UFC 4-721-10 31 July 2002
including change 3, 19 January 2009

UNIFIED FACILITIES CRITERIA (UFC)

NAVY AND MARINE CORPS BACHELOR HOUSING

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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

Change No.	Date	Location
1	20 AUG 02	Chapter 8 –deleted.
2	4 Oct 07	Revised Marine Corps requirements.
3	19 Jan 09	Revise Navy requirements

This UFC supersedes Military Handbook MIL-HDBK-1036A, dated 6 August 1997, and Interim Technical Guidance ITG 01-03 Navy Bachelor Housing Design, dated 18 September 2001.

FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with USD (AT&L) Memorandum dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. 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 more stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

UFC are living documents and will be periodically reviewed, updated, and made available to users as part of the Services' responsibility for providing technical criteria for military construction. Headquarters, U.S. Army Corps of Engineers (HQUSACE), Naval Facilities Engineering Command (NAVFAC), and Air Force Civil Engineer Support Agency (AFCESA) are responsible for administration of the UFC system. Defense agencies should contact the preparing service for document interpretation and improvements. Technical content of UFC 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 (CCR). The form is also accessible from the Internet sites listed below.

UFC 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/.

Hard copies of UFC printed from electronic media should be checked against the current electronic version prior to use to ensure that they are current.

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UNIFIED FACILITIES CRITERIA (UFC)

REVISION SUMMARY SHEET

Document: UFC 4-721-10 -CHANGE 3, 19 January 2009
Superseding: UFC 4-721-10 Change 2 of 4 October 2007

Description of Changes: This document has been revised to include new Navy design criteria and to add the description and requirements for Market Style apartments. These apartments have room patterns and floor areas similar to private sector housing in the local community, e.g., two-bedrooms, two-baths, living room, laundry, and kitchen.

Reasons for Changes: The Secretary of the Navy authorized the Navy to construct Market Style apartments on the condition that the Navy adopts innovative design and acquisition procedures for these projects, including private sector construction standards to minimize the cost impact from enlarging the UEPH units. This change was authorized by waiver to UEPH Design and Construction Standards on 16 August 2006.

Impact: These changes were evaluated to provide minimal impact to cost, as part of the Secretary of the Navy's program for QOL enhancements.

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CHAPTER 1 INTRODUCTION

1-1 SCOPE.

The Navy and Marine Corps will use this UFC. It presents basic design criteria guidance for Navy and Marine Corps Bachelor Housing, and applies to both enlisted and officer quarters, taking into account local program operations and requirements, in accordance with the latest construction standards established by the Office of the Secretary of Defense (OSD). This UFC includes planning and design criteria for renovation and new construction of Navy and Marine Corps Bachelor Housing. Planners and designers must incorporate the requirements of Chapters 2 and 3 in all projects, as well as the requirements of the applicable portions of Chapter 4 for the appropriate type of Bachelor Housing.

1-1.1 Army Criteria.

The Army will use TI 800-01, *Design Criteria, Appendix B, Unaccompanied Enlisted Personnel Housing (UEPH)* and UFC 4-721-11.1, *Unaccompanied Enlisted Personnel Housing (UEPH) Complexes*, Volumes 1 and 2 published in November 2001.

1-1.2 Air Force Criteria.

The Air Force will use the *Air Force Enlisted Dormitory Design Guide*.

1-2 GENERAL DESIGN CRITERIA.

References within this UFC to applicable criteria and codes are intended to assist the designer in compiling 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.

Use UFC 1-200-01, *General Building Requirements*, for guidance on the use of model building codes for design and construction of DoD facilities.

1-3 APPLICABILITY AND MINIMUM STANDARDS.

This UFC provides information required for preparation of both Navy and Marine Corps Bachelor Housing design, including Market Style Housing constructed by Design-Build, Design-Bid-Build, or Public-Private Venture. It is applicable to projects inside the Continental United States, (CONUS), and Outside the Continental United States (OCONUS). It applies to new facilities and restoration and modernization projects, providing the information needed to produce a design for a specific project. Use this UFC in conjunction with Department of Defense (DoD) and other Department of Navy criteria related guidance. This UFC is not a substitute for programming research by the designers, and it recognizes that local climates, geography, communities, mission needs, and changing programs necessitate some special requirements for Navy and Marine Corps Bachelor Housing. It does, however, establish minimum design standards that must be followed. Designers are encouraged to exceed these standards for Bachelor Housing within budgetary constraints where appropriate. This document

also establishes certain maximum standards that shall not be exceeded. However, the Secretary of the Navy has granted a waiver to these constraints for Market Style Housing (see 1-6). The standards provide criteria for determining site evaluation and planning, landscape design, facility design, and interior design.

1-4 CANCELLATION.

The Secretary of Defense directed the implementation of a new 1+1 standard size for permanent party unaccompanied enlisted housing in November 1995. This was implemented in Military Handbook 1036A Bachelor Quarters dated 6 August 1997. In June 2001, the Secretary of Defense increased design options for the 1+1. Navy implemented the revised criteria for all permanent party quarters by CNO letter 4000 Ser N463/1U596286 of 16 August 2001, and again by Interim Technical Guidance (ITG) in September 2001. This UFC cancels and supersedes MIL-HDBK-1036A, Bachelor Housing, dated 6 August 1997, and ITG 01-03, Interim Technical Guidance Navy Bachelor Housing Design, issued 18 September 2001, and constitutes Change 3 to the UFC 4-721-10, dated 4 October 2007.

1-5 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.

1-6 WAIVERS.

The criteria described in this UFC is written specifically for new and replacement construction, and restoration and modernization where feasible. Do not alter the criteria without a waiver from the Assistant Secretary of the Navy (Installations and Environment). The Assistant Secretary implements facility standards for the Office of the Secretary of Defense (OSD) and has been delegated authority to waive these standards by OSD. Send waiver requests via the chain of command to the NAVFAC Atlantic criteria POC. The POC is David M. Young, RA at david.m.young@navy.mil.

1-6.1 For the Navy.

a. The POC will discuss the waiver with the claimant and the Navy Bachelor Housing Program Management Office (BHPMO). POC will then forward the waiver with recommendations to the Assistant Secretary of the Navy (Installations and Environment) via the Navy BH PMO and Director, Ashore Readiness Division (N46). N46 is responsible for the planning, programming, and policy for Navy Bachelor Housing.

b. On 16 August, 2006 the Secretary of the Navy granted a waiver to the design and construction standards in Secretary of Defense (SECDEF) and Deputy Secretary of Defense (DEPSECDEF) memorandums dated 6 November 1995 and 25 June 2001, respectively, for various Navy Military Construction UEPH projects. The waiver authorizes the Navy to construct *market-style apartments.*

Market-style Apartments are designed to have features, room patterns, and floor areas similar to private sector housing in the local community. The waiver is granted on the condition that the Navy adopts innovative design and acquisition procedures for these projects, including private sector construction standards, to minimize the cost impact from enlarging the UEPH components.

1-6.2 **For the Marine Corps.**

The POC will discuss the waiver with the Marine Corps Base Facilities Office who will then forward the request 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 Bachelor Housing. The waiver will be discussed with the requesting site and forwarded with recommendation(s) to the Assistant Secretary of the Navy (Installations and Environment) via the Commandant of the Marine Corps (CMC).

CHAPTER 2 PLANNING AND LAYOUT

2-1 PROJECT INITIATION AND PLANNING.

This UFC 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 Naval Facilities Engineering Command (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 Site Selection.

Site selection is a key aspect of initial project development and requires thoughtful consideration. This is part of a comprehensive planning process. Complete a preliminary site analysis in accordance with UFC 3-200-10N, “Civil Engineering” prior to submission of a military construction project. After site selection and approval, thorough site and field investigations are performed.

a. For Navy projects, follow the established planning process.

b. For Marine Corps projects, follow the site selection process in accordance with the Installation Master Plan.

2-1.2 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, major claimant, design agent, and architect/engineer (A/E) team then develops project requirements based on an analysis of unique customer needs and 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, and a Market Study for Market Style apartments. Unique local requirements concerning building program and design criteria are included in the PCE.

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

b. Conduct a Market Study and Economic Analysis for each Market Style Apartment project, to determine a project’s best fit into the local market. The study shall be performed by:

1. The entity designated by the Project Manager on a Design-Bid-Build project,

2. The author of the Design-Build Request for Proposal (RFP).

2-2 ASSIGNMENT STANDARDS.

The assignment composition for a project establishes the plan used to compose the design of the building. For example: New Navy construction programmed for "permanent party" use would adopt the "Market Style" or "1+1E" Apartment plan as its basic design element, and Navy construction programmed for "transient" use would adopt the 2+0 Room plan. Note that bachelor housing facilities are constructed to one assignment standard, but may be temporarily used for another assignment as critical requirements demand.

a. The minimum assignment standards for Navy personnel are described in DoD Manual 4165.63-M, *DoD Housing Management Manual, latest version*.

b. The assignment standards for Marine Corps personnel are described in Marine Corps Order (MCO) P11000.22, *Housing Management Manual* and the *Bachelor Enlisted Quarters (BEQ) Campaign Plan* (latest version). Refer to DoD 4165.63-M, *Housing Management,* latest version for additional information.

2-3 STANDARDS FOR REPAIRS.

Repairs of existing facilities originally designed for current assignment standards (found in DoD Manual 4165.63-M or MCO P11000.22) are permitted; renovation with the sole purpose of accommodating these standards is not necessary. Implement UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, if building renovations, modifications, repairs, and restorations exceed 50% of the replacement cost of the building, exclusive of the cost to meet the requirements of UFC 4-010-01. See UFC 4-010-01 for additional requirements affecting existing buildings. Coordinate repair, special projects, and construction with public works programming guidance in accordance with OPNAVINST 11010.20, *Facilities Projects Manual*, or MCO P11000.5, *Real Property Facilities Manual, Vol. IV*.

2-4 FACILITY FUNCTIONS.

Three basic functional activities must be addressed in Navy and Marine Corps Bachelor Housing. These three basic functional areas are interactive. Designers must fully understand these relationships and take a holistic approach to creating a fully integrated facility. Where Navy and Marine Corps terminology differs for the same entity, the Navy terminology will be given followed by the Marine Corps terminology in parenthesis, i.e., Common Areas (Spaces).

a. Navy basic living units are referred to as the "Market Style Apartment", the "1+1E Apartment", the "2+0 Room", and the "2+2 Module".

b. Marines use the term “Room” in reference to their basic living unit, the “Marine Corps 2+0”.

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

2-4.1 Apartments, Rooms, and Modules.

The basic living unit is composed of a bedroom, personal storage closet, bathroom, sink/personal hygiene area, food preparation area, telephone, cable, and computer outlets for each occupant within the room.

2-4.2 Building Common Areas (Spaces).

Building Common Areas (Spaces) are programmed spaces within the building that are not included within the Room or Module except for the Market Style and 1+1E Apartments which both include a washer and dryer. Laundry facilities, bulk storage, utility space, mail service area, circulation space, multipurpose space, vending areas, public toilets, supply storage rooms, and administration area may make up the common areas (spaces) if permitted for that room or module.

a. Allowances for Common Areas (Spaces) vary depending upon the plan used.

b. Not all Common Areas (Spaces) are permitted or available for all plans.

2-4.3 Recreation and Community Areas (Spaces).

Recreation and Community Areas (spaces) are outdoor activity areas. See Chapter 3 section titled “Outdoor Recreation.”

2-5 NAVY NEW CONSTRUCTION STANDARDS.

The criteria standards to be followed for new construction, Restoration, and Modernization are determined by the planned use of the facility.

2-5.1 Permanent Party Bachelor Housing.

Use the Market Style Apartment or the 1+1E Apartment for the following permanent party personnel.

a. Rotationals in Homeport.

b. Shipboard Sailors in homeport.

c. Shore Duty and crew members of small ships.

d. Students in training over 20 weeks.

2-5.2 **Visitors Quarters.**

Use the Navy 2+0 Room for the following transient personnel:

a. Crewmembers of Uninhabitable Ships.

b. Deployed Rotational Units.

c. Personnel on TEMDUINS orders to schools not supported by Dormitory berthing (see below).

d. Personnel on TDY orders.

e. Transient Personnel Units (TPU). That portion occupied by the non-disciplinary service-member.

2-5.3 **Dormitories.**

Use the 2+2 Module for the following student personnel.

a. Students assigned to initial assignment training, e.g., "A" School.

b. Officer Indoctrination School (OIS).

c. Naval Academy Preparatory School (NAPS).

d. Broadened Opportunity for Officer Selection and Training (BOOST).

e. Students assigned to Special Environment Training such as Basic Underwater Demolition/Seal (BUD/S) Training and Survival Escape Resistance Evasion (SERE) School when not on field training, Dive School, and OCS.

2-5.4 **Recruit Barracks and Officer Candidate School.**

Use an Open Bay Plan.

2-5.5 **Transient Personnel Units (TPU).**

That portion of TPU facilities that houses disciplinary service-members is single occupancy.

2-5.6 **Geographic Bachelors or Permanent Party Civilians.**

The Navy does not plan or construct for Geographic Bachelors or Permanent Party Civilians in CONUS and Hawaii (see DoD 4165.63M).

2-6 MARINE CORPS NEW CONSTRUCTION STANDARDS.

The criteria standards for new construction, Restoration, and Modernization for Marine Corps Bachelor Housing are referred to as Permanent Party, Transients, or Recruits/Trainees. The term "Transient" refers to the official Government traveler on TDY/TAD or PCS orders; this type of facility is not addressed within this UFC for Marine Corps.

2-6.1 Permanent Party.

Use the Marine Corps 2+0 Room for all permanent party bachelor personnel stationed to an installation or personnel attending training. Note: The Navy and Marine Corps 2+0 plans differ.

2-6.2 Recruits and Trainees.

Use the Open-Bay Plan. These include initial accession/basic training, Military Occupational Specialty (MOS) training. For follow-on MOS training, use the 2+0 room plan.

2-6.3 Geographic Bachelors and Civilians.

The Marine Corps does not plan or construct barracks for Geographic Bachelors and Civilians.

2-7 DESIGN LIMITATIONS.

The Apartment, Room, and Module Plans shown in the graphic examples are the basic building blocks from which Bachelor Housing designs are developed. The layouts are provided to promote uniformity. The plan designs may be altered, but the mandatory limits require that any variations be small. Required Common Areas (Spaces) for each plan differ. Refer to the specific Market Style Apartment, 1+1E Apartment, Room or Module section within Chapter 4 for a detailed description of required Common Areas (Spaces). All plan features must be included as a mandatory minimum.

a. The Net Living/Sleeping Area must be met or exceeded.

b. The Gross Area maximums must not be exceeded.

c. Plan room dimensions are NOT fixed, but must remain functional. Living/sleeping areas in a room configuration and bedrooms in the apartment configurations must be sized to accommodate two (2) extra-long twin beds.

2-8 GROSS BUILDING AREA.

The gross building area for Navy and Marine Corps Bachelor Housing must not exceed the specific limits for the applicable plan being used; except in Market Style Housing, where the unit size will be determined after a study of the local community standards. The Plan sizes vary, and some have been enlarged to accommodate quality of life

features within the rooms at the expense of the common areas (spaces). Not all Common Areas (Spaces) are permitted or available for all 1+1E Apartment, Room, or Module plans. Refer to the specific 1+1E Apartment, Room or Module plan section within Chapter 4 for a detailed description of required Common Areas (Spaces). When calculating the Gross Building Area, measure from the outside face to the outside face of exterior walls.

2-8.1 **Gross Building Area = Apartment, Room or Module + Common Area (Space).**

See descriptions below for area calculations for non-elevator walk-up facilities.

a. Market Style Housing: Determine the Gross Building Area using the Market Study and Economic Analysis. There may be additional amenities and additional square footage allocations required to compete in the local community market.

b. 1+1E Apartment: The maximum allowed per plan Gross Building Area of 710 ft^2 (66m^2) was established by Secretary of Defense letter of 6 November 1995.

c. Navy 2+0 Room: The maximum allowed per plan for Gross Building Area is 517 ft^2 (48m^2).

d. Marine Corps 2+0 Room: The maximum allowed per plan is Gross Building Area of 506 ft^2 (47m^2).

e. Navy 2+2 module: For 1-3 stories the maximum allowed per plan for Gross Building Area is 915 ft^2 (85m^2); for over 3 stories, it is 958 ft^2 (89 m^2).

f. Open Bay Plan: The maximum allowed per person housed for Gross Building Area is 140 ft^2 (13m^2).

2-8.2 **Scope Calculation.**

Refer to NAVFAC P-80, *Facility Planning Criteria for Navy and Marine Corps Shore Installations*, for more information on scope calculation.

2-8.3 **Half Scope Items.**

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

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

b. Stairs and Stairwells: half of the horizontal projection of the stair per floor they serve.

c. Elevators and shafts: count as half scope per floor that they serve.

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

2-8.4 Excluded Scope Items.

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

a. Roof overhangs;

b. Mechanical equipment balconies;

c. Exterior sidewalks that serve rooms at ground level.

2-8.5 Additional Gross Area.

Multi-level construction requires additional structural and mechanical support. Therefore, for buildings above three (3) stories an additional area may be added to the allowable gross building area. This must be identified and justified as a separate item in the DD 1391 documentation. Seek further guidance from your respective Service. Refer to each Apartment, Room, or Module Plan section within Chapter 4 for a description of the specific added allowance. This does not apply to Market Style apartments.

2-9 GROSS AREAS FOR APARTMENTS, ROOMS, AND MODULES.

Gross Area for Market Style Apartment, 1+1E Apartment, Room, or Module is defined as the area within the walls comprising the perimeter of an Apartment, Room, or Module.

a. Wall thickness and chase areas within the perimeter walls are included in the Gross Area.

b. Gross Area is measured from the centerline of perimeter walls shared with interior corridors, common chases, or other rooms.

c. Gross Area is measured to the outside face of exterior walls.

d. Plan corner rooms with two (2) exterior walls to have the same interior dimensions as other rooms, even though, technically, the Gross Area for these corner plans is slightly more than for other plans.

2-9.1 Net Living/Sleeping Area.

Net Living/Sleeping Area describes the actual usable space in each sleeping/living area.

a. Net Living/Sleeping Area is measured from the inside face of one wall to inside face of the opposing wall.

b. Door swing areas, and mechanical unit areas which specifically serve the occupant, are included in net calculations.

c. Areas excluded from Net Living/Sleeping Area calculations are areas not privately controlled by a occupant, e.g., shapes furred to hide through-the-wall equipment or used for storage not specific to the Market Style Apartment, 1+1E Apartment, Room, or Module, furred-out columns, pilaster, and mechanical or plumbing chases that extend into the living and bedroom area from the wall plane, if such items extend from floor to ceiling; and bulk storage areas not accessible from within the Market Style Apartment, 1+1E Apartment, Room, or Module.

CHAPTER 3 GENERAL DESIGN CRITERIA

3-1 SITE DESIGN.

Analysis of existing site conditions (e.g., utilities and plant material, traffic patterns, land use, community facilities, and off-site workplaces) is important for effective site design. Evaluate and analyze the following site standards in conjunction with the risk analysis and vulnerability assessment (RAVA) to ensure the optimum solution is selected. The requirements of the UFC 4-010-01, *DoD Minimum Antiterrorism Standards For Buildings*, take precedence over all other requirements.

3-1.1 Orientation.

Site Navy and Marine Corps Bachelor 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.

3-1.2 Site Organization.

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. Site housing 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 occupant's activities.

3-1.3 Finished Floor Elevation.

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 and interior-exterior transitions. In addition, the finished floor elevation has a significant impact on the landscape architect's ability to effectively introduce plant/vegetation 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. Provide the facility's minimum finished floor elevation and the mechanical/electrical equipment pad elevations in accordance with UFC 3-200-10N, *Civil Engineering*.

3-1.4 Storm Drainage.

Depending on the geographic location and the availability of nearby subsurface storm drains, provide underground storm drainage for the bachelor housing complex. Either intercept site water in drop inlet structures or design to drop directly into a subsurface system. If subsurface storm drains are not available at the proposed site, then program them as part of the project. As a minimum, divert surface water to an underground

system to a point where it is discharged into aboveground storm drains. Discharge water from downspouts onto splash blocks that prevent damage to surrounding plantings and vegetation. Provide for drop inlets as necessary to intercept surface runoff and prevent walkways from flooding. For design of the storm drainage system, use the minimum storm frequency indicated in UFC 3-200-10N, *Civil Engineering*.

3-1.5 Grading.

Grade the site to achieve an orderly transition from the point where personnel enter the site by automobile or on foot, to the point where personnel are at the first floor elevation. Provide grading in accordance with UFC 3-200-10N, *Civil Engineering.*

Consider the impacts of the parking area, bus stop shelters, sidewalks, outdoor passive use areas, mechanical equipment, and trash dumpsters on site grading. Where appropriate, use grading to control the negative impacts these man-made facilities have on the visual environment, such as shielding trash dumpsters, etc.

3-1.6 Walkways and Sidewalks.

Locate and size walkways efficiently and pleasantly to connect occupants 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. Light walkways for safety without spilling light into residential units. Consider security in all circulation designs.

a. Construct walkways to building entrances to be 8 feet (2.5 meters) wide.

b. Construct sidewalks used for troop formations to be as much as 28 feet (8.5 meters) wide.

c. Construct typical pedestrian sidewalks to be 6 feet (2 meters) wide.

3-1.7 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.

3-1.8 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 occupant, visitor, staff, and service personnel parking that is convenient, safe, and pleasant to use. Locate and shape parking areas to improve the residential environment. Use landforms such as berms, retention ponds, and tree

islands to separate parking from other functional zones and to buffer the residential area from possible surrounding adverse environment.

a. Provide barrier-free parking spaces for occupants, visitors, and staff in accordance with the Secretary of Defense Memorandum dated 20 Oct. 93, subject: *Access for People with Disabilities*; and PDPS 94-01, NAVFAC Planning and Design Policy Statement, *Barrier Free Design Accessibility Requirements*, 26 May 94, revised 1 Jun 97.

b. Provide accessible parking to persons with disabilities and place within the main parking area with access to the main entrance.

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

d. Provide standard parking spaces for 70% of the occupant capacity and motorcycle parking for 5% of the occupant capacity. Provide dedicated spaces with concrete paving. Provide bicycle parking, as necessary, for 5% of the occupant capacity with secure, weather protected, conveniently located facilities. Provide visitor parking for 2% of the occupant capacity. Locate two (2) 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.

3-1.9 Vehicular Service to Building.

Antiterrorism requirements take precedence over all other requirements.

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

b. Design access streets and parking areas to accommodate service vehicles and fire protection equipment. Where interior court areas are 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 construct using reinforced concrete to accommodate medium weight vehicles. 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.

3-1.10 Bus Route Access.

Consider developing shelters and walks to serve personnel needs if the installation provides bus service. Design bus shelters to be compatible with the architectural style of existing buildings, Base Exterior Architectural Plan (BEAP), and existing bus shelters

on base. Program at least one bus shelter for each major housing complex. Coordinate with the installation in selecting a new style that is programmed with new projects, where existing shelter designs need upgrading.

3-1.11 Utility Corridors.

Develop utility corridors in coordination with the Installation community planner, electrical, mechanical, and civil engineers. Size corridors to accommodate future expansion. Locate utility corridors no closer 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.

3-1.12 Fire Protection Access.

Site new structures a minimum of 39 feet (12 meters) laterally from the closest adjoining building. Provide fire department access to three sides of new buildings. Provide fire lanes and turn-a-rounds in accordance with NFPA 101, *Life Safety Code*. (Refer to UFC 3-600-01, *Fire Protection Engineering for Facilities*.)

3-1.13 Outdoor Furniture.

Select outdoor furniture that is in harmony with the architectural style of the new and surrounding existing facilities, compliments the building, and makes the outdoor spaces more usable and organized. The landscape architect shall coordinate the selections with the building 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. Consider trash receptacles, seating, picnic shelters and grills, lighting, and bus shelters.

3-1.14 Mechanical Enclosures.

Screen mechanical equipment such as chillers, evaporating condensers, switchgear, and electrical transformers. Use architectural screening materials that complement the architectural style and 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.

3-1.15 Trash Dumpsters.

Locate dumpsters in areas away from main entrances, while still providing a convenient location for occupants 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. Design screening low and in

cognizance of the requirements of the Risk Analysis and Vulnerability Assessment and security requirements.

3-1.16 Planting and Vegetation.

Place in the ground plantings and vegetation that create an aesthetically pleasing landscape that conserve water and resources while minimizing maintenance requirements. The fundamentals of good landscape planning include proper planning and design, plant selection, use of turf alternatives and mulch materials, zoning of plants in accordance with water requirements, soil improvements, efficient irrigation, and appropriate maintenance.

3-1.17 Landscape Maintenance Provisions.

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

a. Irrigation;

b. Mowing and edging, replacing mulch;

c. Inspection, control of pests and weed control;

d. Tightening, staking and guying materials, pruning, fertilization;

e. Maintaining watering saucers.

3-1.18 Irrigation.

Provide projects developed in arid and semi-arid climatic regions with irrigation systems, where it is possible to do so and in compliance with sustainability guidelines.

3-1.19 Outdoor Recreation.

When providing sand volleyball court and full basketball facility or other appropriate outdoor recreation amenity, light these facility areas for evening use. Passive outdoor recreation is to be supported by grouped seating, picnic facilities, and shaded areas. Locate these recreation functions to reduce interference from other functions on and near the site. Shelter or screen both active and passive recreation facilities to temper wind and other climate elements. Where appropriate, install a pavilion as an integral part of the bachelor housing complex. Design pavilions to compliment the architectural style and materials of the project. Compliment these multi-use areas with additional facilities such as barbecue grills, tables, benches, lighting, and landscape plants and vegetation.

3-2 STRUCTURAL DESIGN.

In addition to the criteria established in Section 3-1 of this document, refer to UFC 3-310-01, *Structural Load Data*. For Navy projects, also comply with UFC 3-300-10N, *Structural Engineering*. In the near future all DoD projects shall comply with UFC 3-300-01, *Structural Engineering*.

3-2.1 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 that achieves the architectural design intent. Select an economical structural system based on:

a. Facility size;

b. Load requirements;

c. Geotechnical conditions and foundation design based on local experience;

d. Antiterrorism considerations; progressive collapse for buildings of three stories or greater;

e. Local availability of materials and labor;

f. Local construction practices;

g. Experience of inspection personnel;

h. Resistance to fire.

i. Permafrost conditions;

j. Construction schedule.

3-3 RENOVATION LIMITATIONS AND REQUIREMENTS.

a. All features must be provided as a minimum, e.g., one (1) medicine cabinet per occupant.

b. Do not renovate for the sole purpose of meeting new construction criteria standards if the existing housing currently meets assignment criteria.

c. Adjust designs to work within reasonable architectural practice.

d. The minimum living/sleeping area (for the applicable Plan) is required and must be provided as a clear area. This takes precedence over existing structural features.

e. A shower may be provided in place of a tub/shower in Navy Bachelor Housing. All Marine Corps bachelor housing facilities will have showers.

f. Freestanding columns are allowed, provided they do NOT interfere with a functional area.

3-3.1 Hazardous Materials Removal.

The use of asbestos-containing materials and lead-based paint is prohibited. Comply with UFC 3-800-10N, *Environmental Engineering for Facility Construction*.

3-3.2 Historical Structures.

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

3-4 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA).

Include considerations for effecting compliance with NEPA in initial planning.

3-5 ARCHAEOLOGICAL.

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

3-6 RADON.

Check *EPA's Map of Radon Zones*, to determine the radon priority area. This is located on the EPA website, http://www.epa.gov/. Also, check the results of the Navy radon survey conducted under the Navy Radon Assessment and Mitigation Program (NAVRAMP) by contacting installation environmental personnel and the Facility Engineering Command or EFA Air Pollution Engineer.

a. 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.

b. Check EPA document Model Standards and Techniques for Control of Radon in New Residential Buildings, Federal Register 59 FR 13402 dated 21 March 1994.

3-7 CHEMICAL CONTAMINANTS.

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

3-8 ANTITERRORISM.

The DoD objective is to eliminate personnel exposure to security threats in occupied Bachelor 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 UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*; DoD Instruction 2000.16, *DoD Antiterrorism Standards*; OPNAVINST 3300.55, *Navy Combating Terrorism Program Standards*; OPNAVINST 5530.14C, *Navy Physical Security*; and ; MCO 5530.14, *Marine Corps Physical Security Program Manual*. These requirements are applicable for new construction, restoration, and modernization of existing facilities.

3-8.1 Risk Analysis and Vulnerability Assessment.

During the initial planning process, the Installation Commander may conduct a risk analysis and vulnerability assessment (RAVA) to establish a design basis threat for the facility if there is a perceived threat greater than the design basis threat and / or requires a higher level of protection, than the minimum standards established in UFC 4-010-01. The RAVA examines the proposed project based upon the following considerations:

a. Facility siting and location which provides a safe standoff distance between the facility and the installation perimeter to mitigate potential effects of explosive threats in accordance with the design basis threat of the minimum antiterrorism standard or established by the customer during the RAVA process.

b. Provide a layered system of barriers to delay terrorist intruders. Provide physical and psychological boundaries which establish perimeter boundary control, exterior security control, and building level security systems to protect personnel and to comply with quality of life standards.

c. Requirements for control of vehicle access and egress from the facility using any combination of barriers, gates, electronic security equipment, signage, and guards that can deny entry to unauthorized vehicles.

d. Designation of separate entrances for deliveries, visitors, and occupant vehicles.

e. Requirements for control of pedestrian access to entrances and exits.

f. Use of a mass notification system for emergency and evacuation information.

g. Provision of security lighting systems for the facility perimeter and parking areas.

h. Multi-story high-rise construction: Buildings three or more stories require a design to resist progressive collapse.

i. Controlled access underneath, on top of, and physically adjacent to facilities.

3-8.2 Exposure to Exterior Explosive Attack.

Avoid facing main building entrances directly or broadly onto adjacent roads, parking, or vulnerable areas. Arrange rooms on a single corridor to overlook a protected courtyard. Minimize windows and other openings (fenestration) in exterior facades. Any building or portion of building in which 11 or more unaccompanied DoD personnel are routinely housed requires a minimum of 1/4 inch (6 mm) nominal laminated glass for all exterior windows and glazed doors. Focus primary windows and openings onto protected, less vulnerable areas. Detailed selection, analysis, and cost criteria are provided in MIL-HDBK-1013/12, *Evaluation and Selection Analysis of Security Glazing for Protection against Ballistic, Bomb, and Forced Entry Tactics*.

3-8.3 Secure Barracks Design of High Risk Projects.

When the risk analysis and vulnerability assessment (RAVA) of a new project identifies that a serious threat exists as defined by the guidelines of OPNAVINST 5530.14C and MCO 5530.14, the project must incorporate the following minimum design features of Secure Barracks Design. Additional features are likely to be required.

A graphic illustration of the Secure Barracks Concept is included within this UFC as Figure B-1.

a. Minimize the occupied parts of the building that are exposed to a blast. Bedrooms must be located on an interior protected side of the building, away from a likely bomb blast, and facing a protected courtyard or area with limited access.

b. Harden the building surfaces and structure that are most vulnerable to exposure. Exterior walls which face the most threatened side of the structure must be designed and constructed to absorb, withstand, and reflect the energy of a substantial blast load as defined for the established threat level.

c. Minimize access to vulnerable areas.

d. The design must incorporate these minimal design features; additional measures are likely to be required.

    1) Setbacks: Required standoff distances must be observed on all sides of the structure.

    2) Balconies: Must be designed and constructed to absorb, withstand, and reflect the energy of a substantial blast load as defined for the established threat level and in accordance with the requirements for building overhangs in UFC 4-010-01.

3) Kitchen/Bath: Kitchen and bath areas must be located at the threat side of the building as a buffer to the more frequently occupied living/sleeping areas.

4) Glazing: Limit the use of doors and windows in high-risk quarters. Minimize window sizes, and the glazing must be secure type as defined by MIL-HDBK-1013/12. Windows must be operable, and have lockable hardware. Doors and frames must meet the requirements of UFC 4-010-01.

5) Protected Courtyard: A protected courtyard may or may not be a structurally enclosed space. A protected courtyard is a space where access is limited by either structures or fencing that prevents vehicular access and provides substantial protection against access by an unauthorized person(s) or vehicle(s).

6) Other Features- Provide additional design or structural features as required to mitigate the dangers as identified in RAVA.

3-9 BUILDING DESIGN.

Form buildings to make arrival and movement through them orderly and clearly understandable by users (occupants, staff, service personnel, and visitors). Use circulation to organize and zone activities and to promote physical security. Provide a clear entrance to the building and to the various functional areas within the building. Locate functions and shape circulation space serving functions to ensure the safety of users.

3-9.1 Quality in Privacy.

Privacy for occupants of the bachelor housing facilities is of utmost importance. Recognize that these facilities serve as their homes for occupants, and should be designed accordingly.

3-9.2 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.

3-9.3 Residential Character.

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:

a. Limit building height to three (3) stories unless extreme land shortage can be documented. Where three (3) stories cannot be used, investigate using

several building heights to introduce some residential qualities to the complex.

b. Bay windows may be used to change the exterior appearance from institutional to more residential.

3-9.4 Mockups.

Construction of mockups 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.

a. For new construction, mockups may be elemental or whole, built off-site and later dismantled or built on-site and converted for actual use.

b. For Restoration and Modernization, construct mockups in place on-site and converted to actual use are the most cost effective.

c. Construct mockups for Navy construction projects and Navy Restoration and Modernization projects that contain more than 24 Market Style Apartments, 1+1E Apartments, Rooms or Modules.

d. Mockups are encouraged for Marine Corps projects.

3-10 LIFE SAFETY.

Provisions for life safety will conform to National Fire Protection Association, NFPA 101. Navy and Marine Corps Bachelor Housing are classified by UFC 3-600-01, *Fire Protection Engineering for Facilities*, as Personnel Housing.

3-10.1 Fire Protection Sprinkler System.

For new construction and rehabilitation projects, install sprinkler systems in accordance with NFPA 13 or NFPA 13R (when permitted per listing).

3-10.2 Fire Alarm Systems.

Install addressable building fire alarms systems that are compatible with the installation system and connect to the installation reporting system.

3-10.3 Smoke Detectors.

Install smoke detectors in all personnel housing facilities in accordance with UFC 3-600-01, *Fire Protection Engineering for Facilities* and NFPA 72, *National Fire Alarm Code*.

Power smoke detectors from the building electrical or fire alarm system.

Provide smoke detectors with sounder bases. Smoke detectors in living/sleeping rooms must cause the sounder base to activate in that room and an alarm signal to activate at the FACP, but must not activate the building’s evacuation alarm.

3-10.4 Carbon Monoxide (CO) Detectors.

Install approved carbon monoxide detectors in all Navy and Marine Corps bachelor housing that contain carbon-based fuel burning systems.

Power carbon monoxide detectors from the building electrical system and locate in the immediate vicinity of the living/sleeping areas.

3-11 ACOUSTICS.

Careful attention to acoustic design is required for Navy and Marine Corps bachelor housing facilities to ensure a high degree of privacy for occupants within their living units and study areas. Address isolation of noise from a variety of sources, including adjacent living units, spaces on a floor level above or below, hallways and balconies, mechanical rooms and systems, and exterior generated sound such as aircraft and automobile noise.

a. Walls between living units and between living units and corridors, and exterior walls of living units - sound transmission class (STC) of minimum STC 52.

b. Floor and ceiling assemblies - minimum STC 55 and have an impact isolation class of at least (IIC) 60.

c. Do not compromise the acoustical integrity of wall, floor, or ceiling assemblies with telephone, cable television, convenience outlets, and mechanical ducts.

d. Select fluorescent lamp ballasts to minimize noise generation.

3-12 VAPOR RETARDERS.

Calculate vapor permeability and temperature through the entire wall sections including interior finishes to ensure dew point does not occur within the wall system. Special construction considerations not limited to heating, ventilating, and air conditioning (HVAC) systems are required in humid areas.

3-13 ROOF SYSTEMS.

Design and detail roof systems to resist maximum wind for the area and provide a residential character.

a. Navy: Provide gable or similar roof shapes.

b. Marine Corps: Sloped metal roofs are mandatory for all bachelor housing.

3-14 DOORS.

Specify doors, frames, and hardware to meet sound separation, fire separation, and security requirements unique to Navy and Marine Corps Bachelor 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 weatherstrip exterior doors and include a heavy-duty metal threshold that prevents drafts, dirt, water, and insect entry. Provide lobby and entry vestibules with glass commercial style storefront doors with automatic openers at major entrances. Provide other exterior doors as solid core, thermally insulated, and secure.

a. Provide each Market Style Apartment, Apartment, Room, or Module with solid core wood or thermal insulated metal exterior door to provide sound isolation.

b. Provide a fire-rated, wide-angle security viewport at 60 inch (1524 mm) height.

c. Connecting doors between bedrooms are not allowed.

3-15 HARDWARE AND LOCKS.

Provide dead bolt locks, and night latches, keys without room numbers, and door guard. Provide hinges that conform to Builders Hardware Manufacturers Association (BHMA) 101, *Butts and Hinges*. Hardware and locks on fire doors must comply with the requirements of NFPA 80, *Fire Doors and Fire Windows*. Use of plastic key cards (smart cards), programmable locks, or magnetic reader cards are preferred over key/tumbler hardware. Hardware and lock requirements vary by Market Style Apartment, 1+1E Apartment, Room, or Module Plan.

3-15.1 System Set-up.

When determining lock configurations, consider the different locks an occupant will need to open. For example, in a 1+1E Apartment configuration with 2 occupants, each occupant will have to open the main door to the apartment, one bedroom, and can have access to two closets. If the 1+1E Apartment is temporarily used to house 4 occupants (2 per bedroom), then each must open the main entrance to the apartment, their bedroom door, and one of the closets in their bedroom.

3-15.2 Lock Requirements.

a. Electric locks are required on Apartment entrance doors and bedroom doors.

b. Navy projects require electric locks for closet doors; provide each occupant with a second key for entry to his closet, without access to the other occupant’s closet.

c. Provide electromagnetic (smart cards), programmable locks or electronic cards on all doors except toilets and Marine Corps closets.

    i. Marine Corps: Provide closet doors with padlocking slide bolts.

d. For Market Style and 1+1E Apartments: Provide each occupant one key that opens the apartment entry door, and one bedroom door.

3-15.3 Bathroom Locks.

Install latch bolts on the **inside** of **every** bathroom door to ensure privacy. For example, in the 2+2 configuration shown in Figure B-7, provide latch bolts on both doors leading to the toilet and latch bolts on both doors leading to the tub/shower. Ensure that bathroom doors cannot be locked from the outside.

3-16 WINDOWS.

All fenestration must conform to the recommendations of the Risk Analysis and Vulnerability Assessment. Place windows to prevent illicit entry accomplished by reaching adjacent entry door hardware.

For exterior corridor style 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. Refer to Figure B-9 Room Elevation.

Size glazed openings equal to 30% window to wall ratio to provide optimum daylighting. For more information about optimum daylighting see *Tips for Daylighting with Windows*, available from the Ernest Orlando Lawrence Berkley National Laboratory, http://www.lbl.gov. Size the operating section to meet NFPA 101 standards for egress.

Specify commercial grade windows with heavy-duty insect screen for operating section. Solar glazing with low “E” glass is required in regions with plentiful sunlight.

3-17 WALLS AND PARTITIONS.

Design walls and partitions to meet appearance and acoustic and durability requirements of Navy and Marine Corps Bachelor Housing. Choose wall and partition assemblies that will provide at least a 50 decibel sound separation between Market Style Apartments, 1+1E Apartments, Rooms, or Modules and adjacent spaces on the outside. Place electrical outlet boxes, HVAC openings, and related equipment to maintain the sound separation of the wall assembly. Seal edges of wall assemblies to adjacent construction to avoid flanking sound paths. Consider ease of repair and refinishing when choosing wall finishes. Provide corner guards on walls in public areas.

3-18 INTERIOR FINISHES.

Interior finishes must comply with the requirements of UFC 3-600-01. Employ finishes that are easily cleaned, and endure hard use and food spills. Select neutral colors for the more permanent surfaces within the facility (i.e.; floor/wall tiles, solid surfacing material, masonry) to facilitate future finish/material changes.

a. Navy: Refer to Table 3-1 for interior finish requirements.

b. Marine Corps: Refer to Table 3-2 for interior finish requirements. Note the Marine Corps requires CMU interior walls and masonry exterior construction and finish.

3-18.1 **Ceilings.**

a. Paint ceilings off-white.

b. Suspended acoustical tile is prohibited in all Navy projects.

3-18.2 **Paint.**

Paint interior surfaces, except factory pre-finished material, a minimum of one prime coat and two finish coats. Paint walls and ceilings in compact kitchen areas, bathrooms, in-room service areas, public common spaces, laundry, and utility rooms, painted trim and other painted interior finishes with latex semi-gloss enamel. Blown-on acoustic finish is not allowed, except in public core areas. 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 with two coats minimum.

3-18.3 **Resilient Flooring.**

As a minimum, provide composition 2; Class 2 (through pattern) VCT; or Sheet vinyl Type 1, Grade 1 or Type II, Grade 2 minimum with Class A (fibrous) backing. Avoid “no wax” surfaces, and white as a predominant color.

3-18.4 **Carpet.**

Carpet tiles are acceptable for common areas and for administration areas (spaces). Performance standards for carpet in Bachelor Housing will be according to UFGS 09 68 00, *Carpet*, and additionally as follows:

a. Commercial Grade;

b. Loop Pile construction;

c. Attached Water-resistant backing;

d. Impervious to harsh chemicals, using solution-dyed nylon.

e. Low absorption rate;

f. Low static buildup;

g. Permanent fade/10 year colorfast warranty.

3-18.5 EPA Designated Products.

Certain types of products are listed by the Environmental Protection Agency 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.

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

b. The product must be available at reasonable cost;

c. The product must meet the required performance standards for the project;

d. The product must be available in a reasonable timeframe.

3-18.6 Porcelain and Ceramic Tile.

Use slip resistant porcelain floor tiles in bathrooms and any public toilet areas. Specify a mottled or shaded tile to hide discoloration from detergents, etc. Use solid surface material or ceramic wall tile from floor to ceiling around bathtubs and showers, and in toilet compartments. Provide wainscot-height (48 inch) tile on the other walls.

3-18.7 Cabinets, Millwork and Hardware.

Construct built-in cabinets to American Woodworking Institute Custom grade with heavy-duty hardware - composed of hardwood, steel, or rotationally-molded commercial-grade polyethylene construction. Provide a finish able to withstand frequent cleaning and hard use, and coordinated with the other finish materials within the space. Neutral colors are recommended for cabinets and millwork to facilitate future color scheme changes.

a. No particleboard is allowed in any millwork construction.

b. Prefabricated Compact Kitchens are allowed.

Table 3-1 – Interior Finishes Schedule: NAVY

INTERIOR FINISH SCHEDULE			
AREA/SPACE	FLOORS	WALLS	CEILING
Administration	Carpet	Gypsum Board, Optional Accent Vinyl wall covering	Gypsum board, Optional Texture
Lounge/Meeting/ Game Room	Carpet, or Carpet + Porcelain Tile, or Carpet + VCT	Gypsum board, Optional Accent Vinyl wall covering	Gypsum board, Optional Texture
Public Toilets	Porcelain Tile	Full Height Ceramic Tile	Gypsum board
Vending	Porcelain or Quarry Tile	Gypsum board	
Bulk Storage	Sealed Concrete	CMU	Gypsum board, Optional Texture
Housekeeping	VCT	Gypsum board	Gypsum board, Optional Texture
Laundry	Colored Concrete	Gypsum board or CMU	Gypsum board
Public Corridors	Carpet + Hard Surface	Gypsum board, Optional Accent Vinyl wall covering	Gypsum board, Optional Texture
Bedrooms	Carpet	Gypsum board, Optional One Wall Accent Vinyl	Gypsum board
Kitchen	VCT	Gypsum bd. semi gloss pt.	Gypsum bd. semi gloss
Service Areas	VCT (1+1); Carpet (2+0)	Gypsum board, Vinyl Wall Covering	Gypsum board
Apartment, Room, Module Toilets	Porcelain Tile	Ceramic Tile	Gypsum board
Bedroom Closets	Carpet	Gypsum board	Gypsum board
Entry Door swing Areas	VCT (1+1); Carpet (2+0)	Paint, Vinyl wall covering	Gypsum board
Note1 : Accent walls with paint or vinyl wall covering are encouraged options. Note 2: Market Style Housing may use other market-driven alternative finishes. .			

Table 3-2 – Interior Finishes Schedule: MARINE CORPS

INTERIOR FINISH SCHEDULE			
AREA/SPACE	FLOORS	WALLS	CEILING
Entry Vestibule	VCT or Ceramic Tile	Painted CMU	Paint, Optional Texture
Duty Office	VCT or Carpet	Painted CMU	Paint, Optional Texture
Duty Bunk Room	VCT or Carpet	Painted CMU	Paint, Optional Texture
Public Head	Ceramic Tile	Full Height Ceramic Tile	Paint
Vending	VCT	Painted CMU	Paint, Optional Texture
Multi-Purpose Room	VCT or Ceramic Tile or Carpet or a combination of these	Painted CMU	Paint, Optional Texture
Janitor Closet	VCT	Painted CMU	Paint
Laundry Room	Ceramic Tile or VCT	Painted CMU	Paint
Public Corridors	VCT	Painted CMU	Paint, Optional Texture
Bedrooms	VCT	Painted CMU	Paint, Optional Texture
Service Areas	VCT or Ceramic Tile	Painted CMU	Paint
Room Heads	Ceramic Tile	Ceramic Tile	Paint
Bedroom Closets	VCT	Painted CMU	Paint

3-18.8 Toilet Accessories.

Provide toilet accessories as surface mounted or recessed, of non-corrodible metal or tile.

a. Provide toilet paper holder, soap dish, combination tumbler and toothbrush holder, heavy-duty bathrobe hooks, and heavy-duty towel bars. In shared bathrooms, provide bathrobe hooks and towel bars to accommodate two (2) occupants or four (4) if a 2x2 module.

b. Provide a shower curtain rod. Specify rod at proper height for conventional shower curtains (72 inches by 72 inches (approx.) (1.8 m by 1.8 m)).

3-18.9 Window Treatments.

Include window treatments (blinds or shading systems) as an integral part of the construction contract. Mini- blinds, vertical blinds, draperies, or a combination are authorized. Consider solar conditions when selecting the window treatment. Arrange curtain hardware so draperies overlap window openings to reduce light leakage. Drapery pleats that are either stack pleated, roll pleated, or accordion-type pleated are preferred instead of pinch pleated. Use double carriers similar to Kirsch “Ripple fold” attachment. Hang the drapery lining independently from the finished drapery treatment. Note that drapery treatments are considered collateral equipment and will be included in the furnishings option.

a. Provide flame resistant window treatments.

b. Provide blackout linings (optional).

c. Provide traverse rods of commercial quality.

3-18.10 Privacy with Exterior Balcony.

In projects using Market Style Apartments, 1+1E Apartments, Rooms, or Modules with exterior balcony access, consider the use of an transom over the entry door. This allows for the entry of natural light into the rooms while retaining privacy from travelers along the balcony. This is illustrated in Figure B-9 Room Elevation.

3-18.11 Furnishings.

Select furnishings from the GSA “Packaged Furniture” schedule to facilitate a coordinated package of room/facility furnishings, window treatments, bedspreads, lamps, artwork, and appliances. Select room furnishings that are well constructed of solid hardwoods or ply core and veneers with complementary plastic laminate top surfaces. Recessed pulls are preferred. Maximize storage capabilities. Select only sturdy public furnishings. Furnishings in common areas should be of solid wood or steel frames. Maximize the use of individual lounge chairs and love seats instead of sofas.

3-18.12 Closet Accessories.

Use heavy-duty materials median braced for heavy loads. Review the closet design requirements and electrical requirements elsewhere in this document. Provide living and bedroom closets with vinyl clad metal shelves and hanging systems. Refer to paragraph 3-8 for closet design.

3-18.13 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 style 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 corner protection in hallways and high traffic areas. 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 for each room. Provide directional signage on each floor for way finding.

3-19 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.

a. Specify an easily read typeface such as Helvetica Medium.

b. Provide a signage plan, legend, and details. Indicate the design, location, and installation method in the plan, elevations, and specifications.

c. 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.

d. Provide building signs and other items on the building exterior that meet the Base Exterior Architectural Plans (BEAP).

e. 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 styles, placement, and colors.

f. The interior designer will coordinate interior signage and identification with the exterior designs.

3-19.1 **Signage Manual.**

Prepare a Signage Manual to instruct the activity in maintenance of the signage system and provide specialized equipment and materials necessary for this. Place emphasis on directional signage to immediately familiarize trainees with the room names and numbers. Wall-mounted signs extending into the corridor will indicate room identifications from a distance and greatly enhance efficient access to the appropriate rooms.

3-19.2 **Project Signage.**

Provide the following signs for each project or building:

a. Entrance signs at roadway, walkway and building entry point as appropriate

b. Provide a Building Identification Sign.

c. Provide a Building Directory.

d. Directional Signs.

e. Room Identification Signs.

f. Regulatory Signs.

g. Informational Signs.

h. Notices Board for occupants' use (Permanent Party only)

i. Bulletin Boards (for official use).

3-20 **HEATING, VENTILATION, AND AIR CONDITIONING.**

a. Apply smart building concepts using local loop technology. Avoid central controllers and monitors. Review security requirements for the project.

b. Heating, Ventilating, And Air Conditioning (HVAC). Provide an HVAC system to give occupants individual choice of heating and cooling year round within each living area in accordance with UFC 3-400-10N, *Mechanical*. HVAC systems must meet Energy Star/ FEMP standards of efficiency.

    1. Air Conditioning is mandatory in all Navy and Marine Corps Bachelor Housing.

    2. HVAC Controls. Locate individual HVAC control units within each living/sleeping area to minimize utility runs to the units. Provide heating or cooling in any season without regard for operation of adjacent Rooms. Provide an individual climate control within each Room.

3-21 SUSTAINABILITY.

Design and construct the facility to comply with UFC 4-030-01, *Sustainable Development*.

3-21.1 Commissioning.

All projects, which include new building systems or equipment, require LEED Fundamental Commissioning as a minimum. Provide Commissioning to meet the requirements of the latest version of *USGBC LEED Rating System*. 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. The designated Commissioning Authority shall meet the requirements of the latest version of *USGBC LEED Rating System*, and shall report results, recommendations, and findings directly to the Government.

3-22 PLUMBING.

Plan plumbing systems for bachelor housing taking advantage of stacking bathrooms and placing fixtures back to back wherever reasonable. Mechanical engineers, architects, and structural engineers work together carefully to plan and minimize the size and location of plumbing chases. Avoid plumbing chases whenever possible by placing plumbing in wall cavities.

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

b. Provide shutoff valves at all fixtures.

c. Provide residential, tank-type low water volume water closets in toilet rooms. For Marine Corps, provide flush-valve toilets. Use elongated or round, one-piece construction with a closed-front seat and a lid. Recommend areas with low water pressure use power-flush type water closets.

d. Provide matching water closets and bath fixtures in a neutral color.

e. Provide hose bibs on exterior walls of each building at 30 meter (100 foot) intervals; frost-free as dictated by climatic conditions.

f. Provide floor drains in janitor closets and laundry rooms.

g. Provide ice machine hook-ups within the facility and that are easily accessible to patrons.

h. Provide a drinking fountain with cooler for interior public areas, and appropriate exterior areas at 1 per 100 occupants.

i. Hot Water System type is optional, but must meet FEMP recommendations. Use Building wide system, 1-4 rooms/modules per WH closet unit in module mechanical areas, or instantaneous water heaters in each unit.

j. Natural Gas is prohibited in individual living/sleeping areas.

k. Provide one Service Sink in the janitor closets and in the laundry rooms at each floor.

l. Use the following fixtures as standards: Washerless faucets at lavatories. Single lever faucets at tub showers or shower stalls. Flow restrictive type showerheads at tub showers or shower stalls.

m. Shower units are to use terrazzo base with full height solid surface material or ceramic surround.

n. Use acid-resisting cast iron bathtubs with metal stopper. Arrange as tub and shower with full height surround.

o. For central heads in open-bay designs, provide the following: Water closets: 1 per 10 persons; Lavatories: 1 per 10 persons; Showers: 1 per 8 persons.

3-23 ELECTRICAL DESIGN.

Provide site electrical utilities, interior distribution systems, communications and security, and site lighting according to UFC 3-500-10 (Draft), Electrical Engineering and the latest installation design requirements.

- Site Electrical Utilities includes equipment, overhead power distribution, underground electrical systems, grounding, metering, exterior site lighting, and cathodic protection systems.

- Site Lighting – Provide lighting to ensure occupants have a means of safely moving between outdoor spaces. Refer to the Base Exterior Architectural Plan (BEAP) 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, 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.

3-23.1 Ceiling Fans.

Provide ceiling fans that are Energy Star compliant with pin-based CFL. Do not use combination fan-light fixtures and ensure that no strobe light effect is created by the fan/ light positioning. Select multi-speed fan types that allow adequate ceiling clearance, are wall switch controlled and without pull chains. Prefer heavy-duty, 3-speed, reversible motors that have die cast or steel housing with a lifetime motor warranty. Fan blades with a minimum 14-degree pitch. Mount blades a minimum of seven feet from the floor. Short blades are preferred. Provide separate controls for units with lights. Consider ceiling fans (with timer controls) in multipurpose rooms, game rooms, and laundry facilities.

i. Navy: Provide ceiling fans in renovation and new construction for Navy projects.

ii. Marine Corps: Ceiling fans are optional.

3-23.2 Power.

Provide 20-ampere outlets throughout each Market Style Apartment / 1+1E Apartment/ Module/ Room per applicable electrical code. In bedrooms, provide 20 ampere dedicated quadraplex outlets combined with television, telephone and computer data outlets as described. Provide quadraplex and duplex outlets in the compact kitchen area.

3-23.3 Lighting.

Provide fluorescent lighting that meets a minimum LER of 65 Energy Star Rating in each Market Style Apartment,1+1E Apartment, Room, or Module. All fixtures must be carefully selected to reflect a residential style. Residential style surface-mounted “can” fixtures with residential character are allowed; recessed fixtures are preferred. Consider both day and night situations in the design. Provide lighting fixtures and lighting levels to support residential character, to ensure safety, and to control maintenance cost and energy use.

a. 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 and closet doors to control the bathroom and closet light fixture.

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

c. Bedrooms: Provide overhead adjustable level ambient lighting in bedrooms. The use of recessed and indirect fluorescent fixtures (T-8 730 lamps and electronic ballasts) is required. 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.

d. Use fluorescent lighting fixtures in bathrooms and kitchen areas of living units and public, administrative, and service spaces. Use recessed valance or under counter (task) lighting as well as recessed florescent lighting at the ceiling overhead for in-room food preparation areas.

e. Carefully consider the coordination of lighting with ceiling fans.

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

g. Provide overhead lighting and valance lighting light at the lavatory mirror.

3-23.4 Emergency Power.

Not required.

3-23.5 Telecommunication Systems.

3-23.5.1 In Room Telephone Services.

Provide In-Room Telephone services for each occupant per the assigned Plan design. Provide one (1) dedicated line to two (2) separate outlets on opposite walls. Locate one (1) outlet on each party wall of the bedroom for flexibility and easy furniture access. Do not provide additional telephone lines or outlets when a room is intended for temporary use of two (2) occupants. For example: a 1+1E Apartment bedroom is designed to house one (1) occupant by assignment therefore a minimum of one (1) separate line and two (2) outlets on opposite walls are required in the bedroom areas. Voice and data communication lines can be ganged into one (1) duplex outlet rather than separate outlet boxes as the electrical code permits. Refer to Military Handbook 1012/3 for additional criteria. Do not provide telephone outlets in open bay berthing spaces.

3-23.5.2 Public Telephones.

Requirements vary by plan. Refer to individual Plan chapter for details.

3-23.5.3 In-Room Services.

Provide In-Room access to Local Area Network (LAN) for EACH occupant in all plans except for Open Bay Berthing. Provide each occupant with two (2) LAN outlets per room for voice and data system connections. For example: a 2+0 room is designed to house two (2) occupants, therefore four (4) outlets are required. Locate LAN outlets on each party wall of the bedroom for flexibility and easy access. Do not provide in-room services to open bay berthing spaces. Provide NMCI closet on each floor of facility, stacked over each other.

3-23.5.4 Cable Television.

In each building, provide a permanently installed conduit raceway system for cable television system media. Requirements vary by Market Style Apartment, 1+1E Apartment, Room, and Module Plan. Refer to specific Plan in Chapter 4 for additional details.

3-23.6 Television Services.

Provide CATV system. Provide one outlet per occupant in bedrooms and one outlet in living rooms.

3-23.7 Electronic Security Systems (ESS).

Intrusion detection systems shall be provided at the exterior doors.

3-24 GENERAL REQUIREMENTS FOR LIVING SPACES.

Navy and Marine Corps Bachelor Housing provides three distinct types of accommodations: Permanent Party, Transient and Recruit/Training facilities. The quality benchmark for residential quarters is a mid-grade multi-family apartment complex, and the quality benchmark for lodging is a mid-grade hotel. Permanent Party and Recruit/Training quarters must be clean, secure, and well maintained.

3-24.1 Basic Assignment Categories.

Apartment, Room, and Module requirements vary according to the assigned use. These uses are defined in Chapter 2, along with specific Navy and Marine Corps guidance for when to use each plan.

3-24.2 Basic Apartments, Rooms, and Modules.

The basic Apartment, Module, and Room Plans are detailed and graphically illustrated in Chapter 4 and the Appendices within this manual and are basically described as follows:

a. The Market Style Apartment;

b. 1+1E Apartment;

c. The Navy 2+0 Room;

d. The Marine Corps 2+0 Room;

e. The 2+2 Module;

f. Open-Bay Berthing.

3-24.3 Required Spaces, Areas, Facilities, and Amenities.

The features of the Apartment, Room, and Module spaces, areas, facilities, and amenities vary by plan. Refer to the specific plan's chapter for a description of requirements.

3-24.4 Bathrooms.

Bathrooms are to be of residential design, quality, and finish.

3-24.5 Personal Closets.

Provide one closet for each occupant, as a minimum. Closets must be accessible to the living/sleeping area. Provide each closet with closet organizers with storage extending to the ceiling. Provide additional storage in service areas as appropriate and as space permits. Provide full-height closets, using the space above normal door height for bulk storage. Provide continuous ventilation in closets to prevent mold and mildew growth. Provide integral full-length hanging rods for coats and shelves. Refer to the suggested furniture and fixtures schedule in Appendix B for additional information. A light with motion-activated switch is required in deep Navy closets and is recommended in others. Carefully placed lighting outside 2 foot deep (0.6 meter deep) closets is acceptable. The goal is to allow a clear view of closet contents and, in the case of clothes closets, to facilitate color choice and dressing. 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 fitted with the same locking system as provided on the apartment, room, or module entry. Bi-fold and sliding doors are not acceptable.

For Marine Corps projects: Provide a padlocking slide bolt hardware for each personal closet.

3-24.6 Service Area.

a. This term refers to spaces in the Market Style Apartment, 1+1E Apartment, Room, or Module that are not incorporated into the Net Living/Sleeping Area. Service Areas are intended to provide for minor food preparation and vary by Plan. Refer to the specific Plan's chapter for details of Service Area features and amenities.

b. The Market Style Apartment has a full kitchen.

3-25 OTHER GENERAL INTERIOR REQUIREMENTS.

3-25.1 Laundry Facilities.

Laundry facility requirements vary by Plan. Refer to specific Plan's chapter for details.

3-25.2 Occupant Bulk Storage.

Examples of items typically stored in bulk storage areas may include luggage, original stereo system cartons, tires, bicycles, surfboards, ski equipment, and other sports gear. Occupant bulk storage requirements vary by Market Style Apartment, 1+1E Apartment, Room, and Module Plan. Refer to the plan's chapter for details.

3-25.3 Utility Area (Space).

Provide appropriate space for the mechanical and electrical systems and telecommunications. Note that up to 43 ft^2 (4 m^2) per 1+1E Apartment, Room or Module Plan may be added to the allowable building gross area for structures four (4) stories or higher.

3-25.4 Elevators.

Elevators are intended primarily for the movement of furniture. Provide freight-sized elevators to accommodate movement of both furniture and a medical stretcher for personnel.

- Navy: Elevators are required in facilities with four or more stories. For projects of four or more stories, install an elevator using the additional 43 ft^2 (4 m^2) allowance for high-rise construction. For one to three stories, install concrete pad only (for the use of a portable lift to assist in furniture movement).

- Marine Corps: Elevators are required for all buildings three (3) stories or higher.

3-25.5 Mail Service.

Mail service requirements vary by plan. Refer to the specific plan in Chapter 4 for additional information. Plans may require a mail service area (space) or kiosk. For the design of the mail facilities, the bachelor housing manager and public works office shall discuss plans with local postmasters prior to design, and instruct the design architect of the post office requirements.

3-25.6 Circulation.

Design interior corridors to emphasize each quarter's entrance, and to de-emphasize length or "tunnel vision." Size the corridor to meet NFPA 101 requirements with a minimum clear width to accommodate two persons with suitcases, about 5 feet (1.52 meters). Ensure that exterior walkways have non-slip surfaces and drain away from the building.

3-25.7 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.

3-25.8 Game Rooms.

Requirements for game rooms vary by plan. Refer to the specific plan in Chapter 4 for details.

3-25.9 Vending Area (Space).

Discuss vending area (space), 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. Allow space for a minimum of three (3) soft drink machines and a snack vending machine. 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 provide treatment area to give 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 floor and base finishes that resist heavy wear and are designed for easy maintenance. Provide vending areas with the appropriate outlets and number of outlets for the 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 telephone in this area.

3-25.10 Public Toilets.

By Federal Statute, all public toilet rooms must be accessible for disabled persons. Provide public toilets that are accessible from the lobby and the public areas. Provide commercial grade fixtures. For a 96-person project, provide a minimum of one (1) water closet, one (1) urinal, and two (2) sinks in the men's toilet; and two (2) water closets and two (2) sinks in the women's toilet. Add one (1) of each fixture for each increment of 100 persons to a maximum of five (5) toilets. 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 a recessed waste receptacle. A single unisex toilet may be adequate for smaller capacity bachelor housing facility.

3-25.11 **Janitoral (Space) Area.**

Requirements vary by Plan. Refer to the specific Plan in Chapter 4 for details.

3-25.12 **Administrative Area (Space).**

Requirements vary by apartment/room style choice. Refer to the specific Plan in Chapter 4 for details.

3-25.13 **Lobby, Vestibule, and Reception.**

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

3-26 **ACCESSIBILITY REQUIREMENTS.**

Provide barrier-free design in accordance with the requirements of the Deputy Secretary of Defense (DEPSECDEF) Memorandum "Access for People with Disabilities" dated Oct 31, 2008. The memorandum updates the DoD standards for making facilities accessible to people with disabilities. The US Access Board issued an update of the accessibility guidelines which the DEPSECDEF Memorandum implements with military unique requirements specified in the memorandum attachment. The new DoD, "ABA (Architectural Barriers Act) Accessibility Standard" and the DEPSECDEF Memorandum are located at http://www.access-board.gov/ada%2Daba/aba-standards-dod.cfm .Navy and Marine Corps Bachelor Housing address the issue of accessibility based on the type of occupant and the type of facility.

3-26.1 **Existing Facilities.**

Existing bachelor housing, which are not accessible, are required to comply with PDPS-94-01, *NAVFAC Planning and Design Policy Statement, Barrier Free Design, Accessibility Requirements* upon renovation. However, non-compliance alone does not trigger the requirement to comply.

3-26.2 **New Construction.**

3-29.2.1 Permanent Party, Trainee, and Recruit bachelor housing facilities are designed for able-bodied military personnel. Their apartments, rooms, modules, and bays will not be accessible. However, all public areas, including reception desk, corridors, elevators, and public toilet facilities will be accessible.

3-26.3 **Navy and Marine Corps.**

Public areas within Bachelor Quarters that are open to installation personnel (civilian and military), visitors, etc., including reception area, corridors, elevators and public toilet facilities, MUST be barrier free. Living/sleeping room(s) within permanent party personnel quarters are intended for the housing of able-bodied personnel and therefore

do not require accessibility provisions within current ADA and ABA guidelines. Refer to Service requirements for additional guidance.

3-26.4 **Marine Corps.**

A minimum of **two accessible rooms** on the ground floor will be incorporated in all new construction for permanent party bachelor housing facilities.

CHAPTER 4 SPECIFIC DESIGN CRITERIA FOR APARTMENTS, ROOMS, AND MODULES

This Chapter describes the variety of apartments, rooms, and modules to which Navy and Marine Corps bachelor enlisted personnel are assigned.

4-1 THE MARKET STYLE APARTMENT.

The Secretary of the Navy has authorized the construction of Market Style apartments on the condition that the Navy adopt innovative design and acquisition procedures for these projects, including private sector construction standards. This change was authorized by waiver to UEPH Design and Construction Standards on 16 August 2006. These changes were evaluated to provide minimal impact to cost, as part of the Secretary of the Navy's program for QOL enhancements.

4-1.1 Definition of Market Style.

Market Style apartments have room patterns and floor areas similar to private sector housing in the local community, e.g., two-bedrooms, two-baths, living room, laundry, and kitchen.

4-1.2 Market Style Apartment Building.

Three basic functional activities must be addressed in Market Style apartment projects. The Apartment, the Building Common Areas, and the Site Requirements.

4-1.2.1 The Apartment.

Each Market Style apartment plan includes two single occupancy bedrooms, each with one personal closet, and one private bathroom for each bedroom, a living room/ dining area combination, a separate in-unit laundry area, and a full-sized kitchen that is adjacent to the dining area.

a. Bedroom area of 144 ft2 is a fixed minimum to accommodate double-up surge loading in emergency situations. Room dimensions are NOT fixed, but must remain functional. Bedrooms must be sized to accommodate two extra long twin beds.

b. Living/Dining Room.

c. Kitchen, Bath, and Closet features are fixed, but layouts and sizes are not.

d. Laundry is required. Provide a washer and dryer in each unit. New construction must include air venting to an outside wall or the roof with no exceptions or waivers. Provide full-sized Energy Star stacking units. Ventless dryers are acceptable in new and renovation construction. The designer/engineer must ensure that a ventless dryer will provide the same functionality as regular units, and will have no adverse effect in the

laundry room or the rest of the apartment. Ventless dryers that use only an evaporation pan are unacceptable. Any plan to use ventless dryers must be reviewed and approved by the mechanical engineer.

e. Kitchens: Full sized appliances are mandatory with upper and lower cabinets, microwave, electric 4-burner cook tops, and refrigerator.

f. See Chapter 3 for Mechanical, Plumbing, Electrical, and Communication requirements.

g. Bathrooms. Each bathroom is to be designed to provide two separate areas: the Tub/Toilet room and a Lavatory area. This is a minimum requirement.

h. Each Lavatory Area will contain one sink, one medicine cabinet, and associated fixtures. Provide this open -- adjacent to the bedroom.

i. Tub/Toilet Area will contain an enclosed water closet adjacent to the tub-shower in a separate enclosed room located adjacent to the Lavatory Area.

j. Electric locks are required on Market Style Apartment entrance doors and bedroom doors. Provide each occupant one key that opens the Market Style Apartment entry door, and one bedroom door. All projects require electric locks for closet doors; provide each occupant with a second key for entry to his closet, without access to the other occupant's closet.

4-1.2.2 **Building Common Areas.**

The Market Study shall consider the inclusion of the following common areas. High-rise construction (over 3 stories) will have added common areas as identified.

a. Corridors:

b. Stairways, Mail Room or Mailbox area. Provide one U.S. Postal Service-approved mailbox per occupant located indoors or in an outdoor covered area.

c. Building Mechanical Room.

d. Building Electrical Room

e. Telecommunications Room.

f. Trash chute to dumpster at main level.

g. Janitorial. Janitorial includes vacuum cleaner storage and janitor's sink and faucet.

h. Lobby, Vestibule, and Reception.

i. Offices/Administration Area. (High-rise only or unless specifically required)

j. Bulk Storage room.

k. Public Toilet. Located at main entry level.

l. Public Telephones.

m. General Maintenance room.

n. Multi-purpose Room

o. Vending Area

4-1.2.3 **Site Amenities.**

a. Provide picnic and barbecue areas for 5% of the occupant capacity.

b. One sand volleyball court and one full outdoor basketball court per 300 occupants if not available within ½ kilometer (0.3 miles).

c. Similar outdoor recreation facilities can be substituted.

4-2 THE 1+1E APARTMENT.

This "enhanced" design provides a larger bedroom, incorporates added quality of life features in-room, and now supersedes the smaller original 1+1 Standard Plan. The 1+1E Apartment consists of two specifically approved plans, the Square Apartment (Figure B-2) and the Offset Apartment (Figure B-3).

4-2.1 Assignment and Use.

Refer to Chapter 2 for the proper assignment use for this design type.

4-2.2 Gross Building Area and Apartment Size.

The Gross Building Area for the 1+1E Apartment may not exceed:

a. 710 ft^2 (66 m^2) per apartment for (1-3 stories)

b. 753.5 ft^2 (70 m^2) per apartment for (4 stories and higher). 43.1 ft^2 (4 m^2) per module may be added to structures that are 4 stories or higher for the accommodation of structural, mechanical and electrical requirements.

c. Gross Building Area for the 1+1E Apartment Plan remains unchanged from the original 1+1 Standard, and is unlikely to change in the near future.

4-2.3 **Gross Apartment Area.**

The Gross Apartment Area is approximately:

a. 603 ft^2 (56 m^2) for both the Offset and the Square plan.

b. Make minor modifications to these plans only when approved by OPNAV N46. Refer to Chapter 1 concerning waivers.

4-2.4 **Net Living/Sleeping Area.**

The Net Living/Sleeping Area is the size of each bedroom. This is a fixed minimum.

a. 155 ft^2 (14.4 m^2) per bedroom.

4-2.5 **Features.**

Each 1+1E Apartment plan includes two single occupancy bedrooms (each with two personal closets for each occupant), an in-suite bathroom, laundry area, and compact kitchen area.

a. Bedroom area of 155 ft^2 (14.4 m^2) is a fixed minimum. Room dimensions are NOT fixed, but must remain functional. Bedrooms must be sized to accommodate two extra long twin beds.

b. Kitchen, Bath, and Closet features are fixed, but layouts and sizes are not.

c. Mechanical chases in the apartment may be altered and even removed and added to the Common Area Allowance as required.

d. In-Room Laundry is required, and new construction must include venting to an outside wall or the roof; No exceptions or waivers. Provide full-sized Energy Star stacking units. Ventless dryers are acceptable in new and renovation construction. The designer/engineer must ensure that this option will provide the same functionality as regular units, and will have no adverse affect in the room. Ventless dryers that use only an evaporation pan are unacceptable. Any plan to use ventless dryers must be reviewed and approved by the mechanical engineer.

e. Compact Kitchens: Plan features are mandatory minimum. Provide upper and lower cabinets, microwave, electric 2-burner cook tops, and refrigerator (half or full size).

4-2.6 **Variations.**

Major plan variations will not be approved. See Chapter 1 for waivers.

a. All 1+1E Apartments must be designed as two bedroom units with two closets located in each bedroom.

b. Mechanical, electrical, and communication requirements are included inside the Apartment area. See Chapter 3 for all requirements.

c. Plans show required minimum wall thickness. The intent is to require minimal structure wherever possible. Increases in wall thickness must be taken out of the Common Area allowance.

4-2.7 Bathroom.

The bathroom is to be designed to provide two separate areas: the Tub/Toilet area and the Lavatory area. This is a minimum requirement.

a. The Lavatory Area will contain two sinks, two medicine cabinets, and associated fixtures for two persons. Provide this open -- adjacent to the bedrooms or Service area as shown in the plans.

b. Tub/Toilet Area will contain the water closet and tub-shower in separate enclosed room adjacent to the Lavatory Area.

4-2.8 Service Area.

The 1+1E Apartment provides a Service area with a compact kitchen with a small bar countertop for minor food preparation. The area includes a two-burner in-counter cook top, a half-size refrigerator, single bowl sink, microwave, and cabinets as illustrated in the graphics provided.

4-2.9 Required Common Areas for 1 + 1E Plans

The required common spaces are specifically identified as follows. No deviation from this list is allowed without N46 approval.

a. Interior corridors are the preferred building circulation for 1+1E Apartment designs. However, if the predominant building style for the activity is exterior balcony access and exterior balcony access designs are in keeping with the Base Exterior Architectural Plan (BEAP), then a waiver to use exterior balcony access must be procured from the NAVFACHQ BHPO. Interior Corridors shall be 1.52 m (5 ft) wide minimum.

b. Stairways

c. Mail Room or Mailbox area. Provide one U.S. Postal Service approved mailbox per occupant. Locate mailboxes indoors or in an outdoor covered area, gazebo, or where size warrants, or even in a separate enclosed building subject to local postal rules. See Chapter 3 for additional requirements for mail.

d. Building Mechanical Room

e. Building Electrical Room

f. Telecommunications Room

g. Wall construction adjustments (masonry vs. stud, etc.) must come from the Common Area allowance.

h. Provide picnic and barbecue areas. One sand volleyball court and one full outdoor basketball court per 300 occupants if not available within 1/2 kilometer (0.3 miles). Similar outdoor recreation facilities can be substituted.

4-2.10 **Priority Common Areas.**

Some Common Areas have priority over others. These areas must be identified as required additional space and specifically justified on the DD Form 1391. After the required spaces listed above have been accommodated, include additional spaces in the design only if area is available within the maximum building limit of 66 m^2 (710 ft^2) per apartment. The following priorities must be followed for adding space.

a. Vending.

b. Janitorial. Janitorial includes 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.

4-2.11 **Non-Priority Areas.**

Add the following non-priority areas to the design only after required spaces and priority spaces have been incorporated.

a. Lobby, Vestibule, and Reception. Locate the lobby and its vestibule for easy identification by arriving occupants. Include a seating area for visitors and guests waiting for transportation. Locate the seating area for clear view of arriving automobiles and of the Reception Desk. At the Reception Desk, provide area for 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. Choose and arrange lighting fixtures to organize and identify the space. Finish the lobby and entrance with attractive, durable, and easily cleaned materials.

b. Offices/Administration Area. Design the administrative area to provide the staff with a secure, efficient, and comfortable environment from which to manage the building.

c. Bulk Storage room

d. Public Toilet

e. Public Telephones. Provide public pay telephone services in lobby and multi-purpose areas. Provide at least one station with Digital Services Network (DSN) access. Provide a telephone service cubicle on at least three sides and provide a writing surface and a fixed seat. Provide at least one telephone station accessible to handicapped or disabled persons.

f. If additional space is available in the 1+1E Apartment configured building after the Required Common, Priority, and non-Priority Spaces have been accommodated, apportion the remaining area and incorporate to add space to each apartment.

4-3 NAVY 2+0 ROOM.

This plan includes a double occupancy sleeping area, two personal closets, a shared bathroom, and a shared food preparation area.

4-3.1 Assignment and Use.

Refer to Chapter 2 for the proper assignment use for this design type.

4-3.2 Gross Building Area per Room.

The TOTAL Allowable Gross Building Area per room may not exceed:

a. 517 ft^2 (48 m^2) per room for (one to three stories)

b. 538 ft^2 (50 m^2) per room for (four stories and higher).

4-3.3 Gross Room Area.

The Gross Room Area is approximately 380 ft^2 (35.3 m^2)

4-3.4 Net Living/Sleeping Area.

The Net Living/Sleeping Area is the size of the bedroom. This is a fixed minimum.

a. 180 ft^2 (16.7 m^2) per bedroom.

b. The total net (bedroom) room size of 180 ft^2 (16.7 m^2). allows accessibility to two 21.5 ft^2 (2 m^2) closets (one per person).

c. Maximum building area for common spaces may not exceed 137 ft^2 (12.7 m^2) (one to three stories) and 157.2 ft^2 (14.6 m^2) for high rise (over 3 stories).

4-3.5 **Service Area.**

The Service area provides access to closets, separate compartments for shower and water closet, and compact kitchen Service area.

The food prep area is a compact kitchen unit (usually pre-fabricated) with a small single bowl kitchen type sink; base and wall cabinets; overhead lighting as well as under-cabinet task lighting. At a minimum, provide a microwave and an under-counter refrigerator. Accommodate larger refrigerators in the design of the service area if desired. A 2-burner cooktop is optional.

4-3.6 **Required Common Spaces for Navy 2+0 Room Buildings**

The following spaces are Required Common Spaces when the 2+0 Room Plan is used.

a. Laundry facilities: Provide one washer and two dryers for every 15 occupants; preferably, locate laundry rooms at each floor for easy access; provide acoustic separation from other areas; consider locating the laundry room adjacent to a lounge area to provide a place from which to monitor one's laundry. 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.

b. Building Utility Room (as required);

c. Circulation (corridors, balcony access);

d. Housekeeping. Provide each floor level with a 5-ft x 5-ft (1.5 m by 1.5 m) closet. Provide wall shelves, mop hooks, eyewash station, and room for housekeeping cart. 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 each building with one secure space of about 250 ft^2 (23 sq. m.) net area for housekeeping equipment and supplies. (Adjust the size of this space as appropriate to the overall building size.)

e. Vending; 100 ft^2 max. per vending area (9.3 m^2). More than one vending area may be appropriate depending on the number of occupants. Locate vending area on ground floor in buildings with three floors or less.

4-3.7 **Optional Common Spaces.**

The following spaces are optional common spaces in 2+0 Room designs. Note that the areas cited for each item are typical and meant to be for general guidance only.

a. Automatic entry doors and weather vestibule.

b. Administration Area; approximately 100 ft^2 (9.3 m^2). Design administrative areas to provide the staff with a secure, efficient, and comfortable environment from which to manage the building. Provide offices/ workstations only for authorized BQ administrative staff positions.

c. Lobby, Vestibule, and Reception. Provide Reception only if building is to act as main or satellite check-in facility. Locate 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 reception desk. Choose and arrange lighting fixtures to organize and identify the space. Finish the lobby and entrance with attractive, durable, and easily cleaned materials. Ensure the Reception Desk is provided area for enclosed space or counter/workspace. Locate the counter for visual control of the lobby and other central common areas. 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.

d. Bulk storage for occupants use (as required, extended stay transients only).

e. Multi-Purpose Spaces such as: Lounge, Meeting, Conference, Classroom 150 ft^2 (14 m^2) each. Isolate these areas acoustically, and locate them close to public toilets. Provide finishes that are easily cleaned and endure hard use. Provide cabinets and counter space for minor food service and to accommodate a 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 occupant's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades.

f. Game rooms. Game rooms are optional. Provide game rooms for extended stay VQ only. Acoustically isolate game rooms as appropriate, with appropriate electrical outlets, and close to public toilets. Design the rooms for installation of electronic video games. Locate for appropriate monitoring by Navy Bachelor Housing personnel. Provide rooms with substantial natural lighting.

g. Public Toilets.

h. Public Telephone. Provide public pay telephone services in lobby and multi-purpose areas. Provide at least one station with Defense Switched

Network (DSN) access. Provide a telephone service cubicle on at least three sides and provide a writing surface and a fixed seat. Provide at least one telephone station accessible to handicapped or disabled persons.

i. Library Area for reading/Computer room, (150 ft^2 (14 m^2) maximum).

j. Multi-media rentals (closet size).

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

4-4 MARINE CORPS 2+0 ROOM.

4-4.1 Design Parameters.

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

a. Building Configurations will vary, or be limited in size by Life Safety Code. The NFPA 101 *Fire and Life Safety Code* limits travel distance from corridor door of any guest room to the nearest exit.

b. Building Gross Area must not be exceeded.

c. 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.

d. Accessible Rooms**.** See Chapter 3 for additional information about provision of accessible rooms at ground floor level

4-4.2 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, or exterior conditioned or open breezeway. Any deviations to the 2+0 room design must be approved by HQMC Facilities and Services Design, (Code LF) prior to submission in the MILCON approval process.

a. Gross Building Area: The Total Allowable Gross Building Area may not exceed 506 ft^2 Gross (47 m^2)

b. Gross Room Area: 388 ft^2 (36 m^2).

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

4-4.3 **Room Plan (Spaces) Detailed.**

a. Living/Sleeping Area: 180 ft^2 (16.7 m^2) Net Area is 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 (optional); two (2) wall desk units with built-in under-cabinet lighting, two (2) chairs, and one (1) credenza with double sided drawers (optional).

b. Heads: Heads and fixtures are to be of residential design, quality, and finish. Provide a vanity with lavatory and valance lighting with double medicine cabinets, a full sized shower, and water closet with shelving and towel/toiletry hardware for two (2) occupants.

c. Personal Closets: 22 ft^2 (2 m^2) Net Area is required per closet. Provide at least one (1) closet for each occupant. Provide each individual closet with closet organizers with storage capability extending to the ceiling. Provide additional storage in service areas as appropriate. Provide closets at 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 switch 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 each personal closets doors. Bi-fold and sliding doors are not acceptable. Any deviations must be approved by HQMC Facilities and Services Division, (Code LF).

d. 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 2+0 Room provides access to the personal closets, head, refrigerator (7 cu. ft maximum), microwave, and counter space with single bowl sink.

4-4.4 **Required Common Building Spaces Detailed.**

The following spaces are REQUIRED common spaces:

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

b. 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).

c. 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.

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

e. Elevator (for building three (3) stories or higher): 85 ft^2 (8 m^2) Net Area. (Elevator machine room area is excluded.) See Chapter 3 for added details.

f. Vending: 85 ft^2 (8 m^2) Net Area. Provide space adjacent or co-located to the Multi-Purpose Room for three (3) full-sized commercial vending machines with front facing circulation. Discuss vending area, machine quantity and desired type with the activity and local Marine Corps Community Services office.

g. Multi-Purpose Room/Spaces: 720 ft^2 (70 m^2) Net Area. 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 the occupant'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 Marine Corps 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.

h. Laundry Room: Provide one (1) washer and two (2) dryers for every sixteen (16) occupants, as a minimum. Stacked units are acceptable. Locate a single laundry room at the ground floor 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 room. Provide at least one (1) service sink for rinsing of clothing items.

1. **720 ft^2 (70 m^2) Net Area** required for 200 person occupancy (100 rooms).

2. **1450 ft^2 (135 m^2) Net Area** required for 400 person occupancy (200 rooms).

i. 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 in permanent party barracks 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 service sink with drain, and basic storage for housekeeping items and cleaners.

j. 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).

k. Corridors and Breezeways:

1. NFPA 101 Fire and Life Safety Code limits travel distance from corridor door of any guest room to the nearest exit.

2. 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 clear).

l. 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.

1. Enclose exterior stair towers or provide open-air style per locale and building configuration.

4-4.5 Optional Common Building Spaces Detailed.

The following common spaces are OPTIONAL when using the Marine Corps 2+0 Room Plan.

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

b. Game Rooms. Acoustically isolate game rooms as appropriate.I 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 Bachelor Housing personnel. Provide rooms with substantial natural lighting.

c. Occupant Bulk Storage. Occupant Bulk Storage as required.

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

4-4.6 **Additional Required Building Features.**

The following common features must be provided..

a. Heating, Ventilating, and Air Conditioning (HVAC). Design an HVAC system to provide occupants with individual choice of heating and cooling year round within each living area. Refer to Chapter 3 for added information.

b. Door/Lock Requirements. Each occupant shall have access to their 2+0 room entry door and one (1) closet without access to the other closet. Provide a lockable hasp hardware on each closet. Keyless door locking systems should be considered; however, it is at the local Command's discretion.

c. A minimum of **two accessible rooms** on the ground floor will be incorporated in all new construction for permanent party bachelor housing facilities.

4-4.7 **In-Room Services.**

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

4-4.8 **Exterior Washdown Areas.**

a. Equipment Washdown Area. Equipment washdown areas shall be located adjacent to a building entry point. The area shall be concrete, 8 ft (2.44 m) in diameter with a centrally supported standpipe consisting of six (6) shower heads with cut-off valves suitable for simultaneous operation of all six (6) shower heads. Provide a properly sized supply standpipe with a freeze-proof design and easily accessible shut-off valve(s). Concrete area will be sloped to a central drain to prevent ponding water. All equipment will be suitable for outside service.

b. Equipment Drying Areas**.** Provide an enclosed equipment drying area on concrete hardstand adjacent to the equipment washdown area. Each drying area shall be totally enclosed on all four (4) sides and across the

top with chain link fence fabric. Fence fabric shall be adequately supported by fence posts and support members to withstand a hanging equipment load of up to 150 lb/ft^2 (732 kg/m^2) from the top of the structure. The drying area shall be divided into three (3) separate sections with one (1) pedestrian gate per section. Each gate shall have a lockable hasp. Each of the three (3) sections shall be 90 in x 252 in x118 in (2300 mm X 6400 mm X 3000 mm) high. The concrete hardstand will be adequately sloped to prevent ponding water.

4-4.9 **Doors.**

Refer to Chapter 3 for door information.

4-4.10 **Hardware and Locks.**

Refer to Chapter 3 for hardware and lock information.

4-4.11 **Windows.**

a. Continuous overhead fenestration which provides cross ventilation is encouraged. See section example Figure B-7 and B-10.

b. See Chapter 3 for additional window requirements.

4-4.12 **Interior Walls and Finishes.**

The Marine Corps requires CMU interior walls and masonry exterior construction and finish. Refer to Table 3-2 in this UFC for the Marine Corps for specific interior finish schedules.

4-5 **THE NAVY 2+2 MODULE.**

The 2+2 Module includes two double-occupancy sleeping areas, one 21.5 ft^2 (2 m^2) closet per person, a shared bathroom, and service area. (A closet may be less than 21.5 ft^2 (2 m^2) per person in renovations only). See Figures B-7 and B-8.

4-5.1 **Assignment and Use.**

Refer to paragraph 2-5 for the proper assignment use for this design type.

4-5.2 **Gross Module Area.**

The Gross area per Module is 713 ft^2 (66.2m^2).

4-5.3 **Net Living/Sleeping Area.**

The Net Living/Sleeping Area is 180 ft^2 (16.7 m^2) per bedroom.

4-5.4 **Service Area.**

The 2+2 Module service area consists of a vanity with lavatory and valance lighting, refrigerator/microwave area, and access to closets and bathroom area.

4-5.5 **Required Building Common Areas.**

a. Circulation and Corridors.

b. Stairs.

c. Laundry Facilities: Provide one Washer and two Dryers for every fifteen occupants; locate laundry rooms preferably at each floor for easy access and provide acoustic separation from other areas; consider locating the laundry room adjacent to a lounge area to provide a place from which to monitor one's laundry; 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.

d. Building Utility Room (5-10% of Gross Building Area).

4-5.6 **Optional Building Common Areas.**

For construction using the 2+2 Module, all Optional Common Areas from the list below must be individually scoped and justified on a per project basis. Areas are not to be provided when similar facilities are already available within walking distance of the project. Do not duplicate services Sizes shown are maximums.

a. Administrative (approximately 100 ft^2 (9.3 m^2)). Design Adminstrative areas to provide the staff with a secure, efficient, and comfortable environment from which to manage the building. Provide other administrative office spaces as required.

b. Lobby, Vestibule, and Reception are optional. 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 vehicles 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.

c. Master at Arms: 100 ft^2 (9.3 m^2)

d. Lounges: Provide a large screen TV Lounge. Isolate the area acoustically, and locate close to public toilets. Provide cabinets and counter space for minor food service and to accommodate a 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 occupant's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades.

e. Group study/ meeting rooms.

f. Game Rooms. Acoustically isolate game Rooms, with appropriate electrical outlets, and placed close to public toilets. Design the rooms for installation of electronic video games. Locate for appropriate monitoring by Navy Bachelor Housing personnel. Provide rooms substantial natural lighting.

g. Vending.

h. Central Kitchen: Provide a module fitted as a central kitchen and eating area for every 75 occupants.

i. Public Telephone Alcove: Provide public pay telephone services in lobby and multi-purpose areas. Provide a telephone service cubicle on at least three sides and provide a writing surface and a fixed seat. Provide at least one telephone station accessible to handicapped or disabled persons.

j. Public Toilets;

k. Bulk Storage for Occupants' use;

l. Parking for Occupants' use;

m. Janitor Closet(s). Provide a 5-foot x 3-foot (1.5 m x 0.9 m) closet on each floor 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.

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

4-6 OPEN BAY PLAN.

The Open Bay Plan consists of an open-plan sleeping area, gang showers, and grouped water closet facilities.

4-6.1 **Assignment and Use.**

Refer to Chapter 2 for the proper assignment use for this design type.

4-6.2 **Gross Building Area.**

Maximum gross building area may not exceed 140 ft^2 (13 m^2) per person.

4-6.3 **Gross Area.**

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

4-6.4 **Net Living/Sleeping Area.**

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

b. MOS Trainee net living area is 90 ft^2 (8.4 m^2) per person minimum.

c. Disciplinary Quarters net living area is 72.ft^2 (6.7 m^2) per person minimum.

4-6.5 **Required Common Areas (Spaces).**

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

a. Laundry facilities: Provide one (1) washer and two (2) dryers for every 15 occupants (for every 22 occupants if recruit barracks). 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.

b. Bulk storage;

c. Building Utility Room;

d. Circulation, corridors and hallways;

e. 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. Provide window coverings and hardware to allow for darkening of the room with blinds or shades.

f. For Marine Corps: With the advent of Marine Online and the military requirement of Marine Corps 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 2 (two) eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room.

g. 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.

h. Vending Area; (optional for recruit barracks)

i. Public Toilets; (optional for recruit barracks)

j. Public Telephone. Provide public pay telephone services in multipurpose area (space). Provide at least one telephone station accessible to handicapped or disabled persons.

4-6.6 **Optional Common Areas (Spaces).**

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

a. Automatic entry doors and weather vestibule;

b. Administration Area. Design administrative areas to provide the staff with a secure, efficient, and comfortable environment from which to manage the building.

c. Office Space. Provide other administrative office spaces as required.

d. 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.

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Tips for Daylighting with Windows, Ernest Orlando Lawrence Berkeley National Laboratory, Berkeley Lab Public Information Department, 1 Cyclotron Road MS-65, Berkeley, CA, 94720, (510) 486-5771, Fax (510) 486-6641, http://www.lbl.gov

EIA TIA/EIA-570-A, *Residential Telecommunications Cabling Standard,* Electronic Industries Alliance, 2500 Wilson Blvd., Arlington, VA 22201, (703) 907-7500, http://www.eia.org

EIA TIA-758, *Customer-Owned Outside Plant Telecommunications Cabling Standard,* Electronic Industries Alliance, 2500 Wilson Blvd., Arlington, VA 22201, (703) 907-7500, http://www.eia.org

EIA TIA/EIA-569-A, *Commercial Building Standard for Telecommunications Pathways and Spaces,* Electronic Industries Alliance, 2500 Wilson Blvd., Arlington, VA 22201, (703) 907-7500, http://www.eia.org

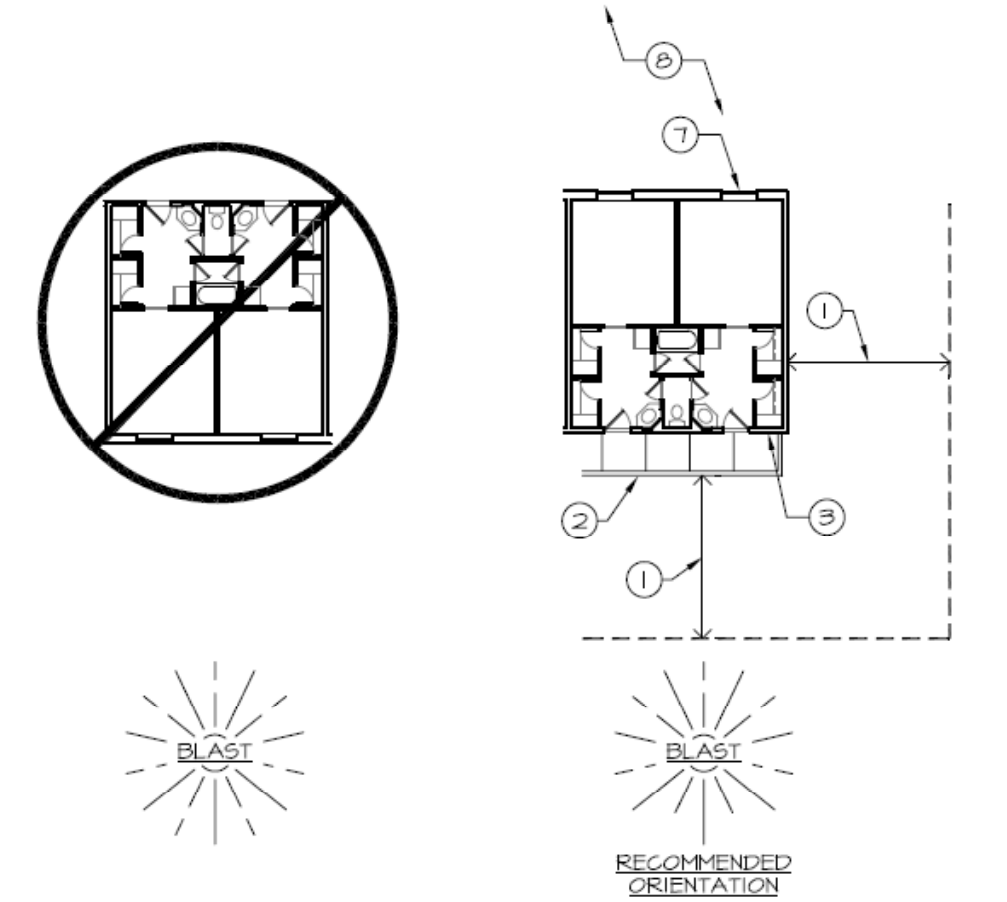
EIA TIA/EIA-568-A-5, *Transmission Performance Specifications for 4-Pair 100 Ohm Category 5e Cabling Addendum No. 5 to TIA/EIA-568-A*, Electronic Industries Alliance, 2500 Wilson Blvd., Arlington, VA 22201, (703) 907-7500, http://www.eia.org

EIA TIA/EIA-568-B.2, *Commercial Building Telecommunications Cabling Standard Part 2: Balanced Twisted-Pair Cabling Components Revision of TIA/EIA-568-A*, Electronic Industries Alliance, 2500 Wilson Blvd., Arlington, VA 22201, (703) 907-7500, http://www.eia.org

EIA TIA/EIA-568-B.3, *Optical Fiber Cabling Components Standard,* Electronic Industries Alliance, 2500 Wilson Blvd., Arlington, VA 22201, (703) 907-7500, http://www.eia.org

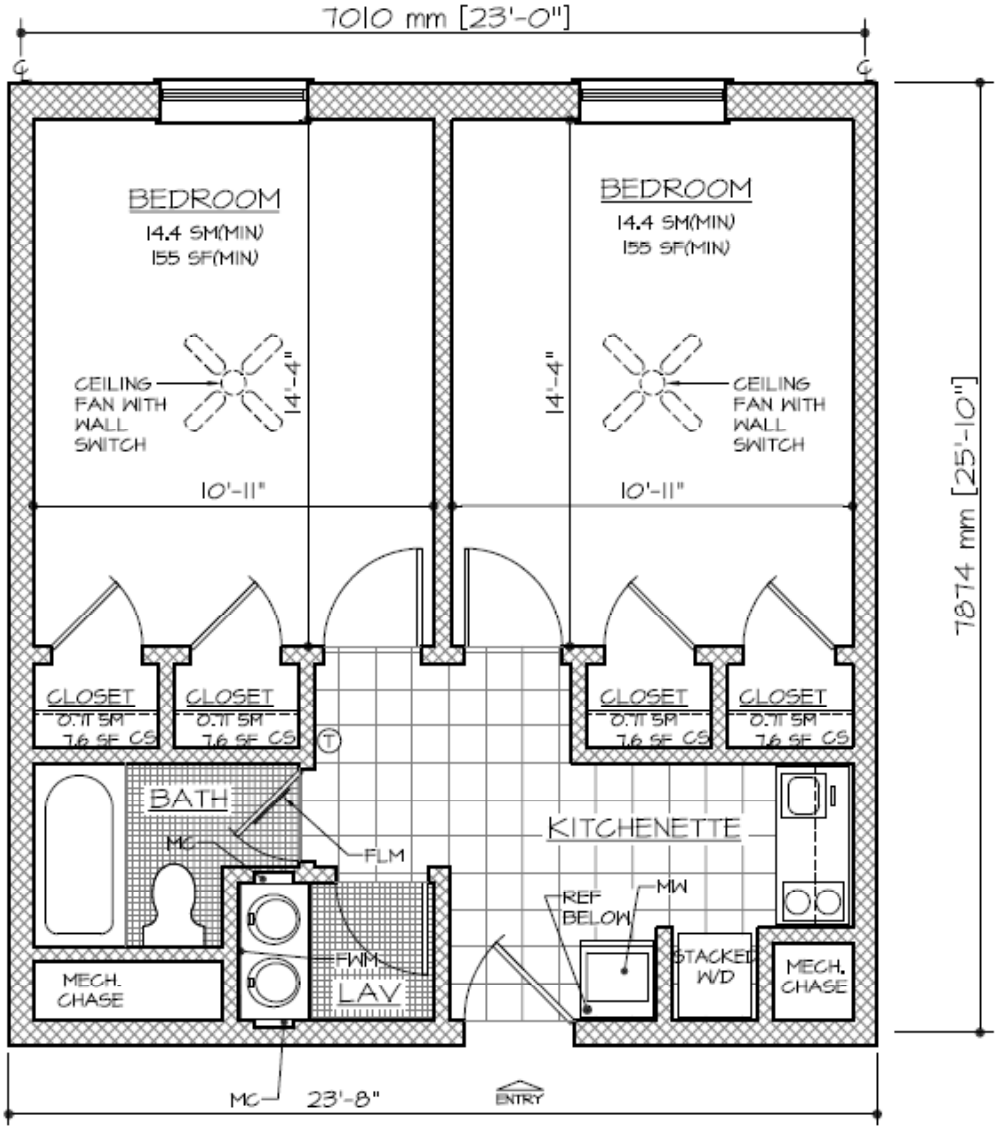
APPENDIX B GRAPHICS

Figure B-1 – Secure Barracks Design



1. SETBACKS - REQUIRED MINIMUM SITE / BUILDING SETBACKS AT ALL EXPOSED SIDES
2. BALCONY - STRUCTURED TO ABSORB / REFLECT BLAST IMPACT
3. EXTERIOR WALL - STRUCTURALLY HARDENED AGAINST BLAST, WITH MINIMAL FENESTRATION
4. KITCHEN / BATH - LOCATE TO THE THREAT SIDE OF THE BUILDING
5. SLEEPING ROOMS - UNDESIRABLE LOCATION ON THE DANGER SIDE OF THE BUILDING
6. SLEEPING ROOMS - DESIRABLE RELOCATITON ON THE PROTECTED SIDE OF THE BUILDING
7. GLAZING - MINIMIZED, OPERABLE AND LOCKABLE
8. PROTECTED COURTYARD - ACCESS LIMITED BY FENCE OR STRUCTURE, WITH NO VEHICLE ACCESS

Figure B-2 – The 1+1E Square Apartment



REQUIREMENT
BUILDING GROSS AREA PER APARTMENT
GROSS MODULE AREA
NET SLEEPING AREA

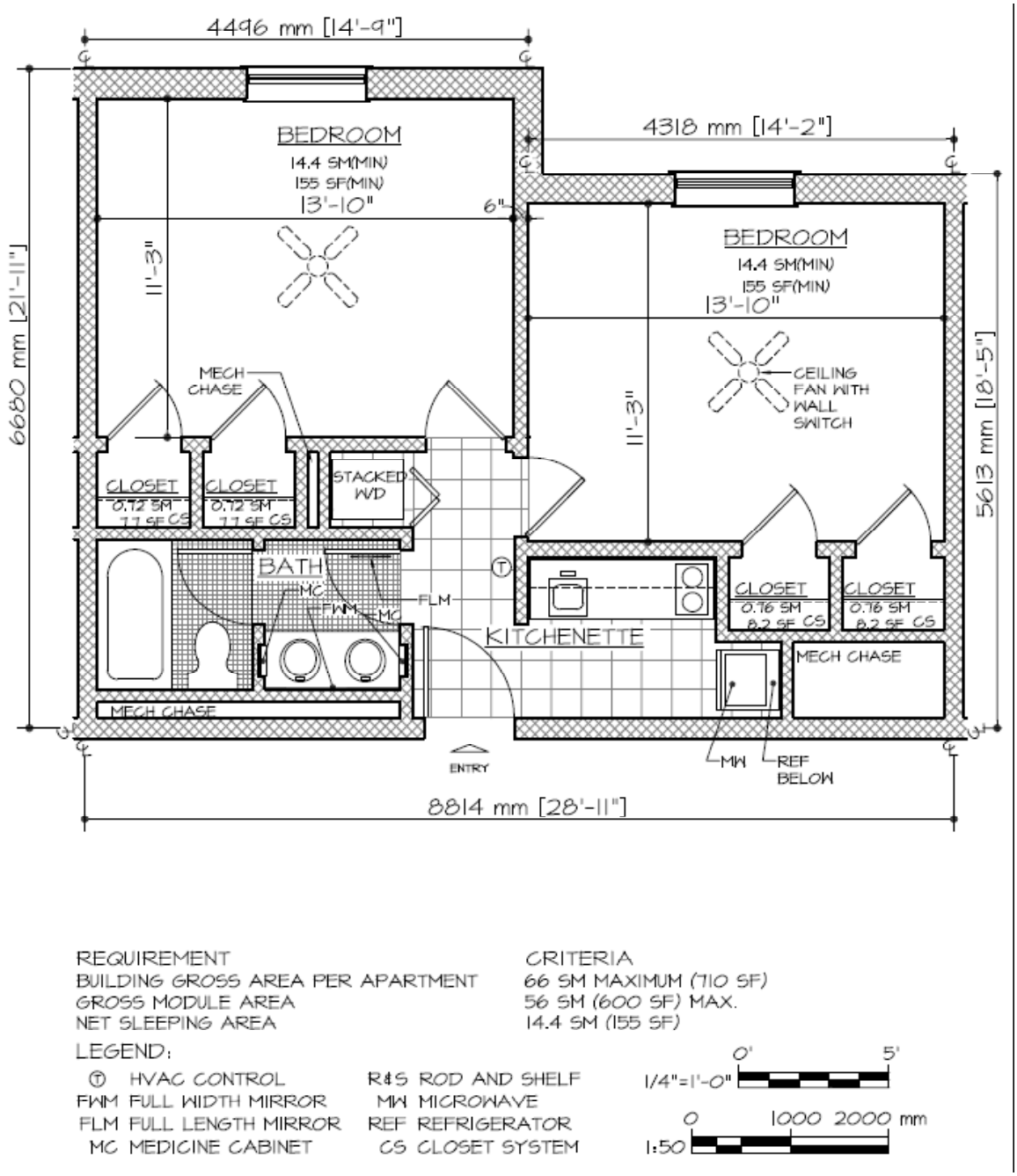
CRITERIA
66 SM MAXIMUM (710 SF)
56 SM (600 SF) MAX.
14.4 SM (155 SF)

LEGEND:

ⓣ HVAC CONTROL	CS CLOSET SYSTEM
FLM FULL LENGTH MIRROR	MW MICROWAVE
FWM FULL WIDTH MIRROR	REF REFRIGERATOR
MC MEDICINE CABINET	

0' 5'
1/4"=1'-0"
0 1000 2000 mm
1:50

Figure B-3 – The 1+1E Offset Apartment



REQUIREMENT	CRITERIA
BUILDING GROSS AREA PER APARTMENT	66 SM MAXIMUM (710 SF)
GROSS MODULE AREA	56 SM (600 SF) MAX.
NET SLEEPING AREA	14.4 SM (155 SF)

LEGEND:

T	HVAC CONTROL	R&S	ROD AND SHELF
FWM	FULL WIDTH MIRROR	MW	MICROWAVE
FLM	FULL LENGTH MIRROR	REF	REFRIGERATOR
MC	MEDICINE CABINET	CS	CLOSET SYSTEM

1/4"=1'-0" 0' 5'

1:50 0 1000 2000 mm

Figure B-4 – The Navy 2+0 Room

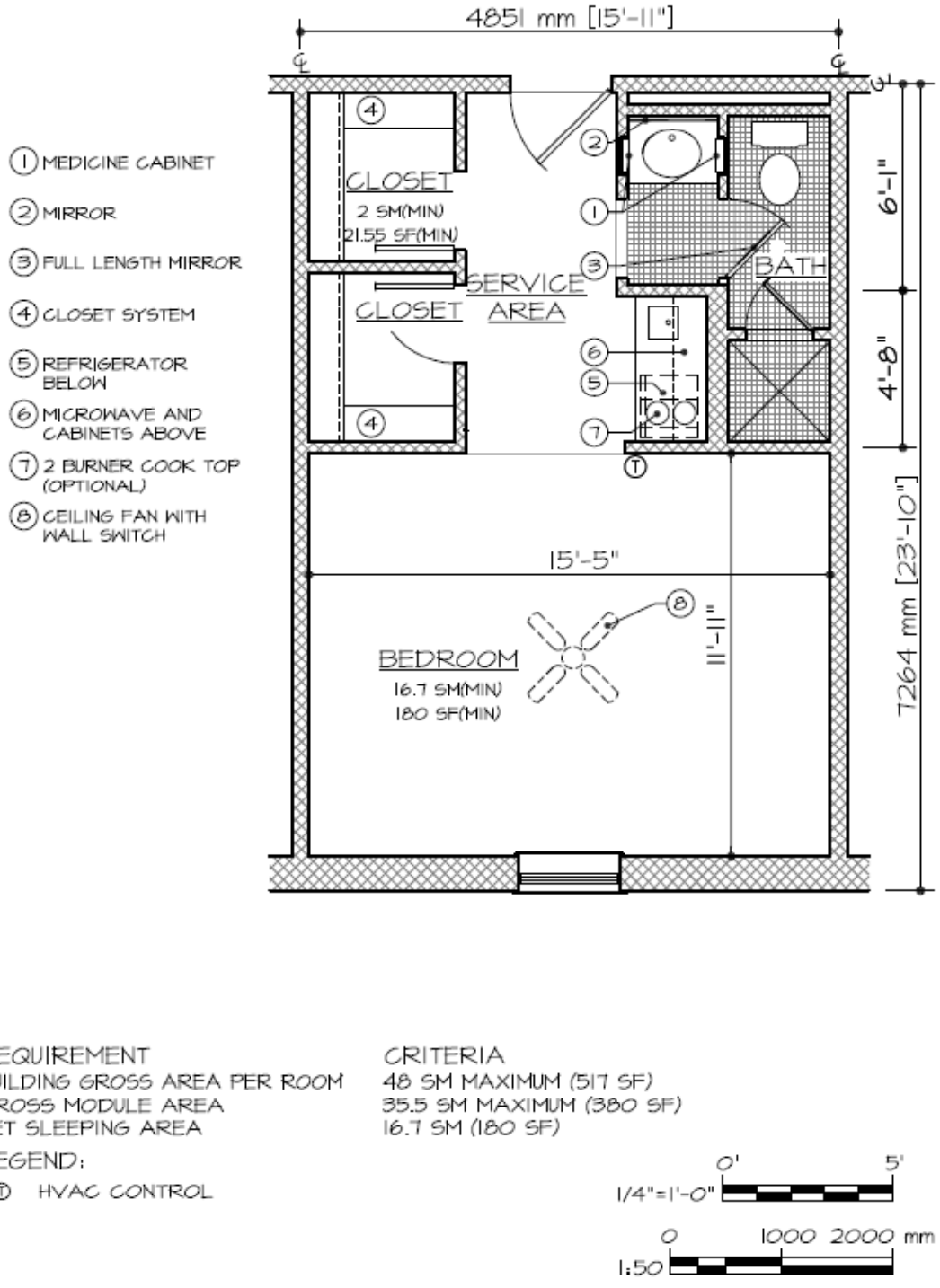
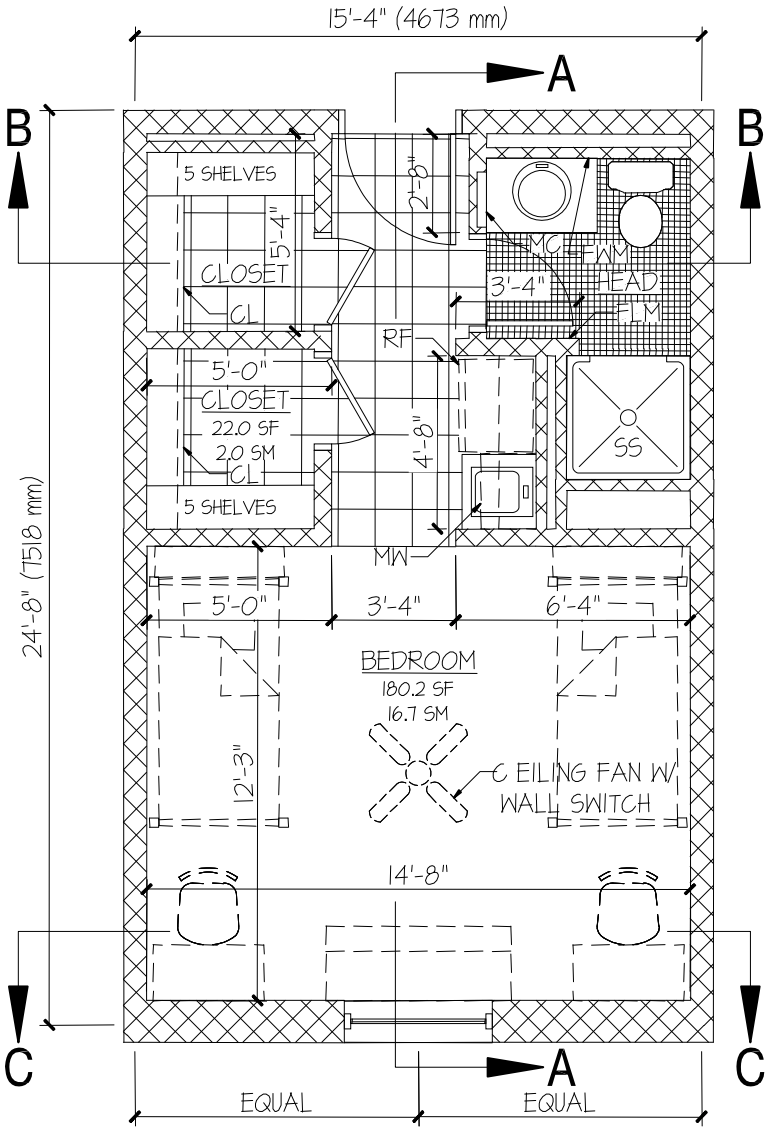


Figure B-5 – The Marine Corps 2+0 Room (Interior Access)



LEGEND:

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

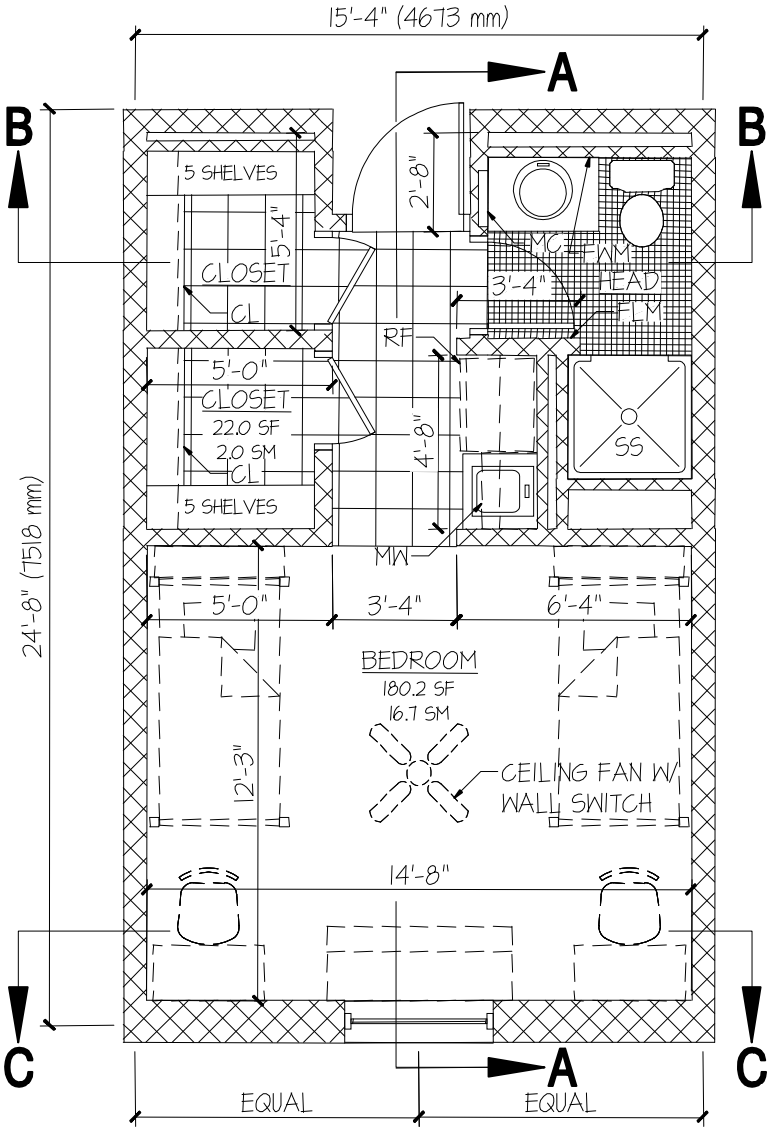
REQUIREMENT	CRITERIA
GROSS ROOM SQUARE FOOTAGE (WITHOUT BRICK VENEER)	373.4 SF (34.6 SM)
NOTE: BRICK VENEER AND AIRSPACE ADDS 8.2 SF TO GROSS SF, TOTALING 381.6 SF (35.4 SM)	
NET SLEEPING AREA	180.2 SF (16.7 SM)
CLOSET #1	22.0 SF (2.0 SM)
CLOSET #2	22.0 SF (2.0 SM)

REQUIRED 2+ 0 ROOM PLAN
(INTERIOR CORRIDOR ACCESS)

SCALE: 1/4" = 1'-0"

SCALE: 1/4" = 1'-0"

Figure B-6 – The Marine Corps 2+0 Room (Exterior Access)



LEGEND:

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

REQUIREMENT	CRITERIA
GROSS ROOM SQUARE FOOTAGE (WITHOUT BRICK VENEER) NOTE: BRICK VENEER AND AIRSPACE ADDS 8.2 SF TO GROSS SF, TOTALING 381.6 SF (35.4 SM)	373.4 SF (34.6 SM)
NET SLEEPING AREA	180.2 SF (16.7 SM)
CLOSET #1	22.0 SF (2.0 SM)
CLOSET #2	22.0 SF (2.0 SM)

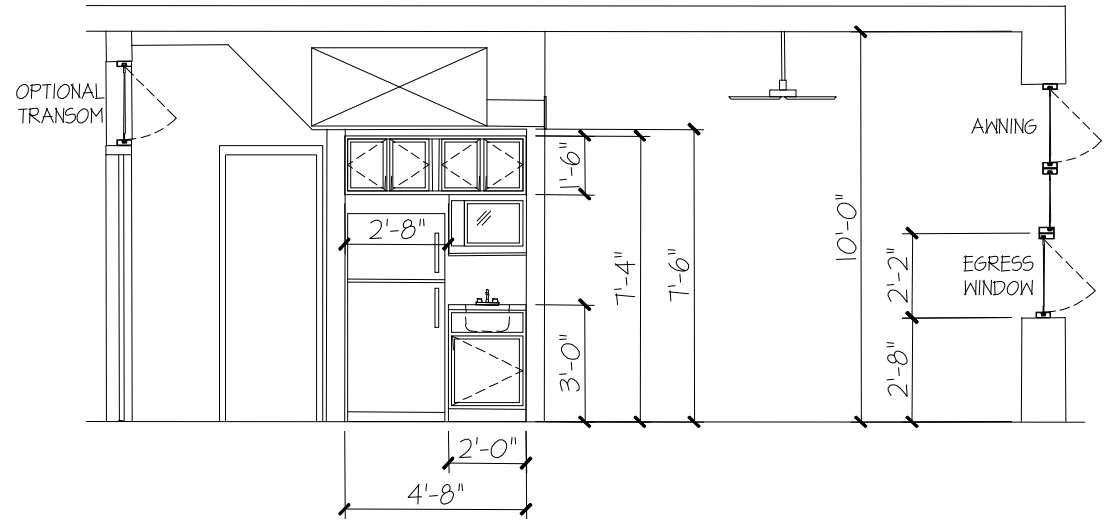
REQUIRED 2+ 0 ROOM PLAN (EXTERIOR BREEZEWAY ACCESS)

SCALE: 1/4" = 1'–0"

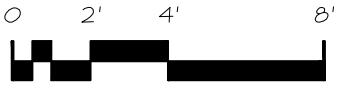
0 2' 4' 8'

SCALE: 1/4" = 1'-0"

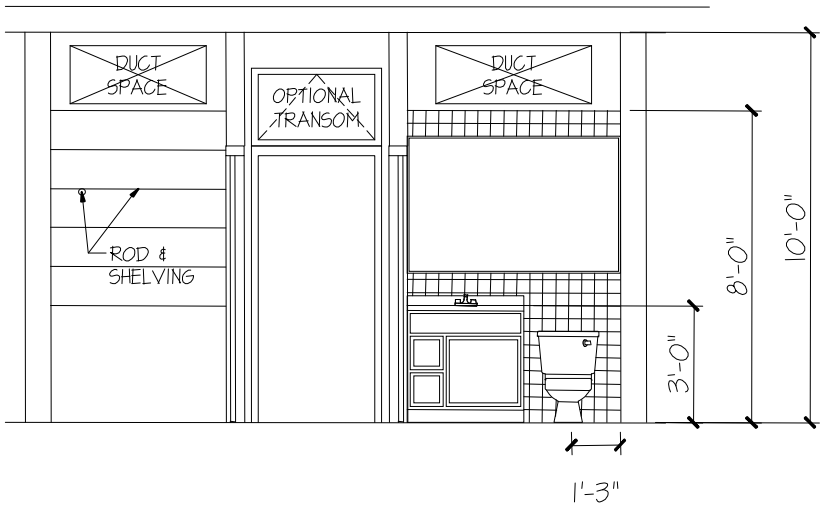
Figure B-7 – Sections A, B & C of 2+0 Room



A SECTION THRU 2+ 0 ROOM
SCALE: 1/4" = 1'-0"



SCALE: 1/4" = 1'-0"



B SECTION @ ENTRY
SCALE: 1/4" = 1'-0"

Figure B-7 – Sections A, B & C of 2+0 Room

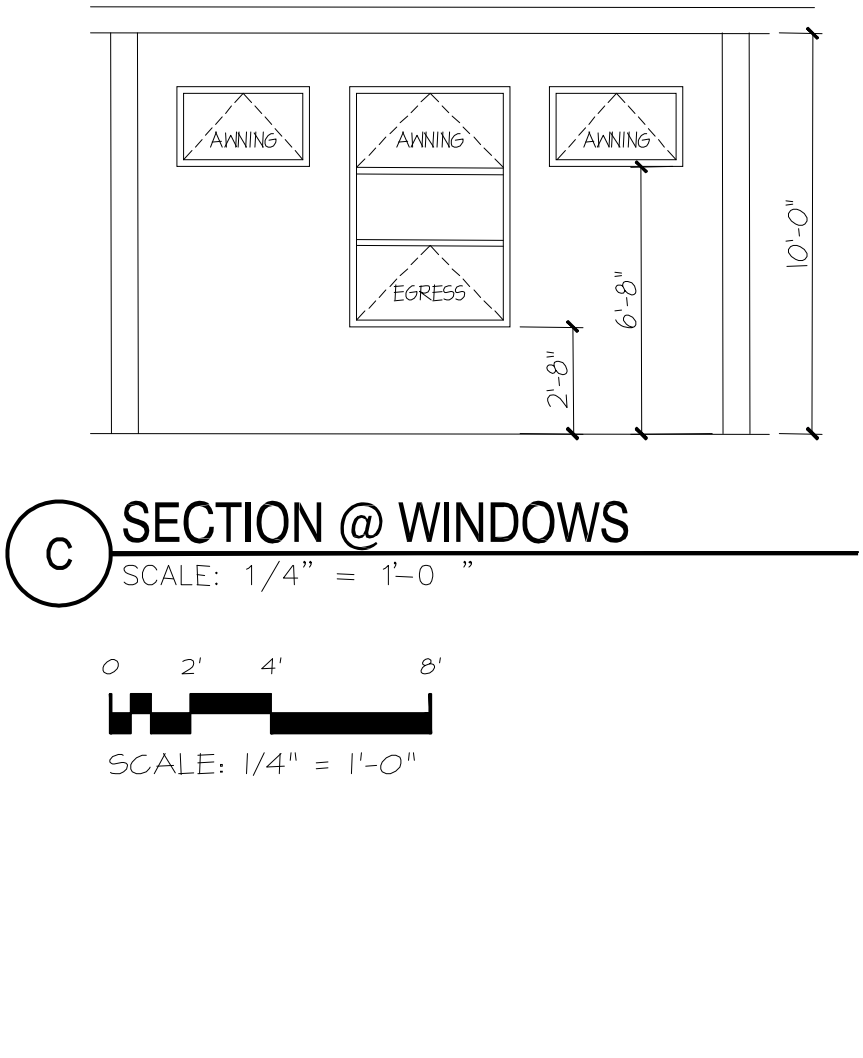


Figure B-8 – The Navy 2+2 Module (Interior Access Plan)

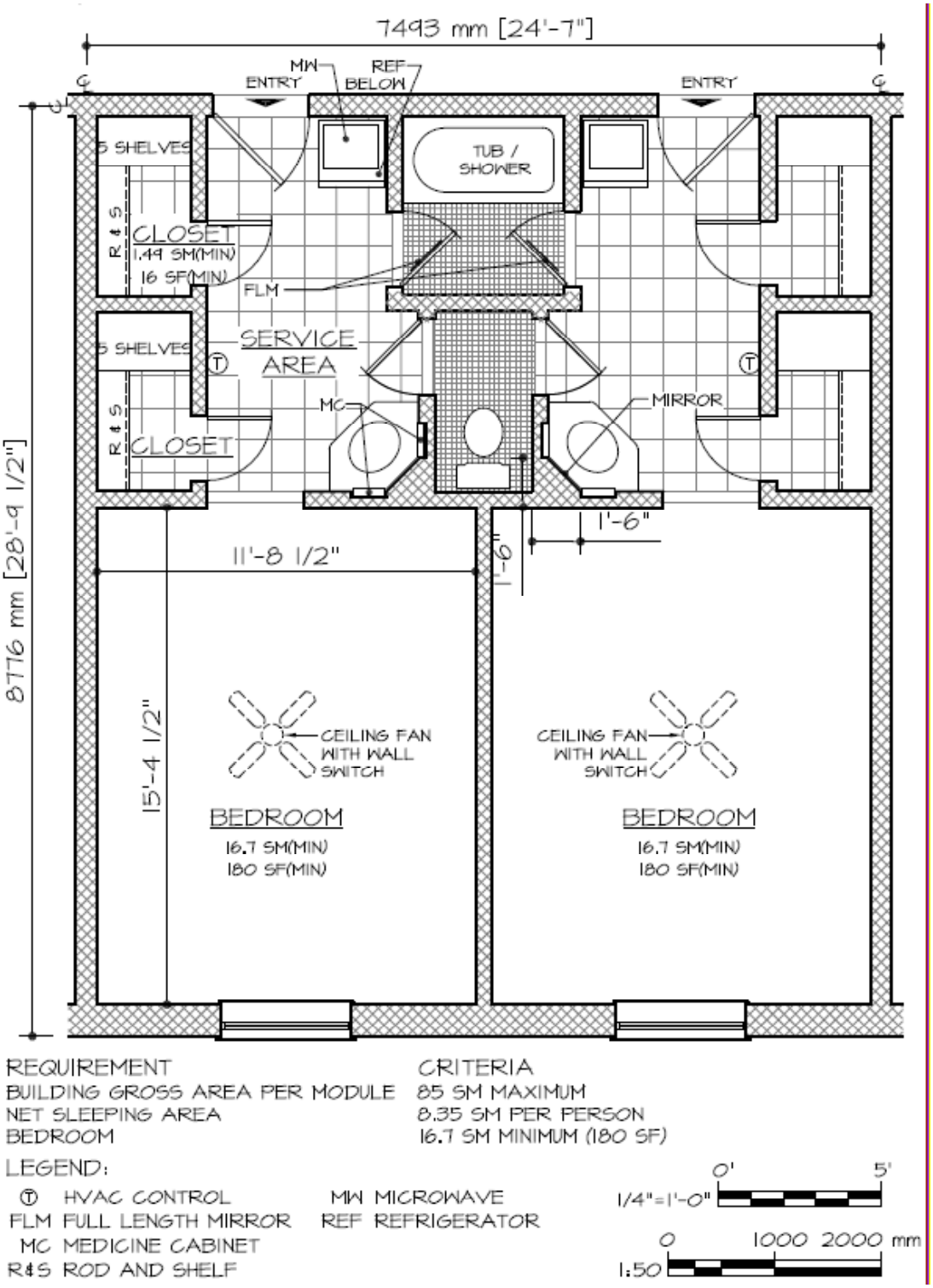


Figure B-9 – The Navy 2+2 Module (Exterior Access Plan)

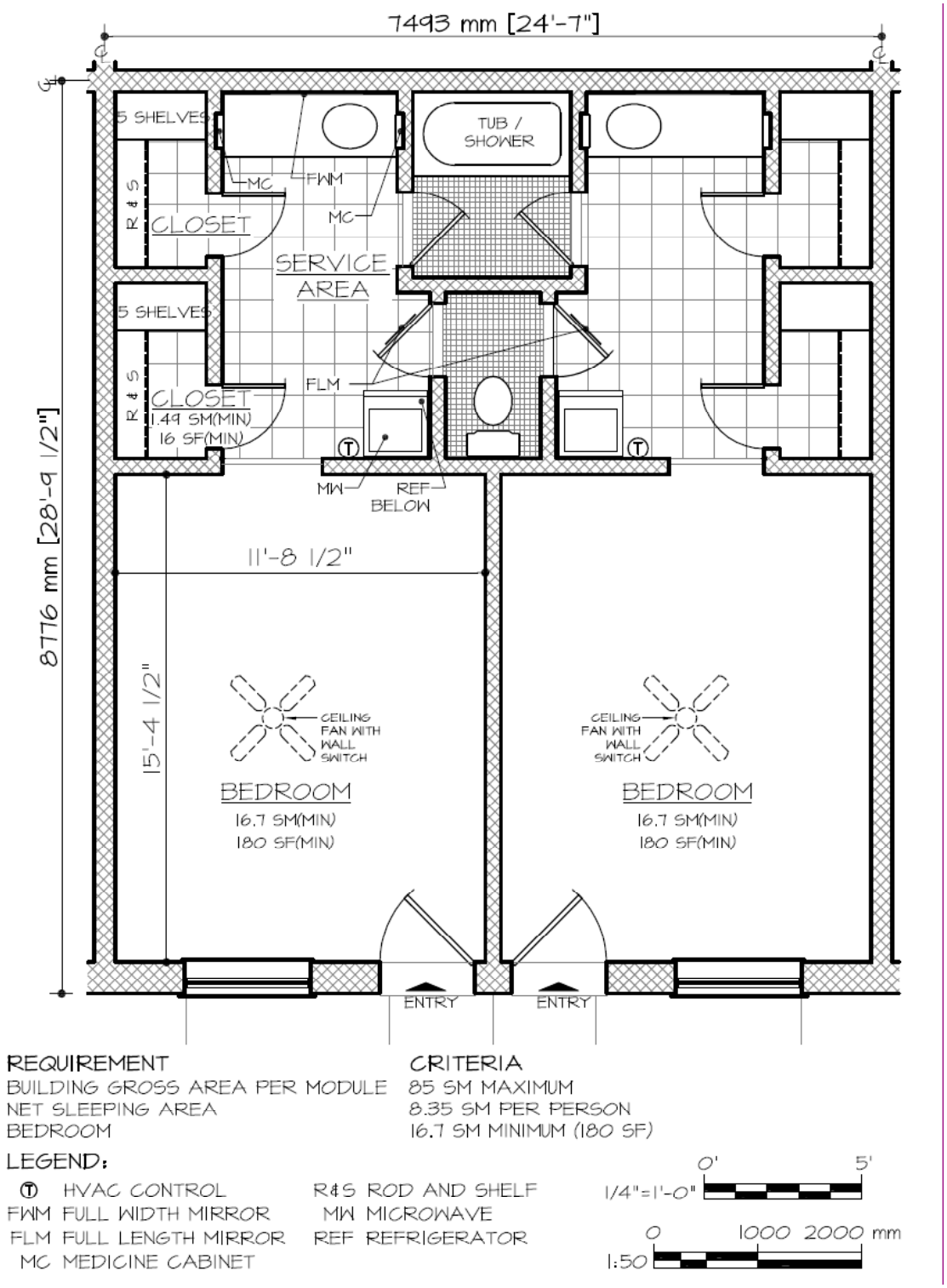


Figure B-10 – Room Elevation

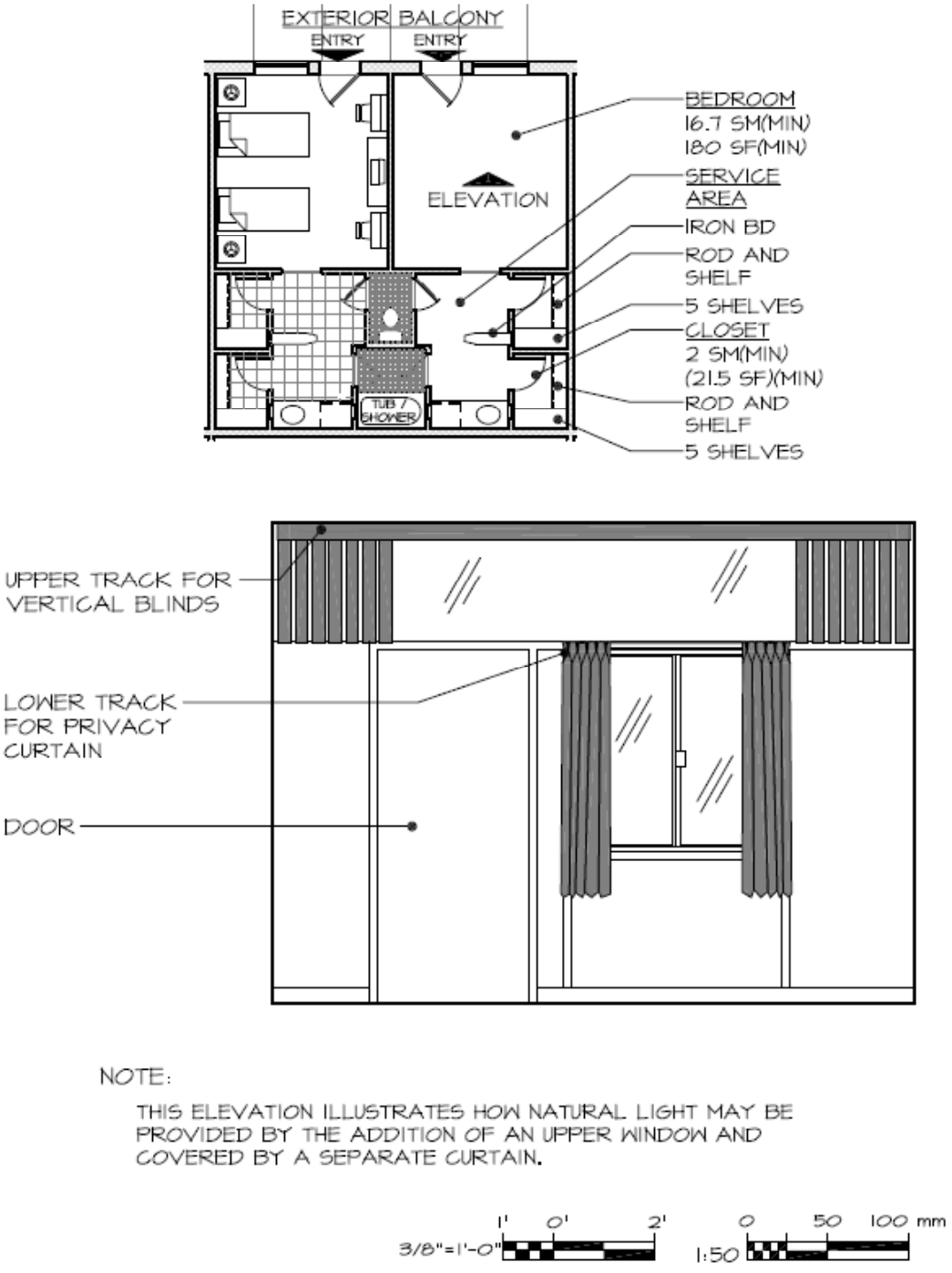


Figure B-11 – Market Style Apartment