FC 4-721-10N
1 November 2012
Change 6, 20 May 2015

FACILITIES CRITERIA (FC)

NAVY AND MARINE CORPS UNACCOMPANIED HOUSING

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UNIFIED FACILITIES CRITERIA PROGRAM

FACILITIES CRITERIA NAVY AND MARINE CORPS

UNACCOMPANIED HOUSING

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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER CENTER

Record of Changes (changes are indicated by **1**\ ... /**1**/)

Change No.	Date	Location
1	15 Nov 2012	• Revised paragraph 3-21.8.
2	1 May 2013	• Title changed from “Facilities Criteria Navy and Marine Corps: Unaccompanied Housing” to “Navy-Marine Corps Unaccompanied Housing”; • Clarified Sustainability and Commissioning requirements added reference to the UFC 1-200-02; • Created and added new Austere construction standards as Appendix E.
3	13 Nov 2013	• Revised paragraph 3-21.7.
4	1 May 2014	• Revised paragraphs 2-7.1. • Revised paragraphs 2-7.1, 3-29.6 to 3-29.9
5	25 Jan.2015	• Replaced Paragraphs 3-18, 1-5 Hardware and Locks
6	20 May 2015	• Add 1+1E Marine Corps Plan for OCONUS (Japan) use • Revised para.2-7.1 • Revised para.5.2 • Revised Graphics. Add D-5 1+1E Plan

This facilities criteria (FC) supersedes FC 4-721-10N, dated 1 November 2012 and subsequent Change 5, last dated 25 January 2015.

FOREWORD

Facilities Criteria (FC) provide functional requirements (i.e., defined by users and operational needs of a particular facility type) for specific DoD Component(s) and are intended for use with unified technical requirements published in DoD Unified Facilities Criteria (UFC). FC are applicable only to the DoD Component(s) indicated in the title, and do not represent unified DoD requirements. Differences in functional requirements between DoD Components may exist due to differences in policies and operational needs.

All construction outside of the United States is also governed by Status of Forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA.) Therefore, the acquisition team must ensure compliance with the most stringent of the UFC (replace w/ FC), the SOFA, the HNFA, and the BIA, as applicable.

Because FC are coordinated with unified DoD technical requirements, they form an element of the DoD UFC system applicable to specific facility types. The UFC system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applicable to the Military Departments, Defense Agencies, and the DoD Field Activities. The UFC System also includes technical requirements and functional requirements for specific facility types, both published as UFC documents and FC documents..

FC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC), and the Air Force Civil Engineer Center (AFCEC) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content is the responsibility of the cognizant DoD working group. Recommended changes with supporting rationale should be sent to the respective service proponent office by the following electronic form: Criteria Change Request. The form is also accessible from the Internet site listed below.

FC are effective upon issuance and are distributed only in electronic media from the following source:

- Whole Building Design Guide web site http://dod.wbdg.org/.

Refer to UFC 1-200-01, *General Building Requirements,* for implementation of new issuances on projects.

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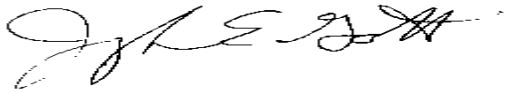

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FACILITIES CRITERIA (FC)
SUMMARY SHEET

Document: FC 4-721-10N, *NAVY AND MARINE CORPS UNACCOMPANIED HOUSING*

Superseding: FC 4-721-10N, *UNACCOMPANIED HOUSING* dated 1 Nov 2012, with subsequent Changes 1-5, dated 22 January 2015.

Description: This FC describes design requirements for the Navy and Marine Corps unaccompanied housing. This change in designation was made on 01 Nov 2012 from UFC to FC identifies this as a services specific criteria document for Navy and Marine Corps use.

Reasons for Document:

- Clarified Sustainability and Commissioning requirements added reference to the UFC 1-200-02;
- Austere construction standards were added as Appendix E. Austere construction is intended for facilities in locations determined by CNIC and approved by OPNAV to be eligible for austere facilities construction. The austere standards are intended to be applied flexibly and in varying degrees to all facilities at locations designated as austere. The flexibility should be allowed to ensure the criteria are appropriate for individual austere locations. These requirements are located in an appendix to this document.
- The Marine Corps is completing significant and lasting improvements to its permanent party Unaccompanied Housing through its BEQ Military Construction (MILCON) Redline Initiative. The Bachelor Enlisted Quarters Facilities Oversight Board was authorized by the Assistant Commandant of the Marine Corps in December 2009. The Board now meets annually to review, evaluate and recommend for adoption design criteria and specifications for Marines Unaccompanied Housing and formally codify construction innovations for the USMC enterprise. The changes in this publication represent the results of those meetings.

Impact:

- These changes were evaluated to provide minimal impact to cost, as part of the Secretary of the Navy's program for QOL enhancements and approved by the ADC I&L (LF). The austere criteria described in Appendix E is intended to reduce facilities costs.

Unification Issues

Differing policy from Navy to Marine Corps appears as follows in this document: Waiver Process, Requirements Determination Process, Navy Unit, and Marine Corps Room Plans. These unification issues are a direct result of overarching Service policies outside the scope of this document.

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CHAPTER 1 INTRODUCTION.

1-1 SCOPE.

The Navy and the Marine Corps will use this document. It presents basic design criteria guidance for Unaccompanied Housing (UH) for the Navy and the Marine Corps, and applies to both enlisted and officer quarters. It also takes into account local program operations and requirements, in accordance with the latest construction standards established by the Office of the Secretary of Defense (OSD). UH serves recruits in open bay, students in dormitories, and permanent party housing. This facilities criteria FC includes planning and design criteria for renovation and new construction of Navy and Marine Corps UH. Planners and designers must incorporate the requirements of this document as applicable to their appropriate type of UH. This document does not apply to privatized assets (PPV). This document does not include criteria for Navy Gateway Inns & Suites (NGIS), Transient, or Visitors Quarters.

1-2 APPLICABILITY AND MINIMUM STANDARDS.

This FC establishes minimum design standards that must be followed. It provides criteria for unaccompanied housing (UH), and is applicable to both new construction (MILCON) as well as sustainment, restoration and modernization (RM, SRM) projects. It is applicable to projects inside the continental United States, (CONUS), and outside the continental United States (OCONUS). Use this FC in conjunction with Department of Defense (DOD) and other Department of Navy criteria related guidance. This FC recognizes that local climates, geography, communities, mission needs, and changing programs necessitate some special requirements for Navy and Marine Corps UH. These standards provide criteria for determining site evaluation and planning, landscape design, facilities design, and interior design.

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1-2.1 Austere Construction.

Austere construction is intended for facilities in locations determined by CNIC and approved by OPNAV to be eligible for austere facilities construction. The austere standards are intended to be applied flexibly and in varying degrees to all facilities at locations designated as austere. The flexibility should be allowed to ensure the criteria are appropriate for individual austere locations. Austere requirements are located in Appendix E of this document.

/2/

1-3 REFERENCES TO OTHER CRITERIA.

References within this FC to applicable criteria and codes are intended to assist the designer in compiling and complying with the required statutes. These references are

not intended to identify all those that may apply. It is the responsibility of the designer of record to identify and comply with all required statutes.

1-4 BUILDING CODES.

Comply with UFC 1-200-01, General Building Requirements. UFC 1-200-01 provides applicability of model building codes and government unique criteria for typical design disciplines and building systems, as well as for accessibility, antiterrorism, security, high performance and sustainability requirements, and safety. Use this FC in addition to UFC 1-200-01 and the UFCs and government criteria referenced therein.

1-5 CANCELLATION.

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This is Change 2 of FC 4-721-10N Navy and Marine Corps Unaccompanied Housing and replaces Change 1 of FC 4-721-10, Navy and Marine Corps Bachelor Housing, dated 15 November 2012.

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1-6 QUALITY OF LIFE.

Providing our unaccompanied military personnel with adequate, comfortable housing is a major goal for the Navy and Marine Corps, and a critical element in attracting and retaining high caliber personnel. Thus the minimum standards set forth in this document maintain the focus of providing housing for a comfortable living environment.

1-7 WAIVERS.

Engineering criteria and code interpretations may not be altered without a waiver from the Chief Engineer of the Navy per Mil-Std 3007. Personnel and functional planning criteria may not be altered without a waiver from the Assistant Secretary of the Navy, Energy, Installations and Environment (ASN EI&E). ASN EI&E implements facilities standards for the Secretary of the Navy. The DoD standard for new or renovated UH for junior enlisted members who are required to live on the installation is a market-style unit. ASN EI&E has the authority to approve a lesser construction standard with the constraint that a bathroom cannot be shared by more than two members on a permanent basis. Send Requests for waivers via the chain of command described below.

Navy Waiver Process. Forward personnel and functional planning criteria waiver requests to the Commander Naval Installations Command (CNIC), Attn: Housing (N93) for review and validation. If CNIC determines a waiver is required, the waiver will be discussed with the requesting site and forwarded with recommendation(s) to the ASN EI&E, via Chief of Naval Operations (N46).

Marine Corps Waiver Process. Forward personnel and functional planning waiver requests via the Installation's Office through chain of Command to Headquarters, U.S. Marine Corps, Attn: Facilities and Services Division (Code LF). Code LF is responsible for the planning, programming, and policy for Marine Corps Unaccompanied Housing. The waiver will be discussed with the requesting site and forwarded with recommendation(s) to the ASN EI&E via the Commandant.

1-8 REFERENCES.

Appendix A contains a list of references used in this document. The publication date of the code or standard is not included in this document. In general, the latest available issuance of the reference is used.

1-9 APPENDIX B . BEST PRACTICES

Appendix B contains Best Practices for Navy Resident and building manager input.

1-10 GLOSSARY.

Appendix C contains acronyms, abbreviations and terms.

1-10 APPENDIX D FIGURES.

These are unit, and module floor plan examples for some types of UH.

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1-11 APPENDIX E AUSTERE UNACCOMPANIED HOUSING

Appendix E contains requirements for austere design and construction by showing the modifications to this Facility Criteria.

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CHAPTER 2 PLANNING AND LAYOUT.

2-1 PROJECT INITIATION AND PLANNING.

This FC provides information required for preparation of DD Form 1391, which initiates project development. This includes information about functions, space allowances, overall building size, site evaluation, and special factors to consider in developing overall scope and cost estimates. It provides data and criteria needed at each stage of NAVFACENGCOM planning, project engineering, and the design process. Additional documentation may be provided in accordance with Chief of Naval Operations (CNO) or Commandant of the Marine Corps (CMC) guidance.

2-1.1 Navy Requirements Determination.

Navy UH requirements are defined in annual Unaccompanied Housing Requirements Determination Report (R-19), within the Enterprise Military Housing System (eMH). The R-19 identifies the "Permanent Party Program Requirements" (line 15) by comparing base loading (people) and projected inventory. "School Program Requirements" are identified in the R-19 on page two (line 33), by comparing student throughput demand and projected inventory.

2-1.1.1 Permanent Party (Navy).

E1-E3: Shared bedrooms, with a bathroom to be used by 2 persons maximum.

E4: Private bedroom, with a bathroom to be used by 2 persons maximum.

E5-E6 (at remote locations): Private bedroom, with a bathroom to be used by 2 persons maximum.

E7-E9, O1 and above (at remote locations): Private unit with living room, bedroom, kitchen, and bathroom

2-1.1.2 Military Necessity/Mission Essential (Navy).

E1-E3: Shared bedrooms, with a bathroom to be used by 2 persons maximum.

E4-E6: Private bedroom, with a bathroom to be used by 2 persons maximum.

E7-E9, O1 and above: Private bedroom, private bathroom

2-1.1.3 Students (Navy).

Recruit: Use the Open Bay configuration.

Training Necessity: Shared bedrooms, with a bathroom to be used by 2 persons maximum.

2-1.2 Marine Corps Requirements Determination.

Marine Corps UH requirements are defined in annual BEQ Requirements Worksheet generated by MCICOM GF to the Installations Permanent Party.

E1-E3: Shared bedroom, with a bathroom to be used by 2 persons maximum.

E4-E5: Private bedroom, with a private bathroom.

2-1.2.1 Students (Marine Corps).

Recruit: use the Open Bay plan to house personnel engaged in duty that requires special housing in groups to accomplish their tasks. These include basic training, follow-on entry level training at the Schools of Infantry (East and West), Special Forces with special mission needs, or other special situations as approved.

Formal Training/Schools: marines undergoing Military Occupational Specialty (MOS) training at Marine Corps Formal schools will be billeted at the 2+0 standard, unless otherwise approved.

Officer Accession: Shared bedrooms, with a bathroom to be used by 2 persons maximum.

2-1.3 Site Selection.

Site selection is a key aspect of initial project development and requires thoughtful consideration. This is part of a comprehensive planning process. After site selection and approval, thorough site and field investigations are performed.

- For Navy projects, follow the established planning process.
- For Marine Corps projects, follow the site selection process in accordance with the Base Installation Master Plan.

2-1.4 Project Analysis and Engineering Phase.

After a project is initiated, it is analyzed and defined. During the project analysis stage, the project team meets to define the project so as to have a clear understanding of the project goals and objectives. The customer, CNIC/HQMC, design agent, and architect/engineer (A/E) team then develops the project documentation based on an analysis of unique customer needs, requirements, established criteria, and site and environmental constraints. Information gathered provides the basis for defining the preliminary design and supports the project engineering phase, parametric cost estimating (PCE), and programming process. Information required includes space planning, site design, selection of the appropriate plan, and building design, elements and concepts. Unique local requirements concerning building program and design criteria are included in the PCE.

- Antiterrorism requirements are established as part of the design program and are identified as a separate line item in the DD Form 1391 estimate.

- For Navy Modernization projects a Business Case Analysis (BCA) is required for OPNAV review and approval.

2-2 ASSIGNMENT STANDARDS.

Navy: Assignment standards for the Navy are described in DOD Manual 4165.63-M, *DOD Housing Management Manual,* latest edition, and NAVADMIN 072/12 Interim Change to OPNAVINST 5009.1, Responsibility for Navy Housing and Lodging Programs.

Marine Corps: Assignment standards for Marine Corps personnel are described in Marine Corps Order (MCO) P11000.22, *Housing Management Manual*. Refer to DOD 4165.63-M for additional information.

2-3 FACILITY FUNCTIONS.

Three basic functional activities must be addressed in Navy and Marine Corps UH: “Units” (Navy) and “Rooms” (Marine Corps); Building Common Areas; Recreational and Community Areas.

2-3.1 Terminology: “Unit”, “Room”, “Plan”, “Open Bay”

The basic living unit may be composed of bedroom, living area, personal storage closet, bathroom, sink/personal hygiene area, food preparation area, and telecommunications as applicable. Navy and Marine Corps terminology differs for the same entity.

"Unit". Navy unaccompanied housing living spaces shall be referred to as "Units. The ‘Unit’ will refer to any group of rooms sharing any common space, such that a ‘2+0 Unit’ is composed of only one room and bathroom, whereas a ‘Market Unit’ might include several bedrooms, bathrooms, kitchen and living/dining area.

"Room" or "Plan". The Marine Corps uses the terms “Room” or “Plan” in reference to their basic unaccompanied Housing living spaces, resulting in the “Marine Corps 2+0 Room”, “SNCO/BOQ Room” and “Marine Corps Officer Plan”.

Both Navy and Marine Corps use the term "Open Bay".

2-3.2 Building Common Areas (Spaces).

Building Common Areas (Spaces) are spaces within the building that are not included within the Unit and Room and Marines Officer Plan. Examples of these spaces are: entrance, laundry facilities, bulk storage, utility space, mail service area, circulation space, multipurpose space, vending areas, public toilets, supply storage rooms, and administration area. See Chapter 4.

- Allowances for Common Areas (Spaces) vary depending upon the plan used.
- Not all Common Areas (Spaces) are permitted or available for all plans.

2-3.3 Recreation and Community Areas (Spaces).

Recreation and Community Areas (spaces) are outdoor activity areas. See Chapter 3, paragraph entitled “Outdoor Recreation” for a more detailed description.

2-4 NAVY STANDARDS FOR CONSTRUCTION AND SRM.

Restoration and Modernization (RM) projects must be executed in accordance with OPNAVINST 11010.20G. This document provides detailed guidance for the administration of facilities projects at Navy shore installations. The criteria standards to be followed for Construction, or Restoration and Modernization are determined by the planned use of the facility as determined by the housing authority. Chapter 4 contains additional information for the housing authority and project team to determine best practices for renovation or redesign of previous construction standards. Modernization projects which alter the configuration of the units and/or building require a Business Case Analysis (BCA) approved by OPNAV.

2-4.1 Recruits.

Recruits shall use the Open Bay plan.

2-4.2 Training Necessity.

All construction for Students in Officer Accessions (Officer Training Command) and Enlisted (E1-E4), "non-prior service" in Initial Skills training ("A" Schools, Accessions pipeline, "C" Schools, etc.) who have not yet had an assignment with a previous duty station or fleet unit shall use the NETC Dormitory Unit with two per room, no more than two per bath. The NETC Dormitory Unit construction standard applies to all Officer Accessions and Enlisted Initial Skills Training, "A" Schools regardless of training timeline (i.e., over or under 20 weeks). Housing for these students is part of the training mission and separate from other unaccompanied housing, and students are considered “Must House” on the installation.

2-4.3 Mission Essential.

All construction for rotational Sailors outside their homeport and crewmembers of uninhabitable ships/submarines outside their normal homeport shall use the Navy Shared/Mobilization Unit.

2-4.4 Permanent Party.

All construction for Permanent Party UH shall use Market Units in accordance with NAVADMIN 072/12. Students in training 20 weeks or longer with exception of Officer

Accessions and Enlisted "A" School pipeline training will be housed as Permanent Party (Market Units). This requirement is not applicable to renovation projects. Note that the Navy no longer uses a 2+0 plan for new footprint Permanent Party construction.

2-5 MARINE CORPS STANDARDS FOR CONSTRUCTION AND SRM.

The criteria standards for Construction, Sustainment, Restoration, and Modernization (SRM) for Marine Corps Unaccompanied Housing are referred to as Permanent Party, Transients, or Recruits/Trainees. The existing building shell should be considered and respected in re-design projects. Modernization projects which alter the structural configuration of the building require a Business Case Analysis (BCA) approved by the Marine Corps Office Facilities and Services Division (Code LF).

2-5.1 Permanent Party.

All new Marine Corps construction for Permanent Party shall use the Marine Corps 2+0 Room.

2-5.2 Recruits and Trainees.

Use the Open-Bay Plan to house personnel engaged in duty that requires special housing in groups to accomplish their tasks. These include basic training, follow-on entry level training at the Schools of Infantry (East and West), Special Forces with special mission needs, or other special situations as approved by HQMC Facilities and Services Division (Code LF). Marines undergoing Military Occupational Specialty training at Marine Corps formal schools will be billeted at the 2+0 standard, unless otherwise approved by HQMC Facilities and Services Division (Code LF).

2-5.3 Geographic Bachelors and Civilians.

The Marine Corps does not plan or construct for Geographic Bachelors and Permanent Party Civilians

2-6 DESIGN LIMITATIONS.

Graphic illustrations in this document are the basic building blocks from which UH designs are developed. These illustrations are provided to promote uniformity in the design of projects. These designs may be altered, but the mandatory size limits require that any variations be small. Required Common Areas (Spaces) for each plan differ. Refer to the specific Unit or Plan within subsequent chapters for the detailed descriptions of required Common Areas (Spaces).

- While plan layouts may be altered to some degree, all of the detailed features and fixtures must be included as a mandatory minimum.

- The Net Living/Sleeping Areas must be met and gross area maximums must not be exceeded.

- Plan room dimensions are NOT fixed, but should remain functional. Bedrooms should be sized to accommodate two extra-long twin beds.

2-7 GROSS BUILDING AREA.

When calculating the Gross Building Area, measure from the outside face to the outside face of exterior walls.

2-7.1 Gross Building Area = Unit/Room + Common Area (Space).

- Market Unit - The maximum allowable gross building area is \4\ 527 ft^2 /4/ ($49m^2$) per bedroom, based on a two-bedroom Unit. This maximum is not applicable for one-bedroom Units.

- Navy NETC Dormitory Unit / Shared Mobilization - The maximum allowed per plan Gross Building Area is \4\ 517ft^2 /4/ ($48m^2$).

- Marine Corps 1+1E Room The maximum allowed per plan Gross Building Area is\6\ 710 ft^2 ($66m^2$)./6/

- Marine Corps 2+0 Room - The maximum allowed per plan is Gross Building Area of \4\ 517 ft^2 /4/ ($48m^2$).

- Marine Corps Officer Plan – The maximum allowed per plan is Gross Building area of 743 ft^2 ($69m^2$).

- Open Bay Plans - The maximum allowed per person housed is Gross Building Area of 140 ft^2 ($13m^2$).

2-7.2 Building Area Calculation.

For detailed information on Facilities Planning criteria for Navy/Marine Corps shore installations, and project scope (size) calculations, refer to UFC 2-000-05N/P-80.

2-7.3 Half Scope Items.

When calculating Gross Building Area for programming purposes, count the following as Half-Scope:

- Balconies and Exterior Covered Areas over 21.5 ft^2 (2 m^2), and measure from the face of the enclosure wall to the edge of the covered area;

- Stairs and Stairwells; half of the horizontal projection of the stair per floor they serve.

- Elevators and shafts (count as half scope per floor that they serve);

- Chases used for mechanical, electrical or plumbing count as half area per floor that they serve.

Navy: Square footage of interior corridors for enlisted unaccompanied housing will be calculated as “half-scope” in determining total facility square footage; per PDASN (I&E) Memo dated 19 January 2010.

Marine Corps: Square footage of interior corridors for enlisted unaccompanied housing will be calculated as “half-scope” in determining total facility square footage; per PDASN (I&E) Memo dated 4 September 2009.

2-7.4 Excluded Scope Items.

When calculating Gross Building Area Allowances for programming, do not include the following:

- Roof overhangs;
- Mechanical equipment balconies;
- Exterior sidewalks that serve rooms at ground level.

2-7.5 High Rise Structures and Additional Gross Area.

Multi-level construction requires additional structural and mechanical support. Therefore, for buildings above 3 stories an additional area of 21.5 ft^2 ($2m^2$) may be added to the allowable gross area per Navy Unit or Marine Corps Plan. This must be identified and justified as a separate item in the DD 1391 documentation.

2-8 GROSS “UNIT” OR “ROOM” AREA.

Gross Unit or Room Area is defined as the area within the walls comprising the perimeter of a (Navy) Unit or (Marine Corps) Room. Review the paragraph entitled “Terminology for "Unit", "Room", "Plan" and "Open Bay"”.

- Wall thickness and chase areas within the perimeter walls are included in the Gross Area.
- Gross Area is measured from the centerline of perimeter walls shared with interior corridors, common chases, or other rooms.
- Gross Area is measured to the outside face of exterior walls.
- Plan corner rooms with two exterior walls are to have the same interior dimensions as other rooms, even though technically the Gross Area for these corner spaces is slightly more than for other spaces.

2-8.1 Net Living/Sleeping Area.

Net Living/Sleeping Area describes the actual usable space in each sleeping/living area. Refer to DOD 4165.63-M for additional descriptive information.

CHAPTER 3 GENERAL DESIGN CRITERIA - NAVY AND MARINE CORPS.

3-1 SCOPE.

This Chapter is applicable to new construction, and renovation and modernization projects. Redesign and renovation project teams shall apply sections relevant to the scope of work for their project.

3-2 SITE DESIGN.

Analysis of existing site conditions (e.g., utilities and plant material, traffic patterns, land use, community facilities, and off-site workplaces), and antiterrorism is important for effective site design.

- Site Navy and Marine Corps Unaccompanied Housing to take advantage of the positive features of the site. Provide protection from undesirable winds and glare, shading from excessive sun in warm climates, and orientation of operable windows to take advantage of summer breezes.

- Pay special attention to building orientation, mass, and scale in developing the site plan. Develop a sense of order, arrival, orientation, and community in planning the site. Arrange the placement of structures in relationship to one another to create outdoor spaces for use as passive or active recreation areas. Achieve spatial balance and scale through thoughtful placement and arrangement of structures, landscaping, and landforms. Organize the site using functional zones and the appropriate relationship of functions. Intermittent functions such as trash collection, vending machine service, furniture moving, and mechanical repair should not interrupt residents' activities.

- Establishing the finished floor elevation of the project is one of the most important aspects of site planning. The Finished Floor Elevation affects grading, cut and fill, and visual impact of the facility; as well as interior and exterior transitions. In addition, the Finished Floor Elevation has a significant impact on the landscape architect's ability to effectively introduce plant materials into the new environment. When the approach is to "level the site" without sensitivity to other demands, the results lack visual interest. Closely combine efforts of the landscape architect, architect, and civil engineer to achieve the most optimum design results. For Civil Engineering, provide the facility's minimum finished floor elevation and the mechanical/electrical equipment pad elevations in accordance with the latest civil design guidance.

3-2.1 Walkways and Sidewalks.

Locate and size walkways to efficiently connect residents with site amenities, parking, station transportation, community facilities, jogging trails, and workplaces. Place walkways with emphasis on functional rather than formal needs. Grade walkways to

drain away from the building and ensure non-slip surfaces are provided. Consider security in all circulation designs.

- Construct walkways to building entrances to be 8 feet (2.5 meters) wide.
- Construct sidewalks used for troop formations to be as much as 28 feet (8.5 meters) wide.
- Construct typical pedestrian sidewalks 6 feet (2 meters) wide.

3-2.2 Vehicular Access.

Provide access to the housing site from secondary (collector) streets to reduce congestion associated with main arterial streets. Where possible, divide main entrances with landscaped traffic medians between entry and exit lanes. Because of high volume of traffic using the entrances, construct the width of non-divided entrances to be a minimum of 24.6 feet (7.5 meters). Carefully review security requirements when designing for vehicular access.

3-2.3 Parking.

Review the security study and incorporate its requirements into the design. Ensure existing and proposed parking is in compliance with Chapter 3 paragraph entitled, Antiterrorism. Provide parking for residents, visitors, staff, and service personnel that is convenient, safe, and pleasant to use. Locate and shape parking areas to improve the residential environment. Use landforms such as earth berms, retention ponds, and tree islands to separate parking from other functional zones and to buffer the residential area from possible surrounding adverse environment.

Maintenance parking for service functions does not necessarily require dedicated space. Use the expected frequency of maintenance vehicles to determine whether dedicated parking is needed. Locate service access and parking to avoid disturbing residents.

Provide standard parking spaces for 70% of the resident capacity. Provide motorcycle parking for 5% of the resident capacity; provide dedicated space with concrete paving. Provide bicycle parking for 5% of the resident capacity; provide secure, weather protected, conveniently located facilities. Navy prefers interior bicycle storage in the building or parking structures. Provide visitor parking for 2% of the resident capacity. Locate two standard parking spaces for guest check-in near the entrance. Provide parking for each staff member and locate staff parking at the outer areas of the parking area.

3-2.4 Vehicular Service to Building.

Antiterrorism requirements take precedence over all other requirements.

- Entrances. Where possible, separate service entrances associated with mechanical rooms or mechanical enclosures from parking areas.

- Design access streets and parking areas to accommodate service vehicles and fire protection equipment. Where interior court areas are being proposed between adjoining buildings, consider designing the main pedestrian walks to accommodate service and fire protection vehicles. For example, construct the minimum width of such walkways a minimum of 8 feet (2.5 meters) wide and constructed using reinforced concrete to accommodate government vehicle weight class 4 and 5.

- Consider treating the walkways with a patterned concrete system to minimize the negative impact of the wider access route. Use materials such as concrete grass road type pavers to provide access for infrequent service vehicles.

3-2.5 Bus Route Access.

Consider developing shelters and walks to serve personnel needs if the base provides bus service. Design bus shelters to be compatible with the architectural aesthetic of existing buildings, Installation Appearance Plan (IAP), and existing bus shelters on base. Program at least one bus stop shelter for each major housing complex. Coordinate with the base in selecting a new shelter that is programmed with new projects, where existing shelter design needs upgrading.

3-2.6 Utility Corridors.

Develop utility corridors in coordination with the planner, electrical, mechanical, and civil engineers. Size the corridors to accommodate future expansion. Locate utility corridors no closer to tree trunks than one and one-half times the crown width of mature trees or 33 feet (10 meters), whichever is the greater amount. Locate utility corridors to allow for future street tree plantings.

3-2.7 Fire Protection Access.

Site new structures a minimum of 39 feet (12 meters) laterally from the closest adjoining building. Provide fire department access, fire lanes, and fire apparatus turn-a-rounds in accordance with UFC 3-600-01.

3-2.8 Site Furniture.

Select site furniture that is in harmony with the architecture of the new and surrounding existing facilities, compliments the building, and makes the outdoor spaces more usable and organized. The landscape architect must coordinate the selections with the architect and interior designer to ensure smooth transitions are made in the procession from within the building to the outdoors and vice versa. Effective transitions are affected when building materials, colors used in the building exterior and interior areas, and design details from the building are incorporated into the paving materials and site

furnishings. Durable site furnishings are to be used to support various site functions. Wherever possible, use recycled materials for site furnishings. Coordinate the use and locations of site furnishings, trash receptacles, seating, picnic shelters and grills, and lighting. Provide public areas suitable for various group sizes (4-20) with grills and at least partially covered seating. Site public areas to accommodate larger coordinated and smaller separated activities.

3-2.9 Mechanical Enclosures.

Screen mechanical equipment such as chillers, evaporating condensers, switchgear, and electrical transformers. Use architectural screening materials that complement the materials used to construct the new facility. Use landforms to screen objects in the landscape that do not require enclosures. Design screening low and in cognizance of the requirements of the Risk Analysis and Vulnerability Assessment and security requirements.

3-2.10 Trash Dumpsters.

Locate dumpsters in areas away from main entrances, while still as convenient as possible to residents and large trash handling trucks. Screen trash dumpster locations with any combination of hard wall materials, earth forms, and landscaping to reduce their impact. Where hard wall materials are used, use materials that complement the materials used in the project and adjacent facilities. Locate dumpsters and design screening in accordance with the requirements of the Risk Analysis and Vulnerability Assessment and security requirements.

For Navy, where large refuse containers or compactors are located within building footprints, trash chutes shall be conveniently located for all occupants and trash rooms shall be provided with a hose bib and floor drain for cleanup.

3-2.11 Planting and Vegetation.

Proper planning and design, plant selection, and use of turf alternatives and mulch materials, zoning of plants in accordance with water requirements, soil improvements, efficient irrigation, and appropriate maintenance are the fundamentals of good landscape planting.

- Develop plantings to create an aesthetically pleasing landscape that conserves water and resources while minimizing maintenance requirements.

- Provide low shrubs and ground covers at the building foundation, bio-retention cells (if utilized), and for screening unsightly utility features.

- Provide trees throughout the site including at parking areas, along roadways, around the building as appropriate, and in turf areas.

- Provide new plantings which enhance the visual quality of the site during all seasons and incompliance with local installation standards.

- Provide a one year maintenance contract on all plants, including sod or grass seeded areas.

- Provide plant materials that are drought tolerant, disease and pest resistant, and mostly native.

- All plantings must meet Anti-terrorist (AT) Standards.

3-2.12 Landscape Maintenance Provisions.

The initial contract must provide landscape establishment and maintenance for installation of plant materials. Use a one-year duration of the establishment period in all cases. This must not be made optional. Include the following establishment requirements:

- Irrigation.

- Mowing and edging, replacing mulch;

- Inspection, control of pests and weed control;

- Tightening, staking and guying materials, pruning, fertilization;

- Maintaining watering saucers.

3-2.13 Irrigation.

Permanent irrigation systems are required only for perimeter planted areas in Navy projects (i.e., the 20 foot (6.096 meter) perimeter immediately around building). Permanent irrigation systems are not required in Marine Corps projects. Permanent irrigation systems may be approved where climactic conditions dictate.

3-2.14 Outdoor Recreation.

For Navy projects, a Recreational Services Assessment shall be completed for each project. The findings of this assessment shall be incorporated into the project documentation.

For Marine Corps projects, when providing sand volleyball courts and full basketball facilities or other appropriate amenities, light these facilities for evening use. Locate these recreational functions to reduce interference with other functions on and near the site. Shelter or screen both active and passive recreational facilities to temper wind and other climate elements. Provide horseshoe pits, tables, benches, appropriate lighting for safety and evening recreational activities, and appropriate landscape plant materials.

3-3 RESTORATION AND MODERNIZATION REQUIREMENTS.

Projects for any existing facility housing unaccompanied personnel shall incorporate a 'whole building approach' with the goal of eliminating all identified building deficiencies.

3-3.1 Navy RM

Restoration or Modernization (RM) projects shall address all identified deficiencies (Condition and Configuration), and functional QOL (Quality of Life) deficiencies as defined by UHAP (Unaccompanied Housing Assessment Program). Restoration and Redesign projects shall comply with OPNAVINST 11010.20G, Facilities Projects Instruction. UH Master Plan will provide programming guidance for FY13-20 RM projects. RM projects shall comply with the following:

- Perform a business case analysis and determine whether renovation or replacement construction is more cost effective.
- Do not redesign for the sole purpose of meeting new construction criteria, except where existing designs are inadequate. Inadequate building designs, for Permanent Party usage, include any layout where assignments to the unit cannot be adjusted to ensure that no more than 2 Sailors share a bathroom.
- Redesigns shall adjust unit designs to work within existing structural constraints to maximize building area while minimizing investment.
- Freestanding columns are allowed in redesigned units, provided they do not interfere with a functional area or use.

3-3.2 Marine Corps RM

Restoration and Modernization projects for the Marine Corps will be executed to the maximum extent possible to include new construction requirements noting that a 2+0 standard (assignment) may not be achieved within existing older facilities.

3-4 STRUCTURAL DESIGN.

Use UFC 1-200-01 for structural engineering and seismic design.

3-4.1 Structural Selection.

Coordinate column spacing and layout with the building's floor plan so that they occur within or in alignment with walls. Hold columns occurring within spaces to a minimum and limit them to larger public spaces. Analyze and select the proposed structural system that is the most economical method of realizing the architectural design intent.

- Select an economical structural system based on: facility size; load requirements; geotechnical conditions and foundation design based on local experience;

Antiterrorism considerations, including progressive collapse for buildings of three stories or greater; local availability of materials and labor; local construction practices; experience of inspection personnel; resistance to fire; permafrost conditions; construction schedule.

3-5 HAZARDOUS MATERIALS.

The use of asbestos-containing materials and lead-based paint is prohibited.

3-6 CHEMICAL CONTAMINANTS.

Evaluate the site for potential soil and groundwater contamination. Check with the Installation Environmental Restoration Program and Underground Storage Tank Program managers, and consider previous uses of the site.

3-7 HISTORICAL STRUCTURES.

Include the State historical representative in initial planning for buildings eligible or listed as a historically significant structure.

3-8 NEPA.

Include considerations for effecting compliance with the National Environmental Policy Act (NEPA) in initial planning.

3-9 ARCHAEOLOGY.

Include in a preplanning site investigation whether the affected area of construction involves earthwork in an archaeologically sensitive area.

3-10 RADON.

Check *EPA's Map of Radon Zones*, to determine the radon priority area. Check the results of the Navy radon survey conducted under the Navy Radon Assessment and Mitigation Program (NAVRAMP) by contacting base environmental personnel and the Facility Engineering Command or EFA Air Pollution Engineer. Check EPA document Model Standards and Techniques for Control of Radon in New Residential Buildings, Federal Register 59 FR 13402 dated 21 March 1994.

- Mitigation. Provide passive sub-slab depressurization systems for projects located in the Priority Area No. 1 and all areas identified by NAVRAMP to have expected radon levels greater than 4 pCi/L. Change the system to active if needed based on follow up testing.

3-11 ANTITERRORISM (AT).

\2\ The DOD objective is to eliminate personnel exposure to security threats in occupied Unaccompanied Housing and workspaces and limit property damage and minimize

the likelihood of mass casualties from terrorist attacks through cost effective security improvements. DOD policy and guidance for antiterrorism and the physical security of facilities is contained in core criteria as referenced in UFC 1-200-01. Use UFC 4-010-01, and UFC 4-010-02, and Geographic Combatant Commander Antiterrorism construction standards for these antiterrorism requirements. These requirements are applicable for new construction, restoration, and modernization or redesign of existing facilities. /2/

3-11.1 Vulnerability and Risk Assessment.

During the initial planning process, the Planning Team may conduct a vulnerability assessment to determine the appropriate Design Basis Threat (DBT) and associated level of protection. Use UFC 4-020-01.

3-11.1.1 UH Design in High Threat Environments.

When the vulnerability and risk assessment of a new project identifies a higher DBT, the following minimum design features may to be required:

- Kitchen/Bath. Kitchen and bath areas located to the threat side of the occupied space as a buffer to the more frequently occupied sleeping areas.

- Windows and Glass. Limit the use of doors and windows. Windows must be operable, and with lockable hardware.

- Protected Courtyard. A protected courtyard may or may not be a structurally enclosed space. A protected courtyard is a space where access by unauthorized persons or vehicles is limited by landscaping, structures or fencing.

3-12 BUILDING DESIGN.

Design buildings to make arrival and movement through them orderly and clearly understandable by users (visitors, residents, staff, and service personnel). Use circulation to organize and zone activities and to promote physical security.

- Provide a single public entrance to the building and to different functional areas within the building.

- Provide a weather protected entrance vestibule with two sets of doors. The first exterior door shall not be secured. The second door set to provide secure access to the building.

3-12.1 Architectural Character and Scale.

Design the architectural character of the facility in context with its surroundings, and relate not only to the immediate site and adjacent buildings, but also to the Installation itself.

3-12.2 Residential Character for Unaccompanied Housing.

Design housing to provide a residential environment through both exterior and interior elements. Design exterior building forms to reflect the residential character of the project. These residential images can be reinforced through the following:

- Provide gable or similar steep sloped roof shapes. Sloped metal roofs are mandatory on Marine Corps Unaccompanied Housing.

- Limit building height to three stories unless land shortage can be documented. Where three stories cannot be used, investigate using several building heights to introduce residential quality to the complex.

- Bay windows may be used to change the exterior appearance from institutional to more residential. Additionally, architecturally integrated sun shades or other features are acceptable.

3-13 MODEL UNIT “MOCKUPS”.

Construction of a Model Unit or "Mockup" of a typical Unit/Plan or selected spaces within a typical Unit/Plan created and finished for illustration purposes, have proven to be very effective in cost management and quality control. They are most successful when completed prior to the start of project construction. For new construction, mockups may be elemental or whole, built off-site and later dismantled or built on-site and converted for actual use. For RM construct mockups in place on-site and convert to actual use to be most cost effective. Mockup reviews shall include acoustical field testing in accordance ASTM E336.

- Mockups are required for Navy construction of restoration and modernization (RM) projects that contain more than 24 units.

- Mockups are encouraged for Marine Corps projects where space is available and time permitting, and if so, incorporated in the project RFP.

3-14 LIFE SAFETY AND FIRE PROTECTION.

3-14.1 Sprinkler Systems.

All Unaccompanied Housing buildings are required to be sprinkled.

3-14.2 Fire Alarm Systems.

Install addressable building fire alarms systems and connect to the base reporting system.

3-14.3 Smoke Detectors.

Install smoke detectors for all personnel housing facilities and power them from the building fire alarm system.

3-14.4 Carbon Monoxide (CO) Detectors.

Install approved carbon monoxide detectors in all Navy and Marine Corps Unaccompanied Housing that contain carbon-based fuel burning systems. Use carbon monoxide detectors that are 24 Vdc powered by the building fire alarm system. An alarm from the Carbon monoxide detector will cause the fire alarm system to activate a voice announcement stating the following," Carbon monoxide has been detected in the building. Please exit the building." The fire alarm system shall send a separate signal via the base reporting system.

3-15 ACOUSTICS.

- Careful attention to acoustic design is required for Navy and Marine Corps UH to ensure a high degree of privacy for residents. Design to meet acoustic requirements structurally rather than through the use of applied finishes. Do not compromise the acoustical integrity of wall, floor, or ceiling assemblies with electrical outlets, or mechanical ducts. If required, field test assemblies in accordance with ASTM E336 and ASTM E492. Provide the following acoustic ratings:

- All acoustic materials shall meet the requirements in UFC 3-600-01 for interior finishes.

- Walls between living units and between living units and corridors, and exterior walls of living units require a sound transmission class (STC) of minimum STC 55 for Navy and STC 50 for the Marine Corps.

- Walls within the living units (room to room) require a minimum STC 50 for Navy and STC 45 for the Marine Corps.

- Floor and ceiling assemblies require a minimum STC 55 and have an impact isolation class of at least (IIC) 60 for Navy. An impact Isolation rating (IIC) of STC 50 is the minimum design target for the Marine Corps, but an IIC45 is acceptable if field tested.

3-16 ARCHITECTURAL DETAILS AND FINISH

Refer to UFC 1-200-01 for direction to the appropriate core criteria for architectural details and finish concerning:

- Exterior Finishes, vapor retarders, thermal insulation, and air infiltration.

- Roof systems. Design and detail roof systems to resist maximum wind for the area. Provide a residential character through the use of gable or similar steep sloped forms.

3-17 DOORS.

Specify doors, frames, and hardware to meet sound separation, fire separation, and security requirements unique to Navy and Marine Corps Unaccompanied Housing. All doors and frames must be designed and installed in accordance with the findings of the Risk Analysis and Vulnerability Assessment provided for the project. Fully weather strip exterior doors and provide heavy duty metal thresholds that prevent drafts, dirt, water, and insect entry. Provide lobby and entry vestibules with glass commercial storefront doors with automatic openers at both sets of doors at major entrances. Provide other exterior doors as metal, thermally insulated, and secure.

- For Room Entry doors shall use solid core wood (interior access) or thermally insulated metal doors (for exterior access) to provide sound isolation, and note that the acoustic rating for these living areas is not required to meet the adjacent wall rating. Provide a fire-rated, wide-angle security view port at 60-inch (1524 mm) height.

- Connecting doors between bedrooms are not allowed. Navy requires hollow core doors within the units, while the Marines prefer solid core doors.

3-18 HARDWARE AND LOCKS.

\5\ Provide hardware that conforms to Builders Hardware Manufacturers Association (BHMA) standards, BHMA156, (1000 series). Use Grade 1 for entry doors. Occupant entry doors BHMA 4000 series Grade 1 locksets and privacy latches. All locks must be industry standard and comply with UFC 1-200-01 and UFC 3-600-01. All electronic locks must have a mechanical key override. There are a variety of electronic lock systems available, and these different systems are not interoperable. Installations shall ensure procurement of new and replacement lock systems are based upon a single system to reduce operating costs. New and replacement electronic lock systems shall be stand-alone, not connected to any information network. Procurement of networked electronic lock systems is prohibited. Use stand-alone key-encoding systems. Use of CAC cards as keys for new internal lock systems is prohibited. Use industry standard key cards (magnetic, contact, RFDI, etc.).

3-18.1 Navy Locks.

- Exterior doors. Electronic locks are required at all exterior doors. Building access shall comply with CNIC and Installation standards.

- Unit entrance doors. Electronic key card locks of industry standard shall be provided on all interior unit entrance, bedroom, closet doors and secured common areas. Provide dead bolts on unit entrance doors.

- Use of mechanical key/tumbler locks is limited to service closets and administrative spaces.

3-18.2 Marine Corps Locks.

- All Marine Corps Doors will use programmable electronic key systems except for bathrooms and closets. New and replacement electronic lock systems shall use stand-alone programmable systems. When determining lock configuration requirements, consider the different locking levels a manager, lock system programmer, facility employees such as housekeeping, and an occupant would need to open. Each occupant's key card must be able to open the entrance to their room, and secured common rooms (lounges, laundry, etc.) as appropriate.
- Occupant room entries shall be provided with a rounded knob at their interior side.
- Bathroom doors shall have privacy latches, and ensure that they cannot be locked from the outside./5/

3-19 WINDOWS.

All fenestration must conform to the recommendations of DOD standards for buildings, and fire and life safety, including exiting. Place windows to prevent illicit entry accomplished by reaching adjacent entry door hardware. For exterior corridor configurations, where windows are likely to be kept covered for privacy, higher fenestration with a separate covering mechanism is recommended to allow light to enter the room while maintaining privacy at eye level. In general, size glazed openings to approximately 30% window to wall ratio to provide day light. Operable windows are encouraged within sleeping and living areas; subject to code compliance. Window sizing, placement, and shading should respond to the building's orientation and climate zone. Projects must provide an energy efficient envelope which considers many aspects of opening design: allowing winter sun, shading summer sun, allowing day light into the majority of a given sleeping or living space, and quality of the glazing system. Specify commercial grade windows; low "E" glass is required. Install heavy duty insect screens on operable windows. For more information about optimum daylighting, see *Tips for Daylighting with Windows*.

3-20 WALLS AND PARTITIONS.

Design walls and partitions to meet appearance and acoustic and durability requirements of Navy and Marine Corps Unaccompanied Housing. Seal edges of wall

assemblies to adjacent construction to avoid flanking sound paths. Consider ease of repair and refinishing when choosing wall finishes. Proprietary finishes are prohibited. Provide corner guards on walls in public areas.

- For Navy projects, use light-frame construction for interior wall construction.

- Marine Corps exterior walls shall be masonry construction and finish. Basic wall construction types may consist of concrete modular units (CMU), precast concrete, or cast-in-place concrete construction, where appropriate. The Marine Corps requires interior walls with hard finishes similar in durability to CMU. Any deviations must be approved by HQMC Facilities and Services Division, (Code LF).

3-21 INTERIOR FINISHES.

Refer to the tables in this manual for specific interior finish schedules for Navy and the Marine Corps. Employ finishes that are easily cleaned, and endure hard use and food spills. Neutral colors shall be selected for the more permanent surfaces within the facility (i.e.; floor/wall tiles, solid surfacing material, masonry) to facilitate future finish/material changes with respect to Installation guidelines where available.

- See Table 3-1 for Navy outline interior finish requirements. In high-use areas, consider double layer gypsum board, high-impact gypsum board, plywood backing board as a base to gypsum board, or similar. Vinyl Wall Covering is prohibited in Navy Unaccompanied Housing facilities.

- See Table 3-2 for Marine Corps interior finish requirements. Note the Marine Corps requires CMU interior walls and masonry exterior construction and finish. A waiver is required for any deviation. Refer to the Paragraph entitled “Waivers” for the Marine Corps Waiver Process.

3-21.1 Wall Protection.

Provide resilient corner guards consisting of integrally colored high impact resistant extruded vinyl, polyvinyl chloride, stainless steel, or injection molded thermal plastic. Install at external corners of gypsum board interior walls, partitions, and columns in all public spaces.

3-21.2 Ceilings.

Paint ceilings off-white. Suspended acoustical tile (SAT) is prohibited in all bedrooms/bathrooms in Unaccompanied Housing projects. Suspended acoustical tile may be used in corridors, entryways, and multi-purpose rooms.

3-21.3 Paint.

Paint interior surfaces, except factory pre-finished material, a minimum of one prime coat and two finish coats. Paint walls, ceilings and trim in units and public common spaces with latex semi-gloss enamel. Blown-on acoustic finish is not allowed. Paint exterior surfaces requiring painting with a minimum of one prime coat and two finish coats. Back prime wood trim frames, and other wood. Apply exterior semi-transparent sealing stains to wood surfaces with two coats minimum.

3-21.4 Flooring.

3-21.4.1 Resilient Flooring.

Vinyl Composition Tile (VCT) flooring must comply with ASTM F 1006, minimum 3/32" thickness, Composition 1, Class 2, in accord with ASTM F1066. Sheet Vinyl flooring must comply with ASTM F 1303, minimum .08 inch (.20 cm) thickness and .05 inch (.13 cm) wear thickness. Avoid “no wax” surfaces, and white as a predominant color. Use of no-wax solid vinyl planking is permitted. Installations may choose colors, and shall specify Resilient Floor Covering Institute (RFCI) FloorScore Certified products.

3-21.4.2 Carpet.

Marine Corps does not carpet hallways. For Navy, carpet tiles are acceptable for common areas and for administration areas (spaces). If hallways are carpeted, carpet tiles are required.

Performance standards for carpet in Unaccompanied Housing will be according to UFGS 09 68 00, *Carpet*, and additionally as follows:

Provide Commercial Grade; Loop Pile construction; Attached Water-resistant backing; Impervious to harsh chemicals, using solution-dyed nylon. Low absorption rate; Low static buildup; Permanent fade/10 year colorfast warranty; Carpet and Rug Institute (CRI) Green Label Plus carpet and adhesive.

3-21.4.3 Porcelain and Ceramic Tile.

Navy, where provided, floor tiles shall be slip resistant porcelain floor tiles in baths and toilets. Specify a mottled or shaded tile to hide discoloration from detergents, etc.

Marine Corps use slip resistant porcelain floor tiles in baths and toilets. Specify a mottled or shaded tile to hide discoloration from detergents, etc. Use solid surface material or wall tile from floor to ceiling around bathtubs and showers, and in toilet compartments. Provide wainscot-height 48 inch (121.92 cm) minimum to full height wall tile on the other walls.

3-21.4.4 Wood and Engineered Flooring.

Pre-finished hardwood (minimum ¾ inch (1.95 cm) thickness), bamboo (minimum 5/8 inch (1.59 cm) thickness, (minimum 1200 psi hardness) and engineered flooring (i.e.

laminated hardwood) shall be limited to entry areas and accent flooring, specify FloorScore Certified products.

3-21.4.5 Base Molding.

For porcelain or ceramic tile, use matching or stone base molding. For all other flooring, use FloorScore Certified vinyl molding. Accent base molding may be provided in building and elevator lobbies.

3-21.4.6 EPA Designated Products.

Certain types of products are listed by the Environmental Protection Agency (EPA) as a Designated Product because they contain, or are manufactured using environmentally desirable products. Federal agencies are required to give first preference to EPA Designated Products. DOD policy requires all purchases of EPA designated products to comply with affirmative procurement requirements. SECNAV policy makes affirmative procurement mandatory for all Navy purchases of EPA designated products. Design specifications are required by the FAR to specify the use of EPA designated products containing the maximum practicable amount of recovered materials.

Procurement agencies are required to give preference to purchase EPA designated products subject to the following:

- The product must be available at reasonable cost;
- The product must meet the required performance standards for the project;
- The product must be available in a reasonable timeframe.

3-21.5 Cabinets, Millwork, and Hardware.

Construct cabinets to American Woodworking Institute Custom grade with heavy-duty hardware.

- Kitchen countertops shall be solid surface or solid surface veneer. Use of natural stone is prohibited.
- Bathroom vanity tops shall be solid surface, solid surface veneer or cultured marble, with integral sink bowl.
- Cabinet boxes should be minimum 11/2 in (12.7 mm) hardwood plywood. Cabinet backs and drawer bottoms should be minimum 1/4 in (6.4 mm) hardwood plywood.
- Shelving should be 5/8 in (15.8 mm) hardwood plywood matching front edge banding. Hanging or mounting rails, and toe kicks, should be a 3/4 in (19 mm) hardwood.

- Cabinet frames, doors and drawer fronts should be 3/4 in (19 mm) hardwood. Drawer boxes should be 5/8 in (15.8 mm) hardwood plywood, with dovetail or box joints, mounted on full extension guides, rated for minimum 75 lbs (34 kg).

- Provide adjustable, cup type, hinges having a minimum 105-degree swing. Cabinets and countertop support must comply with CPA/ANSI A208.2 or ANSI/HPVA HP-1 standards for low formaldehyde emissions.

- Sustainable alternative materials should be considered where they provide comparable strength, quality and durability, including formaldehyde free, or no added formaldehyde plywood and alternative backer boards.

Table 3-1 Interior Finishes Schedule: Navy

INTERIOR FINISH SCHEDULE			
AREA/SPACE	FLOORS	WALLS	CEILING
Administration/ Conference Rooms	Carpet, Resilient or Engineered Wood	Gypsum Board.	Gypsum board or SAT
Elevators	Resilient	Factory finish	Factory finish
Lobby/Front Desk	Tile, Resilient or integrally colored and/or honed concrete	Gypsum Board or Accent material	Gypsum board or SAT
Mechanical and Electrical Rooms	Sealed Concrete	Gypsum Board, Concrete or CMU	Exposed Structure
Weather Vestibule	Tile, integrally colored and/or honed concrete, or Poured Terrazzo	Exterior Building Finish or Gypsum Board	Exterior Finish or Gypsum Board
Lounge/Meeting/ Game Room	Carpet Tile, Resilient or Engineered Wood	Gypsum board.	Gypsum board or SAT
Public Toilets	Tile, integrally colored and/or honed concrete, or Poured Terrazzo	Gypsum board and Tile Wainscot	Gypsum board or SAT
Vending/Coffee Mess	Tile, integrally colored and/or honed concrete, or Poured Terrazzo	Gypsum board	Gypsum board or SAT
Bulk Storage	Sealed Concrete	Gypsum Board, Concrete or CMU	Exposed Structure or SAT
Bike Rooms	Sealed Concrete	Gypsum Board, Concrete or CMU	Exposed Structure or SAT

Trash Rooms	Sealed Concrete	Gypsum Board, Concrete or CMU	Exposed Structure
Housekeeping/Linen	Sealed Concrete or Resilient	Gypsum board.	Gypsum board or SAT
Common Laundry	Sealed Concrete	Gypsum board, Concrete or CMU	Gypsum board or SAT
Public Corridors	Carpet Tile or Accent Finishes	Gypsum board or Accent Finishes	SAT
UNITS			
Entry/Service Areas	Resilient or Tile	Gypsum board	Gypsum board
Living/Dining Area	Resilient, Tile or Engineered Wood	Gypsum board	Gypsum board
Kitchen	Resilient or Tile	Gypsum board	Gypsum board
Bedrooms	Resilient, Carpet Tile or Engineered Wood	Gypsum board	Gypsum board
Closets	Resilient, Carpet Tile or Engineered Wood	Gypsum board	Gypsum board
Laundry	Resilient	Gypsum board	Gypsum board
Bathrooms/Vanity	Resilient or Tile	Gypsum board with tile or solid surface wainscot	Gypsum board

Table 3-2 Interior Finishes Schedule: Marine Corps

INTERIOR FINISH SCHEDULE			
AREA/SPACE	FLOORS	WALLS	CEILING
Entry Vestibule	Epoxy Terrazzo, Aggregate Concrete, Solid Vinyl	Painted CMU. Optional synthetic smooth plaster finish. Painted CMU should be used with split block accents or other equally durable masonry. Note 2.	Paint, optional texture,
Duty Office	Carpet Tile; Solid Vinyl	Painted CMU.	Paint, optional texture,
Duty Bunk Room	Carpet Tile; Solid Vinyl	Painted CMU, Note 2.	Paint, optional texture.
Public Head	Porcelain Tile; Epoxy Terrazzo; Concrete	Full Height Porcelain tile	Paint, optional texture.
Vending	Epoxy terrazzo; Aggregate Concrete	Painted CMU, Note 2.	Paint, optional texture, suspended acoustical tile.
Multi-Purpose Room	Hard/Soft mix of Epoxy Terrazzo; Aggregate Concrete; Carpet Tile; Porcelain Tile.	Painted CMU, optional synthetic smooth plaster finish. Painted CMU used with split faced block accents or equal. Note 2.	Paint. Optional texture.
Janitor Closet	Concrete sealed	Painted CMU	Paint
Laundry Room	Epoxy Terrazzo; Aggregate Concrete	Painted CMU	Paint

Public Corridors	Epoxy Terrazzo; Aggregate Concrete; Solid Vinyl	Painted CMU, optional synthetic smooth plaster finish. Painted CMU used with split faced block accents or equal. Note 2.	Paint, suspended acoustical tile.
Bedrooms	Epoxy Terrazzo; Aggregate Concrete; Solid Vinyl.	Painted CMU, Note 2	Paint, Optional texture.
Room Service Areas	Epoxy Terrazzo; Concrete sealed; Solid Vinyl.	Painted CMU, optional synthetic smooth plaster finish. Painted CMU used with split faced block accents or equal. Note 2.	Painted. Optional texture.
Room Heads	Porcelain Tile 12"x12"; Epoxy Terrazzo, Aggregate Concrete.	Solid Surface or Porcelain Tile wainscot	Paint
Bedroom Closets	Epoxy Terrazzo; Aggregate Concrete; Solid Vinyl	Painted CMU	Paint

3-21.6 Toilet Accessories.

Provide toilet accessories as surface mounted or recessed, of non-corrodible metal or tile. Provide toilet paper holder, soap dish, combination tumbler and toothbrush holder, bathrobe hooks, and towel bars. Provide a shower curtain rod. Specify rod at proper height for conventional shower curtains (72 inches by 72 inches, approximately (1.8 m by 1.8 m)).

3-21.7 Window Treatments.

\3\ Include window treatments (such as horizontal blinds and shading systems) as an integral part of the construction contract. Dual solar roller shade systems with manual roll chain operation are recommended. /3/ Consider solar conditions when selecting a window treatment. Dual solar shade system provides visual privacy and natural light, with black out shades for sleeping. Track on side of system adds durability and stability. Window treatments should overlap window openings to reduce light leakage, where possible. \3\ Note that soft window treatments, such as draperies, are considered collateral equipment and will be included in the FF&E package. /3/ Any window treatment must have: flame resistance; blackout shade/lining; commercial quality.

3-21.8 Furnishings, Fixtures and Equipment (FF&E).

\1\ Navy: UH FF&E procurement packages shall be designed by the same design agent as the facility to ensure complete coordination. Final approval of UH FF&E specifications will be determined by the design team to include guidance/input received from the respective Naval Facilities Command Interior Designers. Use of turn-key approach to UH FF&E procurement within military construction UH projects is directed to the greatest extent possible and practical. This will ensure a coherent UH FF&E package which promotes an increased QOL for occupants and makes the best use of funding. This applies to UH furniture, furnishings, and equipment for new construction (collateral equipment) and existing UH (whole room concept and replacement items). /1/

Marine Corps: Marine Corps will prepare all BEQ FF&E procurement packages through collaborative effort with Base Property, Purchasing and Contracting office, and installation Bachelor Housing Directors. Final approval of BEQ FF&E specifications will rest with the Installation BH Director. Procurement must conform to acceptable funding restraints. Incorporate to the extent possible guidance/input received from the respective Naval Facilities Command Interior Designers. Use of turn-key approach to BEQ FF&E procurement within military construction BH projects is directed to the greatest extent possible and practical. This will ensure a coherent BEQ FF&E package which promotes an increased QOL for occupants and makes the best use of funding. This applies to BH furniture, furnishings, and equipment for new construction (collateral equipment) and existing BH (whole room concept and replacement items).

3-22 BALCONY.

For projects with exterior breezeway or balcony access to each room, consider the use of an upper window, and transom over the entry door. This allows for the entry of natural light into the occupants rooms while retaining privacy from travelers along the breezeway or balcony.

3-23 SIGNAGE.

Prepare a signage design package that instructs the activity in maintenance of the signage system, and provides equipment and materials necessary for this. Place emphasis on directional signage to allow visitors and occupants to immediately familiarize with room names and numbers.

3-23.1 Exterior Signs and Associated Equipment.

Design directional signs as an integral part of an overall building and site system, to be furnished and installed under the construction contract. Economy, aesthetics, durability, flexibility, ease of installation and maintenance are important considerations of signage design. Design the system to inhibit vandalism but with flexibility to enable the addition or deletion of information. Select a mounting mechanism for the signs to permit the reuse of signs as the facility changes.

- Specify an easily read typeface such as Helvetica Medium.
- Provide a signage plan, legend, and details. Indicate the design, location, and installation method in the plan, elevations, and specifications.
- Require the contractor, in the project specifications, to make a comprehensive submittal of the proposed signage system and to provide information necessary for acquiring new or replacement signs.
- Provide building signs and other items on the building exterior that meet the IAP (Installation Appearance Plan).
- The exterior signage system must be respected both on and off the specific facility site. Any signage must also be harmonious in the landscape. Care must be taken to use signs only when necessary and to restrict the use of random sizing, placement, and colors.
- The interior designer will coordinate interior signage and identification with the exterior designs.

3-23.2 Project Signage.

Provide the following signs for each project or building:

- Entrance signs at roadway, walkway and building entry point as appropriate;
- Building Identification Sign;
- Building Directory;
- Directional Signs;
- Room Identification Signs. Provide a sign that incorporates the ability to display 8-1/2 inch by 11 inch, (21.59 cm by 27.94 cm) printed sheet of occupant information;
- Regulatory Signs;
- Informational Signs;
- Notices Board for residents' use (Permanent Party only);
- Bulletin Boards (for official use).

3-23.3 Interior Signage, Artwork and Accessories.

Provide artwork for all public areas, except storage rooms and maintenance areas. Coordinate graphics and interior signage to complement the architectural and finish materials. Silk plants are recommended for public areas. Provide attached or integral wall protection for recreational games such as dartboards and billiards. Provide bulletin boards in service areas and at the main entry. Provide interior signage, bulletin boards and any wall protection devices as an integral part of the construction contract. Artwork and silk plants are considered collateral equipment and will be included in the furnishings option. Provide interior signage at each room. Provide directional signage as required for way finding. Provide interior signage educating occupants on energy efficient and sustainable elements of the facility, particularly those elements with occupant control or influence. Educational signage should be permanent in nature but flexible for future additions/deletions of information.

3-24 HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

Apply smart building concepts using local loop technology. Avoid central controllers and monitors. Provide an HVAC system to give residents individual choice of heating and cooling year round within each living area. Provide one thermostat per unit. HVAC systems must meet Energy Star/ FEMP standards of efficiency. All new buildings shall meet ASHRAE 62.1 or ASHRAE 62.2 ventilation requirements. <u>Air Conditioning is mandatory in all Navy and Marines Unaccompanied Housing, except where an exemption or waiver has been approved</u>.

Camp Pendleton Waiver. Marine Corps Base Camp Pendleton's request for a waiver was approved by Memorandum from Deputy Assistant Secretary (Installations and

Facilities), Wayne Arny to Assistant Deputy Commandant (Installations and Logistics) R.S. Coleman, *Air-Conditioning of Marine Corps Bachelor Housing Waiver Request, signed with endorsements, dated 3 June, 2003.*

3-25 VENTILATION AND MOISTURE MITIGATION.

Design and construct new Navy facilities in accordance with ASHRAE 62.1 or ASHRAE 62.2, as applicable to facility size. Design and construct facilities to comply with UFC 3-400-10N. Consideration should be given to all components of natural and mechanical ventilation to provide a system which is adequately sized and easily maintained to avoid excessive indoor moisture, mold growth, and poor indoor air quality.

Navy Renovation and Redesign projects shall address building and unit ventilation and moisture management deficiencies, and endeavor to comply with ASHRAE 62.1 or 62.2. Navy Renovation and Redesign projects shall also comply with in NAVFAC ITG FY03-4, Mold Response Manual, where there is evidence or a history of mold problems in the building or units.

For new construction, redesign, and renovation projects, UFC 1-200-01 provides reference to the criteria governing moisture control.

3-26 SUSTAINABILITY.

Navy requirements for LEED or equivalent apply to construction, redesign, renovation and modernization projects. \2\ Refer to UFC 1-200-02. /2/

3-27 COMMISSIONING.

\2\ Requirements related to LEED and High Performance and Sustainable Buildings Guidance are provided in UFC 1-200-02 and shall be followed. /2/

3-28 PLUMBING.

Avoid plumbing chases whenever possible by placing plumbing in wall cavities. Mechanical engineers, architects, and structural engineers must coordinate to plan and minimize the size and location of plumbing chases. Fixture clearances should be appropriately sized for the intended occupants and use low-flow fixtures requirements where feasible.

- Provide hot and cold water to public toilets, en-suite bathrooms, compact kitchens, janitor closets, and laundry rooms.

- Provide shutoff valves at all fixtures.

- Water Closets. Water Closets must be commercial quality, low consumption type. It is recommended that areas with low water pressure use power-flush type water

closets. Use elongated, one-piece construction with a closed front seat and a lid. Provide matching water closets and bath fixtures in neutral color.

- Navy: Provide residential, tank-type water closets.

- Marine Corps: Provide flush-valve toilets, dual-flush manual type, and overhead rain fall type shower heads that meet low flow requirements set at a minimum of 75inches (190.5cm) above the shower base.

- Central Heads: For Navy recruits only, provide central heads in open-bay designs, including the following: Water closets 1 per 10 persons; Lavatories 1 per 10 persons; \2\ Individual Showers at1 per 8 persons, or gang showers with shower heads separated by partitions and tile floors sloped to drain. /2/

- Provide hose bibs on exterior walls of each building at 100 foot (30 meter) intervals; in trash rooms and near rooftop mechanical units; frost-free as dictated by climatic conditions. Provide floor drains in all janitor closets, laundry rooms, public restrooms, and trash rooms.

- Provide a drinking fountain(s) with cooler for interior public areas.

- Domestic Hot Water System type is optional, but must meet FEMP recommendations. Recommend building wide system.

- Natural Gas is prohibited in unit or room.

- Provide one Service Sink per floor.

- Use the following fixtures as standards: Washerless faucets at lavatories. Single lever faucets at tub/showers or shower stalls. Provide showerheads with maximum 2.2 gpm flow rate. Locate showerheads a minimum of 75 inches (190.5 cm) above the floor.

- \2\ Showers are to have solid floor pans, with full height surround or porcelain tile bases sloped to drains, with separated shower stalls. /2/ New construction shall provide a 12ft^2 shower space with a minimum dimension of 30 inches (76.2 cm). Renovation projects without redesign may provide a minimum 30 inch (76.2 cm) dimension and 9 ft^2 in order to fit in existing space.

- Provide stainless steel kitchen sinks (double bowl), kitchenette (single bowl). All sinks to be provided with single lever faucets, sprayers are prohibited.

3-29 ELECTRICAL.

Provide site electrical utilities, interior distribution systems, communications and security, and site lighting according to core criteria referenced by UFC 1-200-01 and the latest installation design requirements. Provide site lighting to ensure occupants have a

means of safely moving between outdoor spaces. Refer to the Installation Appearance Plan in the selection of light poles and signs. Provide adequate site lighting at any point where there is a change in grade requiring steps, near handicap and motorcycle parking areas, and near main entrances to buildings. Provide exterior lighting in parking areas, building entrances, and walkways.

Interior distribution systems includes service entrance and distribution equipment, Televised Surveillance System (TVSS), dry type transformers, wiring devices, raceways, conductors, interior lighting systems, emergency power systems, lightning protection systems, hazardous locations, housing distribution, and systems furniture.

Communications and security includes telecommunications systems, television systems, electronic security systems (ESS), and intercommunication systems.

3-29.1 Ceiling Fans.

Ceiling fans are optional, \2\except as noted below./2/. Provide fans that are Energy Star compliant. Where included, ceiling fans shall be provided in bedrooms and living areas within units. Consider ceiling fans for multipurpose rooms and laundry facilities. \2\For Navy, ceiling fans are mandatory in sleeping rooms where HVAC may be deleted by waiver./2/

3-29.2 Power.

Provide electrical outlets appropriately adjacent to telecommunication outlets combined with television and telephone and computer data outlets. Provide duplex outlets in the compact kitchen or service areas. Provide a service panel located within the Unit or Room. Meter bases shall be provided for all new and renovated buildings.

3-29.3 Lighting.

Provide Energy Star certified lighting fixtures and lamps. LED lamps are preferred. All fixtures must be carefully selected to reflect a residential style, rather than institutional. Hallway lighting (walls and ceilings) shall be recessed. Suspended exit signs are prohibited. Surface mounted "pillow" or "cloud" light fixtures are prohibited for Navy. Recessed fixtures are preferred by Navy and allowed by Marine Corps.

Navy:

- Provide three-way switches at Unit/Room entrance and bedroom(s) doors. Also, provide motion sensor switches at bathroom and living rooms to control the light fixtures.

- Provide minimum 15 foot-candles lighting at the exterior of each unit or room entrance.

- Bedrooms: Provide overhead ambient lighting in bedrooms, separately switched and dimmed for each occupant side of the room. Ambient light level at desk height must provide a minimum of 30 foot-candles in each bedroom. The use of recessed and indirect fluorescent fixtures (T-8 730 lamps and electronic ballasts) is required by Navy.

- Bathrooms: Provide overhead ambient lighting and separate lighting at the lavatory mirror.

- Kitchens: Provide overhead ambient lighting, under cabinet lighting and lighting at sink.

Marine Corps:

- For direct entrance rooms, provide three-way switches at the entrance door and in the vanity area so that the living room and bedroom area lighting is controlled at either location. Also, provide motion sensor switches at bathroom doors to control the bathroom light fixture.

- Provide one exterior light fixture outside each room entrance door for exterior entry designs.

- Bedrooms: Provide overhead adjustable level ambient lighting in bedrooms; separately switched/dimmed for each occupant side of the room. Coordinate this with the furnishings plan. Marine Corps uses both indirect fluorescent fixtures (T-8 730 lamps and electronic ballasts) and dimmable LED lighting is allowed. Do not rely solely on table lamps for room lighting. Ambient light level at desk height must provide a minimum of 30 foot-candles in each bedroom. Indirect “cove” lighting is preferred.

- Bathrooms use fluorescent or LED lighting fixtures. Provide overhead lighting and valance lighting at the lavatory mirror. Use recessed valance or under counter (task) lighting in service area.

- Carefully consider the coordination of lighting with ceiling fans.

- Provide appropriate lighting and consider providing a recessed light at each entrance in addition to standard overhead corridor lighting.

3-29.4 Appliances.

All appliances shall be residential grade, "Energy Star", CEE Tier 2 compliant.

Navy:

- All appliances shall be color white.

- Washing machines: Minimum 3 cf, top-loading where space accommodates. Size in-unit Laundry Area to accommodate a variety of available washing machines, including front loading, to ease future replacement.
- Dryers shall be electric except by waiver.
- Refrigerator: Kitchen 18-22 cf; Kitchenette 16-19 cf; Service Area 10-16 cf
- Microwave: Kitchen/Kitchenette 1500 watts; Service Area 1200 watts.
- Dishwashers are prohibited in construction and redesign projects. Existing dishwashers may be replaced in renovations projects as applicable.
- Garbage disposal: 1/2 HP minimum, with SS impellers and sound insulation.
- Range: Free standing electric 30 inch (76.2 cm) width.
- Cooktop: Minimum two burner electric cooktop.
- Exhaust Hood: Provide three speed fan, maximum 5.0 sones with dual light settings.
- Bathroom Exhaust Fan: Maximum 1.0 sones, minimum 50 cfm. Humidistat control preferred.

Marine Corps:

- Washing machines: minimum 3 cf top load.
- Dryers shall be electric.
- Dishwasher: Minimum 24 inch (60.96 cm) width.
- Refrigerator: Service Area 10.3cf; Kitchens (SNCO/BOQ), 18-22cf.
- Microwave: 1200 watts.
- Garbage disposal: 1/2 HP with SS impellers and sound insulation.
- Range: Free standing electric 30 inch (76.2 cm) width.
- Cooktop: Minimum two burner electric cooktop.
- Exhaust Hood: Provide three speed fan, maximum 5.0 sones with dual light settings.

- Bathroom Exhaust Fan: Maximum 1.5 sones, minimum 50 cfm. Humidistat control preferred.

3-29.5 Emergency Power.

Emergency power is not required in UH.

\4\

3-29.6 Telecommunication Service

Provide in each Unit/Room a permanently installed conduit raceway system, supporting future needs of telecommunication systems. Provide a minimum of one outlet for each bedroom and one for each living room, located for flexibility and easy furniture access. Do not provide outlets in open bay berthing spaces. Navy UH and Marine Corps UH currently receive wireless internet service from service-wide contracted provider; coordinate to provide ample equipment space to meet the needs of this service..

3-29.7 Cable Television.

Navy requires no cable television service to each unit, but does permit vendor installation to each unit, through the Installation's contract. Navy does require cable television service in each building, to be provided in all common areas, such as lounges, lobbies, etc.

Marine Corps require cable television service in each building. Provide a permanently installed conduit raceway system for cable television system media. Refer to specific Plan for additional details.

3-29.8 Intrusion Detection/Monitoring systems (IDS).

Navy requires provision of conduit with pull strings and boxes for future installation of Intrusion Detection/Monitoring (IDS) systems that can cover building entrances/exits, entrance/elevator lobbies and hallways. With respect to "centrally monitored", the requirement is only something that is "central" to the building rather than central "base-wide". IDS systems and Access Control systems should be provided with BMS switches (fixed) and card swipes (fixed) along with conduit, wiring and a "basic" monitoring panel, (fixed). Designer should provide an appropriate location for a "stand-alone" card station.

3-29.9 Closed Circuit Television (CCTV) Systems

Provide conduit systems with pull strings and outlet boxes to accommodate later installation of a monitoring system as part of all new construction. System to include all common areas such as hallways, lobbies, lounges, classrooms/special use rooms, common kitchens, game rooms, laundry rooms, vending areas, stairwells (interior and exterior), elevators, entrances and exits, building exterior and additional areas/facilities adjacent to the UH facility.

/4/

3-30 GENERAL REQUIREMENTS FOR UNITS AND ROOMS.

Navy and Marine Corps Unaccompanied Housing serves three distinct demographics: Recruits, Students and Permanent Party. The quality benchmark for residential quarters is a mid-grade multi-family apartment complex.

3-30.1 Basic Units and Rooms.

The basic Unit/Room Plans are specifically described and detailed in Chapter 4 and 5. Refer to the Paragraphs entitled “Navy Standards for Construction and SRM” and “Marine Corps Standards for Construction and SRM” for an explanation of terminology.

- Navy Market Unit
- Navy (NETC) Dorm Room Unit
- Navy Mobilization Unit
- Navy Senior Enlisted/Officer Unit
- Marine Corps 2+0 Room
- Marine Corps Staff Non-Commissioned Officer/Officers Plan
- Open-Bay Berthing Navy (No graphic example).
- Open Bay Berthing Marine Corps (No graphic example).

3-30.2 Kitchen and Kitchenette.

Navy. Kitchens, as defined per DOD 4165.63-M, are required in new Market and redesigned Units. Where feasible, kitchenettes should be provided in renovated Units. At a minimum, a kitchenette shall consist of a microwave, 16 cf refrigerator and a sink independent of the bathroom.

Marine Corps. The Marine Corps provides a kitchen in its Staff NCO/Officer plan, and limited features in the service area of its 2+0 Room plan.

3-30.2.1 Service Area.

Service areas are intended to provide for minor food preparation and vary by Unit and Room.

Navy. Service Areas for Navy Dormitory Units shall provide cabinets in the lavatory with a minimum four drawers, pair of doors minimum 36 inch (91.44 cm) width with centered bowl. Provide two medicine cabinets. Provide a mirror over the vanity.

Marine Corps. Service Areas include a refrigerator, microwave, single bowl sink with goose-neck faucet and cabinetry. These Marine Corps areas are intended for minor food preparation only. Refer to Chapter 5 for more description.

3-30.3 Bathrooms.

Where feasible, renovation and redesign projects shall design bathrooms to provide two separate areas: Shower/toilet room and a lavatory area. Cabinets shall be provided with a lavatory with a minimum four drawers, and a pair of doors with a minimum 36 inch (91.44 cm) width with centered bowl. Provide two medicine cabinets and a mirror over the vanity. Provide a minimum four towel bars per bathroom. Vanity area shall be designed to shield bedroom from spillover light; minimizing impact on roommates working different shifts.

3-30.4 Closets, Personal.

All UH types (except open bay) must provide at least one closet for each resident. Provide full-height closets, using the space above normal door height for bulk storage. Provide continuous ventilation in closets to resist mold and mildew growth. Bi-fold and sliding doors are prohibited. Also refer to the paragraphs relating to Sustainment Restoration and Modernization (SRM). The existing building structural elements should be considered and respected in re-design projects. As an example: A specific closet size is mandated for new construction, but it may not fit into a SRM project. The increased costs of the mandated size may not be justifiable.

Navy. Provide integral full-length hanging rods for coats and shelves. A light with motion-activated switch is required in deep closets and is recommended in standard 2 foot (0.6 meter) deep closets. Carefully placed lighting outside of a standard closet is acceptable if it allows a clear view of closet contents and facilitates color choice and dressing. Secure closets with standard hinged doors with non-removable pin hinges and locking hardware fitted with the same locking system as provided on the unit. A minimum 48 inch (121.92 cm) shelf and hanging pole are required. Additional closet organizers may be provided. Shelving and organizers shall be rated at a minimum 50 lbs/lf (23kg).

Marine Corps. For detailed description of closet requirements, refer to Chapter 5.

3-30.5 Laundry Facilities.

Laundry facility requirements vary. Refer to the detailed descriptions in Chapters 4 and 5.

3-30.6 Resident Bulk Storage.

Examples of items typically stored in bulk storage areas include luggage, original stereo system cartons, snow tires, bicycles, surfboards, ski equipment, and other sports gear. Resident bulk storage requirements vary by Unit or Room plan. Refer to the plan's chapter for details.

3-30.7 Utility Area (Space).

Provide appropriate space for the mechanical and electrical systems and telecommunications.

3-30.8 Elevators.

Elevators are intended for the movement of furniture and people. Provide elevators sized to accommodate movement of both furniture and a medical stretcher for personnel. Special consideration is to be given to protecting elevators from harmful weather conditions. Additional gross area may be added for high-rise construction. Refer to the paragraph entitled "High Rise Structures and Additional Gross Area." for details. The following is guidance for new construction.

Navy. One elevator is required for buildings two stories or higher for new construction. Training Facilities do not require an elevator.

Marine Corps. Additional elevators may be provided at the discretion of the Installation Commander. Provide the following for new construction at a minimum:

- One elevator is required for buildings 2-3 stories;
- Two elevators are required for buildings 4-5 stories;
- Three elevators are required for buildings 6-7 stories;
- Four elevators are required for buildings 8 stories or higher;
- Marine Corps Recruit Facilities require a minimum of one elevator.

3-30.9 Mail Service.

Navy. No mail service is provided in unaccompanied housing, and no mailbox or space will be programmed in Navy UH facilities.

Marine Corps. Requirements for mail service may vary by locality. Project planners and designers must verify local mail delivery services.

3-30.10 Circulation.

Design interior corridors to emphasize each quarter's entrance, and to de-emphasize length or "tunnel vision." Size the corridor to provide a minimum clear width to accommodate two persons with suitcases, and a base minimum of 5 feet (1.52 meters). Ensure that exterior walkways have non-slip surfaces and drain away from the building.

3-30.11 Multi-Purpose Areas (Spaces).

Multi-purpose areas (spaces) are for individual recreation, group activities, training, and meetings. Multi-purpose space requirements vary by plan. Refer to the specific plans in Chapter 4 for details.

3-30.12 Game Rooms.

Requirements for Game Rooms vary by plan. Refer to the specific plan in Chapter 4 for details.

3-30.13 Vending Area (Space).

Discuss vending area, machine quantity and the desired type with the installation and the local Navy Exchange General Manager/Vending Manager or the Marine Corps Community Services Director as appropriate. Provide space adjacent or co-located to the Multi-Purpose Room. Allow space for a minimum of four (4) full-sized commercial vending machines with front facing circulation; three (3) soft drink machines and one snack vending machine is typical. Allow a minimum recess of 40 inches (1 m) from the rear wall to the soffit. The minimum clearance from the finish floor to the soffit is 80 inches (2 m) for soft drink machines and 74 inches (1.9 m) for vending machines. Minimum space requirements for the vending areas are 180 inches (4.5 m) long x 84 inches (2.13 m) wide x 80 inches (2 m) high from finished space to finished space. Locate all vending areas on the ground floor with access from the parking areas. Locate vending space for security of users and for ease of service. Secure vending machines to prevent tipping. Provide appropriate sound isolation between vending and other spaces. Recess the machines into the wall or use materials to create a recessed appearance. Drop the soffits above the machines to the top of the machines, but allow for proper cooling and heat dissipation. Coordinate paint or wall coverings with the interior designer's concept of the facility. Mirrored panels, cove lighting, and neon lights are optional, but desirable. Provide vending areas with appropriate outlets for appliances. Provide space for at least one waste receptacle and one recycling container. Provide an accented slip resistant floor surface and a dropped ceiling with open grid type panels or acoustic tiles to accent the vending area. Provide a retail commercial lighting level in this area. Do not locate pay telephones in this area.

3-30.14 Public Toilets.

Navy will provide public toilets adjacent lobby and public areas. Provide commercial grade fixtures. For a 96-person project, provide a minimum of one water closet, one urinal, and two sinks in the men's toilet and two water closets and two sinks in the women's toilet. Add one of each fixture for each increment of 100 persons; to a

maximum of five (5) of any fixture type. Provide floor and wall finishes as described in Tables 3-1 and 3-2. Use solid surfacing material for lavatory counters and solid plastic, continuous anchorage toilet partitions. Provide a floor drain placed out of the usual traffic pattern and close to the water closets. Provide appropriate dispensers for soap, towels, toilet tissue, and recessed waste receptacle. A single unisex toilet may be adequate for smaller capacity unaccompanied housing.

Marine Corps requirements are described in Chapter 5.

3-30.15 Janitorial.

Requirements for Janitorial vary by Plan. Refer to the specific unit or plan for details.

3-30.16 Administrative Area (Space).

Requirements for Administrative areas (spaces) vary by Plan. Refer to the specific Plan in Chapter 4 for details.

3-30.17 Lobby, Vestibule, and Reception.

Lobby, Vestibule, and Reception vary by Plan. Refer to the specific plan in Chapter 4 for details.

3-31 ACCESSIBILITY REQUIREMENTS.

Use the DOD Memorandum “Access for People with Disabilities”, dated 31 October 2008. The DOD Memorandum is located at: http://www.access-board.gov/ada%2Daba/aba-standards-dod.cfm.

3-32 FALL PREVENTION AND PROTECTION.

Any location of the UH including accessing the roof structure or equipment that requires future maintenance work and exposing maintenance personnel to falls from heights above 4 feet, shall incorporate prevention and control measures into the design. This is to protect personnel working at heights and exposed to fall hazards in accordance with OPNAVINST 5100.23G.

CHAPTER 4 NAVY UNITS.

This Chapter describes the variety of units to be constructed, or Redesigned to, for Navy unaccompanied enlisted personnel. New construction shall correspond to the current Construction Standard for the type of personnel to be housed. Sustainment, Restoration and Modernization (SRM) project teams should take into account both the current DoD and Navy construction standards for the type of personnel, as well as the current layout of the facility, to determine best practices. RM project teams shall utilize the Business Case Analysis process to determine whether renovation or replacement construction is more cost effective.

4-1 CONSTRUCTION (NEW FACILITIES) REQUIREMENTS

- Construction of new Units for Permanent Party (E1-E6) shall be the 2 bedroom Market Style Unit, reference Figure 1.
- Construction of new Units at remote locations where higher pay grades are housed in Unaccompanied Housing (E7-O10) shall be the 1 bedroom Market Style Unit, reference Figure 2.
- Construction of new Units for Mission Essential shall be the Shared Mobilization Unit, reference Figure 3.
- Construction of new Units for Students (Training Necessity) shall be the 2+0 NETC Dormitory Unit, reference Figure 4.
- Construction of new Units for Recruits shall be Open Bay Berthing (refer to Chapter 6).

4-1.1 The Market Unit.

In accordance with DOD 4165.63-M and CNO direction, the construction standard for the Navy's core requirement (E1-E4) is a Market Unit. Market Units shall have room patterns and floor areas similar to comparable private sector housing, including bedrooms, baths, living room, laundry, and kitchen; see Figure B-1 and D-1, D2.

4-1.2 Market Projects.

Three basic functional activities must be addressed in Market projects: the Unit, Building Common Areas, and Site Requirements.

4-1.3 The Unit.

New Construction Market Units shall be 2-Bed/2-Bath. 1-Bed/1-Bath Units are authorized only at remote locations with a requirement to house personnel ranking E7-O10. Refer to the chart for space and area requirements.

Table 4-1 Market Unit Square Footages

Unit Type	Minimum Areas (Square Feet (Net Square Meters))					Laundry (In-Unit / Common)	Minimum / Maximum Allowable Areas		Navy GSF per unit programmed amount (note 3)
	Bedroom (note 1)	Bedroom Closet (provide 2 per bedroom)	Shower / Toilet area (per bathroom)	Living / Dining Area	Kitchen		Construction Minimum GSF per Unit (note 2)	Maximum GSF per Unit (note 2)	
2-Bed/2-Bath	144 (13.4)	12 (1.1)	40 (3.7)	200 (18.6)	55 (5.1)	IU	850 (79.1)	1290 (120.1)	1060 (98.7)
1-Bed/1-Bath	144 (13.4)	12 (1.1)	40 (3.7)	130 (12.1)	55 (5.1)	IU	750 (69.8)	1050 (97.7)	900 (83.6)

Note 1: Bedroom area is Net Square Feet, specifically as defined by DOD 4165.63-M.

Note 2: Construction Minimum and Maximum Gross Square Feet includes building circulation and common areas, as defined by DOD 4165.63-M.

Note 3: Navy requirements represent the Navy Programming standard inclusive of building circulation and common areas.

4-1.3.1 Dimensional Requirements:

- Bedroom dimensions are NOT fixed, but must remain functional. Bedrooms must be sized to accommodate two extra-long twin beds.
- Living/Dining Room can be a single shared space or two discrete spaces. Layout and sizing is not fixed.
- Kitchen, Bath, and Closet features are fixed, but layouts and sizes are not. Provide two closets per bedroom, equally sized. Provide a minimum of one hall/entry closet per Unit.

4-1.3.2 Detail Requirements

(Refer to Chapter 3 for mechanical, plumbing, electrical, and telecommunication requirements).

- Laundry: Units require in-unit laundry. Provide a full size Energy Star CEE Tier 2 top-load washer and a full size dryer in each Unit. Laundry closet shall be sized to accommodate a variety of top and front-loading washing machines, such that options will be available for replacement equipment in the future. Provide drip pan and drain in floor slab, tie this plumbing to restroom, kitchen, or other regularly used drain with trap. Laundry closet shall include space for storage of one full size ironing board and iron, one shelf for product storage, and one pole for clothes.

- Kitchens: Provide upper and lower cabinets, at least 3 lineal feet of uninterrupted countertop as food preparation area, two compartment sink, and full sized residential grade appliances. For any galley or u-shaped layout, provide a minimum of 4 feet (1.22 m) between countertop edges. Overall cabinet layout shall provide a minimum of 75 c.f. of storage space behind a variety of doors and drawers. Appliances shall include refrigerator/freezer, microwave, garbage disposal, range (or electric 4-burner cook top and oven), and range hood. Dishwashers are not authorized. Applicable appliances shall be Energy Star Certified and CEE Tier 2. See additional appliance and ventilation requirements in Chapter 3.

- Bathrooms: Each bathroom is to be designed to provide two separate areas: a Shower/Toilet room and a Lavatory/Vanity area. In the case of remote locations authorized to construct 1-Bed/1-Bath units, a one room bathroom may be provided.

- Each Lavatory/Vanity Area will contain one sink, two medicine cabinets, and associated fixtures. Vanity shall be a continuous counter surface at least 2 feet (0.61 m) deep and 4 feet (1.22 m) wide with a centrally located bowl. Base cabinetry shall include a two door storage area and minimum two drawers. Shield bedroom from spillover light from vanity.

- Each Shower/Toilet Room will contain a water closet and shower in a separate enclosed room, located adjacent to the Lavatory/Vanity Area. Toilet shall be located within a clear space at least 4 ft in width; Shower shall be a minimum size of 12 ft^2 ($1.1m^2$). See ventilation requirements in Chapter 3.

- Doors and Locks: Electric locks are required on Market Style Unit entrance doors, bedroom doors, and closet doors. Refer to Chapter 3.

4-1.4 Building Common Areas.

Provide the following common areas. Mid/High-rise construction (over 3 stories) should have added common areas as identified.

- Corridors.
- Stairways.
- Personnel Elevator(s) and Freight Elevators. (optional/per local code requirements)
- Building Mechanical Room.
- Building Electrical Room.
- Telecommunications Room.
- Trash chute to dumpster at main level. Provide fully walled room at each level for trash chute access. At base of chute, provide dumpster room with lighting, ventilation, hose bib and floor drain. Trash compactors are optional. Provide only waterproof washable surfaces in trash and dumpster rooms.
- Janitorial. Janitorial includes vacuum cleaner storage and janitor's sink and faucet; as well as storage for maintenance supplies.
- Lobby and Vestibule. Provide lobby space in proportion with capacity of building, and locate to facilitate way finding for residents and guests. At a minimum, provide a waiting area with 1 seat per 8 Units in building. Structure lobby and vestibule space to allow pedestrian traffic into building without passing through waiting area.
- Reception/Front Desk. Size should be coordinated with overall Base needs for check-in space; do not duplicate functions which are already accommodated in other Unaccompanied Housing buildings.
- Offices/Administration Area. Identify specific requirements to avoid future conversion/loss of assignable spaces.
- Bulk Storage Room. Storage rooms(s) may be provided for both UH Management and occupant storage. Storage rooms(s) shall be climate controlled. Occupant storage lockers/areas, if provided, shall be a minimum 50 CF, securable by occupants.
- Public Toilet. Located at main entry level, provide a minimum of one male and one female restroom. Coordinate placement with multi-purpose rooms; and

provide additional restrooms to accommodate occupancy of large multi-purpose rooms.

- General Maintenance room.

- Multi-purpose Room/Rooms. Provide a combination of room types (including game room, lounge, meeting room, etc.), at a minimum of 5ft^2 (.47 m^2) per planned occupant to a maximum of 10ft^2 (.93 m^2). Plan for space usage to change in the future and provide maximum flexibility. Isolate these areas acoustically, and locate them close to public toilets when possible. Provide finishes that are easily cleaned and durable. Provide cabinets and counter space for minor food service and to accommodate a microwave oven. Provide locked storage for related supplies and equipment. Provide rooms with light and power for general use. Room lights shall be controlled to accommodate multiple uses. Provide window coverings and hardware to allow for darkening of the room with blinds or shades.

- Vending Area.

- Linen Room. Linen rooms, where provided, shall be located to maximize building functionality.

4-1.5 Site Amenities.

Provide picnic and barbecue areas for 5% of the resident capacity; locate picnic tables and covers immediately adjacent to barbecue. Provide spaces appropriate for large and small groups. Provide other amenities as identified in the Recreational Services Assessment.

4-2 NAVY SHARED/MOBILIZATION UNIT

This Unit type, formerly referred to as a “2+0” design, includes double occupancy living/sleeping area, two personal closets, a separated toilet and shower compartment, and a single bowl lavatory/vanity in the service area. Refer to Figure 3. Access is from an interior corridor. <u>The construction of Shared /Mobilization Units is only authorized for Military Essential housing requirements</u>.

- Gross Building Area: The Total Allowable Gross Building Area may not exceed 517 ft^2 (48 m^2) except for high-rise constructions. Refer to the Paragraph entitled “High Rise Structures and Additional Gross Area”.

- Minimum Net Square Footage as defined by DOD 4165.63-M: 180 ft^2 (16.7 m^2).

4-2.1 Unit Details.

- Sleeping Area. Room shall be designed for double occupancy. Room dimensions are not fixed, but must remain functional to accommodate two (2)

twin extra-long beds ,two (2) desk units, two (2) chairs, and appropriate dress drawer storage. For newly constructed facilities, the Sleeping Area shall meet the Minimum Net Square Footage per DOD 4165.63-M as indicated above. For renovated and redesigned facilities, it may be appropriate to meet the Minimum Net Square Footage by combining both Sleeping Area and Service Area square footage.

- Bathroom. Provide a single lavatory and valance lighting in the service area with two medicine cabinets, along with a separate compartment with full sized shower (12 ft^2 (1.1 m^2)) and water closet. Provide towel/toiletry hardware for two (2) residents. Provide a full length framed mirror mounted on Service area side of one door.

- Personal Closets. Minimum 22 ft^2 (2 m^2) Net Area required. Provide one (1) closet for each resident. Provide each closet with closet organizers with storage capability extending to the ceiling. Provide continuous ventilation in closets to resist mold and mildew growth. A light inside the closet with motion-activated control is preferable, but carefully placed lighting outside 2 ft (0.6 m) deep closets is acceptable.

- Service Area. For Shared Units in a newly constructed facility, the Service Area shall be the corridor/service space within the unit that is not incorporated into the Net Square Footage. The service area provides access to the storage closets, bathroom, and a kitchenette. Kitchenette shall include refrigerator, microwave, single bowl sink, and some counter and cabinet space. Kitchenette sink is separate from lavatory/vanity bowl. In renovated and redesigned facilities it is appropriate that Net Square Footage per DOD 4165.63-M may be achieved by combining both Sleeping Area and Service Area square footage.

- Locks. Electric locks are required on building entrance doors, Unit doors, and closet doors. See Chapter 3.

4-2.2 Building Common Areas.

Provide common spaces as detailed for Market Style Unit Buildings, reference paragraph entitled “Building Common Areas”. Additionally, a common Laundry room(s) shall be provided, with a minimum one (1) washer and two (2) dryers for every 15 Sailors.

4-3 THE NAVY (NETC) DORMITORY UNIT

This room plan includes double occupancy living/sleeping area, two personal closets, shared toilet with a separated shower compartment, and single bowl lavatory in the service area. Access is from an interior corridor.

- Gross Building Area: The Total Allowable Gross Building Area may not exceed 517ft^2 (48 m^2) except for high-rise constructions.

- Gross Room Area: 380ft^2 (35.3m^2) in the example plan.

- Net Living/Sleeping Area: 180 ft^2 (16.7 m^2) is the required MINIMUM size per bedroom

4-3.1 Unit Details.

- Living/Sleeping Area. Bedrooms are intended for double occupancy. Bedroom dimensions are not fixed, but must remain functional to accommodate two (2) twin extra-long pop-top captains beds with double storage compartments below, storage headboard; two (2) computer/TV wall desk units with built-in under-cabinet lighting, two (2) chairs, and at least one (1) credenza with double sided drawers.

- Heads. Heads and fixtures are to be of residential design, quality, and finish. Provide a single lavatory and valance lighting in the service area, a separate compartment with full sized shower, and separate compartment with water closet with shelving. Provide towel/toiletry hardware for two (2) residents. Provide a full length framed mirror mounted on Service area side of one door.

- Personal Closets. 22 ft^2 (2 m^2) Net Area required. Provide at least one (1) closet for each resident. Provide each closet with closet organizers with storage capability extending to the ceiling. Provide additional storage in service areas as appropriate. Provide closets full height, using the space above the normal door height for bulk storage. Provide continuous ventilation in closets to resist mold and mildew growth. Provide integral full-length hanging rods for coats and shelves. A light with motion-activated control is preferable, but carefully placed lighting outside 2 ft (0.6 m) deep closets is acceptable. Each closet must be provided with a solid core wood door. Secure closets with standard hinged doors with non-removable pin hinges and locking hardware. Provide padlocking slide bolt hardware for personal closets. Bi-fold and sliding doors are not acceptable.

- Service Area. This term refers to the corridor/service space within the plan that is not incorporated into the Net Living/Sleeping Area. The service area in the plan provides access to the personal closets, head, a FAR Rated, Energy Star, 2 door refrigerator (10.3 cu. ft maximum) and microwave, and small counter space with the single bowl sink.

- Locks. Electric locks are required on building entrance doors, Unit doors, and closet doors. Use a magnetic key card system with hard key override.

4-3.2 Building Common Areas (Required).

The following spaces are REQUIRED common spaces. The net areas shown are approximations to assist the designer.

- Entry Vestibule. 50 ft^2 (4.5 m^2) Net Area. Provide automatic entry doors and weather vestibule. This area shall serve as the controlled single-point of entry/exit quarterdeck as part of the Navy Military Training (NMT) environment. Other points of emergency egress shall be installed with an alarm system, which would activate when door is opened.

- Duty Office (and Head). 125 ft^2 (12 m^2) Net Area. Include a duty office designed to provide the staff with a secure, efficient, and comfortable environment from which to manage the building. Provide area for one (1) desk with computer. Connect to a non-public lavatory (included in the net area).

- Duty Bunk. 80 ft^2 (7.5 m^2) Net Area. Provide lockable room for one (1) bed and one (1) wall locker. Locate adjacent to the Duty office and head.

- Public Head. 45 ft^2 (4.5 m^2) Net Area. Provide one (1) water closet, and one (1) lavatory with associated hardware.

- Elevator. 85 ft^2 (8 m^2) Net Area each. (Elevator machine room area is excluded.) See Chapter 3 for added details.

- Vending. 85 ft^2 (8 m^2) Net Area. Provide space adjacent or co-located to the Multi-Purpose Room. Allow space for a minimum of (4) full-sized commercial vending machines with front facing circulation - 3 soft drink machines and one snack vending machine is typical. Discuss vending area, machine quantity and desired type with the activity and local Marine Corps Community Services Director.

- Multi-Purpose Room. Calculate room size based on 6.25sf (0.58sm) minimum to 12.5sf (1.16sm) maximum area for each occupant. Includes spaces such as: Lounge, Meeting, Conference, Class room(s), or other appropriate spaces. Isolate the area acoustically, and locate them close to public toilets. Provide cabinets and counter space for minor food service and to accommodate a temporary microwave oven, waste receptacles, and other similar food warming equipment. Provide locked storage for related supplies and for equipment. Provide rooms with light and power for resident's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades. With the military requirement of service members to access the internet to review military records and conduct personnel administration, <u>multi-purpose rooms are required to be wired with infrastructure to support high speed internet access.</u> Provide a minimum of two (2) eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room. Refer to ECB 2010-04.

- Laundry Room. Provide one (1) washer and two (2) dryers for every fifteen (15) residents, as a minimum. Stacked units are acceptable. Locate laundry rooms (at the ground floor for NETC/Dorm unit only) for easy access and provide

acoustic separation from other areas. Provide adjacency to a Multi-Purpose room as appropriate. Provide 12 linear feet of folding table(s), clothes hanging area with hanging rods and 4 ft (1.25 m) of full height hanging for drip-dry clothing. Set aside a space of 36 inches x 72 inches (915 mm x 1829 mm) for soap, bleach, fabric softener and other laundry aid vending in each laundry facility.

- Janitor Closet(s). 90 ft^2 (8.5 m^2) Net Area. Provide a minimum 5 ft x 3 ft (1.5 m x 0.9 m) closet for permanent party facilities at each floor. At each floor level, provide a 5 ft x 5 ft (1.5 m x 1.5 m) closet for Transient facilities. In addition, for transient facilities, provide one (1) secure space of about 250 SF (23 m^2) net area for housekeeping equipment and supplies. Finish floor, base, and wall at the mop receptor to resist water. Slip resistant quarry tile or ceramic tiles are examples of acceptable finishes. Provide a motion-activated light. Provide a janitor's sink with drain, and basic storage for mops and one (1) commercial grade floor polisher.

- Mechanical and Electrical Room(s). These rooms are calculated at 5% of the Gross Building Area, (7% maximum). This includes: Main Mechanical room at ground floor, Electrical control closet, NMCI Electrical room, Fire Pump Room, Elevator Equipment room, Mechanical room on each floor, and main vertical duct space (floor to floor).

- Corridors. Travel distance from corridor door of any guest room to the nearest exit is limited by Code.

- Stair Towers. Estimate each exiting stair tower at 16 m^2 (170 ft^2) net area per floor – Stairways count against gross building area at 50%. Example: 4 stair towers x 3 floors x 170 ft^2 x 50% = 1020 ft^2 Gross Building Area. Enclose exterior stair towers or provide open-air per locale and building configuration.

4-3.3 Building Common Areas (Optional).

The following common spaces are OPTIONAL.

- Admin/Office Space. Provide other administrative office spaces as required within approved gross area constraints.

- Game Rooms. Acoustically isolate game rooms as appropriate. Include appropriate electrical outlets, and place close to public toilet(s). Design the rooms for installation of electronic video games. Locate within building design for appropriate monitoring by Marine Corps Unaccompanied Housing personnel. Provide rooms with substantial natural lighting.

- Resident Bulk Storage. Resident Bulk Storage as required.

- Mail**.** See Chapter 3 for requirements for mail.

4-3.4 In-Room Services.

See Chapter 3 for requirements for in-Room telephone, cable television and Local Area Network Systems (LAN).

4-4 OPEN BAY PLAN.

This construction standard is current for all Recruits. See Chapter 6.

4-5 RESTORATION AND REDESIGN REQUIREMENTS FOR NAVY.

Refer to Chapter 3, paragraph entitled “Navy RM” for specifics concerning RM requirements for Navy projects.

4-5.1 Renovation.

Several previous Construction Standards are still considered adequate Unit design for housing Permanent Party unaccompanied enlisted personnel. As such, when facilities with adequate Unit Types are programmed for an RM project, the project team shall endeavor to include features and benefits of current Construction Standards without Redesign, while providing best return on investment.

4-5.1.1 Adequate Previous Construction Standards/Unit Types.

Existing 1+1, 1+1E, 2+0, and 2+0 Types, and Welton Becket Units (4-bed, 4-bath Units with lounge), when minimum bedroom sizes are met see the paragraph entitled “Renovation and Redesign Criteria" below, are acceptable Unit plans. Project teams shall apply the recommendations in the paragraph entitled “Renovation and Redesign Criteria" to the specific facility in question to determine best practices, ideal return on investment for the Navy, and how to best return adequate quarters for unaccompanied personnel. For example, considerations should include re-working single user bathrooms to the separate lavatory/vanity area and toilet-shower room when the project scope already includes bathroom work. Additionally, all projects including renovations and redesigns must be constructed per DoN policy for LEED. \2\ Refer to UFC 1-200-02. /2/

4-5.2 Redesign.

Several previous Construction Standards are inadequate for Permanent Party unaccompanied enlisted personnel. As such, when facilities with those Unit Types are programmed for an RM project, the project team shall select the optimum solution for reconfiguring and most efficiently utilizing the existing footprint, providing best return on investment.

4-5.2.1 Previous Construction Standards/Unit Types.

Existing Open Bay and Gang Head Unit Types, e.g., Motel, Tower etc., shall be redesigned when planned to house Permanent Party Sailors. Existing Open Bay/Gang

Head Unit Types shall be redesigned when planned to house Students, subject to individual school requirements. Project teams shall refer to the recommendations below for the specific facility to determine best practices, ideal return on investment for the Navy, and how to best return adequate quarters for unaccompanied personnel.

Permanent Party Barracks:

- Open Bay or Gang Head buildings shall be Redesigned to Shared Units
- The following designs may be considered for redesign to make a more usable facility:
- 2+2 Units may be Redesigned to Market Units

Student Dormitories:

- Open Bay or Gang Head buildings should be redesigned to Dorm 2+0 Units, requirements vary by school

4-5.3 Renovation and Redesign Criteria.

SRM Project Teams are responsible for evaluating optimum return on Navy investment for the specific facility in question, and providing a BCA as required above. All renovation or redesign projects shall incorporate design features of current Unit Types whenever practicable. The following list is relevant for all Unit Types except as noted otherwise.

- All RM projects shall provide, replace or upgrade Fire Protection (Sprinkler & Fire Alarm) Systems to meet current requirements.
- Redesign projects shall return the following minimum Bedroom area (NSF): Shared Unit = 180 ft^2 (16.7 m^2); Market Unit = 144 ft^2 (13.4 m^2) with no more than two Sailors per bath.
- Renovation projects shall retain existing Bedroom size, except where built-in closets are being added. Renovated bedrooms shall provide a minimum 90 ft^2 (NSF) per occupant.
- Bathroom Configuration. Renovation projects should provide separate lavatory/vanity and shower-toilet areas when scope includes bathrooms work. Redesign projects shall provide separate lavatory/vanity and shower-toilet areas. All projects shall provide one medicine cabinet per potential occupant. All projects shall meet bathroom ventilation requirements in Chapter 3.
- Closet Sizing and Organization: Renovation projects should, and Redesign projects shall, comply with current closet standards, Reference Chapter 3.

- HVAC: Renovation projects should, and Redesign projects shall, meet applicable energy conservation criteria as identified in UFC 1-200-01, including occupant HVAC controls in unit.

- Ventilation: Renovation projects should, and Redesign projects shall, meet applicable criteria of ASHRAE 62.1 or 62.2.

- Laundry: Central laundry is not mandatory but is acceptable in existing buildings being renovated. Redesign projects should evaluate feasibility of relocating Laundry in the Unit. In-Unit, stacked full size washer/dryers are acceptable in Redesign projects. If central laundry will remain, provide one(1) washer and two (2) dryers per 15 Sailors.

- Kitchen: Redesign projects returning Market Units shall provide Kitchens in accordance with new construction standards specified earlier in Chapter 4.

- Kitchenette: Renovation projects should, and Redesign projects returning Shared/Mobilization Units shall, provide a Kitchenette; meeting the following minimum requirements: Single bowl stainless steel sink; Base and wall cabinets; Microwave; Minimum 16 cf refrigerator; Two-burner electric cook top.

- Building Common Areas: At Installations with surplus housing capacity, Renovation and Redesign project teams should evaluate the conversion of assignable building area to Common Areas, defined for new construction earlier in Chapter 4; to improve Sailors Quality of Life and ‘right size’ building capacity.

CHAPTER 5 MARINE CORPS ROOM PLANS.

This chapter describes the variety of room plans to which Marine Corps unaccompanied enlisted personnel and single non-commissioned officers are assigned.

5-1 DESIGN PARAMETERS.

These plans are the basic building blocks from which Marine Corps Unaccompanied Housing designs are developed. The building layouts are provided to promote uniformity. All plan features must be included as a mandatory minimum.

- Building Gross Area must not be exceeded.

- Room Plan dimensions are NOT fixed, but must remain functional. Bedrooms must be sized to accommodate two extra-long twin beds. Room Plans are accessed from an interior corridor, or an exterior open breezeway.

- Adaptable Rooms**.** The Marine Corps will provide two easily adaptable rooms at the ground floor of all new construction to allow Marines with minor injuries to remain with their group. Fully accessible rooms are NOT intended; rather to serve those who are temporarily unable to climb stairs, etc. This billeting is not intended for wounded warriors who require long term medical care. This not part of the accessibility requirements of the DoD Memorandum, Accessibility for People with Disabilities. Refer to the paragraph entitled “Accessibility Requirements”.

5-2 \6\MARINE CORPS 1+1E ROOM MODULE (OCONUS USE ONLY)

The 1+1E Room Plan Module has been approved as the standard for future BEQs built at Marine Corps Installations in Japan, instead of the 2+0 Module. Access is from an interior corridor, or conditioned or open breezeway.

- Gross Building Area per Apartment: The Total Allowable Gross Building Area per module may not exceed 710 ft^2 (66 m^2), except for high-rise constructions. Refer to the paragraph entitled "High Rise Structures and Additional Gross Area.”

- Gross Room Area: 600ft^2 (56 m^2) (Example plans are notional).

- Net Living/Sleeping Area: 155 ft^2 (14.4 m^2) is the required MINIMUM size per bedroom /6/

5-3 MARINE CORPS 2+0 ROOM.

This room plan includes double occupancy living/sleeping area, two personal closets, shared toilet with a shower compartment, and sink service area. Access is from an interior corridor, conditioned or open breezeway.

- Gross Building Area: The Total Allowable Gross Building Area may not exceed 517 ft^2 (48 m^2) except for high-rise constructions. Refer to the paragraph entitled "High Rise Structures and Additional Gross Area."

- Gross Room Area: 387.5ft^2 (36 m^2) (Example plans are notional).

- Net Living/Sleeping Area: 180 ft^2 (16.7 m^2) is the required MINIMUM size per bedroom

5-3.1 Room Plan (Spaces) Detailed.

- Living/Sleeping Area. 180 ft^2 (16.7 m^2) Net Area required. Bedrooms are intended for double occupancy. Bedroom dimensions are not fixed, but must remain functional to accommodate two (2) twin extra-long pop-top captains beds with double storage compartments below, storage headboard; two (2) computer/TV wall desk units with built-in under-cabinet lighting, two (2) chairs, and at least one (1) credenza with double sided drawers.

- Heads. Heads and fixtures are to be of residential design, quality, and finish. Provide a double vanity with double lavatory and valance lighting with double medicine cabinets, a full sized shower, and water closet with shelving and towel/toiletry hardware for two (2) residents. Provide a full length framed mirror mounted on Service area side of the bathroom door.

- Personal Closets. 22 ft^2 (2 m^2) Net Area required. Provide at least one (1) closet for each resident. Closets must be accessible to each living/sleeping area. Provide each closet with closet organizers with storage capability extending to the ceiling. Provide additional storage in service areas as appropriate. Provide closets full height, using the space above the normal door height for bulk storage. Provide continuous ventilation in closets to resist mold and mildew growth. Provide integral full-length hanging rods for coats and shelves. A light with motion-activated control is required. Carefully placed lighting outside 2 ft (0.6 m) deep closets is acceptable. Each closet must be provided with a solid core wood door. Secure closets with standard hinged doors with non-removable pin hinges and locking hardware. Provide padlocking slide bolt hardware for personal closets. Bi-fold and sliding doors are not acceptable.

- Service Area. This term refers to the corridor/service space within the 2+0 Room Plan that is not incorporated into the Net Living/Sleeping Area. The service area in each Plan Room provides access to the personal closets, head, a FAR Rated, Energy Star, 2 door refrigerator (10.3 cu. ft) maximum, a microwave, and counter space with single bowl sink.

- Locks. Electric locks are required on building entrance doors and room doors. Use a magnetic key card system with hard key override. Provide each occupant one key that opens the room entry door, and one bedroom door. Installation

Commanders may require electronic locks for closet doors as an option that provide each occupant with a second key for entry to his closet, without access to the other occupant's closet.

5-3.2 Required Common Building Spaces Detailed.

The following spaces are REQUIRED common spaces for the Marine Corps 2+0 Room configurations. The net areas shown are approximations to assist the designer.

- Entry Vestibule. 50 ft^2 (4.5 m^2) Net Area. Provide automatic entry doors per ABA and weather vestibule.

- Duty Office (and Head). 125 ft^2 (12 m^2) Net Area. Include a duty office designed to provide the staff with a secure, efficient, and comfortable environment from which to manage the building. Provide area for one (1) desk with computer. Connect to a non-public lavatory (included in the net area).

- Duty Bunk. 80 ft^2 (7.5 m^2) Net Area. Provide lockable room for one (1) bed and one (1) wall locker. Locate adjacent to the Duty office and head.

- Public Head. 45 ft^2 (4.5 m^2) Net Area. Provide one (1) water closet, and one (1) lavatory with associated hardware.

- Elevator. 85 ft^2 (8 m^2) Net Area each. (Elevator machine room area is excluded.) See Chapter 3 for added details.

- Vending. 85 ft^2 (8 m^2) Net Area. Provide space adjacent or co-located to the Multi-Purpose Room. Discuss vending area, machine quantity and desired type with the activity and local Marine Corps Community Services Director. See Chapter 3 for details.

- Multi-Purpose Room. Calculate room size based on 6.25sf (0.58sm) minimum to 12.5sf (1.16sm) maximum area for each occupant. Includes spaces such as: Lounge, Meeting, Conference, Class room(s), or other appropriate spaces. Isolate the area acoustically, and locate them close to public toilets. Provide cabinets and counter space for minor food service and to accommodate a temporary microwave oven, waste receptacles, and other similar food warming equipment. Provide locked storage for related supplies and for equipment. Provide rooms with light and power for resident's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades. With the advent of Marine Online and the military requirement of Marines to access the internet to review military records and conduct personnel administration, multi-purpose rooms are required to be wired with infrastructure to support high speed internet access. Provide a minimum of two (2) eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room. Refer to ECB 2010-04.

- Laundry Room. Provide one (1) washer and two (2) dryers for every twelve (12) residents, as a minimum. Stacked units are acceptable. Locate a single laundry rooms for easy access and provide acoustic separation from other areas. Provide adjacency to the Multi-Purpose room. Provide 12 linear feet of folding table(s), clothes hanging area with hanging rods and 4 ft (1.25 m) of full height hanging for drip-dry clothing. Set aside a space of 36 inches x 72 inches (915 mm x 1829 mm) for soap, bleach, fabric softener and other laundry aid vending in each laundry facility.

- Janitor Closet(s). 90 ft^2 (8.5 m^2) Net Area. Provide a minimum 5 ft x 3 ft (1.5 m x 0.9 m) closet for permanent party facilities at each floor. Finish floor, base, and wall at the mop receptor to resist water. Slip resistant quarry tile or ceramic tiles are examples of acceptable finishes. Provide a motion-activated light. Provide a janitor's sink with drain, and basic storage for mops and one (1) commercial grade floor polisher.

- Mechanical and Electrical Room(s). These rooms are calculated at 5% of the Gross Building Area, (7% maximum). This includes: Main Mechanical room at ground floor, Electrical control closet, NMCI Electrical room, Fire Pump Room, Elevator Equipment room, Mechanical room on each floor, and main vertical duct space (floor to floor).

- Corridors and Breezeways. Code limits travel distance from corridor door of any guest room to the nearest exit. All building corridors are to be sized to meet the minimum (or better) requirements of the International Building Code. Provide appropriate lighting and consider providing a recessed light at each entrance in addition to standard overhead corridor lighting. Size the corridor to meet NFPA 101 requirements with a minimum clear width to accommodate two persons with suitcases (60 inches (152.4 mm) clear).

- Stair Towers. Estimate each exiting stair tower at 16 m^2 (170 ft^2) net area per floor – Stairways count against gross building area at 50%. Example: 4 stair towers x 3 floors x 170 ft^2 x 50% = 1020 ft^2 Gross Building Area. Enclose exterior stair towers or provide open-air per locale and building configuration.

- Adaptable Rooms. Provide easily adaptable rooms per 5-1 Design Parameters.

5-3.3 Optional Common Building Spaces Detailed.

The following common spaces are OPTIONAL for the Marine Corps 2+0 configuration.

Admin/Office Space. Provide other administrative office spaces as required within approved gross area constraints.

Game Rooms. Acoustically isolate game rooms as appropriate. Include appropriate electrical outlets, and place close to public toilet(s). Design the rooms for installation of electronic video games. Locate within building design for appropriate monitoring by

Marine Corps Unaccompanied Housing personnel. Provide rooms with substantial natural lighting.

Resident Bulk Storage. Resident Bulk Storage as required.

Mail**.** See Chapter 3 for requirements for mail.

5-3.4 In-Room Services.

See Chapter 3 for requirements for in-Room telephone, cable television and Local Area Network Systems (LAN).

5-3.5 Exterior Washdown Areas.

These areas should be sized based upon the number of occupants.

- Equipment Washdown Area. Equipment washdown areas must be located at a covered cleaning shelter adjacent to a building entry point. The area must be concrete based, approximately 15 ft (4.6m) width by 50ft 15m length with supported standpipes consisting of six (6) hose bibs with sturdy supports and anchored at the tabletop level 40 inch (1016 mm) maximum height with separate cut-off valves suitable for simultaneous operation of all six (6). Provide a properly sized supply standpipe with a freeze-proof design and easily accessible shut-off valve(s). The concrete table top area will be sloped to a central drain with easy cleanout for mud and debris. All equipment will be suitable for outside service.

- Equipment Drying Areas**.** Provide a semi-enclosed roofed equipment drying area on concrete hardstand adjacent to the equipment wash down area. Each drying area may be totally enclosed on all four (4) sides and across the top for security per Command decision. The drying area must be divided into separate sections. If gates are used, each must have a lockable hasp. The concrete hardstand will be adequately sloped to prevent ponding water.

- Note that these structures will be counted as part of the allowable area limits for the project.

5-3.6 Windows.

Continuous overhead fenestration which provides cross ventilation is encouraged. See section examples in the graphics. See Chapter 3 for additional window requirements.

5-3.7 Interior Walls and Finishes.

The Marine Corps requires hard finishes similar in durability to CMU interior walls. Exterior construction shall be masonry exterior construction and finish. Basic wall construction types may consist of concrete modular units CMU, precast concrete, or cast-in-place concrete construction. Any deviations must be approved by HQMC Facilities and Services Division, (Code LF). Refer to the Paragraph entitled "Walls and Partitions", and Table 3-2 in this FC for specific interior finishes and schedules.

5-4 MARINE CORPS SNCO/OFFICERS ROOM.

This room plan is intended for unaccompanied Staff Noncommissioned Officers (E6-E9)(SNCO) and Officers on a dependent restricted unaccompanied orders, and support personnel on the Unit Deployment Program (UPD). Access is from an interior corridor, conditioned or open breezeway.

- Gross Building Area: The Total Allowable Gross Building Area may not exceed 743 ft^2 Gross (69 m^2) per unit module.

- Gross Room Area: 603 ft^2 (56 m^2).

- Bedroom Area: 151 ft^2 (14 m^2) is the required MINIMUM size per bedroom

5-4.1 Room Plan (Spaces) Detailed.

- Bedroom. 151 ft^2 (14 m^2) Net Area required. Bedrooms are intended for single occupancy. Bedroom dimensions are not fixed, but must remain functional to accommodate one queen bed, one (1) computer/TV wall desk unit with hutch, one (1) chair, one (1) nightstand, one (1) lamp and at least one (1) bureau or chest.

- Living Room. 130 ft^2 (12 m^2) Net Area required. Living rooms are intended for one occupant and two visitors use, sized for a sofa, chair, coffee table, end lamp, floor lamp and TV/credenza. Lighting shall be adjustable level, recess mounted in the ceiling. Provide a ceiling fan with no light attachment appropriately mounted to avoid the recessed fixtures.

- Laundry Area. Provide one (1) washer and one (1) dryer for every resident, as a minimum, vented to the exterior. Stacked units are acceptable. Provide a containment curb. A floor drain is optional. Provide room for storage of ironing board and shelving for laundry soap.

- Heads. Heads and fixtures are to be of residential design, quality, and finish. Provide a vanity with lavatory and valance lighting with a single medicine cabinet, a full sized tub-shower, and water closet with shelving and towel/toiletry hardware for one (1) resident.

- Walk-in Closet. 32 ft^2 (3 m^2) Minimum Net Area required. Provide at least one (1) walk-in closet for each resident. Closet must be accessible to the sleeping area.

Provide organizers with storage capability extending to the ceiling. Closet shall be full height, using the space above the normal door height for bulk storage. Provide continuous ventilation in closets to resist mold and mildew growth. Provide integral full-length hanging rods for coats and shelves at the long side, with shelf above the hang rod, and 5 fixed shelves located at the far end wall. Provide one wall void of shelving for storage of tall items. Lighting outside of closets is not acceptable. An interior light with motion-activated switch is required. Carefully placed lighting outside closets is not acceptable. The closet must be provided with a solid core wood door. Secure each closet with standard hinged doors with non-removable pin hinges and keyed locking hardware. Bi-fold and sliding doors are not acceptable. Closet doors may have full-length dressing mirrors.

- Kitchen. The kitchen area is adjacent and provides open access to the living area, and doorway access to the bath and bedroom. The kitchen area will contain a full sized refrigerator (14 cu. ft maximum), a (4) four burner range with oven below and microwave and ventilation fan collocated above, appropriate counter space with under cabinet lighting with single bowl sink. Provide a small pantry and closet with broom storage capabilities adjacent to the main Room entry door.

- Locks. Use a magnetic key card system with hard key override. Provide occupant one key that opens the room entry door and bedroom door.

5-4.2 Required Common Building Spaces Detailed.

The following spaces are REQUIRED common spaces for the Marine Corps SNCO and Officers configurations:

- Entry Vestibule. 50 ft^2 (1.5 m^2) Net Area. Provide automatic entry doors and weather vestibule.

- Public Head. 15 ft^2 (1.5 m^2) Net Area. Provide one (1) water closet, and one (1) lavatory with associated hardware.

- Elevators. 85 ft^2 (8 m^2) Net Area. (Elevator machine room area is excluded.) Note that the number of elevators allowed is now calculated by the building height. See Chapter 3 for additional details.

- Janitor Closet(s). 90 ft^2 (8.5 m^2) Net Area. Provide a minimum 5 ft x 3 ft (1.5 m x 0.9 m) closet for permanent party facilities at each floor. Finish floor, base, and wall at the mop receptor to resist water. Slip resistant quarry tile or ceramic tiles are examples of acceptable finishes. Provide a motion-activated light. Provide a janitor's sink with drain, and basic storage for mops and one (1) commercial grade floor polisher.

- Mechanical and Electrical Room(s). These rooms are calculated at 5% of the Gross Building Area, (7% maximum). This includes: Main Mechanical room at ground floor, Electrical control closet, 10 ft by12 ft (304.8 cm by 365.8 cm) NMCI Electrical room, Fire Pump Room, Elevator Equipment room, Mechanical room on each floor, and main vertical duct space (floor to floor).

- Corridors and Breezeways. NFPA 101 Fire and Life Safety Code limits travel distance from corridor door of any guest room to the nearest exit. All building corridors are to be sized to meet the minimum (or better) requirements of the International Building Code. Provide appropriate lighting and consider providing a recessed light at each entrance in addition to standard overhead corridor lighting. Size the corridor to meet NFPA 101 requirements with a minimum clear width to accommodate two persons with suitcases (minimum 66 inches (167.64 cm) clear).

- Stair Towers. Estimate each exiting stair tower at 16 m^2 (170 ft^2) net area per floor – Stairways count against gross building area at 50%. Example: 1 stair towers x 3 floors x 170 ft^2 x 50% = 1020 ft^2 Gross Building Area. Enclose exterior stair towers or provide open-air per locale and building configuration.

5-4.3 Optional Common Building Spaces Detailed.

The following common spaces are OPTIONAL for unaccompanied SNCO and Officers configurations.

- Admin/Office Space. Provide other administrative office spaces as required within approved gross area constraints.

- Vending. 85 ft^2 (8 m^2) Net Area. Provide space adjacent or co-located to the Multi-Purpose Room. Discuss vending area needs, machine quantity and desired type with the activity and local Marine Corps Community Services Director. Refer to Chapter 3 for details.

- Multi-Purpose Room. Calculate room size based on 6.25sf (0.58sm) minimum to 12.5sf (1.16sm) maximum area for each occupant. Includes areas such as: Billiards, Ping Pong, Foosball and Air Hockey and spaces such as a Game Room, Internet Café, Theater, or other appropriate areas or spaces. Isolate the area acoustically, and locate them close to public toilets. Provide cabinets and counter space for minor food service and to accommodate a temporary microwave oven, waste receptacles, and other similar food warming equipment. Provide locked storage for related supplies and for equipment. Provide rooms with light and power for resident's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades. With the advent of Marine Online and the military requirement of Marines to access the internet to review military records and conduct personnel administration, <u>multi-purpose rooms are required to be wired with</u>

infrastructure to support high speed internet access. Provide a minimum of two (2) eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room.

- Game Rooms. Acoustically isolate game rooms as appropriate. Include appropriate electrical outlets, and place close to public toilet(s). Design the rooms for installation of electronic video games. Locate within building design for appropriate monitoring by Marine Corps Unaccompanied Housing personnel. Provide rooms with substantial natural lighting.

- Resident Bulk Storage. Resident Bulk Storage as required.

- Theater room is acceptable as an option.

- Audio/Visual Equipment Rooms are acceptable as an option.

- Internet café is an option.

- Balconies are an option.

5-5 ADDITIONAL REQUIRED BUILDING FEATURES.

The following common features must be provided.

5-5.1 Heating, Ventilation and Air Conditioning.

Design an HVAC system to provide residents with individual choice of heating and cooling year round within each living area.

5-5.2 In-Room Services.

See Chapter 3 for requirements for in-Room telephone, cable television and Local Area Network Systems (LAN).

5-5.3 Doors and View Ports.

Provide solid core doors or thermally insulated metal doors (in exterior applications) for sound isolation for the entry units. Provide a fire rated, wide angle security viewport at the 60 in (1524mm) height.

5-5.4 Hardware and Locks.

Refer to Chapter 3 for hardware and lock information.

5-5.5 Windows.

Provide continuous overhead fenestration which allows cross ventilation in projects where open breezeway corridors are present. Single hung windows with window

screens are required for interior corridor designs. Locate secure openings above the entry door and over windows in living room and bedroom. See Chapter 3 for additional window requirements.

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CHAPTER 6 OPEN BAY.

This Chapter describes Open Bay configurations used by the Navy and the Marine Corps. Marines Corps variations are specifically identified.

6-1 OPEN BAY PLAN.

An Open Bay barracks consists of an open-bay, central head facilities, common areas, circulation and laundry facilities.

6-2 GROSS BUILDING AREA.

Maximum gross building area may not exceed 140 ft^2 (13 m^2) per person. Refer to UFC 2-000-05N/P-80.

6-3 GROSS OPEN BAY SLEEPING AREA.

Determine the total gross area of the open bay by the number of persons that will occupy the space. (# of persons x minimum net sleeping area per person). Typical sizes are 60 persons per bay.

6-4 NET LIVING/SLEEPING AREA.

Recruit net living area is 72 ft2 (6.7 m^2) per person minimum.

6-5 REQUIRED COMMON AREAS (SPACES).

The following spaces are required common spaces in Open-Bay designs.

- Navy Laundry facilities: Provide one washer and two dryers for every 12 residents as a minimum. Adjust this number as appropriate where some or all of the laundering is performed by contract. Locate laundry rooms preferably at each floor for easy access and provide acoustic separation from other areas; provide 10 linear feet (3 linear meters) of folding table with hanging rods above and 4 feet (1.25 meters) of full height hanging for drip-dry clothing.

- Marine Corps Laundry facilities: Provide one (1) washer and two (2) dryers for every twelve (12) residents, at a minimum. Locate laundry rooms on the ground floor or in an adjacent separate building. Clothing and gear requirements may vary by location. Provide folding tables with hanging rods appropriately designed for the mission of the occupants.

- Building Utility Room;

- Bulk storage. Provide bulk storage areas for gear and supplies for navy. This is optional for the Marines Corps.

- Mechanical and Electrical Rooms. The spaces include main mechanical room, main electrical control closet, NMCI electrical closet, fire pump room, must be provided within the limits of the maximum gross building area. This is limited to a maximum of 7% of the Gross building area. The elevator equipment room (not generally required for open bay UEPH), and the floor to floor duct spaces are not included in this limit.

- Circulation, corridors and hallways should be designed for appropriate passage with luggage and exiting. Provide additional recessed lighting at all entrances.

- Multi-Purpose Areas (Space) such as lounge or classroom. Isolate the areas acoustically, and locate them close to public toilets. Provide rooms with light and power, and provide light dimmers. Multi-purpose rooms are required to be wired with infrastructure to support high speed internet access. Provide a minimum of two (2) eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room. Refer to ECB 2010-04. Provide window coverings and hardware to allow for darkening of the room with blinds or shades.

- Janitorial. Provide a 5-foot x 3-foot (1.5 meter x 0.9 meter) closet for each Bay to house vacuum cleaner storage and janitor's sink and faucet. Finish floor, base, and wall at the mop receptor to resist water. Slip resistant quarry tile or ceramic tiles are examples of acceptable finishes. Provide a motion-activated light.

6-6 OPTIONAL COMMON AREAS (SPACES).

The following spaces are optional common spaces in Open-Bay designs.

- Automatic entry doors and weather vestibule

- Administration Area (for Navy). Design administrative areas to provide the staff with a secure, efficient, and comfortable environment from which to manage the building.

- Navy Office Space. Provide other administrative office spaces to meet mission requirements within the gross building area limits.

- Lobby, Vestibule, Reception Desk. Locate the lobby and its vestibule for easy identification by arriving guests. Include a seating area for visitors and guests waiting for transportation. Locate the seating area for clear view of arriving automobiles and of the front desk. Choose and arrange lighting fixtures to organize and identify the space. Finish the lobby and entrance with attractive, durable, and easily cleaned materials. Provide the Reception Desk with enclosed space or counter/workspace. Locate the counter for visual control of the lobby and other central common spaces. Arrange the counter for check-in by several persons at once with electronic cash register and computer, key control, and forms storage. Light counter surfaces for writing, mount duplex outlets

above work surface, and provide computer and telephone cables and connections.

- Vending Area. Note that this is optional for recruit barracks.

- Public Toilets. Note that this is optional for recruit barracks.

- Marine Corps Drill Instructor Area. These spaces may include a duty office designed for the Drill Instructor with head and bunk room. Provide area to accommodate one desk with computer, with adjacency to a non-public lavatory (included in the net area); a lockable room to accommodate one (1) bed and one (1) wall locker. Provide windows in the office area to observe conditions within the open-bay area, if located on each floor.

- Armories. Individual armories (if required) are part of the open bay area, or an adjacent space. This may consist of a lockable (metal cage) cabinet permanently attached per force protection standards as referenced in UFC 1-200-01, and MCO 5530.14A.

- Marine Corps Multi-Purpose Areas. Isolate these areas acoustically and adjacent to a single public toilet. Provide these rooms with easily adjustable light (dimmers), power and internet capabilities according to mission use. Provide window coverings and hardware to allow for darkening of the room with blinds or shades. With the advent of Marine Online and the military requirement of Marines to access the internet to review military records and conduct personnel administration, <u>multi-purpose rooms are required to be wired to support high speed internet access.</u> Provide a minimum of two (2) eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room. Refer to ECB 2010-04.

- Public Telephone. Consider provision of public pay telephone services in multipurpose area (space). Public telephones must meet disability standards.

- Exterior Wash down areas will be provided as follows: Navy will provide exterior water at a paved and well drained area with 6 grouped hose bibs securely posted at 40 inch (101.6 cm) height for individual wash down of field gear and shelters may be optional. Marine Corps will provide exterior equipment wash down areas and shelters for them as described in Chapter 5 in the paragraph entitled, Wash Down Areas.

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APPENDIX A REFERENCES

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
http://www.ansi.org/

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
http://www.astm.org/

ASTM E336, *Standard Test Method for Measurement of Airborne Sound Attenuation between Rooms in Buildings*

ASTM E492, *Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine*

ASTM F1066, *Standard Specification for Vinyl Composition Floor Tile*

ASTM F1303, *Standard Specification for Sheet Vinyl Floor Covering with Backing*

AMERICAN SOCIETY OF HEATING REFRIGERATING AND AIR-CONDITIONING ENGINEERS
http://www.ashrae.org

ASHRAE 62.1, *Ventilation for Acceptable Indoor Air Quality*

ASHRAE 62.2, *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings*

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.
http:buildershardware.com/

BHMA A156:
A156.1 Butts and Hinges;
A156.2 Bored and Preassembled Locks and Latches;
A156.3 Exit Devices;
A156.4 Door Controls - Closers;
A156.6 Architectural Door Trim;
A156.13 Mortise Locks and Latches (1000 series);
A156.23 Electromagnetic Locks;
A156.25 Electrified Locking Devices;
A156.29 Exit Locks and Alarms.

CARPET AND RUG INSTITUTE
CRI Green Label and Green Label Plus Certified Product List,
http://www.carpet-rug.org/commercial-customers/green-building-and-the-environment/green-label-plus

COMPOSITE PANEL ASSOCIATION
http://www.compositepanel.org/
CPA/ANSI A208.2, Medium Density Fiberboard (MDF) for Interior Applications

DEPARTMENT OF DEFENSE

ABA Accessibility Standard for Department of Defense Facilities,
http://www.access-board.gov/ada-aba/aba-standards-dod.cfm

DOD 4165.63-M, *DOD Housing Management Manual.*

DOD 2000.16, *DOD Antiterrorism Standards.*

ENVIRONMENTAL PROTECTION AGENCY
EPA 402-R-93-071, *EPA's Map of Radon Zones*,
http://www.epa.gov/radon/zonemap.html

HARDWOOD PLYWOOD AND VENEER ASSOCIATION
http://www.hpva.org/
ANSI/HPVA HP-1, American National Standard for Hardwood and Decorative Plywood

LAWRENCE BERKLEY NATIONAL LABORATORY
http://www.lbl.gov
Tips for Daylighting with Windows, prepared by the Building Technologies Program, Lawrence Berkley National Laboratory, Copyright 1997 The regents of the University of California,

MARINE CORPS AND NAVY

ECB 2010-04, *Marine Corps BEQ, Gross Building Allowance (GBA) Calculation Change,*
http://www.wbdg.org/ccb/NAVFAC/ECB/ecb_2010_04.pdf

MCO 5530.14A, *Marine Corps Physical Security Program Manual,*
http://www.marines.mil/news/publications/Pages/MCO553014A(FINAL).aspx

MCO P11000.5G, Volume IV, *Real Property Facilities Manual (for Marine Corps Projects),*
http://www.marines.mil/news/publications/Pages/MCO%20P11000.5G.aspx

MIL-HDBK-1013/12, *Evaluation and Selection Analysis of Security Glazing for Protection against Ballistic, Bomb, and Forced Entry Tactics,*
http://www.wbdg.org/ccb/NAVFAC/DMMHNAV/1013_12.pdf

MIL-STD 3007F, *Standard Practice for Unified Facilities Criteria and UFC Guide Specifications;* (This standard applies to FC facility specific documents as well.)

http://www.wbdg.org/ccb/FEDMIL/std3007f.pdf

NAVFAC ITG FY03-4, *Mold Response Manual*,
http://www.wbdg.org/ccb/NAVFAC/INTCRIT/fy03_04.pdf

OPNAVINST 3300.55, *Navy Combating Terrorism Program Standards.*

OPNAVINST 5009.1, with Interim Change NAVADMIN 072/12, *Responsibility for Navy Housing and Lodging Programs.*

OPNAVINST 5100.23, *Navy Occupational Safety and Health (NAVOSH) Program Manual*

OPNAVINST 11010.20G, *Facilities Projects Instruction, Change 1, dated 2 Sept 2010.*

NATIONAL FIRE PROTECTION ASSOCIATION
http://www.nfpa.org
Life Safety Code

OCCUPATIONAL HEALTH AND SAFETY ADMINISTRATION
Asbestos, *29 CFR 1926.1101, Asbestos, dated 01 July 2010,*
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10862&p_table=STANDARDS

SCIENTIFIC CERTIFICATION SYSTEMS/RESILIENT FLOOR COVERING INSTITUTE
SCS/RFCI FloorScore Certified Products List,
http://www.rfci.com

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
http://www.aqmd.gov/
Rule 1113, *Architectural Coatings*

UNIFIED FACILITIES CRITERIA
http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

\2\ UFC 1-200-01, *General Building Requirements.* \2\ This document provides applicability of model building codes and government-unique criteria for typical design disciplines and building systems as well as accessibility antiterrorism, security, sustainability, and life safety, exiting. /2/

\2\ UFC 1-200-02, 1-200-02, high Performance and Sustainable Building Requirements /2/

UFC 2-000-05N/*P-80 Facility Planning Criteria for Navy/Marine Corps Shore Installations*

UFC 3-200-10N*, Civil Engineering (DRAFT),*
http://www.wbdg.org/ndbm/design_guidance.php

UFC 3-400-10N*, Mechanical Engineering*

UFC 3-600-01, *Fire Protection Engineering for Facilities*

UFC 4-010-01*, DoD Minimum Antiterrorism Standards for Buildings*

\2\ UFC 4-010-02, *DoD Minimum Antiterrorism Standoff Distances For Buildings* /2/

UNIFIED FACILITIES GUIDE SPECIFICATIONS
http://www.wbdg.org/references/pa_dod.php

UFGS 09 68 00, *Carpet*

APPENDIX B BEST PRACTICES

B-1 NAVY RESIDENT AND BUILDING MANAGER INPUT.

Best practices for new construction and renovation projects for Navy Permanent Party Unaccompanied Housing should consider recent resident feedback, documented in the form of Post Occupancy and Resident Satisfaction Surveys. The most common desires among residents included:

- Outdoor BBQ areas, ideally with shade covers, and a variety of sizes to accommodate varying size groups

- For bathrooms which will be shared by 2 people, consider how two Sailors will use the area at the same time. In addition to providing separate vanity area, provide space for closet access while roommate is using vanity, etc.

- When possible, maintain 2-bedroom Market Style Units, and do not add additional bedrooms, as it complicates roommate interactions

- Look at entry/exit travel paths for residents when setting building entries; with use of electronic locks and cameras, resident entries can be remote from main lobby on convenient travel paths from commonly used facilities on the Installation (such as the fitness center, etc.)

- Cleanliness and maintenance of buildings are a consistent top resident concern; strongly consider ease of maintenance in selection of finishes and equipment.

    - Consider how to maintain operations when critical systems are being maintained; for example providing a hookup for a generator-based A/C system during chiller maintenance.

Building Managers offered the following input during the Post Occupancy Survey process:

- Appliances:

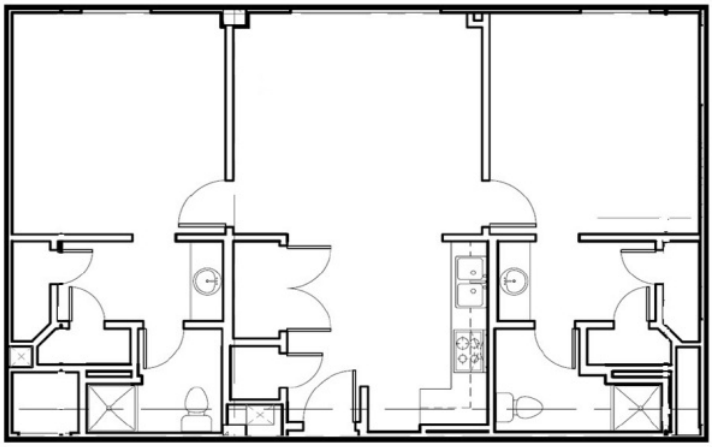
    - Residential Grade, simple appliances are the best for obtaining replacement parts, cleanability, etc. For example, all-glass stovetops which require special cleaners are not usually properly maintained by UH residents.

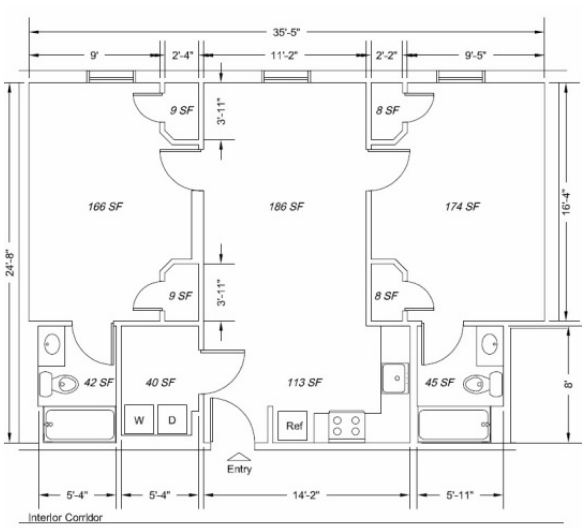
    - Strongly consider maintainability in initial appliance selection, including ability to maneuver the unit in and out for replacement or maintenance, serial numbers and product codes on the front of units, and providing ample attic stock/replacement parts as part of initial construction contract

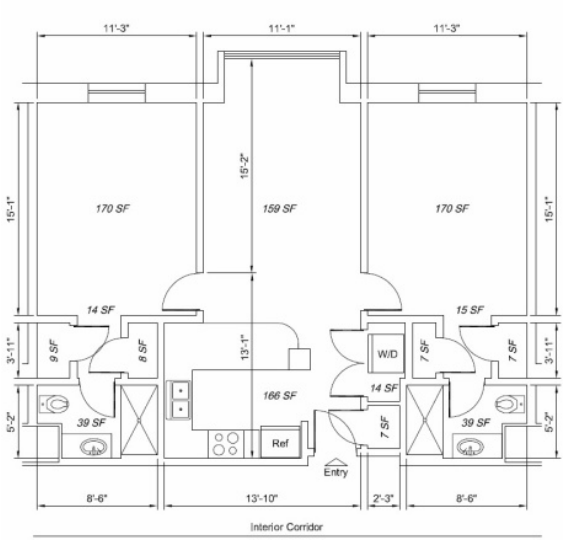
- Finishes: strongly consider not only durability but colors which hide stains/dirt well for carpet, other flooring, grout, countertops, etc.

B-2 FLOOR PLAN EXAMPLES

Figure B-1 Navy New Market Style Examples



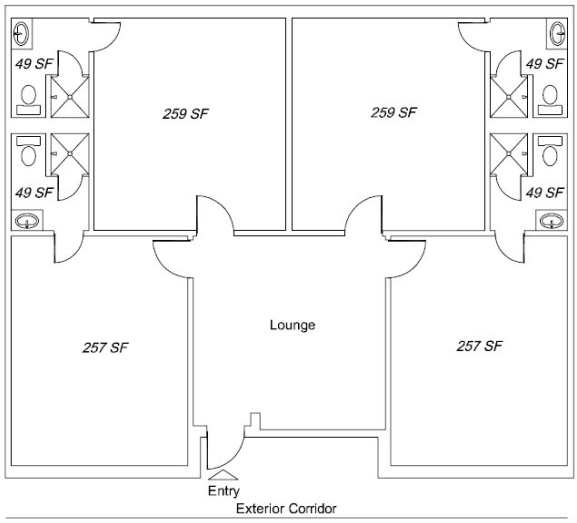




The Market Style Apartments shown above offer a variety of solutions for accommodating all requirements.

Figure B-2 Navy Reconfiguration to Market Style Example

4 Bed-4 Bath Welton Becket BEFORE



3 Bed-3 Bath Market Style AFTER

Installations with Welton Becket style buildings, and surplus capacity, should consider re-designs similar to the concept in Figure B-2 above. Note that the re-design provides built-in closets, a separate vanity area for each restroom, in-unit laundry, and space for Market Style furnishings.

B-3 MARINE CORPS BEST PRACTICES

Marine Corps Best practices for new construction and renovation projects for Permanent Party barracks should reflect lessons learned from our CMC BEQ initiative (2008-2012) projects; these include:

- Design a cohesive and integrated campus style complex for convenience of residents, with better traffic flow, hierarchical outdoor spaces, varying from large active outdoor areas, to smaller areas for passive use.

- Co-locate BEQs and support facilities in order to provide more usable outdoor areas. Site buildings and structure to protect residents from strong winds and inclement weather, wherever possible; and use solar orientation to reduce summer heat gain and site to take advantage of seasonal cooling breezes. .

- Provide identifiable entry and focal points, variation of building massing and colors, landscape with native plants (low maintenance and water conserving), and use of locally available site materials and elements.

- Outdoor BBQ areas, ideally with shade covers, and a variety of sizes to accommodate varying size groups. Include quality built-in BBQs and maximize outdoor seating/eating capacity with open green space areas.

- Provide home-like environment by maximizing living/sleeping area (within the maximum limits), provide beds with lockable storage compartments, maximize the use of natural daylight and ventilation

- For bathrooms, consider how two Marines will use the area at the same time. In addition to providing separate vanity area, provide space for closet access

- Finishes: strongly consider not only durability but colors which hide stains/dirt well for carpet, other flooring, grout, countertops, etc. while roommate is using vanity, etc. where possible.

- Provide coordinated furnishings, fixtures and equipment (FF&E) packages reflective of the buildings architectural style, local culture and theme. Involve interior designers in complete process (design charettes, FF&E selection/design and turnkey process.

- Specify sustainable FF&E with an extended warranty for material and labor beyond the normal contract or manufacturer’s warranty period.

- Cleanliness and maintenance of buildings are a consistent top resident concern; strongly consider ease of maintenance in selection of finishes and equipment.

Create a team of professionals during the process from start to finish; these should include: NAVFAC, Contract Specialist, Project Manager, design manager, Interior

Designer, ROICC/Construction Manager, ROICC Contract Specialist, Client/End user, Bachelor Housing Director, Public works project manager, Installation Property Manager/CMSC Officer, and HQMC LF (where necessary).

Figure B-3 Best Practice, BEQ Campus Arrangement

In this illustration the BEQs (3 each) are sited in the same complex with the new Dining Facility to form a very comfortable, easy to walk to various facilities in a coherent, sustainable complex with plenty of usable outdoor facilities for both very active sports to very low key passive recreational spaces. BEQ CAMPUS ARRANGEMENT: Example of Preferred Building Arrangement, Adjacency, Massing, Site Improvements, Landscaping, and Vehicle and Pedestrian Circulation Paths.

Figure B-4 Best Practice, BEQ Campus Sun shading and Walkways

Building design and site design: Example of using shading structures for outdoor gathering spaces, deep overhang to provide shade and shadow and minimize heat gain in Summer time, walkway connecting all elements of projects to each other, enhanced paving materials at important nodes in the circulation paths. Note site planning and building design to offer optimum views to all rooms in the BEQ.

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APPENDIX C GLOSSARY

ACRONYMS

AT Anti-Terrorism/Force Protection

DoD Department of Defense

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FC Facilities Criteria. Facilities Criteria FCs are part of the Unified Facilities Criteria System, but meaning that it is Service specific with a designation in the number title (N) , meaning Navy or (A) Army only as examples.

/2/

HNFA Host Nation Funded Construction Agreements

LEED Leadership in Energy and Environmental Design, a program of the United States Green Building Council

MOS Military Occupational Specialty

NAVFAC Naval Facilities Engineering Command

UFC Unified Facilities Criteria

DEFINITION OF TERMS

2+0 Type Designs – Unaccompanied Housing suitable for assignment of two E1-E3 Sailors or one E4 Sailor. 2+0/2+0 Type Designs generally consist of a Unit providing a room of at least 180 net square feet and an in-room bath.

Formal Training/Schools – United States Marine Corps Training and Education Command (TECOM)-Sponsored Professional Military Education (PME) schools (such as the Sergeants course, Advanced Senior Non-Commissioned Officers (SNCO) Academy, etc.) or a formal MOS-producing school (similar to Navy A Schools). Formal Training/Schools do not include basic training which includes recruit basic training at Marine Corps Recruit Depots (MCRD), School of Infantry (SOI)/Marine Combat Training (MCT), etc. or local training courses such as the Corporal's course, Vehicle Operator Training Course, etc.).

Mission Essential – Housing for rotational/mobilized Sailors outside their homeport and crewmembers of uninhabitable ships/submarines outside their normal homeport.

Military Necessity – Housing supporting Individual's Accounts Personnel, individual augmentees, Sailors assigned to Transient Personnel Units while awaiting ship's movement or separation from the Navy, Sailors executing temporary duty for further

assignment (TEMDUFURAS) orders, awaiting Medical boards, executing limited duty orders, or Sailors directed by the Command to temporarily reside in UH because of restricted duty, military protective orders, cool down, etc. Personnel are considered "must house" on the installation.

Motel/Tower Design – Unaccompanied Housing which generally consists of a ‘module’ including six bedrooms sized to house three Sailors each that share a central head, shower and laundry room and lounge.

Officer Accessions – Any of several programs that provide personnel to assume positions as commissioned officers.

Permanent Party – Active duty and Reserve Component military personnel who are assigned to or are attached to an installation in a PCS Status. Also includes trainees or students who are attending a training course for 20 weeks or longer.

Recruits – Personnel undergoing basic military training who have no continuous prior enlisted service (active or reserve).

Remote Locations – Installations without community housing support (e.g., NAVSUPPFAC Diego Garcia, NAVSTA Guantanamo Bay, the California Off-Shore Islands of Santa Cruz, San Clemente and San Nicolas, etc.) or with only limited community housing support (e.g., AUTEC Andros Island, etc.)

Rotational/Mobilized Sailors – Sailors attached to units that are "Sea Duty for rotational purposes" (air squadrons, mobile training units, Seabees, etc.) on orders as a unit to duty outside their homeport, individuals on orders to a combat zone or crewmembers of uninhabitable ships/submarines outside their normal homeport.

Training Necessity – Training programs including officer accessions (e.g., OTC) and enlisted initial skills training ("A" schools, accessions pipeline schools, etc.) where student housing is part of the training mission and separate from other unaccompanied housing, and students are considered 'must house' on the installation

Welton Becket Units – Unaccompanied Housing, designed by the architecture firm Welton Becket, which generally consists of a ‘module’ including four bedroom-bath sets with a 1:1 relationship, surrounding a common lounge space.

APPENDIX D FIGURES

Figure D-1 Navy Market Style Unit (Two Bedroom)

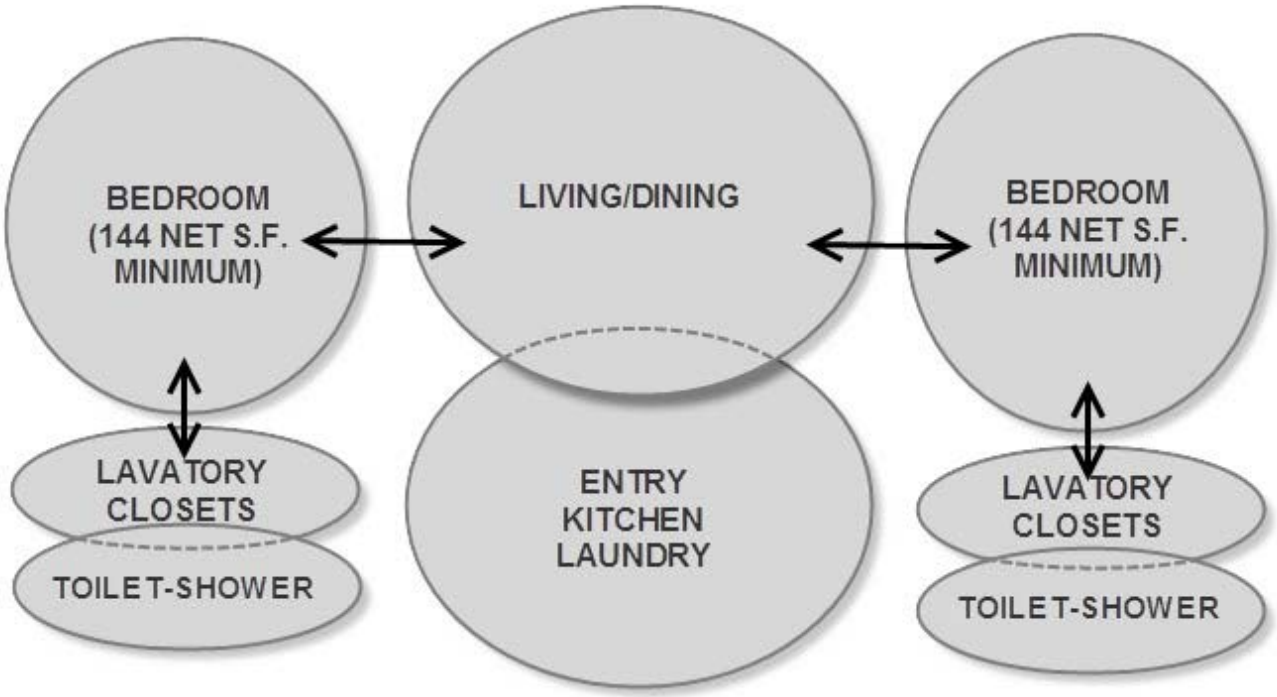


Figure D-2 Navy Market Style Unit (One Bedroom, Remote Locations)

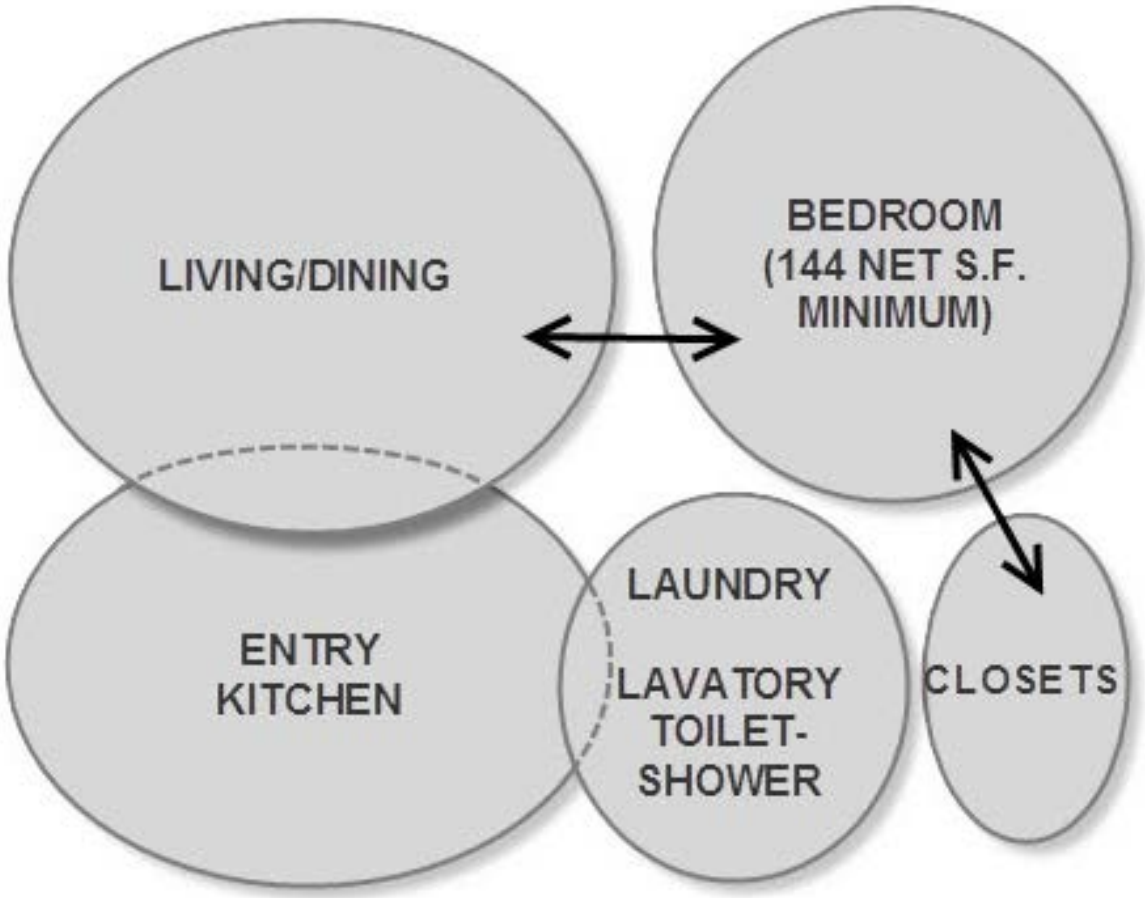


Figure D-3 Navy Shared Mobilization Unit

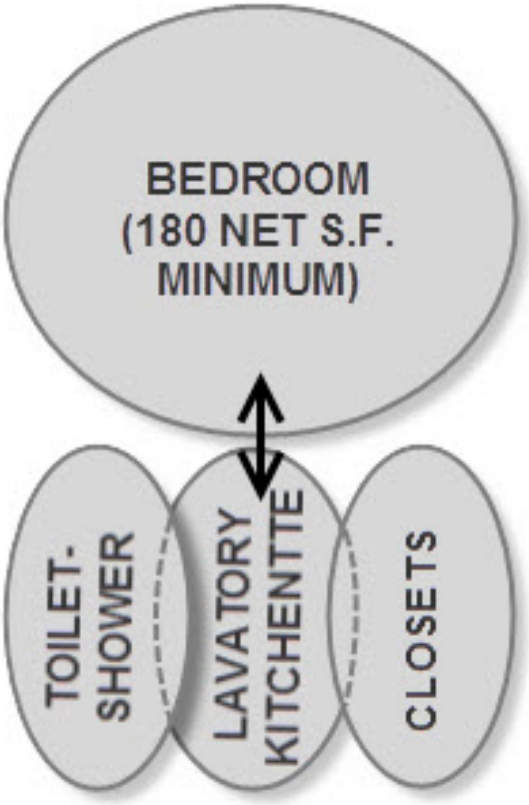
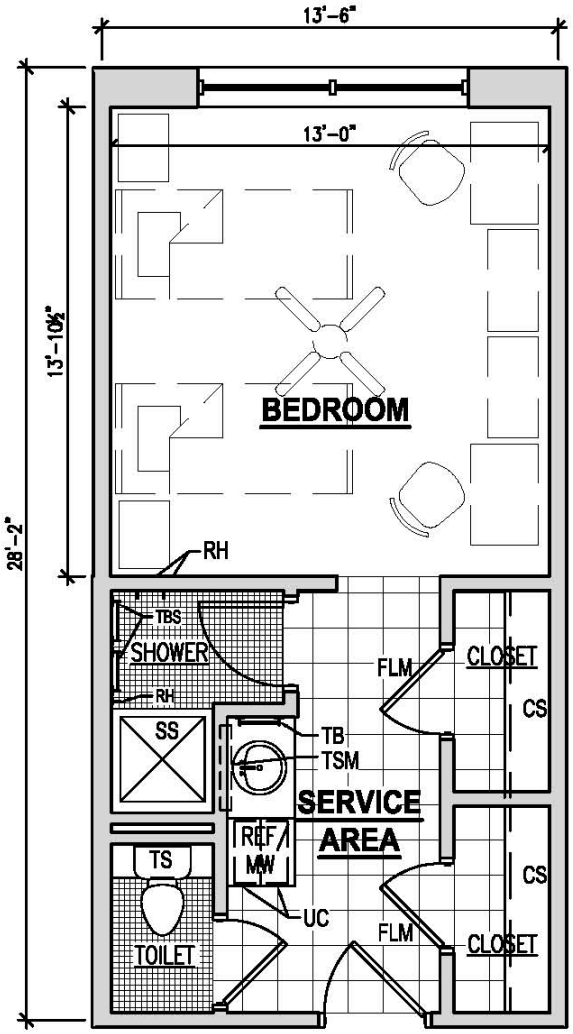


Figure D-4 NETC Dorm Room



LEGEND:

TBS	TOWEL BAR WITH SHELF ABOVE (2)
RH	ROBE HOOK
SS	SHOWER STALL
TS	12"D X 36"W UPPER CABINET
FLM	FULL LENGTH MIRROR
UC	12"D X 24"W UPPER CABINET
TSM	THREE SECTION MIRROR W/ TWO BUILT-IN MEDICINE CABINETS.
CL	CLOSET SYSTEM
IB	IRONING BOARD WITH IRON STORAGE RACK
TB	TOWEL BAR

NOTE: REFER TO UFC FOR GROSS AND NET AREAS

0 2' 4' 8'

0 500 1000 2000 mm

\6\Figure D-5 Marine Corps 1 + 1E Plan – OCONUS Use Only

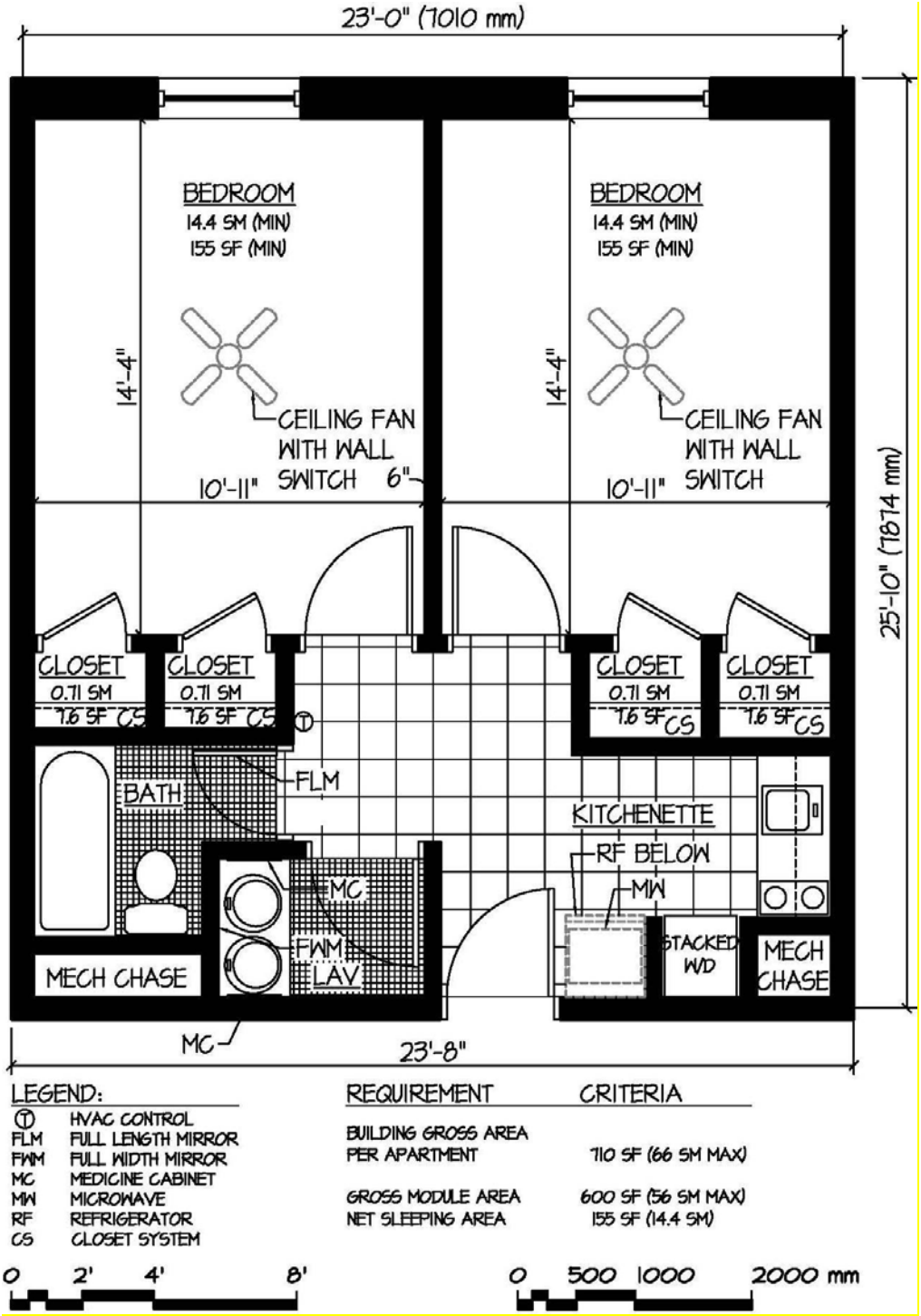


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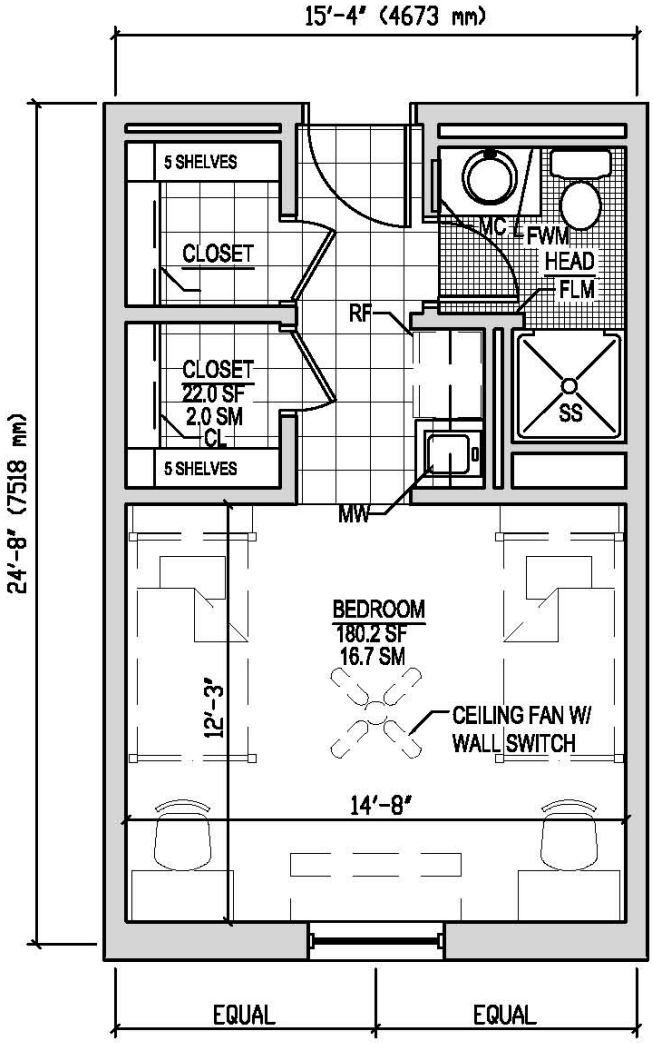
Figure D-6 Marine Corps 2+0 Room (Interior Access)



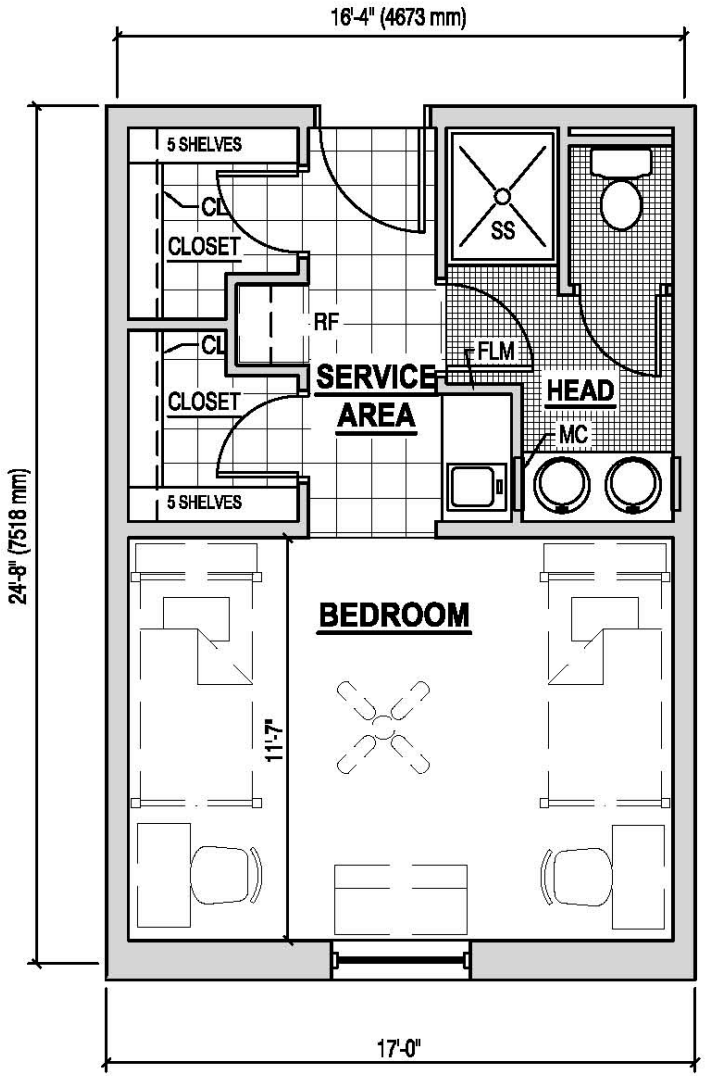
LEGEND:

FLM	FULL LENGTH MIRROR	MW	MICROWAVE
FWM	FULL WIDTH MIRROR	RF	REFRIGERATOR
MC	MEDICINE CABINET (2 STACKED)	SS	SOLID SURFACE SHOWER ENCLOSURE
CL	CLOSET SHELVES & RODS		

NOTE: REFER TO UFC FOR GROSS AND NET AREAS

0 2' 4' 8' 0 500 1000 2000 mm

Figure D-7 Marine Corps 2+0 Room (Double Lavatories)



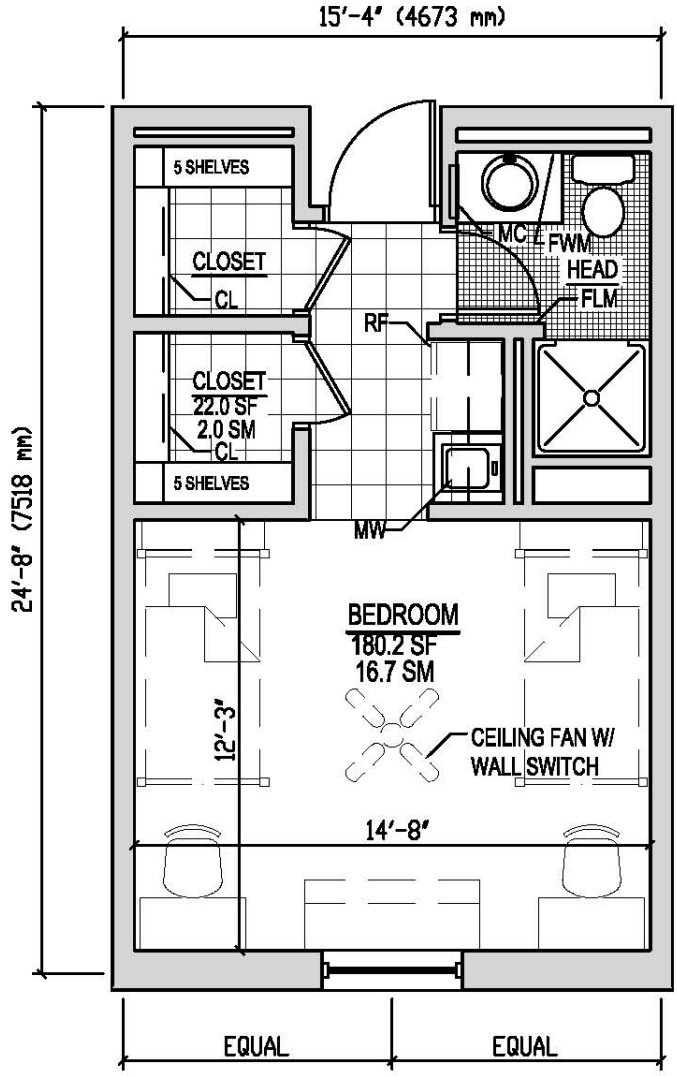
LEGEND:

FLM	FULL LENGTH MIRROR	MW	MICROWAVE
FWM	FULL WIDTH MIRROR	RF	REFRIGERATOR
MC	MEDICINE CABINET (2 STACKED)	SS	SOLID SURFACE SHOWER ENCLOSURE
CL	CLOSET SHELVES & RODS		

NOTE: REFER TO UFC FOR GROSS AND NET AREAS

0 2' 4' 8' 0 500 1000 2000 mm

Figure D-8 Marine Corps 2+0 Room (Breezeway Access)



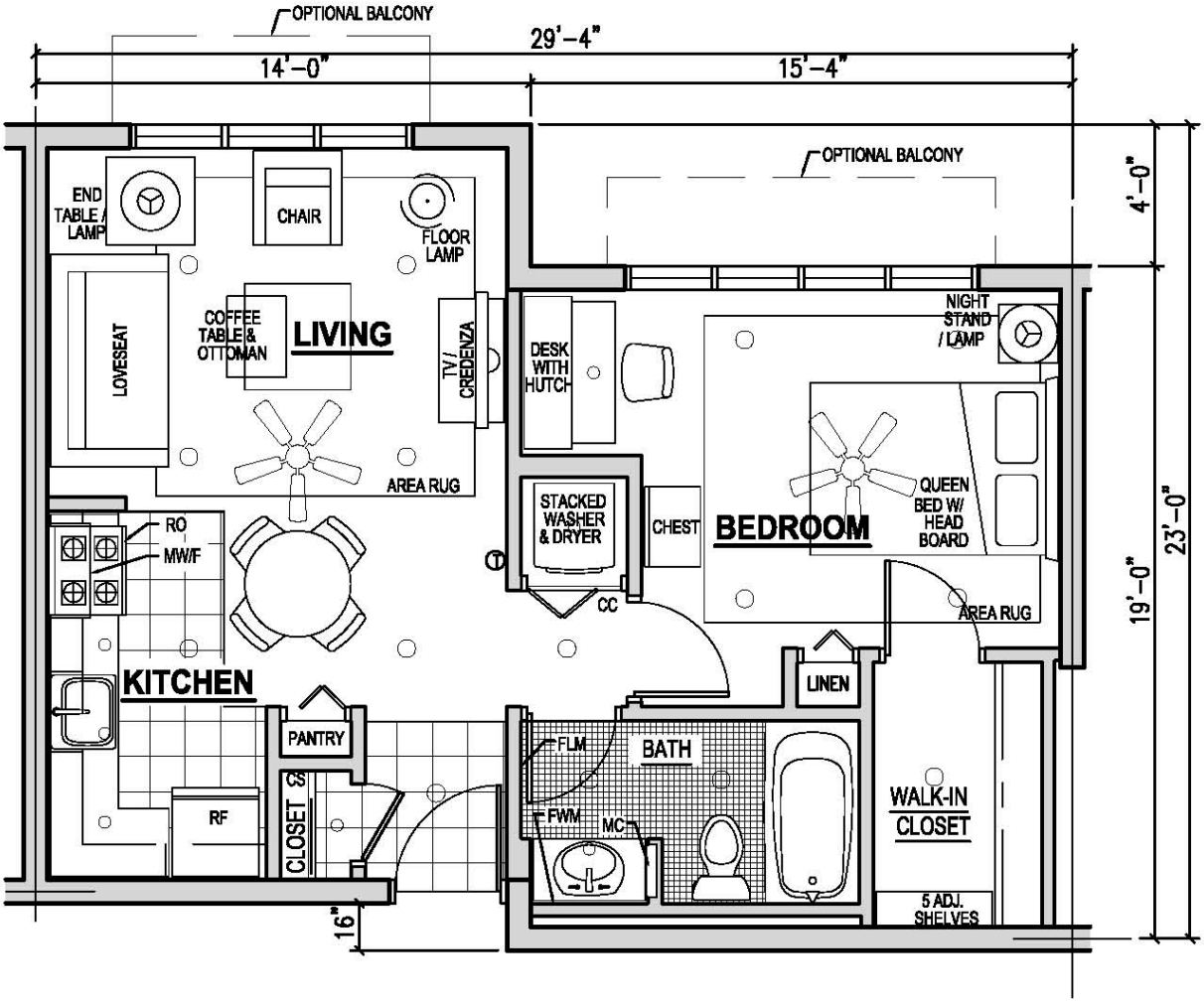
LEGEND:

FLM	FULL LENGTH MIRROR	MW	MICROWAVE
FWM	FULL WIDTH MIRROR	RF	REFRIGERATOR
MC	MEDICINE CABINET (2 STACKED)	SS	SOLID SURFACE SHOWER ENCLOSURE
CL	CLOSET SHELVES & RODS		

NOTE: REFER TO UFC FOR GROSS AND NET AREAS

0 2' 4' 8' 0 500 1000 2000 mm

Figure D-9 Marine Corps SNCO/Officer's Room Plan



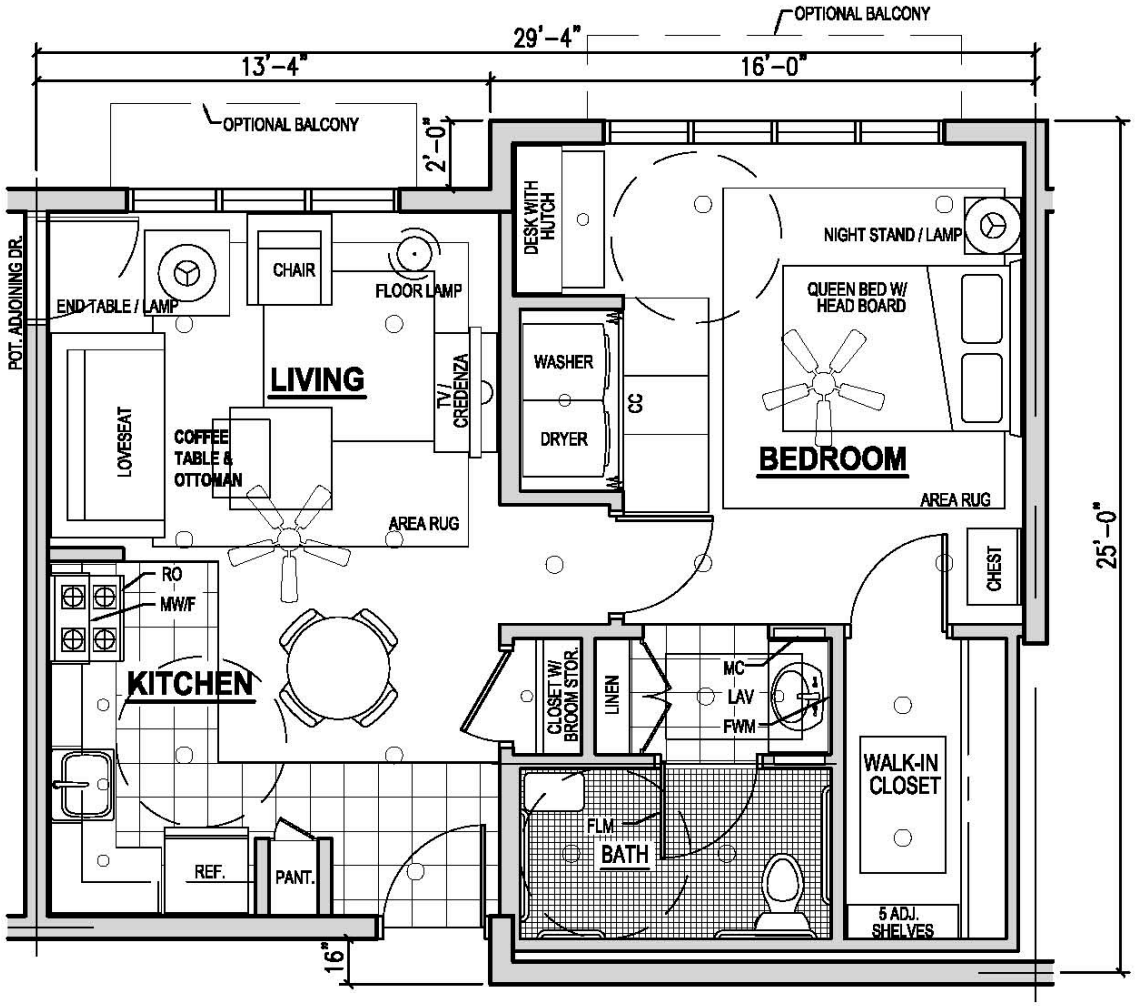
LEGEND:

Ⓣ	HVAC CONTROL	CC	CONTAINMENT CURB
FLM	FULL LENGTH MIRROR	RF	REFRIGERATOR
FWM	FULL WIDTH MIRROR	CS	CLOSET SYSTEM
MC	MEDICINE CABINET	RO	RANGE OVEN
MW/F	MICROWAVE W/ RANGE FAN		

NOTE: REFER TO UFC FOR GROSS AND NET AREAS

0 2' 4' 8' 0 500 1000 2000 mm

Figure D-10 Marine Corps SNCO/Officer's Room Plan (Accessible Example)



LEGEND:

Ⓣ	HVAC CONTROL	CC	CONTAINMENT CURB
FLM	FULL LENGTH MIRROR	MW	MICROWAVE
FWM	FULL WIDTH MIRROR	RF	REFRIGERATOR
MC	MEDICINE CABINET	CS	CLOSET SYSTEM

NOTE: REFER TO UFC FOR GROSS AND NET AREAS

0 2' 4' 8' 0 500 1000 2000 mm

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APPENDIX E AUSTERE UNACCOMPANIED HOUSING

E-1 PURPOSE.

The purpose of this appendix is to provide implementation guidance for austere construction established by Commander, Navy Installations Command (CNIC). These requirements were developed to address construction of support facilities only in designated operating environments.

E-2 DEFINITION AND SCOPE.

Austere facility is defined as a structure designed and constructed with minimal infrastructure, footprint/area, and finishes incorporating applicable building codes and facility criteria to assure adherence to all health, accessibility and life safety standards and regulations required to fulfill the mission, including anti-terrorism force protection regulations as appropriate to each site. Austere facilities should be built with the lowest total ownership costs (TOC) possible, including purchase, maintenance and use of consistently available local goods.

E-3 APPLICABILITY.

Austere construction is intended for facilities in locations determined by CNIC and approved by OPNAV to be eligible for austere facilities construction. The austere standards are intended to be applied flexibly and in varying degrees to all facilities at locations designated as austere. The flexibility should be allowed to ensure the criteria are appropriate for individual austere locations.

E-4 MODIFICATIONS FOR AUSTERE CONSTRUCTION.

For austere design and construction use the facility criteria (FC) 4-721-10N, *Unaccompanied Housing* with the following (generally deductive) modifications of this Appendix.

(FC) CHAPTER 3 GENERAL DESIGN CRITERIA - NAVY AND MARINE CORPS.

3-2 SITE DESIGN

Add the following to the FC paragraphs. Apply austere decision making to assess, modify and incorporate requirements such as pedestrian circulation, vehicle parking, and lighting plans appropriately to local conditions.

3-2.3 Parking

Delete the FC paragraphs and use the following. Apply austere decision making to assess, modify and incorporate requirements such as pedestrian circulation, bus

access, service vehicle parking, and lighting plans appropriately to local conditions and to limit parking as much as possible while still meeting the facility mission. Review the security study and incorporate its requirements into the design. Ensure existing and proposed parking is in compliance with antiterrorism requirements. In austere facilities parking for residents, visitors, staff, and service personnel should be extremely minimal and only to the mission. Maintenance parking for service functions does not necessarily require dedicated space. Use the expected frequency of maintenance vehicles to determine whether dedicated parking is needed. Locate service access and parking to avoid disturbing residents.

3-7 HISTORICAL STRUCTURES.

Delete this FC paragraph in its entirety.

3-10 RADON.

Delete this FC paragraph in its entirety, and refer to the UFC 4-101-01 Architecture.

3-12.1 Architectural Character and Scale.

Delete this FC paragraph in its entirety. Scale should be a reflection of security and local military construction requirements.

3-12.2 Residential Character for Unaccompanied Housing.

Delete this FC paragraph in its entirety.

3-13 MODEL UNIT "MOCKUPS".

Delete the FC paragraph in its entirety. Mockups are not required in austere.

3-16 ARCHITECTURAL DETAILS AND FINISH

Add the following to the paragraphs. Austere construction requires cost effective and durable materials and finishes throughout. Refer to the Table 3-3 Austere Interior Finishes.

3-18 HARDWARE AND LOCKS.

Use the FC paragraphs with the following exceptions; Electric locks are optional in austere UH. Provide locks to BHMA standards.

3-18.5 Bathroom locks.

Delete the FC paragraph and substitute the following: Provide hardware and latches for Common Centralized Shower/ Toweling/Dressing/and adjacent Toilet only as privacy requires.

3-20 WALLS AND PARTITIONS.

Delete the FC paragraphs and use the following for austere construction. The ability to repair, refinish and reconfigure are important in austere construction. Design walls and partitions to meet appearance, acoustics and durability requirements of Navy UH. Seal edges of wall assemblies to adjacent construction to avoid flanking sound paths. Consider ease of repair and refinishing when choosing wall finishes. Proprietary finishes are prohibited. Provide corner guards on walls in public areas. Austere projects use of light-frame construction with gypsum board for interior wall construction is preferred. Concrete / masonry is optional; minimize load bearing walls where appropriate.

3-21 Interior Finishes.

Delete FC Table 3-1 and Table 3-2 and use the following Table 3-3 for Austere Finishes.

Table 3-3 for Austere Interior Finishes			
AREA/SPACES	FLOORS	WALLS	CEILING
Entrance weather Vestibule	Concrete, hardened and sealed	Match exterior building finish at sides, 2 sets of double doors at entry	Moisture weather resistant gypsum board, painted
Resident Corridors/Distribution	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Resident multi-occupant rooms	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Centralized Toilets and Showers	Porcelain tile, slip-resistant	Ceramic Tile over Gypsum Board to full height; Painted Gypsum Board at plumbing/wet walls	Refer to 3-21.2 of this appendix
Janitorial Areas	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Housekeeping Areas	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Utility Rooms	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Laundry, linens (optional)	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Laundry, resident use (optional)	Concrete, hardened and sealed	Ceramic Tile over Gypsum Board to full height; Painted Gypsum Board at plumbing/wet walls	Refer to 3-21.2 of this appendix
Laundry Storage, clean	Gypsum Board, painted	Gypsum Board, painted	Refer to 3-21.2 of this appendix

(optional)			
Laundry Storage, soiled (optional)	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Receiving (optional)	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Reception, (optional)	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Storage, cleaning fluid (optional)	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Storage, General supply (optional)	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix
Mechanical and Electrical Utility rooms	Concrete, hardened and sealed	Gypsum Board, painted	Refer to 3-21.2 of this appendix

3-21.2 Ceilings.

Delete the FC paragraph and use the following. Suspended acoustical ceilings and blown-on acoustical ceiling finishes are prohibited. Ceilings are to be exposed and painted, including all exposed plumbing mechanical and electrical conduit, unless it is more cost effective to provide a hard finished (gypsum board) painted ceiling.

3-21.3 Paint.

Delete the FC paragraphs and use the following. Interior (and Exterior) surfaces requiring paint must use a minimum of one prime coat and two finish coats.

3-21.4.5 Base Molding.

Revise the paragraph as follows. For porcelain or ceramic tiled areas, use matching or cove base trim. For all other flooring, use coved rubber molding.

3-21.5 Cabinets, Millwork, and Hardware.

Delete the FC paragraph and substitute the following: Construct cabinets to American Woodworking Institute Custom grade with heavy-duty hardware. Centralized / Group

bathrooms provide solid surface vanity tops with integral bowl lavatories. Toilet / Shower partitions (if applicable) shall be solid plastic (HDPE) or Color-through Phenolic.

3-21.6 Toilet Accessories.

Delete the FC paragraph and substitute the following: Provide toilet accessories as surface mounted or recessed, of non-corrodible metal or tile. Provide toilet paper holders, soap dishes, and bathrobe hooks. Provide shower curtain rods set at proper height for conventional shower curtains.

3-21.7 Window Treatments.

Delete the FC paragraph and substitute the following. Include window treatments (shading systems) as an integral part of the construction contract. Dual fabric solar roller shade systems with manual roll chain operation are recommended. Consider solar conditions when selecting a window treatment. Dual solar shade system provides visual privacy and natural light, with black out properties available as required Side tracks can add durability, stability and reduce light leakage.

3-21.8 Furnishings, Fixtures and Equipment, (FF&E).

Delete the FC paragraphs and substitute the following:

FF&E procurement packages shall be designed by the same design agent as the facility to ensure complete coordination. Final approval of FF&E specifications will be determined by the design team to include guidance/input received from the respective NAVFAC Interior Designers. Use of turn-key approach to FF&E procurement within military construction projects is directed to the greatest extent possible and practical. This will ensure a coherent FF&E package and the most practical use of funding.

Specified furnishings shall be as minimal as possible to meet the required mission of the facility. Durability, flexibility and sustainability shall be the major prerequisites for all products provided. The standard to follow shall require easily maintained, non-corrosive finishes. Special attention shall be given to the geographical location and extreme weather conditions of the facility to provide the most practical solutions to endure the situation. Surge capabilities shall be considered as required by the specific location and facility requirements.

3-26 SUSTAINABILITY.

Delete the FC paragraph and substitute the following: Do not register or certify projects designated austere. The Chief Engineer of NAVFAC has waived LEED Registration and Certification requirements for projects designated austere (OCONUS). However, requirements for the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (HPSB) remain. Refer to UFC 1-200-02 for criteria associated with HPSB.

3-27 COMMISSIONING

Delete the FC paragraph and substitute the following: Austere projects require fundamental commissioning or an equivalent process. At a minimum, commission the following systems: HVAC systems and controls, lighting controls, and if provided, day lighting controls, refrigeration systems and controls, renewable energy systems and domestic hot water systems. Refer to UFC 1-200-02.

3-28 PLUMBING.

Delete the FC paragraph and substitute the following: Avoid plumbing chases whenever possible by placing plumbing in wall cavities. Fixture clearances should be appropriately sized for the intended occupants and use low-flow Water Sense requirements where feasible.

- Centralized or common toilet areas are to be standard for austere housing. The International Plumbing Code (IPC) uses the term "Bathroom Group" for fixtures located together on the same floor. These bathroom groups should be centrally located at each floor within each building and designed with consideration to the local male/female resident privacy requirements. No tub-showers or bathtubs are allowed in austere construction. Provide all fixtures in accordance with the UFC 1-200-01 and IPC, for water closets and urinals, lavatories and service sinks, and individual curtained dressing/showers.
- Provide hot and cold water to laundry facilities if applicable.
- Provide easily accessible shutoff valves at all fixtures.
- Water Closets. Water Closets must be commercial quality. It is recommended that areas with low water pressure use power-flush type water closets. Use elongated, one-piece construction with a closed front seat and a lid. Provide matching water closets and bath fixtures in neutral color.
- Provide hose bibs on one exterior wall of each building and near rooftop mechanical units; frost-free as dictated by climatic conditions. Provide floor drains in all janitor closets, and laundry rooms, if applicable.
- Provide a single drinking fountain with cooler in accordance with the IMPC.
- Provide a building- wide hot water system.
- Provide the following fixtures as standards: Faucets at lavatories must be single-lever and washer-less. Provide overhead rain fall type showerheads with maximum 2.2 gpm flow rate, low-flow if applicable. Locate showerheads a minimum of 75 inches (190.5 cm) above the shower base.

- Showers are to have porcelain tile bases sloped to drains, with full height surrounds. New construction shall provide a 12 sf shower space with a minimum dimension of 30 inches (76.2 cm).

3-30 GENERAL REQUIREMENTS FOR UNITS AND ROOMS.

3-30.2.1 Service Area.

Delete the FC paragraph and substitute the following: Austere bedrooms do not have service areas. All bedrooms will use a common bath toileting area that is ideally centralized within the building and may be divided for male and female use.

3-30.17 Lobby, Vestibule, and Reception.

Delete the FC paragraph and substitute the following: Provide a weather vestibule with two (2) sets of doors. Lobby, and Reception areas are prohibited in austere.

Chapter 4 NAVY UNITS.

Delete the FC Chapter 4 NAVY UNITS except as follows:

4-1.3 The Unit.

Delete the FC paragraph and substitute the following: Each austere bedroom will be a simple open room sized 288sf net for habitation by four (4) persons; that is 72sf net area per person in each room. They do not contain any service area or toilets within the rooms. UH occupants will use centralized toilet facilities.

4-2.1 Unit Details.

Delete the FC paragraph 4-4.1 The Market Unit, and substitute the following:

- Living/Sleeping Area. Bedrooms are intended for occupancy by 4 persons. Bedroom dimensions are not fixed, but must remain functional to accommodate four (4) twin extra-long beds; two (2) desk units, two (2) chairs, and four (4) wall lockers.
- Personal closets are not included in Austere UH construction.
- Bathroom Groups (Common Centralized Shower /Toileting) - refer to Plumbing paragraph 3-28 to describe requirements for "Bathroom Groups" Common bathroom groups will consist of shower/dry toweling/ dressing/and adjacent toileting areas which are to be centrally located for division for male / female personnel occupancies at each floor.
- Centralized Laundry. The Austere requirement for laundry is optional. If provided, locate a single centralized laundry at the ground floor only if no other laundry facilities are within a reasonable co-location. Provide one (1)

washer and two (2) dryers for every twenty (20) residents, as a minimum. Stacked units are acceptable. Provide a single laundry room for easy access and provide acoustic separation from other areas. Provide 12 linear feet of folding table(s), a clothes hanging area with hanging rods and 4 ft (1.25 m) of full height hanging for drip-dry clothing. Set aside a space of 24 inches x 48 inches for soap, bleach, fabric softener and other laundry aid vending.

Delete the FC Chapter 5 MARINE CORPS ROOM PLANS.

Delete the FC Chapter 6 OPEN BAY.

Delete the FC APPENDIX B. BEST PRACTICES.

Delete the FC APPENDIX D FIGURES.

END OF APPENDIX E.

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