test shall be performed in the early stages of design indicating Date and Location of Test, Static Pressure, Flow, and Residual Pressure. Provide preliminary hydraulic calculations to determine whether there is sufficient water supply and pressure to meet the flow demands of the sprinkler systems within the facility and the fire department hose stream requirements from the fire hydrants.

**Fire Pump.** When a pump is required, type of pump shall be in accordance with Unified Facilities Criteria 3-600-01 Design: Fire Protection Engineering for Facilities. Provide electric driven fire pump and controllers in accordance with NFPA 20.

**Fire Extinguishers and Cabinets.** Provide portable fire extinguishers in accordance with NFPA 10. Provide bracket-mounted extinguishers in service areas. Provide semi-recessed aluminum fire extinguisher cabinets with clear view panel in public areas. Provide fire-rated cabinets in fire-rated wall assemblies.

**Interior Wall and Ceiling Finishes.** Wall and ceiling finishes and movable partitions shall conform to the requirements of the IBC and NFPA 101, except as follows:

Interior finish for exits, and exit passageways shall be Class A only. Flame spread (FS) and smoke development (SD) shall be tested in accordance with IBC requirements. Class C materials shall only be permitted in fully sprinklered buildings.
2.3.5.14.3 Fire Detection and Alarm Systems

Fire Alarm. Provide an addressable fire alarm system conforming to requirements of UFC 3-600-01, NFPA 72 and NFPA 101. Fire alarm system shall consist of pull stations, audiovisual devices, control/annunciation panel and tamper and/or flow connection/supervision to the sprinkler system. Provide supervision of fire pump where fire pump is provided. Fire alarm system shall tie into the base-wide system in accordance with base requirements.
2.4 BARRACKS BUILDING

The Barracks Building shall be situated within close proximity of the Academy Building, Parking and other campus amenities. The building shall be within the NCOA campus site layout. Table 2.4 below indicates the various Barracks Building sizes per average TDY population based on throughput (PN).

The Barracks Building Consists of the following primary spaces:

- Living Quarters
- Lounge
- Laundry
- General Supply Storage

SF allocation differs from the current RPLANS algorithm (as of 4 Jan 2016). The current RPLANS algorithm includes both Scrub room and multipurpose room. The multipurpose room is now part of the instructional component and is to be located accordingly. The NCOA standard does not require a scrub room since the STX and Field training has been removed from the POI (these are completed by the student prior to enrollment).

<table>
<thead>
<tr>
<th>Size</th>
<th>GSF</th>
<th>PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>7,900</td>
<td>16-20</td>
</tr>
<tr>
<td>Medium</td>
<td>11,200</td>
<td>32-40</td>
</tr>
<tr>
<td>Large</td>
<td>14,100</td>
<td>48-60</td>
</tr>
</tbody>
</table>

Table 2.4

2.4.1 Living Quarters

The current position from TRADOC (2/9/2017): Living Quarters shall be programmed at 135 SF per person in accordance with table 3-7 of AR 420-1. Verify with TRADOC, at time of project programming, the current position. 50% of the Living Quarters will be designed with two person sleeping areas. The remaining 50% of the Living Quarters will be designed to accommodate the Peak Design Capacity of the building accommodating 3 persons per sleeping area. Each two person sleeping unit includes two beds, furniture, bathroom, closets and an entry door. See Diagram 2.4.1 below.

ABA Standard dictates that 5% of the Living Quarters provide mobility features, all of which shall be located on the first floor.
2.4.2 Lounge

Lounge areas shall be provided for the recreational use of students on each floor of the Building. Lounges shall be a minimum of 540 SF per floor. Vending shall be provided within the Lounge area of the first floor of a multi-story barracks building.

2.4.3 Laundry

Provide one laundry room per floor. Laundry rooms shall be sized to accommodate large capacity washers at a ratio of 8:1 and stackable dryers at a ratio of 6:1. Ratios shall be calculated per floor occupancy and based on Peak Design Capacity. The ratios used are based on the current edition of the AIT Standard.

2.4.4 Unisex Toilet

Provide a single occupant, handicapped accessible, Unisex Toilet adjacent to the Lobby/ Lounge area on the first floor only, for the use of personnel and authorized visitors. Unisex Toilet shall be sized to meet ABA Standards.

2.4.5 General Storage

Provide one General Storage Room per floor. The minimum area of each Storage Room shall be 280 NSF. Surplus linen, bedding and furniture will be accommodated in this space.

2.4.6 Telecommunications Systems

Information systems will consist of a complete end-to-end voice, data, and telemetry cable based functional design accomplished IAW the US Army Installation Information Infrastructure Architecture (I3A) Technical Criteria UFC 3-580-01 Telecommunications Interior Infrastructure Planning and Design, with change 1. Information system equipment provided to satisfy the service requirements of this design will meet the technical specifications and planning guidance found in ANSI/TIA/EIA-568-B and 569-A, as appropriate. Functional requirements will be developed and implemented based upon the I3A UFC criteria to satisfy both the near-term as well as the growth potential of this US Army facility. The I3A UFC 3-580-01 standard dual jack voice/data outlet will be used throughout this facility with the following exceptions: wall telephone outlets will be single jack configuration. System provisions will be compliant with the requirements of the Americans with Disabilities Act (ADA), as directed for the facility.

2.4.7 Voice Systems

The telephone/voice system provided in this project will meet all US Army I3A the UFC 3-580-01 objectives using standard state-of-the-art equipment and installation practices. The telephone/voice system provided with this facility will receive dial tone from a US government controlled telephone switching system. Special requirements for telephone circuits receiving dial tone from other sources, i.e., pay-telephone, etc., will be coordinated with installation's local commercial provider - see NEC for contact information. The telecommunications cross-connect scheme for this project will utilize a combination of 110 -punch down blocks and category rated patch panels as shown in the I3A Criteria UFC 3-580-01 standard; this is not a "small facility" for cross-connect purposes. Coordinate minimum essential service requirements with the NEC; use these requirements in conjunction with the I3A Criteria UFC 3-580-01 standard to develop the design based upon planned functional usage of the various spaces. Plan for wall telephone outlets to satisfy an intelligent design based upon safety, courtesy, and convenience: as a minimum, wall telephone outlets will be provided in all equipment rooms (electrical room, HVAC room, telecommunications room, CATV/CCTV/surveillance room, etc.); in all "break" areas and at all entry areas; and along corridors and hallways using a density of four wall telephones per 10,000 square feet of gross building space.
2.4.8 Data Systems

Data jacks will be terminated on patch panels located on racks in the telecommunications rooms(s). Coordinate with the NEC for special data requirements. Wireless Technology: The use of wireless technology for data transfer shall be in accordance with AR 25-1 Army Information Management at http://www.army.mil/usapa/epubs/25_Series_Collection_1.html as well as the latest memorandum and letters regarding this quickly evolving issue.

2.4.9 Information System Equipment

All equipment provided for the Barracks will meet the functional standards found in the I3A criteria UFC 3-580-01 standard. The building's interior copper cabling will be TIA/EIA 568B Category 6. Installation will be in accordance with (IAW) applicable UFGSs.

2.4.10 Outside Cable Plan Infrastructure

Extend the information system infrastructure from the nearest existing information system node having sufficient capacity to satisfy the facilities requirements -- coordinate with the NEC on this location. New underground conduits will be multiple concrete encased 100-mm [4-inch] PVC ducts (or equivalent) and will be sized, designed and installed in the underground manhole and duct system IAW the installation's current approved I3A UFC 3-580-01 standard Plan to ensure maximum flexibility for future growth. Place outside plant information systems cabling, both copper cable(s) and fiber optic cable(s), from the servicing nodes into the new facility; extend and terminate the OSP information system cabling on the building's entrance facility per applicable fire and safety code.

2.4.11 Cable and Jacks

Provide in accordance with the I3A Criteria UFC 3-580-01 standard using the latest technical standards in TIA/EIA-568-B. Connect all information system (voice/data) outlets from the equipment room's equipment rack with two 4-pair, Category 6, unshielded twisted pair (UTP) solid copper station cable terminated on 8-position insulation displacement connector (IDC) type connectors and extended to the servicing equipment room's equipment rack. Connect all single 8-position type walls, and pay telephone outlets with one 4-pair, Category 6, unshielded twisted pair (UTP) solid copper station cable terminated on 8-position IDC type connectors and extended to the servicing equipment room's equipment rack. For specialized circuits, such as pay phones, coordinate with the local telephone company for electrical requirements and Americans with Disabilities Act (ADA) design features. Use a combination of multimode and single mode fiber optic cable (12 strands of each at a minimum) for backbone data service, unless expanding an existing site where other backbone cable types are required or requested by user. Refer to the “Installation Information Infrastructure Architecture (I3A) Technical Criteria UFC 3-580-01 Telecommunications Interior Infrastructure Planning and Design, with change 1”.

2.4.12 Paging Systems

A paging system is not required. Will be provided for the entire building with the microphone located in the Building Manager’s Office. Provide a system that allows paging individually or grouped in classrooms, administration and public areas. Outdoor spaces such as break areas shall be on the public area system.

2.4.13 Electronic Security System

Coordinate the requirement for any security system including provisions for the CCTV system with the User and the Installation local security authority. Design of security systems shall also be coordinated with the Mandatory Center of Expertise (MCX) Electronic Security Center, US Army Installation Support Center, Huntsville, Alabama.
2.4.14 CCTV
For large facilities, an alarm and CCTV system shall be provided. Alarm monitoring will be performed in the Building Manager’s Office at a console where the public cannot view the alarm and CCTV monitors. Every exterior door shall have a door position switch. CCTV camera shall be installed in corridors, public spaces, and the loading dock. Facilities shall have their alarms reported to the Installation security office.

2.4.15 Mass Notification System
Provide a mass notification system conforming to UFC 4-010-01 and UFC 4-021-01 for the purpose of providing real-time announcements in the immediate vicinity of the building during emergency situations. Coordinate specific system requirements with the User and Installation.

2.4.16 Electrical
2.4.16.1 General
The electrical design for all facilities shall be in accordance with the current editions of the National Electrical Code and the National Electrical Safety Code, and any other applicable criteria. Lighting design shall conform to the Illuminating Engineers Society of North America (IESNA) Lighting Handbook and recommended practices
Facility Energy Conservation Requirements. The entire facility design, including interior and exterior lighting and power systems shall be in compliance with ASHRAE 90.1.
Design Calculations. Provide analysis throughout the design to document selection of equipment and wiring in accordance with applicable criteria. Calculations as a minimum shall include load analysis, voltage drop, arc fault device coordination, short circuit calculations, interior and exterior lighting.
Space Requirements. Provide electrical space for all electrical equipment. Space shall provide clearances and working areas as required by the National Electrical Code. Coordinate location to consider factors such as aesthetics, ease of maintenance, proximity to loads being served, and accessibility.
Materials and Equipment. All materials and equipment shall be the standard catalogued products of manufacturers regularly engaged in the production of such equipment and material, and shall be the manufacturer’s latest design. All equipment and material shall conform to the requirements of American National Standards Institute (ANSI), American Society of Testing and Materials (ASTM), National Electrical Manufacturer’s Association (NEMA), National Fire Protection Association (NFPA) or other national trade association as applicable. Where standards exist, materials and equipment shall bear the label and be listed by Underwriters Laboratories, Inc. (UL) or other recognized testing organization

2.4.16.2 Power
Power service to the facility will be fed underground from the base electrical distribution system via a pad-mounted transformer located near the primary building. Secondary power service to buildings will be fed underground from the transformer to building service entrance equipment located in the main electrical equipment room.

Special Power Requirements. Electrical power outlets for special power shall be coordinated with the requirements in Chapter 2, Space Design Criteria.

Grounding. Facilities will have in addition to the grounding requirements of the National Electrical Code a ground grid or counterpoise around the building perimeter for connection to incoming service, building steel, lightning protection, telephone service, piping, and internal grounding requirements.
Lightning Protection. Facilities shall be protected from lightning in accordance with the National Electrical Code. Where recommended by the Standard for installation of Lightning Protection Systems, NFPA 780, Annex L, the facility shall be protected by a building lightning protection system.

2.4.16.3 Lighting Levels, Fixtures and Control

Interior and exterior lighting design shall conform to the recommendations of the IESNA Handbook. Provide variable/multilevel switching and/or dimming systems in interior spaces as defined by ASHRAE 90.1, and as indicated in Chapter 2, Space Design Criteria. Provide occupancy sensors in spaces where use is intermittent such as corridors, restrooms, and storage spaces. Sleeping Room lighting shall be accomplished by ceiling mounted fixtures or switch controlled receptacles. General purpose receptacles shall be provided in sleeping rooms.

2.4.17 Mechanical

2.4.17.1 General

Design Standards and Codes. The mechanical design for all facilities shall be in accordance with the current versions of Army Design Guides, UFC, International Mechanical codes, and applicable codes and standards. The building including the building envelope, HVAC systems, service water heating, power, and lighting systems shall meet the Mandatory Provision and the Prescriptive Path requirements of ASHRAE 90.1

Design all building systems and elements to meet the minimum requirements of ANSI/ASHRAE/IESNA 90.1. Design the building, including the building envelope, HVAC systems, service water heating, power, and lighting systems to achieve an energy consumption that is at least 30% below the consumption of a baseline building meeting the minimum requirements of ANSI/ASHRAE/IESNA Standards 90.1. Energy calculation methodologies used for this documentation and analysis shall follow the guidelines set forth in Appendix G of ASHRAE 90.1, with the exception that receptacle and process loads may be omitted from the calculation.

The equipment shall be Energy Star or FEMP designated products. The term “Energy Star” means a product that is rated for energy efficiency under an Energy Star program. The term “FEMP designated product” means a product that is designated under the Federal Energy Management Program of the Department of Energy as being among the highest 25 percent equivalent products for energy efficiency. When selecting integral sized electric motors, chose NEMA PREMIUM type motors that conform to NEMA MG 1, minimum Class F insulation system. Motors with efficiencies lower than the NEMA PREMIUM standard may only be used in unique application that require a high constant torque speed ratio (e.g., inverter duty or vector duty type motors that conform to NEMA MG 1, Part 30 or Part 31).

Design Calculations: Heat loss and heat gain calculations. Heating and cooling loads shall be in accordance with the current edition of the ASHRAE Handbook of Fundamentals, International Mechanical Code and UFC 3-410-01FA – Design: Heating, Ventilating, and Air Conditioning. Computer-generated load calculations shall be provided, and shall include complete input and output summaries. Equipment may be oversized to no more than 115 percent of the computer-generated load. Design shall be based on weather data from UFC 3-400-02, Engineering Weather Data; from ASHRAE Handbook of Fundamentals; or from other recognized and authoritative sources of weather data. Values for internal cooling loads shall be included in the computerized load calculations in accordance with ASHRAE recommendations. Minimum space heating and ventilation shall be provided in spaces normally unoccupied, such as storage and equipment rooms. Any industrial ventilation requirement, other than that required per human occupant, may be considered process load when selecting supplemental heating equipment for the bay area.
Load Design Criteria. Internal loads shall be included for each space. Lights shall be included for the actual quantity provided. Any additional equipment furnished or planned under the design shall also be included in the appropriate space.

Ventilation Air Calculations. Calculations determining minimum outside ventilation air shall be provided for each building space. Ventilation rates shall be in accordance with the current edition of the International Mechanical Code, and the current ASHRAE Standard 62.1. Outside air quantities will be sufficient to meet ventilation requirements and maintain a positive pressure relative to the outdoors.

Exhaust Air Calculations. Calculations determining minimum exhaust shall be provided for each exhaust system. Exhaust rates shall be in accordance with the current edition of the International Mechanical Code and the current ASHRAE 62.1.

Piping Calculations. Calculations shall be provided for pressure drop calculations for all piping systems, including head loss calculations for all pumps.

Duct Calculations for Medium Pressure Duct Systems. Calculations shall be provided for sizing all duct systems, including static pressure drop calculations for all fans. Ductwork layout drawings shall also be provided to indicate all fittings and devices to substantiate calculations.

2.4.17 HVAC

Mechanical Systems. Each building core area shall be provided with a central heating and air conditioning system. Systems shall be designed, installed, balanced, and adjusted to distribute heat and cooling in proportion to the calculated load requirements of these spaces. A detailed investigation of the treatment of outdoor ventilation air shall be provided. Individual systems per sleeping unit such as water source heat pumps shall be investigated and considered. Each sleeping unit shall have ability of space temperature control. Special problems requiring special solutions occur when the outdoor air is at a high relative humidity condition and/or the spaces are only partially occupied or unoccupied. The Designer in close coordination with the installation shall determine the allowable system types and fuel options to be used. Also coordinate unit locations with Installation facilities engineering personnel (DPW). Consider systems utilizing energy efficient equipment, providing additional space in the mechanical room, and other features, which contribute to ease of system operation and maintenance.

Air Distribution Systems. Provide duct systems conforming to the recommendations of the SMACNA Duct Construction Standards including seal class requirements. Fire dampers shall be provided where required by NFPA 90A. Balancing dampers shall be provided at all branch takeoffs and for all supply outlets. Permanent access to dampers shall be provided. Air intakes shall be placed at least 10 feet above ground to meet the requirements of UFC 4-010-01 – DoD Minimum Antiterrorism Standards for Buildings. Intakes shall be covered with screens to prevent insects and foreign objects from entering.

Humid Air Design. Where applicable, the special criteria for humid areas in UFC 3-410-01FA – Design: Heating, Ventilating, and Air Conditioning shall be used

Building Automation System. Provide a building Automation System consisting of a building control network, and integrate the building network into the existing base wide EMCS/UMSC (if present).

2.4.17.3 Temperature Controls

The building control network shall be a single complete non-proprietary Direct Digital Control (DDC) system for control of the heating, ventilating, and air conditioning (HVAC) systems. The building control network shall be an Open implementation of LonWorks® technologies using ANSI/EIA 709.1B as the only communications protocol and use only LonMark Standard Network Variable Types (SNVTs), as defined in the LonMark® Resource files, for communication between DDC hardware devices to allow multi-vendor interoperability. The building automation system shall be open in that it is designed and installed such that the Government or its agents are able to perform repair, replacement, upgrades, and expansions of the system without further dependence on the original contractor.
Perform all necessary actions needed to integrate the building DDC system into the base wide EMCS/UMCS. These actions shall include but are not limited to: configure M&C Software functionality including: graphical pages for System Graphic Displays including overrides, alarm handling, scheduling, trends for critical values needing long-term or permanent monitoring via trends, and demand limiting. Install IP routers or ANSI/CEA-852 routers as needed to connect the building network to the EMCS/UMCS IP network. Routers shall be capable of configuration via DHCP and use of an ANSI/CEA-852 configuration server but shall not reply on these services for configuration. All communication between the EMCS/UMCS and building networks shall be via the ANSI/CEA-709.1B protocol over the IP network in accordance with ANSI/CEA-852.

Provide air distribution emergency shutoff switch as required by UFC 4-010-01.

### 2.4.18 Fire Protection

The fire protection design for all facilities shall be in accordance with the current versions of the Unified Facilities Criteria 3-600-01 Design: Fire Protection Engineering for Facilities, International Building Code and the National Fire Protection Association (NFPA) standards and codes.

### 2.4.19 Fire Suppression

**Sprinkler System.** Provide a wet and/or dry type sprinkler as required by the project. Design shall be provided by a qualified Fire Protection Engineer as defined in UFC 3-600-01 and shall be in compliance with UFC 3-600-01 and NFPA 13, Standard for the Installation of Sprinkler Systems.

**Hydrant Flow Data:** A hydrant flow test shall be performed in the early stages of design indicating Date and Location of Test, Static Pressure, Flow, and Residual Pressure. Provide preliminary hydraulic calculations to determine whether there is sufficient water supply and pressure to meet the flow demands of the sprinkler systems within the facility and the fire department hose stream requirements from the fire hydrants.

**Fire Pump.** When a pump is required, type of pump shall be in accordance with Unified Facilities Criteria 3-600-01 Design: Fire Protection Engineering for Facilities. Provide electric driven fire pump and controllers in accordance with NFPA 20.

**Fire Extinguishers and Cabinets.** Provide portable fire extinguishers in accordance with NFPA 10. Provide bracket-mounted extinguishers in service areas. Provide semi-recessed aluminum fire extinguisher cabinets with clear view panel in public areas. Provide fire-rated cabinets in fire-rated wall assemblies.

**Interior Wall and Ceiling Finishes.** Wall and ceiling finishes and movable partitions shall conform to the requirements of the IBC and NFPA 101, except as follows:

Interior finish for exits, and exit passageways shall be Class A only. Flame spread (FS) and smoke development (SD) shall be tested in accordance with IBC requirements. Class C materials shall only be permitted in fully sprinklered buildings.

### 2.4.20 Fire Detection and Alarm Systems

**Fire Alarm.** Provide an addressable fire alarm system conforming to requirements of UFC 3-600-01, NFPA 72 and NFPA 101. Fire alarm system shall consist of pull stations, audiovisual devices, control/annunciation panel and tamper and/or flow connection/supervision to the sprinkler system. Provide supervision of fire pump where fire pump is provided. Fire alarm system shall tie into the base-wide system in accordance with base requirements.
2.5  NCOA DINING FACILITY (DFAC)

An NCOA DFAC provides feeding support, three meals a day, to the NCOA Soldiers, Staff, and VIPs at the Academy. An NCOA DFAC is a cafeteria-style operation and includes serving lines for regular full menu and short order or fast food meals, self-service areas for beverages, desserts, and salads. Carry-out is not required for the NCOA during Field Training Exercises (FTXs), it is standard practice that the Academy coordinates with installation DFACs to provide field support. This space is required in accordance with the approved POI and the approved TDA for Authorized personnel.

When programming a new NCOA every attempt should be made to locate the Academy building within 1 mile of an existing installation DFAC capable of supporting the NCOA feeding population.

If the NCOA feeding population cannot be supported by an existing installation DFAC, an NCOA DFAC should be programmed. The feeding population for an NCOA DFAC is typically less than that of a Standard small-sized DFAC which is designed to serve 400-660 PN, therefore, a Non-Standard DFAC will be required at most Academies. A Non-Standard DFAC serves between 200-399 PN and is maximum 12,800 SF.

However, if the planned NCOA DFAC feeding population falls below the Non-Standard DFAC minimum 200 PN, the Academy must be located within a 1-mile radius of an installation DFAC capable of serving the proposed NCOA feeding population.

Criterion: The NCOA DFAC criterion is based on the feeding population of the respective NCOA. The Academy is a training environment with limited downtime; therefore, the DFAC capacity is calculated based on the average daily load of the Soldiers plus the approved Table of Distribution and Allowance (TDA) personnel and guests on campus. The DFAC should be capable of handling a 95% utilization factor.

Total NCOA DFAC Feeding Population Calculation = (Average Daily Load of Soldiers) + (Authorized TDA Personnel) + (Average Number of Guests per day)

<table>
<thead>
<tr>
<th>DFAC Size</th>
<th>Min (GSF)</th>
<th>Max (GSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small NCOA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Medium NCOA</td>
<td>-</td>
<td>12,800</td>
</tr>
<tr>
<td>Large NCOA</td>
<td>12,800</td>
<td>12,800</td>
</tr>
</tbody>
</table>

Table 2.5

References:

U.S. Army Corps of Engineers, Norfolk District, Center of Standardization issued guidance.
2.6 COVERED TRAINING FACILITY

Provide a covered training area near the rear building entrance(s).

The covered training area shall be in accordance with the approved POI.

This area provides a covered area to support and conduct training while providing protection for equipment and personnel from the elements. The structure shall have open sides with a metal roof. The ground surface shall be constructed of a durable, low maintenance material such as sand, wood chips or shredded rubber.

The Covered Training area criterion is based on the average daily load of Soldiers registered for a given course in ATTRS. A minimum 12 NSF per soldier is required. (e.g. (256 PN x 12 SF/PN) = 3,072 SF)

<table>
<thead>
<tr>
<th>Covered Training Area</th>
<th>Min (NSF)</th>
<th>Max (NSF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>-</td>
<td>1,536</td>
</tr>
<tr>
<td>Medium</td>
<td>1,548</td>
<td>3,072</td>
</tr>
<tr>
<td>Large</td>
<td>3,084</td>
<td>4,608</td>
</tr>
</tbody>
</table>

Diagram 2.6
2.7 OUTDOOR TRAINING AREA

The Outdoor Training Area consists of a Running Track and Physical Training (PT) Pits and Pulls. These elements are required per the approved POI. Outdoor Training requirements should be confirmed by the installation during programming.

Diagram 2.7 below illustrates the required running course with the Pits and Pulls located within the track.

Diagram 2.7

2.7.1 Running Course

Provide one (1) running course per NCOA.

The running course shall be a 1/4 mile closed circuit, either oval or round in shape, constructed of synthetic sports surface material. The track must be a separate standalone feature and must be observable from one central location to allow for maximum instructor oversight.

Night Training is required per the POI; lighting shall be provided around the running course to enable the Soldiers and Staff to conduct training in a safe environment. The running track lighting level shall be a minimum of 3 foot candles and shall be switch operated. Refer to COS and INCOPD for specific illumination requirements.

Alternative: A 1-mile cross-country running course around the periphery of the campus. This set-up creates a more attractive campus environment and shall be programmed when site conditions are favorable.
2.7.2 Physical Training Pits and Pulls

PT Pits will be used for hand-to-hand combat drills, physical exercise, and calisthenics.

The PT Pits are constructed of a durable, low maintenance, synthetic surface, such as shredded rubber chips, and must incorporate surface and subsurface drainage. Color shall be selected by the installation.

PT Pits should be either standalone facilities or located within the interior of the Running Course.

PT Pits criterion is based on the approved POI. Each pit is a minimum of 18,500 square feet. Square pits are desired, but pit configurations may be adjusted to accommodate site conditions.

<table>
<thead>
<tr>
<th>Standard</th>
<th>PN</th>
<th>EA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT Pits</td>
<td>75</td>
<td>1</td>
</tr>
<tr>
<td>Pull-Up Bar Set</td>
<td>25</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2.7.2.1

<table>
<thead>
<tr>
<th>PT Pits</th>
<th>Min (EA)</th>
<th>Max (EA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Medium</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Large</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 2.7.2.2

<table>
<thead>
<tr>
<th>Pull-Up Bar Sets</th>
<th>Min (EA)</th>
<th>Max (EA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Medium</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Large</td>
<td>11</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 2.7.2.3
2.8 SITE AND PARKING

Site and Parking consists of the following:

- Parking and Vehicular Traffic
- Walkways
- Equipment Yards
- Dumpster Enclosures
- Outdoor Furnishings
- Signage
- Site Lighting
- Landscaping/Hardscaping

2.8.1 Parking and Vehicular Traffic

Site the facility so it is clearly visible to pedestrians, cars and delivery vehicles. Separate service/delivery access from the student/staff access and circulation. Plan for daily deliveries to the loading area. Control vehicular access within UFC 4-010-01 standoff distances for the building.

Comply with the requirements of Technical Instructions 804-11 Design for Non-Organizational or Privately Owned Vehicle (POV) Site Circulation and Parking and Technical Instructions 800-01 Design Criteria, Chapter 3 Site Planning and Design Criteria. Special consideration is required for number of parking spaces when an ACES function is included in the project.

2.8.2 Walkways

Connect the buildings within the NCOA complex to the public walkway system and to parking, with pedestrian walkways. Primary building entrances shall be at least 8 wide. The minimum width of a sidewalk shall be 5 ft. Place handicapped curb cuts in convenient locations while not creating obstacles for walkers. Depress curbs for handicapped access where possible instead of creating ramps. Consider brick or concrete pavers or patterned concrete to identify significant entrances. Provide well-lighted walkways since the facility is often used in the evening (especially if it is to be used as an ACES).

2.8.3 Equipment Yards

Equipment yards shall be provided in compliance with ATFP and the Installation Design Guide to house and screen mechanical and electrical equipment, satellite antennas, emergency generators, etc. Access to the yards shall be provided for maintenance. Place out of the main pedestrian and vehicular flow but in a location that can be accessed for repair work and convenient for utility lines to the mechanical/electrical rooms.

2.8.4 Dumpster Enclosures

Provide a dumpster enclosure for each building within the complex. Consider accommodating recycling in the same enclosure.

Place out of the main pedestrian and vehicular flow but in a location that can be accessed by truck for emptying the dumpster. Comply with AT/FP required setbacks.

Provide gates and landscape in accordance with the Installation Design Guide. Assure the height is adequate for the dumpsters to be used. Provide a reinforced concrete apron for the front tires of the truck to bear on. Use landscape screening.
2.8.5 Outdoor Furnishings

Provide outdoor furnishings including trash and recycling receptacles, seating, bicycle racks, lighting standards and bollards in coordination with the Installation Design Guide. Where the climate is acceptable, provide outdoor break areas with tables, seating and shading devices.

2.8.6 Signage

Plan site identification signage in coordination with site approach, landscape, and lighting. Comply with the Installation Design Guide and the Army Installation Design Standards. Provide traffic control signage as well as “No Parking” signs at service drives. Provide informational signs to direct students to appropriate entries.

2.8.7 Site Lighting

Site lighting is an integral part of the design. Comply with the requirements of the Installation Design Guide. Provide lighting to ensure safe movement through outdoor areas. Consider the color rendition of outdoor lighting. Use bollards or variations in lighting to articulate entrances and public areas. Design lighting levels in accordance with the Illuminating Engineering Society (IES) Lighting Handbook illumination levels. Use photocells, motion detectors and timers to control lighting and conserve energy.

2.8.8 Landscaping/Hardscaping

Coordinate the landscape design with AT/FP and Installation requirements. Preserve natural landscape features including existing topography, trees, and vegetation. Provide windbreaks and shading where appropriate. Consider earth berms to screen parking and roadways. Where berms or swales are used use gradual slopes no greater than 1:5 to allow use of mowing equipment. Screen service area and outdoor equipment. Shade parking areas to reduce heat developed by exposed pavement. Landscaping shall be in accordance with requirements of the Installation. Where appropriate, provide a variety of plants with seasonal change, color, texture, fragrance, and interpretive value. Always use local, durable, native species to help ensure survivability. The use of native plants will also minimize the requirement for chemical pesticides, herbicides and watering. Choose plant materials on the basis of plant hardiness, climate, soil conditions, low maintenance, and quality. Selected plant materials shall be easily maintained and tolerant of the specific site conditions. Incorporate sustainable design principles into the selection of plants. Planting or seeding shall occur only during periods when beneficial results can be obtained. Plant varieties shall be nursery grown or plantation grown stock. They shall be grown under climatic conditions similar to those in the locality of the project. Plants shall be furnished that have heavy, well developed, and balanced top with vigorous well developed root system, and shall be furnished in containers.
2.9 LAWN EQUIPMENT BUILDING (LEB)

A 1,000 NSF Lawn Equipment Building shall be provided at the rear of the facility to store equipment necessary to the function. The structure shall match the physical characteristics of the main NCOA structure.

Place out of the main pedestrian and vehicular flow but in a location that can be accessed by lawn maintenance equipment. Comply with AT/FP required setbacks.
3.0 BACKGROUND

3.1 Composition

A Non-Commissioned Officer Academy Complex consists of several facilities types; Administration and Instruction Facility, Barracks Facility, DFAC Facility, Lawn Equipment Building and Covered Training Building.

3.2 General Design Philosophy

An NCOA complex shall be programmed as a unit, rather than as individual facilities. The Facilities, outdoor training areas, and any additional support facilities, shall be arranged on the site as a unit to allow the students to live, eat, train, and work together. Functional, operational, and spatial relationships critical to meeting training requirements are embedded in the operational layout of facilities. By definition, the use of the term complex in this standard refers to multiple facility types that are packaged to meet the training mission objectives while minimizing (to the extent feasible) the complex footprint. The facility planner shall contact the COS to consider alternatives that will minimize or preclude functional and operational impacts on training requirements when there is a critical need for spatial or land use consideration for this Army Standard.

3.3 Planning and Land Use

Site selection and real property master planning for all NCOA complexes should, to the maximum extent possible, meet layout and configuration for spatial relationships between the Operations and Administration facility, barracks and DFAC as depicted in the NCOA Complex Standard Design.
4.0 GUIDANCE

4.1 Operational Configuration

The overall scope of an NCOA Complex varies depending on the number of Students within the complex. An NCOA Complex includes: Barracks, Administration, Instruction, Dining, Outdoor Training area with a quarter mile running track, parking, and service access. The Complex should also have a clear and convenient pedestrian access to the Barracks, Operation and Instruction Facilities, and Dining Facility. The Standard Design does not utilize or include a Central Chiller or Energy Plant.

4.2 Accessibility

As of 31 October 2008, all areas and facilities required to be accessible to physically disabled persons shall conform to the ABA Accessibility Standard for Department of Defense Facilities. This standard is composed of ABA scoping chapters 1 and 2 and the technical chapters 3 through 10. This is a publication of the U.S. Access Board and is available at: http://www.access-board.gov/ada-aba/aba-standards-dod.cfm.

Accessible parking spaces shall be provided for those visitors and non-military employees with disabilities. The required number of spaces is prescribed by the accessibility guidelines. Such spaces are required to be located so as to provide convenient access to the building entrance.

Accessible desks and chairs shall be handled by the installation based on specific needs. Accessible desks are not required in each classroom. In Auditoriums access to permanent stages and wheelchair space in the audience shall be provided in accordance with standards.

The following areas are not required to be handicapped accessible: mechanical, electrical, and communications equipment rooms; storage space; hazardous waste/materials storage space; loading docks. All other spaces are required to be accessible unless specifically exempted by the Accessibility Standard.

4.3 Building Areas

Net Floor Areas: Where NSF is identified in this Army Standard those numbers shall be actual constructed sizes and are calculated by measuring the inside clear dimensions from the finish surfaces of walls.

Gross Floor Areas: For scoping purposes, compute the "gross area" and GSF in accordance with the following:

Enclosed Spaces: The "gross area" is the sum of all floor spaces with an average clear height 6'-11" (as measured to the underside of the structural system) and having perimeter walls which are 4'-11". The area is calculated by measuring to the exterior dimensions of surfaces and walls.

Limited Scope Spaces: Areas of the following spaces shall count as one-half scope when calculating "gross area":
- Balconies
- Porches
- Covered exterior loading platforms or facilities
- Covered but not enclosed spaces, canopies, training, and assembly areas
- Covered but not enclosed passageways and walks
- Open stairways (both covered and uncovered)
- Covered ramps

41
Excluded Spaces: The following spaces shall be excluded from the “gross area” calculation:
- Crawl spaces
- Uncovered exterior loading platforms or facilities
- Exterior insulation applied to existing buildings
- Open courtyards
- Open paved terraces
- Uncovered ramps
- Uncovered stoops
- Utility tunnels and raceways
- Roof overhangs and soffits measuring less than 3’-0” from the exterior face of the building to the fascia.

4.4 Energy Performance & Sustainable Design

NCOA Complex facilities shall be designed to meet current Sustainable development and design policy requirements as established by the Department of the Army. Higher sustainability levels may be established by other applicable Army or DoD policy, regulation, or criteria.

- Landscaping: Utilize Xeriscape™ design techniques to ensure all plant materials are native to the area and require minimal maintenance. All landscapes shall be designed to utilize no potable water for irrigation after a one-year establishment period. Irrigation shall be minimal and achieved through groundwater collection and grey-water reuse.
- Site Utilities: Where feasible, all site utilities should utilize underground distribution methods.
- Mechanical Systems: Facilities shall utilize the most energy efficient solution for HVAC design available within budget. Mechanical system design shall not be required to accommodate older, less-efficient legacy systems.

4.5 Compliance Threshold

The Army Standard may identify an Army regulation, technical guide or other written guidance as mandatory criteria. The COS provides the first line technical compliance review. The Facilities Design Team (FDT), in conjunction with the COS, will resolve any issues where there may be conflicting, unclear or no compliance measurement threshold. Resolution may require senior leadership guidance or amendment of the Army Standard. The Army Standard is not intended to provide compliance criteria detailed in references, regulations, industry standards, or the standard design.

4.6 Renovation

Renovated facilities shall meet minimum functional requirements as indicated below. A new facility must be provided if renovation criteria cannot be met.

a. Assure that minimum requirements for seismic issues, fire protection, life safety, sustainable design can be met with the buildings intended for renovation.
b. Seismic mitigation must occur if renovation cost is greater than 30% of the building’s replacement value as determined by the Installation.
c. Fire Protection/Life Safety upgrades are required if renovation cost is greater than 50% of the building’s replacement value as determined by the Installation.
d. Silver rating from GBCI is required for the FY13 program and beyond when the renovation provides significant opportunities for substantial improvement in the sustainable design elements of the building, including energy efficiency, or any renovation that exceeds $7.5m.
e. ATFP upgrades (setbacks) are required if renovation cost is greater than 50% of the building’s replacement value as determined by the Installation.
5.0 REFERENCE CRITERIA

Use the latest adopted editions of the following design criteria:

- Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines
- IBC – International Building Code
- AR 405-70, Utilization of Real Property
- AR 420-01, Army Facilities Management
- AR 380-05, Department of the Army Information Security Program
- AR 190-11, Physical Security of Arms, Ammunition, and Explosives
- DoD 5100.76-M, Physical Security of Sensitive conventional Arms, Ammunition, and Explosives
- DA PAM 415-28, Construction Real Property Category Codes
- UFC 3-600-01, Design: Fire Protection Engineering for Facilities
- UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings
- UFC 4-023-03, Security Engineering: Design to Resist Progressive Collapse
- UFC 4-722-01 Dining Facilities
- UFC Series 3-100 Architecture and Interior Design
- TB MED 530 Occupational and Environmental Health Food Sanitation
- ETL 1110-3-491, Sustainable Design for Military Facilities
- UFC 3-580-01 Telecommunications Building Cabling Systems Planning/Design
- ANSI/TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard
- ANSI/TIA/EIA-569 Telecommunications Pathways and Spaces