UFC 4-721-10
31 July 2002

UNIFIED FACILITIES CRITERIA (UFC)

DESIGN:
NAVY AND MARINE CORPS
BACHELOR HOUSING

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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

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

Change No.	**Date**	**Location**
1	20 AUG 02	Chapter 8 – has been deleted.

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.

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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).

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 **APPLICABILITY AND MINIMUM STANDARDS**. This UFC provides information required for preparation of both Navy Bachelor Housing and Marine Corps Bachelor Housing design. It is applicable to projects inside the Continental United States, (CONUS), Outside the Continental United States (OCONUS), and Overseas. 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 Bachelor Housing and Marine Corps Bachelor Housing. It does, however, establish minimum design standards that must be followed. Designers are encouraged to exceed these standards for Navy Bachelor Housing within budgetary constraints where appropriate. It also establishes certain maximum standards that shall not be exceeded. The standards provide criteria for determining site evaluation and planning, landscape design, facility design, and interior design. Mandatory DoD minimum antiterrorism standards for new and existing inhabited buildings are contained in Appendix B of UFC 4-010-01, *DoD Minimum Antiterrorism Standards For Buildings*. Recommended antiterrorism measures for new and existing inhabited buildings are included in Appendix C of UFC 4-010-01. The standards in UFC 4-010-01 are minimum requirements regardless of threat.

1-3 **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.

1-4 **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.

1-5 **WAIVERS**. The criteria described in this UFC is written specifically for new and replacement construction, and restoration and modernization where feasible, and may not be altered 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. Requests for waivers should be sent via the chain of command to the NAVFAC Engineering Innovation and Criteria Office (EICO). EICO is responsible for the technical development of Department of Navy design criteria. The EICO POC is David M. Young, RA at youngdm@efdlant.navfac.navy.mil.

- For the Navy: EICO will discuss the waiver with the claimant and the Navy Bachelor Housing Program Management Office (BHPMO). EICO 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.

- For the Marine Corps: EICO 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 to the Assistant Secretary of the Navy (Installations and Environment) via the Commandant.

CHAPTER 2

PROJECT PLANNING

2-1 **PROJECT INITIATION AND PLANNING**. This UFC provides information required for preparation of DD 1391, which initiates project development. This includes information about functions, space allowances, overall building size, site evaluation, and special factors to consider in developing overall scope and cost estimates. It provides data and criteria needed at each stage of NAVFACENGCOM planning, project engineering, and the design process. Additional documentation may be provided in accordance with Chief of Naval Operations (CNO) or Commandant of the Marine Corps (CMC) guidance.

2-1.1 **Site Selection**. Site selection is a key aspect of the initial project work and requires thoughtful consideration. This is generally part of a comprehensive planning process and must be completed prior to submission of a military construction project. After site selection and approval, thorough site and field investigations are performed.

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 found in this UFC. Unique local requirements concerning building program and design criteria are included in the PCE. Antiterrorism/Force Protection requirements are established as part of the design program and are identified <u>as a separate line item on the planning documents.</u>

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 “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 may have been constructed to one assignment standard, but temporarily used for another assignment as critical requirements demand.

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

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

2-3 **REPAIRS OF EXISTING FACILITIES**. 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. Implementation of the DoD Minimum Antiterrorism Standards For Buildings, UFC 4-010-01 is required 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, Facilities Projects Manual*.

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. The basic functional considerations for each project are:

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 <u>each</u> room occupant.

- Navy basic living units are referred to as “Apartment” for the 1+1E, “Room” for the Navy 2+0, and “Module” for the 2+2.

- Marines use the term “Room” in reference to their basic living unit, the “Marine Corps 2+0” and the “Marine Corps 1+1 Officer Plan.”

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

- 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).

2-4.2 **Building Common Areas (Spaces)**: Building Common Areas (Spaces) are programmed spaces within the building that are not included within the Apartment, Room, or Module except for the 1+1E designs which include a washer and dryer in each apartment. 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 apartment, room, or module.

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

2-4.3 **Recreation and Community Areas (Spaces)**: Outdoor activity areas.

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 1+1E Apartment for the following permanent party personnel.

- Rotationals in Homeport.
- Shipboard Sailors in homeport.
- Shore Duty and crew members of small ships.
- Students in training over 20 weeks.

2-5.2 **Visitors Quarters**. Use the Navy 2+0 Room for the following transient personnel:

- Crewmembers of Uninhabitable Ships.
- Deployed Rotational Units.
- Personnel on TEMDUINS orders to schools not supported by Dormitory berthing (see below).
- Personnel on TDY orders.
- 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.

- Students assigned to initial assignment training, e.g., “A” School.
- Officer Indoctrination School (OIS).

- Naval Academy Preparatory School (NAPS).
- Broadened Opportunity for Officer Selection and Training (BOOST).
- 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 Unit Personnel Units (TPU)**. That portion of TPU facilities that houses disciplinary service-members.

2-5.6 **Geographic Bachelors**. The Navy does not plan or construct for Geographic Bachelors and Permanent Party Civilians in CONUS and Hawaii (see DoD 4165.63M).

2-5.7 **Civilians.** The Navy does not plan or construct for Civilians in CONUS or Hawaii.

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.

2-6.1 **Permanent Party and Transients**. Use the Marine Corps 2+0 Room. Occupancy of 180 days or more is considered permanent party occupancy; occupancy of less than 180 days is considered transient. Note: The Navy and Marine Corps 2+0 plans differ. The 1+1 design may only be used by the Marine Corps when individually approved by the CMC.

2-6.2 **Recruits and Trainees**. Use the Open-Bay Plan to house personnel engaged in duty that requires special housing in groups to accomplish their tasks. These include basic training, Military Occupational Specialty (MOS) Training, Special Forces with special mission needs, or other special situations as approved by HQMC (Code LF).

2-6.3 **Geographic Bachelors and Civilians**. The Marine Corps does not plan or construct for Geographic Bachelors and Permanent Party Civilians in CONUS and Hawaii (see DoD 4165.63M).

2-7 **DESIGN LIMITATIONS**. The Apartment, Room, and Module Plans shown in the graphic examples are the basic building blocks from which Navy and Marine Corps 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 may differ. Refer to the specific Apartment, Room or Module chapter for a detailed description of required Common Areas (Spaces). All plan features must be included as a mandatory minimum.

- The Net Living/Sleeping Areas must be met or exceeded.
- The gross area maximums must not be exceeded.
- Plan room dimensions are NOT fixed, but must remain functional. Bedrooms must be sized to accommodate two twin beds.

2-8 **GROSS BUILDING AREA**. When calculating the Gross Building Area, measure from the outside face to the outside face of exterior walls. The gross building area for Navy and Marine Corps Bachelor Housing must not exceed the specific limits for the Apartment, Room, or Module Plan being used. 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 Apartment, Room, or Module plans. Refer to the specific Apartment, Room or Module chapter for a detailed description of required Common Areas (Spaces).

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.

- The maximum allowed per plan Gross Building Area of 66m^2 (710 ft^2) per 1+1 Apartment was established by Secretary of Defense letter of 6 November 1995.
- The maximum allowed per plan Gross Building Area of 48m^2 (517 ft^2) is established for the Navy 2+0 Room.
- The maximum allowed per plan Gross Building Area of 42.5m^2 (457.5 ft^2) is established for the Marine Corps 2+0 Room.
- The maximum allowed per plan Gross Building Area of 85m^2 (915 ft^2) is established for the 2+2 Module (1–3 stories;) 89 m^2 (958 ft^2) (over 3 stories.)
- The maximum allowed per plan Gross Building Area of 13m^2 (140 ft^2) is established for Open Bay Plans.

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 allowances per Apartment, Room, or Module for programming purposes, count the following as Half-Scope:

- Balconies and Exterior Covered Areas over 2 m^2 (21.5 ft^2), and measure from the face of the enclosure wall to the edge of the covered area;
- Stairs and Stairwells; half of the horizontal projection of the stair per floor they serve.
- Elevators and shafts (count as half scope per floor that they serve);
- Chases used for mechanical, electrical or plumbing count as half area per floor that they serve..

2-8.4 **Excluded Scope Items**: When calculating Gross Building Area Allowances for programming, do not include the following:

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

2-8.5 **Additional Gross Area**: Multi-level construction requires additional structural and mechanical support. Therefore, for buildings above 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. Refer to each Apartment, Room, or Module chapter for a description of the specific added allowance.

2-9 **GROSS APARTMENT, ROOM, OR MODULE AREA**. Gross Apartment, Room, or Module area is defined as the area within the walls comprising the perimeter of an Apartment, Room, or Module.

- Wall thickness and chase areas within the perimeter walls are included in the Gross Apartment, Room, or Module Area.
- Gross Apartment, Room, or Module Area is measured from the centerline of perimeter walls shared with interior corridors, common chases, or other rooms.
- Gross Apartment, Room, or Module Area is measured to the outside face of exterior walls.
- Corner rooms with two exterior walls should have the same interior dimensions as other rooms, even though, technically, the Gross

Apartment, Room, or Module 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.

- Net Living/Sleeping Area is measured from the inside face of one wall to inside face of the opposing wall.
- Door swing areas, and mechanical unit areas which specifically serve the resident, are included in net calculations.
- Areas excluded from Net Living/Sleeping Area calculations are areas not privately controlled by a resident, e.g., shapes furred to hide through-the-wall equipment or used for storage not specific to the 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 Apartment, Room, or Module.

2-10 **SITE SELECTION**.

- Navy: Follow the established planning process.
- Marine Corps: Follow the site selection process in accordance with the Base Installation Master Plan.

2-11 **RENOVATION LIMITATIONS**.

- All features must be provided as a minimum, e.g., 2 medicine cabinets.
- Do not renovate for the sole purpose of meeting new construction criteria standards if the housing currently meets assignment size.
- Designs may be adjusted to work within reasonable architectural practice.
- The minimum living/sleeping area (for the chosen Apartment, Room, or Module Plan) is required and must be provided as a clear area. This takes precedence over existing structural features.
- A shower may be provided in place of a tub/shower in Navy Bachelor Housing. Marine Corp Bachelor Housing will have showers.
- Freestanding columns are allowed, provided they do NOT interfere

with a functional area.

2-12 **ASBESTOS MITIGATION**. The use of asbestos containing materials is prohibited.

2-12.1 **Renovation**. A preplanning site investigation should identify existing asbestos probabilities affecting a restoration or modernization project. In accordance with OPNAVINST 5100.23, *Navy Occupational Safety and Health (NAVOSH) Program Manual*, the Navy's objective for the Asbestos Management Program Ashore is to eliminate personnel exposure to airborne asbestos fibers in occupied Navy buildings and workspaces through cost effective management of asbestos containing material (ACM). The program consists of several key elements:

- Inventory, Survey, and Material Evaluation;
- Operations and Maintenance;
- Design and Abatement of Hazards.

Facilities constructed before 1980 targeted for restoration work should be given priority for completing the first two elements. For Restoration and Modernization projects, verify the Asbestos Survey and Operation and Maintenance (O&M) Plan during initial site investigations. Positive and assumed ACM should be noted in the contract documents based on the potential for disturbance. Any project scope involving removal and/or encapsulation of ACM will incorporate the third element of the Asbestos Management Program and comply with OSHA 29 CFR 1926.1101, *Asbestos*. Projects concerning asbestos abatement should also incorporate Unified Facilities Guide Specification (UFGS) 13281N, *Engineering Controls of Asbestos Containing Materials*. An indefinite quantity unit price schedule should be included in the contract bidding schedule to pre-price ACM removal that may not have been identified in the inventory. . This will deter costly change orders due to hidden conditions.

2-13 **LEAD MITIGATION**. A preplanning initial site investigation should identify existing surface coatings and materials (e.g., pipes, solder, etc.) that contain lead probabilities affecting the project. A lead survey should be developed to identify any lead containing material before beginning any restorations or modernizations. If a lead survey is not available, consider painted surfaces in pre-1982 facilities as lead containing.

2-13.1 **Lead Based Paint**. Lead-based paint is forbidden throughout all buildings – interior and exterior, including recreation equipment (for example, the post for a basketball net.) Lead-based paint is defined as any paint containing more that six one-hundredths of 1 per centrum (0.06 percent) lead by weight (calculated as lead metal) in total nonvolatile content of the paint, or the equivalent measure of lead in the dried film of paint already applied. Use UFGS

13283N, Removal/Control and Disposal of Paint with Lead for modifications to existing quarters.

2-14 **HISTORICAL STRUCTURES**. Initial planning should include the State historical representative if the building is eligible or listed as a historically significant structure.

2-15 **NEPA**. Initial planning should include considerations for effecting compliance with the National Environmental Policy Act (NEPA).

2-16 **ARCHAEOLOGICAL**. A preplanning site investigation should include whether the affected area of construction involves earthwork in an archaeologically sensitive area.

2-17 **SEISMIC REQUIREMENTS**. Seismic requirements are governed by UFC 1-200-01, *General Building Requirements*. Additional guidance is contained in the following documents:

- COMNAVFACENGCOM letter *Seismic Design Criteria for Owned and Leased Buildings*.
- COMNAVFACENGCOM letter *Seismic Design Criteria for New Facilities, 3 May 1999* and COMNAVFACENGCOM letter *Seismic Design for New Facilities, 7 June 1999*.
- *Seismic Hazards Mitigation Program for Facilities Outside the Continental United States, its Territories and Possessions*.

2-18 **MOCKUPS**. Construction 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.

- For new construction, mockups may be elemental or whole, built off-site and later dismantled or built on-site and converted for actual use.
- For Restoration and Modernization, mockups should be constructed in place on-site and converted to actual use to be most cost effective.
- The use of mockups is desirable for Navy construction projects, and Navy Restoration and Modernization projects that contain more than 24 Apartments, Rooms or Modules.
- Mockups are encouraged for Marine Corps projects where space is available and time permitting, and if so desired by the base project officer.

2-19 **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 base environmental personnel and the NAVFACENGCOM EFD or EFA Air Pollution Engineer.

- 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. The system should be changed to active if needed based on follow-up testing.

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

2-20 **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 uses of the site.

2-21 **FORCE PROTECTION**. 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.

2-21.1 **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:

- 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.

- 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.

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

- Designation of separate entrances for deliveries, visitors, and resident vehicles.

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

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

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

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

- Controlling access underneath, on top of, and physically adjacent to facilities.

2-21.2 **Exposure to Exterior Explosive Attack**. Facilities should avoid facing main building entrances directly or broadly onto adjacent roads, parking, or vulnerable areas. 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 6-mm (1/4-in) nominal laminated glass for all exterior windows and glazed doors. Design to prevent progressive collapse for buildings 3 or more stories. Arrange rooms on a single corridor to overlook a protected courtyard. 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*.

2-21.3 **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 handbook as Figure 2-1.

- 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. Refer to the graphic illustration.

- 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/reflect the energy of a substantial blast load as defined for the established threat level.

- Minimize access to vulnerable areas.

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

- Setbacks- required standoff distances must be observed on all sides of the structure.

- 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.

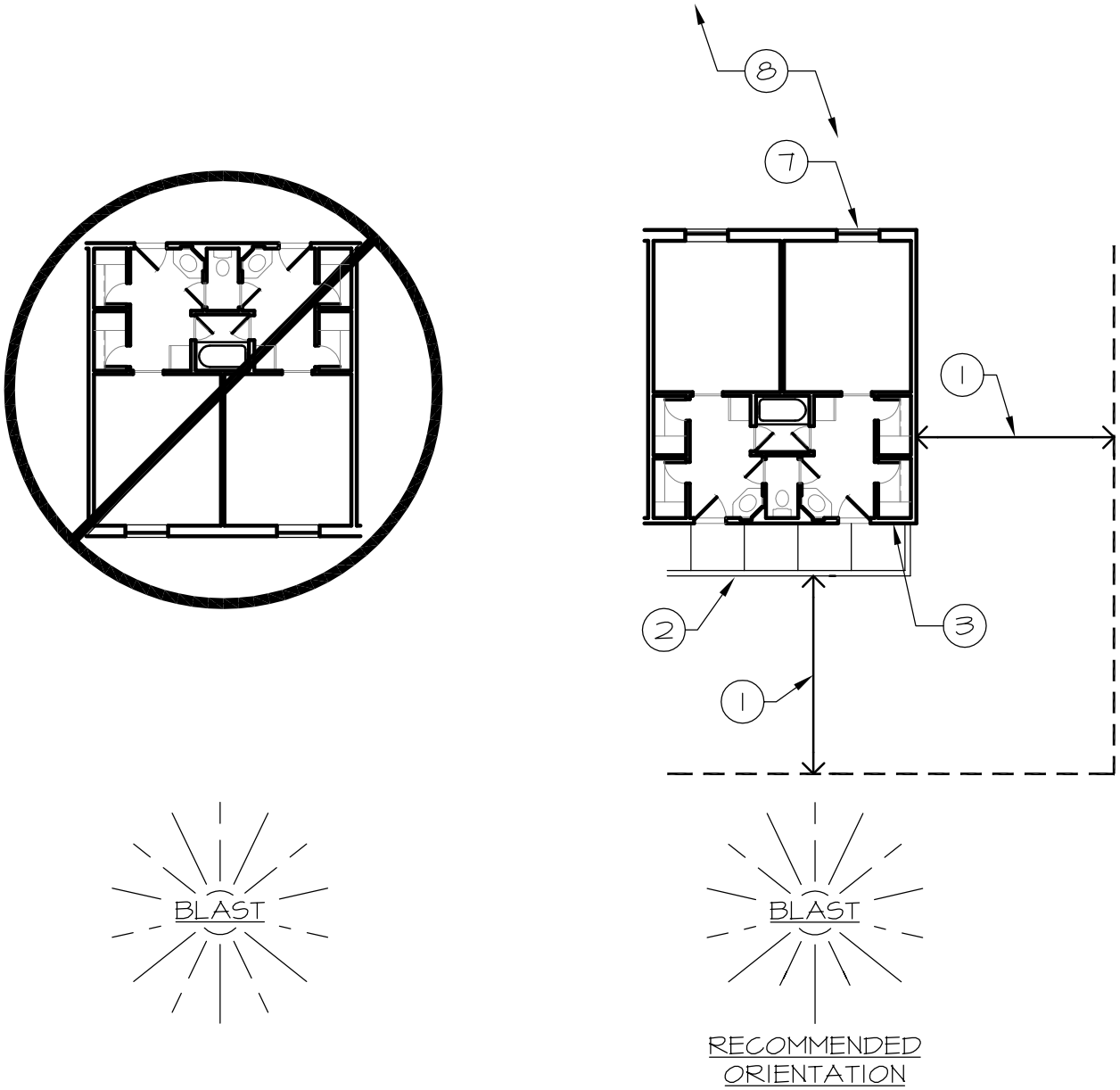
- Kitchen/Bath- Kitchen and bath areas must be located to the threat side of the building as a buffer to the more frequently occupied sleeping areas.

- Glazing- Limit the use of doors and windows in high-risk quarters. Windows sizes should be minimized, and the glazing must be secure type as defined by MIL-HDBK-1013/12. Windows must be operable, and with lockable hardware. Doors and frames must blast resistant and as a minimum meet the requirements of UFC 4-010-01.

- 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 automotive access and provides substantial protection against access by an unauthorized person or vehicle.

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

Figure 2-1 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

2-22 WHOLE ROOM CONCEPT.

2-22.1 **Navy.** The Bachelor Housing "Whole Room Concept" is an approved method of procuring interior room furnishings for new, restored or modernized Bachelor Housing. Procuring furnishings through the "Whole Room Concept" is mandatory for new, restored or modernized Bachelor Housing and authorized by NAVSUP Policy letter 97-30, dated 24 February 1997. This policy letter includes a template justification for award to other than the lowest price GSA vendor under the "Whole Room Concept." Furnishings included in the "Whole Room Concept" include: beds, dressers, desks, chairs, draperies, and window coverings, carpeting, wall coverings, and incidental artwork or decoration. For new, restoration or modernization Bachelor Housing projects, the "Whole Room Concept" furnishing package must be coordinated with the architect developing the facility design to ensure a complete, coordinated and attractive facility design.

2-22.2 **Marine Corps.** The Bachelor Housing "Whole Room Concept" is an approved method of procuring interior room furnishings for new, restored or modernized Bachelor Housing. Procuring furnishings thought the "Whole Room concept" is mandatory for new, restored or modernized Bachelor Housing. Coordination should be made with HQMC, Code LFS for funding and procurement planning. Furnishings included in the "Whole Room Concept" are: beds, dressers, desks, chairs, draperies and window coverings, carpeting, wall coverings, and incidental artwork or decoration. For new, restoration or modernization Bachelor Housing projects, the "Whole Room Concept" furnishings package must be coordinated with the architect developing the facility design to ensure a complete, coordinated and attractive facility design.

CHAPTER 3

FUNCTIONAL AREA AND SPACE CRITERIA

3-1 **GENERAL**. Navy and Marine Corps Bachelor Housing provides three distinct types of accommodations: Permanent Party, Transient and Recruit/Training complexes. 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. Dormitories and Training/Recruit quarters must be clean, secure, and well maintained.

3-2 **BASIC ASSIGNMENT CATEGORIES**. Apartment, Room, and Module requirements vary according to the assigned use. These uses are defined in Chapter 1, along with Navy and Marine Corps guidance for when each plan should be used.

3-3 **BASIC APARTMENTS, ROOMS, AND MODULES**. The basic Apartment, Module, and Room Plans are detailed and graphically illustrated in separate chapters in this manual and are basically described as follows:

- The 1+1E Apartment;
- The Navy 2+0 Room;
- The Marine Corps 2+0 Room:
- The 2+2 Module;
- The Marine Corps 1+1 Officer Plan
- Open-Bay Berthing.

3-3.1 **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.

3-4 **BATHROOMS**. Bathrooms are to be of residential design, quality, and finish.

3-5 **PERSONAL CLOSETS**. Provide at least one closet for each resident. Closets must be accessible to each living/sleeping area. Provide each closet with closet organizers with storage extending to the ceiling. Provide additional storage in service areas as appropriate. Closets should be full height, using the space above 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. Refer to the suggested furniture and fixtures schedule for additional information. A light with motion-activated switch

is required in deep Navy closets and is recommended in others. Carefully placed lighting outside 0.6 meter deep (2 foot 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 (Marines require padlocking slide bolt hardware for personal closets). Bi-fold and sliding doors are not acceptable.

- For Marine Corps projects: Any deviations must be approved by HQMC (Code LF).

3-6 **SERVICE AREA**. This term refers to spaces in the 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.

3-7 **LAUNDRY FACILITIES**. Laundry facility requirements vary by Plan. Refer to specific Plan's chapter for details.

3-8 **RESIDENT BULK STORAGE**. Examples of items typically stored in bulk storage areas include luggage, original stereo system cartons, snow tires, bicycles, surfboards, ski equipment, and other sports gear. Resident bulk storage requirements vary by Apartment, Room, and Module Plan. Refer to the plan's chapter for details.

3-9 **UTILITY AREA (SPACE)**. Provide appropriate space for the mechanical and electrical systems and telecommunications. Note that up to 4 square meters (43 ft^2) per Apartment, Room or Module Plan may be added to the allowable building gross area for structures four stories or higher in Navy and Marine Corps projects.

3-10 **ELEVATORS**. Elevators are required in facilities with four or more stories. Install an elevator using the additional 4 m^2 (43 ft^2) allowance for high-rise construction.

- Provide freight-sized elevators to accommodate movement of both furniture and personnel.

- For one to three stories, install concrete pad only (for the use of a portable lift to assist in furniture movement).

3-11 **MAIL SERVICE**. Mail service requirements vary by plan. Refer to the specific plan chapter for details.

3-12 **CIRCULATION**. Design interior corridors to emphasize each quarter's entrance, and to de-emphasize length or "tunnel vision." 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, about 1.52 meters (5 feet). Ensure that exterior walkways have non-slip surfaces and drain away from the building. Exterior sidewalks that serve Apartments, Rooms, or Modules with exterior entry at ground level do not count against the gross building areas for calculation of limits.

3-13 **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 plan's chapter for details.

3-14 **GAME ROOMS**. Requirements for Game Rooms vary by plan. Refer to plan's chapter for details.

3-15 **VENDING AREA (SPACE)**. Discuss vending area, machine quantity and the desired type with the installation and the local Navy Exchange General Manager/Vending Manager or the Marine Corps Community Services Director as appropriate. Allow space for a minimum of three soft drink machines and a snack vending machine. The dimensions should be a minimum recess of 1 m (40") from the rear wall to the soffit. The minimum clearance from the finish floor to the soffit should be 2 m (80") for soft drink machines and 1.9 m (74") for vending machines. Minimum space requirements for the vending areas are 4.5 m (180") long x 2.13 m (84") wide x 2 m (80") high from finished space to finished space. All vending areas should be located on the ground floor with access from the parking areas. Pay telephones should not be located in this area. Locate vending space for security of users and for ease of service. 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. Floor and base finishes should resist heavy wear and must be designed for easy maintenance. Provide vending areas with appropriate outlets for appliances. Provide space for at least one waste receptacle and one recycling container. Provide an accented slip resistant floor surface, and a dropped ceiling with open grid type panels or acoustic tiles to accent the vending area. Provide a retail commercial lighting level in this area.

3-16 **PUBLIC TOILETS**. By Federal Statute, all Public toilet rooms must be accessible to disabled persons. Provide public toilets accessible from the lobby and the public areas. Provide commercial grade fixtures. For a 96-person project, provide a minimum of one water closet, one urinal, and two sinks in the men's toilet and two water closets and two sinks in the women's toilet. Add one of each fixture for each increment of 100 persons to a maximum of five toilets. Provide overhead lighting and valance lighting light at the lavatory mirror.

Provide floor and wall finishes as described in Table 10-1. Use solid surfacing material for lavatory counters and solid plastic, continuous anchorage toilet partitions. Provide a floor drain placed out of the usual traffic pattern and close to the water closets. Provide appropriate dispensers for soap, towels, toilet tissue, and recessed waste receptacle. A single unisex toilet may be adequate for smaller capacity bachelor housing.

3-17 **HOUSEKEEPING/JANITORIAL**. Requirements for Housekeeping varies by Plan. Refer to the specific Plan's chapter for details.

3-18 **ADMINISTRATIVE AREA (SPACE)**. Requirements for Administrative areas (spaces) varies by Apartment, Room, and Module. Refer to specific Plan chapter for details.

3-19 **LOBBY, VESTIBULE, AND RECEPTION**. Lobby, Vestibule, and Reception vary by Plan. Refer to the specific plan chapter for details.

3-20 **TELEPHONES**. Provide a structured voice telecommunications cabling system including fiber optic or Category 5e copper cabling from the base telecommunications system to the room wall outlet. Provide dedicated telecommunications equipment rooms, backbone, horizontal, and campus media and raceway systems as required by the following industry standards:

- EIA TIA/EIA-570-A, *Residential Telecommunications Cabling Standard*;
- EIA TIA-758, *Customer-Owned Outside Cable Plant Telecommunications Cabling Standard*;
- EIA TIA/EIA-569-A, *Commercial Building Standard for Telecommunications Pathways and Spaces*;
- 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*;
- EIA TIA/EIA-568-B.2, *Commercial Building Telecommunications Standard Part 2: Balanced Twisted-Pair Cabling Components Revision of TIA/EIA-568-A*; and
- EIA TIA/EIA-568-B.3, *Optical Fiber Cabling Components Standard*.

Provide government owned outside plant media and raceway in accordance with EIA/TIA 758.

3-20.1 **In-Room Telephone Services**. Provide In-Room Telephone services for each resident per the assigned Plan design. Provide one dedicated line to two separate outlets on opposite walls. Locate one outlet on each party

wall of the bedroom for flexibility and easy furniture access. No additional telephone lines or outlets are required if the room is intended for temporary use of 2 occupants. For example: a 1+1E bedroom is designed to house 1 occupant by assignment therefore a minimum of 1 separate line and 2 outlets on opposite walls are required. Voice and data communication lines can be ganged into one 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.

3-20.2 **Public Telephones**. Requirements for Public Telephones vary by Plan. Refer to individual Plan chapter for details.

3-21 **LOCAL AREA NETWORK SYSTEMS (LAN)**. Provide building space as required for Local Area Network hubs, routers, and rack mounted equipment supporting administrative operations, training, and support operations associated with Bachelor Housing management and mission assignment of the occupants. Media may share a common raceway system with telephone and other communications systems. Refer to EIA/TIA 570-A, 758, 569-A, 568-A-5, 568-B.2 and 568-B.3 for additional criteria. Provide a permanent installed conduit/raceway system to support LAN operations.

3-21.1 **In-Room Services**. Provide In-Room access to Services to EACH resident in all plans except Open Bay Berthing. For example: a 2+0 room is designed to house 2 occupants, therefore 4 outlets are required. Provide each occupant with two LAN outlets per room for voice and data system connections. Locate LAN outlets on each party wall of the bedroom for flexibility and easy furniture access. Media may share a common raceway system with telephone and other communications systems. Refer to EIA/TIA 570-A, 758, 569-A, 568-A-5, 568-B.2 and 568-B.3 for additional criteria. Do not provide services to open bay berthing spaces.

3-22 **ACCESSIBILITY REQUIREMENTS**. Bachelor Quarters are Federal reservations and are governed by the Uniform Federal Accessibility Standards (UFAS.) Barrier-free design should be in accordance with the requirements of the UFAS as required by 42 U.S.C. 4151-4157, Architectural Barriers Act of 1968, and consistent with 29 U.S.C. 794, Rehabilitation Act of 1973, but also meet the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG.) Use the criteria that provides the greatest barrier-free design requirements. Spaces in Bachelor Housing that are open to the public, civilian staff, visitors and transients should be barrier free. The apartments and modules of Permanent Party quarters and 95% of the transient rooms are for able-bodied personnel and do not require accessibility provisions Refer to the reference section for additional information.

3-23 **CABLE TELEVISION**. In each building, provide a permanently installed conduit raceway system for cable television system media. Exposed surface mounted wiring is not permitted. Provide fire resistant media listed and

marked suitable for the application. Installations must comply with Articles 820, or 830 of the National Electrical Code. Requirements vary by Apartment, Room, and Module Plan. Refer to specific Plan chapter for additional details.

CHAPTER 4

THE 1+1E APARTMENT

4-1 **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 4-1) and the Offset Apartment (Figure 4-2).

4-2 **ASSIGNMENT AND USE**. Refer to paragraph 1-6 for the proper assignment use for this design type.

4-3 **GROSS BUILDING AREA PER APARTMENT**. The Gross Building Area for the 1+1E Apartment may not exceed:

- 66 m^2 (710 ft^2) per module for (1-3 stories)
- 70 m^2 (753.5 ft^2) per module for (4 stories and higher). 4 m^2 (43.1 ft^2) per module may be added to structures that are 4 stories or higher for the accommodation of structural, mechanical and electrical requirements.

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

4-4 **GROSS APARTMENT AREA**. The Gross Apartment Area is approximately:

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

Minor modifications may be made to these plans, but they must be approved by OPNAV N46. Refer to paragraph 1-8 concerning waivers.

4-5 **NET LIVING/SLEEPING AREA**: The Net Living/Sleeping Area is the size of each bedroom. <u>This is a fixed minimum.</u>

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

4-6 **FEATURES**: Each Apartment plan includes two single occupancy bedrooms (each with two personal closets for each resident), an in-suite bathroom, laundry area, and compact kitchen area.

- Bedroom area of 14.4 m^2 (155 ft^2) is a fixed minimum. Room dimensions are NOT fixed, but must remain functional. Bedrooms must be sized to accommodate two twin beds.
- Kitchen, Bath, and Closet features are fixed, but layouts and sizes

are not.

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

- 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.

- Compact Kitchens: Plan features are mandatory minimum.

- Required: Upper and lower cabinets, microwave, electric 2-burner cook tops, and refrigerator (half or full size).

4-7 **VARIATIONS**: Major plan variations will not be approved. See paragraph 1-8 for waivers.

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

- Mechanical, electrical, and communication requirements are included inside the Apartment area.

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

4-8 **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.

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

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

4-9 **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 full size refrigerator, single bowl sink, microwave, and cabinets as illustrated in the graphics provided.

4-10 **REQUIRED COMMON AREAS**. The required common spaces are specifically identified as follows. No deviation from this list is allowed without N46 approval.

- Interior Corridors: 1.52 m (5 ft) wide interior corridors minimum.
- 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.
- Stairways
- Mail Room or Mailbox area. Provide one U.S. Postal Service approved mailbox per resident. The mailboxes may be located indoors or in an outdoor covered area, gazebo, or where size warrants, or even in a separate enclosed building subject to local postal rules. Prior to design, the bachelor housing manager and public works office should discuss plans with local postmasters.
- Building Mechanical Room
- Building Electrical Room
- Telecommunications Room
- Wall construction adjustments, masonry vs. stud, etc. must come from the Common Area allowance.
- Provide picnic and barbecue areas. One sand volleyball court and one full outdoor basketball court per 300 residents if not available within 1/2 kilometer (0.3 miles). Similar outdoor recreation facilities can be substituted.

4-11 **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, additional spaces may be included 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.

- Vending.

- 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.

4-12 **NON-PRIORITY AREAS**: The following areas are non-priority and may be added to the design only after required spaces and priority spaces have been incorporated.

- Lobby, Vestibule, and Reception. Locate the lobby and its vestibule for easy identification by arriving residents. 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.

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

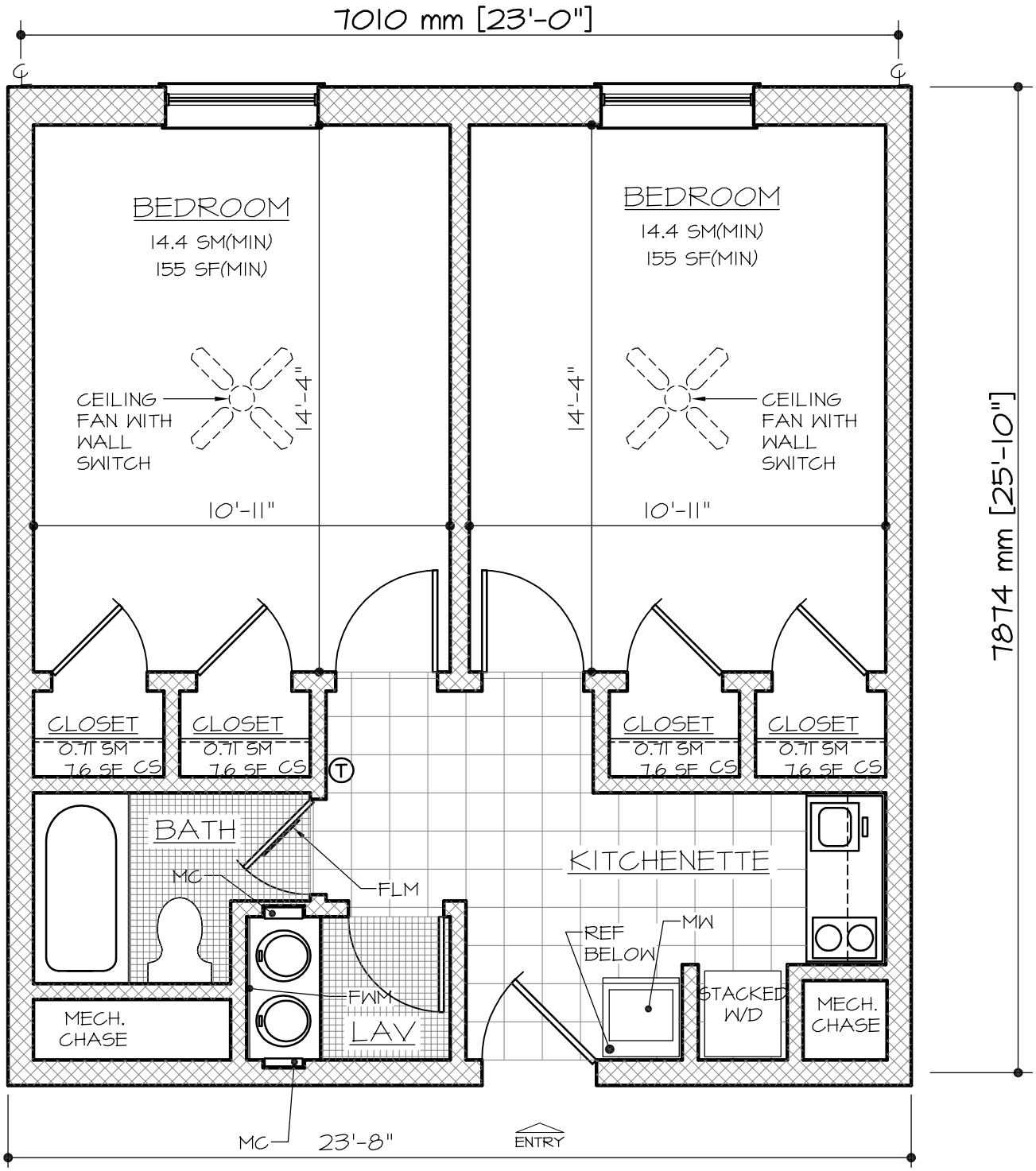
- Bulk Storage room

- Public Toilet

- 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.

- If additional space is available in the 1+1E 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 module.

Figure 4-1 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
FLM FULL LENGTH MIRROR
FWM FULL WIDTH MIRROR
MC MEDICINE CABINET
CS CLOSET SYSTEM
MW MICROWAVE
REF REFRIGERATOR

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

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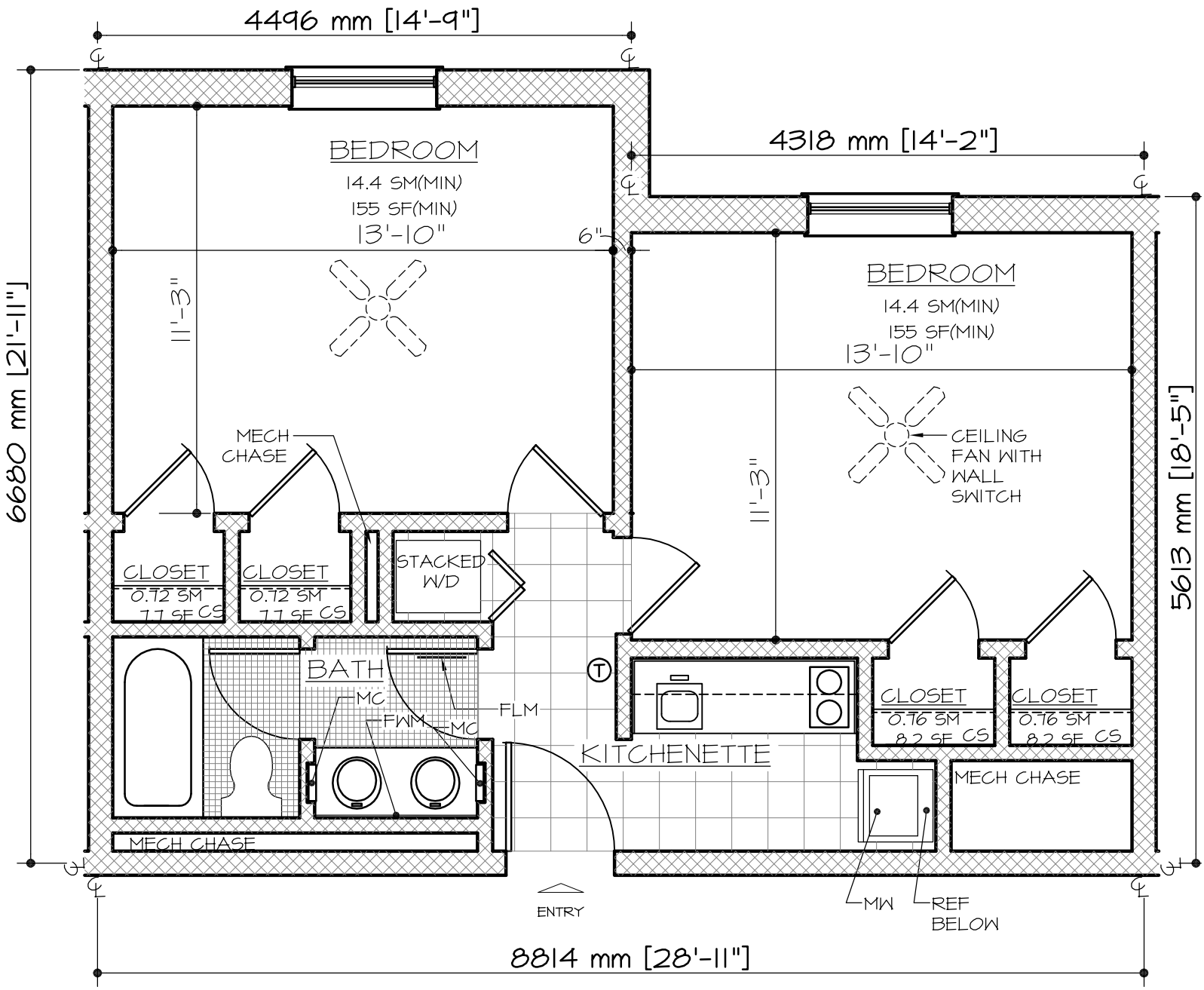
Figure 4-2 The 1+1E Offset Apartment



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

4-13 **LOCK REQUIREMENTS**. Electric locks are required on Apartment entrance doors and bedroom doors.

- Provide each occupant one key that opens the apartment entry door, and one bedroom door.
- 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.
- Marine Corps projects require padlocking slide bolt hardware for closets.

4-14 **PARKING**. In addition to the parking requirements outlined in Chapter 10, provide parking for 70% of the resident capacity. Motorcycle parking should be provided as necessary. Provide dedicated space with concrete paving. Bicycle parking should be provided as necessary. Provide secure, weather protected, conveniently located facilities. Provide visitor parking for 2% of the resident capacity. Locate staff parking at the outer areas of the parking area.

CHAPTER 5

NAVY 2+0 ROOM

5-1 **NAVY 2+0 ROOM**. This plan includes a double occupancy sleeping area, two personal closets, a shared bathroom, and a shared food preparation area.

5-2 **ASSIGNMENT AND USE**. Refer to paragraph 1-6 for the proper assignment use for this design type.

5-3 **GROSS BUILDING AREA PER ROOM**. The Total Allowable Gross Building Area per room may not exceed:

- 48 m^2 (517 ft^2) per module for (one to three stories)
- 50 m^2 (538 ft^2) per module for (four stories and higher).

5-4 **GROSS ROOM AREA**. The Gross Room Area is approximately 35.3 m^2 (380 ft^2)

5-5 **NET LIVING/SLEEPING AREA**. The Net Living/Sleeping Area is the size of the bedroom. <u>This is a fixed minimum.</u>

- 16.7 m^2 (180 ft^2) per bedroom.
- The total net (bedroom) room size of 16.7 m^2 (180 ft^2). allows accessibility to two 2 m^2. (21.5 ft^2) closets (one per person).
- Maximum building area for common spaces may not exceed 12.7 m^2. (137 ft^2) (one to three stories) and 14.6 m^2 (157.2 ft^2) for highrise (over 3 stories).

5-6 **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. If desired, larger refrigerators may be accommodated in the design of the service area. A 2-burner cooktop is optional.

5-7 **REQUIRED COMMON AREAS**. The following areas are Required Common Areas when the 2+0 Room Plan is used.

- Laundry facilities: Provide one washer and two dryers for every 15

residents; 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 3 linear meters (10 linear feet) of folding table with hanging rods above and 1.25 meters (4 feet) of full height hanging for drip-dry clothing.

- Building Utility Room (as required);
- Circulation (corridors and/or balcony access);
- Housekeeping. Provide each floor level with a 1.5 m by 1.5 m (5-ft x 5-ft) 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 23-sq. m. (250 ft^2) net area for housekeeping equipment and supplies. (The size of this space may be adjusted as appropriate to the overall building size.)
- Vending; 9.3 m^2 (100 ft^2 max. per vending area). More than one vending area may be appropriate depending on the number of residents. Locate vending area on ground floor in buildings with three floors or less.

5-8 **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.

- Automatic entry doors and weather vestibule.
- Administration Area; approximately 9.3 m^2 (100 ft^2). Administrative areas should be designed to provide the staff with a secure, efficient, and comfortable environment from which to manage the building. Offices/ workstations should be provided only for authorized BQ administrative staff positions and should be sized in accordance with P-80 criteria for Admin space.
- 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.

- Bulk storage for residents use (as required, extended stay transients only).

- Multi-Purpose Spaces such as: Lounge, Meeting, Conference, Classroom 14 m^2 (150 ft^2 each). Isolate these areas acoustically, and locate them close to public toilets. Finishes should be easily cleaned and should 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 resident's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades.

- Game rooms. Game rooms are optional. Game rooms should be provided for extended stay VQ only. Game rooms should be acoustically isolated 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. Finishes should be easily cleaned, and endure hard use and food spills. Rooms should be provided with substantial natural lighting.

- Public Toilets.

- 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.

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

- Multi-media rentals (closet size).

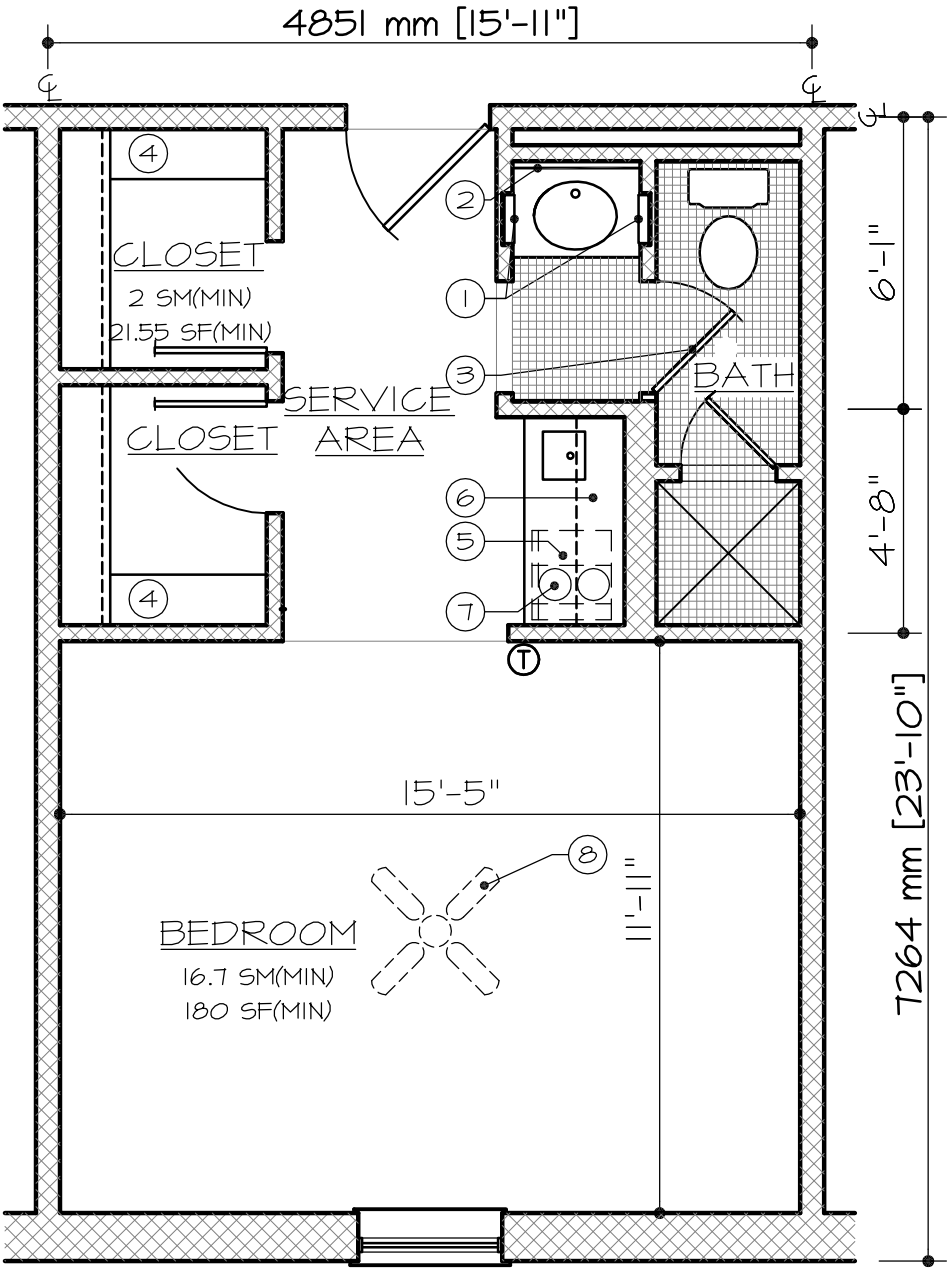
5-9 **LOCK REQUIREMENTS**. Electric locks are required on room entrance doors, bedroom doors, and closet doors.

- Provide each resident one key that opens the room entry door and one closet (without access to the other closet). In single resident rooms, the key may open both closets.

5-10 **PARKING**. In addition to the parking requirements outlined in Chapter 10, provide vehicular parking for 70% of resident capacity. Motorcycle parking should be provided as necessary; provide dedicated space with concrete paving. Bicycle parking should be considered for extended stay transients as necessary; provide secure, weather protected, conveniently located facilities. Provide visitor parking for 2% of resident capacity. Locate staff parking at the outer area of parking lot. Provide for a minimum of two parking spaces for guest check-in.

Figure 5-1 The Navy 2+0 Room

1. MEDICINE CABINET
2. MIRROR
3. FULL LENGTH MIRROR
4. CLOSET SYSTEM
5. REFRIGERATOR BELOW
6. MICROWAVE AND CABINETS ABOVE
7. 2 BURNER COOK TOP (OPTIONAL)
8. CEILING FAN WITH WALL SWITCH



REQUIREMENT	CRITERIA
BUILDING GROSS AREA PER ROOM	48 SM MAXIMUM (517 SF)
GROSS MODULE AREA	35.5 SM MAXIMUM (380 SF)
NET SLEEPING AREA	16.7 SM (180 SF)

LEGEND:

Ⓣ HVAC CONTROL

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

0 1000 2000 mm
1:50

CHAPTER 6

MARINE CORPS 2+0 ROOM

6-1 **MARINE CORPS 2+0 ROOM**. This design configuration includes double occupancy sleeping area, two personal closets, a shared toilet with a shower compartment, and a sink service area. See Figure 6-1.

6-2 **ASSIGNMENT AND USE**. Refer to paragraph 1-6 for the proper assignment use for this design type.

6-3 **GROSS BUILDING AREA**: The Total Allowable Gross Building Area may not exceed

- 42.5 m^2 (458 ft^2) per room for one to three stories.
- 44.5 m^2 (479 ft^2) per room for four stories and higher.

6-4 **GROSS ROOM AREA**. The Gross Room Area is 31.5 m^2 (330 ft^2).

6-5 **NET LIVING/SLEEPING AREA**. The Net Living/Sleeping Area:

- 16.7 m^2 (180 ft^2) per bedroom

6-6 **SERVICE AREA**. The service area in each Room provides access to closets, separate compartments for shower and water closet, and refrigerator/microwave combination, and vanity with lavatory and valance lighting.

6-7 **RECREATION AND COMMUNITY SPACES**. Consider available base/community recreation facilities in coordination with the base MCCS office.

6-8 **REQUIRED COMMON SPACES**. The following spaces are required common spaces when the Marine Corps 2+0 Plan is used except when similar facilities are already available within walking distance of the project. Services should not be duplicated. The minimum required spaces are:

- Laundry facilities: Provide one washer and two dryers for every eight residents. Locate laundry rooms preferably at each floor for easy access and provide acoustic separation from other areas. Provide three linear meters (10 linear feet) of folding table with hanging rods above and 1.25 meters (4 feet) of full height hanging for drip-dry clothing. Set aside a space of 915 mm by 1829 mm (36” x 72”) for soap, bleach, fabric softener and other laundry aid vending in each laundry facility.
- Building Utility Room.
- Circulation, corridors, and/or balcony access.

6-9 **OPTIONAL COMMON SPACES**. The following common spaces are optional when using the Marine Corps 2+0 Plan.

- Automatic entry doors and weather vestibule.

- Administration Area: Administrative areas should be designed to provide the staff with a secure, efficient, and comfortable environment from which to manage the building.

- Lobby, Vestibule, and Reception Desk: Locate the Lobby and 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 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.

- Office Space: Provide other administrative office spaces as required.

- Multi-Purpose Spaces such as: Lounge, Meeting, Conference, Classroom: Isolate the area acoustically, and locate them close to public toilets. Finishes should be easily cleaned and should 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 resident's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades. With the advent of Marine Online and the military requirement of Marines to access the internet to review military records and conduct personnel administration, <u>multi-purpose rooms are required to be wired with infrastructure to support high speed internet access.</u> Provide a minimum of two eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room.

- Game Rooms: Game Rooms should be acoustically isolated 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 Marine Corps Bachelor

Housing personnel. Finishes should be easily cleaned, and endure hard use and food spills. Rooms should be provided with substantial natural lighting.

- Vending: Discuss vending area, machine quantity and the desired type with the activity and the local Marine Corps Community Services, Services Director.

- Public Toilets.

- Public Telephone. 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.

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

- Multi-media rentals (closet size).

- Additional Resident Bulk Storage as required.

- Mail Service.

- Housekeeping: Provide a 1.5 m by 0.9 m (5-foot x 3-foot) closet for permanent party facilities. At each floor level, provide a 1.5 m by 1.5 m (5-foot x 5-foot) closet for Transient facilities. In addition, for transient facilities, provide one secure space of about 23-sq. m. (250 ft^2) net area for housekeeping equipment and supplies. Finish floor, base, and wall at the mop receptor to resist water. Slip resistant quarry tile or ceramic tiles are examples of acceptable finishes. Provide a motion-activated light.

6-10 **DOOR/LOCK REQUIREMENTS**. Electric locks are required on Room entrance doors and bedroom doors.

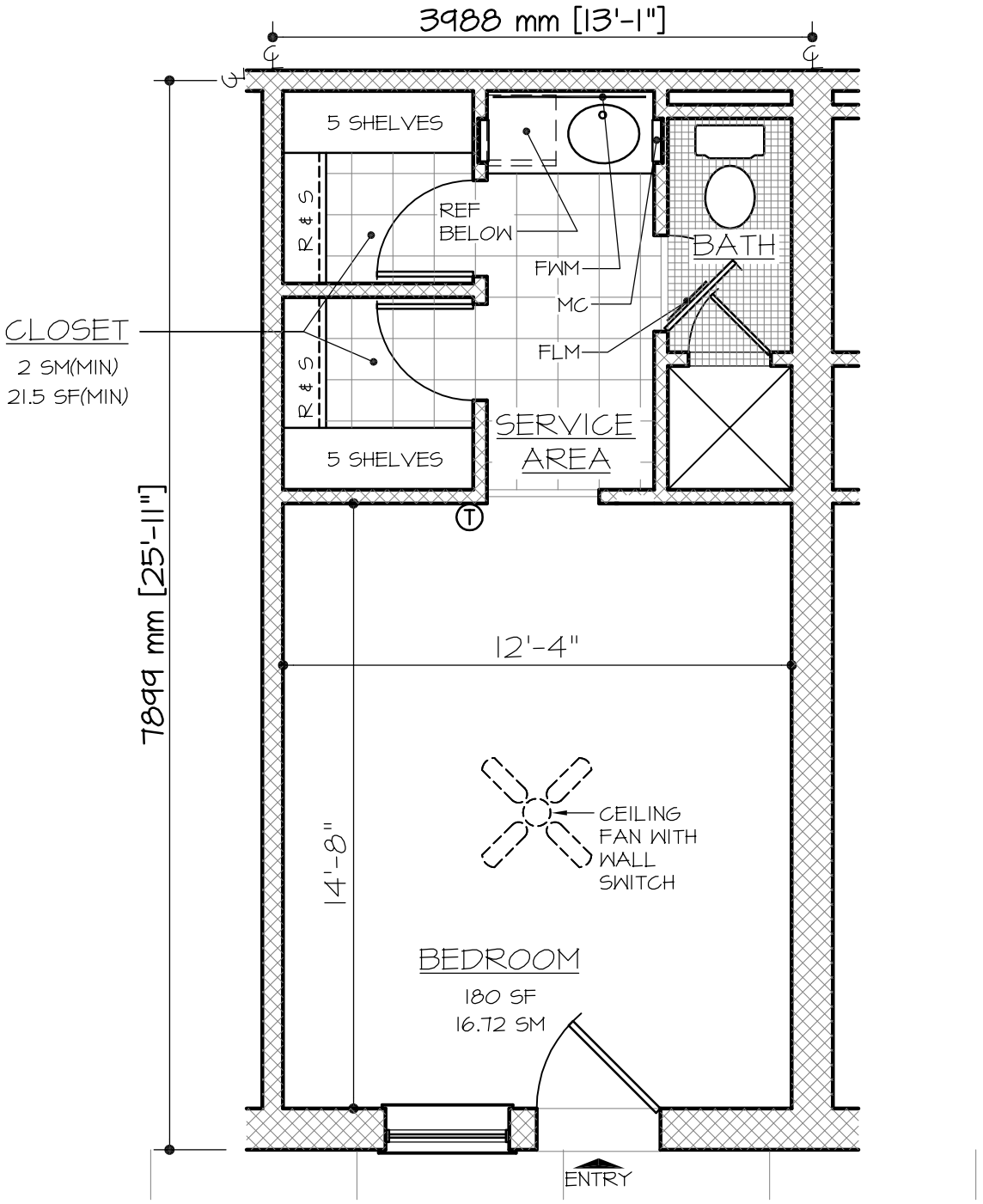
- Provide each resident one key that opens the room entry door and one closet (without access to the other closet). In single resident rooms, the key may open both closets.

- Provide padlocking slide bolt hardware for personal closets.

6-11 **PARKING**. In addition to the parking requirements outlined in Chapter 10, provide a minimum of seven spaces for every ten residents. Motorcycle parking should be provided as necessary; provide dedicated space

with concrete paving. Bicycle parking should be provided as necessary; provide secure, weather protected, conveniently located facilities.

Figure 6-1 The Marine Corps 2+0 Room



REQUIREMENT	CRITERIA
BUILDING GROSS AREA PER PLAN	42.5 SM MAXIMUM
GROSS AREA PER PLAN	31.5 SM (RECOMMENDED)
NET SLEEPING AREA	8.35 SM PER PERSON

LEGEND:

Ⓣ HVAC CONTROL
FLM FULL LENGTH MIRROR R&S ROD AND SHELF
FWM FULL WIDTH MIRROR
MC MEDICINE CABINET

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

1:50 0 1000 2000 mm

CHAPTER 7

THE 2+2 MODULE

7-1 **THE 2+2 MODULE**. The 2+2 Module includes two double-occupancy sleeping areas, one 2 m^2 (21.5 ft^2) closet per person, a shared bathroom, and service area. (A closet may be less than 2 m^2 (21.5 ft^2) per person in renovations only). See Figure 7-1.

7-2 **ASSIGNMENT AND USE**. Refer to paragraph 1-6 for the proper assignment use for this design type.

7-3 **GROSS BUILDING AREA PER MODULE**. The Total allowable Gross Building Area may not exceed 85 m2 (915 ft2) per module for 1-3 stories, 89 m^2 (958 ft^2) per module for highrise (over 3 stories).

7-4 **GROSS MODULE AREA**. The Gross area per Module is 66.2m^2 (713 ft^2).

7-5 **NET LIVING/SLEEPING AREA**. The Net Living/Sleeping Area is 16.7 m^2 (180 ft^2) per bedroom.

7-6 **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.

7-7 **REQUIRED COMMON BUILDING AREAS**

- Circulation and Corridors.
- Stairs.
- Laundry Facilities: Provide one Washer and two Dryers for every fifteen residents; 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 3 linear meters (10 linear feet) of folding table with hanging rods above and 1.25 meters (4 feet) of full height hanging for drip-dry clothing.
- Building Utility Room (5-10% of Gross Building Area).

7-8 **OPTIONAL COMMON BUILDING 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. Services should not be duplicated. Sizes shown are maximums.

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

- 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.

- Master at Arms (9.3 m^2 (100 ft^2)

- Lounges: Provide a large screen TV Lounge. Isolate the area acoustically, and locate close to public toilets. Finishes should be easily cleaned and should 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 resident's general use, and provide light dimmers. Provide window coverings and hardware to allow for darkening of the room with blinds or shades.

- Group study/ meeting rooms.

- Game Rooms. Game Rooms should be acoustically isolated 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. Finishes should be easily cleaned, and endure hard use and food spills. Rooms should be provided with substantial natural lighting.

- Vending.

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

- 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.

- Public Toilets;

- Bulk Storage for Residents' use;

- Parking for Residents' use;

- Janitorial. Provide a 1.5 m x 0.9 m (5-foot x 3-foot) 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.

7-9 **LOCK REQUIREMENTS**. Electric locks are required on Room entrance doors and bedroom doors, and closet doors.

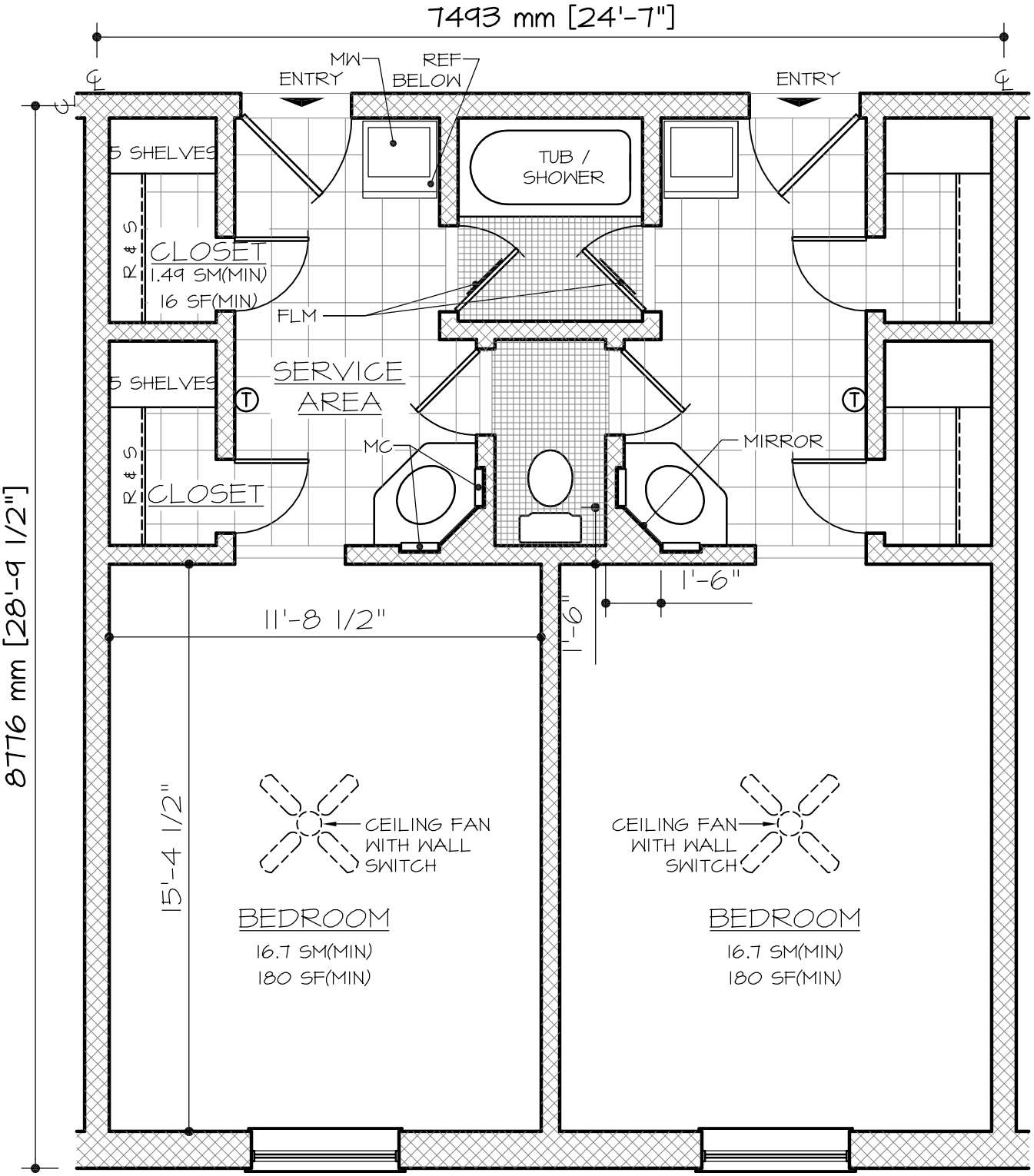
- Provide each resident one key that opens the room entry door.

- Navy projects require electronic locks on closet doors; provide each occupant a key to open one closet.

- Marine Corps projects require padlocking slide bolts on closet doors.

7-10 **PARKING**. In addition to the parking requirements of Chapter 10, provide dormitory parking for 70% of the resident capacity. Motorcycle parking should be provided as necessary. Provide dedicated space with concrete paving. Bicycle parking should be provided as necessary. Provide secure, weather protected, conveniently located facilities. Provide visitor parking for 2% of the resident capacity. Locate staff parking at the outer areas of the parking area.

Figure 7-1 The 2+2 Interior Access Module (Room Plan)



REQUIREMENT	CRITERIA
BUILDING GROSS AREA PER MODULE	85 SM MAXIMUM
NET SLEEPING AREA	8.35 SM PER PERSON
BEDROOM	16.7 SM MINIMUM (180 SF)

LEGEND:

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

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

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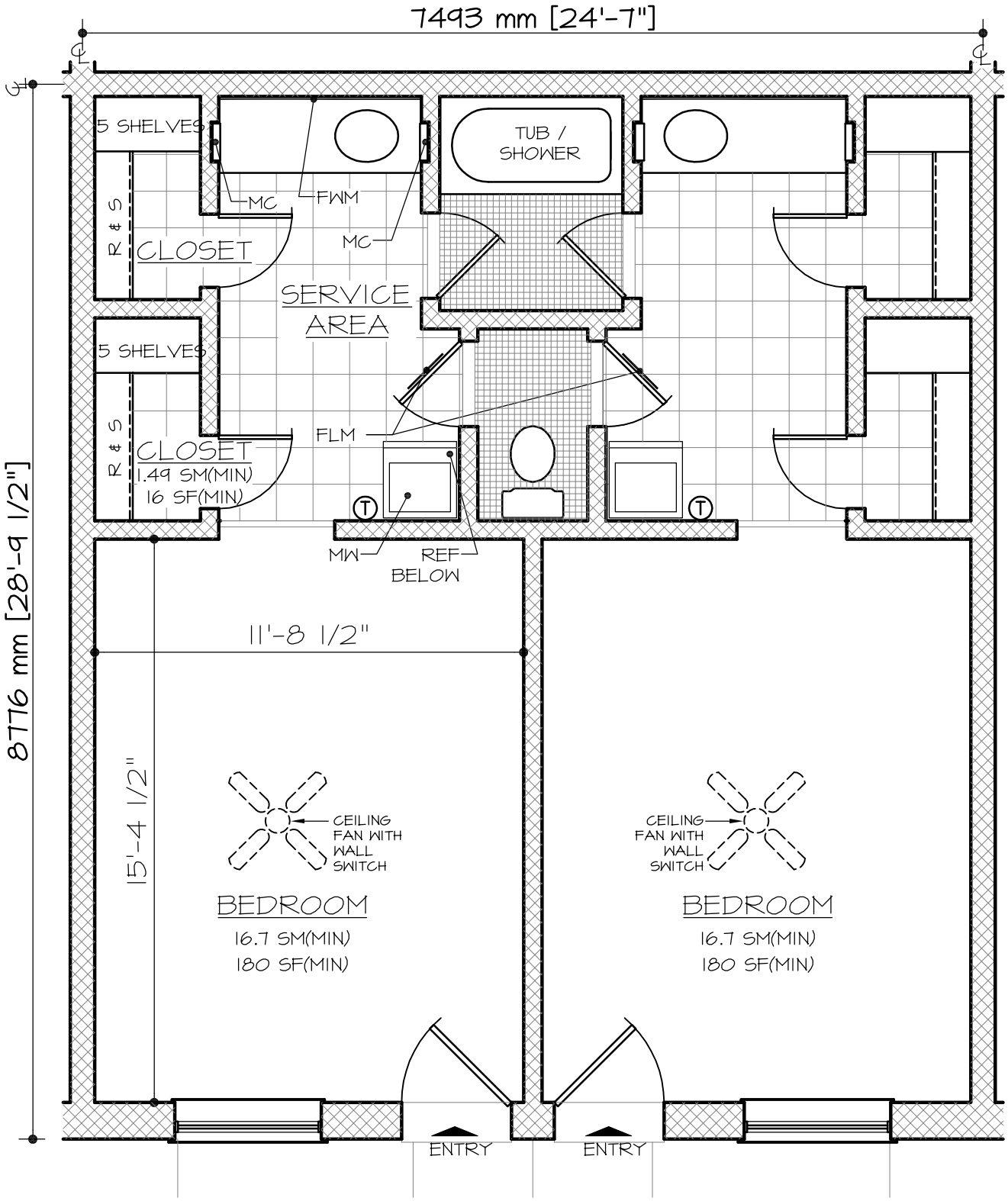
Figure 7-2 The 2+2 Exterior Access Module (Room Plan)



REQUIREMENT	CRITERIA
BUILDING GROSS AREA PER MODULE	85 SM MAXIMUM
NET SLEEPING AREA	8.35 SM PER PERSON
BEDROOM	16.7 SM MINIMUM (180 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		

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

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CHAPTER 8

MARINE CORPS OFFICER PLAN

8-1 This chapter has been deleted.

CHAPTER 9

OPEN BAY PLAN

9-1 **OPEN BAY PLAN**. The Open Bay Plan consists of an open-plan sleeping area, gang showers, and grouped water closet facilities.

9-2 **ASSIGNMENT AND USE**. Refer to paragraph 1-6 for the proper assignment use for this design type.

9-3 **GROSS BUILDING AREA**. Maximum gross building area may not exceed 13 m^2 (140 ft^2) per person.

9-4 **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).

9-5 **NET LIVING/SLEEPING AREA**.

- Recruit net living area is 6.7 m^2 (72 ft^2) per person minimum.
- MOS Trainee net living area is 8.4 m^2 (90 ft^2) per person minimum.
- Disciplinary Quarters net living area is 6.7 m^2 (72.ft^2) per person minimum.

9-6 **REQUIRED COMMON AREAS (SPACES)**. The following spaces are required common spaces in Open-Bay designs.

- Laundry facilities: Provide one washer and two dryers for every fifteen residents (for every 22 residents if recruit barracks). This number may be adjusted 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 3 linear meters (10 linear feet) of folding table with hanging rods above and 1.25 meters (4 feet) of full height hanging for drip-dry clothing.
- Bulk storage;
- Building Utility Room;
- Circulation, corridors and hallways;
- Multi-Purpose Areas (Space) such as lounge or classroom. Isolate the area acoustically, and locate them close to public toilets.

Finishes should be easily cleaned and should endure hard use. 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.

- For Marine Corps: With the advent of Marine Online and the military requirement of Marines to access the internet to review military records and conduct personnel administration, multi-purpose rooms are required to be wired with infrastructure to support high speed internet access. Provide a minimum of 2 (two) eight-pin data ports wired with Category 5e wiring and clean power in each multi-purpose room.

- Janitorial. Provide a 1.5 meter x 0.9 meter (5-foot x 3-foot) 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.

- Vending Area; (optional for recruit barracks)

- Public Toilets; (optional for recruit barracks)

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

9-7 **OPTIONAL COMMON AREAS (SPACES)**. The following spaces are optional common spaces in Open-Bay designs.

- Automatic entry doors and weather vestibule;

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

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

- 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.

9-8 **PARKING**. In addition to the parking requirements outlines in chapter 10, provide recruit parking for 70% of the resident capacity. Motorcycle parking should be provided as necessary. Provide dedicated space with concrete paving. Bicycle parking should be provided as necessary. Provide secure, weather protected, conveniently located facilities. Provide visitor parking for 2% of the resident capacity. Locate staff parking at the outer areas of the parking area.

CHAPTER 10

FACILITY STANDARDS

10-1 **SITE PLANNING AND BUILDING 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 DoD Minimum Antiterrorism Standards For Buildings, UFC 4-010-01, take precedence over all other requirements.

10-2 **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.

10-3 **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 residents' activities.

10-4 **WALKWAYS AND SIDEWALKS**. Walkways should be located and sized to pleasantly and efficiently connect residents with site amenities, parking, station transportation, community facilities, jogging trails, and workplaces. Place walkways with emphasis on functional rather than formal needs. Grade walkways and size to allow barrier-free access to the first floor of buildings and to outdoor areas. Light walkways for safety without spilling light into residential units. Consider security in all circulation designs.

- Walkways to building entrances should be 2.5 meters (8 feet) wide.
- Sidewalks used for troop formations may be as much as 8.5 meters (28 feet) wide.
- Typical pedestrian sidewalks are 2 meters (6 feet) wide.

10-5 **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, the width of non-divided entrances should be a minimum of 7.5 meters (24.6 feet). Carefully review security requirements when designing for vehicular access.

10-6 **PARKING**. Review the security study and incorporate its requirements into the design. Resident, visitor, staff, and service personnel parking should be 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.

- Provide staff parking for each staff member.

- Accessible parking must be provided to persons with disabilities and placed within the main parking area with access to the main entrance. Barrier-free parking spaces (e.g., residents, visitors, and staff in accordance with the Secretary of Defense Memorandum (Aspin Memo), 20 Oct. 93, *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.

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

- Parking requirements vary by Plan. Refer to each Plan's chapter for details.

10-7 **VEHICULAR SERVICE TO THE BUILDING**. Force protection requirements take precedence over all other requirements.

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

- Design access streets and parking areas to accommodate service vehicles and fire protection equipment. Where interior court areas are being proposed between adjoining buildings, consider designing the main pedestrian walks to accommodate service and fire protection vehicles. For example, the minimum width of such walkways should be a minimum of 8 feet (2.5 meters) wide and should be constructed 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.

10-8 **BUS ROUTE ACCESS**. Consider developing shelters and walks to serve personnel needs if the base provides bus service. Bus shelters should 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 stop shelter for each major housing complex. Where existing shelter design needs upgrading, the site planner should coordinate with the base in selecting a new style that is programmed with new projects.

10-9 **UTILITY CORRIDORS**. The site planner should 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 10 meters (33 feet), whichever is the greater amount. Locate utility corridors to allow for future street tree plantings.

10-10 **FIRE PROTECTION ACCESS**. Site new structures a minimum of 12 meters (39 feet) 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 Military Handbook 1008C, *Fire Protection for Facilities Engineering, Design, and Construction*.).

10-11 **SITE LIGHTING**. Site lighting is an integral part of any project. 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. Use the recommendations of the *Illuminating Engineering Society of North America (IES) Lighting Handbook* to establish illumination levels.

10-12 **SITE FURNITURE**. Site 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 should coordinate the selections with the architect and interior designer to ensure smooth transitions are made in the procession from within the building to the outdoors and vice versa. Effective transitions are affected when building materials, colors used in the building exterior and interior areas, and design details from the building are incorporated into the paving materials and site furnishings. Durable site furnishings are to be used to support various site functions. Wherever possible use recycled materials for site furnishings. Consider trash receptacles, seating, picnic shelters and grills, lighting, and bus shelters.

10-13 **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 materials into the new environment. When the approach is to "level the site" without sensitivity to other demands, the results lack visual interest. The landscape architect, architect, and civil engineer should work closely together to achieve the most optimum design results.

10-14 **STORM DRAINAGE**. Depending on the geographic location and the availability of nearby subsurface storm drains, provide underground storm drainage for the 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. Provide for drop inlets as necessary to intercept surface runoff and prevent walkways from flooding.

10-15 **MECHANICAL ENCLOSURES**. Screen mechanical equipment such as chillers, evaporating condensers, switchgear, and electrical transformers. Architectural screening materials should 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 Threat Assessment Study and security requirements.

10-16 **TRASH DUMPSTERS**. While trash dumpsters should have convenient access by the residents and by large trash handling trucks, locate dumpsters in areas away from main entrances. 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, the materials should complement the materials used in the project and adjacent facilities. Design screening low and in cognizance of the requirements of the Threat Assessment Study and security requirements.

10-17 **PLANTING AND VEGETATION**. Develop plantings to create an aesthetically pleasing landscape that conserves water and resources while minimizing maintenance requirements. Proper planning and design, plant selection, and use of turf alternatives and mulch materials, zoning of plants in accordance with water requirements, soil improvements, efficient irrigation, and appropriate maintenance are the fundamentals of good landscape planting.

10-18 **LANDSCAPE MAINTENANCE**. The initial contract must provide landscape establishment and maintenance for installation of plant materials. The

duration of the establishment period should be one year in all cases. This shall not be made optional. The establishment requirements should include:

- Irrigation;
- Mowing and edging, replacing mulch;
- Inspection, control of pests and weed control;
- Tightening, staking and guying materials, pruning, fertilization;
- Maintaining watering saucers.

10-19 **IRRIGATION**. Provide projects developed in arid and semi-arid climatic regions with irrigation systems.

10-20 **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. 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.

10-21 **OUTDOOR RECREATION**. When providing sand volleyball court and full basketball facility or other appropriate amenity, light these facilities 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, active and passive recreation facilities to temper wind and other climate elements. Where appropriate, install a pavilion as an integral part of the housing complex. Pavilions should 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 plant materials.

10-22 **BUILDING ORGANIZATION**. Form buildings to make arrival and movement through them orderly and clearly understandable by users (visitors, residents, staff, and service personnel). Use circulation to organize and zone activities and to promote physical security. Provide a clear entrance to the building and to different functional areas within the building. Locate functions and shape circulation space serving functions to ensure the safety of users.

10-23 **QUALITY IN PRIVACY**. Privacy for residents of permanent party and transient quarters is of utmost importance. Recognize that these facilities serve as homes for these residents, and design accordingly.

10-24 **ARCHITECTURAL CHARACTER AND SCALE**. The architectural character of the facility should be in context with its surroundings, and relate not

only to the immediate site and adjacent buildings, but also to the installation itself.

10-25 **RESIDENTIAL CHARACTER**. Housing should provide a residential environment through both exterior and interior elements. Exterior building forms should reflect the residential character of the project. These residential images can be reinforced through the following:

- Provide gable or similar roof shapes.
- Limit building height to three stories unless extreme land shortage can be documented. Where three stories cannot be used, investigate using several building heights to introduce some residential qualities to the complex.
- Bay windows may be used to change the exterior appearance from institutional to more residential.

10-26 **LIFE SAFETY**. Provisions for life safety will conform to National Fire Protection Association, NFPA 101. Navy and Marine Corps Bachelor Housing are classified by MIL-HDBK-1008C, *Fire Protection for Facilities Engineering, Design, and Construction*, as Personnel Housing.

10-26.1 **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).

10-26.2 **Fire Alarm Systems**. Install building fire alarms systems that are compatible with the base system and connect to the base reporting system.

10-26.3 **Smoke Detectors**.

- Install smoke detectors for all personnel housing facilities in accordance with MIL-HDBK-1008C, *Fire Protection for Facilities Engineering, Design, and Construction;* PDPS 96-01, Sprinklers and Smoke Detector Requirements for Housing and BQS; and NFPA 72, *National Fire Alarm Code*.
- Power smoke detectors in bedrooms and living rooms from the building electrical system or fire alarm system.

10-26.4 **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 bedrooms.

10-27 **ACCESSIBILITY REQUIREMENTS**. Navy and Marine Corps Bachelor Housing address the issue of accessibility based on the type of resident and the type of facility.

10-27.1 **For New Construction**:

- BQ (PP), Dormitory (Trainee), and Recruit Bachelor Housing are designed for able-bodied military personnel. Their apartments, modules, and Bays will not be accessible. However, all public areas, including reception desk, corridors, elevators, and public toilet facilities will be accessible.

- VQ (Transient) Bachelor Housing is available to serve able-bodied and disabled civilian personnel as well as able-bodied military personnel. Therefore, a minimum of 5 percent of the rooms must be barrier free. In addition, all public areas including the front desk, corridors, elevators, and public toilet facilities will be accessible.

10-27.2 **For Existing Facilities**. Existing Marine Corps Bachelor Housing or Navy Visitors Quarters which are not accessible may provide a "certificate of non-availability" (CNA) to the traveler. Existing bachelor housing and Visitors Quarters 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.

10-27.3 **Barrier-Free Design**. Barrier-free design should be in accordance with the requirements of the Secretary of Defense (Les Aspin) Memorandum, 20 Oct. 93, *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. Use the criterion that provides the greatest barrier-free design requirements in all required areas.

10-28 **ACOUSTICS**. Careful attention to acoustic design is required for Navy and Marine Corps Bachelor Housing to ensure a high degree of privacy for residents within their living units and study areas. Designers should 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.

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

- Floor and ceiling assemblies should be at least STC 55 and have

an impact isolation class of at least (IIC) 60.

- Telephone, cable television, convenience outlets, and mechanical ducts should not compromise the acoustical integrity of wall, floor, or ceiling assemblies.

- Select fluorescent lamp ballasts to minimize noise generation.

10-29 **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 the proposed structural system that is the most economical method of realizing the architectural design intent. Select an economical structural system based on:

- Facility size;

- Projected load requirements;

- Subsoil conditions;

- Local availability of materials and labor;

- Feasibility of prefabrication;

- Local construction practices;

- Resistance to fire, wind, snow, seismic, geologic, and permafrost conditions as dictated by the location.

10-30 **VAPOR BARRIERS**. 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.

10-31 **ROOF SYSTEMS**. Design and detail roof systems to resist maximum wind for the area. Provide a residential character through the use of gable or similar sloped forms.

10-32 **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 Threat Assessment Study provided for the project.

- Exterior doors should be fully weather-stripped and include a heavy-duty metal threshold that prevents drafts, dirt, water, and

insect entry. Provide lobby and entry vestibules with glass commercial style store front doors with automatic openers for major entrances. Navy and Marine Corps Bachelor Housing managers should designate which entrances require this feature. Other exterior doors should be solid core, thermally insulated, and secure.

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

- Provide each Apartment, Room, or Module with solid core wood or thermal insulated metal door to provide sound isolation. Provide a fire-rated, wide-angle security viewport at 1524 mm (60 inch) height and electromechanical or plastic coded key lock system.

- Connecting doors between bedrooms are not allowed.

10-33 **HARDWARE AND LOCKS**. Provide dead bolt locks, and night latches, keys without room numbers, and door guard. Hinges should conform to Builders Hardware Manufacturers Association (BHMA) 101, *Butts and Hinges*. Hard ware 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 Apartment, Room, or Module Plan. Refer to specific Plan chapter for details.

When determining lock configurations, consider the different locks an occupant will need to open. For example, in a 1+1E configuration with 2 occupants, each occupant will have to open the main door to the apartment, one bedroom, and can have access to both closets. If the 1+1E 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.

10-33.1 **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 7-1, this would mean 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.

10-34 **WINDOWS**. All fenestration must conform to the recommendations of the Project Threat Assessment Study. 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 10-1

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. Install heavy-duty insect screens on operable windows.

10-35 **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 Apartments, Rooms, or Modules and adjacent spaces on the outside. Place electrical outlet boxes, HVAC openings, etc., 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. Navy and Marine Corps finish requirements are different. Tables 10-1 and 10-2 outline requirements.

- Navy: Follow the guidelines established in the "Whole Room" Interior Design concept.

- Marine Corps: The Marine Corps requires CMU interior walls and masonry exterior construction and finish. HQMC Code LF must approve any deviation.

10-36 **INTERIOR DESIGN FINISHES**. Interior finishes must comply with the requirements of MIL-HDBK-1008C, *Fire Protection for Facilities Engineering, Design, and Construction*. Refer to Table 10-1 for the Navy and Table 10-2 in this manual for the Marine Corps for specific interior finish schedules.

10-36.1 **Ceilings**.

- Ceilings should be off-white.

- Suspended acoustical tile is prohibited in all Navy projects.

10-36.2 **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, and painted trim with latex semi-gloss enamel.

Other painted interior finishes should be semi-gloss. Blown-on acoustic finish is not allowed, except in public core areas. Exterior surfaces requiring painting should receive a minimum of one prime coat and two finish coats. Wood trim frames, etc., should be back primed. Exterior semi-transparent sealing stains should have two coats minimum. Select neutral colors for the more permanent surfaces (e.g., ceramic tiles, laminates, etc.) to facilitate future finish material changes.

10-36.3 **Vinyl Composition Tile (VCT)**. 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.

10-36.4 **Carpet**. Carpet tiles are acceptable for common areas and for administration areas (spaces) only. Performance standards for carpet in Bachelor Housing will be according to UFGS 09680N, *Carpet*, and additionally as follows:

- Commercial Grade;
- Loop Pile construction;
- Attached Water-resistant backing;
- Impervious to harsh chemicals;
- Low absorption rate;
- Low static buildup;
- Permanent fade/10 year colorfast warranty.

10-36.5 **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 <u>mandatory</u> 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.

- Polyethylene Terephthalate (PET) Carpet has been listed as an EPA designated product.
- Procurement agencies are required to give preference to purchase

EPA designated products subject to the following:

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

Table 10-1 Interior Finishes Schedule: NAVY

INTERIOR FINISH SCHEDULE			
AREA/SPACE	FLOORS	WALLS	CEILING
Administration	Carpet	Gypsum Board, Optional Accent Vinyl	Paint, Optional Texture
Lounge/Meeting/ Game Room	Carpet	Gypsum board, Optional Accent Vinyl, Sisal	Paint, Optional Texture
Public Toilets	Ceramic Tile	Full Height Ceramic Tile	Gypsum board
Vending	Quarry Tile	Gypsum board	
Bulk Storage	Sealed Concrete	CMU	Paint, Optional Texture
Housekeeping	VCT	Gypsum board	Paint, Optional Texture
Laundry	VCT	Paint Gypsum board or CMU	Paint Gypsum board
Public Corridors	Carpet	Gypsum board, Vinyl Wall Covering, Optional Accent Vinyl, Sisal.	Paint, Optional Texture
Bedrooms	Carpet	Gypsum board, Optional One Wall Accent Vinyl	Gypsum board
Service Areas	VCT (1+1) Carpet 2+0	Gypsum board, Vinyl Wall Covering	Gypsum board
Apartment, Room, Module Toilets	Ceramic Tile	Ceramic Tile	Gypsum board
Bedroom Closets	Carpet	Gypsum board	Gypsum board
Entry Door swing Areas	VCT (1+1) Carpet 2+0	Paint, Vinyl	
Note: Accent walls with vinyl wall covering are encouraged options.			

Table 10-2 Interior Finishes Schedule: MARINE CORPS

INTERIOR FINISH SCHEDULE			
AREA/SPACE	FLOORS	WALLS	CEILING
Administration	Carpet	Painted CMU	Paint, Optional Texture
Lounge/Meeting/ Game Room	Ceramic tile	Painted CMU	Paint, Optional Texture
Public Toilets	Ceramic Tile	Full Height Ceramic Tile	Paint
Vending	VCT	Painted CMU	Paint, Optional Texture
Bulk Storage	VCT	Painted CMU	Paint, Optional Texture
Housekeeping	VCT	Painted CMU	Paint
Laundry	VCT	Painted CMU	Paint
Public Corridors	VCT	Painted CMU	Paint, Optional Texture
Bedrooms	VCT	Painted CMU	Paint, Optional Texture
Service Areas	VCT	Painted CMU	Paint
Room Toilets	Ceramic Tile	Ceramic Tile	Paint
Bedroom Closets	VCT	Painted CMU	Paint

10-36.6 **Ceramic Tile**. Use slip resistant ceramic floor tiles in baths and toilets. 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. Other walls may receive wainscot-height tile or solid surface material.

10-36.7 **Ceiling Fans**. 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 should have a minimum 14-degree pitch. Short blades are preferred. Units with lights should have separate controls. Consider ceiling fans (with timer controls) in multipurpose rooms, game rooms, and laundry facilities.

- Navy: Provide ceiling fans in renovation and new construction.
- Marine Corps: Ceiling fans are optional.

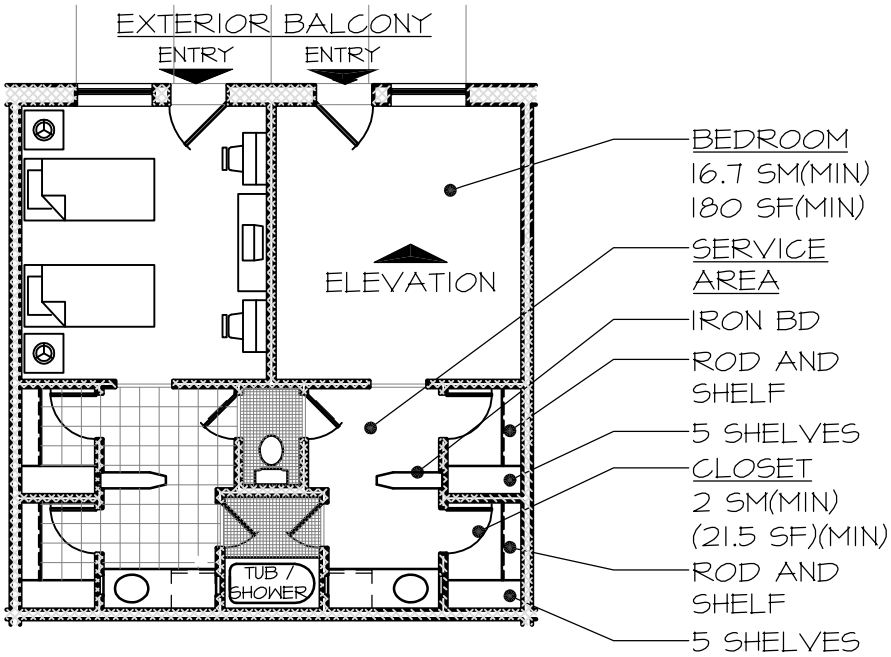
10-36.8 **Cabinets, Millwork and Hardware**. Built-in cabinets should be well constructed with sturdy hardware and composed of hardwood, steel, or rotationally-molded commercial-grade polyethylene construction. Finish should be able to withstand frequent cleaning and should coordinate with the other finish materials within the space. Neutral colors are recommended for cabinets and millwork to facilitate future color scheme changes.

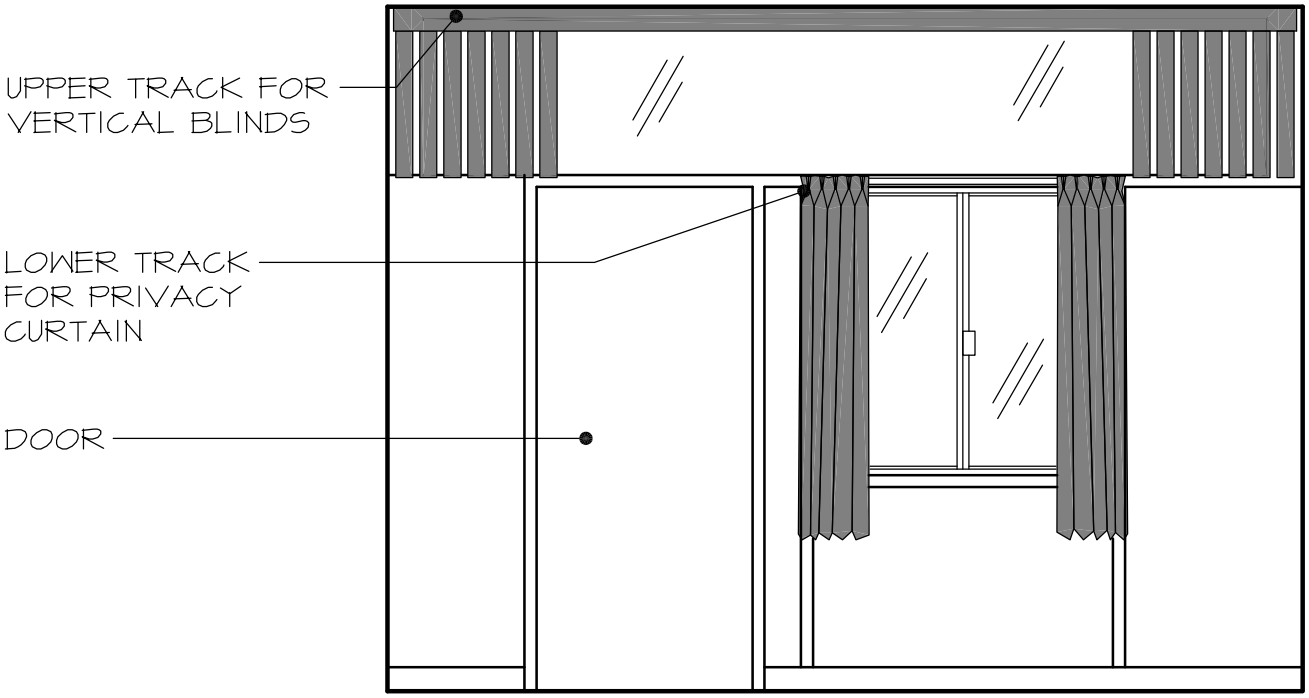
- No particleboard is allowed in any millwork construction.
- Prefabricated Compact Kitchens are acceptable if they meet durability standards.
- Hinges, Locks and Latches. Hinges should comply with BHMA 101. Locks and latches should comply with BHMA 601, *Bored and Pre-assembled Locks and Latches*, Series 4000, Grade 2. Closers should comply with BHMA 301, *Door Controls, Closers*.

10-36.9 **Toilet Accessories**. Toilet accessories may be surface mounted or recessed, of non-corrodible metal or tile.

- Provide toilet paper holder, soap dish, combination tumbler and toothbrush holder, bathrobe hooks, and towel bars.
- Provide a shower curtain rod. Specify rod at proper height for conventional shower curtains (1.8 m by 1.8 m (approx.) (72 inches by 72 inches)).

Figure 10-1 Room Elevation





NOTE:

THIS ELEVATION ILLUSTRATES HOW NATURAL LIGHT MAY BE PROVIDED BY THE ADDITION OF AN UPPER WINDOW AND COVERED BY A SEPARATE CURTAIN.

3/8"=1'-0" 1' 0' 2'

1:50 0 50 100 mm

10-36.10 **Window Treatments**. Window treatments (blinds or heavy-duty drapery hardware) must be an integral part of the construction contract. Mini-blinds, vertical blinds, draperies, or a combination are authorized. Consider solar conditions when selecting a 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. The drapery lining should hang independently from the finished drapery treatment.

- Window treatments must be flame resistant.
- Blackout linings are optional.
- Traverse rods should be of commercial quality.

10-36.11 **Privacy with Exterior Balcony**. Projects using Apartments, Rooms, or Modules with exterior balcony access should consider the use of an upper window 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 10-1 Room Elevation.

10-36.12 **Furnishings**. Select furnishings from the "GSA Whole Room Catalog" that are well constructed of solid hardwoods and veneers with plastic laminate top surfaces. Recessed pulls are preferred. Maximize storage capabilities. Public furnishings should be extremely sturdy. Furnishings in common areas should be constructed with solid wood or steel frames. Plastic laminate tops should be used on table surfaces. Maximize the use of individual lounge chairs and love seats instead of sofas.

- Refer to paragraph 2-22 for "Whole Room Concept" requirements.

10-36.13 **Artwork and Accessories**. Use "GSA Whole Room Catalog." 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. Interior signage and bulletin boards should be an integral part of the construction contract. Artwork is considered collateral equipment and will be included in the interior design option. For Marine Corps Bachelor Housing and Navy Dormitories: provide nameplate signage with removable inserts to identify each resident.

10-37 **SIGNS AND ASSOCIATED EQUIPMENT**. Design directional signs as an integral part of an overall building and site system, to be furnished

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

- Specify an easily read typeface such as Helvetica Medium.
- Provide a signage plan, legend, and details. Indicate the design, location, and installation method in the plan, elevations, and specifications.
- Require the contractor, in the project specifications, to make a comprehensive submittal of the proposed signage system and to provide information necessary for acquiring new or replacement signs.
- Building signs and other items on the building exterior should meet the Navy BEAP (Base Exterior Architectural Plans).
- 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.
- The interior designer will coordinate interior signage and identification with the exterior designs.

10-37.1 **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.

10-37.2 **Project Signage**. Provide the following signs for each project or building:

- Entrance signs at roadway, walkway and/or building entry point as appropriate
- Provide a Building Identification Sign.
- Provide a Building Directory.
- Directional Signs.
- Room Identification Signs.

- Regulatory Signs.
- Informational Signs.
- Notices Board for residents' use (Permanent Party only)
- Bulletin Boards (for official use).

10-38 **CLOSET ACCESSORIES**. Use heavy-duty materials median braced for heavy loads. Review the closet design requirements and electrical requirements in the previous chapter. Provide living and bedroom closets with vinyl clad metal shelves and hanging systems. Refer to paragraph 3-8 for closet design.

10-39 **SMART BUILDING SYSTEMS**. Apply smart building concepts using local loop technology. Avoid central controllers and monitors. Review security requirements for the project.

10-40 **ELEVATORS**. Freight elevators are used in bachelor housing. Freight elevators may be used for the movement of furnishings as well as passengers. Passenger elevators are not to be used without approval. See paragraph 3-13 for added area allowance for elevator construction.

- For buildings one to three stories high, install a concrete pad at ground level for installation of a temporary portable lift. Install removable railings at the lift areas of each upper level.
- For buildings four stories or higher, provide one freight-sized service elevator. Additional elevators may be provided upon approval for multi-level projects. Install removable railings at the lift areas of each upper level. Install fall protection tie off points that can be used when railings are removed.

10-41 **HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)**. Air Conditioning is mandatory in all Navy and Marine Corps Bachelor Housing. With the exception of open bay, HVAC should provide residents with individual choice of heating and cooling year round within each living area. HVAC systems must meet Energy Star/ FEMP standards of efficiency. The selection of the type of HVAC system used for a housing project significantly impacts the initial construction cost and the life cycle cost of the facility. An existing HVAC system may be reused for restoration and modernization projects, but must provide individual heating and cooling of each Apartment, Room, or Module at any time of the year.

10-41.1 **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 Apartments,

Rooms, or Modules. Provide an individual climate control in each Apartment, Room, or Module.

10-42 **SUSTAINABLE DESIGN**. Minimize energy consumption and optimize life cycle cost with renewable energy possibilities. Incorporate renewable energy principles such as day lighting, passive and active solar, natural ventilation, and photo-voltaics where they are life cycle cost effective. Follow the guidance in NAVFACENGCOM Interim Technical Guidance 95-2*, Design Energy Target Reductions,* dated 5 June 1995, to achieve energy conserving designs for bachelor housing.

10-43 **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 should work together to carefully plan and minimize the size and location of plumbing chases. Avoid plumbing chases whenever possible by placing plumbing in wall cavities.

- Provide hot and cold water to public toilets, en-suite bathrooms, compact kitchens, janitor closets, and laundry rooms.
- Provide shutoff valves at all fixtures.
- Provide residential, tank-type low water volume water closets in public toilet rooms. 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.
- Water closets and bath fixtures should match and should be neutral in color.
- Provide hose bibs on exterior walls of each building at 30 meter (100 foot) intervals; frost-free as dictated by climatic conditions.
- Provide floor drains in janitor closets and laundry rooms.
- Provide ice machine hook-ups in facility easily accessible to patrons.
- Provide a drinking fountain with cooler for interior public areas, and appropriate exterior areas at 1 per 100 occupants.
- Hot Water System type is optional, but must meet FEMP recommendations.
    - Use Building wide system; or
    - 1-4 modules per WH closet unit in module mechanical areas.

- Natural Gas is prohibited in individual living/sleeping areas.
- Provide one Service Sink in service or housekeeping closets at each floor.
- Use the following fixtures as standards:
  - Washerless faucets at lavatories.
  - Single lever faucets at tub showers or shower stalls.
  - Shower units are to use terrazzo base with full height solid surface material or ceramic surround.
  - Shutoff valves for each fixture.
  - Tank type, water saver, single piece, elongated bowl water closets with closed front seat, and lid in private living units. Areas with low water pressure should use power-flush type water closets.
  - Flow restrictive type showerheads at showers.
  - Acid-resisting cast iron bathtubs with metal stopper. Arrange as tub and shower with full height surround.
- Central Heads: 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
  - Water coolers: 1 per 100 persons
- Provide one Service Sink in service closets or housekeeping closets at each floor.

10-44 **ELECTRICAL**. Base electrical system design calculations on multi-family occupancy rather than interior corridor occupancy since bachelor housing is the full-time home of the residents, and therefore has a higher demand factor. Provide the following as required:

- Distribution equipment
- Wiring

- Receptacles and grounding
- Interior and exterior lighting for the building,
- Exterior site and parking area lighting,
- Emergency lighting,
- Telephone wiring,
- Fire detection and annunciation,
- Cable television wiring,
- LAN Local Area Network system wiring for Computer hookup for each occupant.
- Intrusion detection systems at the exterior doors.
- Provide metering for electric power.
- For direct entrance rooms, provide three-way switches at the entrance door and in the vanity area so that the living room and bedroom area lighting is controlled at either location. Also, provide motion sensor switches at bathroom doors to control the bathroom light fixture.
- Provide 20-ampere outlets throughout each Apartment/ Module/ Room per applicable electrical code. In bedrooms, provide 20 ampere dedicated quadraplex outlets combined with television and telephone and computer data outlets as described. Provide quadraplex and duplex outlets in the compact kitchen area.
- Provide each Apartment/ Module/ Room with dedicated lines for telephone, and data outlet (personal computers) and television of <u>each</u> room occupant. Dedicate each line solely to a bedroom, providing each bedroom with two combination outlets with duplex, telephone, and data outlet and television for each occupant of each room. Locate them on opposite walls to facilitate and coordinate with the room furniture layout.
- Ceiling Fans: Provide 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.
- Ceiling fans should be provided in renovation and new construction for Navy projects. Ceiling fans are optional for the Marine Corps.

- Conceal wiring. Exposed surface metal raceways or conduits are not allowed.

- Provide exterior lighting in parking areas, building entrances, and walkways. Refer to Chapter 2 for more information concerning exterior lighting. Use NFPA 70, *National Electrical Code*, the *IES Lighting Handbook*, and NFPA 101 for lighting calculations. Provide one exterior light fixture outside each room entrance door for exterior entry designs.

- Perform lightning protection risk assessment in accordance with NFPA 780, *Lightning Protection Code*.

10-44.1 **Ground-Fault Circuit Interrupt**. All receptacles must be grounding type. Provide ground-fault circuit-interrupt (GFCI) protection for all 120-volt AC receptacles installed in wet areas, including kitchens, toilet and exterior receptacles. In laundry rooms GFCI will only be provided for general use 120-volt receptacles, but not for the fixed installation equipment.

10-45 **LIGHTING**. Provide fluorescent lighting that meets a minimum LER of 65 Energy Star Rating in each 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, but recessed fixtures are preferred. The designer should be cognizant of lighting for both day and night situations. Provide lighting fixtures and lighting levels to support residential character, to ensure safety, and to control maintenance cost and energy use.

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.

- 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.

- Carefully consider the coordination of lighting with ceiling fans.

- Consider security requirements in all lighting situations.

REFERENCES

GOVERNMENT PUBLICATIONS

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UFC 1-200-01, General Building Requirements

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

2. Unified Facilities Guide Specifications

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UFGS 09680N, Carpet

UFGS 13281N, Engineering Control of Asbestos Containing Materials

UFGS 13283N, Removal/Control and Disposal of Paint with Lead

3. Naval Facilities Engineering Command

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Norfolk, VA 23511-2669

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COMNAVFACENGCOM letter, Seismic Safety Criteria for Owned and Leased Buildings, 2 November 2000

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MIL-HDBK-1008C, Fire Protection for Facilities Engineering, Design, and Construction, 10 June 1997

MIL-HDBK-1013/12, Evaluation and Selection Analysis of Security Glazing for Protection Against Ballistic, Bomb, and Forced Entry Tactics, 10 March 1997

MIL-HDBK-1190, Facility Planning

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	P-80, Facility Planning Factor Criteria for Navy and Marine Corps Shore Installations
	ITG 95-2, Design Energy Target Reductions, 1 June 1995.
4. Department of Defense Defense Printing Service Detachment Office (DPSDO) Standardization Document Order Desk 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094	DOD 2000.12D, Protection of DOD personnel and Resources Against Terrorist Attacks DOD 2000.12H, Protection of Personnel and Activities Against Acts of Terrorism and Political Turbulence DoD I 2000.16, DoD Antiterrorism Standards DOD 4165.63-M, DOD Housing Management Manual
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6. Department of the Navy Defense Printing Service Detachment Office (DPSDO)	OPNAVINST 3300.55, Navy Combating Terrorism Program Standards OPNAVINST 5100.23, Navy

Standardization Document Order Desk 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094	Occupational Safety and Health (NAVOSH) Program Manual OPNAVINST 5530.14C, Navy Physical Security OPNAVINST 11010.20, Facilities Projects Manual (for Navy projects) OPNAVINST 11103.1, Policies and Procedures Governing Bachelor Housing
7. Environmental Protection Agency (EPA) Radon Information Center 1355 Beverly Road, Suite 216 McLean, VA 22101 www.epa.gov	EPA 402-R-93-071, EPA's Map of Radon Zones
8. Code of Federal Regulations	29 CFR 1926.1101, Asbestos

NON-GOVERNMENT PUBLICATIONS

1. American Association of Textile Chemists and Colorists (AATCC) 1 Davis Drive P.O. Box 12215 Research Triangle Park, NC 27709	AATCC 16, Colorfastness AATCC 134, Electrostatic Propensity of Carpets
2. Builders Hardware Manufacturers Association, Inc (BHMA) 355 Lexington Avenue New York, NY 10007	BHMA 101, Butts and Hinges BHMA 301, Door Controls, Closers BHMA 601, Bored and Preassembled Locks and Latches
3. Illuminating Engineering Society of North America (IES) United Engineering Center 345 E. 47th Street	IES Lighting Handbook

New York, NY 10017	
4. National Fire Protection Agency (NFPA) One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101	NFPA 1, Fire Prevention Code NFPA 13, Installation of Sprinkler Systems NFPA 13R, Sprinkler Systems in Residential occupancies Up To and Including Four Stories in Height NFPA 70, National Electrical Code NFPA 72, National Fire Alarm Code NFPA 80, Fire Doors and Fire Windows NFPA 101, Life Safety Code NFPA 253, Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source NFPA 258, Determining Smoke Generation of Solid Materials NFPA 780, Lightning Protection Code
5. 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 http://windows.lbl.gov	Tips for Daylighting with Windows,
6. Electronic Industries Alliance 2500 Wilson Blvd. Arlington, VA 22201 Phone: (703) 907-7500	EIA TIA/EIA-570-A, Residential Telecommunications Cabling Standard EIA TIA-758, Customer-Owned Outside Plant Telecommunications Cabling Standard

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EIA TIA/EIA-569-A, Commercial Building Standard for Telecommunications Pathways and Spaces

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EIA TIA/EIA-568-B.3, Optical Fiber Cabling Components Standard