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ARCHITECTURAL COMPATIBILITY AND BASE DESIGN STANDARDS

Andersen Air Force Base, Guam

May 2013

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Commander's Statement

I am proud to present the updated Andersen Air Force Base's Architectural Compatibility and Base Design Standards. As Andersen Air Force Base continues the largest build-up since its construction, we have established a clear vision and expectations governing the appearance of our facilities, landscaping, and overall environment.

These standards guide the development of our air base, aiding us in maintaining architectural compatibility. It is important to note that compatibility is not the same as uniformity. We do not want all of our facilities to appear the same. Rather, we seek to create a visually appealing base that uses architectural relationships to create a connection to the environment.

Aesthetically pleasing, low maintenance, cost effective facilities and landscaping of a consistent design character are our priority. Maintaining standards ensures consistency and excellence in the design of Andersen Air Force Base; a base that is more than just buildings and infrastructure, it is a well-planned community and our home. These standards ensure we provide a high quality working and living environment in support of our mission and benefit our most important asset, our Air Force family.

These architectural and landscape design standards create an environment that promotes excellence and pride in where we live and work. I encourage all members of Team Andersen to become familiar with our standards and employ them as we invest in Andersen's future.

STEVEN D. GARLAND

Brig Gen Steven D. Garland
Commander, 36th Wing,
Installation Commander/
Base Commanding Officer,
Andersen Air Force Base, Guam


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Architectural Compatibility and Base Design Standards


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Introduction

1.0 Purpose

The purpose of the Architectural Compatibility and Base Design Standards is to establish a realization of consistency and excellence in the design of Andersen Air Force Base facilities, and to minimize impacts of construction on base by contractor activities, such as contractor vehicles and parking on site. This goal requires clear communication in planning, design and execution of architectural, civil, mechanical, electrical, paving and landscaping standards, and expectations. The Architectural Compatibility and Base Design Standards was developed to promote a high quality working and local living environment in support of the base mission.

Andersen Air Force Base, Guam

The Architectural Compatibility and Base Design Standards is intended to function as a working design guide that establishes and documents design and procedural standards. This standard provides macroscopic guidance to designers and builders to ensure that functional and aesthetic consistency is achieved. This document is not intended to serve as construction specifications. Any deviation from these standards requires written approval from the Base Civil Engineer.

1.1 Philosophy

Life quality, productivity, and morale are all directly influenced by the physical appearance of Andersen Air Force Base. Andersen Air Force Base is one of the largest military airfields in the world, with more than 19,025 acres, 1,682 buildings, and more than 6,311 personnel. Therefore, dedication to the functional adequacy and maintenance of our workplace facilities and living environments is a necessary component to continued success on Base. Aesthetically pleasing, low maintenance facilities and landscaping of a consistent design character are a priority at the Base and each of these considerations should be implemented for all projects.

1.2 Geography

Taragüe Embayment

Andersen Air Force Base is located on the northern tip on the island of Guam. Guam is approximately 30 miles in length with a variable width ranging from 12 miles to 4 miles at its narrowest point. Approximately 212 square miles, excluding reef formations, the island has two basic geological components. The central and northern features are primarily raised limestone plateaus with several volcanic formations at Mount Santa Rosa and Mount Mataguak. The northern cliff line drops precipitously into the sea with an elevation ranging from 300 to 600 feet. The southern features are volcanic with an elongated mountain ridge dividing the inland valleys and coastline. The highest point is Mount Lamlam with an elevation of 1,334 feet.

1.3 Climate

Guam's climate is pleasantly warm year-round. The mean annual temperature is 81 degrees. Generally, the temperature range is from the low 70's to the middle 80's. The coolest and least humid months, marked by prevailing westerly trade winds, are December through February. The annual rainfall totals 80 to 110 inches. There are two seasons: the dry and the rainy. The dry season, "fanummangen", begins in December and continues through June. The rainy season, "fanuchanan", falls within all remaining months. The island's climate is corrosive in nature due to the presence of ambient salt water vapor in the air.

1.4 Responsibility for Compliance

The Andersen Air Force Base Installation Commander has approval authority of facilities standards. The 36th Civil Engineer Squadron (36 CES) is responsible for compliance to the Standard, regardless of how the work is accomplished.

Forms and Policies

2.0 Access Protocol

Security on Andersen Air Force Base is an absolute priority. Therefore contractors who intend to access the base will be subject to strict clearance requirements. Each individual will be required to complete special forms and must submit to a criminal background check. Personal information from each individual requesting base access will be required as requested on the required forms. For MILCON projects, which require significant contractor manpower, the contractor shall make arrangements to bus contractor employees onto the base, directly to the construction site.

Entry Gate

Refer to Appendix A.1 – Access Protocol, for additional requirements.

2.1 Work Clearance Request (AF 103)

A work clearance request (AF Form103) is necessary for excavation that breaks the crust of the earth, work that may disrupt aircraft or vehicular traffic flow, base utility (electric, water, sewer, gas) services, or protection provided by fire and intrusion alarm systems. The work clearance request is used to coordinate the required work with key base activities and to keep customer inconvenience to a minimum. It is also used to identify potentially hazardous work conditions in an attempt to prevent accidents. The work clearance request is processed just prior to the start of work. The Contractor is responsible for paying for permits as required for Navy projects on the Andersen Air Force Base.

Refer to Appendix A.2.a – Base Civil Engineer Work Clearance Request (AF Form103), for additional requirements.

2.2 CONSTRUCTION WAIVERS, FREE ZONE REQUESTS, AND CRANE REQUESTS

2.2.1 Temporary Airfield Construction Waivers

Any construction activities impacting the airfield or the imaginary surfaces generated by the airfield environment require a temporary airfield construction waiver. The waiver is generated by the 36th Civil Engineer Squadron (36 CES) Planning Department and includes the waiver request, maps with construction location (with exact coordinates), contractor equipment and personnel lists, an entry into the Air Obstruction Management System (AOMS), and in some instances a request letter for a free zone (refer to Section 2.2.2 below). This information is coordinated through a number of base agencies, most notably the Security Forces Squadron (SFS), Wing Safety (SE), and the Operations Support Squadron (OSS). The request is approved/disapproved by the Installation Commander and typically requires 6-8 weeks of coordination prior to approval.

Refer to Appendix A.2.b – Sample Temporary Airfield Construction Waiver

2.2.2 Free Zone Requests

In some instances, most notably on larger and longer duration construction projects on the airfield, the contractor may request a free zone in conjunction with their temporary airfield construction waiver. A free zone establishes a controlled boundary around a project site which allows the contractor to work freely within without escort. This is extremely advantageous on longer, more complicated projects on the airfield as the base does not need to provide escorts for long durations. Free zone requests are staffed in the same manner as temporary airfield construction waivers, with signatures required of the OSS/CC, SFS/CC, MSG/CC, and the WG/CC. The request format consists of an In-Turn Memorandum endorsed by the aforementioned individuals with maps and site plans attached to the request. Typical processing timeline is similar to temporary airfield construction waivers (6-8 weeks).

Refer to Appendix A.2.c – Sample Free Zone Request Letter

2.2.3 Crane Requests

Any activity that requires the use of a crane (or similar equipment) exceeding twenty-five feet (25'-0") in height anywhere on base requires prior coordination with the Operations Support Squadron Terminal Enroute Radar Procedures (TERPS) section to ensure that flight paths are not adversely affected. The contractor must submit exact crane coordinates (in minutes, degrees, seconds, and elevations), proposed dates of use, equipment certifications, and proposed maximum height of equipment to 36th Civil Engineer Squadron (36 CES) for coordination with

TERPS. Approvals/Disapprovals are typically granted in 1 week. Approved requests typically result in the issuance of a Notice to Airmen (NOTAM) advising flight crews that obstructions to flight may be present.

Refer to Appendix A.2.d – Sample Notice to Airmen (NOTAM)

2.3 Contractor Staging Yard Policy and Procedure

Special procedures are necessary to manage the staging areas of various contractors on site. Contractors are required to establish an approved staging area and to coordinate with the 36th Civil Engineer Squadron (36 CES) regarding necessary facilities and utilities. Contractors are responsible for maintaining their designated staging area, and each area is subject to inspections. The Base Civil Engineer has final approval authority over contractor staging yard policy and procedure.

Refer to Appendix A.3 – Andersen AFB Contractor Staging Yard Policy and Procedures, for additional requirements.

2.3.1 Construction Safety Fencing

For contract performance periods less than one hundred and eighty (180) days, as soon as practicable, but not later than fifteen (15) days after the date established for commencement of work, the Contractor shall furnish and erect a temporary project safety fencing at the work site. The safety fencing shall be a six-feet (6'-0") minimum high chain link fence with privacy mesh or approved equal. The fence shall be secured to a tubular steel frame. Frame shall be fabricated into ten feet (10'-0") wide panels. Fence panels shall rest in precast concrete block at the base and shall be bolted together approximately twelve-inches (12") from the panel top edge. Privacy mesh shall be removed from site and secured when TCOR 3 is initiated. Fence shall not be attached to trees, signposts or other objects. The minimum limits of the fence shall be shown on the project drawings or as designated by the Contracting Officer.

Contract performance periods exceeding one hundred and eighty (180) days require a permanently installed six-foot (6'-0") high chain link fence with privacy mesh. Privacy mesh shall be removed from the fence when TCOR 3 is initiated.

The use of ribbon/surveyors tape, or orange snow fencing for marking construction zones are not acceptable substitutions.

The safety fencing shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the work, shall become the property of the Contractor and shall be removed from the work site.

2.3.2 Construction Utility Service and Utility Outages

Guam experiences frequent electrical power outages. Electrical service must be requested in writing and submitted to the Contracting Officer a minimum often (10) working days in advance of an anticipated power or utility outage. Depending on the project size and complexity, electrical requests may be required thirty (30) working days in advance. If required, the contractor shall provide back-up generator power in order to continue the flow of work and to maintain the project schedule.

2.4 Landfill Authorization

To assist in managing waste processing at the Andersen Air Force Base Landfill, contractors are required to identify and inventory waste loads prior to dumping. Recyclable materials and hazardous wastes, in particular, must comply with specific procedures.

Refer to Appendix A.4 - Landfill Authorizations Permit/Load Inspection Report, for additional requirements.

2.5 Environmental Objective

The Andersen Air Force Base Community prides itself on respecting our natural resources and maintains a strong desire to protect and preserve these resources and the lifestyle they afford. Therefore it is necessary that visitors understand and equally respect the value and fragility of our natural surroundings. Before proceeding with construction, the contractor shall secure the necessary permits and become familiar with all Andersen Air Force Base and Guam environmental requirements.

Air Traffic Control Tower

Environmental permitting includes, but is not limited to, the following considerations:

- Environmental Protection Plan (EPP):
  In addition to air and water quality, hazardous waste, pesticide use, and other environmental impacts, the EPP emphasizes storm water and groundwater controls. Refer to the Guam Environmental Protection Agency (GEPA) website for additional environmental permit information. http://epa.guam.gov/documents/

- Air Operating Permit:
  It is important to identify critical path items prior to construction and to consider compliance of temporary construction activities. On-site generators will also require an air-operating permit.

- United States Environmental Protection Agency (EPA):
  Emergency Planning and Community Right to Know Act (EPCRA).

Refer to Appendix A.5 - Environmental Requirements for Contractors, for additional requirements.

2.5.1 Sustainable Concepts

The built environment, both during and after construction, has both direct and indirect influence on the surrounding environment. Green design considerations include how to minimize energy consumption, optimize site potential, protect and conserve water resources, and to use environmentally preferable products and materials. Various programs and resources are available, some of which are indicated below. Project specific requirements should be reviewed with the Environmental Flight.

For additional information on sustainable concepts for facilities, refer to the United States Air Force Sustainable Facilities Guide at:
http://www.nasbap.org/curriculumlinks/downloads/Unit%201/afcee%20sustainable%20facilities%20guide.pdf
Green Procurement (formerly known as Affirmative Procurement):
The Air Force Center for Environmental Excellence Website states, “Green Procurement is the purchase of environmentally preferable products and services in accordance with one or more of the established Federal "green" procurement preference programs. The mandatory Green Procurement Program (GPP) elements are:

- Recycled content products on the EPA CPG list

- Energy Star® products and energy efficient standby power devices

- Alternative fuel vehicles, alternative fuels, and fuel efficient vehicles
- Bio-based products as defined by USDA
- Non-ozone depleting substances
- EPA Priority Chemicals
- Federal purchasers are also encouraged to follow EPA's Environmentally Preferable Purchasing (EPP) guidelines as part of the Green Procurement Program.

The "Guide to Green Purchasing" was updated in January 2005 to reflect the full scope of the GPP and can be downloaded from the link below."

USAF Guide to Green Purchasing, January 2005:
http://www.afcec.lackland.af.mil/eq/programs/progpage.asp?PID=1

An alternative program for consideration is the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) certification program. Information on this program can be found at http://www.usgbc.org.

2.6 Force Protection

Force protection is a primary concern at Andersen Air Force Base. Security issues should be considered and integrated early in the design process to ensure a quality building that effectively addresses force protection. Refer to Section 4.5.3 – Force Protection Barriers and UFC 4-010-01 – DoD Minimum Antiterrorism Standards for Buildings, for specific force protection criteria and components.

2.7 Design Reviews

2.7.1 Design-Bid-Award Project

This process is typical for 36 CONS/LGCA and NAVFAC PAC MILCON Design-Bid-Award projects. This project type has five (5) submittal stages/review periods that the design consultant must plan for in the design schedule. The five (5) stages occur at the following project design completion levels: 35%, 65%, 95%, 100%, and Final. The consultant is required to submit a minimum of ten (10) sets, including drawings, specifications, and design analysis to the 36th Civil Engineer Squadron (36 CES) for each submittal stage. The various Andersen reviewing agencies include:

1. 36 CES/CEC – Civil Engineer Flight
   a. Architectural
   b. Civil Engineer
   c. Mechanical Engineering, Plumbing, Fire Protection d. Electrical Engineering
2. 36 CES/CEOE – Maintenance Engineering
3. 36 CES/CEV – Environmental Flight
4. 36 CS/SCXP – Communication Squadron
5. 36 CES/CEF – Fire Emergency Services Flight
6. 36 SFS/AT-FP – Security Forces Squadron – Antiterrorism/Force Protection
7. 36WG/SE–Wing Ground Safety
8. User – Using agency or user of the project facility

The review period and turn-around time frame for each submittal stage is a minimum of two (2) weeks (14 working days). However, the review period and turnaround time may vary depending on the project size and complexity. Consult with the 36th Civil Engineer Squadron (36 CES) for project specific requirements.

2.7.2 AFCEE Design-Build-Award Project

AFCEE Design-Build-Award projects are different than the typical Design-Award projects mentioned above, and follow different submittal stages than the MILCON Design-Build projects as well. The typical AFCEE Design-Build project has only two (2) submittal stages/review periods that the Design-Builder must plan for in the project schedule. The two (2) submittal packages include: Conceptual Working Plan (CWP) and Implementation Work Plan (IWP), which includes the comments and responses, project specifications, working drawings, current working estimate, design analysis/calculations, project schedule, health and safety plan, construction quality plan, and meeting minutes.

2.7.3 AFCESA Design-Build-Award Project

AFCESA Design-Build-Award projects are different than the typical Design-Award projects mentioned above, and follow different submittal stages than the MILCON Design-Build projects as well. The typical AFCESA Design-Build project has only two (2) submittal stages/review periods that the Design-Builder must plan for in the project schedule. The two (2) submittal packages include: Conceptual Working Plan (CWP) and Implementation Work Plan (IWP), which includes the comments and responses, project specifications, working drawings, current working estimate, design analysis/calculations, project schedule, health and safety plan, construction quality plan, and meeting minutes.

2.7.4 MILCON Design-Build-Award Project

MILCON Design-Build-Award projects follow a different process, and have different submittal requirements than the typical Design-Award projects mentioned above. The Functional Analysis Conceptual Design (FACD) Phase includes a two (2) weeks period to develop the project concept with a Partnering Agreement. The first week includes an in-brief for the 36th Civil Engineer (36 CES) Squadron Commander. The second week includes an out-brief to the Wing and Mission Support Group Commander. Once a Partnering Agreement is signed, a Request for Proposal (RFP) package will be developed. The response to the RFP will be reviewed by the same reviewing agencies mentioned in the "Design-Award Project" description above. Therefore a minimum of ten (10) submittal sets will be required.

The submittal and meeting phases that the Design-Builder must account for in the project schedule are as follows:

Phase I is the "Design Phase" and includes the 50%, 100%, and Final submittal packages. Upon receipt of each submittal, the various Andersen reviewing agencies will provide comments back to the Design-Builder by completing a Form225. Then a "table-top" meeting will occur between the various Andersen agencies and the Design-Builder to review the comments and to obtain consensus.

Phase II is the "Construction Phase" and includes the Preconstruction Meeting in which all Andersen agencies will attend with the Design-Builder. Each Andersen AFB agency distributes their required forms and policies to the contractor at the preconstruction meeting.

2.7.5 SABER Design-Build-Award Project

Simplified Acquisition of Building Engineering Requirements (SABER) projects are an in house 36 CONS/LGCA design-build contract with $730,000 threshold maximum per project. These projects are relatively small projects. Review process is achieved as appropriate and submission is at 100% to final with negotiated suspense dates. Reviewers are in-house and depend on the statement of work for the engineering disciplines are involved.

Primary Guidance Documents

3.0 Introduction

Regardless if the below documents are specifically referenced in project-specific contract documents, all new and renovated facilities shall abide by the following list of documents as set forth by the related governing body. Required documents may include this list but are not exclusively limited to it. Additionally, a series of permits may be required before construction can begin depending on the scope of each individual project. Consult the contracting office for further information. Where a conflict exists within this standard and other applicable codes or standards, the more stringent shall apply.

F-15 Strike Eagles over the southern point of Guam

3.1 Building Codes and Local Ordinances

The applicable Unified Facilities Criteria (UFC) mentioned below are the governing documents for structural and seismic design criteria. However, the 36th Civil Engineer Squadron (36 CES) believes that in order to protect building occupants and property from typhoons and seismic activity, more stringent requirements are necessary. Therefore, amended and more stringent requirements, which exceed the UFC structural design criteria, are set forth below. Projects shall conform to such amended and more stringent criteria as established herein. In addition, the Guam Building Code and 2012 International Building Code should be used by consultants and contractors for non-structural items and/or when UFC's do not specifically apply.

3.1.1 Applicable Building Codes and Local Ordinances

- Guam Building Code
- 2012 International Building Code (IBC)
- Government of Guam Zoning Law

3.1.2 Wind Speed Criteria

Wind loads on every building and other structures, including the Main-Wind-Force Resisting System (MWFRS) and all Components and Cladding (C&C) shall be determined in accordance with Chapters 26 through 31 of ASCE 7-10. Guam is classified under the ASCE 7-10 as an area defined as hurricane prone and wind borne debris Region.

A "3-second gust" wind speed shall replace "Fastest Mile" speed as the basis of wind speed used in design. The wind speed criteria used to determine wind loads on AAFB shall be based on design wind speed maps for corresponding Risk Category.

Risk Category	Wind Speed (mph) "3- Second Gust"
I	180
II	195
III & IV	210

General Application: Buildings and structures must be designed to withstand the minimum wind loads prescribed in Section 1609- IBC 2012. The provisions under ASCE 7-10 shall define the basic wind parameters for use on AAFB along with other provisions contained in the IBC and UFC guidelines.

3.1.3 Seismic Criteria:

Design criteria for all buildings and structures on AAFB, including all structural components thereof shall be designed and constructed to resist the effects of earthquake motions in accordance with the requirements referenced in ASCE/SEI 7-10 and IBC-2012-Section 1613, as well as the other provisions specified under UFC 1-200-01, UFC 3-310-01, and ACI 318-11.

Until recently, the 1997 Uniform Building Code (UBC) defined seismic code criteria in terms of seismic zones which were identified on the maps by contour lines representing ground motions. Zones ranged from Zone 0 (indicating no seismicity) to Zones 1, 2A, 2B, 3, and 4. Zone 4- indicates the highest level of seismicity. The criteria of the old seismic "zone" no longer exist.

Current codes define site seismicity in a different manner. Under the new provision of the IBC and the ASCE 7, Seismic Design requirements for building structures on Guam, both military and civilian facilities shall depend on various parameters; namely seismic ground motion values; risk category of buildings and structures; importance factors and the characteristics of the soil (site class). These parameters are evaluated in order to determine a Seismic Design Category (SDC) which will define the required seismic design requirements. Seismic Design Categories are assigned letters, as defined by code, A through F.

ACI 318-11 Chapter 21 defines specific requirements for design of concrete structures in regions of high and moderate seismic risk. ACI 318-11 requires detailing mandated for SDC's D, E, and F-high seismic risk- which shall apply to the seismic criteria design for all Air Force Facilities on or off base on Guam.

3.2 Unified Facilities Criteria (UFC)

Some of the more common and applicable UFC's are listed below. Refer to the UFC website at: http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4 for additional UFC design criteria, as applicable to a specific project.

UFC 1-200-01, Design: General Building Requirements
UFC 1-200-02, High Performance and Sustainable Building Requirements
UFC 1-300-09N, Design Procedures
UFC 3-101-01, Architecture
UFC 3-110-03, Roofing
UFC 3-120-01, Design: Air Force Sign Standard
UFC 3-201-02, Landscape Architecture
UFC 3-210-01A, Design: Area Planning, Site Planning, and Design
UFC 3-210-02, Design: POV Site Circulation and Parking
UFC 3-210-03A, Design: Planning of Outdoor Recreation Areas
UFC 3-210-06A, Design: Site Planning and Design
UFC 3-210-10, Low Impact Development
UFC 3-220-01, Geotechnical Engineering
UFC 3-220-04FA, Design: Backfill for Subsurface Structures
UFC 3-220-05, Design: Dewatering and Groundwater Control
UFC 3-220-06, Design: Grouting Methods and Equipment
UFC 3-220-08FA, Design: Engineering Use of Geotextiles
UFC 3-220-10N, Soil Mechanics
UFC 3-230-01, Water Storage, Distribution, and Transmission
UFC 3-230-02, Water Supply Systems Operation and Maintenance

UFC 3-230-17FA, Design: Drainage for Areas Other than Airfields
UFC 3-230-06A, Design: Subsurface Drainage
UFC 3-250-01FA, Design: Pavement Design for Roads, Streets, Walks, and Open Storage Areas
UFC 3-250-04, Design: Standard Practice for Concrete Pavements
UFC 3-250-07, Design: Standard Practice for Pavement Recycling
UFC 3-250-09FA, Design: Aggregate Surfaced Roads and Airfield Areas
UFC 3-250-11, Design: Soil Stabilization for Pavements
UFC 3-250-18FA, General Provisions and Geometric Design for Roads, Streets, Walks, and Open Storage Areas
UFC 3-260-01, Design: Airfield and Heliport Planning and Design
UFC 3-260-02, Design: Pavement Design for Airfields
UFC 3-260-03, Design: Airfield Pavement Evaluation
UFC 3-260-16FA, Design: Airfield Pavement Condition Survey Procedures
UFC 3-260-17, Design: Dust Control for Roads, Airfields and Adjacent Areas
UFC 3-280-01A, Design: Guidance for Ground Water/Fuel Extraction and Ground Water Injection Systems
UFC 3-301-01, Structural Engineering
UFC 3-301-04, Seismic Design for Buildings
UFC 3-320-06A, Design: Concrete Floor Slabs on Grade Subjected to Heavy Loads
UFC 3-400-10N, Design: Mechanical Engineering
UFC 3-410-01FA, Design: Heating, Ventilating, and Air Conditioning
UFC 3-410-02A, Design: Heating, Ventilating, and Air Conditioning (HVAC) Control Systems
UFC 3-410-03FA, Design: Heating, Ventilating, and Air Conditioning of Hardened Installations
UFC 3-410-04N, Industrial Ventilation
UFC 3-430-01FA, Design: Heating and Cooling Distribution Systems
UFC 3-440-05N, Tropical Engineering
UFC 3-450-01, Design: Noise and Vibration Control
UFC 3-501-01, Electrical Engineering
UFC 3-520-01, Interior Electrical Systems
UFC 3-530-01AN, Interior and Exterior Lighting and Controls
UFC 3-535-01, Visual Air Navigation Facilities
UFC 3-550-01, Exterior Electrical Power Distribution
UFC 3-560-01, Electrical Safety, O&M
UFC 3-600-01, Fire Protection Engineering for Facilities
UFC 3-600-10N, Fire Protection Engineering
UFC 3-601-02, Operations and Maintenance Inspection, Testing and Maintenance of Fire
UFC 3-730-01, Programming Cost Estimates for Military Construction
UFC 3-740-05, Handbook Construction Cost Estimating
UFC 3-701-01, DoD Facilities Pricing Guide
UFC 3-800-10N, Design: Environmental Engineering for Facility Construction
UFC 4-010-01, DoD Minimum Anti-terrorism Standards for Buildings
UFC 4-010-02, DoD Minimum Antiterrorism Standoff Distances for Buildings

UFC 4-020-02FA, Security Engineering: Concept Design
UFC 4-020-03FA, Security Engineering: Final Design
UFC 4-020-04FA, Security Engineering: Electronic Security Systems
UFC 4-021-01, Design and O&M: Mass Notification Systems

3.3 Engineering Technical Letter (ETL)

Some of the more common and applicable ETL's are listed below. Refer to the ETL website at: http://www.wbdg.org/ccb/browse_cat.php?c=125 for additional ETL's, as applicable to a specific project.

ETL 96-5, Hangar Concrete Floor Reflective Coating Criteria, August 26, 1996
ETL 97-16, Pavement Marking Systems, November 25, 1997
ETL 97-17, Paint and Rubber Removal from Roadway and Airfield Pavements, December 1, 1997
ETL 97-18, Guide Specification for Airfield and Roadway Marking, December 5, 1997
ETL 02-9, Construction Signs, May 15, 2002
ETL 02-12, Communications and Information Systems Criteria for Air Force Facilities, June 27, 2002
ETL 01-18, Fire Protection Engineering Criteria - Electronic Equipment Installations, October 24, 2001
ETL 02-15, Fire Protection Engineering Criteria- New Aircraft Facilities, December 3, 2002
ETL 07-4, Air Force Carpet Standard
ETL 03-5, Converting Civil Engineering Radio Frequency Devices to Narrow Band Technology, October 21, 2003
ETL 04-2, Standard Airfield Pavement Marking Schemes, July 19, 2004
ETL 04-3, Design Criteria for Prevention of Mold in Air Force Facilities, April 6, 2004
ETL 04-4, Trenchless Technology (TT) for Crossing Air Force Pavements, March 31, 2004
ETL 04-10, Determining the Need for Runway Rubber Removal, May 12, 2004

3.4 General References

Air Force General Officer Quarters (GOQ) Guide, three-volume "boxed set"
Volume I: Air Force GOQ Resident's Handbook
Volume II: Air Force GOQ Standards for Programming, Design, and Construction
Volume III: GOQ Individual Facility Profile (IFP)

Andersen AFB General Officer Quarters (GOQ) Standards

Andersen AFB Housing Community Plan (HCP), August2004

Andersen AFB Dorm Master Plan (DMP), April 2003

Andersen AFB Base General Plan (BGP), August 2005

Andersen AFB 36th Wing Exterior Sign Standards, April2006

AFCEE website: http://www.afcec.lackland.af.mil

AFCEE Design Guidelines Database:
http://www.afcec.lackland.af.mil

PACAF Installation Strategic Vision & General Planning Initiative--APRIL 2006

Architectural Barriers Accessibility Guidelines for DOD Facilities (ABAAG)

USAF Family Housing Guide, August 2004

USAF Temporary Lodging Facilities Design Guide

USAF Unaccompanied Housing Design Guide

Americans with Disabilities Act Accessibility Guidelines (ADAAG)

Federal Standard (FED STD) 595 – Paint Colors

"Make It Better" Pacific Air Forces Facilities Excellence Guide

National Fire Protection Agency (NFPA) Codes and Standards

Uniform Federal Accessibility Standards (UFAS)

United States Air Force Unaccompanied Housing Guide

Andersen Blue Knights Honor Guard

3.5 Other Government Directives

Combat Information Transport System Baseline Program Directive (CITS-BPD)

38 EIG OI 33-01 – First Four Hundred Feet

PACAF C2 Design Guide

Site and Landscape Development

4.0 Objective

The objective of all site and landscape design components is to aesthetically unify and visually streamline the overall look of Andersen Air Force Base. A well-developed vegetation plan captures several environmentally beneficial characteristics. For example, vegetation can aid in the prevention of soil erosion and can improve air quality. Consistency in distribution and type aids in the recognition of thoroughfares, entry points, and recreation areas among other spaces throughout the Base. Existing vegetation, especially if native and mature, should be preserved and included in new plans and designs.

4.1 Site Design

4.1.1 Roadways

4.1.1.1 Major Roads (Within Facility Areas)

Fifty feet (50'-0") wide asphalt concrete pavement with five feet (5'-0") wide bike lane with white stripes markings and bike logo, eight feet (8'-0") shoulder, concrete curb and gutter, four feet (4'-0") buffer zone (green area), and five feet (5'-0") sidewalks both sides of the major road. Bike lanes are only provided within the proximity or close to the facilities especially housing.

4.1.1.2 Major Roads (Away from Facility Areas)

Forty feet (40'-0") wide asphalt concrete pavement with eight feet (8'-0") shoulder, concrete curbs and gutter, four feet (4'-0") buffer zone (green area), and five feet (5'-0") sidewalks both sides of the major road. No bike lane is required away from facilities.

4.1.1.3 Minor Roads

Thirty feet (30'-0") wide asphalt concrete pavement with concrete curb and gutter.

4.1.1.4 Service and Access Roads

Standard two-way, twenty-four feet (24'-0") asphalt concrete pavement without curb and gutter. Standard pavement markings without reflective markers.

For roadways mentioned above, refer to 4.1.2.1 below for Paving Materials, refer to 4.1.2.2 below for Curb and Gutter standards, and refer to 4.1.2.3 below for Pavement Markings.

4.1.2 Paving

Paving includes streets, crosswalks, gutters, curbs, sidewalks, parking lots, ramps, steps, curb- cuts, and recreation paths. The integration of architectural elements with safe vehicle and pedestrian travel depends on a well-planned and well-developed system of streets and pedestrian travel ways. Consider uniformity in the type, size, and style of paving materials, as they are a critical component in maintaining architectural consistency on the Base. Pedestrian crosswalks should be provided with a defining surface in both color and texture.

The applicable Unified Facilities Criteria (UFC) for paving includes, but are not limited to, the following:

UFC 3-250-01FA, Design: Pavement Design for Roads, Streets, Walks, and Open Storage Areas
UFC 3-250-04, Design: Standard Practice for Concrete Pavements

Refer also to Section 3 – Primary Guidance Documents, for additional governing documents. Where a conflict exists within this standard and other applicable codes or standards, the more stringent shall apply.

4.1.2.1 Paving Materials

Paving materials shall be as indicated by type below:

Roadways:
Three inches (3”) thick minimum asphalt-concrete over six inches (6”) thick compacted base course.

Parking lots and Driveways:
Three inches (3”) thick asphalt-concrete over six inches (6”) thick compacted base course.

Jogging Paths:
Four inches (4”) concrete pavement (rigid) over six inches (6”) base course or two inches (2”) thick asphalt-concrete (flexible) over four inches (4”) thick compacted base course. Provide synthetic rubber track surface. Provide submittal for review/approval.

Bike Paths:
Four inches (4”) concrete pavement (rigid) over six inches (6”) base course or Two inches (2”) thick

Jogging Path

Jogging Path with Synthetic Surface

asphalt-concrete (flexible) over four inches (4”) thick compacted base course.

Walkway Paths:
Paver blocks or stamped concrete with integral color (herringbone pattern). For paver blocks, provide four inches (4”) concrete base course with half-inch (1/2”) to one-inch (1”) sand cushion to avoid washout and shifting of pavers. For stamped concrete, provide four inches (4”) thick compacted base course.

Walkway Paths

Pedestrian Crosswalks:
Paver blocks or stamped concrete with integral (herringbone pattern). For paver blocks, provide six inches (6”) concrete base course with half-inch (1/2”) to one-inch (1”) sand cushion to avoid washout and shifting of pavers. For stamped concrete, provide six inches (6”) thick compacted base course.

Pedestrian Crosswalk

Street Sidewalks/Ramps/Curb-Cuts:
Four inches (4”) thick concrete with broom finish and smooth troweled edges with control joints at four feet (4’-0”) on center over six inches (6”) thick compacted base course.

Curb-cuts, meeting the specification above, shall be provided at street intersections and as necessary from handicapped parking spaces.

Street Sidewalk

Curb-Cut

Sidewalks Adjacent to Buildings:
In order to provide for proper pedestrian circulation, sidewalks shall be provided adjacent to buildings as required. Provide building sidewalks with four inches (4") thick concrete with broom finish and smooth troweled edges with control joints at four feet (4'-0") on center over six inches (6") thick compacted base course.

Building Sidewalk

4.1.2.2 Curb and Gutter

Unless existing site conditions require compatibility with existing curb and gutter, curbs shall be six inches (6") above the road surface and provided with a twenty-four-inches (24") wide gutter. Curbs shall not be painted. When gutters do not terminate at storm drains, catch basins, or other outfall, a cut-out shall be provided in the gutters to allow them to drain. Questions regarding type, style, locations of curbs, curb cuts, and handicapped accessible curbs shall be coordinated and approved by the Base Civil Engineer.
Refer to Section 4.5.3, Force Protection Barriers, for Anti-Terrorism/Force Protection (AT/FP) curbs.

Curb and Gutter

4.1.2.3 Pavement Markings

4.1.2.3.1 Painted Pavement Markings

Painted pavement markings shall be used for parking stalls, traffic direction indicators, centerlines, and handicapped accessible routes/loading zones. Roadway and parking lot two-way traffic centerlines shall be single, yellow, dashed lines with raised yellow reflective markers. All other pavement marking shall be white, unless otherwise specified. Parking stall lines shall be four inches (4") wide. Reflective paint is required for direction indicators, crosswalks, and centerlines. Paint is preferred for pavement markings. For paint specifications, coordinate with the Base Civil Engineer and FS-TT-B-1325D Beads Reflective, and CIDA-A-2886 Paint, Traffic, Solvent Based.

Painted Pavement Marking

Thermoplastic pavement markings are an acceptable alternative to paint, if approved by the Base Civil Engineer.

A sign shall indicate handicap parking stalls, not pavement markings. Refer to Part 4.3 below - Base Exterior Signs, for handicap parking sign standards.

Raised Reflective Pavement Marking

4.1.2.3.2 Raised Reflective Pavement Markings

Raised reflective pavement markings shall be used for roadway centerlines and for fire hydrant indicators. Fire hydrant indicators shall be standard fire hydrant indicators, reflective blue, offset twelve to sixteen inches (12" to 16") from hydrant side of the street or road. Provide pavement edge markers for roads without curbs. The standard road pavement paint marking is centerline composition, as indicated in 4.1.2.3.1 above.

Ninety-Degree Parking Stalls

4.1.3 Parking

Two-way parking driveways shall be provided with two (2) two-way entrances/exits. Parking lots shall be laid-out with ninety-degree stalls. Diagonal parking stalls in parking lots are not permitted. Parking lots and stalls shall conform to UFC 3-210-02 Design: POV Site Circulation and Parking, and to the Guam Zoning Regulations as follows:

Ninety-Degree Parking Stalls

Standard parking stall:
Nine feet (9'-0") wide by nineteen feet (19'-0") long.

Minimum parking stall:
Eight feet and six inches (8'-6") wide by nineteen feet (19'-0") long.

Maximum parking stall:
Ten feet (10'-0") wide by twenty feet (20'-0") long.

Handicapped accessible parking stall:
Thirteen feet (13'-0") wide by nineteen feet (19'-0") long.

Provide parking stalls with precast concrete wheel stops, anchored to pavement as required. Offset wheel stops approximately two-feet-six inches (2'-6") from the adjacent curb and sidewalk, to avoid vehicle bumpers from overhanging into pedestrian circulation paths.

For additional requirements on parking layout and design, refer to the National Fire Protection Agency (NFPA) Regulations for minimum dimensions of roads, fire lanes, parking lot stalls, and parking lot lanes. Separate ingress and egress routes must be located as remote from each other as possible. Consider the requirements of UFC 4-010-01, DoD Minimum Anti-terrorism Standards for Buildings, when laying out parking arrangements.

Wheel Stop

4.1.3.1 On-Street Parking

On-street parking generally is highly not recommended. It will be limited to parallel parking with sufficient length and width to allow safe movement into and out of the space and to adequately separate the parked vehicle from the traffic lanes. On-street parking, shall also meet the American's with Disabilities Act (ADA) requirements.

4.1.3.2 Off-Street Parking

Two-way ninety-degree parking is preferred. Diagonal parking or forty-five degree parking layout is not preferred.

4.1.4 Airfield Standards

Airfield standards shall adhere to all applicable Unified Facilities Criteria (UFC), Engineering Technical Letters (ETL), Air Force Instruction (AFI), Federal Aviation Administration (FAA) Requirements, and other applicable published criteria.

Typical General Airfield Standards include, but are not limited to the following:

UFC 3-260-01, Airfield and Heliport Planning and Design

Compliance with the above documents is mandatory. Refer also to Section 3 – Primary Guidance Documents, for additional governing documents. Where a conflict exists within this standard and other applicable codes or standards, the more stringent shall apply. Additional requirements can be found at Air Force Civil Engineer Support Agency (AFCESA) website, http://www.afcesa.af.mil/.

4.1.4.1 Airfield Pavement

UFC 3-260-02, Pavement Design for Airfields, prescribes procedures for determining thickness, material, and density requirements for airfield pavements. It also defines pavement as follows, "Airfield pavements are surfaced areas designed to carry aircraft traffic and includes the entire pavement system structure above the sub grade". All slabs on grade required to support aircraft loading, whether interior (hangar floors) or exterior are considered airfield pavements.

Refer to UFC 3-260-02 for additional requirements.

4.1.4.2 Airfield Markings

Airfield marking standards include, but are not limited to, the following:

AFI 32-1042, Standards for Marking Airfields, October 27, 2005
ETL 04-2, Standard Airfield Pavement Marking Schemes, July 19, 2004
FAA/AC 150/5354-1, Standard for Airport Markings
ETL 97-16, Pavement Marking Systems, November 25, 1997
ETL 97-17, Paint and Rubber Removal from Roadway and Airfield Pavements, December 1, 1997
ETL 97-18, Guide Specification for Airfield and Roadway Marking, December 5, 1997

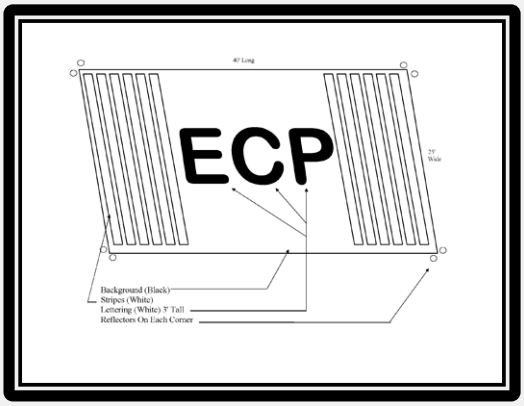
Compliance with the above documents is mandatory.

For airfield marking paint specifications, coordinate with the Base Civil Engineer and refer to the following Federal Specifications:

FS-TT-P-1952D, Paint, Traffic and Airfield Marking, Waterborne
FS-TT-B-1325D, Beads Reflective
CID A-A-2886, Paint, Traffic, Solvent Based

4.1.4.2.1 Entry Control Point Markings

The Airfield Entry Control Point shall be marked as shown in the adjacent figure. The marking shall be forty-feet (40'-0") long by twenty-five (25'-0") wide with black and white stripes as shown. White lettering, three-feet (3'-0") tall, and reflectors on each corner shall also be provided as shown in the adjacent figure.



Entry Control Point Marking

4.1.4.2.2 Restricted Access Signs on Pavement

Restricted Access Signs shall be provided on pavements thirty-six inches (36") wide by thirty inches (30") high and shall be as illustrated in the adjacent figure.
Refer to UFC 3-120-01.

4.1.4.3 Aircraft Arresting Systems

Refer to the documents below for Aircraft Arresting System Standards:

AFI 32-1043
FAA AC 150/5220-9, Aircraft Arresting Systems for Joint Civil/Military Airports
AFI 32-1043, Managing, Operating and Maintaining Aircraft Arresting System.

Restricted Access Signs

4.1.4.4 Airfield Repair and Maintenance

Refer to UFC 3-270-07, Airfield Damage Repair, for additional requirements.

4.1.5 Storm-Water and Groundwater Controls

No retention/ponding basins shall be used for storm water design, except at underground injection wells, or as designated by the Base Civil Engineer. Storm-water management shall be accomplished by providing sufficient grading to channel rainfall through shallow, grassy drainage swales to the existing injection wells or to existing approved low lying areas. Side slopes of drainage swales shall be kept to a minimum to allow for easy maintenance access for mowers or grass cutting equipment, and to avoid soil erosion and grass wash-out. Rip-rap shall not be used in grassy drainage swales or for any other type of site drainage system. Silt fences and/or sandbags should be used to protect the wells.

Drainage Swale and Culvert

Injection Well

4.1.5.1 Catch Basins and Miscellaneous Site-Civil Structures

Storm water catch basins shall be provided to accommodate site and paving drainage. Curb face inlets are commonly provided for catch basins along streets and roadways. Surface catch basin inlets are often provided in parking areas. Combination curb face and ground surface catch basins can also be provided where appropriate. Daylight/outfall structures, concrete swales, storm sewer manholes, water meter valve boxes, and other civil structures are common on Andersen Air Force Base.

Parking Lot Catch Basin

Example photos of the various catch basins and miscellaneous site-civil structures are shown herein.

Earth-Lined Drainage Swale

Drainage Culvert

Earth-Lined Drainage Swale

Combination Ground Surface and Curb Face Catch Basin

Curb Face Catch Basin

Storm Drain Manhole

Water Meter Valve Box

Daylight Area Drain/Outfall Structure

4.1.5.2 Environmental Protection Plan (EPP)

4.1.5.2.1 EPP Process

An Environmental Protection Plan (EPP) shall be required for all projects depending on the intensity and Scope of the project, at the discretion of the Guam EPA Administrator. This Plan will describe the methods, practices, and equipment to be used on site: expected or anticipated environmental problems during and after Construction and the methods, practices, and equipment that may be used to avoid, mitigate or control potential adverse effects on the environment. EPPs are specifically identified in 22 Guam Annotated Regulations, Division II, Chapter 10, Section 10103.C.S (d).

EPPs are applicable to all land and water areas of Guam and all projects, activities and facilities by private, and governmental sectors, including, the Government of Guam and all Federal Agencies on Guam. Accordingly, an EPP shall be submitted as an integral part and in support of any application for a permit, and specifically Clearing and Grading and/or Construction Permits authorizing such work unless the requirement is waived in writing by the Administrator of the Guam Environmental Protection Agency.

The EPP shall be implemented prior to the commencement of work, project or activity and shall continue to be implemented for the duration of the work, project or activity. EPPs shall include a description of the work to be undertaken and use of the property or facility including, erosion and sedimentation control (as addressed in the Guam Soil Erosion and Sediment Control Regulations), vegetation, wildlife and coral/marine resource protection measures, fugitive dust control, solid and hazardous waste management and disposal procedures, personnel safety procedures, work site maintenance, and typhoon contingency plans, as necessary, depending on the work, project, activity and facility function. Guidance on the development and preparation of EPPs is available through the Guam Environmental Protection Agency.

Examples of the EPP are given in Appendix A.6 – Sample Environmental Protection Plans (EPP) Prior to the issuance of a permit for the work, project or activity, the permit applicant/contractor/developer shall meet with the Contracting Officer and the Environmental Compliance Manager to discuss the proposed environmental protection plan. The meeting shall develop a mutual and specific understanding relative to details of environmental protection, including required reports, provisions and measures to be taken should the permit holder fail to provide adequate protection in an adequate and timely manner. Not more than ten (10) days after the meeting, the permit applicant shall submit an electronic version of the EPP for review and approval by the Andersen AFB Environmental Office (Compliance Manager). Once the EPP is approved the contractor will submit 3 copies of the plan to the Compliance Manager, to be submitted to the Guam Environmental Protection Agency. Each copy of the plan shall have a cover letter addressed to the Administrator (see attached). Once the plan is submitted to GEPA, they will have up to 30 days for review and acceptance at which time they will send a written authorization to the contractor and the AAFB Environmental Office.

Inquiries into the status of the EPP should be directed to the Compliance Manager via telephone or e-mail provided at the first meeting.

The Contractor, owner or operator shall provide and maintain a copy of the Environmental Protection Plan during the life of the permit /duration of the work/activity, project or function at its base field office. The Contractor's, owner's and operator's operations shall comply with all federal, state and local regulations pertaining to water, air, solid waste, noise pollution, and sources of non point pollution.

The process for administering the EPP requires the contractor to prepare and submit the application to 36 CES/CEC Civil Engineer Flight, which will then forward the application to the 36 CES/CEV Environmental Flight. The 36 CES/CEV Environmental Flight will coordinate directly with the Guam Environmental Protection Agency (GEPA). All projects that require an EPP shall be submitted to 36 CES/CEC Engineering Flight in coordination with 36 CES/CEV Environmental Flight and final approval of GEPA. Submittal process requires a 30-day evaluation and approval turnaround. Contractor shall plan on submitting the EPP prior to starting work. Refer to the Guam Environmental Protection Agency (GEPA) for additional information.

4.1.5.2.2 Storm-Water and Groundwater Controls

Existing underground injection wells shall be protected with silt fences and/or sandbags as approved.

4.1.5.2.3 Landfill Disposal, Asbestos Abatement, and Other Environmental Considerations

Consistent with the requirements set forth by the EPP, conditions have been established relating to potentially hazardous materials. Policies regarding the presence and disposal of asbestos, lead-based paint, polychlorinated biphenyl (PCB's) shall be reviewed as applicable.
Guidelines pertaining to chemical container storage, spills, and clean-up procedures shall also be reviewed prior to initiating the construction phase of a project. Handling and disposing of recyclable materials and demolition debris, dust control, clearing and grubbing, and generator installation shall be in compliance with the EPP and with Appendix A.5 herein.

Refer to the Environmental Protection Plan (EPP) and Appendix A.5 - Environmental Requirements for Contractors for additional requirements.

4.2 Hardscape

4.2.1 Introduction

Site furnishings and other accessories are intended to enhance the convenience, safety, and comfort of the Andersen Air Force Base Community in outdoor areas. Consider maintenance needs when selecting materials and finishes.

Choose site furnishings and accessories that further compliment the overall architectural theme and regional characteristic of Andersen Air Force Base and Guam. Consistency is required in the selection of hardscape elements, and other site furnishings. Designers shall maintain compatibility within a particular architectural district. When there is no existing compatibility, the designer shall coordinate material selection with the Base Architect.

Use site furnishings and other accessories where they are functionally most useful. Be sparing in uses that are trendy or design oriented and avoid excessive and random placement. Select for low maintenance, durable furnishings, and accessories.

4.2.2 Fences and Screen Walls/Enclosures

Fences and screen walls/enclosures shall be used as a security measure and to disguise unsightly equipment and other objects not intended for public visibility or use.

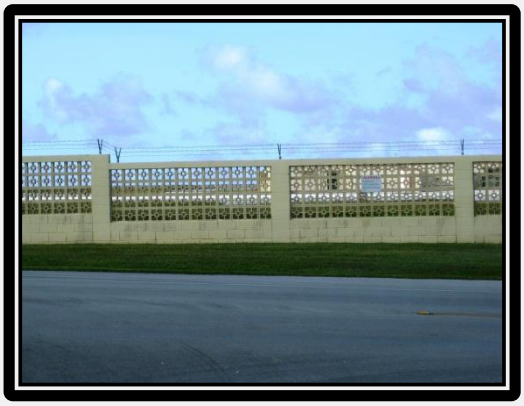
4.2.2.1 Fences

Fence types are as indicated below:

Base Perimeter Anti-Terrorism/Force Protection (AT/FP) Fence:
Nine-gauge (9 ga), galvanized steel chain link fence with five-strands barbed wire outriggers on heavy pre-cast concrete lined posts at ten feet (10'-0") on center with ¾" diameter aircraft cable. Refer to UFC 4-022-02.

Base Perimeter AT/FP Fence

Flight Line Perimeter Fence:
The existing Flight Line Perimeter Fence is an Eight-inch (8") thick concrete masonry unit wall/fence with decorative breezeway blocks. Color: "antique linen", as shown in the adjacent photo. Repair and maintenance projects involving the existing Flight Line Perimeter Fence shall maintain its existing general appearance. However, for replacement of the Flight Line Fence in the future, coordinate with the Base Civil Engineer for Flight Line Perimeter Fence replacement design criteria.



Existing Flight Line Perimeter Fence

Alternative- Eight-feet (8'-0") high chain link fence with double outriggers (five strands per side), coordinate with Base Civil Engineer for review and approval.

Facility Perimeter Fence:
Nine-gauge (9 ga), galvanized steel chain link fence with three-strands barbed wire outriggers on a two inches (2") diameter galvanized steel lined post at ten feet (10'-0") on center. Corner and gate posts shall be three inches (3") diameter galvanized steel posts.

Facility Perimeter Fence

4.2.2.2 Screen Walls/Enclosures

Descriptions of various enclosure types are as follows:

- Electrical screen walls/enclosures: Transformers and switchgear enclosure to be stenciled with equipment identification to be seen from exterior. All enclosures shall have adequate clearance as per latest NEC code.
- Mechanical screen walls/enclosures: Air conditioning condensers and chillers
- Dumpster screen walls/enclosures: Trash receptacles/dumpsters

The adjacent photo demonstrates Andersen Air Force Base's standard screen wall/enclosure configuration. Screen walls/enclosures shall be eight-inches (8") thick with a minimum height of twelve-inches (12") above equipment height concrete masonry unit (CMU) with inverted breezeway CMU blocks having corner and end wall columns designed to withstand the wind speed criteria as indicated in Section 3, Primary Guidance Documents. Provide interior concrete slab sloped to drain, and provide eight inch (8") by eight inches (8") block-out at the base of each wall for rainwater drainage.

Screen Wall/Enclosure

4.2.3 Pavilions

4.2.3.1 Dormitory Pavilions

Dormitory pavilions shall be thirty-two feet (32'-0") wide by thirty-two feet (32'-0") long, independent/freestanding, with cast-in-place concrete columns and footings. Concrete beams shall be painted "antique linen". Provide concrete roof with "mission red", Spanish style roofing system, and aluminum louver smoke vents at side attic walls. Pavilions shall be complete with concrete seating, BBQ stand, and a trash receptacle.

Dormitory Pavilion

4.2.3.2 Picnic Pavilions

Picnic pavilions shall be twenty feet (20'-0") wide by thirty-two feet (32'-0") long, independent/freestanding, with cast-in-place concrete columns and footings. Paint concrete beams "antique linen". Provide with concrete roof having "mission red", Spanish style roofing system. Pavilions shall be complete with concrete seating, BBQ stand, and trash receptacle.

Picnic Pavilion

4.2.4 Bus Stop Shelters

Bus stop shelter sizes and dimensions may vary based on specific shelter requirements. However, the typical shelter is eight feet-eight inches (8'-8") wide by twenty feet (20'-0") long. Bus stop shelters shall be constructed with independent/freestanding cast-in-place concrete walls, columns, and beams painted "antique linen". Provide concrete roof with "mission red", Spanish style roofing system. Bus Stop Shelters shall be complete with concrete seating, and trash receptacle. Bus stop shelter locations shall be coordinated with the Base Civil Engineer.

Bus Shelter

4.2.5 Outdoor Tables and Seating

Locate comfortable fixed benches or seat walls near building entrances, courtyards, in recreation areas, and in other informal gathering areas. The designer shall be consistent in type and color of benches and tables and ensure that they are compatible with the architectural theme of the Base. Outdoor tables and seating shall be pre-cast concrete with durable exterior finish. Coordinate style with the Base Civil Engineer for approval.

Concrete Seating

Concrete Picnic Table with Seats

4.2.6 Covered Walkways

Cast-in-place covered walkways constructed of concretecolumns, beams, and a concrete mansard roof having“mission red”, Spanish style roof tiles are preferred.

Covered Walkway

4.2.7 Trash Receptacles

Trash receptacles are to be placed on paved surfaces, removed from direct circulation paths. Use receptacles that are consistent with other site furnishings and accessories. Typhoon resistance and low maintenance products are preferred characteristics. Trash receptacles shall have a pre-cast concrete exterior with pebble stone “antique linen” finish with dark brown trim, retractable trash bin, and heavy-duty cover.

Precast Concrete Trash Bin

4.2.8 Stair and Ramp Railings

Exterior stairs, steps, and ramps shall be provided with handrails and guardrails as required. Forty-two inch (42") high guardrails shall be provided for fall-protection when the elevated walking surface is thirty inches (30") or more above adjacent grade. Handrails shall be provided on each side of stairs, steps, and ramps, and shall be mounted between thirty-four inches (34") and thirty-eight inches (38") in height. Railings shall be one and one-half inch (1-½") diameter pipe. Polished stainless steel is highly preferred for railing material. Aluminum with kynar finish is acceptable as an alternative railing material.

Polished Stainless Steel Railings

4.2.9 Bicycle Racks

Bicycle racks shall be located near secondary entrances. Install racks on paved surfaces, removed from direct circulation paths. Polished stainless steel is preferred. Painted galvanized steel pipe for railings will not be allowed.

Bicycle Rack

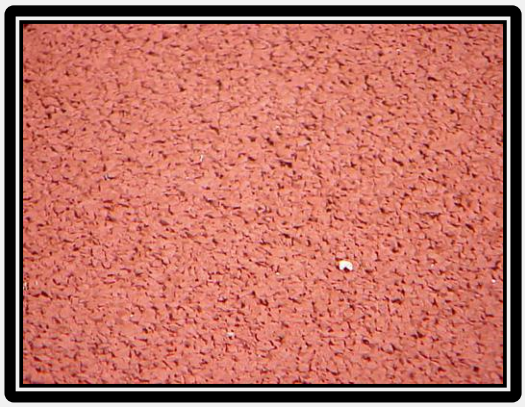
4.2.10 Playground Equipment

4.2.10.1 Playground Equipment Description

Playground equipment shall be sited mainly at Housing, School, and Child Development Center (CDC) for military, civilian, and their dependent's use. Pre-finish aluminum material with rainbow color scheme is preferred with plastic top and coated platforms combination with stainless steel connectors. Fall protection can be provided by monolithic synthetic rubber material cushion. Multi-age group playground equipment for infant, pre-toddler, composite toddler/pre-school, school-age, and pre-teen age groups is preferred other than the CDC designed to provide challenging play activities by age group. All equipment shall conform to the latest edition of ASTM F1487 and CPSC pub no. 325.

Playground Equipment

Playground Equipment



Playground Synthetic Rubber Cushion

4.2.10.2 Prohibited Playground Equipment

Prohibited playground equipment that does not meet the Air Force development program requirements on outdoor play areas include the following: chain balance beams; rotating equipment such as merry-go-rounds, log rolls, whirls and may poles; fulcrum seesaws (teeter totters); spring rocking equipment intended for standing; animal figure swings; rope swings; multiple occupancy swings; swinging exercise and trapeze bars; swinging platforms; tire climbers; swinging dual exercise rings; roller slides; trampolines; swinging gates or doors; new or used vehicle tires; play houses or enclosures made of horizontal posts or bars with space between them; wood components treated with creosote, pentachlorophenol, and tributyl tin oxide; wood components coated with a finish containing pesticide.

4.3 Base Exterior Signs

4.3.1 Objective

The objective of the signage standard is to keep the type of signs to a minimum and for signs to be consistent throughout Andersen Air Force Base. All Andersen Air Force Base exterior signs shall conform to the UFC 3-120-01 "Air Force Sign Standards" criteria, to the latest AFB Sign Policy, 36th Wing Exterior Sign Standards developed by 36 CES/CEOE, and to the requirements specified herein. Non-conforming signs may not be installed without prior written approval from the Base Civil Engineer.

All exterior signs shall be low profile and typhoon resistant. Cast-in-place concrete signs or signs constructed of concrete masonry units are preferred. "H" frames/post-type signs shall be used sparingly, and when they are used, they shall be designed and installed to be removable/retractable as described below. Examples of frequently used standard sign types (letters and materials) are featured in the photos shown herein.

Existing non-conforming signs shall be removed and changed to conform to these Standards. Refer to Section 3 – Primary Guidance Documents, and Appendix B - Andersen "H" Frame Sign Detail for additional requirements.

4.3.2 Organizational Signs

Organizational signs shall identify primary facility functions and should not be in the form of building directories. Concrete marquee mounted signs for large facility MILCON projects are preferred and shall be coordinated and approved by the Base Civil Engineer. Post-mounted signs may be used for all other facilities, unless otherwise specified. Sign placement shall be approved by the Base Civil Engineer.

Only one organizational sign is authorized per facility. Wall mounted signs may be used when there is a limited space and when post mounted signs are not applicable. Signs shall not include decals or symbols other than the organization's designation. Abbreviations are allowed provided that they are in conformance with the Air Force Manual of Abbreviations, FAR 11-2. Not all facilities require a sign. The 36thCivil Engineer Squadron, Operations Flight (36 CES/CEO) will make the final determination of the need for an organizational sign.

4.3.2.1 Concrete Marquee Organizational Signs

Cast-in-place concrete or concrete masonry unit wall sign is preferred for most headquarters facilities like the 36th Wing (36 WG) and 36th Mission Support Group (36 MSG) buildings.

Marquee Organizational Sign

Marquee Organizational Sign

Other major MILCON project facilities marquee signs are similar with concrete mansard roof with Spanish mission-red roof tiles as shown in the sample photos. The specific design features of MILCON marquee signs shall be reviewed in advance with the Base Architect to ensure design consistency and compatibility. The MILCON marquee sign shown in the photo below is the recommended standard for MILCON marquee signs on Andersen Air Force Base.

MILCON Marquee Sign

4.3.2.2 Post Mounted Organizational Signs

Post and cross members shall be two inch (2") by two inches (2") by one-quarter inch (1/4") thick aluminum H-frame with "tobacco brown" paint finish. Post and cross members connections shall be fully welded.

H-Frame Post Sign

Removable/retractable sign guide shall be one and three-eighths inch (1-3/8") by one and three-eighths inch (1- 3/8") by one-eighth inch (1/8") thick aluminum riveted and spot welded to the inner side of post and cross member as shown in Appendix B, Andersen 'H'-frame Sign Detail – Removable/Retractable signs.

Removable/retractable sign shall be sixteen-gauge (16 ga) aluminum (back-to-back) riveted on a one-inch (1") aluminum channel framing. Signs shall receive reflective "tobacco brown" sheeting and shall conform to FHA FP-79, and shall have white Helvetica Medium font. Aluminum material for sign post shall be 6061-TS alloy with mill finish. Aluminum for extrusions shall be 6063- T5 or 6063-T6 with mill finish in accordance withASTM-B221. All aluminum sheeting shall be 6061-T6 with mill finish in accordance with ASTM-B209. Foundation footing shall be a minimum of twelve inches (12") diameter by twenty-four inches (24") deep three- thousand pounds per square inch (3,000 psi) concrete. Size, sign type, lettering, numbers, and shields shall conform to the UFC 3-120-01 "Air Force Sign Standards".

4.3.2.3 Shields on Organizational Signs

All organizational signs for Pacific Air Forces (PACAF) unit squadron level shall use the PACAF shield, or the 36th Wing shield as applicable. Tenant unit organizational shield shall use their major command shield in lieu of the PACAF shield. Organizational signs for Wing staff functions, squadrons, and units or functions below squadron level shall use a wing shield only. No more than two shields per sign may be used. When two shields are used, the higher-level shield shall be on the left. When a single shield is used, it shall be located on the left. Shield shall be decals ordered from UNICOR (Federal Prison Industries) or other commercial manufacturers.

4.3.3 Award Signs

Award signs such as, "Best in PACAF" or " Best in AIR FORCE" shall be hung from the lower cross member of the organizational sign. Sign shall be removable aluminum with tobacco brown reflective sheeting and white letters in Helvetica Medium font as shown on the sample photo. Signs may be displayed for a period not to exceed two (2) fiscal years (FY) beyond the year awarded and shall be removed no later than October 1st of the second year. Example: Awards received for FY 2004 may be displayed during FY05 and FY06.

Post Mounted Award Sign

Post Mounted Award Sign

4.3.4 Organizational/Squadron Commander & First Sergeant (Sgt) Signs

Organizational/Squadron Commander & First Sergeant (Sgt) name signs shall be hung from the lower cross member of the organizational sign. The only authorized names for these signs are for Group Commanders/1st Sgt or Squadron Commanders/1st Sgt levels. Sign shall be removable aluminum with tobacco brown reflective sheeting and white letters as shown on the sample photo.

Post Mounted Commander & First Sergeant Signs

4.3.5 Other Post Mounted Signs

4.3.5.1 Post Mounted Directional Signs

Removable/retractable H-frame aluminum signs are preferred for directional signs. Materials, specifications, and colors shall be the same as for Post Mounted Organizational Signs indicated above. No more than four (4) facilities shall be provided per sign. A sample photo is shown herein.

Post Mounted Direction Sign

4.3.5.2 Street Name Signs

Street name signs are situated at intersections identifying the crossing streets. Signs shall be fixed aluminum with "tobacco brown" reflective sheeting and reflective white letters in Helvetica Medium font. The signs shall be provided with and a border, including PACAF shield on the left side. Signs shall be mounted on a two-inch (2") diameter aluminum post with "tobacco brown" paint finish over twelve inches (12") diameter by twenty-four-inch (24") deep concrete footing. Removable/retractable sign posts are preferred for street name signs.

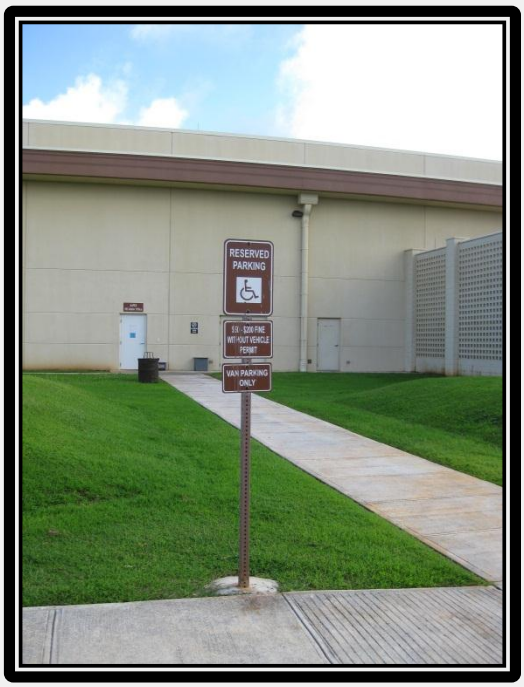
Street Name Sign

4.3.5.3 Traffic Signs

Traffic signs shall be situated where necessary, as designated by a traffic engineer, and with approval from the Base Civil Engineer. Traffic signs shall be fixed aluminum mounted on a two inch (2") diameter aluminum post with "tobacco brown" paint finish over twelve inches (12") diameter by twenty-four-inches (24") deep concrete footing. Removable/retractable signpost is preferred. All traffic signs shall comply with the UFC 3-120-01 "Air Force Sign Standards" and with the Manual of Uniform Traffic Control Devices.

4.3.5.4 Handicap Parking Signs

Handicap parking signs shall be mounted over the sidewalk or curb side of the designated handicap parking stall. Sign shall be fixed aluminum with "tobacco brown" reflective sheeting and reflective white letters in Helvetica Medium font, handicap symbol and border, and mounted on a two inch (2") diameter aluminum post with "tobacco brown" paint finish over twelve inches (12") diameter by twenty-four inches (24") deep concrete footing. Removable/retractable sign posts are preferred; handicap pavement markings are not allowed.



Handicap Parking Sign

4.3.5.5 Reserved Parking Signs

Reserved parking shall be limited to signs for visitors, customers, handicapped, Distinguished Visitor (DV), Commanders, and incentive award program winners (e.g. NCO of the quarter). Reserved parking shall be indicated by a surface mounted aluminum plate ("tobacco brown") with reflective white letter films, mounted on the face of the parking stall curb as shown in the adjacent photo. Refer to Andersen Air Force Base's Sign Standard for additional requirements.

Reserved Parking Sign

4.3.6 Building Identification Signs

Building identification signs shall be wall mounted, of twelve inches (12") minimum high dark brown (bronze) or gold raised letters preferably die-cast aluminum and in Helvetica Medium font. Dark brown (bronze) lettering shall be used for Squadron or lower level organizations; and gold lettering shall be used for Group or higher-level organizations. Wall signs shall be prominently located and integrated with the architectural character of the building mainly in front facade focal point considering ease of view when approaching the facility. Facilities with an entrance canopy may use the canopy as an alternate location.

Building Identification Sign

Building Identification Sign

Building Identification Sign

Building Identification Sign

Building Identification Sign

4.3.7 Building Numbers

Building numbers shall be located on at least one corner side of the facility, preferably on the left side corner facing the building. Building numbers shall be coordinated with the Real Property Section. There is only one number assigned unique to every building. More than one number may be used for large facilities such as dormitories, administrative buildings, and hangars as considered necessary to aid in the facility identification by customers and emergency response personnel. Location of numbers shall be coordinated with the Fire Emergency Services Flight.

Building numbers shall be on aluminum plate with "tobacco brown" reflective sheeting background and reflective white numbers in Helvetica Medium font mounted five feet (5'-0") to six feet (6'-0") high above finish grade or floor. All building numbers shall be manufactured by the 36th Civil Engineer Squadron Sign Shop with an approved work request.

Building numbers shall be installed as part of the construction project. They shall be installed when major construction is completed toward end of project, as soon as possible.

For more information on signage standards, refer to the USAF Sign Standard at:
UFC 3-120-01 Air Force Sign Standard
http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4

4.4 Exterior Lighting

4.4.1 Introduction

Provide architecturally compatible and energy efficient lighting for parking lots, roadways, building exteriors, and high traffic pedestrian walkways for the convenience and security of the community. All exterior lights should be consistent in function and style based on type.

4.4.2 Streetlights

Round pre-cast concrete poles with two feet (2'-0") to three feet (3'-0") cantilever arm, aluminum finish with photocell electric switches. The total length of the arm and the light fixture head together should not be more than three feet (3'-0") long. Light fixture heads should have a flat lens (not convex) to reduce wind exposure. Military family housing streetlights shall be two hundred forty volts (240V), and two hundred fifty watts (250w). Industrial streetlights shall be four hundred eighty volts (480V), and one hundred fifty watts (150w).

Refer to Section 9 - Electrical Standards, for additional lighting requirements.

Street Lights

Street Lights

4.4.3 Parking Lights

Pole mounted can-lights with short arm dark bronze aluminum anodized finish with photocell electric securely mounted on concrete footing foundation.

Parking Lights

Parking Lights

4.4.4 Jogging Path Lights

8'-0" high pole mounted solar powered LED lights and securely mounted on concrete footing foundation.

Jogging Path Lights

4.4.5 Signage Light (Flood Lights)

Dark bronze aluminum anodized floodlights with photocell electric securely mounted on concrete footing foundation.

Signage Lights

4.5 Anti-Terrorism/Force Protection

4.5.1 Introduction

Protection of the Andersen Air Force Base community is of paramount concern. Therefore, anti-terrorism/force protection measures must be considered early in the design process of Base development projects. Attention is required towards preventative measures, as well as careful thought regarding how design features can minimize damage in the event of an attack. Three (3) primary methods used to achieve anti-terrorism/force protection objectives are:

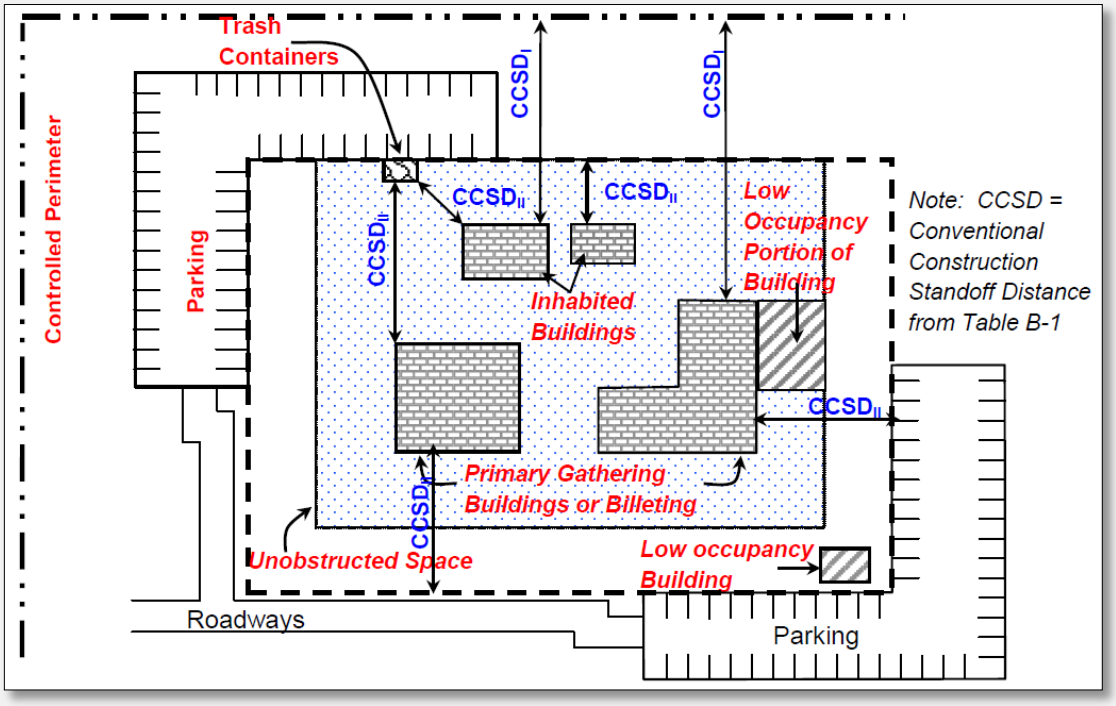
- Maximize standoff distances from facilities
- Strategically place physical barriers
- Design facilities in order to minimize the likelihood of collapse and flying debris hazards.

Anti-terrorism/force protection standards are based on a specific range of assumed, baseline threats, and they serve as a cost-effective guide to minimizing the risk of mass casualties. Full implementation of anti-terrorism/force protection standards will provide some protection against all threats and will significantly reduce the number of injuries and fatalities.

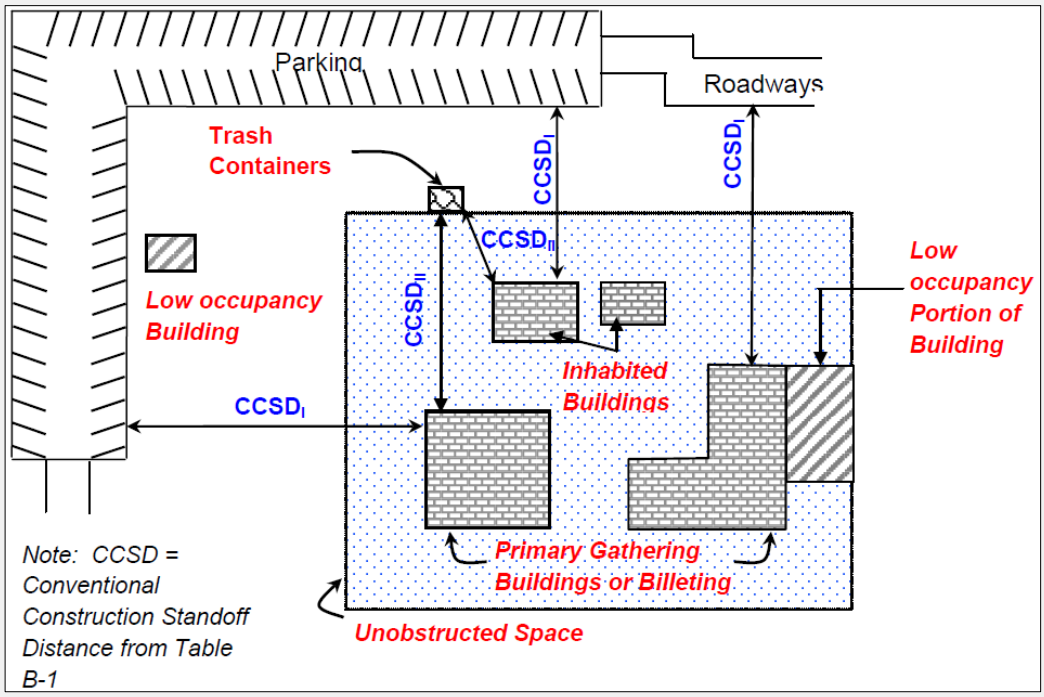
Refer to UFC 4-010-01, DoD Minimum Anti-terrorism Standards for Buildings, and UFC 4-010-02, DOD Minimum Antiterrorism Standoff Distances for Buildings, for additional requirements.

4.5.2 Standoff Distances from Facilities

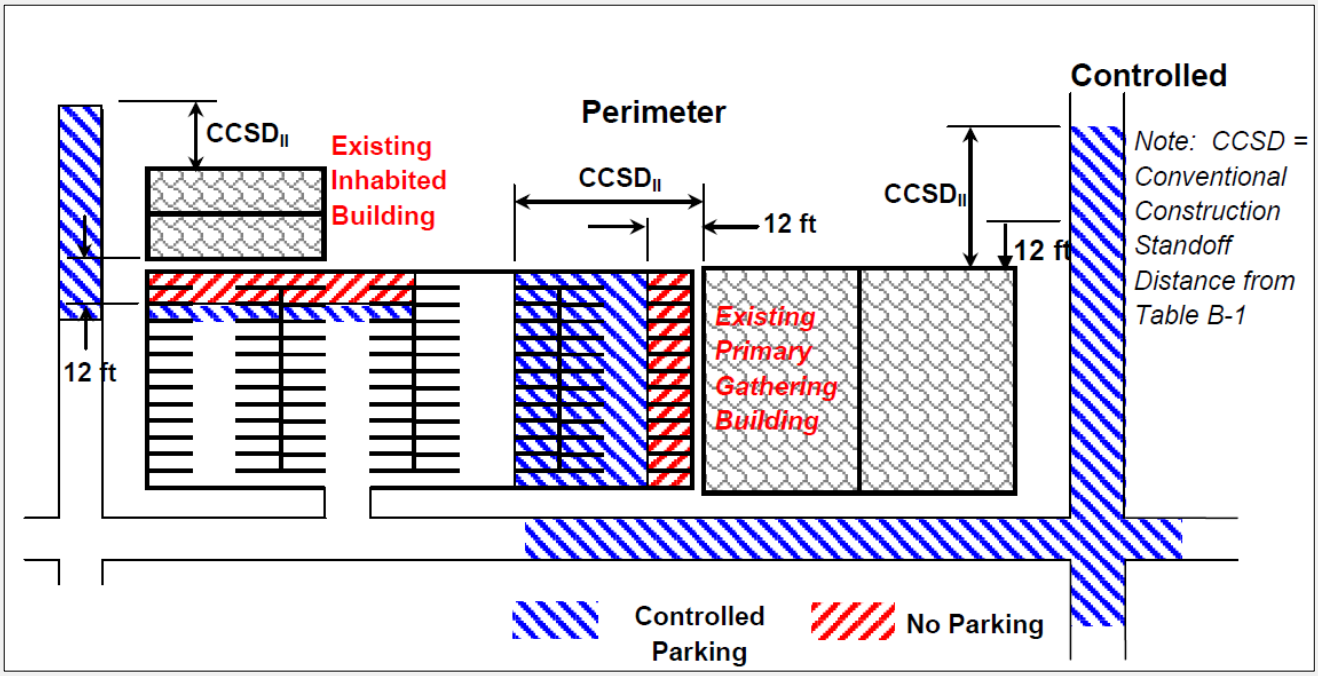
Standoff distances are a design parameter intended as a preventative measure for occupant and facilities protection. The primary design strategy revolves around maintaining a controlled perimeter around facilities that keeps the enemy far away from their target as possible. These distances are not "reserved" and will be encroached upon under various circumstances. However, they do provide a general protection as well as a foundation from which to expand protective measures as threat levels justify. Where minimum standoff distances cannot be achieved, provisions for building hardening to mitigate blast effects must be implemented. All standoff distances are measured from the controlled perimeter to the closest point on the building exterior or inhabited portion of the building.



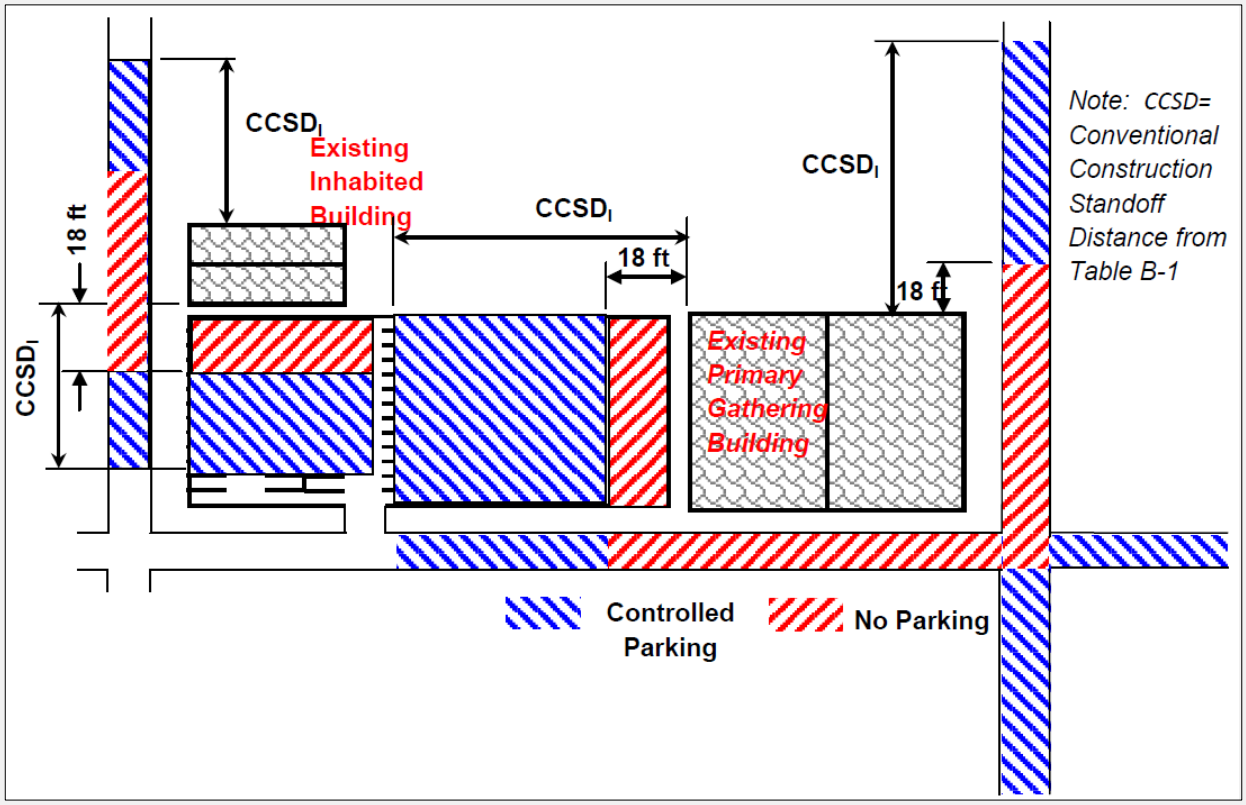
Standoff Distances – With Controlled Perimeter



Standoff Distances – No Controlled Perimeter



Parking and Roadway Control for Existing Buildings – Controlled Perimeter



Parking and Roadway Control for Existing Buildings – No Controlled Perimeter

4.5.2.1 Minimum Standoff Distances

For conventionally constructed buildings minimum standoff distances have been established to increase the survivability of the structure in the event of an explosion. The minimum standoff distances outlined in Table 4.5.2.3 below, under the "Conventional Construction Standoff Distance" heading, are based on explosive safety considerations that have been developed based on experience and observation. Stated distances may be conservative for heavy construction such as masonry or reinforced concrete and just adequate for lighter construction such as timber- frame. Where the minimum distances cannot be achieved an engineer experienced in blast- resistant design shall conduct a structural analysis to determine where hardening shall be applied to mitigate the effects of a potential explosion.

4.5.2.2 Effective Standoff Distances

For new construction, distances less than those stated in Table 4.5.2.3 below, under the "Effective Standoff Distance" heading, are not allowed under any circumstances. Lesser distances are not allowed so that space is "reserved" for potential future upgrades that may be required in response to increased risk of attack. For existing construction a structural analysis demonstrating that hardening can achieve the desired level of protection may result in an allowance for a reduced standoff area.

Table 4.5.2.2.1 - Standoff Distances for New and Existing Buildings

Distance to:	Building Category	Applicable Level of Protection	Standoff Distances			
			Conventional Construction Standoff Distance		Minimum Standoff Distance [2]	Applicable Explosive Weight [3]
			Load Bearing Walls [1]	Non-Load Bearing Walls [1]		
Controlled Perimeter or Parking and Roadways without a Controlled Perimeter	Billeting and High Occupancy Family Housing Primary Gathering Building Inhabited Building	Low	A	C	18 ft (5.5 m)	I
		Low	A	C	18 ft (5.5 m)	I
		Very Low	B	D	18 ft (5.5 m)	I
Parking and Roadways within a Controlled Perimeter	Billeting and High Occupancy Family Housing Primary Gathering Building Inhabited Building	Low	E	G	12 ft (3.6 m)	II
		Low	E	G	12 ft (3.6 m)	II
		Very Low	F	H	12 ft (3.6 m)	II
Trash Containers	Billeting and High Occupancy Family Housing Primary Gathering Building Inhabited Building	Low	E	G	12 ft (3.6 m)	II
		Low	E	G	12 ft (3.6 m)	II
		Very Low	F	H	12 ft (3.6 m)	II

4.5.3 Force Protection Barriers

4.5.3.1 Pipe Bollards

Pipe bollards shall be eight inches (8”) to twelve inches (12”) diameter by three feet, six inches (3’-6”) high fixed galvanized steel pipe bollards, concrete filled with “antique linen” paint finish and one yellow reflective tape band at the top. Where appropriate, a stainless steel cable shall be installed between the bollards.

Pipe Bollards

Pipe Bollards

4.5.3.2 Decorative Concrete Bollards

Decorative concrete bollards used in recreation areas, or other designated areas, shall be custom-designed for the context for which they will be installed. Design, placement, and installation shall be as approved by the Base Civil Engineer.

4.5.3.3 Moveable Concrete Barriers

Moveable concrete barriers shall be sixteen inches (16”) thick (tapered) by three feet (3’-0”) high sections, in either three feet (3’-0”), four feet (4’-0”), or six feet (6’-0”) lengths. Barriers shall be pre-cast concrete with gray stamped-stone finish and reflective tape.

Moveable Concrete Barriers

Moveable Concrete Barriers

4.5.3.4 Facility Metal Gate Barriers

Prefabricated scissor truss-type, swinging gate constructed of a minimum three inches (3") diameter galvanized steel pipe with four (4) each six inches (6") diameter posts painted "tobacco brown". Gate-posts shall be embedded in three thousand-pounds per square inch (3,000 psi) concrete foundations.

Facility Metal Gate

4.5.3.5 Fixed Wall Barriers

The preferred fixed wall barrier type is an integrally colored, split face, interlocking, structural concrete masonry retaining wall. An alternative fixed wall barrier type would be constructed of cast-in-place concrete. Wall barriers shall be twelve inches (12") thick by three-feet, six inches (3'-6") high. Cast-in place concrete wall barriers shall have smooth plaster finish with "antique linen" paint finish.

Concrete Fixed Wall Barrier

4.5.3.6 Concrete Curbs

Concrete curbs shall be cast-in-place, twelve inches (12") wide by eighteen inches (18") to twenty-four inches (24") high concrete curbs, with smooth plaster finish. Curbs shall not be painted.

AT/FP Concrete Curb

AT/FP Concrete Curb

4.5.4 Facilities Hardening

Facilities or Building Hardening refers to enhancing conventional construction as a means to mitigate potential explosive impact on a building. In the event of an attack or explosion the primary factor to be addressed from a design standpoint is that of minimizing hazardous flying debris and thus, potential injury to building occupants. A second concern is the prevention of catastrophic structural failure resulting in building collapse.

4.5.5 Minimize Hazardous Airborne Debris

Flying debris resulting from an explosion is a leading cause of injuries and fatalities in events where there is not catastrophic failure of the structural system. Avoiding certain materials and construction systems can minimize airborne glass, wall fragments, ceiling fragments, and non-structural fixtures including site furnishings adjacent to the building.

Minimizing window size and number, as well as using enhanced window construction can significantly lower the risk of injury or death. Window and door systems that are part of an integral structural system help to reduce this risk. Refer also to Section 5 – Exterior Architectural Standards, for additional information on doors, windows, and glazing systems.

4.5.6 Prevention of Catastrophic Structural Failure

Provisions intended to mitigate the risk of catastrophic structural failure and subsequent building collapse are critical to ensuring the safety and security of building occupants. Structural systems that provide increased continuity and redundancy among members are less likely to fail in the event of an explosive attack. Designing these features into new construction or integrating them into a renovation project of an existing structure are the most cost-effective times to provide for these provisions.

Mandatory Department of Defense minimum anti-terrorism standards for new and existing inhabited buildings are contained in Appendix B of United Facilities Criteria document 4-010-01.

4.5.7 Infrastructure Protection

Protecting the air and water supplies of Andersen Air Force Base is critical to the overall security of the Base community. Therefore, the importance of infrastructure security must be emphasized during the design phase of Base development projects. For example, when designing building mechanical systems, water treatment and supply systems, or wells, security risks inherent to the design must be carefully considered in order to prevent contamination.

UFC 4-020-01 - Security Engineering Facilities Planning Manual, presents the processes for developing design criteria necessary to incorporate security and anti-terrorism features for Andersen Air Force Base facilities. Procedures for identifying cost implications of applying such design criteria are also found within the UFC. Refer to UFC 4-020-01 for further information.

4.6 Landscaping

4.6.1 Existing Conditions

Preserve existing landscape features, particularly when the vegetation is native or mature. Before developing a complete landscape plan, take inventory of the existing resources on the site and include and enhance these features in the plan. Be certain that future planting is consistent with and augments existing landscape conditions. Vegetation types should match those already in place in size, color, and growth characteristics.

- Use regionally native plants for landscaping,
- Design, use, and promote construction practices that adverse effects on natural habitat,
- Prevent pollution by reducing fertilizer and use integrated pest management practices, recycling green waste (composting), and minimizing runoff,
- Implement efficient water practices,
- Prevent the introduction of invasive species.

As a result of these constraints and Guam's unique environmental conditions the following are landscaping guidelines for Air Force landscaping projects on Guam:

- At least 50% native species should be used for all landscaping projects (native species must be grown on Guam with all cutting/seed stock having originated on Guam).

- When existing landscape plants need to be replaced, at least 50% of the plants should be native plants.
- Clumping several individual plants together should be used whenever possible to increase survival rate of plants during a typhoon.
- For best results, it is recommended to plant during the wet season and allow time for plants to become established before dry season begins.

4.6.2 Soils

Guam soils can generally be grouped into two broad categories: clay (volcanic origin) soil and limestone soils.

4.6.2.1 Clay Soils

This large category contains the clay soils and the silty clay soils, developed from basalt and other volcanic rocks. In wet areas, these soils are highly leached and are usually strongly acidic. These soils are low in all three major plant food elements (n-p-k), and are also low in calcium.

4.6.2.2 Limestone Soils

The other group of soils includes those developed from coral, coral sand, or limestone. These soils are usually sandy and somewhat alkaline. They are low in all three major food elements; nitrogen, phosphorus, and potassium but have a surplus of calcium. Grasses usually grow well if fertilized only with N-P-K.

4.6.3 Invasive Plant Species

An "invasive species" is defined as a species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm to human health (Executive Order 13112).

4.6.4 Restricted Plant Species

Certain species, especially large fruiting trees, cause maintenance problems due to excessive debris and may become an "attractive nuisance," as people attempt to pick the fruits. Others have growth habits, such as aggressive root systems, that generally make them difficult to maintain. Such species should not be used in "improved" areas.

One restrictive species that deserves special mention is the Coconut palm. Although it is commonly associated with a tropical setting, it is probably the least desirable species of palm to use for Navy landscaping for a number of different reasons. They are costly to maintain because they produce approximately 100 coconuts and about a dozen fronds per year. If they are not trimmed at least once a

year (and preferably every six months) by professional tree trimmers there is the danger of injury from falling coconuts. Furthermore, Coconut palms are known to harbor rodents like rats and are the host plant for the Coconut Rhino Beetles (CRB), an invasive insect that has been introduced to Guam.

Restricted Plant List*		
Scientific Name	**Common Name(s)**	**Reason for Restriction**
Artocarpusaltilis	*Breadfruit (Ulu)*	*Fruit*
Bambusa spp.	*Bamboo*	*Aggressive*
Brassaiaactinophylla	*Octopus Tree*	*Invasive*
Carica Papaya	Papaya**	*Fruit*
Chrysophyllumoliviforme	*Satin Leaf, Satinwood*	*Invasive*
Citharexylumspinosum	*Fiddlewood*	*Invasive*
Coco nucifera	*Coconut Palm*	*Fruit/host plant for CRB*
Dendrocalamus spp.	*Bamboo*	*Aggressive*
Eucalyptus globulus	*Blue Gum*	*Invasive*
Ficusmicrocarphylla	*Moreton Bay Fig*	*Invasive*
Ficusmicrocarpa (retusa)	*Chinese Banyan*	*Invasive, aggressive*
Grevillearobusta	*Silky Oak*	*Invasive*
Hedychiumcoronarium	*White Ginger*	*Invasive*
Hedychiumflavescens	*Yellow Ginger*	*Invasive*
Hedychiumgardnerianum	*Kahili Ginger*	*Invasive*
Mangiferaindica	*Mango*	*Fruit*
Melaleucaquinquenervia	*Paperbark*	*Invasive*
Musa spp.	*Banana***	*Fruit; Aggressive*
Nerium oleander	*Oleander*	*Poisonous*
Paraserianthesfalcataria	*Albezia*	*Invasive*
Persea Americana	*Avocado*	*Fruit*
Phyllostachys spp.	*Bamboo*	*Aggressive*
Prosopispallida	*Kiawe*	*Invasive*
Psidiumcattleianum	*Strawberry Guava*	*Invasive*
Psidiumguajava	*Guava*	*Fruit*
Roseliaspp	*Firecracker*	*Invasive*
Schinusterebinthifolius	*Christmas Berry*	*Invasive*
Spathodeacampanulata	*African Tulip Tree*	*Invasive*
Sphaeropteriscooperi	*Australian Tree*	*Invasive*
Heterospatheelata	*Sagisi Palm*	*Invasive*

Veitchiamerrilli	*Chinese betel nut*	*Invasive*
Shrubs		
Ligustrumlucidum	*Oriental Privet*	*Invasive*
Ligustrumsinense	*Chinese Privet*	*Invasive*
Groundcover		
Asystasiagangetica	*Asystasia*	*Invasive*
Lonicera japonica	*Honeysuckle*	*Invasive*
Passiflorasuberosa	*Passion Fruit*	*Fruit; Invasive*
Sphagneticolatrilobata	*Wedelia*	*Invasive*
Thunbergiagrandiflora	*Bengal Trumpet*	*Invasive*
Tradescantiaspathcea	*Oyster plant/Moses in the bullrushes*	*Invasive*
Thunbergia	*Laurel Leaved Thunbergia*	*Invasive*

*Note: This list is subject to change as new information becomes available
** In certain circumstances some fruit trees can be considered in well maintained community gardens.

4.6.5 Landscape Planning

The inclusion of appropriate vegetation on a site increases energy efficiency, reduces erosion, provides a wind block and shading device, improves air quality, and adds aesthetic value. Carefully consider maintenance, typhoon resistance, and watering needs when developing a landscape plan.

Prioritize vegetation placement based on the distinguished visitor (DV) travel way from the Passenger Terminal to housing and from Base entrance gate to housing. Line roads and parking areas with small leaf deciduous trees to minimize maintenance and clean up.
Also, focus landscape plans on increasing vegetation density at primary and secondary entrance points of buildings and lesser elsewhere.

Example of Landscaping at Building Entry

4.6.5.1 Xeriscaping

Within the past 15 years, the public's perception of water as an abundant and easily renewable resource has changes dramatically to an understanding that water is a finite and expensive commodity. This change of perception has taken place as increased population demands and droughts have taken their toll on regional water supplies, particularly island environments. Additionally, Executive Order on Environmentally and Economically Beneficial Practices on Federal Landscaped Grounds (April 26, 1994) directs agencies to employ landscaping practices that conserve

water. One response to increased concern for methods of conserving water has been the idea of "Xeriscape," a philosophy of design aimed at water conservation through effective and appropriate landscaping. Xeriscaping, which refers to landscaping in ways that reduce or eliminate the need for supplemental irrigation. Xeriscape design is based on seven basic practices of good horticulture:

a. Planning and good design
b. Soil improvement
c. Use of mulch
d. Limited lawn areas (saves energy due to little or no lawn mowing)
e. Lower water consumption
f. Efficient irrigation
g. Good maintenance

Xeric plants are those that tolerate dry soil conditions. Xeriscape design approaches landscaping with an eye toward using efficiency. **Note: Xeriscape designs don't always require xeric plants**.

For more information on Landscaping, refer to the USAF Landscape Design Guide at the following link: http://www.afcee.af.mil/resources/designandconstruction/familyhousingpublications/index.asp

4.6.6 Strategic Vegetation Placement

Use landscape features for shading at entry points, pedestrian walkways, and benches and tables. Shading may also be useful for buildings with uninterrupted southern exposure as a means of mitigating heat gain.

Vegetation shall also be used in combination with screen walls/enclosures for screening transformers and mechanical devices as well as other unsightly objects. Place shrubs along the base of trees to prevent trunk damage inflicted by mowers and trimmers.

Vegetation Used With Screen Walls

Specify plants without thorns around doorways and along walkways, or where children may play. Many tropical plants are poisonous and should not be placed in areas that may be occupied by children.

Avoid unsightly clusters and isolated singles. Even spacing and similar type creates a more natural rhythm.

4.6.7 Proximity Standards

Plant trees at least fifteen feet (15'-0") from buildings. Vegetation used for screening and shading shall be placed no less than five feet(5'-0") from the edges of transformers and other mechanical devices or screens. Roads shall be lined with trees that are evenly spaced and of common type to create a rhythm and consistency throughout the Base.

Landscaping Adjacent to Buildings

Example of Landscape Grouping

4.6.8 Preferred Vegetation

Planting shall conform to Andersen Air Force Base Preferred Trees and Plants in Table 4.6.5.1 at the end of this Section herein. Unless otherwise specified, provide plants grown under climatic conditions consistent with those found in Guam. For example, Flame Trees, Asoca, or Palms (except coconut bearing palms) are acceptable choices for trees.

Lawn and Landscape at Golf Course

Lawn and Landscape at Open Space

Table4.6.8.1- Andersen Air Force Base Preferred Trees and Plants

Flowering Trees

Common Name	*Botanical Name*
Arbot, Flame Tree (35)	*DelonixRegia*
Coral Tree	*Variegata*
Giant Crape Myrtle	*Lagerstroemia Speciosa*
Golden Shower	*Cassia Spp*
Golden Shower	*Cassia Fistula*
Ilang-Ilang	*Cananga Odorata*
Narra	*Pterocarpus Indicus*
Orchid Tree (1)	*Bauhinia Spp*

Palms and Cycads

Common Name	*Botanical Name*
Areca Palm (11)	
Chinese Fan Palm	*Livistonia Chinensis*
Fiji Fan Palm	*Prichardia Pacifica*
Manila Palm (10, 12-15)	*VeitchiaMerrillii*
McArthur Palm	*Ptychosperma Marcarthuri*
Royal Palm	*Roystonea Elata*

Shade and Park Trees

Common Name	*Botanical Name*
MonkeyPod	*Samanea Saman*
Palomaria, T. Kamani	*Calophyllum Inophyllum*
Rubber Tree	*FicusSpp (Religiosa)*
Mahogony	*Swietenia Macrophylla*
Autoghraph tree	*Clussia Rosea*
False Wiliwili	*Adendanthera Pavanina*
Fiddle-leaf fig	*Ficus Lyrata*
Ironwood	*Casaurina Equisetfolia*

Shrubs

Common Name	*Botanical Name*
Wax Ficus	*Ficus*
Beefsteak	*Acalypha Wilkesiana*
Bougainvilla (29)	*Bougainvilla Spectabilis*
Chinese Ixora	*Ixora Chinenses*
Copperleaf (25-28)	*Acalypha Ateca*
Corn Plant	*Dracaena Spp*
Crape-Myrtle	*Lagerstroemia*
Croton (16, 27)	*Codiaeum Variegatum*

Shade and Park Trees (continued)

Common Name	*Botanical Name*
Lagundi	*VitexLagundi*
Sea Grape	*CoccolobaUvifera*
Yoga (37)	*ElaeocarpusJoga*
	Sphaericus
Ifit Tree	*IntsiaBijuga*
African Tulip	*Spathodea*
	Companulata
	Artocarpus
	Mariannensis
	Neisosperma
	Oppositifolia
	Orchrosia
	Mariannensis
	Eugenia Palumbis

Shrubs (continued)

Common Name	*Botanical Name*
Hibiscus (17, 31, 33, 40)	*Hibiscus Rosa-Sinensis*
Monkey Tree	*Dracaena Marginata*
Periwinkle (7, 8)	*CatharanthusRoseus*
Red Ginger	*AlpiniaPurpurata*
Sampaguita	*Jasmine Spp*
	ScaevolaSericea

Ground Cover

Common Name	*Botanical Name*
Chutsarita	*Alternatnera Spp*
Caladium	*Caladium Bicolor*
Canna Lily	*Canna Spp*
Periwinkle (7, 8)	*Vinca*
Rhoeo	*RhoeoSpathacea*
Joyweeds	
Blue Daze	
False Heather (26)	
Portulaca	

Grass Seed

The preferred grass seed and turf mix is hydraulic seeding and mulching as follows:

Grass seed near or around facilities:
Bermuda Grass (Hulled): Pure Seed 98.00%, weed seed: 00.10%, Other crop: 00.50%, Inert matter 01.40%, Germination: 85.00%, no noxious weed.

Grass seed away from facilities & open areas:
Annual Ryegrass, Gulf variety. Pure seed 99.59, other crop 00.07, inert matter 00.34, weed seed 00.00, germination 90%, no noxious weed

4.6.8.2 Vegetation Photos

Orchid Tree or Bauhinia (1)

Mini Ixora (2)

Yellow Allamanda (3)

Grand Ixora (4)

Blue dragons (5)

Mini Ixora (6)

Periwinkle or Vincas (7)

Periwinkle (8)

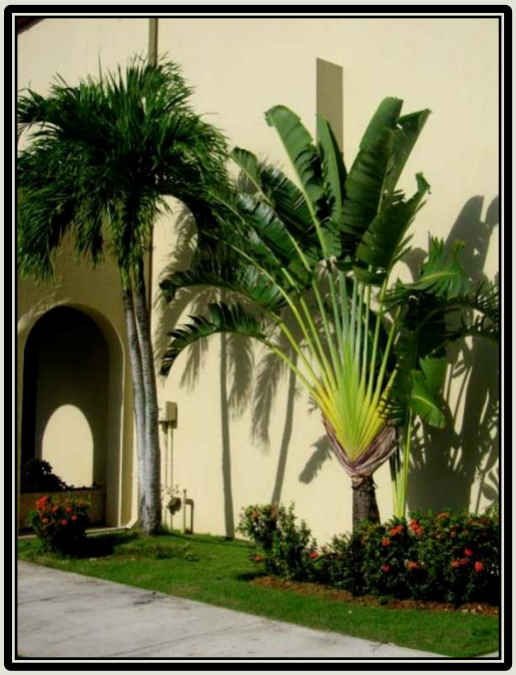
Plumeria(9)

Manila Palm and Vitex (10)

Areca Palm (11)

Manila Palm and Acalypha (12)

Manila Palm (13)



Manila Palm and Traveler's Palm (14)

Manila Palm (15)

Palm, Croton, and Don Manuel (16)

Palm and Hibiscus (17)

Sago Palm (18)

Sago Palm (19)

Sago Palm and Duranta (20)

Mini Ixora and Sago Palm (21)

Sago Palm and Ixora (22)

Fuji Palm (23)

Phoenix Palm (24)

Acalypha (25)

False Heather and Acalypha (26)

Acalypha, Croton, and Don Manuel (27)

Mini Ixora and Acalypha (28)

Bougainvilla (29)

Grand Ixora (30)

Pink Hibiscus (31)

Grand Ixora (32)

Pink Hibiscus (33)

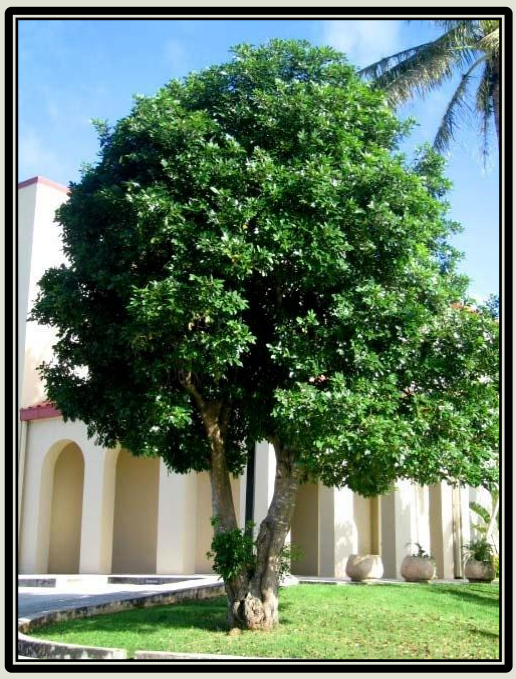
Grand Ixora (34)

Moses on the Boat (35)

Springerii(36)

Vitex Tree (37)

Ti Plant (38)



Pink Tacoma (39)

White Hibiscus (40)

Vitex Tree (41)

Manila Palm (42)

Flame Tree (43)

Yoga Tree (44)

Da'ok Tree (45)

False Heather and Liriope (46)

4.6.9 Landscaping Warranty and Maintenance

4.6.9.1 Turf Establishment Period

Turf establishment period will commence on the date inspection by contracting officer shows that the new turf furnished under this contract has been satisfactory installed and shall continue for a period of 365 days or 1 year.

4.6.9.2 Maintenance during the Establishment Period

Begin maintenance immediately after turf has been installed. Inspect turf areas at least once a week during the installation and establishment period and perform maintenance promptly. In other words, the warranty period for turfs is good up to one (1) year and should be maintained by fertilizer application every month within the warranty period.

Exterior Architectural Standards

5.0 Objective

The primary goal of the exterior architectural standards is to define a clear and consistent design theme that visually unifies building exteriors throughout the Base. This goal is achieved by providing a set of uniform design characteristics to apply to the individual architectural features, such as colors, wall finishes, and roof types of each building. The construction of new facilities and the renovation or repair of existing facilities on the Andersen Air Force Base should provide conformity to the location, function, and selected base theme.

Andersen Middle School

5.1 Primary Design Considerations

5.1.1 Building Character

Building design traditionally reflects the historical precedent established by local and regional cultural forces. To accent the rich Spanish heritage of the island of Guam, a Spanish theme was selected for the base décor. This generally includes the look of stucco walls with arches and “mission red”, Spanish style tile roofs. Window accents may be used to add to the Spanish appearance. The use of walkways, patios, and low, easy care gardens may also be used in the design. Since Andersen Air Force Base has come under the command of the Pacific Air Forces, this theme has been reflected at the base facilities, resulting in a pleasant yet functional base appearance. Refer to the illustrations at the end of this Section for further demonstration of the Andersen Air Force Base architectural character.

Fitness Center

Security Forces Squadron

5.1.2 Typhoon Resistance

Protection against typhoons and extreme weather in general is a priority at Andersen Air Force Base. Many building materials and assemblies are subject to airborne storm debris and significant wind loads which can result in outright building envelope rupture, or can produce pressures that may compromise water and air infiltration resistance of cladding systems.

5.1.3 Anti-Terrorism/Force Protection

Refer to Section 4 – Site and Landscape Development, for Standoff Distances, Force Protection Barriers, and Facilities Hardening requirements.

5.2 Building Materials

New buildings constructed on Andersen Air Force Base should be designed for a sixty-year useful life. Consider weather protection characteristics, durability, and low maintenance in building material selection. Avoid materials that require painting. Materials with integral color are preferred. Select non-ferrous metals such as aluminum and stainless steel to mitigate corrosion.

5.2.1 Roofing

Roofs shall be sloped to promote positive drainage. When appropriate, use overhangs to provide shade for the building and for pedestrian travel ways. Select for durability, color retention characteristics, and chalk resistance. Solvent and chemical resistance is also desirable. Roof colors should be similar to natural Spanish tile, and shall match the roof colors currently on the Base. Refer to Section 7 for Base Color Standards.

Various Roofing Systems Exist on Base

Refer also to applicable Unified Facilities Criteria (UFC) and Engineering Technical Letters (ETL) for additional requirements.

5.2.1.1 Existing Roof Types

Existing roof types on base include:

- Low Slope Roofs: Low slope roofing systems consist of built-up felt, asphalt, or coal tar bitumen on a variety of insulation types and structural decks. Such structural decks include cast-in-place concrete, precast concrete, or metal deck with concrete topping. Existing low slope roofs are often provided with a concrete fascia, or with an authentic or simulated Spanish tile mansard perimeter.

Low Slope Roof with Concrete Fascia

Low Slope Roof with Mansard

- Steep Roofs: Existing steep roofs consist of various geometries; however gable or hip style roofs are the most prevalent types of steep roof systems on the Base. Existing steep roofs are most commonly clad with authentic Spanish tile, or with metal panels, which simulate a Spanish tile appearance.

Steep Roof - Hip

Steep Roof – Gable and Hip

5.2.1.2 Slope Conversion Policy

Air Force policy promotes conversion from built-up roofs to steep roof systems when economically and aesthetically acceptable. Coordinate with the Base Civil Engineer to determine if your roofing project will be considered for slope conversion.

5.2.1.3 Low Slope Roofs

5.2.1.3.1 Roof Coating Systems

A single component, elastomeric, air-dry silicone rubber coating directly applied to the roof deck is the preferred roofing system for low-slope concrete roofs. Color shall be white, and provide for a high level of solar ultraviolet reflectivity. Coating must be formulated to resist algae and fungi growth, and must not oxidize or discolor in hot and humid climates. Installations of roof coatings require that the roof insulation be installed on the underside of the roof deck, on the interior of the building.

Roof Coating System

5.2.1.3.2 Built-Up Roof Systems

Built-up roofs are not preferred on new projects, and may only be allowed in limited use for patching and repair of existing built-up roofs at the discretion of the Base Civil Engineer. In most cases, when existing built-up roofs are punctured after typhoons and 70 percent (70%) is damaged, or the warranty is void after its life span, the whole roofing system shall be replaced with the roof coating system mentioned above.

In such cases, a concrete topping may be required to be added to the top of the deck, and/or the insulation will be required to be installed on the underside of the roof deck. The specifics of this scenario will vary based on the existing conditions.

5.2.1.4 Mansard Roofs

Mansard roofs around the building's parapet perimeter may be used as a way to achieve a Spanish aesthetic on buildings that require a low slope roof system because of large, open floor plans that require clear structural roof spans. Authentic Spanish roof tile, fully grouted, is the preferred mansard system. The acceptable standard is either authentic Spanish Tile, concrete Spanish tile with mission red integral color, or pre-cast concrete with Spanish tile pattern and mission red integral color.

Authentic Spanish Tile Mansard Roof

5.2.1.5 Steep Roofs

5.2.1.5.1 Concrete and Precast Concrete Roofing Systems

For optimum typhoon resistance and reduced maintenance needs, steep concrete with integral coloring is the preferred roofing material. Precast concrete, with an integral color, and Spanish tile pattern may be acceptable, provided the system is cost effective. Generally, this roof type has only been found to be cost effective on larger projects. Coordinate with the Base Civil Engineer to determine if your project is suitable for this type of roofing system.

Steep Concrete Roof System

5.2.1.5.2 Authentic Spanish Roof Tile

Fully grouted, authentic Spanish tile is also a preferred steep roof cladding system. Authentic Spanish tile systems must be engineered to comply with the wind speed criteria mentioned in Section 3 – Primary Guidance Documents.

5.2.1.5.3 Concrete Spanish Roof Tile

Fully grouted concrete Spanish roof tile is also a preferred option for steep roof cladding system. Concrete Spanish tile should be precast with integral mission red color, engineered to comply with the wind speed criteria mentioned in Section 3 – Primary Guidance Documents.

5.2.1.5.4 Simulated Spanish Roof Tile

Simulated Spanish roof tile metal panels are acceptable on new steep roof systems and may be necessary to match existing, where buildings are being renovated or expanded. Simulated Spanish roof tile panels must be heavy gauge aluminum, mission red, and shall be installed to withstand the wind speed criteria and seismic criteria mentioned in Section 3 – Primary Guidance Documents, as calculated in accordance with the Building Code. Panels shall be securely fastened directly to the concrete slope using stainless steel fasteners at six-inch (6") on center. Wood or metal nailing strips shall not be used. Assume the profile rib faces externally with 1:12 to 1:24 roof-slope. Coordinate with the Base Civil Engineer for final roofing material selection.

Existing Simulated Spanish Tile Metal Panels

5.2.1.6 Rooftop Equipment

Due to limited access for maintenance, and concerns due to typhoon exposure, rooftop mounted mechanical and utility equipment and plant rooms are not allowed on new projects. If no other viable alternative exists, the designer shall submit a proposed location plan for proposed roof mounted equipments in advance for review and approval on a case by case basis to the Base Civil Engineer. Refer to Section 8 - Mechanical, Plumbing, and Fire Protection Standards, included in this document, for further details regarding type and placement of equipment.

5.2.2 Wall Systems

Uniformity in design throughout the Base is encouraged as a means to ease future maintenance and repair projects. Strength, durability, and weather resistance are priorities in the design of wall systems. Typically, wall systems should be of concrete masonry unit construction. A textured, Direct Applied Exterior Finish System (DAEFS) with integral coloring shall be applied as the exterior stucco finishing material. Alternatives such as precast concrete panels, or poured-in-place concrete with textured, integrally colored DAEFS may also be considered. Other systems or finishes must be approved individually, in advance, with the Base Civil Engineer.

DAEFS Exterior Wall Finish

DAEFS Exterior Wall Finish Texture

DAEFS Exterior Wall Finish

Exterior sheathing and siding systems, metal and wood exterior stud framing, use of wood blocking and nailers, thin brick systems, and other common U.S. mainland exterior wall assemblies are not allowed. Renovation and rehabilitation of any such existing systems must be coordinated with the Base Civil Engineer.

For repair and repainting of existing DAEFS or Exterior Finish and Insulation Systems (EFIS), prepare, patch, and paint damaged surfaces to match existing. Acrylic coatings are suggested, as applicable, for color retention, wind driven rain resistance, ability to bridge hairline cracks, and permeability.

5.2.3 Doors, Overhead Coiling Doors, Storefront Systems, Windows, Louvers, and Typhoon Shutters

Doors, overhead coiling doors, storefront systems, windows, louvers, and attachments shall be designed and installed to withstand the wind speed criteria and seismic criteria mentioned in Section 3 – Primary Guidance Documents, as calculated in accordance with the Building Code. Curtain wall systems are not allowed due to typhoon conditions.

5.2.3.1 Doors

The preferred material for exterior doors is aluminum. Aluminum doors and frames shall have a dark bronze anodized finish. Exposed aluminum surfaces shall be cleaned and provided with an anodized finish conforming to Aluminum Association (AA) 45. Finish shall be integral color-anodized, designation AA-M10-C22-A42, Architectural Class 10.0175 mm 0.7 mil or thicker.

Exterior Aluminum Door

Exterior Aluminum Door

Steel doors may be used only when required to meet wind load resistance criteria, for force protection, or to comply with required fire ratings. Whenever steel doors are used, they shall be galvanized and painted. Finishes for steel components shall include galvanizing, a zinc coating, a phosphate treatment and a shop prime coat of rust-inhibitive paint to be finish painted in the field. The color shall be, as indicated in Section 7 – Base Color Standards.

All exterior doors should open outwards.

5.2.3.1.1 Keying Hardware

Provide heavy-duty stainless steel hardware. Recommended manufacturers include Best, and Schlage. Special security features such as keyless entry are not required on doors; however keying shall be coordinated with the 36th Civil Engineer Squadron (36 CES).

5.2.3.2 Overhead Coiling Doors

Overhead Coiling Door

Aluminum is preferred for overhead coiling doors. However, steel is a more common material for overhead coiling doors on Andersen Air Force Base, and depending on the door size, steel may be required for compliance with wind load resistance and force protection needs.

If aluminum is used for overhead coiling doors, the doors shall have a dark bronze anodized finish. Exposed aluminum surfaces shall be cleaned and provided with an anodized finish conforming to Aluminum Association (AA) 45. Finish shall be integral color-anodized, designation AA-M10-C22-A42, Architectural Class 10.0175 mm 0.7 mil or thicker

Steel doors shall be galvanized and painted. Finishes for steel components shall include galvanizing, a zinc coating, a phosphate treatment and a shop prime coat of rust-inhibitive paint to be finish painted in the field. The color shall be, as indicated in Section 7 – Base Color Standards.

Overhead coiling doors shall be operated by electric-power with auxiliary hand chain operation.

Details of overhead coiling doors must be submitted to the 36th Civil Engineer Squadron (36 CES) for approval.

5.2.3.3 Storefront Systems

Aluminum Storefront

Exterior storefront systems shall be aluminum, with doors that swing outward. Aluminum storefronts shall have a dark bronze anodized finish. Exposed aluminum surfaces shall be cleaned and provided with an anodized finish conforming to Aluminum Association (AA) 45. Finish shall be integral color-anodized, designation AA-M10-C22-A42, Architectural Class 10.0175 mm 0.7 mil or thicker.

Aluminum Storefront

Storefront Door

Exterior storefront system doors shall be wide stile.

For storefront systems glazing requirements, refer to 5.2.3.4.1 - Glass and Screens, below. For keying requirements, refer to 5.2.3.1.1. – Keying Hardware, above.

Storefront systems on mass gathering and critical buildings shall be kept to minimum. Curtain wall systems are not allowed due to typhoon conditions.

5.2.3.4 Windows

Windows frames shall be dark bronze aluminum. Exposed aluminum surfaces shall be cleaned and provided with an anodized finish conforming to Aluminum Association (AA) 45. Finish shall be integral color-anodized, designation AA-M10-C22-A42, Architectural Class 10.0175 mm 0.7 mil or thicker.

Exterior windows shall conform to American National Standards Institute/American Architectural Manufacturer's Association (ANSI/AAMA) 101, complete factory-assembled unit, with or without glass installed.

Slider and hung windows are preferred window types. Awning or projecting windows are not allowed.

Windows on mass gathering and critical buildings shall be kept to minimum.

5.2.3.4.1 Glass and Screens

Impact resistant, Low-E, laminated glass with reflective, bronze-tint shall be provided as the standard for exterior glass on Andersen Air Force Base. Thickness shall be designed and provided as required to meet Anti-Terrorism/Force Protection (AT/FP) and typhoon resistance requirements.

Provide insect screens suitable for the type of window with which they will be used. Screen frame shall be of extruded aluminum in color to match windows. Screening shall be of plastic-coated fibrous glass finish.

5.2.3.5 Louvers

Stainless steel or aluminum are preferred louver materials. Exposed aluminum surfaces shall be cleaned and provided with an anodized finish conforming to Aluminum Association (AA) 45. Finish shall be integral color-anodized, designation AA-M10-C22-A42, Architectural Class 10.0175 mm 0.7 mil or thicker.

Louvers shall be provided with supporting performance data in accordance with Air Movement and Control Association (AMCA) Standards 500 and 511, and the louvers shall bear AMCA Certified Ratings Seals for air performance and water penetration ratings.

5.2.3.6 Typhoon Shutters

Typhoon shutters shall be provided for all exterior openings, and must carry Federal Emergency Management Agency (FEMA) approvals.

5.2.3.6.1 Existing Typhoon Shutters

Some existing MILCON projects on Andersen Air Force Base have coiling shutters, but many existing typhoon shutters are accordion type. Accordion shutters are not allowed on future projects. Accordion type shutters are allowed on housing units only. Exterior mounted, heavy-duty aluminum or stainless steel sheet metal barrier shutters will be used for commercial and industrial buildings.

5.2.3.6.2 Preferred Typhoon Shutters

The preferred choice for typhoon shutters for industrial and commercial buildings are exterior mounted, heavy-duty aluminum or stainless steel sheet metal barrier that is provided with a perforation pattern allowing for optimum light penetration and airflow, as well as unobstructed views from the interior or exterior. The shutter must provide protection from air-borne storm debris, must be aesthetically acceptable, and must provide ultraviolet ray protection while allowing for emergency egress from the interior. Accordion type shutters are preferred for housing units.

Coiling type typhoon shutters manufactured in accordance with American Architectural Manufacturer's Association (AAMA) 604.892 may be considered for compatibility on existing industrial and commercial buildings as approved in advance by the Base Civil Engineer.

Coiling Type Typhoon Shutter
For Existing Commercial and Industrial BLDGS.

The shutter system shall be electro-statically painted with modified acrylic polyester enamel applied over pretreated aluminum. Color shall be as indicated in Section 7 - Base Color Standards.

5.3 Exterior Handrails and Guardrails

Refer to Section 4 – Site and Landscape Development, 4.2.8 - Stair and Ramp Railings for exterior handrail and guardrail requirements.

5.4 Entrance Canopies and Tarps

5.4.1 Concrete Canopy

Concrete lean-to roof with hip-roof Spanish roof tile design ("mission red"), built-in concrete gutter with roof drain and downspout into concrete column is preferred. Column shall be round or square with three-feet (3'-0") high column base design. Canopy shall be provided with exterior lighting with photocell electric located at roof fascia or building wall. See adjacent photos for examples.

Concrete Canopy

Concrete Canopy

5.4.2 Solar Canvas Tarps

Free standing or lean-to roof/awning tarps are preferred styles. Post and framing shall be of one and one-half inch (1-1/2") rigid galvanized round or square pipes securely mounted on the concrete slab or wall and shall be primed and painted "tobacco brown". Tarps shall be ultraviolet (UV) rated solar canvas dark brown color securely fastened or tied into the pipe framing and can be removed during typhoon conditions. See adjacent photos for examples.

Solar Canvas Tarp

Solar Canvas Tarp

5.5 Base Paint Plan

5.5.1 Objective

Andersen Air Force Base employs a system of painting the exterior of base facilities in which facilities are identified by users, evaluated, and painted on an as needed basis. This plan will phase out this approach. The plan is a proactive phasing system to paint base facilities on a regular basis, encouraging consistency and regularity of finding over time. This plan calls for a five (5) phase plan based on location that results in the painting of all facilities every five (5) years. The current Indefinite Delivery, Indefinite Quantity (IDIQ) contract will be used. Facilities determined to be top priority or facilities sustaining damage may be issued delivery orders outside of this phasing plan.

5.5.2 Five Year Paint Plan

The 36th Civil Engineer Squadron, Maintenance Engineering Section (36 CES/CEOE) maintains a five-year paint plan. Base industrial facilities are inspected annually and a database is maintained for planning paint projects.

Painting is predominantly performed by an Indefinite Delivery, Indefinite Quantity (IDIQ) contractor.

Although Military Family Housing and Industrial Facilities painting projects are maintained separately, common guidelines for programming and planning are used for both types of painting projects.

5.5.3 Cluster Plan

All exterior painting shall adhere to the five-year paint plan. Facilities shall be grouped in clusters allowing the painting schedule to identify when each cluster shall be painted. The 36th Civil Engineer Squadron, Maintenance Engineering Section (36 CES/CEOE) includes a color-coded map demonstrating which areas are scheduled for painting. Small buildings adjacent to larger facilities shall be painted when the larger facility is painted. Unforeseen circumstances that require an individual unit be painted out of cycle and self-help painting at the discretion of the group commander are possible exceptions to the five-year paint plan.

5.6 Temporary Buildings

The use of temporary buildings, even on a short-term basis, is discouraged. Buildings erected for temporary use shall be removed and their site restored to its original condition. The use and placement of temporary buildings is subject to approval by the Base Civil Engineer.

5.7 Renovation and Rehabilitation

Renovation projects provide an opportunity to improve on potential shortcomings in past design and when possible should further develop overall functionality and durability. All renovations and rehabilitation projects shall adhere to the general design, appearance, and durability criterion outlined in this document unless otherwise specified by the Base Civil Engineer.

5.8 Hangars and Storage Warehouses

5.8.1 Hangars

The preferred type of construction for aircraft hangars is pre-cast concrete dome type structure. Pre-engineered metal structure is not acceptable.

Refer to adjacent photograph for preferred hangar type.

Preferred Hangar Type

5.8.2 Storage Warehouses

The preferred type of construction for storage warehouses is pre-engineered metal frame with metal roof decking and concrete roof topping with fluid applied silicone elastomeric coating and underneath roof insulation. Walls shall be, concrete masonry units (CMU) or tilt-up construction with concrete gutter and PVC downspouts. Pre-engineered metal structure is not acceptable.

Refer to adjacent photograph for preferred storage warehouse type.

Preferred Storage Warehouse Type

Preferred Storage Warehouse Type

Andersen Air Force Base
Architectural Character Samples

Air National Guard Building

Andersen Middle School

Andersen Chapel

Andersen Youth Center

Passenger Terminal

Fitness Center

Ocean View Conference Center

Temporary Lodging Facility (TLF)

Dormitory

Single Family Housing Unit

Finance and MPF Building

WRM Phase 1 STO Warehouse

AEF FOL Aircraft Maintenance Hangar

Soccer/Football/Track & Field
Announcer's Stand

Bamboo Willies

Security Forces Squadron

Military Working Dog Facility

Medical and Dental Clinic Facility

Commander's House

Single Unit Housing

Duplex Housing

Distinguished Visitor Housing


PREPARED TO PREVAIL

Interior Design Standards

6.0 Objective

The quality of the spaces in which we live and work significantly and directly impacts our quality of life. Therefore, thought must be given to the design and quality created within the buildings of Andersen Air Force Base. Workplaces should convey a sense of professionalism, pride, and respect. Lounges should convey comfort and relaxation. All spaces should serve to raise morale by providing functional and enjoyable places to live and work.

6.1 General Interior Requirements

This section provides guidance primarily for administrative, industrial, and executive offices. Specialty areas may have specific requirements that need to be determined on an individual basis and coordinated with the Base Civil Engineer. Durability, maintenance, and cost-efficiency are primary considerations in choosing interior finishes. Neutral base colors with contrasting accented accessories should be applied when appropriate.

In addition to the above, the designer shall consider the applicable Unified Facilities Criteria (UFC), Building Codes, fire ratings, acoustical performance, structural needs, and thermal and moisture transmission characteristics when designing project-specific interior assemblies.

Where a conflict exists within this standard and other applicable codes or standards, the more stringent shall apply.

6.2 Floor Coverings

Durability, slip resistance, and maintenance should be carefully considered when selecting flooring materials. When alternatives are offered within this standard (below), coordinate with the Base Civil Engineer for project specific flooring surface performance characteristics, and final selection of flooring materials.

6.2.1 Floor Coverings by Room Type

6.2.1.1 Vestibules and Entryways

Slip-resistant recessed floor mats shall be placed immediately inside and outside of entry and exit doors, particularly at vestibules. Beyond the recessed floor mats, eight-inch (8") by eight-inches (8") or twelve-inch (12") by twelve-inches (12") slip resistant ceramic tile with an abrasive surface texture is preferred, with a four-inch (4") ceramic tile cove base. Twelve- inch (12") by twelve-inches (12") vinyl composition tile or sheet vinyl with a four-inch (4") rubber cove or oil stained, oak color wood base may be considered as alternatives, depending on the project budget.

Recessed Entry Mat

Vinyl Composition Tile with Wood Base

6.2.1.2 Corridors, Hallways, and Heavy Traffic Areas

Eight-inch (8") by eight-inches (8") or twelve-inch (12") by twelve-inches (12") slip resistant ceramic tile with an abrasive surface texture is preferred, with a four-inch (4") ceramic tile cove base. Depending on the project budget, twelve-inch (12") by twelve-inch (12") vinyl composition tile with a four-inch (4") rubber cove or oil stained, oak color wood base may be considered as an alternative to ceramic tile in some facilities.

Ceramic Floor Tile at Corridor

Ceramic Floor Tile at Corridor

Vinyl Cover Base at Corridor

Vinyl Cover Base at Corridor

6.2.1.3 Office Spaces and Administrative Areas

Solid color carpeting with a recurring pattern is mandatory and helpful in masking traffic soil patterns.

Direct-glued, commercial grade carpet, without carpet cushion, is mandatory for use in most office and administrative areas. However, carpet with carpet cushion shall be provided in the workspaces of Group Commander and higher rank. A four-inch (4") rubber cove base, or oak colored, oil stained wood base shall be specified as the carpeting base material.

Solid Color Carpet in Offices

6.2.1.4 Conference Rooms

Conference rooms shall be provided with a combination of direct-glued, commercial grade carpet with carpet cushion. A four-inch (4") oak colored, oil stained wood base shall be specified as the base material. An oak colored, oil stained chair-rail and wainscot is also preferred.

6.2.1.5 Distinguished Visitor Lounge and Special Category Rooms

Distinguished Visitor (DV) and Special Category rooms shall be provided with a combination of commercial grade carpet with carpet cushion, and twelve-inch (12”) by twelve-inch (12”) marble and ceramic tile. A grey rubber transition strip shall be used between carpet and tile. A four-inch (4”) oak colored, oil stained wood base shall be specified as the base material.

Marble Flooring at Distinguished Visitor Lounge

Transition Strip at Marble and Carpet Flooring at Distinguished Visitor Lounge

Carpet Flooring at Distinguished Visitor Lounge

6.2.1.6 Toilet Rooms and Shower Areas

Twelve-inch (12”) by twelve-inch (12”) ceramic tile, non-skid surface; earth tone colors; with epoxy grout is preferred at toilet room floors. Two-inch (2”) by two-inch (2”) mosaic ceramic tile, with epoxy grout, is preferred at shower area floors. Tile sample and layout plan shall be submitted to Base Civil Engineer for approval prior to installation.

Ceramic Tile Sample- Earth Tone Colors

Ceramic Tile Flooring at Toilet Rooms

6.2.1.7 Kitchen Areas

Six-inch (6”) by six-inch (6”) slip-resistant, quarry tile, with abrasive surface texture and six-inch (6”) high quarry tile base is the preferred floor covering for kitchen areas. Quarry tile shall be provided in either grey or red tones, and shall be provided with epoxy grout. One-quarter inch (1/4”) epoxy flooring with six-inch (6”) epoxy flooring base may be considered as an alternative to quarry tile. If epoxy flooring is used, include a broadcast silica aggregate, medium profile, for added slip resistance.

6.2.1.8 Warehouses and Storage Areas

Slip resistant grey rubber paint, with broadcast silica aggregate, is the preferred floor covering for warehouses and storage areas. A cove base is not required for warehouses and storage areas. An alternative floor covering material for warehouses and storage areas is integrally colored, stained concrete; in red/yellow color tones.

Warehouse Floor

6.2.1.9 Stairways/ Stairwells

Administrative areas shall be provided with carpet for stairway floors, landings, and steps.

Industrial areas such as warehouse stairwell floors and steps should be provided with slip resistant grey rubber paint, with broadcast silica aggregate. A cove base is not required for warehouses and storage areas. An alternative floor covering material for warehouses and storage areas are integrally colored, stained concrete in red/yellow color tones with safety stair nosing.

6.2.2 Floor Covering Material Descriptions

6.2.2.1 Ceramic Floor Tile

Provide ceramic floor tile in accordance with American National Standards Institute (ANSI) A137.1, Standard Grade. Where slip resistance is required the appropriate finish should be selected. Ensure that patterns and colors are integral to tile products, and that they extend the full depth of anticipated wear level.

6.2.2.2 Vinyl Composition Tile

Provide vinyl tile in accordance with American Society for Testing and Materials (ASTM) F1066, Composition, Class 2 (through pattern) smooth surface, twelve- inches (12”) wide by twelve-inch (12”) long by one- eighth-inch (1/8”) thick. Color and pattern shall be uniformly distributed throughout thickness of tile. Vinyl tile shall be provided with either a rubber cove base, or an oil stained, oak color, wood base. When vinyl/rubber cove base is used, provide in accordance with Federal Specification SS-W-40 Wall Base: Vinyl Plastic, Type II, Styles A and B. Base shall be four-inch (4”) high, minimum 0.080-inch thick, color as selected.

Vinyl Composition Tile

Vinyl Cove Base

Wood Base

6.2.2.3 Carpet

Provide carpet of tufted, woven, fusion bonded, or knitted construction, first quality, anti-static, and free of visual blemishes, streaks, poorly dyed areas, and other physical and manufacturing defects. Use nontoxic carpet materials and treatments, non-allergenic, and free of other recognized health hazards.

Use materials to fit elected purpose and meet the requirements of UFC 3-600-01, Fire Protection Engineering for Facilities (supersedes MIL-HDBK 1008C) and Engineering Technical Letter (ETL) 03-3: Air Force Carpet Standard.

Carpet Pattern (Nautica Navy)

Five (5) standard carpet colors are preferred as follows:

- Nautica Navy
- Water-Color Blue
- Jade Sheen
- Vintage Wine
- Moonstone

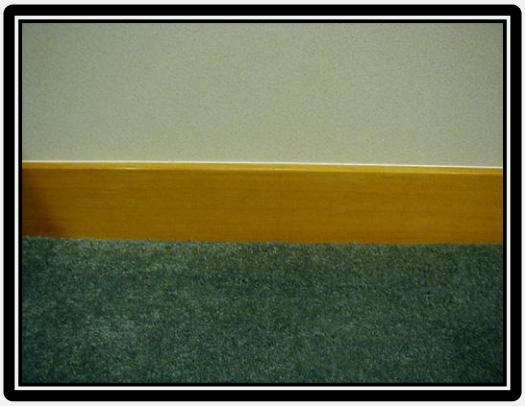
Carpet Pattern (Jade Sheen)

Carpet Pattern (Moonstone)

Carpet Pattern (Moonstone)

The photos below demonstrate preferred carpet and base types. Carpet shall be provided with either a rubber cove base, or an oil-stained, oak color wood base. When rubber cove base is used, provide in accordance with Federal Specification SS-W-40 Wall Base: Vinyl Plastic, Type II, Styles A and B. Rubber base shall be four-inches (4") high, minimum 0.080-inches thick, color as selected. The Base Civil Engineer must approve all color selections.

Carpet Pattern (Watercolor Blue)



Wood Base

6.2.2.3.1 Carpet Cushion

Provide carpet cushion where required. Carpet cushion shall be three-eighths inch (3/8") to one-half inch (1/2") thick high-density polyurethane foam underlayment. Carpet cushion shall meet HUD use of materials bulletin 72A – HUD Building Product Standard and Certification Program for Carpet Cushions.

6.2.2.4 Flooring Regulatory Requirements

Conform to applicable building code for flame/smoke rating requirements in accordance with ASTM E84, Surface Burning Characteristics. Flooring materials shall conform to National Fire Protection Association (NFPA) 253, Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source, ASTM E648, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems, Class II for flooring radiant panel test. Conform to ASTM D2859, Flammability of Finished Textile Floor Coverings Materials, for surface flammability ignition test.

Carpet flooring must contain at least 25 percent (25%) recycled or recovered materials in the face fiber.

6.3 Interior Walls and Partitions

The following presents Andersen Air Force Base's preferences for wall finish materials. In general, wall materials shall be selected with maintenance and aesthetics as primary considerations. When alternatives are offered within this standard (below), coordinate with the Base Civil Engineer for project specific wall and partition surface performance characteristics, and for the final selection of wall and partition materials.

6.3.1 Walls and Partitions by Room Type

6.3.1.1 Vestibules and Entryways

Painted gypsum board, concrete or concrete masonry units, shall be provided for vestibules and entryways, as applicable.

6.3.1.2 Corridors, Hallways, and Heavy Traffic Areas

The wall finish material for corridors, hallways, and heavy traffic areas varies depending on the facility. However, in general, small buildings shall be provided with a painted gypsum board wall surface. In addition to a painted gypsum board surfaces, larger facilities may be provided with a wainscot and chair-rail. Coordinate with the Base Civil Engineer for determining the wall treatment for a given facility.

Flooring at Corridor

Fabric Wainscot, Wood Chair-Rail, and Wood Base at Corridor

Vinyl Chair-Rail at Corridor

6.3.1.3 Office Spaces and Administrative Areas

Office spaces and administrative areas are to be provided with painted gypsum board. Consider sound transmission values in partitions that separate private offices from other areas.

6.3.1.4 Conference Rooms

Conference rooms shall be provided with permeable, washable, acoustical wall surface panels or fabric wall coverings, and an oil-stained, oak color wood chair-rail. Consider sound transmission values in partitions that separate conferences from other areas.

Fabric Wainscot, Wood Chair-Rail, and Wood Base at Conference Room

Wood Base at Conference Room

Wood Chair-Rail AT Conference Room

6.3.1.5 Distinguished Visitor Lounge and Special Category Rooms

Distinguished Visitor (DV) and Special Category rooms shall be provided with permeable, washable fabric wall coverings, oil-stained, oak color wood wainscot and chair-rail. A permeable, washable fabric wainscot may be provided as an alternative to the wood wainscot. Coordinate with the Base Civil Engineer.

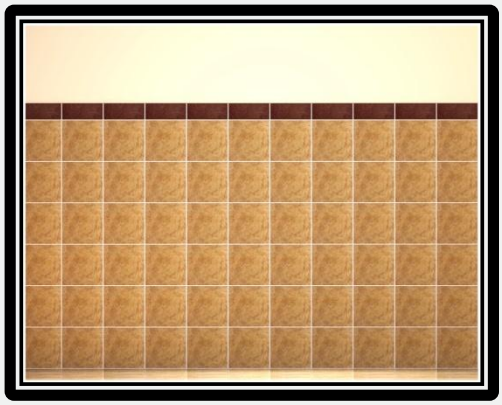
Fabric Wainscot, Wood Chair-Rail, and Wood Base at Distinguished Visitor Lounge

Fabric Wall Covering at Distinguished Visitor Lounge

6.3.1.6 Toilet Rooms and Shower Areas

Provide toilet rooms with minimum four-feet (4'-0") high from finish floor, twelve-inch (12") by twelve-inch (12") ceramic tile wainscot with smooth finish; earth tone colors, with epoxy grout all around. Toilet rooms shall be provided with three-inch (3") wide by twelve-inches (12") long accent tiles. Tile sample and layout plan shall be submitted to Base Civil Engineer for approval prior to installation. The wall surface above the ceramic tile wainscot shall be painted gypsum board, glossy finish. Shower areas shall be provided with full-height ceramic tile wainscot and epoxy grout, with matching accent tiles. Consider sound transmission values in partitions that separate toilet rooms and shower areas from other spaces.

Ceramic Tile Sample- Earth Tone Colors



Sample Ceramic Tile Wainscot at Toilet Room

6.3.1.7 Kitchen Areas

The preferred wall finish for kitchen areas is full-height, six-inch (6") by six-inches (6") ceramic tile, with epoxy grout. Depending on the project's budget, full-height fiberglass panels may be considered as an alternative to ceramic wall tile.

6.3.1.8 Warehouses and Storage Areas

Walls and partitions of warehouses and storage areas shall be painted concrete, concrete masonry, and in some cases, painted cement plaster may be appropriate.

6.3.1.9 Open Stairways

Stairway walls shall be painted. A wainscot and/or chair-rail shall be provided as required to be compatible with the area that the stairway serves.

6.3.1.10 Stairwells

Stairwell walls shall be painted.

6.3.2 Wall Material Descriptions and Assemblies

6.3.2.1 Perimeter Walls

In finished interior spaces, provide furring around perimeter walls using one and one-half-inch (1-1/2") furring channels at sixteen-inches (16") on center. Install a vapor barrier as required. Provide rigid board insulation between the furring channels and waterproof gypsum board as the finish material. For walls requiring ceramic tile finish, provide tile backer board instead of the waterproof gypsum board mentioned above. In unfinished, and/or unconditioned spaces and industrial work areas, perimeter walls should be painted concrete block masonry, concrete, or pre-cast concrete, as applicable.

6.3.2.2 Interior Partitions

Interior partitions shall be constructed of metal studs with painted gypsum board on each side, except provide tile backer board where ceramic tile is to be installed. In unfinished, and/or unconditioned spaces and industrial work areas, interior partitions should be painted concrete block masonry.

6.3.2.3 Wall Finishes

All wall finish materials must be coordinated with the Base Civil Engineer. Washable painted surfaces are preferred. Unless otherwise specified or required, provide three (3) coats of a permeable, maintenance friendly paint, satin finish, in "eggshell white" color. The interior finish of perimeter walls should be breathable to avoid trapping moisture within the wall assembly.

6.3.2.4 Wall Trim

In finished areas solid mahogany or solid oak, depending on local availability, is the preferred material for chair-rails, door and window trim, and wall baseboards. Where functionally and aesthetically applicable, other acceptable wall base materials include vinyl, rubber, and ceramic tile. Refer to the preferences mentioned by room type above, and coordinate with the Base Civil Engineer for direction regarding wall trim.

6.4 Ceilings

Ceiling systems play a significant role in establishing the character and mood of a given space. In addition, ceiling systems contribute to acoustical performance, lighting criteria, and overall interior environmental considerations. Maintenance friendly ceiling systems that are compatible with the function and aesthetics of the room or space being finished are preferred. Ceiling tile materials, patterns, and colors must be coordinated and approved by the Base Civil Engineer.

6.4.1 Ceilings by Room Type

6.4.1.1 Vestibules and Entryways

Provide vestibule and entryway ceilings with one-quarter-inch (1/4") minimum thickness, sag resistant, painted cement board. Suspended tile ceiling systems are not preferred due to the potential of tiles popping out of the grid because of pressurization and vacuum effects, particularly within vestibules. Consider moisture and humidity resistance when selecting ceiling materials for vestibules and entryways. Suspended tile ceiling systems or painted gypsum board systems may be considered in some entryways (not vestibules), provided they are beyond the vestibule, and are within a conditioned space.

6.4.1.2 Corridors, Hallways, and Heavy Traffic Areas

Corridors, hallways, and heavy traffic areas should be provided with a suspended ceiling tile system having a two-feet (2'-0") by two-feet (2'-0") grid, with square-edge, lay-in tiles.

2' x 2' Ceiling Tile Tegular Edge

6.4.1.3 Office Spaces and Administrative Areas

The preferred ceiling system for office spaces and administration areas is a suspended ceiling tile system having a two-feet (2'-0") by two-feet (2'-0") grid, with square-edge, lay-in tiles.

6.4.1.4 Conference Rooms

Conference rooms should be provided with a custom-designed ceiling system, comprised of a combination of two-feet (2'-0") by two-feet (2'-0), tegular edge suspended ceiling tile with complimenting gypsum board soffits, coves, and ceiling trim/crown moldings. Ceiling trim/crown moldings should be oil-stained, oak color solid wood.

6.4.1.5 Distinguished Visitor Lounge and Special Category Rooms

A custom-designed ceiling system, comprised of a combination of two-feet (2'-0") by two-feet (2'-0"), tegular edge suspended ceiling tile with complimenting gypsum board soffits, coves, and ceiling trim/crown moldings is the preferred system for distinguished visitor (DV) and special category rooms. Ceiling trim/crown moldings should be oil-stained, oak color solid wood.

Ceiling at Distinguished Visitor Lounge

Ceiling at Distinguished Visitor Lounge

6.4.1.6 Toilet Rooms and Shower Areas

Toilet rooms and shower areas are to be provided with a suspended ceiling tile system having a two-feet (2'-0") by two-feet (2'-0") grid, with square-edge, moisture and sag resistant, lay-in tiles. One-half-inch (1/2") cut-to-fit, water-resistant, painted gypsum board laid into the suspended grid system may be considered at specific locations where required.

6.4.1.7 Kitchen Areas

A suspended ceiling tile system having a two-feet (2'-0") by two-feet (2'-0") grid, with square-edge, lay-in tiles is preferred in kitchen areas. Ceiling tiles shall be moisture and sag resistant, fiberglass panels.

6.4.1.8 Warehouses and Storage Areas

Finished ceilings are not required in warehouses and storage areas. However, the underside of the exposed structure shall be painted.

6.4.1.9 Open Stairways

Open stairways shall have a finished ceiling, which is compatible with the area that the stairway serves. In most cases, a suspended ceiling tile system having a two-feet (2'-0") by two-feet (2'-0") grid, with square-edge, lay-in tiles will be required.

6.4.1.10 Stairwells

Finished ceilings are not required in stairwells. However, the underside of the exposed structure shall be painted.

6.4.2 Ceiling Material Descriptions and Assemblies

6.4.2.1 Suspended Ceiling Tile Systems

Suspended ceiling tile systems shall be two-feet (2'-0") by two-feet (2'-0") acoustical panels with an even coloration, fine texture, moisture resistant, antimicrobial, and sag resistant features. Avoid two-feet (2'-0") by four-feet (4'-0") ceiling panels, including those that simulate a two-feet (2'-0") by two-feet (2'-0") appearance. White tiles with a white frame grid are preferred.

Suspended ceiling tile systems shall conform to ASTM C423, Sound Absorption Test, and ASTM E1264, Classification for Acoustical Ceiling Products.

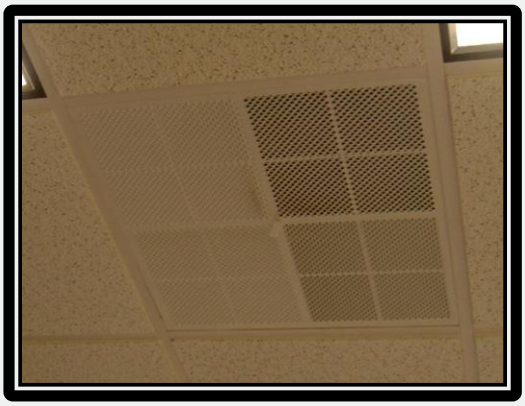
Grid systems shall be exposed grid-type in accordance with ASTM C635, Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

6.4.2.2 Painted Gypsum Board Ceilings

Painted gypsum board may be used for ceiling accents in areas where indicated above. Gypsum board ceilings shall be installed with sufficient framing systems suitable for the project design. Joints shall be taped and finished with quality workmanship. A finished surface texture shall be provided as required for appropriate acoustical performance and maintenance needs. Gypsum board ceilings shall be painted white, unless otherwise noted or advised.

6.4.2.3 Ceiling Diffusers

Supply and return ceiling diffusers should be two-feet (2'-0") by two-feet (2'-0"), multi-directional diffusers. Diffusers should be factory painted white to match the ceiling grid and adjacent tiles, or white to match the adjacent painted gypsum board, as applicable.



Ceiling Diffusers

6.5 Interior Doors

Doors mark the point of transition into and out of rooms and spaces. Because of their purpose and use, style and materials must be considered carefully. Interior doors shall be provided with suitable fire ratings and door hardware as required.

6.5.1 Typical Interior Doors

Provide oil-stained, oak color, solid wood doors. Particleboard is an unacceptable filler material for doors. Solid mahogany or solid oak is preferred, depending on availability and interior compatibility. Select a universal type of wood, and apply a universal stain color to wood doors for consistency within the building and throughout the Base.

6.5.2 Commander's Office Doors

The entry doors into the Commander's Office shall be storefront system-type, aluminum, narrow stile. Provide a dark bronze anodized aluminum finish, with tempered glass and emblem. The preferred method of applying the emblem is to etch the glass. However, "stick-on" type graphics may be used as an alternative to etching. Fixed side-lites are also an option.

Commander's Office Door

6.5.3 Door Hardware Finish

Standard interior doors shall be provided with satin finish, stainless steel door hardware. Doors at Distinguished Visitor (DV) lounges and other Special DV rooms can have gold chrome plated door hardware. Coordinate with the Base Civil Engineer regarding any deviation from these hardware finishes.

6.6 Windows

The base standards for windows installed in perimeter walls, which communicate to the outdoors are provided to Section 5 – Exterior Architectural Standards. This section defines the criteria for interior windows and window treatment.

6.6.1 Interior Windows

Interior windows under this section are limited to aluminum storefront systems, which may be provided in select areas, such side-lites for the Commander's Office, and similar situations. Such interior window systems shall be dark bronze aluminum, and provided with tempered glass. Provide interior storefront window systems compatible with narrow stile doors as indicated above, as required.

6.6.2 Window Treatment

Provide perimeter windows with vertical blinds, having three and one-half-inch (3-1/2") white vinyl slats, manufactured from extruded white 0.32" PVC. Each individual slat shall be able to rotate one hundred and eighty degrees. Vertical blinds should open fully and close tightly. A chord tensioner shall keep cord safely taut. Provide matching valance and valance end panels.

6.7 Interior Handrails and Guardrails

Interior stairs, steps, and ramps shall be provided with handrails and guardrails as required. Handrails shall be provided on each side of stairs, steps, and ramps. Anodized aluminum, or painted galvanized steel pipe, are acceptable railing materials. Any other alternative materials shall be coordinated in advance with the Base Civil Engineer.

6.8 Toilet Room Fixtures and Accessories

Toilet room fixtures and accessories should be selected for their durability, water conservation features (low flow fixtures), ease of cleaning and maintenance, ergonomic benefits, and standard compatibility.

6.8.1 Lavatory Countertops, Sinks, Faucets, and Soap Dispensers

Lavatory countertops shall be solid materials made of 100% acrylic, 100% polyester, or a combination of acrylic and poly, which are highly resistant to stains and scratches. Provide sinks of white porcelain, under counter mounted, oval shaped. Sinks shall have chrome finish, hot and cold mixing valve faucet. Surface mounted liquid soap dispensers shall be stainless steel with satin finish. Soap dispensers should be conveniently located above the counter top, adjacent to each sink. Counter top colors and patterns shall be submitted to Base Civil Engineer for approval.

Sample Lavatory Countertop w/ under mount sink

6.8.2 Lavatory Mirror

Mirror shall be tempered glass, wall-mounted with stainless steel frame. The lavatory mirror shall span the full length of the lavatory countertop.

Lavatory Mirror

6.8.3 Electric Hand-Dryer

Toilet rooms shall be provided with a wall mounted, white enamel electric hand dryer with chrome push button and multi-directional diffuser. Provide multiple units as required based on the size and occupant load of the toilet facility.

Electric Hand-Dryer

6.8.4 Toilet and Urinal Partitions

Toilet and urinal partitions shall be solid phenolic resin type. Urinal partitions shall be wall-mounted as shown in the adjacent photograph. Toilet stalls shall be subdivided with floor-mounted partitions, complete with stainless steel base shoes, partition doors, and the necessary overhead support structure

Phenolic Resin Toilet Partition

Phenolic Resin Toilet Partition

6.8.5 Urinals and Water Closets

Urinals shall be wall mounted, porcelain water conserving fixtures. Water closets shall be floor mounted, porcelain water conserving fixtures. Chrome manual flush valve handles are recommended.

Wall Mounted Urinal

6.8.6 Water Shut-Offs and Clean-Outs

Toilet rooms shall be provided with easily accessible shut-off valves and clean-outs. When placing the access point for shut-offs and cleanouts, consider space requirements for maintenance. Provide suitable stainless steel cover plates as required.

6.8.7 Lockers

Lockers shall be double-tier type with sloped top and provided with latching mechanism and padlocks. Provide black number plates at the top of each locker door with numerals not less than one-half-inch (1/2") high.

Furnish one double prong back hook and two single prong wall hooks in each tier.

Ventilation of the locker shall be accomplished by four pre-manufactured louver slots at the bottom and at the top of each door.

Provide lockers with a factory, baked-on enamel finish.

Lockers

6.9 Casework and Countertops

Distinguished Visitor (DV) kitchens and toilet rooms, and other designated rooms or spaces, shall be provided with commercial-grade, custom casework and countertops. Solid wood casework is preferred, and particleboard will not be accepted. Provide casework with oak color, oil stain. At kitchen cabinets, provide underside of upper cabinets with built-in, fluorescent task lighting.

Solid plastic, scratch-resistant countertops are preferred and should be specified as the project budget allows, or as a bid add-alternate.

If budget is insufficient for solid plastic countertops, countertops shall be post-formed plastic laminate, almond color, on micro-density fiberboard (MDF) base. Provide countertops with a four-inch (4") high backsplash/side splash as required.

Kitchen Casework and Countertop at Distinguished Visitor Lounge

Toilet Room Lavatory

6.10 Furnishings

Several design and function options are available for various furniture types. Durability, flexibility, cost-efficiency, fire resistance, sound absorptions, standardization, and aesthetics are priorities when selecting furniture for Andersen Air Force Base facilities. Matching furniture is encouraged throughout buildings.

6.10.1 Office Furniture

6.10.1.1 Conventional Office Furniture

When selecting conventional office furniture, consider the styles that are appropriate for the space. Conventional office furniture on Andersen Air Force Base is typically comprised of matching executive desk, side table, credenza, bookshelves, file cabinets, one (1) desk chair, and two (2) visitor's chairs. A "U"-shaped configuration is often the most ergonomically appropriate and efficient.

Conventional Office Furniture

6.10.1.2 Systems Office Furniture

Systems office furniture provides complete prefabricated workspaces that offer flexibility and standardization. Systems furniture is often comprised of a set of repetitive units that can be interlocked and interchanged into a limited number of configurations. Blue or gray fabric colors are preferred.

The Base Civil Engineer must review and approve all systems furniture requests. For systems that require a connection to the building's electrical system, a Work Request (Form 332) must be submitted to ensure connectivity. In addition, a qualified professional designer must develop the proposed systems furniture design package.

There are two types of Systems Office Furniture: Modular Systems Office Furniture and Panel Mounted Office Furniture. Modular system furniture, as shown in the adjacent photograph is preferred on Andersen Air Force Base. Panel mounted furniture is less desirable, and not commonly used on Andersen Air Force Base.

6.10.1.2.1 Modular Systems Office Furniture

Modular office furniture systems are comprised of a series of freestanding, floor supported furniture components. These systems are easily reconfigured and are often less expensive than panel mounted systems, without sacrificing style and appearance. However, electrical, phone, and computer cables are often not concealed.

Modular Systems Office Furniture

6.10.1.2.2 Panel Mounted Office Furniture

Panel mounted office furniture (pre-wired workstations) consist of a number of acoustical panels that support work surfaces, drawers, shelves, and storage units. The panels are bolted together for strength and rigidity. Panel mounted office furniture systems offer considerable flexibility in equipment layout without sacrificing accessibility to the equipment and required cables. Electrical, phone, and computer cables are concealed within panel raceways or in horizontal cable trays placed along the top or bottom of each panel. However, disassembly may be required for reconfiguring workstations or installing carpet. Even partial disassembly will prove costly and labor intensive.

Panel Mounted Office Furniture

6.10.2 Distinguished Visitor Lounge and Special Category Furniture

Furniture for Distinguished Visitor (DV) lounge and special category rooms should be selected for comfort and to promote a relaxing interior environment. Select furniture that compliments the style of the room, and that is compatible with other furniture and accessories selected.

Furniture at Distinguished Visitor Lounge

Furniture at Distinguished Visitor Lounge

6.11 Lighting

Sufficient, high quality light is an integral part of creating a successful interior environment. Because natural daylight offers energy conservation benefits, include as much indirect, natural light as possible in interior building spaces. Provide sufficient seismic bracing and supports for interior light fixtures. Refer to Section 9 – Electrical Standards, for additional interior lighting criteria.

6.11.1 Fluorescent Light Fixtures

Parabolic light fixtures with anti-glare diffusers are preferred, yet anti-glare acrylic lenses are also acceptable if required for compatibility purposes. Fluorescent light fixtures shall be two-feet (2'-0") by four-feet (4'-0") units.

Fluorescent light fixtures shall be energy efficient with tubular, one-inch (T8) lamp type F5H.O or LED tube.

Coordinate final light fixture selection with the Base Civil Engineer.

Fluorescent Light Fixtures

6.11.2 Incandescent Light Fixtures

Compact fluorescent light fixtures shall be used in lieu of incandescent bulbs. Incandescent light fixtures may be used sparingly, depending upon the use of the space. Typically, recessed incandescent fixtures are reserved for supplemental or effectual lighting in conference rooms, Distinguished Visitor (DV) lounges, and special category rooms. Incandescent lights are not allowed in office areas.

Incandescent Light Fixtures

6.11.3 Light Switches

For energy conservation purposes, provide light fixtures with dimmable switches, or dual switches that enable turning on only half of a two-feet (2'-0') by four-foot (4'-0") fluorescent light ballast. Occupancy sensors that detect the presence of occupants shall be installed for office spaces and low-use rooms, such as conference rooms. Restrooms shall be provided with occupancy sensors that have a voice reactivation mechanism.

6.11.4 Emergency Lighting

For offices and administrative areas, standard emergency lighting shall be built-in ballast type, integrated as part of the light fixture. Exit light fixtures shall have light emitting diode (LED) red light indicator and shall be located near an exit door. Independent wall type "bug-eye" emergency light fixtures are not allowed in office areas. Separate "bug-eye" units with battery back-up are acceptable only for high bay areas, such as warehouses.

Coordinate emergency lighting in advance with the Base Civil Engineer.

6.12 Interior Environment

The environment inside our buildings influences occupant health, comfort, productivity, and morale. Climate and light control devices shall be present and easily accessible in each room. Facilities should be designed to maximize natural daylight and to have appropriate ventilation and moisture control throughout.


PREPARED TO PREVAIL

Base Color Standards

Andersen Air Force Base exterior color standards mentioned below shall be strictly conformed to. Any proposed deviations regarding interior color standards shall be coordinated with the Base Architect. In addition to the specific requirements below, refer to Federal Standard (FED STD) 595 – Paint Colors, for additional information.

Materials	Color
7.0 Exterior Walls	Antique Linen (Federal Specification 23578)
7.1 Fascia/Roof Trim **7.1.1 Aluminum** **7.1.2 Galvanized Steel** **7.1.3 Concrete**	 Tobacco Brown (Federal Specification 20117) Tobacco Brown (Federal Specification 20117) Tobacco Brown (B66T204)
7.2 Sloped Roofs (Hip, Gable, Mansard) Paint or Roof Tiles	Mission Red (Federal Specification 22144)
7.3 Doors, Windows, Louvers, Overhead Coiling Doors, Typhoon Shutters, and Associated Trim	Galvanized Steel: Tobacco Brown (Federal Specification 20117) Anodized Aluminum: Dark Bronze
7.4 Guardrails and Handrails	Stainless Steel: Polished Galvanized Steel – Tobacco Brown Aluminum: Kynar finished - Tobacco Brown
7.5 Screen Walls/Enclosures, Fences, Gates, Pipe Bollards	Antique Linen (Federal Specification 23578)
7.6 Pad Mounted Electrical and Mechanical Equipment	Factory finished Antique Linen (Federal Specification 23578)
7.7 Exterior Lighting **7.7.1 Streetlights** **7.7.2 Parking Lights** **7.7.3 Bollard Lights** **7.7.4 Signage Lights (Flood Lights)**	 Cantilever arms: Mill finish aluminum Posts: Precast concrete Anodized Aluminum, Dark Bronze Anodized Aluminum, Dark Bronze Anodized Aluminum, Dark Bronze

Materials	Color
7.8 Traffic Sign Post/Sign Back/H-Frame Sign Post	Tobacco Brown (Federal Specification 20117)
7.9 Interior Walls	Eggshell White
7.10 Carpet	Nautica Navy Watercolor Blue Jade Sheen Vintage Wine Moonstone
7.11 Vinyl Tiles	Dove White Gray
7.12 Ceramic Floor Tiles	Sierra Vail Beige
7.13 Ceramic Wall Tiles	Earth Tones with Maroon Accent Earth Tones with Burgundy Accent
7.14 Toilet Partitions and Countertops	Almond
7.15 Above Ground Reservoir Tanks 7.15.1 Above Ground Water Tanks 7.15.2 Elevated Water Storage Tanks 7.15.3 Above Ground Fuel Tanks	 Antique Linen (Federal Specification 23578) Antique Linen (Federal Specification 23578) Antique Linen (Federal Specification 23578)
7.16 Fire Hydrants	Tobacco Brown (Federal Specification 20117) Mission Red (Federal Specification 22144)

Mechanical, Plumbing, and Fire Protection Standards

8.0 General

Mechanical installations on Andersen Air Force Base shall conform to local codes and applicable Unified Facilities Criteria. Conformance includes, but is not limited to ASHRAE Standards, ASTM, SMACNA, and IMC 2012 requirements.

The National Fire Protection Agency (NFPA) codes and standards also apply; including, but not limited to the following:

NFPA 11 – Standard for Low-, Medium-, and High-Expansion Foam
NFPA 90A – Standard for the Installation of Air-Conditioning and Ventilating Systems
NFPA 101 – Life Safety Code

The Unified Facilities Criteria (UFC) includes, but is not limited to, the following:

UFC 3-400-10N, Design: Mechanical Engineering
UFC 3-410-01FA, Design: Heating, Ventilating, and Air Conditioning
UFC 3-410-02A, Design: Heating, Ventilating, and Air Conditioning (HVAC) Control Systems
UFC 3-410-03FA, Design: Heating, Ventilating, and Air Conditioning of Hardened Installations
UFC 3-410-04N, Industrial Ventilation
UFC 3-430-01FA, Design: Heating and Cooling Distribution Systems
UFC 3-440-05N, Tropical Engineering
UFC 3-450-01, Design: Noise and Vibration Control

Refer to the UFC website at: http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4 for additional UFC design criteria, as applicable to a specific project.

Refer to Section 3 – Primary Guidance Documents, for additional references, standards, and requirements.

8.1 HVAC Equipment

Depending on the application, there may be a variety of Heating, Ventilating, and Air Conditioning (HVAC) systems and equipment that will be appropriate for Base projects. Fans, ventilators, air conditioners, chillers, ducting, and HVAC controls are items that will be used for the majority of HVAC related projects.

For most ducted HVAC systems, variable air volume (VAV) systems are the preferred arrangement. Packaged HVAC units or packaged split systems may be possible as alternatives depending on specific project requirements. Alternative HVAC systems should be coordinated with the 36th Civil Engineer Squadron (36 CES) for approval.

Packaged chiller systems shall be equipped with integrated control panels. The control system should incorporate direct digital control (DDC) technology that is tied to chilled water pump and room thermostats to enable monitoring of individual rooms and to indicate faults. The control system interface shall be through equipment compatible software available for laptop computers. The laptop computers, with control system software and Windows XP operating systems shall be provided to enable the programming and troubleshooting of the systems. All HVAC units shall include built-in time delays, and voltage/phase monitors shall also be provided. Units shall be provided with an automatic reset after power interruption, to eliminate the need for manual resets.

HVAC equipment must meet or exceed the minimum efficiency standards set forth by the U.S. Seasonal Energy Efficiency Ratio (SEER), and must be rated as 13 SEER or greater.

Access panels on ducting systems shall be latched; hinge-type covers for filter access panels. Tools should not be necessary for filter access. Kraft-faced fiberboard or “Ductboard” is allowed for duct insulation provided it meets the required R-value. Exterior ductwork shall be stainless steel cladding (minimum 26 gauge) over insulation, no aluminum cladding will be allowed. Exterior ducts joints, and interior duct joints not in conditioned spaces, shall be sealed with an approved duct sealer.

Mechanical equipment that will be exposed to the harsh salt air and tropical conditions should be designed with corrosion control as one of the primary features. All unit coils and fins should be copper, coated with “Bronzglow”, “E-tech” or equivalent. A small stainless steel sheet-metal canopy shall be provided over outdoor duct mounted smoke detectors to protect from rainwater.

Roof mounted mechanical equipment is not allowed. If no other viable alternative exists, the designer shall submit an RFI for such equipment in advance for review to the Base Civil Engineer on a case by case basis. All equipment installation shall be ground level on top of concrete pads and provided with screen walls and/or enclosures as described in Section 4. All outdoor equipment shall be provided with a minimum eight-inch (8") high curb for air circulation, maintenance access, and to keep steel angle supports equipment legs and anchor bolts out of standing water puddles. Equipment shall be provided with a minimum of three-foot (3'-0") clearance around all units to enable maintenance access.

Air handlers shall not be suspended from the underside of structure (i.e.: shall not be hung from above) to eliminate maintenance access, safety, and seismic concerns.

Mechanical rooms shall be insulated and air-conditioned to minimize equipment corrosion. In addition, mechanical room floors shall be sloped and provided with a floor drain. Equipment within mechanical rooms shall be provided with a minimum of three-foot (3'-0") clearance around all units to enable maintenance access.

All chilled water piping shall be above ground.

All condensate drain lines shall be installed below ground, placed before pouring slabs or unit foundations. Above grade condensate drain lines are not allowed due to tripping hazard potential.

A potable water hose bib and one hundred fifteen volt (115v) electrical outlet shall be provided adjacent to the condenser and air-handling units.

8.2 Plumbing

For above and below grade plumbing lines use type k copper pipe.
A potable water hose bib shall be provided adjacent to condensers and air handling units.

New facilities shall be provided with meters to record water consumption. The meters shall be compatible with upgrades for remote monitoring systems.

8.2.1 Water Heater Pad and Support

Provide four-inch (4") thick concrete pad with two each removable/detachable stainless steel straps with stainless steel anchors, anchored to wall with a twelve-inch (12") minimum clearance top and bottom. Refer to the International Plumbing Code (IPC) paragraph 502.4 "Seismic Supports" for additional information.

8.3 Fire Protection Systems and Alarms

Fire protection systems and alarms shall conform to the Unified Facilities Criteria (UFC) 3-600-01, UFC 4-021-01, (UFC) 3-600-10N, Engineering Technical Letter (ETL) 03-5, ETL 02-15, and the National Fire Protection Agency (NFPA) Codes and Standards. Other applicable UFC's, ETL's, and NFPA Codes shall be incorporated for different projects in addition to the references listed in this Section.

36th CES Fire Training Exercise

A fire protection Design Analysis is required for all facility designs, regardless of size, and such analysis must address the fire protection requirements of the project as required by UFC 3-600-01.

Construction plans submitted to the 36th Civil Engineering Squadron, Fire Emergency Services Flight (36 CES/CEF) are considered to be for general reference only. A separate detailed shop drawing submittal shall be reviewed/approved by 36 CES/CEF prior to construction. NFPA 170 – Standard for Fire Safety and Emergency Symbols shall be used for fire protection system and alarm drawings.

The contractor shall conduct the fire flow water test, and shall not rely on Andersen Air Force Base's water flow records for meeting testing requirements. All future projects shall include a Knox Box System.

8.3.1 Fire Hydrants and Piping

All fire hydrants shall be wet barrel type, in accordance with the base standard and applicable Unified Facilities Criteria. Standard hydrant connection shall have isolation valves. Final approval of the hydrants shall be through the Base Water Shop. Fire hydrants shall be painted "Tobacco Brown" with "Mission Red" top cap. Exposed fire sprinkler piping on the exterior of the facilities should be painted to match the color of the facility's exterior finish. Piping shall be identified in accordance with MIL STD 101 and AFOSH STD 91-501, Chapter 20 - Safety Color Coding Labeling and Marking for Piping Systems.

Fire Hydrant

8.3.2 Fire Protection Systems

All new facilities shall be provided with an automatic fire suppression system (sprinklers) as required, except at hangars, high expansion foam systems shall be provided.

High Expansion Foam Fire Suppression System

Fire sprinkler lines shall be painted red and/or labeled periodically throughout the length of the sprinkler line as required by NFPA 13, Installation of Sprinkler Systems. High-grade stainless steel brackets and hardware shall be used for mounting fire suppression system piping. In addition, all fire suppression system control valves shall be equipped with tamper or flow switches. Fire suppression system risers are to be installed inside the main mechanical room of each facility.

Fire extinguishers shall be provided in either fully recessed cabinets, semi-recessed cabinets, or shall be wall mounted, as approved by the Base Civil Engineer and by 36 CES/CEF.

36 CES/CEF shall be provided with accurate and completed copies of the fire protection system inspection, testing, and maintenance acceptance test paperwork from the NFPA forms manual on the day of the acceptance test.

8.3.3 Fire Detection and Alarms

Fire detection and alarms systems shall be “Class B”, and shall conform to National Fire Protection Agency and National Fire Alarm and Signaling Code.

Dormitories shall be provided with combination audio and visual fire alarms.
Fire alarm pull station shall be double action key reset type, with no glass or parts to replace for proper operation of the device.

8.4 Above Ground Reservoir Tanks

8.4.1 Above Ground Water Tanks

Refer to industry standards, applicable Uniform Facilities Criteria (UFC’s), and Base Color Standards.

8.4.2 Elevated Water Storage Tanks

Refer to industry standards, applicable Uniform Facilities Criteria (UFC's), and Base Color Standards. Include the Air Force Shield on elevated water tanks.

8.4.3 Above Ground Fuel Tanks

Refer to industry standards, applicable Uniform Facilities Criteria (UFC's), and Base Color Standards.


PREPARED TO PREVAIL

Electrical Standards

9.0 General

Electrical installations on Andersen Air Force Base shall conform to local codes and applicable to the Unified Facilities Criteria. Conformance includes, but is not limited to grounding standards, airport and base runway lighting standards, and Electronic Industries Association/Telecommunications Industry Association (EIA/TIA) telecom requirements.

Electrical design and installations shall conform to the NESC C-2, National Electrical Safety Code.

The National Fire Protection Agency (NFPA) codes and standards also apply; including, but not limited to the following:

NFPA 70 – National Electric Code
NFPA 72 – National Fire Alarm and Signaling Code
NFPA 170 – Standard for Fire Safety and Emergency Symbols (replaces previous standards – NFPA 171, 172, 174, and 178)
NFPA 780 – Standards for the Installation of Lightning Protection Systems.

The Unified Facilities Criteria (UFC) includes, but is not limited to, the following:

UFC 3-300-9N, Design Procedures
UFC 3-500-10N, Design: General Electrical Requirements
UFC 3-501-01, Electrical Engineering
UFC 3-520-01, Interior Electrical Systems
UFC 3-530-01, Interior and Exterior Lighting and Controls
UFC 3-535-01, Visual Air Navigation Facilities
UFC 3-535-02, Design Drawings for Visual Air Navigation Facilities
UFC 3-550-01, Exterior Electrical Power Distribution
UFC 3-560-01, Electrical Safety, O&M

Refer to the UFC website at: http://www.wbdg.org/ccb/browse_cat.php?o=29&c=4 for additional UFC design criteria, as applicable to a specific project.

Refer to Section 3 – Primary Guidance Documents, for additional references, standards, and requirements.

9.1 Electrical Equipment

Electrical gear enclosures and cabinets, including above ground transformers and pad mounted electrical equipment shall be stainless steel and factory painted “antique linen” (not green). Visually exposed electrical gear is not acceptable.

Refer to Section 4 - Site and Landscape Development, for screen walls/enclosures required around all above ground, pad mounted electrical gear. All switches, transformers, and tanks shall be in NEMA 4X stainless steel enclosures that are located in all damp locations.

New facilities shall be provided with meters to record electrical consumption. The meters shall be compatible with upgrades for remote monitoring systems.

9.2 Wiring and Cable

Insulation on cable and wire installed in raceway shall be suitable for site environment and shall be as follows:

- All interior and exterior low voltage wiring rated for up to six hundred volt (600 v) shall be type THWN/THHN.
- All interior and exterior medium voltage cable rated for 15kV and 34.5kV shall be type XLP, (cross linked polyethylene insulation).
- All conduits will be 3/4" minimum diameter.
- No flex conduit allowed on exterior areas.

9.3 Lighting

Design: Illuminating Engineering Society of North America’s (IESNA) HB-9-00, IESNA Lighting Handbook, latest Edition, shall be referenced for lighting design.

Exit Lights: Exit lights shall be provided in accordance with NFPA 101, Life Safety Code® (LSC). Exit lights shall be state of the art type with LED indicators with built-in battery back-up.

Emergency Lighting: Emergency lighting shall be provided in accordance with the latest LSC and National Electrical Code. Down lighting built into EXIT lights is acceptable if it meets the foot-candle illumination requirements as a means of egress. Generally provide egress lighting by ceiling fluorescent fixtures with emergency ballasts. Wall mounted battery/lamp type units shall be installed only with special permission from the Base Civil Engineer.

9.3.1 Exterior Lighting

Exterior street lighting shall be provided to ensure safety, and shall be installed as follows: The Military Family Housing low profile "cobra head", street light fixtures shall operate at two hundred forty volts (240v) with one hundred fifty watt (150w) lamps installed.

For all other street lighting, low profile "cobra head", industrial type streetlights shall be used and operate at four hundred eighty volts (480v) with induction type / LED lamps installed. All streetlight wires shall be totally enclosed within the pole and mast assembly; exposed wires are not acceptable. For maintenance purposes each streetlight shall have a hand hole installed at the base of the pole for access to the wires.

Exterior red LED warning lights not allowed on or near any Air Force Base.

Refer to Section 4 - Site and Landscape Development, for streetlight illustrations and for additional streetlight requirements. Poles should be round, reinforced concrete, arms and cobra head together should not exceed 36".

9.3.2 Interior Lighting

Sufficient, high quality light is an integral part of creating a successful interior environment. Because natural daylight offers energy conservation benefits, include as much indirect and natural light as possible in interior building spaces. Provide sufficient seismic bracing and supports for interior light fixtures. Refer to Section 6 – Interior Design Standards, for additional lighting requirements.

9.3.2.1 Fluorescent Light Fixtures

Parabolic light fixtures with anti-glare diffusers are preferred, yet anti-glare acrylic lenses are also acceptable if required for compatibility purposes. Fluorescent light fixtures shall be two-feet (2'-0") by four-feet (4'-0") units.

Fluorescent light fixtures shall be energy efficient with tubular, one-inch (T8) lamp type F5H.O or LED Tube.

Coordinate final light fixture selection with the Base Civil Engineer.

9.3.2.2 Incandescent Light Fixtures

Compact fluorescent light fixtures shall be used in lieu of incandescent bulbs. Incandescent light fixtures may be used sparingly, depending upon the use of the space. Typically, recessed incandescent fixtures are reserved for supplemental or effectual lighting in conference rooms, Distinguished Visitor (DV) lounges, and special category rooms. Incandescent lights are not allowed in office areas.

9.3.2.3 Light Switches

For energy conservation purposes, provide light fixtures with dimmable switches, or dual switches that enable turning on only half of a two-feet (2'-0') by four-feet (4'-0") fluorescent light ballast. Occupancy sensors that detect the presence of occupants shall be installed for office spaces and low-use rooms, such as conference rooms. Restrooms shall be provided with occupancy sensors that have a voice reactivation mechanism.

9.3.2.4 Emergency Lighting

For offices and administrative areas, standard emergency lighting shall be built-in ballast type, integrated as part of the light fixture. Exit light fixtures shall have light emitting diode (LED) red light indicator and shall be located near an exit door. Independent wall type "bug-eye" emergency light fixtures are not allowed in office areas. Separate "bug-eye" units with battery back-up are acceptable only for high bay areas, such as warehouses.

Coordinate emergency lighting in advance with the Base Civil Engineer.

9.4 Electrical Distribution System

All primary and secondary electrical distributions shall be designed for installation underground wherever possible. Any above ground installations must be approved in advance by the 36th Civil Engineer Squadron (36 CES). All below ground wiring, regardless of voltage, shall be installed in conduit and buried at a minimum depth of twenty-four-inches (24") below finished grade. All primary electrical distributions shall be 6" minimum conduit size. Medium voltage power 13.8 kV and 34.5kV (medium-to-high voltage) wire shall be installed in underground concrete encased conduit.

Manholes and pull-boxes installed for underground raceway systems shall comply with the following requirements:

Low voltage secondary underground distribution systems shall be provided with hand holes for junction boxes and access to conductors. For medium-to-high voltage primary underground distribution systems, manholes shall be installed for junction boxes. The construction of the hand holes and manholes shall be consistent with the American National Standards Institute (ANSI) requirements, constructed of four thousand pounds per square inch (4,000 psi) concrete. To reduce chipping and excessive deterioration of manhole and hand hole tops and lids, each lid shall be metal, and provided with a metal frame. No splices allowed in manholes. Provide switchgear as needed.

Military Family Housing disconnect air switches shall be replaced with vacuum switches. All power going into a building shall have the capability to be metered.

A one hundred and fifteen volt (115v) electrical outlet shall be provided adjacent to condenser and air-handling units, Refer to Section 8 – Mechanical, Plumbing, and Fire Protection Standards for additional information.

15 kV Cable shall be copper and single conductor cables, 133% Cross-Linked Polyethylene (XLP) insulation level. Cable Jacket shall be PVC or polyethylene jacket suitable for wet locations. Cable Shields shall be tape shielded cables and ensure minimum bending radii of 12 times the overall cable diameter. Use wire shielded cables only where manholes are utilized and the minimum bending radii of tape shielded cables cannot be realized.

The existing distribution system is a loop system. All additions to the underground distribution system shall be designed as loop systems unless specifically authorized to do otherwise by 36 CES.

15 kV underground cables shall be installed in concrete encased duct banks. Provide 6 inch minimum PVC or EB conduit. Provide 6 inch spare conduit with pull wire for future use. Place duct bank 36 inches below grade. Provide plastic warning tape with metallic wire above all duct runs.

All exterior equipment shall be stainless steel and painted antique linen. Refer to Section on Site and Landscape Development for screen walls and enclosures required around all above ground pad mounted electrical transformer and switchgears.

15 kV splices and terminations shall be rated for the full ampacity of the cables being connected. All 15 kV cable shall be hi-pot tested before energizing the circuit. “T” and “Y” type splices, Load Junctions; Separable splices (bolt-T connections) shall not be used. Individually fireproof medium voltage cables in all underground structures.

The size of 15 kV Manholes shall be determined by the number of circuits, voltage ratings, and splicing requirements of the cables within. Manholes shall be a minimum 2meter (6.5 ft) deep.

Pad Mounted Distribution Transformers shall be filled with Envirotemp FR3 fluid with exceptionally high flash/fire points, pad mounted, dead front, loop feed capable with bushings. Provide two-position load break switches that are appropriate for the application. Provide a minimum clearance as per NEC 11 requirement around transformer when installing block/brick walls around pad mounted transformers. Refer to Section on Site and Landscape Development for screen walls and enclosures required around all above ground pad mounted electrical gear.

Pad mounted switchgear (Switches) shall be provided when switching, isolation or electrical protection for the downstream circuit is required or anticipated. Provide SF6 or FR3 fluid insulated, vacuum break, dead front switches. Key interlocks are not allowed.

All pad-mounted equipment (transformers, switches and junction enclosures) shall be mounted on a reinforced concrete pad (or approved equal). A grounding ring of 4/0 bare copper shall encircle the pad and be buried 24 inches below grade. Provide four ground rods (one at each corner of the pad). Provide a 4/0 copper cable from the ground ring to inside the equipment enclosure for grounding in accordance with the National Electrical Safety Code and the National Electrical Code. All connections between the ground rods and the 4/0 cable shall be exothermic type equal to Cadweld brand.

Distribution System Grounding:

Ground rods shall be copper clad steel with diameter adequate to permit driving to full length, but not less than ¾ inch diameter and 10 feet long. All connections to ground rods below ground level shall be by exothermic weld, connections to above ground level cab be accomplished by clamping. Ensure non-current carrying metallic parts associated with electrical equipment have a maximum resistance to solid earth ground not exceeding the following values:

Pad mounted Transformers. Ground in Manholes, Handholes, and vaults. Grounding other metal Enclosures of primary voltage electrical and	5 ohms
Electrically-operated equipment. Grounded secondary Distribution system neutral and non-current carrying metal parts associated with distribution system and grounds not otherwise covered.	5 ohms
Pole grounds	25 ohms

9.5 Lightning Protection

All occupied buildings and major facilities shall be protected against the threat lightning strikes. Lightning protection systems shall be installed in accordance with National Fire Protection Agency (NFPA) 780, "Standards for the Installation of Lightning Protection Systems."

Munitions Storage or facilities where munitions are handled or maintained will be protected with a mast-type or catenary protection system in accordance with Chapter 7 of NFPA 780, except where masts would interfere with aircraft operation requirements.

Communications and Navigational Aid facilities will be protected with a mast-type or catenary protection system in accordance with Chapter 7 of NFPA 780, except where masts would interfere with aircraft operation requirements.

Where catenary masts would interfere with aircraft operation requirements, lightning protection systems shall be installed in accordance with Chapter 4 of NFPA 780.

All new or reinstalled lightning protection systems shall have a Ground Ring Electrode encircling the facility and installed in accordance with NFPA 780.
Because of the harsh environmental conditions, only copper conductors will be used.

9.6. Meters

Electrical meters shall be provided for all new facilities and all major Upgrades/repairs. Meters shall be MV90 compatible capable of remote transmission with the same capabilities as the Sentinel by Itron or equivalent. Electrical meters shall be wirelessly connected and fully capable with the existing base-wide MV90 compatible metering system.

9.7 Panelboards and Circuit Breakers

Breakers shall be provided whenever possible for over-current protection.
Breakers for new panelboards shall be the bolt-on breaker type. In your specifications, specifically states that series rated breakers shall not be used.
Provide 25% spare breakers on all new panels. Provide load calculations in the Design Analysis.

All circuits shall be marked at the panel identifying what each circuit goes to by a location identifier (i.e. lighting room 100).

9.8 Color Coding

All conductors shall be copper. Color coding for all three-phase circuits shall be in accordance with the following:

	480V	208V
Phase A	Brown	Black
Phase B	Orange	Red
Phase C	Yellow	Blue
Neutral	White	White
Ground	Green	Green

9.9 Motors and Controllers

Motors shall be high efficiency types and use de-rated values for supply voltages, i.e. for a 480 volt service, provide a 460 volt motor. For a 208 volt service, provide a 200 volt motor. In addition, all motors shall have a disconnect switch as required by NFPA 70, National Electrical Code® (NEC). Motors over 10 HP shall have under-voltage, phase loss, and phase reversal protection.

Variable Speed Drives: Provide variable frequency drive (VFD) controllers shall be enclosed in a ventilated enclosure with separate conduit for input and output power.

9.10 Energy & Water Conservation

LIGHTING

-For high bay lighting, provide TSHO fluorescent lighting fixture & lamps or induction lighting fixture & lamps that comply with IES.

-Exterior light & parking light shall be induction lighting fixture or LED lighting fixtures. PV LED fixtures are optional.

SWITCHES

-IR & Ultrasonic occupancy sensors on light switches are part of energy conservation. Any rooms, areas or hallways that can accommodate an occupancy sensor are essential.

HVAC

- More Energy Efficient Package Units or Chiller Units with oil less compressors are more efficient than the normal compressors.
-Provide VFD on chiller water supply fan, to have maximum energy efficiency with DDC Control & interlock to existing EMCS.

-New construction building/facilities will be VAV System with DDC and connect to existing EMCS.

ENVIRONMENTAL

10.0 Natural and Cultural Resources

The 36th Wing provides sound management of the lands, natural resources, and cultural and historical sites for which it has stewardship. The 36th Wing strives to protect and enhance these natural and cultural resources in a manner consistent with its military mission. Andersen AFB has a National Wildlife Refuge overlay. Some of this real estate is covered by limestone forest, a sensitive island ecosystem that supports native fauna and flora, including threatened and endangered species. Some of the protected species include the Mariana fruit bat, Mariana crow, Micronesian starling, White-throated ground dove, Green sea turtle, Mariana eight-spot butterfly, Guam tree snail, fragile tree snail, Pacific slender toed gecko, and the Fire tree. Plant species include the Fire tree. Threatened or endangered migratory birds and nesting sea turtles are occasional visitors.

A major challenge for the 36th Wing, federal and Guam wildlife management agencies is the brown tree snake, an invasive species that has decimated Guam's native bird populations. BTS control is mandated by the MOA for BTS Control of 1993. Executed among the DOI, DoD, the USDA, Gov Guam, and the State of Hawaii. DoD assumes the lead for developing control techniques for BTS in military situations on Guam and to prevent dispersal in military traffic to other areas. DoD obligations include personnel, support, use of military customs inspection programs, access and information exchange, and development of informational brochures and training.

Andersen AFB works cooperatively with UOG and the Guam Plant Extinction Prevention Program to protect Guam's rarest plant, the endangered Fire Tree (Serianthes nelsonii) from going extinct.

Andersen AFB has provided facilities, funding and other support to the U.S. Department of Agriculture to prevent the spread of brown tree snake (Boiga irregularis).

In a cooperative effort with the Government of Guam, U.S. Department of Agriculture and U.S. Fish and Wildlife Service, the Air Force supports the reintroduction to the wild of captive-bred Guam rails (Rallus owstoni).

The 36th Wing's program protects the habitat for the federally endangered Mariana fruit bat(Pteropus mariannus).

Andersen AFB cooperates and supports the efforts of U.S. Fish and Wildlife Service and Guam's Division of Aquatic and Wildlife Resources on sea turtle research and endangered species habitat preservation.

Traps have been placed across the base in an effort to control the brown tree snake, which has decimated the native bird population on Guam.

The Tarague Embayment is the site of numerous archeological resources that are administered using the 36th Wing ICRMP.

Portions of the base are covered by limestone forest, a sensitive island ecosystem that supports native flora and fauna, including threatened and endangered plant and animal species.

Recommendation:

1) Continue to conduct biological surveys of native flora and fauna resources to support base planning initiatives, maximize use of existing resources, and reduce impacts to critical limestone forest ecosystems;

2) Construct ungulate (deer and pig) proof fencing around limestone forested areas to protect habitats for federally threatened and endangered species;

3) Continue brown tree snake interdiction efforts by inspecting 100 percent of the cargo leaving AAFB. This will ensure the BTS does not spread to other islands in the Marianas and the Pacific;

4) Develop and implement a Habitat Restoration and Rehabilitation Plan to maintain and enhance vegetation community structure, functionality, and species diversity;

5) Expansion of interpretive programs to further educate installation personnel and the public about natural and cultural resources on Andersen AFB.

6) Develop baseline mapping of historical and archaeological resources base wide to support base planning initiatives, maximize use of existing resources, and meet Guam's cultural resource protection requirements;

7) Continue to manage the Tarague Basin trail network for walking, biking, education, and other recreational opportunities. Keep the third recommendation.

8) Establish an integrated cultural, recreational, and natural resources education program for base residents through interpretive areas, periodic tours, and annual ceremonies. Ensure the widest possible dissemination through such media as the base paper, television channel, and bulletin boards.

Andersen AFB's real estate holdings include the Tarague Embayment, which the Air Force is committed to protect as part of an integrated natural and cultural resources program. The area contains cliff faces with numerous caves, primary forests, beach lines, and coastal reef complexes. The Tarague Embayment is a particularly sensitive location for archaeological and wildlife resources.

The Tarague Embayment Plaque

Tarague Embayment

Housing Standards

11.0 Introduction

Housing projects are unique to all other projects on Andersen Air Force Base. This section outlines criteria specifically for Base housing projects; therefore when undertaking a housing project, the standards herein supersede criteria mentioned elsewhere in the Architectural Compatibility and Base Design Standards, unless otherwise noted or referenced.

Where a conflict exists within this standard and other applicable codes or standards, the more stringent shall apply. Coordinate with the Base Civil Engineer.

11.1 Accompanied Housing Standards (Family Housing)

Refer to USAF Family Housing Guide for additional requirements on Accompanied Housing requirements.

Accompanied Housing units are comprised of both single and duplex housing units on Andersen Air Force Base. Single and duplex units are comprised of two (2) bedroom, three (3) bedroom, and four (4) bedroom types.

Family Housing -Duplex Unit Exterior Front

Family Housing - Duplex Unit Exterior Rear

11.1.1 Site and Landscaping Housing Standards

11.1.1.1 Screen Walls/Enclosures

Screen walls/enclosures shall be eight-inches (8”) thick concrete masonry units (CMU) with inverted CMU blocks having corner and end wall columns designed to withstand the wind speed criteria as indicated in Section 3 – Primary Guidance Documents. Provide an eight-inch (8”) by eight-inches (8”) block-out at the base of each wall for rainwater drainage. Screen walls/enclosures shall be provided with a textured, painted finish. Color shall be as indicated in

Section 7 - Base Color Standards. There are two types of screen walls/enclosures for housing projects as follows:

11.1.1.1.1 Trash Bin Screen Walls/Enclosures

A screen wall/enclosure shall be provided adjacent to housing unit carports, with access from the carport side. Trash bin Screen walls/enclosures shall be three-feet, four-inches (3’-4”) wide by twelve-feet (12’-0”) long by four-feet, four-inches (4’-4”) tall. Trash bin screen walls/enclosures shall be designed to contain two (2) wheeled trash bins.

11.1.1.1.2 Air Conditioning Unit Screen Walls/Enclosures

A screen wall/enclosure shall be provided around housing air conditioning units, associated ductwork, and utilities. Screen walls/enclosures shall be four-feet, four-inches (4’-4”) high, and of sufficient length and width to provide proper visual screening of the air conditioning unit and to provide for service and maintenance access around the unit.

Air Conditioning Screen Wall/Enclosure

11.1.1.2 Vegetation Placement

In order to avoid unwanted pests and to maintain the termite treatment trenches, landscaping and plantings are not allowed adjacent to housing units. Trees may not be planted within fifteen-feet (15’-0”) of the housing units, and any existing trees within fifteen feet (15’-0”) of such buildings will be required to be removed.

Refer to Section 4 – Site and Landscape Development, for a complete list of acceptable vegetation.

11.1.1.3 Sidewalk and Patio

When it is time for a given unit to be renovated as part of the Post Acquisition Improvement Project (PAIP), the sidewalk and patio shall be upgraded to be in compliance with the current USAF Family Housing Guide.

11.1.2 Exterior Housing Standards

11.1.2.1 Roofing

Housing units are provided with flat, built-up roofs. When it is necessary to replace the roofing system, the existing built-up system shall be entirely removed and replaced with the a single component, elastomeric, air-dry silicone rubber coating as described in Section 5 – Exterior Architectural Standards.

The roof fascia shall be provided with a stainless steel drip edge around the roof perimeter. Although some existing fascia drip edges have been painted, all new fascia drip edges shall not be painted.

Existing Built-Up roofing System

11.1.2.2 Wall Finishes

Exterior walls shall be provided with a textured, painted finish (not a Direct Applied Exterior Finish (DAEFS)). The color of exterior walls shall be as required in Section 7 – Base Color Standards. Wall caps and vents shall be unpainted stainless steel.

11.1.2.3 House Number and Tenant Name Sign

Each housing unit shall be provided with a five-and-one half inch (5-1/2”) high by one foot six inches (1’-6”) long (or length as required – depending on the name), wall mounted aluminum plate with three-inches (3”) high white reflective text and dark brown reflective background to indicate the house number and a slide-in nameplate to indicate the tenant’s name. Refer to adjacent photos.

Housing Number and Tenant Name Sign

Housing Number and Tenant Name Sign

11.1.2.4 Doors, Sliding Doors, Windows, and Typhoon Shutters

11.1.2.4.1 Doors

Exterior doors of housing units shall be heavy gauge, dark bronze anodized aluminum. This includes doors of exterior storage units, which shall be provided with louvered vents.

Exterior Storage Unit Doors

11.1.2.4.2 Sliding Doors

Sliding doors are to be provided off of the dining room, to allow access to the rear patio. Sliding doors shall be dark bronze aluminum with tempered glass and insect screen.

Sliding Door

11.1.2.4.3 Windows

Windows shall be single hung or double hung, except at bedrooms. Bedroom units shall be sliding-type in compliance with emergency egress requirements.

Windows shall be dark bronze aluminum, and shall be provided with insect screens and glazing, as required.

Exterior Window

11.1.2.4.4 Typhoon Shutters

Aluminum accordion typhoon shutters shall be provided on glazed openings of housing units, such as windows and sliding patio doors. The color of typhoon shutters shall be as required in Section 7 – Base Color Standard.

Typhoon shutters for the bedrooms shall be able to open from the inside in the event of an emergency.

Typhoon Shutter

11.1.2.5 Carports

Carports are provided for each unit, and are sized to accommodate a single vehicle. At the end of the carport, an outdoor storage closet is provided, complete with shelving.

Carport and Trash Bin Screen Wall/Enclosure

The current overhang coverage of most existing carports is not sufficient to provide enough shade for the entry doors. Because of this, these dark bronze aluminum entry doors and hardware tend to become very hot during the day, and can cause a hazard to touch. Therefore, when it is time for a given unit to be renovated as part of the Post Acquisition Improvement Project (PAIP), the carport and entry overhangs shall be extended to provide sufficient shade over the entry doors and coverage over the exterior storage area. Additional columns shall be provided to support the extended overhangs as required.

11.1.2.6 Supplemental Utilities

A generator power flanged inlet, mechanical interlock (receptacles are no longer the Base standard), with a stainless steel disconnect switch, shall be provided on the exterior wall of each housing unit to enable generator hook-up when electrical service has been disrupted, such as after typhoons.

Mechanical Interlock

Stainless Steel Disconnect Switch

11.1.3 Interior Housing Standards

11.1.3.1 Flooring

11.1.3.1.1 Entry Foyer, Kitchen Storage, Kitchens, Dining Room, and Family Room

Provide with twelve-inch (12”) by twelve-inches (12”) ceramic tile with epoxy grout and four-inch (4”) oil stained wood base, oak color.

Ceramic Tile and Wood Base

11.1.3.1.2 Bathroom

Provide bathrooms with twelve-inch (12”) by twelve-inches (12”) ceramic tile with epoxy grout and six-inch (6”) high ceramic tile base.

Bathroom Ceramic Tile and Base

11.1.3.1.3 Bedrooms, Closets, Living Room, and Hallway

Provide thirty-eight (38) ounces per square yard, twenty-five percent (25%) recycled tan carpet with half-inch (1/2”) thick carpet cushion and four-inch (4”) oil stained wood base, oak color. Transitions between carpet and tile areas shall be provided with a rubber, brown transition strip.

Carpet and Wood Base (Bedroom)

Carpet and Wood Base (Living Room & Hallway)

11.1.3.1.4 Utility Rooms

Provide with twelve-inch (12”) by twelve-inches (12”) vinyl tile with four-inch (4”) oil stained wood base, oak color. Vinyl tile color shall be “cottage tan” or “dove white”.

Vinyl Tile and Wood Base

11.1.3.2 Walls

11.1.3.2.1 Perimeter Walls

Provide furring around exterior perimeter walls using one and one-half-inch (1-1/2”) furring channels at sixteen-inches (16”) on center. Install vapor barrier as required. Provide rigid board insulation between the furring channels, and then install half-inch (1/2”) waterproof gypsum board. Provide a fine textured spray paint finish, “eggshell white”.

11.1.3.2.2 Interior Partitions

Interior partitions shall be constructed of three and five-eighths-inch (3-5/8”) metal studs. Provide foil-faced acoustical batt insulation between the studs and install half-inch (1/2”) gypsum board on each side of the partition, except provide tile backer board where ceramic tile is to be installed. The finish shall be a fine textured spray paint finish, “eggshell white”.

Interior Partition Wall Finish

11.1.3.2.3 Bathroom Shower Surrounds

Bathroom showers shall be provided with half-inch (1/2”) tile backer board and twelve-inch (12”) by twelve-inches (12”) full height ceramic tile wainscot with epoxy grout.

11.1.3.2.4 Electric Range Wall Treatment

Electric Range shall be provided with a stainless steel splashguard as shown in the adjacent photo.

Electric Range Stainless Steel Splash Guard

11.1.3.2.5 Wall Mounted Registers and Diffusers

Air conditioning registers and diffusers shall be wall-mounted (not ceiling mounted) and shall be aluminum, white in color. Return air plenum shall be provided by a partial soffit.

Wall Mounted Registers and Diffusers

11.1.3.3 Doors

Interior doors shall be solid flush wood doors; seven (7) ply with oil stained stain finish, oak color. Hollow core doors will not be allowed. All interior doors are side-hinged type, except for bedroom closet doors, which are sliding doors. Door hinges shall be stainless steel. Doorknobs and trim shall be gold finish color.

Interior Doors – Sliding and Side-Hinge Shown

11.1.3.4 Window Treatment

11.1.3.4.1 Horizontal Window Blinds

Horizontal window blinds (Venetian blinds) shall be provided on all windows. Horizontal window blinds shall be FS AA-V00200, Type II, one-inch (1") slats with matching valance. Provide lengths and widths as required for installation between window jambs. Plastic or vinyl slats are preferred for Type I Venetian blinds. Braided polyester or synthetic fiber chords, ends heat-fused, terminated with a plastic tassel or continuous.

Horizontal Window Blinds

11.1.3.4.2 Vertical Louver Blinds

Provide sliding patio doors with vertical blinds, having three and one-half-inch (3-1/2") white vinyl slats, manufactured from extruded white .032" PVC. Each individual slat shall be able to rotate one hundred and eighty degrees. Vertical blinds should open fully and close tightly. A chord tensioner shall keep cord safely taut. Provide matching valance and valance end panels.

Vertical Lower Blinds

11.1.3.5 Ceilings

Ceiling shall be constructed of one and one-half-inch (1-½") furring channels with rigid insulation in between, and half-inch (1/2") water resistant gypsum board. Provide ceilings with rough textured acoustical finish, painted white.

Textured Ceiling Finish

11.1.3.6 Cabinets and Countertops

Micro-density fiberboard (MDF) and solid wood combination of marine plywood is preferred for kitchen, and nook cabinets. Particleboard will not be allowed. Provide cabinets, cabinet doors, and cabinet shelves with oak color, oil stain. At kitchen cabinets, provide underside of upper cabinets with built-in, fluorescent task lighting. A stand-alone pantry cabinet unit shall be provided adjacent to the refrigerator, to match the other kitchen cabinets. Bathroom lavatory countertops shall be solid materials made of 100% acrylic, 100% polyester, or a combination of acrylic and poly, which are highly resistant to stains and scratches.

Kitchen Cabinets and Countertop

Built-In Fluorescent Task Lighting

Countertops shall be post-formed plastic laminate, almond color with a four-inch (4") high backsplash/side splash as required. However, solid plastic, scratch-resistant countertops are preferred, and should be specified as the project budget allows, or as a bid add-alternate.

The nook counter shall be a stand alone, angled unit with arched pass-through in the interior partition.

Nook Cabinets and Countertop

Pass-Through at Nook

11.1.3.7 Shelving

11.1.3.7.1 Storage, Utility Room, and Linen Closet

Shelving shall be plywood with solid wood edge and one-inch (1") by two-inches (2") framing supports, all painted white.

Kitchen Pantry (adjacent to refrigerator)

Storage, Utility Room, and Linen Closet Shelves

11.1.3.7.2 Bedroom Closet Shelving

Bedroom closet shelving shall be plywood with solid wood edge. Shelving supports shall be metal, chrome plated finish, with integral hangar rod hooks and sufficient plywood nailer backer boards in studs for support anchorage. Plastic shelving supports are not acceptable. Hangar rod shall be solid oak, oil stained. Provide shelving with additional, intermediate (center) support.

Bedroom Closet Shelving

11.1.3.8 Plumbing Fixtures and Accessories

- Water closet (commode) shall be floor mounted, flush tank white porcelain with elongated bowl and plastic cover.
- Chrome towel bar shall be mounted above water closet.
- Bathtub shall be standard size, white porcelain enamel.
- Lavatory counter tops shall be solid surface material. Provide sinks of white porcelain, under counter mounted, oval shaped. Sinks shall have chrome finish, hot and cold mixing valve faucet.
- Shower fixtures shall be chrome, with combination hot and cold mixing valve.
- Shower rod shall be stainless steel. (Except at DV units, provide tempered safety glass with aluminum frame shower door system in lieu of curtain rod.)
- Toilet paper holder shall be chrome.
- Mirror shall be full-length, wall-mounted with a stainless steel frame.
- Kitchen sink shall be standard double unit, stainless steel equipped with electric food disposer with switch above countertop, adjacent to sink.

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Water Closet and Bathtub

Bathroom Lavatories, Faucets, and Mirror

Shower Accessories

11.1.3.9 Water Heater Pad and Support

Provide four-inch (4") thick concrete pad with two each removable/detachable stainless steel straps with stainless steel anchors, anchored to wall with a twelve-inch (12") minimum clearance top and bottom. Refer to the International Plumbing Code (IPC) paragraph 502.4 "Seismic Supports" for additional information.

11.1.3.10 Appliances

When it is time for a given housing unit to be renovated as part of the Post Acquisition Improvement Project (PAIP), each unit shall be provided with the following electrical appliances, white in color:

- Electric range with oven and four-burner cook-top
- Side-by-side Refrigerator
- Washer and Dryer

Kitchen Appliances

11.1.4 Lighting, Smoke Detectors, and Circuit Panels and Circuit Interrupters

11.1.4.1 Lighting

11.1.4.1.1 Bedroom, Living Room, Dining Room Lights

Provide each bedroom, living room, and dining room with ceiling fans having integral light fixtures. Additionally, living room shall be provided with a surface mounted wall sconce adjacent to the kitchen nook pass-through.

Living Room Wall Sconce

Bedroom Light with Ceiling Fan

Living Room Wall Sconce

11.1.4.1.2 Kitchen

Provide kitchen with a two-foot (2'-0") by two-foot (2'-0") surface mounted, energy-efficient fluorescent light fixture with oil stained wood frame, oak color.

Kitchen Light

11.1.4.1.3 Bathroom

Provide bathroom with wall-mounted, strip light fixture above mirror, chrome finish, with four (4) incandescent light bulb sockets and covers.

Bathroom Light

11.1.4.1.4 Hallway

Provide hallways with a wall sconce light fixture, surface mounted. Emergency lighting on back-up power shall also be provided in hallways.

Hallway Wall Sconce

11.1.4.1.5 Storage

Provide storage rooms with an oval, ceiling surface mounted incandescent fixture.

11.1.4.2 Smoke Detectors

Provide smoke detectors in each bedroom and hallway. Two smoke detectors may be necessary in long hallways, as required. Smoke detectors shall incorporate battery back up. All detectors shall be interconnected together such that when one activates all of the detectors activate.

11.1.4.3 Circuit Panel and Circuit Interrupters

Circuit panel must be located in the utility room, with appropriate labeling for each breaker. Bedroom circuits shall be provided with Arc Fault Circuit Interrupters (AFCI's). Bathroom and kitchen circuits shall be provided with Ground Fault Circuit Interrupters (GFCI's).

11.1.5 Television Cable and Telephone

Housing units are to be provided with television (TV) cable and telephone wire, including conduit and receptacle connections. The tenant shall coordinate with the Housing Authority, but ultimately the tenant is responsible to apply to the local telephone and Cable Company for service connectivity.

11.1.5.1 Cable

One interior cable receptacle is to be provided in living rooms and in each bedroom. The cable box is to be provided in the utility room. Exterior cable TV connectivity cable box shall be provided at exterior wall within the air conditioning enclosure area.

11.1.5.2 Telephone

Telephone jacks are to be provided in living rooms, at the kitchen nook counter, in family rooms, and in each bedroom. Exterior connectivity phone box shall be provided at exterior wall within the air conditioning enclosure area.

11.1.6 Air Conditioning Systems

Housing air conditioning systems shall be provided as a packaged system (i.e.: the fan coil and condensing unit shall be contained in a common piece of equipment). The unit shall be mounted on twelve-inch (12") high concrete curbs located outdoors within the screen wall/enclosure described above. Exterior ductwork shall be stainless steel, ducted to the wall, up to the interior underside of structure.

11.1.7 Domestic Water Heater System

Water heater system shall be fifty (50) gallons capacity, electric type, Underwriters Laboratories (UL) 174 with double heating element, glass lined steel tanks, high efficiency type with polyurethane foam insulation, replacement anodes, with adjustable range thermostat.

Air Conditioning System

11.2 Unaccompanied Housing Standards (Dormitories)

This section includes a description for unaccompanied, dormitory-style housing for Non-commissioned Officer (NCO) and Senior Non-commissioned Officers (SNCO). Each group has unique requirements that must be served by their housing accommodations.

Refer to the USAF Unaccompanied Housing Design Guide for additional requirements and information.

Dormitory

11.2.1 Site Development

Community planning is critical to the success of a dormitory campus. Proximity and access to public and recreational spaces is desired and should be considered early in the planning phase. The overall intent of a dormitory campus is to create an area that appeals to traditional residential development and maintains a degree of separation from administrative and mission related functions. Considerations for separation within the campus may include separation of enlisted personnel from officer personnel. Also consider centralized support functions such as laundry facilities, shared social spaces, and mailbox location.

Refer to Section 4 – Site and Landscape Development for more information.

11.2.1.1 Circulation

11.2.1.1.1 Vehicle Circulation

Access to the dormitory campus shall be provided from secondary streets to minimize congestion on main arterial streets. Main entrance lanes shall be divided by a landscaped median. Review standoff distance requirements as described in Section 4.5 – Anti-Terrorism/Force Protection for addressing proximity concerns. All access streets, parking lots must be able to accommodate service vehicles, and drop-off needs. Consider turning radii and building code requirements for emergency vehicle access. Where possible and appropriate, accommodate access to public transportation systems.

11.2.1.1.2 Parking

Provide one parking space per dormitory resident. Consider spatial requirements and access issues early in the design phase. Visitor parking, with the exception of handicap accessible parking requirements, is not required but may be an option based on space availability. Be cautious of paving excessively or inviting excessive vehicular traffic as this can have a negative impact on natural features surrounding the site. Accommodate storm-water drainage in the site plan. Designated motorcycle parking shall also be included in the site plan.

Refer to Section 4 – Site and Landscape Development for paving requirements, and review standoff distance requirements as described in Section 4.5 – Anti-Terrorism/Force Protection for addressing force protection concerns.

11.2.1.1.3 Pedestrian Circulation

Walkways to dormitory building entrances shall be a minimum of eight feet (8'-0") wide. All other sidewalks shall be six feet (6'-0") wide. Design and grade walkways to provide unobstructed pedestrian access to all first-floor living units and to any adjacent public or recreational facilities. Consider access corridors to trail/path systems throughout the Base. Refer to Section 4 – Site and Landscape Development for paving requirements.

11.2.2 Site Amenities and Landscape Architecture

Refer to Section 4 – Site and Landscape Development for considerations on developing a pedestrian-friendly, community-oriented dormitory campus.

11.2.2.1 Visual Screening

Provide visual screens, as described in Section 4 – Site and Landscape Development, around unattractive site features such as trash dumpster areas, pad-mounted electrical transformers, parking areas, and mechanical yards. Sufficient access to mechanical and electrical equipment as well as trash areas must be maintained to provide adequate space for repair and maintenance. Consider using vegetation as a screening device.

Refer to Section 4 – Site and Landscape Development, for a complete list of acceptable vegetation.

11.2.3 Architectural Design Considerations

11.2.3.1 Mass and Scale

Mass and scale are components of architectural design that can be used to generate an overall sense of character in a particular building. People perceive a sense of personal comfort based on the influences of their immediate environment. When the overall sense is agreeable a space is said to be of "human scale." The relative proportions of the height, form, and volume of a building space contribute to creating what is considered "human scale." This characteristic is particularly desirable in a dormitory-style building as a means of alleviating any sense of being in an institutional facility and for further encouraging a sense of belonging among residents.

Andersen Air Force Base policy requires that dormitory buildings do not exceed three floors due to an inconvenience to residents without power following typhoons.

11.2.3.2 Building and Site Relationship

Developing a relationship between the campus site and the architectural design of dormitory buildings is critical to the success of the project. Interior circulation patterns should relate to exterior circulation patterns. When possible, exterior public and social areas should be an extension of interior social areas. Building entrances should be carefully coordinated with sidewalk, roadway, and parking configurations.

The architectural character of Unaccompanied Housing facilities should recognize and establish a relationship with the surrounding buildings as well. The design must relate not only to the conditions of the immediate site but also the overall character of Andersen Air Force Base.

Refer to Section 5 – Exterior Architectural Standards for more information.

11.2.3.3 Balancing Privacy and Social Interaction

Designers should strive to achieve a balance between the social space and privacy of each module and building. Care must be taken to provide young residents with sufficient privacy so they are comfortable but to simultaneously ensure a "buddy system" is in place so that no person is segregated from the group. For NCO and SNCO housing privacy becomes more of a priority and should be addressed accordingly. Separation of male and female ranks is critical and must be maintained at all times.

11.2.3.4 Noise Considerations

Provide adequate separation of noisy, social spaces (shared common areas, game rooms, outdoor recreation areas) and quieter spaces (private living modules, study rooms). Include in all designs acoustical construction measures prevent sound transmission between these spaces. Also consider the proximity of adjacent Base functions such as airfield runways and firing ranges.

11.2.4 Unaccompanied Housing Programs and General Information

The following tables below present programming and required spaces for Unaccompanied Housing units. Refer to USAF Unaccompanied Housing Design Guide for optional spaces and for additional requirements.

Table 11.2.4.1 - Unaccompanied Housing Programming Standards

Net Living Area Per Person	98 sq. ft.
Maximum Number of Persons per Room	2
Bathroom Configuration	1 per room shared by 2 students
Dormitory Configuration	Central corridor

Table 11.2.4.2 - Unaccompanied Housing Required Spaces

Functional Spaces Living Area	Minimum Net	Maximum Net Living Area	Recommended Net Living Area
Living/Bedroom Area 2 per module	196 sq. ft.	196 sq. ft.	196 sq. ft.
Shared Bathroom – 1 per room (1 toilet, 1 shower)	25 sq. ft.	Based on available area	25 sq. ft.
Private lavatory vanity – 2 per room (separate from shared bath, immediately adjacent to bathroom)	3 LF per Lavatory/vanity	Based on available area	Approximately 3 LF per Lavatory/vanity
Closets – 2 per room	20 sq. ft.	20 sq. ft.	20 sq. ft.
Laundry Facilities – (minimum of 1 washer/12 persons and 1 dryer/8 persons)	Based in number of residents	Based in number of residents	21 sq. ft. per Appliance – Circulation and access not inclusive
As required	As required	As required	Dependent on local conditions
Mail Service- 1 box per student (inside building)	As required	As required	Dependent on local conditions/force protection
Circulation space	Dependent on layout	Dependent on layout	80 sq. ft. per room

11.2.4.3 Permanent Party Housing

Permanent Party Housings are full-service units that include all of the features and amenities associated with a traditional living space. Kitchen and bathroom facilities shall be included in each unit.

Refer to USAF Unaccompanied Housing Design Guide for optional spaces and for additional requirements.

Table 11.2.4.3.1 - Permanent Party Housing Programming Standards

Description Balcony	1+1 Dorm/Balcony	2 Bdrm Balcony	2 Bdrm Balcony	4 Bdrm/
Gross Building Area	34,088 sq. ft.	34,088 sq. ft.	34,088 sq. ft.	34,088 sq. ft.
Number of Baths	48	96	96	96
Number of Kitchen	48	48	32	24
Net Living Area per Person	118 sq.ft	129 sq.ft	139 sq.ft	132 sq.ft
Gross Module Area per Person	253 sq. ft.	284 sq. ft.	280 sq. ft.	305 sq. ft.

Table 11.2.4.3.2 - Permanent Party Housing Required Spaces (E1 – E4)

Functional Spaces Living area	Minimum Net	Maximum Net Living Area	Recommended Net Living Area
Living/Bedroom Area- 1 per person	129 sq.ft	183 sq.ft	129-150 sq.ft.
Private Bathroom- 1 per person (1 toilet, 1 shower/tub, 1 lavatory/vanity)	35 sq.ft	Based on available area	35 sq.ft
Private Walk-in Closet- (1 per living/bedroomarea)	20 sq.ft.	Based on available area	123-300 sq.ft
Shared Common Area- 4 persons share (1 kitchen, 1 share social Space per module, 1 laundry area per module,and utility space as require)	123 sq.ft.	Based on available area	123-300 sq.ft

Multi-Purpose Area- (at least 1 space per Dormitory-includes gameroom,fitness room, etc.)	270 sq.ft	Based on available area	2 sq.ft. per person plus 78 sq.ft. for administrative area
Vending Area- (1 per dorm recommended)		Based on available area	80 sq.ft.
Mail Service 1 box per person (centrally located)	As required	As required	Dependent on local conditions/force protection requirements
Supply Storage Room	100 sq.ft. per dormitory	Based on available area	100 sq.ft per dormitory

11.2.4.3.3 Non-commissioned Officer (NCO) and Senior Non-commissioned Officers (SNCO)

The area and occupancy requirements listed in the following tables are construction standards for permanent party enlisted Unaccompanied Housing E5 – E9 and officer grades.

Refer to USAF Unaccompanied Housing Design Guide for optional spaces and for additional requirements.

Table 11.2.4.3.3.1 - NCO/SNCO Housing Programming Standards (E5-E6)

Grade	E5 – E6
Minimum Net Living Area per Person	118 sq. ft.
Recommended Net Living Area per Person	330 sq. ft.
Maximum Gross Building Area per Person	355 sq. ft.
Number of Persons per Module	1
Kitchen Configuration	Private (shared kitchen optional)
Dormitory Configuration	Central corridor, Breezeway, Balcony

Table 11.2.4.3.3.2 - NCO/SNCO Housing Programming Standards (E7-E9)

Grade	E7 – E9
Minimum Net Living Area per Person	236 sq. ft.
Recommended Net Living Area per Person	460 sq. ft.
Maximum Gross Building Area per Person	710 sq. ft.
Number of Persons per Module	1
Kitchen Configuration	Private
Dormitory Configuration	Central corridor, Breezeway, Balcony

Table 11.2.4.3.3.3 - NCO / SNCO Required Spaces

Functional Spaces Living Area	E5-E6 (NCO) Recommended Net	E7-E9 (SNCO) Recommended Net Living Area
Living/ Bedroom Area – 1 per person	330 sq. ft.	460 sq. ft.
Private Bathroom– 1 per person (1 toilet, 1 shower/tub, 1 lavatory/vanity)	35 sq. ft.	35 sq. ft.
Private Walk-in Closet – 1 per person	20 sq. ft.	20 sq. ft.
Kitchen Area – (private kitchen per person recommended)	Private Kitchen (shared kitchen optional)	Private Kitchen
Laundry Area – (1 stacked washer/dryer per module) inclusive	10 sq.ft per appliance Actual footprint-21 Sq.ft. circulation	10 sq.ft per appliance Actual footprint-21 Sq.ft. circulation inclusive

11.2.4.3.4 Dorms-4-Airmen

Dorms-4-Airmen are 4-bedroom modules that meet the Air Force gross building area goals. Other small, shared modules called 1+1 units are comprised of two small private spaces intended for two people sharing kitchen and bath facilities. Other configurations include traditional 2 and 3-bedroom modules. A critical aspect of mixing module types within a single dormitory facility is the ability to provide structural rhythm, regardless of overall module type or size, to maintain efficiencies and to be cost effective. The following tables outline general layouts, configurations, and requirements.

Table 11.2.4.3.4.1 - Dorms-4-Airmen Housing Programming Standards (E1-E4)

Grade	E1 – E4
Minimum Net Living Area Per Person	129 sq. ft.
Recommended Net Living Area per Person	129 – 150 sq. ft.
Maximum Net Living Area per Person	183 sq. ft.
Maximum Number of Persons per Module	4
Kitchen Configuration	Semi-private (shared by 4)
Dormitory Configuration	Central corridor, Breezeway, Balcony

11.2.5 Exterior Unaccompanied Housing Standards

11.2.5.1 Doors

Dead bolts shall be provided on all private room entrance doors. Consider sound-insulated doors with a peep-hole for viewing visitors. Exterior doors shall be heavy-gauge, dark bronze anodized aluminum. Privacy and security shall be provided to all dormitory buildings by way of locking all entrance doors and giving access to residents only. Security alarms shall be provided on all building entrances as applicable.

Refer to Section 4.5 Anti-Terrorism/Force Protection, and Section 5 – Exterior Architectural Standards, for additional requirements.

11.2.5.2 Windows

All living and interior social areas must have operable windows to provide natural ventilation. Windows serving residential modules must be operable and sized for emergency egress. Light-duty residential grade windows are not acceptable. Select insulated, Low E, double-paned, tight-fitting, commercial-grade windows for increased thermal performance and ultraviolet retardation. Windows shall be dark bronze aluminum with heavy-duty insect screens as necessary.

Refer to Section 4.5 Anti-Terrorism/Force Protection, and Section 5 – Exterior Architectural Standards, for additional requirements.

11.2.5.3 Typhoon Shutters

Aluminum accordion typhoon shutters shall be provided on glazed openings of housing units, such as windows and sliding patio doors. The color of typhoon shutters shall be as required in Section 7 – Base Color Standard. For more information on typhoon shutters refer to Section 5 – Exterior Architectural Standards.

11.2.5.4 Roofing

Sloped roofs are preferred on all Unaccompanied Housing facilities to impart an image consistent with residential design and, more importantly, ensure positive drainage.

Refer to Section 5 – Exterior Architectural Standards for more information on roofing standards and preferences.

11.2.5.5 Exterior Finishes and Wall Systems

Traditional building systems with low maintenance, highly durable finishes are preferred for all dormitory buildings. Wall systems and finishes must comply with compatibility standards and force protection requirements

Refer to Section 5 – Exterior Architectural Standards, 11.1.2 – Exterior Housing Standards, and the USAF Unaccompanied Housing Design Guide for additional information on exterior finishes and wall systems.

11.2.6 Interior Unaccompanied Housing Standards

11.2.6.1 Flooring

11.2.6.1.1 Kitchens

In units where kitchens are provided, specify twelve-inch (12”) by twelve-inches (12”) ceramic tile with epoxy grout and four-inch (4”) oil stained wood base, oak color.

11.2.6.1.2 Bathrooms

In units where bathrooms are provided, specify twelve-inch (12”) by twelve -inches (12”) ceramic tile, diagonally laid, with epoxy grout and six-inch (6”) high ceramic tile base.

11.2.6.1.3 Bedrooms, Closets, Commons Areas, Hallways

Provide thirty-eight (38) ounces per square yard, twenty-five percent (25%) recycled tan carpet with half-inch (1/2”) thick carpet cushion and four-inch (4”) oil stained wood base, oak color. Transitions between carpet and tile areas shall be provided with a rubber, brown transition strip.

11.2.6.2 Walls

11.2.6.2.1 Perimeter Walls

Provide furring around exterior perimeter walls using one and one-half-inch (1-1/2”) furring channels at sixteen-inches (16”) on center. Install vapor barrier as required. Provide rigid board insulation between the furring channels, and then install half-inch (1/2”) waterproof gypsum board. Provide a fine textured spray paint finish, “eggshell white”.

11.2.6.2.2 Interior Partitions

Interior partitions shall be constructed of minimum three and five-eighths-inch (3-5/8”) metal studs. In order to mitigate sound transmission concerns between spaces, provide foil-faced acoustical batt insulation between the studs and install half-inch (1/2”) gypsum board on each side of the partition, except provide tile backer board where ceramic tile is to be installed. The finish shall be a fine textured spray paint finish, “eggshell white”.

11.2.6.2.3 Bathroom Shower Surrounds

Bathroom showers shall be provided with half-inch (1/2”) tile backer board and twelve -inch (12”) by twelve -inches (12”) full height ceramic tile wainscot with epoxy grout. Floor tile shall be two- inch (2”) by two-inches (2”) mosaic floor tile, diagonally laid.

11.2.6.3 Doors

Interior doors shall be solid flush wood doors; seven (7) ply with oil stained stain finish, oak color. Hollow core doors will not be allowed. All interior doors are side-hinged type, except for bedroom closet doors, which may be sliding doors. Door hinges shall be stainless steel. Doorknobs and trim shall be gold finish color.

11.2.6.4 Window Treatment

11.2.6.4.1 Horizontal Window Blinds

Horizontal window blinds (Venetian blinds) shall be provided on all windows. Horizontal window blinds shall be FS AA-V00200, Type II, one-inch (1") slats with matching valance. Provide lengths and widths as required for installation between window jambs. Plastic or vinyl slats are preferred for Type I Venetian blinds. Braided polyester or synthetic fiber chords, ends heat-fused, terminated with a plastic tassel or continuous.

11.2.6.5 Ceilings

Ceiling shall be constructed of minimum one and one-half-inch (1-½") furring channels with half-inch (1/2") water-resistant gypsum board. Provide ceilings with rough textured acoustical finish, painted white.

11.2.6.6 Cabinets and Countertops

Micro-density fiberboard (MDF) and solid wood combination of marine plywood is preferred for cabinets. Particleboard will not be allowed. Provide cabinets, cabinet doors, and cabinet shelves with oak color, oil stain.

Countertops shall be post-formed plastic laminate, almond color with a four-inch (4") high backsplash/side splash as required. However, solid plastic, scratch-resistant countertops are preferred, and should be specified as the project budget allows, or as a bid add-alternate.

11.2.6.7 Bedroom Closet Shelving

Bedroom closet shelving shall be plywood with solid wood edge. Shelving supports shall be metal, chrome plated finish, with integral hangar rod hooks and sufficient plywood nailer backer boards in studs for support anchorage. Plastic shelving supports are not acceptable. Hangar rod shall be solid oak, oil stained. Provide shelving with additional, intermediate (center) support.

11.2.6.8 Plumbing Fixtures and Accessories

- Water closet (commode) shall be floor mounted, flush tank white porcelain with elongated bowl and plastic cover.
- Chrome towel bar shall be mounted above water closet.
- Lavatory counter tops shall be solid surface material. Provide sinks of white porcelain, under counter mounted, oval shaped. Sinks shall have chrome finish, hot and cold mixing valve faucet.
- Shower fixtures shall be chrome, with combination hot and cold mixing valve.
- Tempered safety glass with aluminum frame shower door system in lieu of curtain rod.
- Toilet paper holder shall be chrome.
- Mirror shall be wall-mounted above vanity with a stainless steel frame.

11.2.6.9 Lighting, Smoke Detectors, and Circuit Panels and Circuit Interrupters

11.2.6.9.1 Lighting

11.2.6.9.1.1 Kitchen Lighting

In units where kitchens are provided, specify two-foot (2'-0") by two-foot (2'-0") surface mounted, energy-efficient fluorescent light fixture with oil stained wood frame, oak color.

11.2.6.9.1.2 Bathroom Lighting

Provide bathroom moisture and humidity resistant, flush, ceiling mounted light fixtures.

11.2.6.9.2 Smoke Detectors

Provide smoke detectors with battery backup in each unit. All detectors shall be interconnected together such that when one activates all of the detectors activate.

11.2.6.10 Circuit Interrupters

Bedroom circuits shall be provided with Arc Fault Circuit Interrupters (AFCI's). Bathroom and, where applicable, kitchen circuits shall be provided with Ground Fault Circuit Interrupters (GFCI's).

11.2.6.11 Television Cable and Telephone

Housing units are to be provided with television (TV) cable and telephone wire, including conduit and receptacle connections.

11.3 Chief Master Sergeant (CMSgt) Prestige Housing

The USAF Family Housing Guide, August 2004, Section 4-3.5 provides authority, policy, and guidance for installation commanders to establish requirements, to define local installation standards that fit within Air Force criteria, and to develop a program to upgrade existing or to create new Prestige Housing suitable for Air Force Chiefs.

These long-range design and construction standards are essential to the future development of quality Prestige Housing for all E-9s. Requirements should be developed through the Installation Housing Community Plan and executed with the Military Family Housing (MFH) MILCON and Privatization investment program.

Prestige housing standards are intended for level E9 Officer accommodations and may be detached single-family or attached multi-family units. Units may include three (3) or four (4) bedrooms with two (2) baths, and up to three (3) carport or garage spaces per unit. Parking requirements may be limited by site conditions and cost constraints. However, provide a minimum of two (2) designated spaces per unit. All units shall be provided with a central air conditioning unit controlled from within the main living space.

Tables published in the USAF Family Housing Guide, August 2004 define minimum functional and square footage requirements for this housing type. In some cases, it may be desirable to exceed the minimum, particularly for such amenities as usable space or improvements to the quality of equipment, materials, and finishes.

For new construction, units designated for Command Chiefs may be increased by an additional ten (10) percent of the largest sized prestige housing facility at the installation, not to exceed the programming “Benchmark” size for new construction specified in the USAF Family Housing Guide, August 2004. For projects focused on renovating and improving existing facilities, the designs shall reflect best efforts to accommodate all of the programmatic spaces outlined and the “Target” square footages described in the USAF Family Housing Guide.

11.4 General Officer Quarters (GOQ) Housing

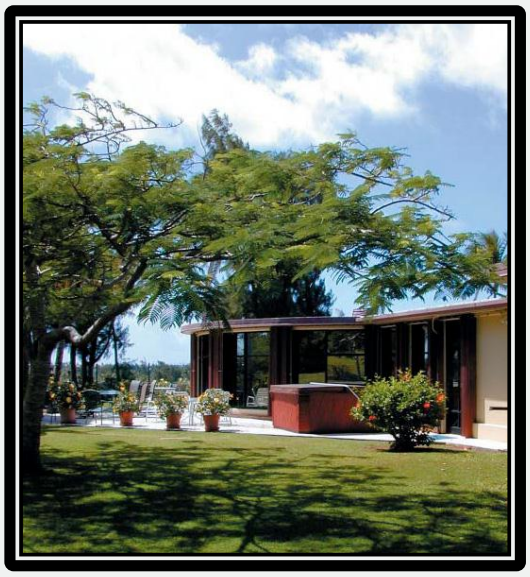
Photos and a floor plan of the existing, free-standing, one-story, four (4)-bedroom, three (3) full and one (1) half-bathroom General Officer Quarters facility at 1000 Rota Drive, AAFB have been included to document existing conditions. This facility was built in 1960, and features a Pacific Island Colonial architectural style consistent with other Military Family Housing (MFH) on Andersen AFB. However, these photos may not necessarily be representative examples of the Andersen AFB General Officer Quarters (GOQ) Standards, or of the other more updated GOQ policies and standards. Refer to the standards and policies mentioned herein for updated GOQ preferences and requirements.

All aspects of General Officer's Quarters occupancy and upkeep are contained in the Air Force GOQ three-volume "boxed set" guide, Volume I: Air Force GOQ Resident's Handbook, latest edition. The handbook covers furnishings, home and grounds maintenance, minor alterations, and cost reporting and allowances for such expenses, and is a supplement to Air Force Instruction (AFI) 32-6003, General Officer Quarters. Additionally, the Andersen AFB GOQ Standards are provided as an integral part of the Air Force GOQ three-volume "boxed set" guide.

The standards and policies provided in the USAF Family Housing Guide, August 2004 are also applicable to all GOQ projects and supplement the Air Force GOQ Standards for Planning, Programming, and Design. For specific GOQ standards and policies, refer to the Air Force GOQ three-volume "boxed set" guide, Volume II: Air Force GOQ Standards for Programming, Design and Construction, latest edition.

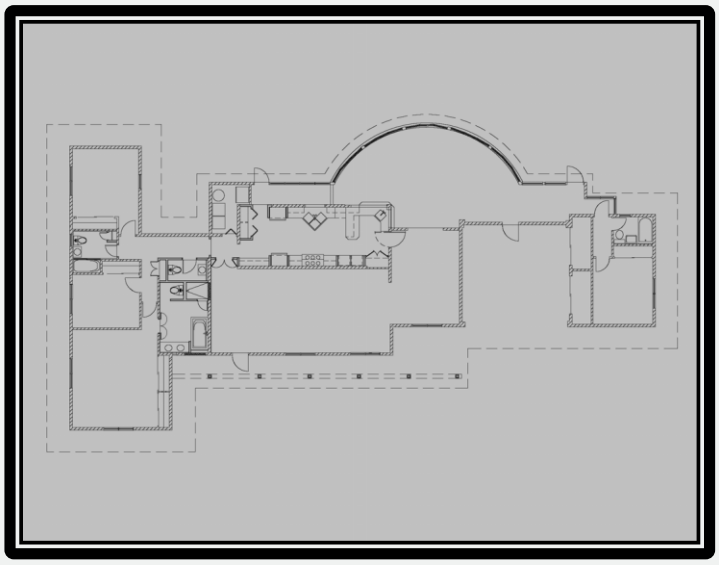
1000 Rota Drive GOQ

1000 Rota Drive GOQ



1000 Rota Drive GOQ

High quality, durable materials, and finishes that minimize recurring maintenance are highly preferred. The GOQ interior design policy is intended to provide a flexible, neutral background fit to accommodate a variety of individual decorative preferences. The Air Force Family Housing Guide and GOQ Standards for Programming, Design & Construction describe allowable interior finishes. Any deviation from those standards requires written permission from the Base Civil Engineer.



1000 Rota Drive GOQ Floor Plan

For GOQ finish materials, refer to the USAF Family Housing Guide, August 2004, Table 4-39: GOQ Authorized Allowable Finish Materials, and to the Andersen AFB General Officer Quarters (GOQ) Standards, Appendix.

11.5 Distinguished Visitor (DV) Housing

Distinguished Visitors (DV) are guests of Andersen Air Force Base who should be provided with the finest accommodations available. DV units are available in one (1) and two (2) bedroom types. Two bedroom types provide a private office space and a small den in addition to a master suite and second bedroom. In the one bedroom model, the master's executive suite includes a small living space in lieu of the additional bedroom. A private office and small den are also included in these units. Refer to the adjacent typical floor plans for DV housing units.

Refer to Section 11.1 – Accompanied Housing Standards (Family Housing), for additional Distinguished Visitor (DV) requirements not listed herein.

Hafa Adai DV House

Santa Rosa DV House

Hafa Adai DV House Floor Plan

Santa Rosa DV House Floor Plan

11.5.1 Site and Landscape Requirements

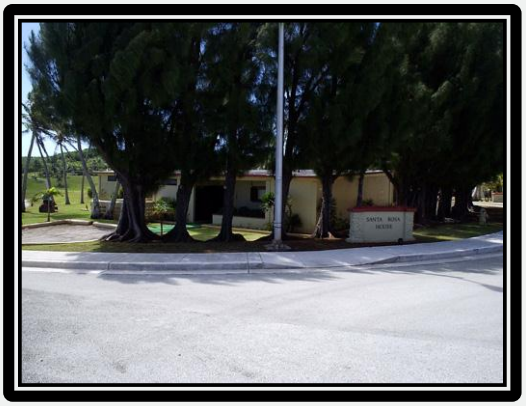
In addition to the requirements listed in 11.1.1 – Site and Landscape Requirements for Accompanied Housing, avoid locating unattractive site features within sight lines early in the planning phase of DV units. When such instances are unavoidable, mask the feature from view with the visual screens and/or vegetation described above.

Additional vegetation should be used for its aesthetic characteristics in the areas surrounding a DV unit. Consider shade and sight lines when determining vegetation placement. Flowering trees and bushes shall be placed near unit entries.

11.5.1.1 Sidewalk and Patio

Outdoor, shaded patio spaces shall be provided for both one and two bedroom DV units. The areas shall be large enough for two outdoor-style chairs and a small table to fit comfortably.

Hafa Adai DV House



Santa Rosa DV House

11.5.2 Exterior Housing Standards

11.5.2.1 Sliding Doors

For DV units, provide sliding doors off of the family room. Sliding doors should access a small patio with adjacent open space.

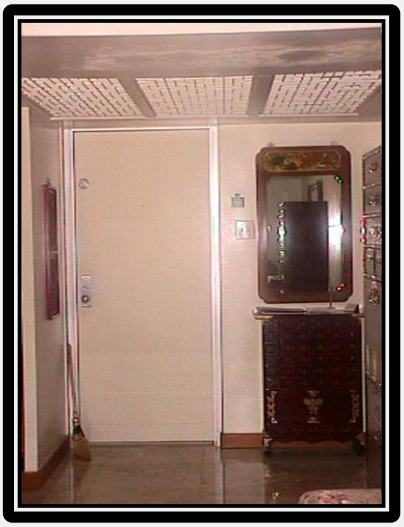
11.5.2.2 Parking

Carports are not required, but are preferred, for DV housing units. At a minimum, two (2) parking spaces shall be provided for each DV unit. Include a walkway lined with decorative vegetation from parking areas to unit entries.

11.5.3 Interior Housing Standards

11.5.3.1 Flooring

Entry foyer with twelve-inch (12”) by twelve-inches (12”) marble tile, and four-inch (4”) oil stained wood base, oak color.



DV Entry Foyer

11.5.3.2 Walls

11.5.3.2.1 Interior Partitions

Provide permeable, washable fabric wall coverings for interior partitions of DV units. Coordinate material, color, and pattern choices with the Base Civil Engineer.

11.5.3.3 Cabinets and Countertops

Refer to the adjacent photo for an illustration of a typical DV housing unit kitchen cabinets, countertop, and appliances configuration.

DV Kitchen

11.5.3.4 Plumbing Fixtures and Accessories

- Water closet (commode) shall be floor mounted, flush tank white porcelain with elongated bowl and plastic cover.
- Chrome towel bar shall be mounted above water closet.
- Bathtub shall be standard size, white porcelain enamel.
- Lavatory counter tops shall be solid surface material. Provide sinks of white porcelain, under counter mounted, oval shaped. Sinks shall have chrome finish, hot and cold mixing valve faucet.
- Shower fixtures shall be chrome, with combination hot and cold mixing valve.
- Shower shall be tempered safety glass with aluminum frame shower door system in lieu of curtain rod.
- Toilet paper holder shall be chrome.
- Mirror shall be full-length, wall-mounted with a stainless steel frame.
- Kitchen sink shall be standard double unit, stainless steel equipped with electric food disposer with switch above countertop, adjacent to sink

11.5.3.5 Appliances

In DV units, provide a separate utility room with washer/dryer, large sink, and laundry table. Refer to DV Kitchen photo in Part 11.5.3.3 above for illustration of DV appliances.

11.5.3.6 Furnishings

Furniture for DV units should be selected for comfort and to promote a relaxing interior environment. Select furniture that compliments the style of the room, and that is compatible with other furniture and accessories selected.

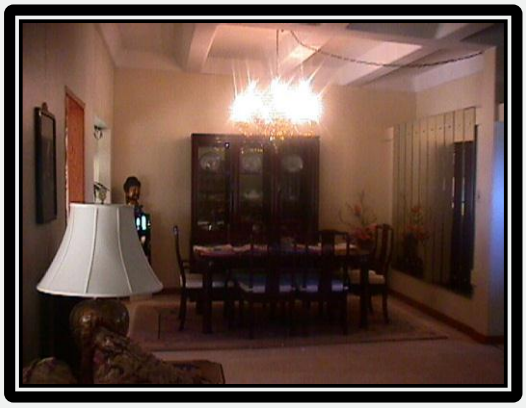
Examples of DV Furniture includes the following:

- Dining Room: dining table, full-length wall-mounted decorative mirrors, china cabinet
- Living Room: sofa, chairs, curio cabinet, coffee tables, end tables, and table lamps
- Family Room: sofa, chairs, coffee tables, end tables, and table lamps

DV Living Room Furnishings

DV Living Room Furnishings

DV Living Room Curio Cabinets



DV Dining Room Furnishings

11.5.4 Lighting, Smoke Detectors, and Circuit Panels and Circuit Interrupters

For additional requirements, refer to Section 11.1.4 – Lighting, Smoke Detectors, and Circuit Panels and Circuit Interrupters.

11.5.4.1 Lighting

Provide additional table and floor lamps as appropriate for DV housing units. A chandelier shall be provided, ceiling-mounted, above the dining table.

11.5.5 Television Cable and Telephone

All television and telephone services shall be provided for DV units in advance of guest arrival.

11.6 Temporary Lodging Facilities (TLF)

Refer to the USAF Temporary Lodging Facilities Design Guide for additional requirements and information on all topics outlined below.

Temporary Lodging Facility (TLF)

11.6.1 Site Development

A primary consideration in developing a successful TLF site is the impression the facility will have on visitors and guests. Consistent with all facilities at Andersen Air Force Base, a TLF complex shall present a professional image and encourage the pride of ownership. Provide for easy access to outdoor public facilities and circulation paths to encourage participation in a greater sense of community. Lend consideration to opportunities for preserving space for potential expansion early in the planning phase so that future facilities are appropriately related to existing structure.

Refer to Section 4 – Site and Landscape Development for more information.

11.6.1.1 Circulation

11.6.1.1.1 Vehicle Circulation

Minimize construction of new roadways for TLF complexes. For the convenience of guests, visitors, and employees, TLF entries shall occur on arterial streets. Where possible divide entry and exit ways with a vegetated median. Consider emergency vehicle access and force protection requirements, particularly when locating buildings on a site with existing vehicle access.

Review standoff distance requirements as described in Section 4.5 – Anti-Terrorism/Force Protection for addressing force protection concerns.

11.6.1.1.2 Parking

Provide parking with the convenience of guests in mind. Private vehicle parking space volume shall be determined by the Base Civil Engineer according to land availability. Minimize the overall paved area and accommodate for storm-water drainage in the site plan. Designated motorcycle parking shall also be included.

Refer to Section 4 – Site and Landscape Development for paving requirements, and review standoff distance requirements as described in Section 4.5 – Anti-Terrorism/Force Protection for addressing force protection concerns.

11.6.1.1.3 Pedestrian Circulation

A well-planned pedestrian circulation system contributes to the convenience, comfort, and enjoyment of TLF visitors and guests. Walks must be safe, attractive, and provide appropriate access to site amenities and recreational areas. Provide curb cuts for disabled persons and for the convenience of employees pushing maintenance carts where appropriate. Refer to Section 4 – Site and Landscape Development for paving requirements.

11.6.2 Site Amenities and Landscape Architecture

Refer to Section 4 – Site and Landscape Development for considerations on developing a pedestrian-friendly, community-oriented dormitory campus.

11.6.2.1 Visual Screening

Concrete masonry unit screen walls, as described in Section 4 – Site and Landscape Development, shall be used to mask unattractive site features such as trash dumpsters, pad-mounted electrical transformers, parking areas, and mechanical equipment. Maintain a roughly three-foot perimeter around all screened mechanical units for maintenance access and repair. Vegetation can be considered as a screening device.

Refer to Section 4 – Site and Landscape Development for a complete list of acceptable vegetation.

11.6.3 Architectural Design Considerations

11.6.3.1 Mass and Scale

Be consistent in using mass and scale to achieve comfortable spaces that are reminiscent of traditional residential units. Become familiar with the concepts as discussed in Part 11.4.3.1 –

Mass and Scale for Unaccompanied Housing Facilities, and apply these concepts to Temporary Lodging Facilities accordingly.

Andersen Air Force Base policy requires that TLF buildings do not exceed three floors due to an inconvenience to residents without power following typhoons.

11.6.3.2 Building and Site Relationship

Developing a relationship between the site and the architectural design of Temporary Lodging Facilities is critical to the success of the project. Relate interior and exterior circulation patterns. Unit entrances should be carefully coordinated with sidewalk, site amenity, roadway, and parking configurations. Be sure to incorporate the required standoff distances as outlined in Section 4.5 – Anti-Terrorism/Force Protection.

The architectural character of Temporary Lodging Facilities should recognize and establish a relationship with structures surrounding the site. The design must relate not only to the conditions of the immediate site vicinity but also the overall character of Andersen Air Force Base.

Refer to Section 5 – Exterior Architectural Standards for more information.

11.6.3.3 Noise Considerations

Include in all designs, acoustical construction measures to prevent sound transmission between units. Consider the proximity of adjacent Base functions such as airfield runways and firing ranges.

11.6.4 Exterior Temporary Lodging Facility Housing Standards

11.6.4.1 Doors

Exterior doors shall be self-closing, heavy-gauge, dark bronze anodized aluminum. Consider sound-insulated doors with a peephole for viewing visitors. Provide permanently lockable doorknobs, deadbolts, and electronic swipe card locksets. Include alarms on all remote exit doors. All entrance doors shall meet accessibility requirements.

Refer to Section 4.5 Anti-Terrorism/Force Protection, and Section 5 – Exterior Architectural Standards, for additional requirements.

11.6.4.2 Windows

All TLF units must provide operable windows for natural ventilation and guest comfort. Windows must be operable and sized for emergency egress. Windows shall be dark bronze aluminum with heavy-duty insect screens as necessary. Select for insulated, low E, double-paned, tight-fitting, commercial-grade windows for increased thermal performance and ultraviolet retardation.

Refer to Section 4.5 Anti-Terrorism/Force Protection, and Section 5 – Exterior Architectural Standards, for additional requirements.

11.6.4.3 Typhoon Shutters

Aluminum accordion typhoon shutters shall be provided on glazed openings of housing units, such as windows and sliding patio doors. The color of typhoon shutters shall be as required in Section 7 – Base Color Standard. For more information on typhoon shutters refer to Section 5 – Exterior Architectural Standards.

11.6.4.4 Roofing

Sloped roofs are preferred on all Temporary Lodging Facilities for their residential connotations and to ensure positive drainage. Coordinate with installation compatibility guidelines to determine acceptable roofing types and materials.

Refer to Section 5 – Exterior Architectural Standards for more information on roofing standards and preferences.

11.6.4.5 Exterior Finishes and Wall Systems

Traditional building systems with low maintenance, highly durable finishes are preferred for all dormitory buildings. Wall systems and finishes must comply with compatibility standards and force protection requirements

Refer to Section 5 – Exterior Housing Standards, and the USAF Unaccompanied Housing Design Guide for additional information on exterior finishes and wall systems.

11.6.5 Interior Temporary Lodging Facilities Standards

11.6.5.1 Flooring

11.6.5.1.1 Kitchens

Full kitchens are an integral part of TLF units and shall include dining space for five persons. Provide with twelve-inch (12”) by twelve-inches (12”) ceramic tile with epoxy grout and four-inch (4”) oil stained wood base, oak color.

11.6.5.1.2 Bathrooms

Provide bathrooms with twelve-inch (12”) by twelve-inches (12”) ceramic tile with epoxy grout and twelve-inch (12”) high ceramic tile base.

11.6.5.1.3 Bedrooms, Closets, Commons Areas, Hallways

Provide thirty-eight (38) ounces per square yard, twenty-five percent (25%) recycled tan carpet with half-inch (1/2”) thick carpet cushion and four-inch (4”) oil stained wood base, oak color. Transitions between carpet and tile areas shall be provided with a rubber, brown transition strip.

11.6.5.2 Walls

11.6.5.2.1 Perimeter Walls

Provide furring around exterior perimeter walls using one and one-half-inch (1-1/2”) furring channels at sixteen-inches (16”) on center. Install vapor barrier as required. Provide rigid board insulation between the furring channels, and then install half-inch (1/2”) waterproof gypsum board. Provide a fine textured spray paint finish, “eggshell white”.

11.6.5.2.2 Interior Partitions

Interior partitions shall be constructed of minimum three and five-eighths-inch (3-5/8") metal studs. In order to mitigate sound transmission concerns between spaces, provide foil-faced acoustical batt insulation between the studs and install half-inch (1/2") gypsum board on each side of the partition, except provide tile backer board where ceramic tile is to be installed. The finish shall be a fine textured spray paint finish, "eggshell white".

11.6.5.2.3 Bathroom Shower Surrounds

Bathroom showers shall be provided with half-inch (1/2") tile backer board and twelve-inch (12") by twelve-inches (12") full height ceramic tile wainscot with epoxy grout.

11.6.5.3 Doors

Interior doors shall be solid flush wood doors; seven (7) ply with oil stained stain finish, oak color. Hollow core doors will not be allowed. All interior doors are side-hinged type, except for bedroom closet doors, which are sliding doors. Door hinges shall be stainless steel. Doorknobs and trim shall be gold finish color.

11.6.5.4 Window Treatment

11.6.5.4.1 Horizontal Window Blinds

Horizontal window blinds (Venetian blinds) shall be provided on all windows. Horizontal window blinds shall be FS AA-V00200, Type II, one-inch (1") slats with matching valance. Provide lengths and widths as required for installation between window jambs. Plastic or vinyl slats are preferred for Type I Venetian blinds. Braided polyester or synthetic fiber chords, ends heat-fused, terminated with a plastic tassel or continuous.

11.6.5.4.2 Vertical Louver Blinds

Provide exterior sliding glass doors with vertical blinds, having three and one-half-inch (3-1/2") white vinyl slats, manufactured from extruded white .032" PVC. Each individual slat shall be able to rotate one hundred and eighty degrees. Vertical blinds should open fully and close tightly. A chord tensioner shall keep cord safely taut. Provide matching valance and valance end panels.

11.6.5.5 Ceilings

Ceiling shall be constructed of minimum one and one-half-inch (1-½") furring channels with half-inch (1/2") water resistant gypsum board. Provide ceilings with rough textured acoustical finish, painted white.

11.6.5.6 Cabinets and Countertops

Micro-density fiberboard (MDF) and solid wood combination of marine plywood is preferred for kitchen, bathroom vanity, and nook cabinets. Particleboard will not be allowed. Provide cabinets, cabinet doors, and cabinet shelves with oak color, oil stain. At kitchen cabinets, provide underside of upper cabinets with built-in, fluorescent task lighting.

Countertops shall be post-formed plastic laminate, almond color with a four-inch (4") high backsplash/side splash as required. However, solid plastic, scratch-resistant countertops are preferred, and should be specified as the project budget allows, or as a bid add-alternate.

11.6.5.7 Shelving

11.6.5.7.1 Bedroom Closet Shelving

Bedroom closet shelving shall be plywood with solid wood edge. Shelving supports shall be metal, chrome plated finish, with integral hangar rod hooks and sufficient plywood nailer backer boards in studs for support anchorage. Plastic shelving supports are not acceptable. Hangar rod shall be solid oak, oil stained. Provide shelving with additional, intermediate (center) support.

11.6.5.8 Plumbing Fixtures and Accessories

- Water closet (commode) shall be floor mounted, flush tank white porcelain with elongated bowl and plastic cover.
- Chrome towel bar shall be mounted above water closet.
- Bathtub shall be standard size, white porcelain enamel.
- Lavatory counter tops shall be solid surface material. Provide sinks of white porcelain, under counter mounted, oval shaped. Sinks shall have chrome finish, hot and cold mixing valve faucet.
- Shower fixtures shall be chrome, with combination hot and cold mixing valve.
- Shower rod shall be stainless steel.
- Toilet paper holder shall be chrome.
- Mirror shall be full-length, wall-mounted with a stainless steel frame.
- Kitchen sink shall be standard double unit, stainless steel equipped with electric food disposer with switch above countertop, adjacent to sink.

11.6.5.9 Appliances

Each unit shall be provided with the following electrical appliances, white in color:

- Electric range with oven cook-top
- Dishwasher
- Side-by-side Refrigerator
- Washer and Dryer

11.6.5.10 Lighting, Smoke Detectors, and Circuit Panels and Circuit Interrupters

11.6.5.10.1 Lighting

11.6.5.10.1.1 Kitchen Lighting

Kitchen units shall have recessed can lighting with a dimmer switch as the primary lighting source. Do not rely on table lamps for room lighting. Provide one control in the kitchen unit and one control in the living space on a wall immediately adjacent to the kitchen entrance.

11.6.5.10.1.2 Bathroom Lighting

Provide bathroom moisture and humidity resistant, flush, ceiling mounted light fixtures.

11.6.5.10.2 Smoke Detectors

Provide smoke detectors in each bedroom and hallway. Two smoke detectors may be necessary in long hallways, as required. Smoke detectors shall incorporate battery backup. All detectors shall be interconnected together such that when one activates all of the detectors activate.

11.6.5.10.3 Circuit Panel and Circuit Interrupters

Bedroom circuits shall be provided with Arc Fault Circuit Interrupters (AFCI's). Bathroom and kitchen circuits shall be provided with Ground Fault Circuit Interrupters (GFCI's).

11.6.5.11 Television Cable and Telephone

Temporary Living Facility units are to be provided with a television (TV) and a telephone, including conduit and receptacle connections.

Conclusion

Appropriate architecture and landscape design creates an environment that promotes efficiency, excellence, pride, and a general sense of well-being for the Andersen Air Force Base community. As budgets continue to become constrained, it is critical that care be taken to ensure the success of infrastructure additions and improvements throughout the Base. Buildings and site improvement projects are investments and must be treated as such. Maintenance schedules must be well developed and closely adhered to as a means of protecting and maintaining the quality of our investment.

Andersen Air Force Base, Guam

12.0 Guide Update Procedure

This guide applies to base development projects, design and construction of new facilities, maintenance, renovation, and rehabilitation of existing facilities on the Andersen Air Force Base. This guide was established with direct input from the 36th Civil Engineer Squadron, based on recent experiences and preferences.

This guide is considered a "working document". Therefore, it will be reviewed annually to confirm its applicability. Changes in mission and regulations, or improvements in construction practices may prompt revisions to this guide. Enhancements and clarifications to the criteria established herein may also warrant further edits and modifications. Changes will be incorporated into this document in order for it to retain its relevance and usefulness. Since this guide is issued formally only once a year, changes that occur afterwards will be made by addenda. Addenda items will be compiled throughout the year and will be formally integrated into this guide prior to reissuing the guide for the following year. Contact the 36th Civil Engineer Squadron to obtain addendum items that have not yet been formally integrated into this guide.

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APPENDIX

Contractor Forms and Policies

A.1 Access Protocol

A. Contractor Base Pass Procedures
B. Request for Base Entry
C. Contractor Employees/Service Provider Access to Andersen Air Force Base
D. USAF Contractor/Subcontractor Access Affidavit Background Investigation Consent

Contractor Forms and Policies

A.2 Requests, Waivers, and Notices

A. Base Civil Engineer Work Clearance Request (AF Form103)
B. Sample Temporary Airfield Construction Waiver
C. Sample Free Zone Request Letter
D. Sample Notice to Airmen (NOTAM)

Contractor Forms and Policies

A.3 Andersen AFB Contractor Staging Yard Policy and Procedures

Contractor Forms and Policies

A.4 Landfill Authorizations Permit/Load Inspection Report:

Contractor Forms and Policies

A.5 Environmental Requirements for Contractors

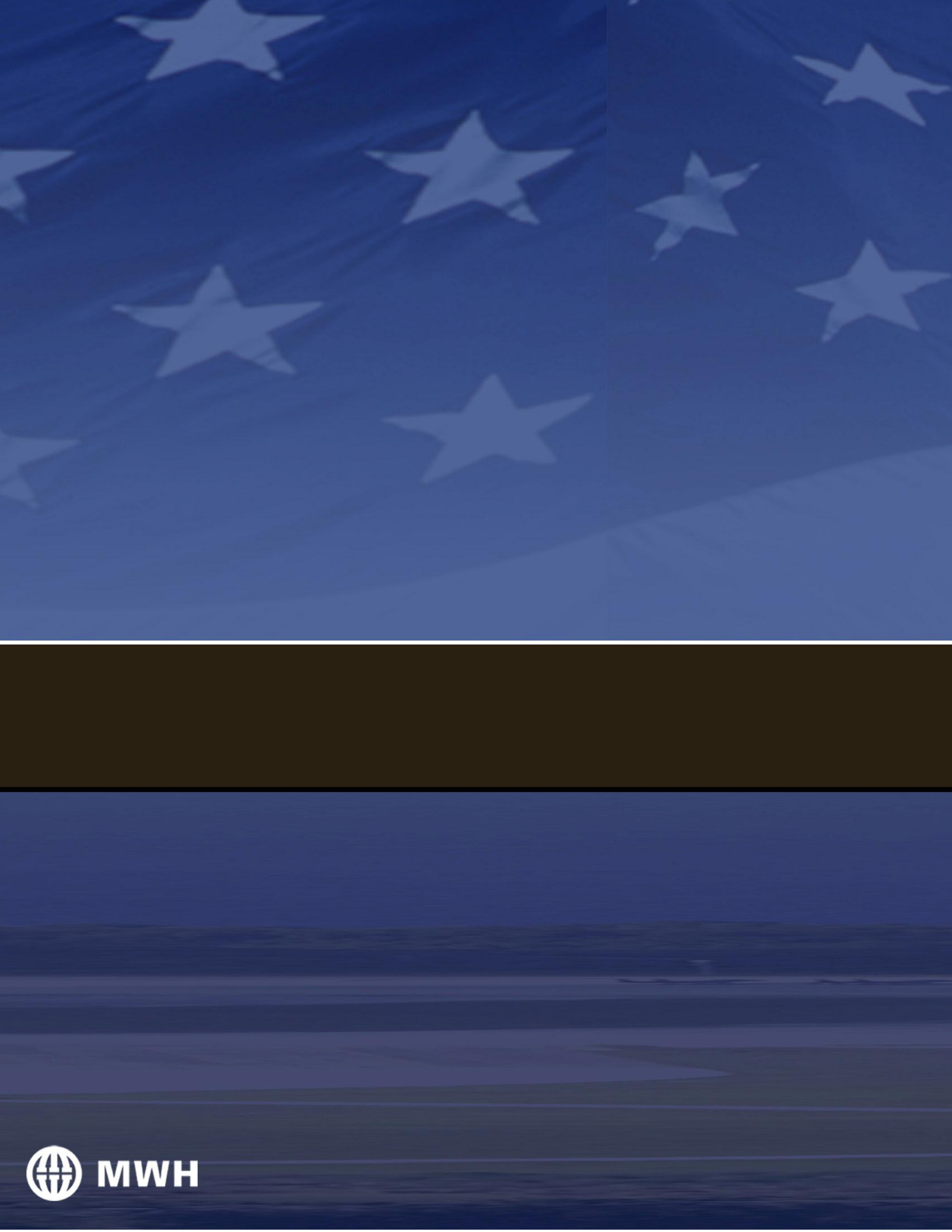
Contractor Forms and Policies

A.6 Sample Environmental Protection Plans (EPP)

Andersen "H" Frame Sign Detail

B.1 Removable/Retractable Signs


PREPARED TO PREVAIL


MWH