KUNSAN AIR BASE
INSTALLATION FACILITIES STANDARDS (IFS)


Installation Elements


Site Development


Facilities Exteriors


Facilities Interiors

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AIR FORCE INSTALLATION FACILITIES STANDARDS

2025

Kunsan Air Base IFS

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A. OVERVIEW

Comply with Air Force Corporate Standards for Overview:
http://afcfs.wbdg.org/index.html

This Installation Facilities Standards (IFS) document is part of the Air Force Corporate Facilities Standards (AFCFS) program to assist bases in implementing and maintaining facilities standards as appropriate for efficient operations within the respective climate region. IFS fully replaces, consolidates and simplifies existing facilities standards documents, such as the Architectural Compatibility Plan (ACP) or ACGs, FEPs, etc., and organizes information using the same structure, or Table of Contents, as the AFCFS website.

IFS reflects the AFCFS' concepts of "Facility Hierarchy" (categorizing facilities into group numbers) and "Facility Quality" (assigning an appropriate level of quality to each group number) and applies these principles at the base level. Applicable DoD and Air Force criteria such as UFCs, AFIs, Memoranda, and UFGSs (Guide Specs) are referenced and linked within IFS to ensure the document is always current.

Navigating within this IFS is efficient and straightforward. Please use the interactive Table of Contents to locate subject matter, and click on the title of a section to access it. From any page, click on the "Back to Table of Contents" footer to return. Content is organized into 4 major sections: Installation Elements, Site Development, Facilities Exteriors and Facilities Interiors.

This IFS document begins as a fill-in PDF form, which is fully editable, and becomes a "living document" that can be regularly updated by base-level personnel following a format that is consistent across the Air Force. While the format is standardized, IFS content is customized for base operations and the local climate to ensure mission success while emphasizing reduced maintenance and reduced initial costs, life-cycle costs, energy use, and water use.

1. Conformance to Air Force Corporate Facilities Standards (AFCFS) and Installation Facilities Standards (IFS) are required by Air Force Instruction (AFI) 32-1023 and Air Force Memorandum. Please refer to the AFCFS website for links to documentation on current policy.

2. Requests to deviate from any installation facilities standards, that are Unified Facilities Criteria (UFC) requirements, will follow the process outlined in the AFCFS for UFC waivers and exemptions.

3. All Air Force designs including Non-Appropriated Funds (NAF) facilities are required to conform to AFCFS per Air Force Instruction (AFI) 32-1023; AFCFS will be used to formulate Installation Facilities Standards (IFS) per the AFI. The Base Civil Engineer (BCE) maintains and implements the IFS.

4. Please refer to the AFCFS website as a portal to reference materials and requirements documents for design and construction projects (via links). Specific references to current DoD memoranda and Air Force criteria are updated periodically to provide the most current guidance and requirements. Programming, design and contract documents should list "current edition" for all reference and requirements documents. The documents in force at the date of execution of the design and/or construction contract will be the governing version.

5. *Advanced Modeling Requirements:*
   For all Air Force projects requiring advanced modeling, to include 3D visualization, Building Information Modeling (BIM), facility data, quantity take-off, geospatial, etc., follow the Army standards. Refer to USACE Minimum Model Matrix (M3) and Project Execution Plan (PxP) which outline required model uses. Refer to CAD BIM Technology Center (Contract Requirements) *for more information on M3 and PxP.*

6. Joint Bases will implement IFS under their Joint-Base designation with volume numbers for individual installations following the IFS Development Tool template. For example, for Joint Base Langley-Eustis, provide: Vol. 1 Langley AFB and Vol. 2 Fort Eustis.

7. References and Supplementary Documents listed in Appendix G are included in these Installation Facilities Standards by reference and are fully part of this document. Please refer to Appendix G for a listing of documents, which are available via hyperlink for viewing and downloading.

8. Host Nation Facilities: Use the International Building Code(r) (IBC) for planning, design and construction of all facilities built for Host Nation personnel use outside of the United States and its territories and possessions. Use the IBC in conjunction with Status of Forces agreements (SOFA), bilateral agreements or other Host Nation (HN) agreements.
   UFC 1-200-01 DoD Building Code: https://www.wbdg.org/dod/ufc/ufc-1-200-01

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◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Group 2 Housing with Base-wide Standard Materials and Color



Group 3 Materials and Color



Group 1 Medical Facility



Group 4 Residential Scale

A01. FACILITY HIERARCHY

Comply with AF Corporate Standards for Facility Hierarchy (and subsections):
http://afcfs.wbdg.org/facility-hierarchy/index.html

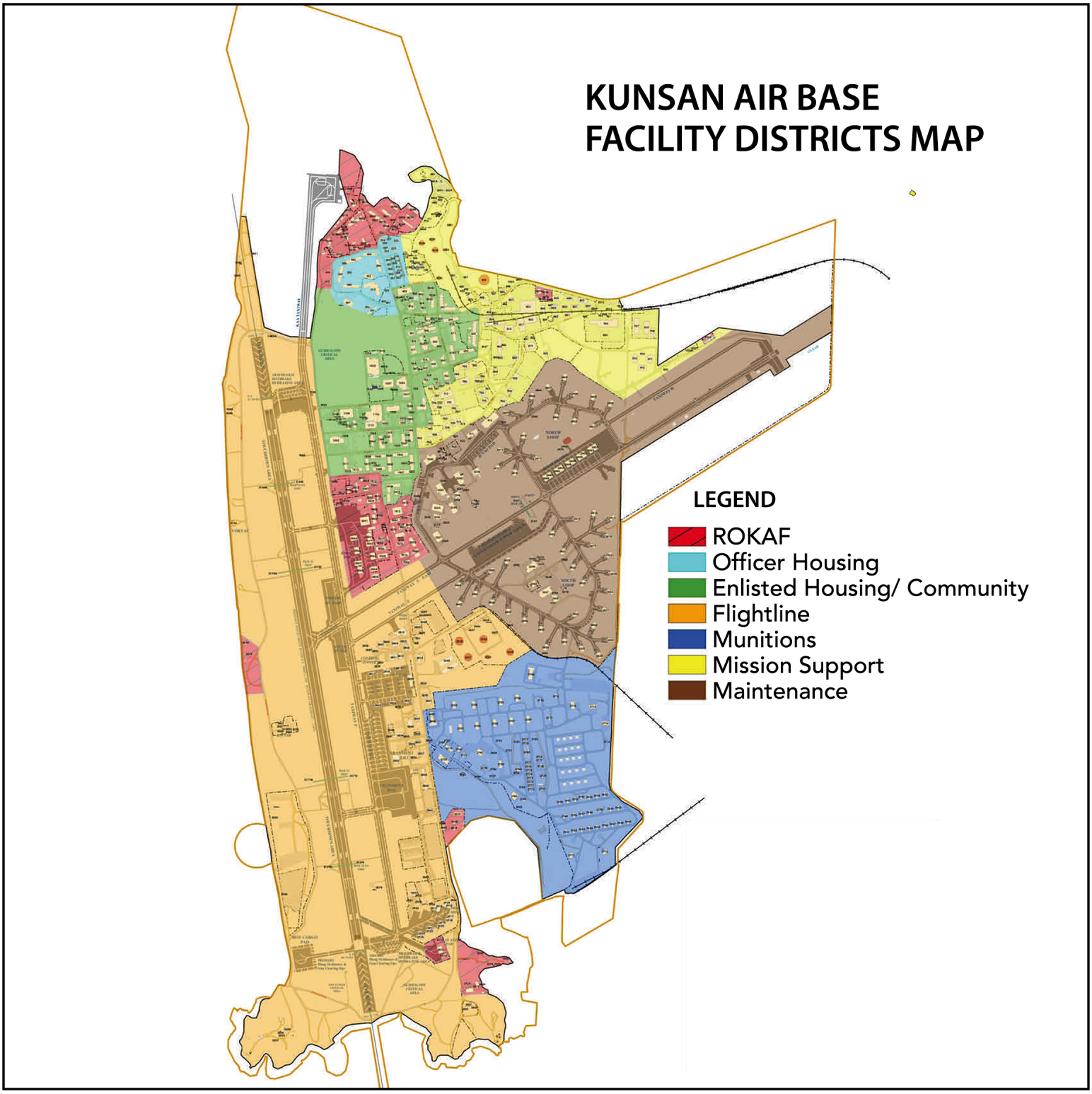
A02. FACILITY QUALITY

Comply with AF Corporate Standards for Facility Quality (and subsections):
http://afcfs.wbdg.org/facility-quality/index.html

A03. FACILITY DISTRICTS

Comply with AF Corporate Standards for Facility Districts (and subsections):
http://afcfs.wbdg.org/facility-districts/index.html

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Note: *Apply the base-wide standards in this IFS for Installation Elements, Site Development, Facilities Exteriors and Facilities Interiors (products, materials, color, etc.). Following application of the base-wide standards, refer to the Appendix and apply any additional requirements specifically related to the Facility District.*

B. INSTALLATION ELEMENTS

Comply with Air Force Corporate Standards for Installation Elements:
http://afcfs.wbdg.org/installation-elements/index.html

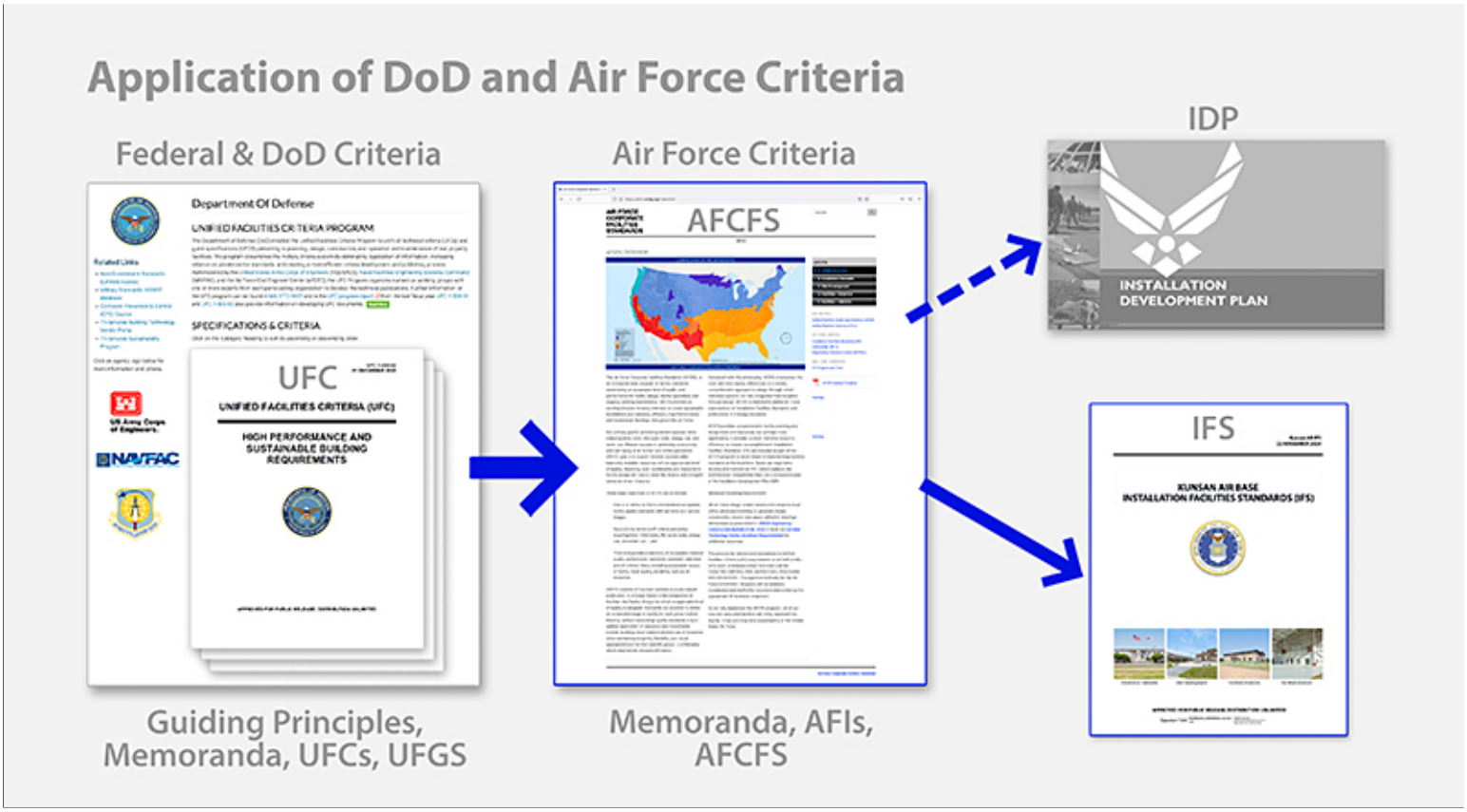
B01. COMPREHENSIVE PLANNING

Comply with Air Force Corporate Standards for Comprehensive Planning:
http://afcfs.wbdg.org/installation-elements/comprehensive-planning/index.html

B01.1. Installation Development Plan (IDP)

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Department of Defense, Department of the Air Force and Air Force Base Criteria

1. The Base Civil Engineer (BCE) is responsible for developing, maintaining and implementing the installation's planning documents and to ensure the Installation Development Plan (IDP) and its components including this IFS are prepared, maintained, and implemented following AFI 32-1015.

B01.1.1. IFS Requirements and Documents

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Maintain this Installation Facilities Standards (IFS) as a component of the base's Installation Development Plan (IDP). Note: IFS supersedes the Kunsan AB *Architectural Compatibility and Design Guide* dated 1 June 2009, and all previous design standards documents including Architectural Compatibility Plans (ACP), Architectural Compatibility Guides (ACG), Facilities Excellence Plans (FEP), etc.

2. Contact 8th Civil Engineer Squadron (CES) for relevant documentation related to the Pacific Air Forces (PACAF) “Installation Strategic Vision” and “Principles of Future Development." Support the PACAF installation strategic vision to effectively balance the needs of mission and people through four foundational, interrelated "Command Pillars" as a path forward:

   - Posture our Forces
   - Prepare and Provide Immediate and Responsive Combat Capability
   - Promote Regional Security and Stability
   - People - THE most critical pillar

3. This IFS will elevate the performance and quality of facilities to reinforce the Air Force's dedication to personnel and their families and to facilitate organizing, training, and equipping personnel for maximum performance and accomplishment. Adhere to the following 12 Principles of Future Development to guide future physical development for an effective military environment during peacetime, through crisis and in war:

   - Enhance Antiterrorism / Force Protection Measures
   - Provide Capacity for Surge Capability
   - Replace Substandard Facilities with Modern Construction
   - Site New Facilities in Accordance with Established Land Use Designations
   - Establish Redundant Utility Systems and Airfield Pavements
   - Specify Sustainability / Energy Savings
   - Facilitate Training
   - Plan for Weapons Systems, Upgrades, and Modernization
   - Promote "Jointness" and Blended Capabilities
   - Enforce Architectural Compatibility Standards
   - Design "Flexible" Facilities
   - Partner with The Community

4. Refer to AFCFS its references to UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings for applicable diagrams and figures:
   https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-4-010-01

5. Comply with Air Force Corporate Standards (AFCFS) for Sustainability:
   http://afcfs.wbdg.org/sustainability/index.html

6. Comply with AFCFS for Resilience:
   http://afcfs.wbdg.org/resilience/index.html

7. Note the Leadership in Energy and Environmental Design (LEED) rating system is superseded by the Air Force Sustainability Requirements Scoresheet.

8. Projects that meet the requirements of AFCFS and this IFS are eligible for entry into the Department of the Air Force Design Awards Program.

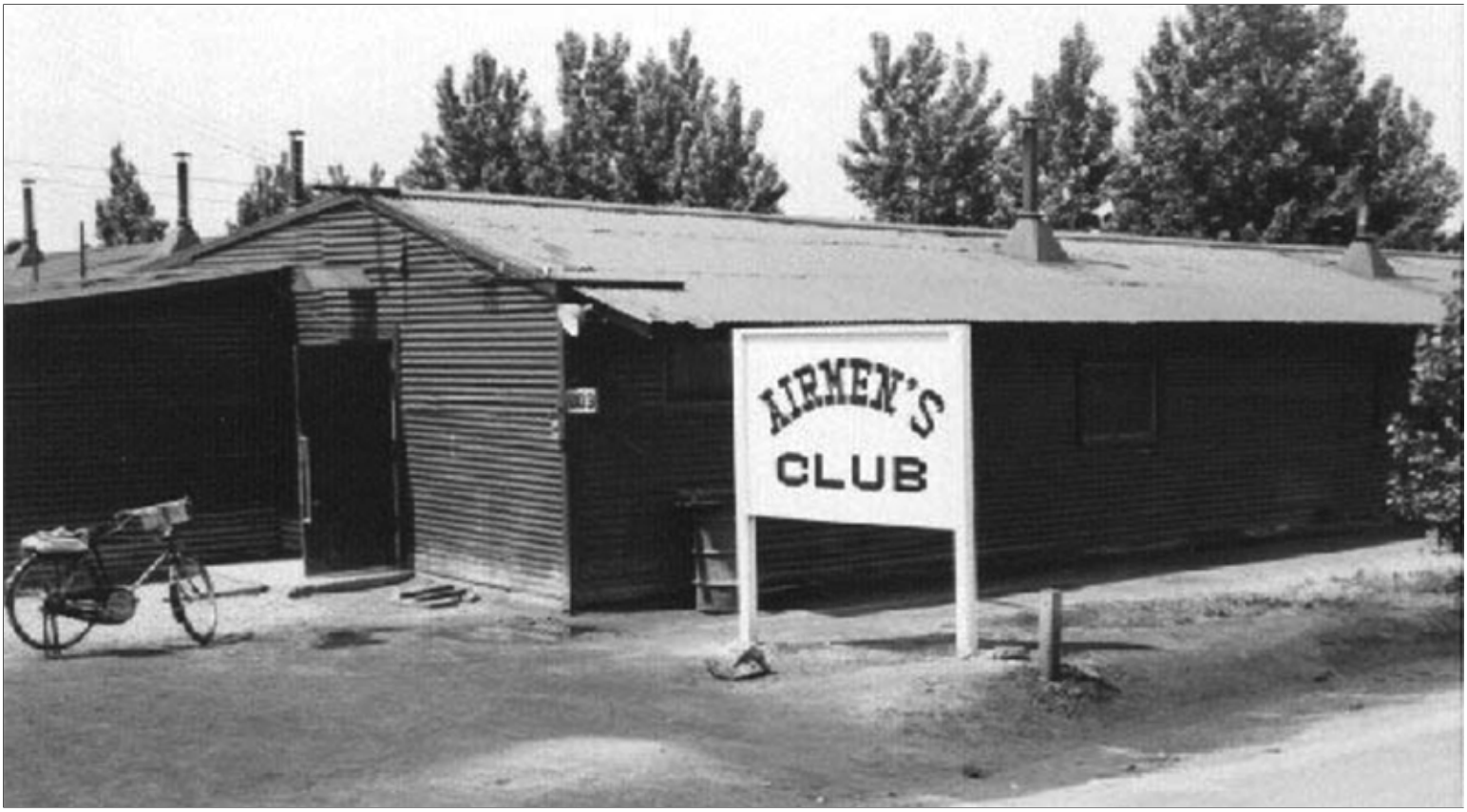
9. Refer to B02.1. Hierarchy of Streets for guidance on installation gates.

End of Section

B01.1.2. Brief History of Base

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Airman's Club at Kunsan AB circa 1958



F-82G Twin Mustang at Kunsan AB c. 1950



F-51D at Kunsan AB c. 1951



F-80 Shooting Stars c. 1953

Originally built by the Japanese as a fighter-interceptor base in 1938, Kunsan became the home of the U.S. Military Assistance Advisory Group in Korea at the end of World War II. In 1949, U.S. forces left Korea, turning the base over to the then-fledgling Republic of Korea Air Force.

In July 1950, at the outset of the Korean Conflict, North Korean forces occupied Kunsan Air Base. The U.S. Army's 3rd Battalion, 24th Infantry recaptured the base and Kunsan City on Sept. 30, 1950. In April 1951, the 27th Air Base Group became the first Air Force unit assigned to the base. The group oversaw the base's rehabilitation. The Army's 808th Engineer Aviation Battalion built a 5,000-foot runway to replace the sod runway built by the Japanese. The 3rd Bombardment Wing moved to the base Aug. 22, 1951, as Kunsan's first assigned aircraft wing.

Following the 3rd Bombardment Wing's return to Japan at the end of the Korean Conflict, Kunsan became the home to several Air Force units. The 6170th Air Base Group and the 6170th Air Base Squadron operated and maintained the base from 1954 to 1968. From 1968 to 1970, the 354th and later the 54th Tactical Fighter Wing ran the base. The 6175th assumed responsibility for the installation in the mid-1970s until the 3rd Tactical Fighter Wing returned to Kunsan in March 1971. In September 1974, the 8th Tactical Fighter Wing was assigned to Kunsan Air Base. As a part of an Air Force-wide reorganization, the 8th Tactical Fighter Wing was re-designated the 8th Fighter Wing on Feb. 3, 1992.

For a detailed history refer to the website for Kunsan Air Base.

B01.1.3. Future Development

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( ) Applicable (•) N/A Small graphics do not apply



Aerial Image of Kunsan Air Base

1. Follow AFI 32-1015 for Air Force Comprehensive Planning, the Comprehensive Planning Process, Comprehensive Planning Requirements, and Geospatial Mapping.

2. Address all future development under the Installation Development Plan (IDP).

End of Section

B02. STREET ENVELOPE STANDARDS

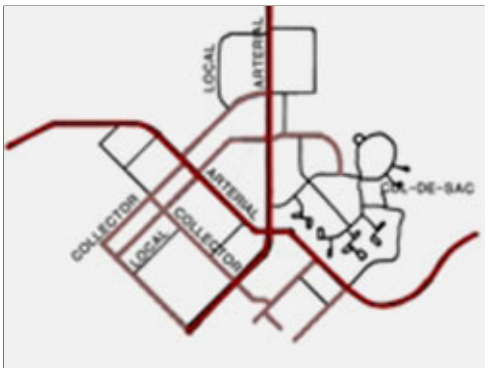
Comply with Air Force Corporate Standards for Installation Elements:
http://afcfs.wbdg.org/installation-elements/index.html

Comply with AF Corporate Standards for Street Envelope Standards:
http://afcfs.wbdg.org/installation-elements/street-envelope-standards/index.html

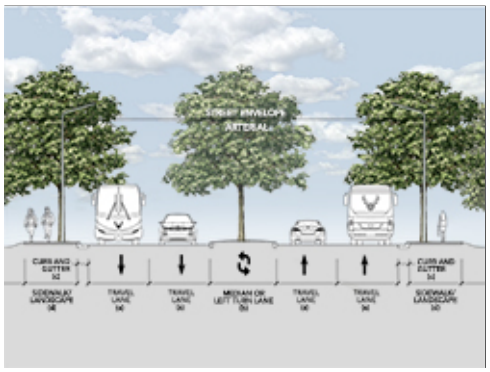
B02.1. Hierarchy of Streets

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Hierarchy of Streets


Street Envelope Section


Coordinated Guardrail and Lighting

1. Develop and evolve a hierarchical transportation network of arterial, collector and local streets following UFC 3-201-01 and its industry references including The Manual for Uniform Traffic Control Devices (MUTCD). If a conflict exists between this IFS and any applicable standard, the more stringent standard will apply.

2. Provide consistent functionality throughout the installation and a level of visual quality relating to the adjacent Facility Group number.

3. Maintain the Main Gate, North Gates and Commercial Vehicle Inspection (CVI) Gate as the principal entrances to the installation following DAFCFS and IFS for Facility Group 1. Use UFC 4-022-01 Security Engineering: Entry Control Facilities / Access Control Points for evaluating, designing and constructing entry control facilities at Kunsan AB and meet the material performance and quality for facility Group 1 under this IFS.

   a. Gates will be constructed according to AFI 31-101.

   b. Specifically, the gate or fabric must come within at least 5 inches of paved surfaces, and 2 inches of any other surface (rock, soil etc..). The maximum allowable distance between gateposts when closed is 5 inches.

   c. All restricted access gates much be clearly marked with the standard installation warning sign in English and Korean characters. Contact the base Civil Engineer for the current signage requirement.

4. Routes along facilities in Group 1 may have materials, finishes and features with a higher visual quality than Groups 2, 3 and 4. Reduce maintenance requirements by installing highly durable materials and finishes in routes along Group 3 industrial facilities. Refer to section B02.3. Street Elements for paving, curb and gutter, and other elements.

5. Special routes may have a visual quality comparable to those along facilities in Group 1.

6. Create and maintain arterials with two lanes of traffic in each direction with landscaped or paved medians as applicable to the local climate and adjacent facility group designation / land use.

7. Minimize stops and turns along arterials. Eliminate on-street parking along arterials and provide on collector streets only on lower speed roadways such as residential streets.

8. Connect arterials to local streets with appropriately scaled collector streets.

9. Provide appropriate landscape setbacks and pedestrian buffers along all streets.

10. Minimize and consolidate curb cuts along streets.

11. Ensure access for emergency and service vehicles.

12. Road grades will not exceed a maximum of seven percent. At high and low points, the change in grade will not be more than eight percent.

13. Standard vertical clearance for all structures will be 21 feet (6.4 meters) at its lowest point.

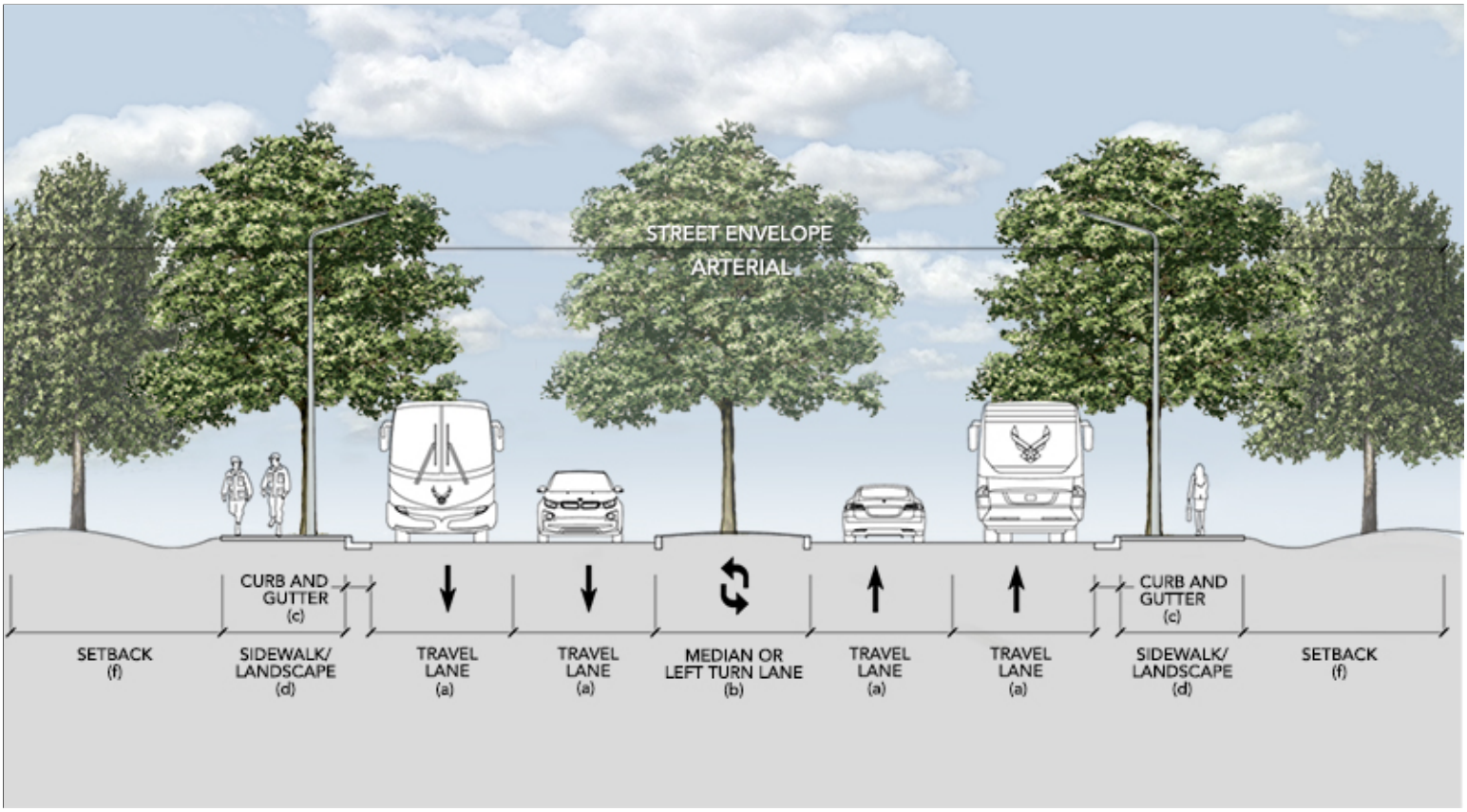
14. Define bicycle traffic routes in the Installation Development Plan or its applicable component plans.

15. Define appropriate force protection features, site furnishings, signs, lighting, utilities, and paving in the IFS.

B02.1.1. Arterial Streets

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 2 Image Tool 800 x 440

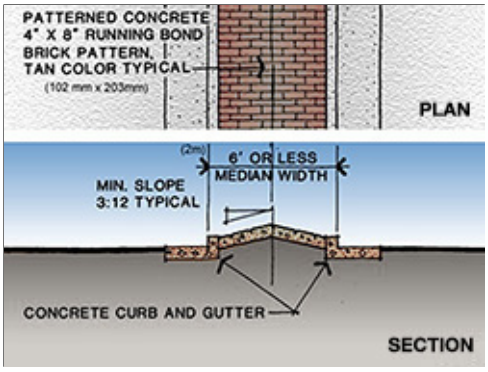
◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Travel Lane (a): 12′ Median (b): 12′ Curb and Gutter (c): 2′ Sidewalk / Landscape (d): 12′) Setback (f): Min. 35' or per AT



Coordinated Street Elements



Paved Median



Attached Sidewalk



Street Frontage at Group 2

1. Stops and turns should be minimized and on-street parking will not be allowed at any point along arterial streets.

2. Provide sidewalks on at least one side of arterial streets and both sides of arterial streets in developed areas. Provide a 6' buffer between the road and sidewalk where space allows.

3. Limit curb cuts on arterial streets to entries into major facilities, building groups and major parking areas.

4. On-street parking is prohibited in new construction on arterial streets. Existing on-street parking removed from a road or facility when it undergoes a major renovation.

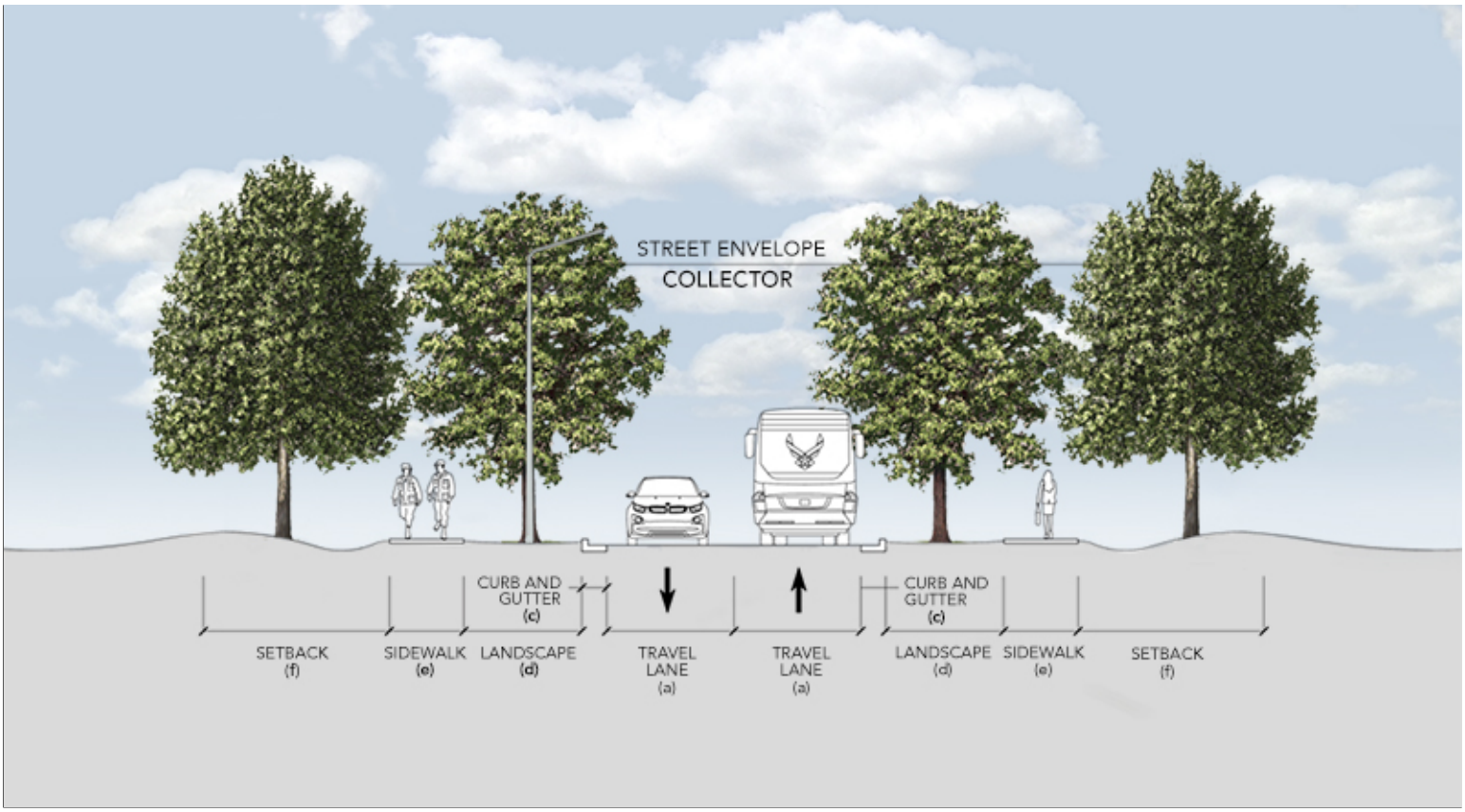
5. Reinforce the importance of arterial streets with appropriate signs, plantings and street lighting

End of Section

B02.1.2. Collector Streets

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Travel Lane (a): 12′ Median (b): N/A Curb and Gutter (c): 2′ Landscape (d): 10′ Sidewalk (e): 6′ Setback (f): Min. 35' or per AT



Integrated Stormwater Elements



Attached Sidewalk at Group 3



Gravel Shoulder at Group 2

1. Frequent traffic stops and low speeds are permitted on collector streets.

2. Provide sidewalks on at least one side of collector streets and both sides of collector streets where functionally required. Buffers are preferred but not required on collector streets.

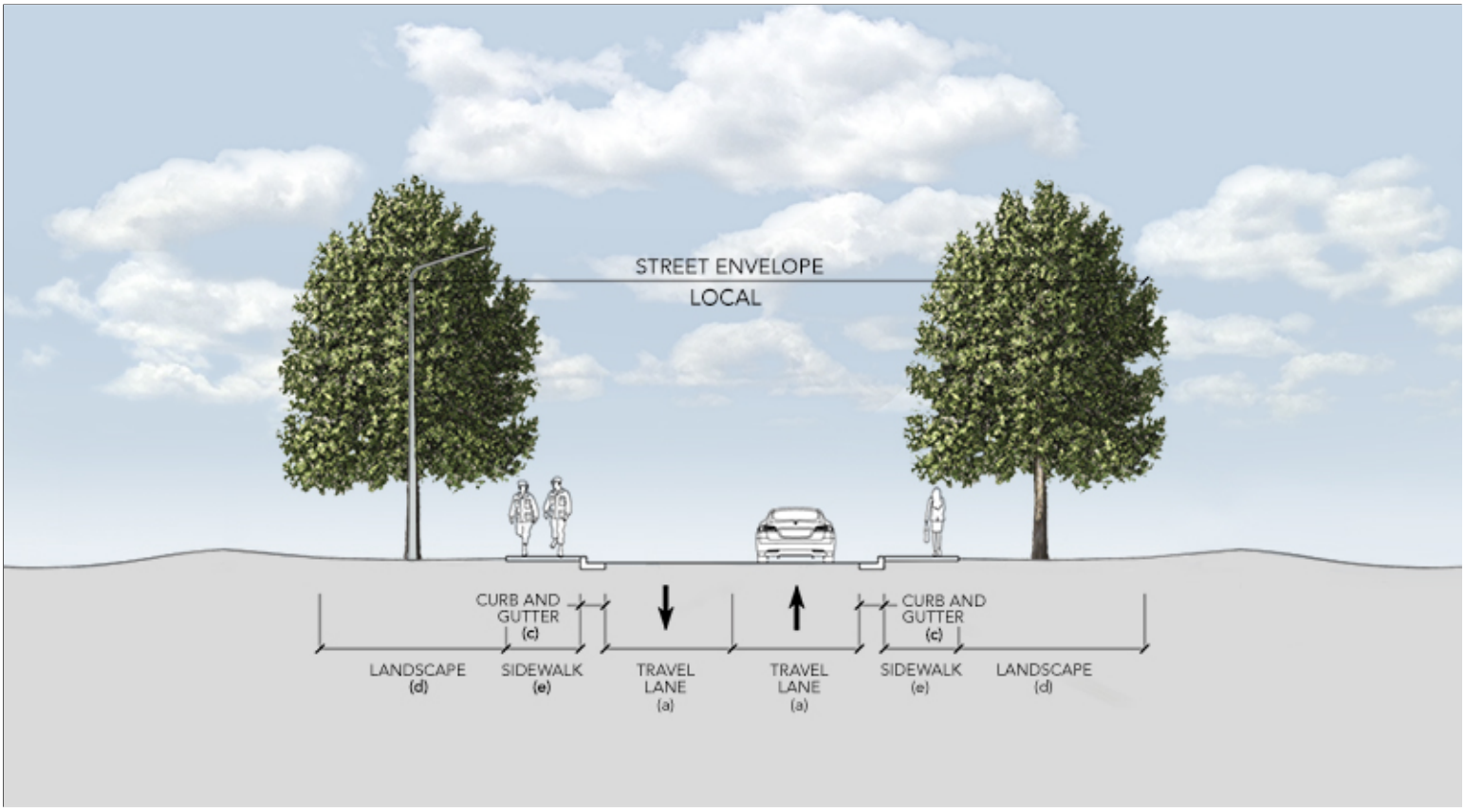
3. On-street parking may be allowed on one side where secondary roads are not less than 34 feet wide. Parking will not interfere with intersections or traffic flow.

4. Signs, plantings and street lighting should reinforce the designation of “collector” street.

B02.1.3. Local Streets

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Travel Lane (a): 11’ Median (b): N/A Curb and Gutter (c): 1.5’ Landscape (d): 15’ Sidewalk (e): 6’



Local Street with Sidewalks on Both Sides



Maintained Landscape at Group 1



Group 4 Streetscape

1. Frequent traffic stops and low speeds are permitted on local streets.

2. Provide sidewalks on at least one side of local streets and both sides of local streets where functionally required. Buffers are preferred but not required on local streets.

3. On-street parking may be allowed following UFC industry references.

4. Signs, plantings and street lighting should reinforce the designation of “local” street.

5. Cul-de-sacs are only permitted in family housing areas. Cul-de-Sacs will be limited to 500 feet (152.4 meters) as measured from the center of the circle to intersection centerline. A minimum outside Cul-de-Sac diameter of 84 feet (25.6 meters) will be maintained. The maximum allowable backup distance is 150 feet.

B02.1.4. Special Routes

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

○ Applicable ◉ N/A Small graphics do not apply



Array of Flags Defining Roadway

1. Develop all special routes consistently with those adjacent to Group 1 facilities.

B02.2. Hierarchy of Intersections

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Provide a hierarchy of intersections to include arterial, arterial-collector, collector, collector-local and local following UFC 3-201-01 and its industry references.

2. Passive systems such as traffic circles are preferred to active systems such as signalized intersections. Aggressively pursue passive systems to lower maintenance requirements and reduce energy use.

3. Use a level of visual quality for an intersection equal to the quality found in the related streetscape, which corresponds to the adjacent Facility Group number.

4. Roadways will intersect at right angles (offset intersections are prohibited). "T" intersections and curves at building entrances, which compromise Anti-Terrorism (AT) measures, are prohibited on Kunsan AB.

5. Driveways will be located a minimum of 50 feet (15.25 meters), but preferably 100 feet (30.50 meters) from the nearest intersection.

6. A minimum of 50 foot (15.25 meters) outside turning radius and 26 foot (7.9 meters) inside turning radius will be provided to accommodate large turning requirements of oversize vehicles (such as fire trucks).

B02.2.1. Arterials

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

○ Applicable ◉ N/A Small graphics do not apply



Base Standard Crosswalks and Traffic Control Devices at Intersection

1. At arterial intersections adjacent to Group 1, landscaping of native grasses and shrubs may be provided; trees may be included when maintenance and non-potable irrigation is available. Monuments and static displays may be integrated into arterial intersection designs.

B02.2.2. Arterial/Collector

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. At arterial/collector intersections adjacent to Group 1, landscaping of native grasses and shrubs may be provided; trees may be included when maintenance and non-potable irrigation is available.

B02.2.3. Collectors

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Coordinated Building Setbacks and Street Elements


Standard Placement of Street Elements


Regular Spacing of Lighting and Utility Poles


Standard Elements at T Intersection

1. At collector intersections adjacent to Group 1, landscaping of native grasses and shrubs may be provided; trees may be included when maintenance and non-potable irrigation is available. Intersections adjacent to Group 2 may be developed similarly, but with less detailing.

B02.2.4. Special Intersections

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Develop all special intersections consistently with those adjacent to Group 1 facilities.

B02.2.5. Street Frontage Requirements

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

○ Applicable ◉ N/A Small graphics do not apply



Landscape Setback at Group 2 with Coordinated Placement of Lighting, Sidewalks, Utility Elements, and Plantings

1. Consistently maintain open space buffers following B03.2.3. Preserves.

2. Refer to C06.1.7. Streetscape Landscaping for planting and screen wall requirements along street frontage.

B02.2.6. Sight Lines

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Provide adequate sight lines for an effective and safe traffic operation per American Association of State Highway and Transportation Officials (AASHTO) standards and local municipality guidelines.

B02.3. Street Elements

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Base Standard Landscape Setbacks with Coordinated Elements



Integrated Security Elements



Standard Placement of Signage



Bus Shelter, Signage and Utility Elements

1. Emulate the streetscape area's pre-development hydrology using passive and active design features to help sustain the adjacent regionally appropriate landscape. Coordinate with the base Stormwater Management Plan.

2. Employ systems, materials and techniques to maximize streetscape sustainability. Consider pervious paving and high reflectivity of surfaces, which are appropriate for the local climate.

3. Install at-grade curbing and/or raised-profile curb and gutter as applicable to direct stormwater to bioswales and rain gardens as source water for vegetation. Do not paint concrete curbing.

4. Provide all on-site utility service lines and equipment below grade when adjacent to Facility Group 1. In routes along Group 2, 3 and 4, when mounting elements such as utility cabinets, communications equipment and water valves above grade is unavoidable, paint these consistently and provide visual screening following Installation Facilities Standards (IFS).

5. Provide traffic control devices including access control point/entry control facility signs, speed limit signs and street name signs following the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) per UFC 3-120-01 or the ROK equivalent.

6. Striping and markings will have a retroreflective material to improve nighttime visibility of road markings.

7. Crosswalk markings will follow the MUTCD for Streets and Highways or the ROK equivalent, current edition. Provide white markings that define the edges of the crosswalk or a tone of lines defining the area of the crosswalk consistent with common practices found in the adjacent municipality.

8. Follow UFC 3-120-01 or the ROK equivalent for directional and wayfinding signs and address both vehicular and pedestrian traffic.

9. Reduce energy consumption and reduce maintenance requirements by providing street lighting only when functionally required to ensure safety and to address antiterrorism following UFC 4-010-01. Ensure the quality and quantities of lighting and fixtures are appropriate for the adjacent Facility Group number.

B02.3.1. Paving

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Concrete Paving



Standard Asphalt Paving



Curb, Sidewalk, and Storm Drainage Element

1. Pavement design will comply with UFC 3-250-01. Ensure appropriate analysis and design of subgrade conditions to promote low maintenance, high performance pavements. Apply all applicable best practices from Appendix B of the UFC.

2. Materials will be specified in accordance with UFC 3-250-01 and must conform to requirements set forth in the Unified Facility Guide Specifications (UFGS) or the ROK equivalent, whichever is most stringent, for concrete and bituminous pavement.

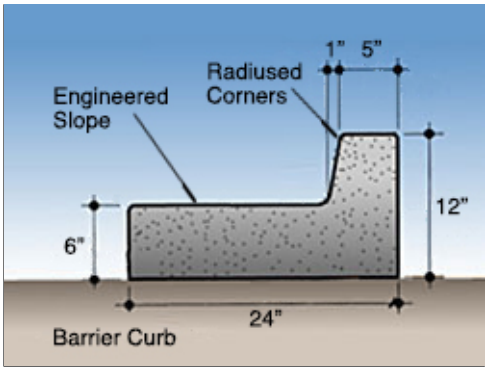
3. Asphalt or concrete pavement is acceptable for roads. Concrete paving should be considered for roads used by heavy vehicles such as fork lifts and cranes and in areas subject to fuel spillage. Use economical asphalt paving and recycled materials such as old asphalt, concrete, rubber and plastic for most road and vehicle parking areas.

End of Section

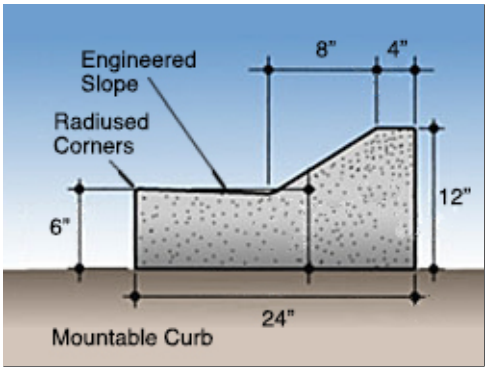
B02.3.2. Curb and Gutter

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Standard Curb and Gutter



Mountable Curbing


Curb Ramp

1. Curb all streets except remote/isolated roads and rock-paved service roads.

2. All streets should have integral concrete curbs and gutters. Painted curbs are prohibited because they are very difficult to maintain. Some exceptions may include using curb painting to indicate no parking zones at fire hydrants and intersection areas. The painting of curbs for the purpose of assigning or restricting parking should be avoided.

3. Use concrete for sidewalks and curbs. Do not use asphalt curbs.

4. Curb and gutter with drainage cuts are appropriate for streets and parking lots. Roll curbing should be provided in housing areas and header curbs on outlying roadways with mower ramps for access to turf areas.

   a. Curbs will be constructed at a height of 6 inches (15.25 centimeters) above the road surface and provide a 24 inch (61 centimeter) wide gutter.

   b. Gutters that do not terminate at storm drains, catch basins or other type of outfall will be provided a cut-out in the curb to allow for drainage.

   c. Curbs must generally not be painted. Painted curbs may only be considered for approval by the BCE, for example, at "No Parking" zones at fire hydrants, road intersections or loading zones.

5. Handicapped access should be provided at intersections and crosswalks

   a. Curb ramps will be provided at crosswalks to provide a smooth transition to the street.

   b. Only returned, flared and diagonal curb ramps will be used on Kunsan AB and will be built in accordance to the Architectural Barriers Act (ABA) Accessibility Standard for Department of Defense Facilities. Should the Americans with Disability Act (ADA) of 1991 and the Uniform Federal Accessibility Standards have a more stringent standard, that standard will apply.

   c. Curb ramps will be constructed of a non-colored concrete with a broom finish and one quarter inch (0.64 centimeter) tooled joints at 6 inch (15.25 centimeter) spacing each way.

   d. Curbs that are used in AT applications must be built according to AT standards and are exempt from the Kunsan AB curb standard. Where an AT curb ends, it will taper down to the existing curb or grade. No abrupt change / end in curb size is authorized.

6. Barrier curbs are required for edges of all arterial roads, collector streets in office/community character areas, and parking lot edges adjacent to pedestrian areas. Barrier curbs should also be used at locations where restriction of vehicle access is necessary.

7. Mountable curbs provide drainage control and limited vehicle access control usually through the design of a curb that can be traveled over by vehicles. They should be utilized on local streets and collector streets in housing areas or areas where vehicular requirements necessitate traversing curbs in a controlled manner.

B02.3.3. Utility Service Elements

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 6 Image Tool 250 x 188



Underground Utility Service Lines



Pad Mounted Electrical Cabinet



Electric Cabinet, Panels and Junction Boxes



Standard Fire Hydrant



Buried Service Lines to Lighting



Underground Water and Gas Service



Buried Electric Service from Cabinets

1. Provide all utility service lines below grade when streets are adjacent to Facility Group 1; when mounting elements (such as utility cabinets, communications equipment and water valves) above grade is unavoidable, paint these consistently and provide visual screening following Site Development, Landscaping.

2. Overhead service lines along streets adjacent to Facility Groups 2, 3 and 4 are discouraged.

3. Utility or other cuts in the road pavement are prohibited unless no other method for laying underground utilities is possible

4. Install a water line marker for water main with a brass plate anchored to concrete pier where change of pipe size or direction occurs. Top plate must include information on pipe size and direction.

B02.3.4. Traffic Signs

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Refer to Exterior Signs, Colors and Types for Traffic Control Devices, which includes signs.

B02.3.5. Street Lighting

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Refer to the Lighting section for appropriate applications along streets.

B02.3.6. Other

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

B03. OPEN SPACE / PUBLIC SPACE

Comply with Air Force Corporate Standards for Installation Elements:
http://afcfs.wbdg.org/installation-elements/index.html

Comply with AF Corporate Standards for Open Space / Public Space:
http://afcfs.wbdg.org/installation-elements/open-space-public-space/index.html

B03.1. Plazas, Monuments and Static Displays

(•) Applicable ( ) N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

(•) Applicable ( ) N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Memorial Plaza with Central Marker and Benches at Perimeter



Plaza with Commemorative Marker



Plaza at Building Entrance



Bronze Plaque on Pedestal Monument

1. Natural features and culturally or historically significant features or events may be recognized and acknowledged with physical elements such as plazas, monuments and static displays. However, limit these elements on the base to ensure judicious use of resources and to reduce ongoing maintenance requirements.

2. Design highly durable plazas, monuments and static displays with a level of quality comparable to Facility Group 1.

3. Link plazas, monuments and static displays to the pedestrian circulation system. Install landscaping, site furnishings and lighting appropriate for the application and local climate following Installation Facilities Standards (IFS).

4. Select systems, products and materials for paving, walls, and structures following IFS.

5. Regarding monuments, design monuments to provide a simple, dignified, and timeless appearance with durable materials to minimize maintenance and provide a sense of permanence. Use plantings to provide comfort to viewers and partial screening without concealment. Make the monuments highly visible and well lit at night for security purposes.

6. Regarding static displays, displays should be placed at prominent locations, such as at important intersections and elevated above the surrounding ground or otherwise be separated from adjacent activities. This will enable viewers to understand that the item displayed is not merely a parked piece of hardware in active use. The exhibit should be interpreted, lighted, and protected from damage without creating a maintenance liability.

B03.1.1. Paved Plazas

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



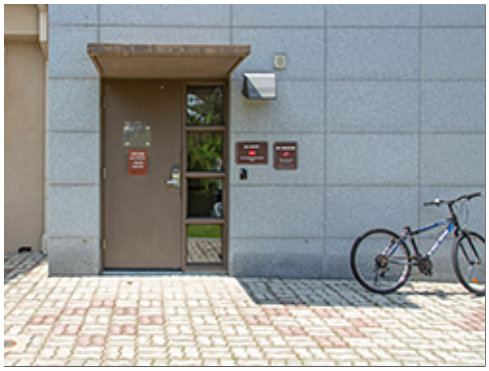
Entrance Plaza at Group 2



Entrance Plaza with Landscape Beds



Porte-Cochere at Lodging Group 2



Paved Plaza at Staff Entrance

1. Mitigate heat island effect by providing high-albedo, shaded plazas. Pervious pavers will be used on all plazas and courtyards in Facility Groups 1 and 2; use pervious concrete in Groups 3 and 4. The designer will incorporate appropriate expansion and construction joints.

2. Pavers will match the color of pavers used on adjacent sidewalks using base standard range of gray or red blend. Select colors to complement adjacent structures and site elements. Patterned concrete that imitates pavers is discouraged because matching the finish and color of replacement patterned concrete, when repairs are necessary, is very difficult.

B03.1.2. Sculptures, Markers and Statuary

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 2 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Stone-Clad Base with Quarry-Faced Stone Plinth and Polished Stone Monument



Centrally Located Monument with Benches at Perimeter of Plaza



Bench with Stone Base to Match Monument



Bronze Plaque on Polished Stone Monument



CES Bomb Repair Commemorative Plaque

1. Relate new sculpture, markers and statuary to the base's architectural design theme. Generally limit these elements to frequently used locations adjacent to Facility Group 1 and highly traveled community pedestrian spaces.

2. Consider entry gates as possible sites for new displays.

3. All proposed memorials will follow AFI 36-3108 and be limited to highly deserving individuals or groups as deemed appropriate by the installation leadership. Living memorials (tree plantings / etc.) are discouraged due to added maintenance requirements.

4. When sculpture requires a base, match the materials and / or color palette of adjacent buildings.

5. Use direct or indirect lighting to accentuate features or enhance an intended effect.

6. Ensure that all sculpture, markers and statuary are honorable and inspiring, provide a sense of place, positively contribute to the base's visual quality, and encourage pride for the community and the US Air Force.

B03.1.3. Static Display of Aircraft

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Follow IFS base-wide standards for all elements of the display area with specific attention to traffic sight lines, pedestrian circulation, site furnishings, signs, and lighting. Address requirements for the Facility District as well.

2. Generally locate concrete base/foundation structures for static displays below grade.

3. At static displays where pedestrian paths are provided, a minimum of one trash receptacle and one bench will be provided. Receptacle and bench design must conform to IFS requirements.

B03.2. Grounds and Perimeters

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 2 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Open Space Buffer Adjacent to Airfield



Open Space with Views to the Yellow Sea



Open Space with Native Grasses



Maintained Native Grass Planting



Park Setting

1. Provide formal spaces for parade and review functions, recreational areas and parks following the base's Installation Development Plan (IDP) and Installation Facilities Standards (IFS). Refer to the Site Furnishings topic for additional information.

2. Maintain preservation areas following the IDP and IFS.

3. Comply with UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings and UFC 4-022-03 Security Fences and Gates or the ROK equivalent for all elements associated with the base's gates and perimeter fence.

4. Identify and describe base-wide utility corridors in the IDP.

5. Base-wide utility infrastructure will be inconspicuous. Bury utility service lines below grade when adjacent to Facility Group 1 and when economically feasible for Facility Groups 2, 3 and 4. When service lines are located above grade, create an ordered, coordinated appearance.

6. Follow the requirements of this IFS regarding all utility structures and service lines located above grade that visually impact the installation.

7. Where screening of utility equipment and structures is provided, allow adequate and proper clearance for safety and maintenance.

8. Reduce visual clutter and visual impact of the following items through a combination of careful placement, screen walls, landscaping and painting:
   - Electrical switch-stations
   - Sewage lift stations
   - Water well pumps, storage tanks and/or related structures
   - Gas piping, meters and similar incidental items
   - Above ground fuel storage tanks
   - Any ground-mounted freestanding utility item exposed to view

9. Larger structures such as electrical switch-stations, sewage lift stations, fuel storage tanks and mechanical/electrical equipment will be screened from view, using materials, forms, and colors in the screen walls that match those respective design elements present at adjacent buildings.

10. Paint aboveground equipment and associated components such as electrical piping or exposed plumbing lines dark bronze.

11. Maintain existing buried utility service lines as a visual asset.

12. Bury the following exposed above-grade items in future projects when economically feasible:
   - Electrical power grid and service lines
   - Telephone lines
   - Cable TV lines
   - Communications lines
   - Exterior lighting service lines
   - Any similar system of above-ground lines serving the base

13. Consolidate and enclose service utility lines in underground utility corridors when feasible. Create routes along the inside edge of parking lot islands.

14. All development of open space requires prior coordination and approval from the Base Civil Engineer.

B03.2.1. Parade Grounds

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Follow UFC 3-201-02, Appendix B or the ROK equivalent for the planning and design process and criteria for parade grounds.

2. Establish and maintain parade grounds only where there is a confirmed need and provide landscape materials appropriate for the locale following IFS.

3. Bleachers may be installed only when there is a documented requirement at parade grounds. Nonferrous metals that do not require painting or ongoing maintenance are preferred. The Base Civil Engineer will determine quantities, sizes, and products on a case by case basis.

End of Section

B03.2.2. Parks

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188


Park Space Adjacent to Group 2 Housing


Recreational Fields


Fitness Trail and Track

1. Bleachers may be installed only when there is a documented requirement at parks and fields for recreational events. Follow guidance under Parade Grounds.

2. Picnic pavilions may be provided in parks where there is a documented need.

3. Prohibited picnic pavilion materials include wood, concrete masonry units (CMU) or metal pre-manufactured storage sheds. Use only materials and detailing that are low maintenance and endure with minimal weathering.

4. When picnic pavilions are permitted near facilities, generally match the architecture of the adjacent facility and provide a level of quality of the adjacent facility group number.

B03.2.3. Preserves

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188


Naturally Forming Native Landscape


Preserved Open Space with Vehicle Access


Revegetated Area Adjacent to Roadway

1. Preserve areas adjacent to runways, taxiways, aprons, golf course roughs, storage areas, antenna facilities, and ammunition storage areas as open space.

2. Provide minimal maintenance with mowing as needed for controlling bird behavior for airfield safety or eliminating fire hazards.

B03.2.4. Perimeter Fence

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Perimeter Fence with Visual Screening Integrated with Security Elements at Installation Gate



Open Space Buffer



Chain Link Fencing with Outriggers



Integrated Security Measures

1. Design, install and maintain the base's perimeter fence following UFC 4-022-03. Stringently comply with AT requirements following UFC 04-010-01 for all spaces adjacent to the base's perimeter fence and all gates.

3. Fencing, gates and other elements associated with the main gates will be a level of quality equivalent to Facility Group 1.

4. Maintain a positive visual quality along the traffic corridor on both sides of the main gates. Specifically address pedestrian access, circulation and common areas.

C. SITE DEVELOPMENT

Comply with Air Force Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

C01. SITE DESIGN

Comply with AF Corporate Standards for Site Design / NEPA:
http://afcfs.wbdg.org/site-development/site-design-nepa/index.html

C01.1. Site Design Considerations

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Collect documentation to validate approvals and completion of the National Environmental Protection Act (NEPA) or the ROK equivalent process.

2. Ensure site design compliance with the Installation Development Plan (IDP) and its component plans and Installation Facilities Standards (IFS).

3. Promote integrated design with on-site solutions such as engineered small-scale hydrologic controls versus base-wide infrastructure; consider open space, natural features, bioswales, building roofs, streets, and paved surfaces.

4. Limit the impact of development on land and water resources. All site elements and infrastructure will reinforce an image of sustainability, with reduced energy demand, renewable-energy usage, and water conservation.

5. Consider energy conservation during site design for the following categories: building and site lighting, auxiliary systems and equipment (refrigerators, elevators, etc.), building envelope, electric power and distribution, HVAC systems and equipment, service hot water, and energy management (metering, EMCS).

6. Coordinate on-site renewable-energy systems and components to minimize area requirements and maximize efficiencies. Appropriately buffer and screen these and other mechanical systems and equipment.

7. New building projects should preserve open space and protect natural habitat.

8. Conform to existing topography to the greatest extent possible and use slopes to increase site and building efficiencies. Design sites to minimize irrigation and impacts to stormwater runoff.

9. Carefully study new project sites to identify the character of adjacent buildings, streets, landscaping, and site design elements. Reinforce the existing character in new site design.

10. Consider relationships to adjacent facilities and district / centralized heating and cooling infrastructure and cost effectively connect building systems to harvest heat, grey water or other beneficial byproducts.

11. Minimize existing and planned obstructions from landscaping, structures, topography, and adjacent developments to preserve solar access and natural ventilation.

12. Purposefully integrate service access, receiving and storage areas to eliminate the need for visual screening.

13. Appropriately connect to the base network of streets, sidewalks and trails using drive aisles, parking areas, walkways, paths, and bicycle routes addressing both vehicles and pedestrians.

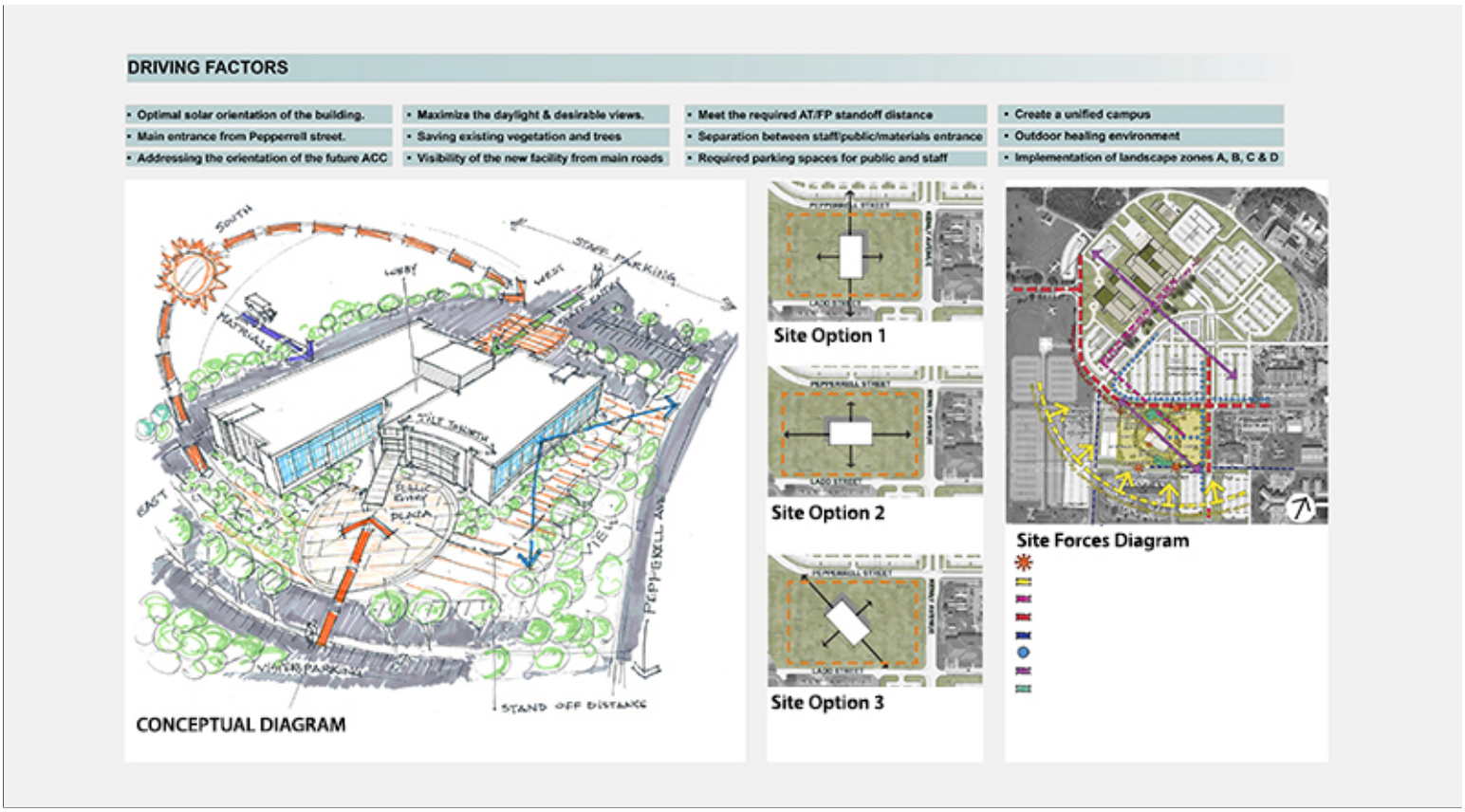
14. Applicably coordinate heat island mitigation in paving and roof designs when implementing an integrated approach to stormwater management.

15. Consider the location of Designated Tobacco Use Areas (DTA).

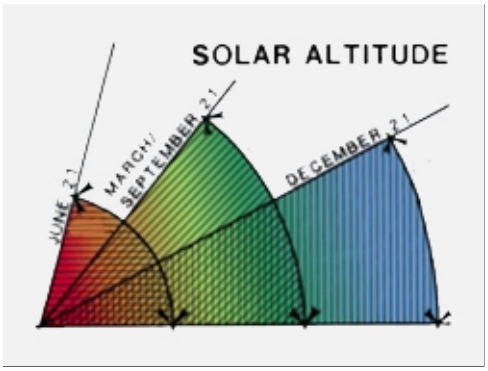
C01.2. Building Orientation

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

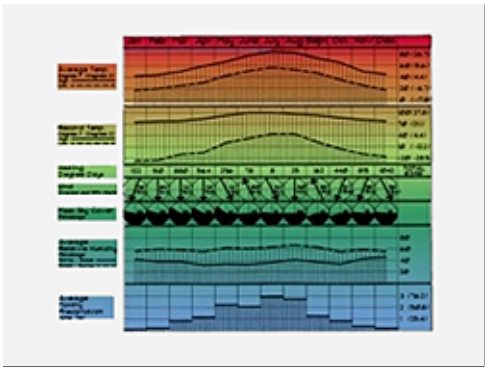
◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 6 Image Tool 250 x 188



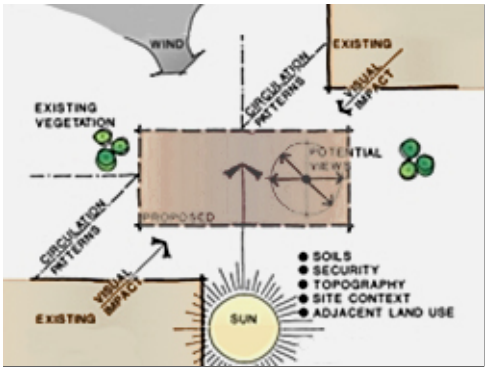
Conceptual Site Analysis and Site Design Diagram



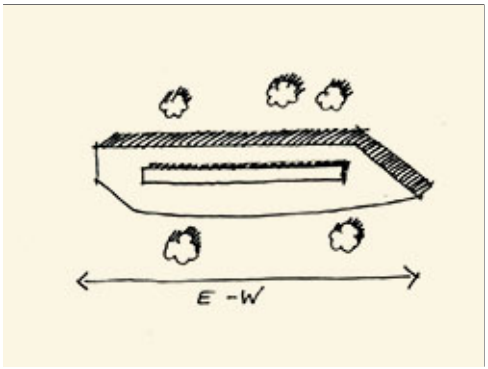
Local Solar Data



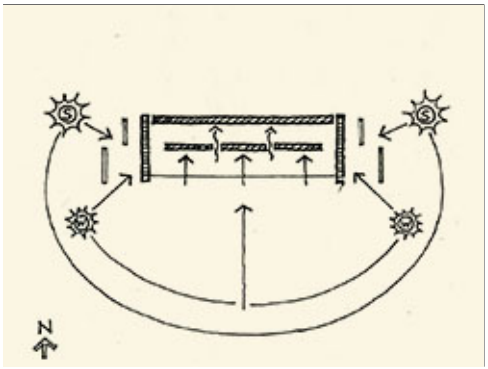
Local Climate Data



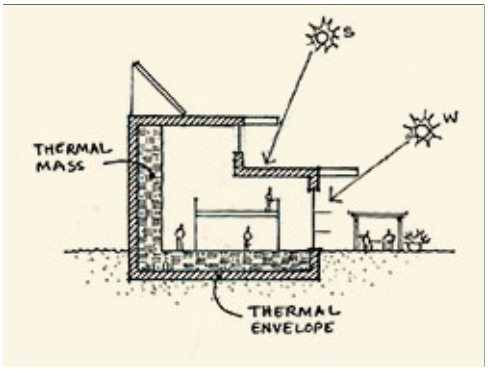
Site Data



East-West Axis



Optimum Solar Control



Maximized Shading

1. Ensure the site will accommodate optimum requirements for building orientation, which is with the long axis parallel to the east/west direction for rectilinear buildings in the Republic of Korea

2. Meet Installation Facilities Standards (IFS) requirements for the locations of the building's passive and renewable-energy systems—including geothermal and solar systems—and exterior shading systems.

3. Locate the building(s) and permitted ancillary structures to promote solar gain, solar shading, natural ventilation, rainwater harvesting, wind buffering and other beneficial passive systems. Consider natural ventilation during the design of HVAC systems.

4. Consider relationships to adjacent sites and their facilities and infrastructure, and cost effectively integrate building systems to harvest heat, grey water or other beneficial byproducts.

5. Consider the "public side" of the building, its views and the location of the main entrance.

C02. UTILITIES

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Utilities:
http://afcfs.wbdg.org/site-development/utilities/index.html

C02.1. Utility Components

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Overhead Service Feeding Transformer



Transformer Adjacent to Facility



Utility Fuel Oil Storage

1. Infrastructure systems must comply with Federal, DoD and DAF criteria including:

- UFC 3-320 series on Water Systems
- UFC 3-340 series on Sanitary Systems
- UFC 3-400 series on Mechanical Systems
- UFC 3-500 series on Electrical Systems
- Air Force Instructions (AFIs)
- Air Force Manuals (AFMs)
- Any other applicable design guide specific to the system being designed

2. Infrastructure Standards:

a. System lines (electrical, natural gas, water, wastewater, fuel, etc.). will be color coded (with either paint or tape) with an arrow indicated direction of flow through the pipe to aid in proper identification of pipes by Civil Engineer personnel.

b. Additionally, system isolation valves, junction boxes and access points will be provided throughout the utility system to allow for safe maintenance and repair while minimizing system disruption to the base.

c. All colors will be based off of MIL-STD 101B Color Code For Pipelines and For Compressed Gas Cylinders.

3. Utility / Energy Management, Control Systems and Utility Metering:

a. Utility / energy management and control systems (UMCS/EMCS) are a tool used to track the consumption of utilities on an installation and develop plans to reduce consumption. At present, a base wide UMCS/EMCS system is not in place; there is a limited system in use monitoring approximately 30 HVAC systems in base facilities.

b. To prepare for a future UMCS/EMCS system and to assist in compliance with Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management mandating utility consumption reduction, all new facilities will include utility meters (electric, water, wastewater, natural gas) that have the ability to be remotely monitored/read.

4. Electrical Distribution:

a. All systems installed at Kunsan must comply with UFC 3-500 series on Electrical Systems, AFJMAN 32-1082 Facilities Engineering Electrical Exterior Facilities, AFI 32- 1065 Grounding Systems and AFM 88-9/ Chapter 3 Electrical Design - Lightning and Static Electricity Protection.

b. Power production generators will be installed on critical facilities in accordance with AFI 32 -1063 Electrical Power Systems. Installed systems will comply with the standards set in UFC 3-540-04N Diesel Electric Generating Plants.

c. Kunsan AB currently has an approved sole source with Cummins, Inc. for generators.

d. Provide identification standards for electrical equipment, raceways, and conductors accordance with KUN 3-500-01 Kunsan Electrical Identification Standard.

5. Water Distribution:

a. Kunsan treats its own potable water supply and as such, has a water production plant and distribution system on the base. Future improvements to the potable water system will be built in accordance to the UFC 3-320 series on Water Systems, AFI 32-1066 Backflow Prevention Program and AFI 32- 1067 Water Systems. Additionally, water systems will consider the following standards for wastewater, stormwater, fire hydrants, and liquid fuel distribution, and will adhere with these as applicable.

6. Wastewater Distribution:

a. Kunsan does not treat its own wastewater; it is pumped off base for treatment. Future improvements to the wastewater collection and distribution system on the base will comply with the UFC 3-340 series on Sanitary Systems, ETL 99-1 Treatment and Disposal of Aircraft Washwater Effluent, with Change 1 and ETL 86-8 Aqueous Film Forming Foam Waste Discharge Retention and Disposal.

b. Additionally, wastewater systems will adhere with the aforementioned standards.

7. Stormwater Distribution:

a. Stormwater collection and distribution is critical on Kunsan due to the monsoon rains experienced during summer. Currently, stormwater is collected through an underground piping system and roadside ditches that drain into the Yellow Sea. Due to land reclamation efforts underway by the Korean Government, changes to this system are eventually required.

b. Future projects concerning stormwater collection and drainage will comply with the UFC 3-320 series on Water Systems, ETL 08- 6 Design of Surface Drainage Facilities and ETL 03-1 Stormwater Construction Standards. Additionally, stormwater systems will adhere to the following standards:

c. Roadside ditches (locally known as Benjo Ditches) are no longer authorized and will be replaced with underground pipes, culverts or open channels.

8. Fire Hydrants:

a. Fire hydrants will be installed in accordance with UFC 3-230-10A Water Supply: Water Distribution and UFC 3-600-01 Fire Protection Engineering for Facilities. Hydrants will be painted to comply with the PACAF Fire Hydrant Color Coding Standard.

b. All hydrants barrels connected the base water system will have the barrel painted "FSN# 30099 – Dark Brown" from Federal Standard 595B. All hydrant bonnets will be colored according to their class. For rapid identification at night, the bonnet colors will incorporate a reflective paint.

1) Class AA — Rated capacity of greater than 1500 gpm (5680 L/min) — Light Blue

2) Class A — Rated capacity of 1000–1499 gpm (3785–5675 L/min) — Green

3) Class B — Rated capacity of 500–999 gpm (1900–3780 L/min) — Orange

4) Class C — Rated capacity of less than 500 gpm (1900 L/min) — Red

9. Liquid Fuels Distribution:

a. All liquid fuels distribution on Kunsan will comply with UFC 3-460-01 Petroleum Fuel Facilities.

b. Diesel fuel storage systems are installed concurrent with power production generators. Whenever possible, an above ground tank system will be used unless there is an overriding requirement such as safety, fire or force protection. If an underground installation is required, the system must be in a vault (if practical) or double walled complete with corrosion protection, overfill/spill prevention and leak detection. Above ground systems must also have corrosion protection, overfill/spill prevention and leak detection.

10. Provide all on-site utility service lines below grade for Facility Group 1; when mounting elements (such as utility cabinets, communications equipment and water valves) above grade is unavoidable, paint these consistently and provide visual screening following Installation Facilities Standards (IFS).

11. Provide installation of utility infrastructure to support near term and future electric vehicle charging stations.

12. Define all service entry points into the building and route distribution below grade into an interior space within the facility; exposed conduits, cables and wires on exterior walls are not permitted for Facility Group 1.

13. Include consideration of appropriate placement of meters in support of Automated Revenue Management Services (ARMS).

14. Limit exterior mechanical distribution systems such as exterior steam, chilled water, and hot water distribution to Group 3 facilities; when required for Group 1 and 2 facilities integrate with the architecture and provide visual screens following IFS.

15. Direct roof drainage to underground collection when feasible or provide splash blocks / paved channels to intercept roof drainage at grade.

C03. PARKING AREAS

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Parking Areas:
http://afcfs.wbdg.org/site-development/parking-areas/index.html

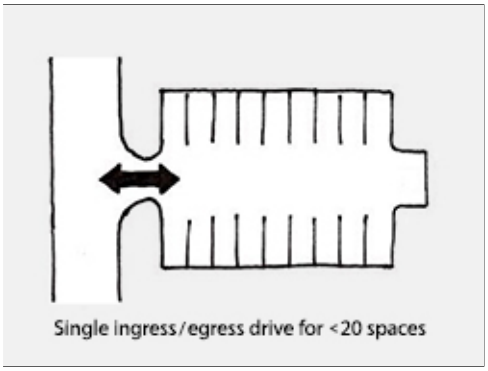
C03.1. Configurations and Design

(•) Applicable ( ) N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

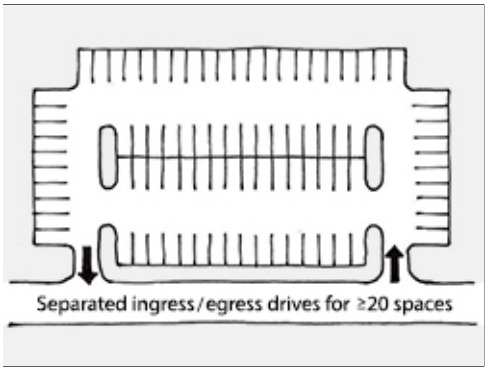
(•) Applicable ( ) N/A Select number of graphics / images (small: 250 px x 188 px) to insert 6 Image Tool 250 x 188



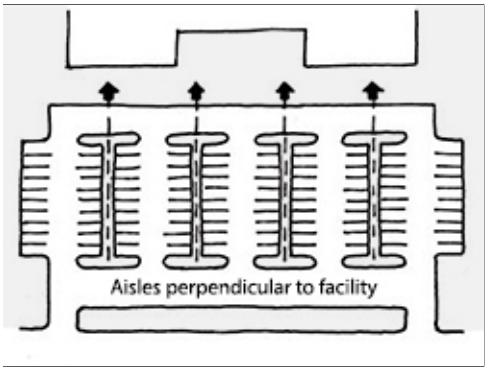
90-Degree Parking Layout with Permeable Pavers



Small Lot Configuration



Large Lot Configuration



Facility Group 1 Configuration



Street Trees Defining Access



Landscaped Islands and Medians



Preferred 90-Degree Parking Stalls

1. Evaluate adjacent sites and cost-effectively consolidate parking areas to maximize efficient use. Ensure that all parking areas comply with UFCs and ABA accessibility guidelines. Refer to UFC 3-201-01 Civil Engineering, Table B-2 Parking Space Guidelines, for the number of parking spaces required for each facility type.

2. Generally, envision on-site parking as a series of small connected singular areas selectively placed around the facility served, rather than a single large area; buffer parking areas from the facility main entrance with a transition space and provide drop-offs to decrease close-in parking. Comply with IFS standards while meeting antiterrorism (AT) requirements.

3. Integrate at-grade and raised-profile curbing, permeable paved areas, and parking islands with the stormwater system and direct stormwater to bioswales and rain gardens as source water for regionally appropriate native vegetation.

4. Define pedestrian access with approved hardscape and provide shading along the primary path from the parking area to the building's main entrance of the building.

5. Coordinate suitable landscape or barriers integrated with walls and fences to ensure adequate force protection.

6. Accessible parking spaces will be marked according to UFC 3-120-01 and its references in ABAAS and the MUTCD or the ROK equivalent.

7. Where possible, provide drop-off drives at community facilities to decrease the demand for nearby parking following AT guidelines.

8. When feasible, locate small parking lots behind facilities and landscaping to reduce their visual effects.

9. Separate privately owned vehicle from government owned vehicle parking.

10. Consider locations and requirements of near term and future electric vehicle charging stations.

11. Designate preferred parking spaces for electric vehicles and carpools near the main entrance.

12. Consider cost-effectively integrating solar photovoltaic arrays into covered parking structures.

13. Reserved parking is discouraged except for Facility Group 1.

14. On-street parking is discouraged except in multi-use areas. When used, provide approved on-street parking configurations following UFC 3-201-01 or the ROK equivalent.

15. Access and service drives should accommodate the largest vehicle serving the facility.

16. Combining roads with parking lot functions and on-street parking is prohibited.

End of Section

C03.1.1. Paving and Striping

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Double-Stripe Parking Stalls



Single-Stripe Parking Stalls



Directional Arrows Indicating Exit



Two-Way Aisle Markings

Facility Group 1 paving materials will be as follows.

Primary:	Asphaltic Concrete
Secondary:	Concrete
Accent:	Permeable Pavers

Facility Group 2 paving materials will be as follows.

Primary:	Asphaltic Concrete
Secondary:	N/A
Accent:	N/A

Facility Group 3 paving materials will be as follows.

Primary:	Concrete where Operationally Required
Secondary:	Asphaltic Concrete
Accent:	N/A

Facility Group 4 paving materials will be as follows.

Primary:	Asphaltic Concrete
Secondary:	N/A
Accent:	N/A

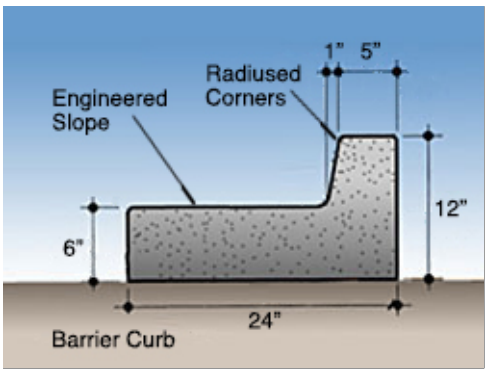
1. All new parking lots in Groups 1 and 2 will be constructed of bituminous pavement or, when functionally required, concrete pavement may be used following UFC 3-250-01 or the ROK equivalent.
2. All new parking lots in Groups 3 will be constructed of bituminous pavement and, where operationally required, concrete pavement following UFC 3-250-01 or the ROK equivalent.
3. Porous paving may be considered on a case by case basis.
4. Cost-effectively provide light-colored concrete to reduce heat island effect; otherwise install bituminous pavement. Dirt, gravel, and grass lots are not allowed.
5. Use consistent striping, angles and stall sizes in all parking areas.
6. All parking will be marked with white stripes of paint or applied vinyl coatings. Red or yellow markings will only be used for safety purposes and must be kept to a minimum. All lines will be four inches (4") wide.

End of Section

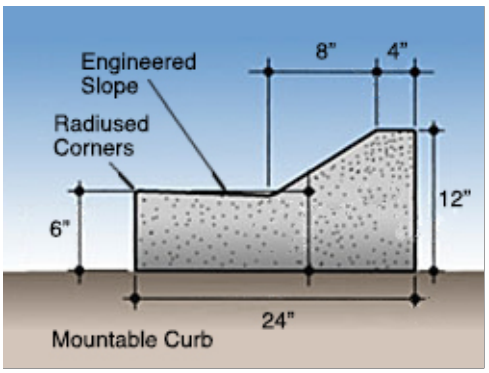
C03.1.2. Curbing

○ Applicable ◉ N/A Large graphics do not apply

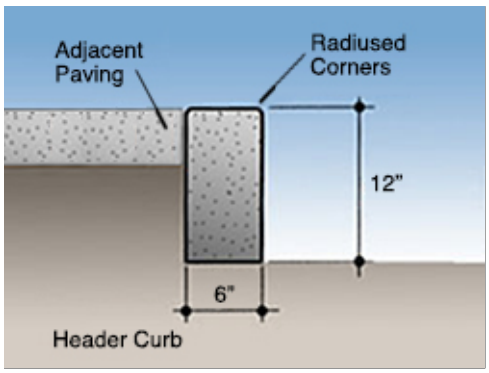
◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



"Barrier" Curb



"Mountable" Curb



Header Curb

Facility Group 1 curbing / edging materials will be as follows.

Primary: Concrete

Secondary: N/A

Accent: N/A

Facility Group 2 curbing / edging materials will be as follows.

Primary: Concrete

Secondary: N/A

Accent: N/A

Facility Group 3 curbing / edging materials will be as follows.

Primary: Concrete

Secondary: N/A

Accent: N/A

Facility Group 4 curbing / edging materials will be as follows.

Primary: Concrete

Secondary: N/A

Accent: N/A

1. Define all parking lots with either raised- profile or at-grade curbing to promote drainage and protect paving edges. All raised curbs will be the rolled (mountable) type.
2. Integrate curbing to direct stormwater to bioswales and rain gardens as source water for regionally appropriate native vegetation.
3. Wheel stops are not permitted except at locations where vehicle bumpers could contact adjacent items such as poles, signs or pedestrians.

End of Section

C03.1.3. Internal Islands and Medians

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Landscaped Island with Boulders at Group 1


Predominant Use of Grasses


Grass Median

1. Install landscape islands and medians as visual breaks, to reduce heat island effects and to accommodate bioswales and rain gardens with consideration for winter conditions. Coordinate suitable landscape or barriers integrated with walls and fences to ensure adequate force protection.
2. When lighting is necessary, contain fixture bases within medians or internal landscape islands.

End of Section

C03.2. Parking Structures

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Parking structures are encouraged in land-constrained locations when economically feasible.

2. Consider near- term and future electric vehicle charging stations and renewable energy generation development during the analysis and design.

3. Consider opportunities for integrating parking structures into multi-use developments with pedestrian-oriented uses located on the ground floor and parking on upper levels; ensure AT guidelines are fully addressed.

4. Structures may be constructed below grade with roofs serving as vegetated areas or plazas.

C03.3. Connectivity

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188


Connection to Base-wide Sidewalk System


Link to Adjacent Facility with Crosswalk


Site Stair

1. Refer to the Installation Development Plan (IDP) for locations of transit stops and pedestrian and cycling networks; provide appropriately sized sidewalks and bike paths to connect facilities and users to these networks.

2. Provide amenities such as rain and shade shelters, trees, and benches to encourage and facilitate use of public transportation.

3. Evaluate the IDP for the current and planned network of roads and optimally develop vehicular access to and from the site.

C04. STORMWATER MANAGEMENT

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Stormwater Management:
http://afcfs.wbdg.org/site-development/stormwater-management/index.html

C04.1. Stormwater Requirements

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Permeable Pavers Used to Reduce Stormwater Runoff



Drainage Swale with Rip-Rap



Swale with Grass Planting



Roof Drainage Elements

1. Design all stormwater systems including retention ponds, detention areas, channels, etc. as on-site amenities that are consistent with natural systems and drainage patterns, that help sustain the base landscape with beneficial functionality and that provide aesthetic appeal; coordinate with the base Stormwater Management Plan.

2. Incorporate bioswales into the design of all roadway, parking and facility roof systems to enhance water quality and support the overall stormwater system.

3. Permeable paving may be used.

4. Provide rainwater harvesting and storage that is attached to the building's roof drain systems to support grey water irrigation; consider potential freezing temperatures in the design.

5. When underground drainage systems are required establish a maintenance program to include removal of sediments and debris; inspect joints seasonally for alignment to prevent leakage and the development of voids and surface failures.

6. Cost-effectively integrate stormwater systems with AT measures.

C05. SIDEWALKS, BIKEWAYS AND TRAILS

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Sidewalks, Bikeways and Trails:
http://afcfs.wbdg.org/site-development/sidewalks-bikeways-trails/index.html

C05.1. Circulation and Paving

(●) Applicable ( ) N/A Select number of graphics / images (large: 800 px x 440 px) to insert 2 Image Tool 800 x 440

( ) Applicable (●) N/A Small graphics do not apply



Detached Sidewalk along Special Route



Direct Access to Staff Entrance and to Main Entrance

Facility Group 1 sidewalks, plazas, and courtyards paving materials will be as follows.

Primary:	Permeable Pavers
Secondary:	Concrete Paving and Edging
Accent:	Colored Concrete (Optional)

Facility Group 2 sidewalks, plazas, and courtyards paving materials will be as follows.

Primary:	Permeable Pavers
Secondary:	Concrete Paving and Edging
Accent:	Colored Concrete (Optional)

Facility Group 3 sidewalks, plazas, and courtyards paving materials will be as follows.

Primary:	Concrete Paving
Secondary:	N/A
Accent:	N/A

Facility Group 4 sidewalks, plazas, and courtyards paving materials will be as follows.

Primary:	Concrete Paving
Secondary:	N/A
Accent:	N/A

1. Maintain efficient geometry and accessibility to connect building entrances to adjacent parking areas and activity areas and to the base transportation system following AT. Efficiently use materials to optimize life-cycle costs and to minimize maintenance. Coordinate applicable UFCs and accessibility standards for all sidewalks.

2. Generally, conform horizontal layouts of sidewalks to the geometric configuration of adjacent buildings, streets, parking lots, and other adjacent related site amenities. Occasional meanders and/or jogs may be included to capture views, to coordinate with landscaping or accommodate site constraints.

3. Provide sidewalks along all roads in built-up areas of the base and along at least one side of all arterial roads, between all facilities and leading into facility mechanical enclosures/rooms.

4. Concrete paving will be used for all sidewalks and will be a minimum of 48 inches (122 centimeters) and a maximum of 72 inches (183 centimeters) wide depending on the anticipated level of use.

5. Crosswalks are defined under B02.3. Street Elements and will conform to the standards under MUTCD.

6. Walks in parking areas will provide a direct path using "safe islands" and "peninsulas" to encourage safety. Walks parallel to streets will follow streetscape guidelines. Clearly mark pedestrian crossings at vehicular routes.

7. Mitigate heat island effect by providing high-albedo, shaded sidewalks. Permeable pavers will be used on all sidewalks, plazas and courtyards in Facility Groups 1 and 2; use pervious concrete in Groups 3 and 4. The designer will incorporate appropriate expansion and construction joints.

8. Only experienced contractors will install pervious pavements.

9. Consider an integrated approach that could include stormwater management (permeable surfaces) and complement the design of the storm drainage system when appropriate.

10. Provide recreational path paving using asphalt, 72 inches (183 centimeters) wide to allow for comfortable side-by-side walking.

11. Sidewalks leading to a building main entrance and at the interior of parking lots will be a minimum width of 6'. Walks greater than 10' wide may be used at high-density pedestrian areas where volumes of traffic justify added material.

12. Where vehicles park adjacent and head-in to the sidewalk and wheel stops are not used, such perimeter walks will be increased to a minimum width of 8' to accommodate overhangs of the parked vehicles.

13. All sidewalks will have positive drainage to prevent ponding of water or ice accumulation with slopes ranging from 2.1% to 4.2%. Walks with a slope greater than 4.2% will be designed as ramps following accessibility guidelines. All walks will have a minimum cross slope of 2.1%.

14. Pavers will conform to the following range of color: Grey or Red blend. Pavers used on walks will typically be 100 by 100 by 10 mm (4 by 4 by 3/8 inch) or 150 by 150 by 10mm (6 by 6 by 3/8 inch) in size.

15. Connect to the bicycle circulation system and provide bicycle parking with a suitable means for securing bicycles following IFS. Consider changing / shower facilities for use by cyclists.

16. Refer to the Installation Development Plan for future trails, bicycle paths, and sidewalks.

C05.1.1. Ramps and Stairs

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Site Ramp at Main Entrance


Site Stair


Site Stair Access to Mechanical Yard

1. Use ramps instead of stairs for sidewalks, bikeways and trails and at all buildings where possible. Where stairs are unavoidable, follow UFC 1-200-01 and its references to the International Building Code and the Architectural Barriers Act (ABA). Where the Americans with Disability Act (ADA) is more stringent, use the ADA.

2. Site stairs may only be provided when an alternate accessible walkway is available.

3. Stair landings will be provided between every six risers and will be a minimum of 5 feet (1.5 meters) long.

4. Single steps on sidewalks and paths are prohibited unless in plazas and pedestrian spaces.

5. Grade-level building entrances are preferred when cost-effective. Stairs at building entrances are generally discouraged.

6. Only returned and flared curb ramps should be utilized at Kunsan AB. The use of built-up ramps should be avoided. Ramps must be at least 36 inches wide and provide a smooth transition from sidewalk to ramp to street. Design ramps with a maximum slope of 1:12, in accordance with 28 CFR Part 36, ADA Accessibility Guidelines.

7. Although curb ramps do not require level landings, the adjoining slope of the sidewalk or road should not exceed 1:20. When the ramp slope is perpendicular to the direction of traffic on the sidewalk, provide space on the sidewalk for a wheelchair to turn at the top of the ramp.

8. Provide flared ramps when pedestrian traffic crosses the ramp. To maintain a safe walking surface, the maximum slope of the flared sides must not exceed 1:10. If the space on the sidewalk at the top of the ramp is less than 48 inches wide, then the slope of the flared sides may not exceed 1:12.

C05.1.2. Lighting

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188


Lighting for Street and Sidewalk


Lighted Bollard at Group 2


Lighted Bollard at Group 1

1. Provide lighting for all stairs and landings where traffic warrants.

2. Refer to the Lighting section for path lighting along sidewalks, bikeways and trails.

C06. LANDSCAPE

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Landscape:
http://afcfs.wbdg.org/site-development/landscape/index.html

C06.1. Climate-based Materials

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Predominant Use of Native Trees and Grasses



Native Coniferous Trees Providing Shade



Native Deciduous Trees



Trees Defining Space

1. Use only native, naturally occurring, drought tolerant indigenous plant species (including grasses) appropriate for the locale to promote energy efficiency and water conservation, preserve drainage patterns, inhibit erosion, improve air quality, lower maintenance, and add beauty.

2. Follow details and specifications of the American Standard for Nursery Stock, current edition [https://www.americanhort.org/education/american-nursery-stock-standards/], which are applicable for tree and shrub plantings and grass seeding in the Republic of Korea.

End of Section

C06.1.1. Landscape Design Concept

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Tree Planting to Provide Scale, Define Space and Create Shading



Trees Providing Shade



Xeric Planting with Drought Tolerant Species



Use of Colorful Ornamental Trees

1. Develop, maintain and implement a climate-based plant list with landscape features using a regionally appropriate palette of materials to promote energy efficiency, preserve drainage patterns, inhibit erosion, improve air quality, lower maintenance and add beauty. Follow UFC 3-201-02 *Landscape Architecture*. Refer also to IFS Supplemental document *G32 Kunsan AB IFS Exterior Improvements* which includes sections for "Guidance for Selection of Plant Species" and "Recommended Plant Species" (Plant List).

2. Landscaping is required for all newly developed sites and facilities; preserve existing native landscape where possible and avoid overplanting.

3. Concentrate landscaping in Facility Group 1 and along major thoroughfares and integrate these landscaped areas into the base's stormwater management plan. Refer to the Streetscape Envelope Standards in this IFS.

4. All Facility Group 1 and 4 sites will be landscaped at their entire perimeter; limit formal planting arrangements to formal spaces typically associated with Group 1. Landscape public spaces near the main entrances of Group 1 facilities.

5. Facility Group 2 and 3 sites may have a native undisturbed landscape except at the main entrances of Group 2, which should be newly landscaped.

6. Facility plantings will follow the Installation Facilities Standards (IFS) plant list, which is based on the specific microclimates created by the adjacent building: shadow areas, protected areas, zones adjacent to thermal mass, and availability of rainwater and/or grey water.

7. Provide open spaces as transitions between developed and native areas that promote quality of life and provide visual relief and allow walkable connections to the transportation system.

8. Return suitable areas to a natural state to minimize and, whenever possible, eliminate ground maintenance requirements; expand prairie areas where appropriate with native plants to eliminate mowing and maintenance requirements.

9. In tree clusters replace grass with naturalized shrub beds and leaf litter mulch to eliminate mowing requirements.

10. Use plantings in open spaces to reinforce the space as a visual asset.

11. Consider landscape windbreaks when suitable for the local climate.

12. Integrate security requirements into the landscape design. Coordinate the heights of trees and shrubs and note restrictions for plantings following UFC 4-010-01.

13. Berms may be used as an integral part of the overall landscape strategy for screening, security and/or visual interest.

C06.1.2. Xeriscape Design Principles

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Drought Resistant Trees and Shrubs



Planting Bed with Rock Mulch



Use of Xeric Species

1. Apply xeriscape principles following UFC 3-201-02, Appendix B, or the ROK equivalent, and Air Force Corporate Facilities Standards.

2. Facility plantings are encouraged to use native plant species and to consider specific microclimates created by the adjacent building: shadow areas, protected areas, zones adjacent to thermal mass, and availability of rainwater and/or grey water.

End of Section

C06.1.3. Minimizing Water Requirements

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Reasonably reduce demand on potable water while seeking opportunities to increase alternative water sources for irrigation. Reduce or eliminate the use of potable/domestic water for purposes of landscape architecture maintenance, consistent with existing legal or contractual obligations, and prohibit potable-water irrigation in new construction beyond establishment following current DoD and Air Force policy.

C06.1.4. Plant Material Selection

○ Applicable ◉ N/A Large graphics do not apply

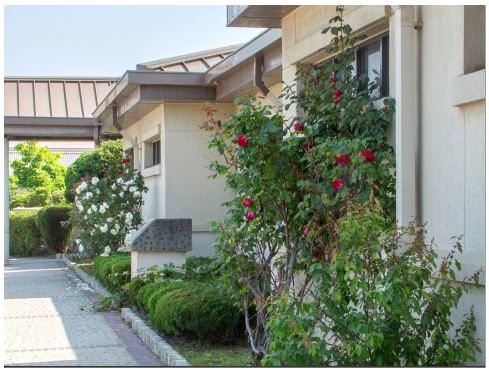
◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Trees Providing Scale at Entrance Plaza



Ornamental Species



Blooming Species

1. Use only native, naturally occurring plant materials including grasses or turf suited for the local climatic conditions in the landscape design; potable-water irrigation systems are discouraged beyond the establishment period.

2. New facilities are encouraged to use native plant species as indicated in *G32 Kunsan AB IFS Exterior Improvements* which includes a listing of plant species.

3. Trees should be the focus of landscape plantings and, where possible, should be a mix of deciduous and evergreen species for variety; provide tree grates when appropriate and use tree guards on smaller trees.

4. Ground covers are only recommended when minimal maintenance is required.

5. Turf areas should be limited to those that can be sustained by natural rainfall or grey water (non-potable) irrigation systems; turf may be defined by at-grade concrete mow strips to lessen maintenance.

6. Analyze soils and provide organic amendments as needed to improve plant growth and conserve water.

7. All plant material will have one-year warranty and is subject to approval by the Base Landscape Architect.

End of Section

C06.1.5. Water Budgeting (Hydrozones)

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Comply with DoD and Air Force policy or the ROK equivalent on potable-water irrigation systems.

2. Provide irrigation systems in new construction to establish plant materials following "Water for Landscaping" in UFC 1-200-02. Note the climate zone and annual rainfall for the locale.

3. New buildings will cost-effectively integrate a grey-water reclamation system following UFC 1-200-02, which provides source water for an automatic drip irrigation system; connect adaptive plantings adjacent to facilities to a grey-water irrigation system when available and discontinue the use of potable water for irrigation after the establishment period.

4. Provide irrigation design following UFC 3-201-02. Install drip irrigation products and components following UFGS Section 32 84 24 Irrigation Sprinkler Systems. Match the color of valve box lids to the adjacent ground treatment (i.e. green at turf & native seed areas, brown at wood mulch & rock areas).

5. Life cycle cost-effectively equip irrigation systems to sense soil moisture, rainfall and wind to minimize unnecessary watering; incorporate drip irrigation systems as the primary source.

C06.1.6. Base Entrance Landscaping

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Varied Planting of Trees, Shrubs and Grasses while Preserving Sight Lines



Coordinated Tree Placement



Trees and Shrubs with Rock Mulch



Shrubs and Grasses

1. At the main gate, reinforce a sense of arrival through a well-designed concentration of landscape elements consistent in visual quality with Facility Group 1.

2. Ensure landscaping has seasonal features with spring and fall color and a combination of evergreen and deciduous trees and shrubs for winter interest.

C06.1.7. Streetscape Landscaping

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

○ Applicable ◉ N/A Small graphics do not apply



Coordinated Streetscape Landscaping with Native Grasses, Shrubs and Trees

1. Provide landscape designs with plant materials appropriately representing the level of quality of the adjacent Facility Group number. Refer to the Installation Elements section.

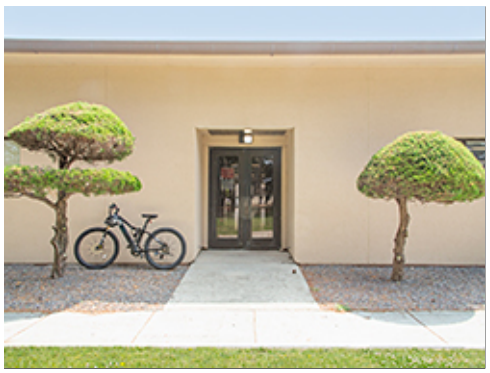
2. Select a variety of regionally appropriate streetscape plantings and grading to create a visual interest.

C06.1.8. Pedestrian Circulation Landscaping

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188


Varied Landscape as Entrance Feature


Topiary Used to Define Entrance


Trees for Shading, Scale and Visual Interest

1. Define walkways with landscaping where appropriate.

2. Provide rest areas along the pedestrian circulation network with human-scaled deciduous shade trees. Supplement tree plantings with finely textured shrubs when appropriate for the climate.

3. Provide wind breaks where required.

C06.1.9. Parking Lot Landscaping

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188


Trees for Shading


Landscaping as an Amenity


Plantings for Shading, Screening and Security

1. Integrate appropriate landscaping elements into parking areas to visually soften the appearance at a minimum rate of --10 percent of the total area.

2. Avoid trees that drop sap, fruit, or seeds, and use long-lived species; keep trees trimmed, removing dead and dying trees or branches.

3. Provide planting in islands within parking lots for shade and appeal following IFS and the base stormwater management plan.

4. Rain garden islands will be landscaped to receive rainwater runoff from adjacent impervious parking areas to be absorbed into the ground/planting bed. Native plants and groundcovers are recommended within the rain garden areas, which can survive without supplemental irrigation once established.

C06.1.10. Screen/Accent Landscaping

○ Applicable ◉ N/A Large graphics do not apply

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Landscape Screening



Visual Screening at Group 4



Accent Planting at Entrance

1. Provide complimentary accent landscaping at monuments and static displays.

2. At Facility Group 1, provide landscaping adjacent to all freestanding signs without distracting from the written communication.

3. Provide landscape screening of utility elements adjacent to Facility Group 1.

4. Providing landscaping as visual screening is preferred to the construction of walls and fences; berming and mounding may supplement landscape screening.

C06.1.11. Other

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. No information is provided at this time.

End of Section

C07. SITE FURNISHINGS

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Site Furnishings:
http://afcfs.wbdg.org/site-development/site-furnishings/index.html

C07.1. Furnishings and Elements

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Pavilion with Regional Vernacular Materials and Detailing



AT Bollard



Stainless Steel Bicycle Rack



Bus Shelter

1. Provide a coordinated consistent inventory of site furnishings to positively contribute to the visual environment, image, and identity of the base; ensure durability, low maintenance, reduced visual clutter, and compatibility with the adjacent architecture.

2. Remove poorly located or redundant litter / ash receptacles, newspaper and bicycle racks, telephone booths, vending machines, walls and fences to reduce visual clutter and to lessen the requirements for maintenance.

3. Group 1 to 4 site furnishings will be architecturally compatible, able to withstand the extreme corrosive environment and must be approved by the 8th Civil Engineer Squadron. Generally match the site furniture of adjacent facilities and the facility district. Use durable materials that are appropriate for the architectural context and the environment such as factory-finished metals, fiberglass, precast concrete, quality wood, or those made of recycled materials.

4. Install needed outdoor seating (benches and low walls) in public gathering spaces near main and secondary building entrances. Low walls will match facility architecture.

5. Benches in Groups 1, 2 and 3 will be precast; powder coated steel and recycled plastic slats. Provide powder coated steel and recycled plastic slats or plastisol coated steel benches in Group 4 and parks.

6. Integrate functional bicycle racks with the design of the building's main entrance grounds in Facility Groups 1 and 2 while meeting AT requirements.

7. Bollards and Barricades Standards:

   a. Generally, limit the use of bollards to AT measures.

   b. Any AT bollard installed on Kunsan AB must be a manually retractable type permitting the bollard to be deployed or stored without removing it from the roadway.

   c. Retractable bollards must be counterbalanced to allow the operator to lift and lower the bollard without the use of heavy tools or equipment and to allow operation year-round in Kunsan's harsh climate.

   d. Retractable bollards must be removable from the ground if needed for maintenance and repair.

   e. All retractable bollards will have a minimum US Department of State K-Rating of K4, which is able to stop a 15,000 lbs (6,804 kg) vehicle traveling at 30 MPH (48 KPH).

   f. Retractable bollards will be finished according to UFC 4-022-01.

   g. Barricades, or barriers, may be used to prevent vehicle access to facilities or roadways where bollards are not installed. Barrier walls may be designed as raised planters or amenities at Group 1 facilities when feasible.

   h. Roadway barricades will not be part of a facilities design, however all new facilities must have their general site plan submitted to the Base Civil Engineer so changes may be made to the base barrier plan.

   i. Bollards used for building protection at overhead doors will use concrete-filled steel and may be sheathed with a bollard cover.

   j. Decorative bollards made of architectural precast concrete, cast iron or other materials may only be used in Groups 1, 2, 4, park and trails when approved by the BCE.

   k. Illuminated bollards may be used as approved on a case by case basis.

8. Locate architecturally coordinated containers for recycling, litter, ash, vending, etc., to minimize visual clutter and not be visible from the building's main entrance. Minimize the use of freestanding planters.

9. Generally limit picnic tables, barbeque grills and drinking fountains to lodging, dormitories, housing areas, parks and recreation areas following IFS.

10. The Installation Flagpole location will comply with the guidance for the display of flags in AFI 34-1201. Each Air Force installation is authorized to fly one United States Flag, normally in front of the installation headquarters. Waivers for non-authorized locations must be submitted in accordance with AFI 33-360 and approved waivers (AF Form 679) must be maintained by the installation protocol office.

11. Flagpoles using approved materials may be installed at locations designated by IFS, and in accordance with AFI 34-1201.

12. Refer to the Overview Section "Facility Hierarchy" topic of this AFCFS for guidelines regarding ancillary structures such as pavilions and shade shelters.

13. Bus shelters will be provided only where there is a documented need and when approved on a case by case basis. Generally, emulate the designs of adjacent shelters using protected metal or standing seam metal roofing system, concrete or CMU walls with plaster skim coat to match adjacent building finish.

14. Monuments and static displays will be limited. New elements are generally discouraged unless these are fully vetted through the base's approval process and designed following IFS.

15. When visual screening is necessary, consider landscaping as the first option; screen walls are permitted only in Group 1 finished with stucco.

16. For fencing, apply the standards for "Products, Materials and Color" in the following section. Limit those with the highest visual quality to Facility Group 1 where there is sustained maintenance. Define all levels of security and visual quality.

17. Do not use chain-link fencing at Group 1, 2 or 4 facilities; Limit the use of barbed-wire outriggers on chain-link fencing at industrial sites, unless required for additional security or protection of assets.

18. Wood fencing may be used in Facility Group 4 and in recreation areas following IFS for material and finish when there is sustained periodic maintenance.

19. Provide trash dumpster enclosures for Group 1, 2 and 3 with concrete or CMU/brick or stucco to match adjacent facilities; all gates will be metal factory finished dark brown color.

20. Specify screen wall materials and finishes that do not require painting or maintenance beyond periodic cleaning.

21. Group 1, 2, 3, 4 and park area picnic tables and seating will be plastisol coated steel or factory finished metal. Generally limit picnic tables, barbeque grills and drinking fountains to lodging, dormitories, housing areas, parks and recreation areas.

22. Limit the use of freestanding planters to areas with ongoing maintenance.

23. Provide kiosks only where there is a documented need for visual communication of posted messages. When used, match adjacent facilities in materials and detailing and consolidate kiosks with other site furnishings within 30 feet of major pedestrian paths. Limit kiosks to facility Groups 1 and 2 and parks.

24. Manufacturers listed in sections C07.2.1. - C07.2.18. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

End of Section

C07.2. Site Furnishings Products, Materials and Color

Note: *Apply the below base-wide standards for Site Furnishings (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

C07.2.1. Barbeque Grills

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Charcoal**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☑ Other

Mfr: Most Dependable Fountains, Inc. (US) or ROK equivalent

Color: Natural stainless steel

Finish: Mill

Model #: SS BBQ Grill

Other: Concrete foundation, coordinate with Base Architect; built-in charcoal grills may be approved by CES

UFGS: N/A



Type: **Natural Gas**

Applies to: ☐ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☑ Other

Mfr: BBQ Coach (US) or ROK equivalent

Color: Natural stainless steel

Finish: Mill

Model #: 32" 4-Burner

Other: Built-in masonry, coordinate with Base Architect

UFGS: N/A

C07.2.2. Benches

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Precast Concrete Bench**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Materials, Inc. (US) or ROK equivalent

Color: Weatherstone Gray

Finish: Standard Finish (Smooth)

Model #: Mesa, Rectangular design

Other: N/A

UFGS: N/A



Type: **Metal Bench**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☑ Other

Mfr: Belson Outdoors

Color: Medium bronze or, in parks, green

Finish: Factory powder coat

Model #: MF2012

Other: In-ground mount or surface mount; with or without arms

UFGS: N/A

C07.2.3. Bike Racks

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Ribbon Bicycle Rack**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Brandir International Inc.

Color: Galvanized

Finish: Factory

Model #: The Ribbon Bike Rack, RB-07

Other: N/A

UFGS: N/A

C07.2.4. Bike Lockers

○ Applicable ◉ N/A

C07.2.5. Bollards

◉ Applicable ○ N/A Number of base standards 3 Image Tool 250 x 188



Type: **Lighted Square Sloped Top**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Kim Lighting (US) or ROK equivalent

Color: Medium bronze

Finish: Anodized aluminum

Model #: VSB1 Square

Other: 3000K LED Lamp, 360° downlighting

UFGS: N/A



Type: **Lighted Round Dome Top**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Lithonia Lighting Products (US) or ROK equivalent

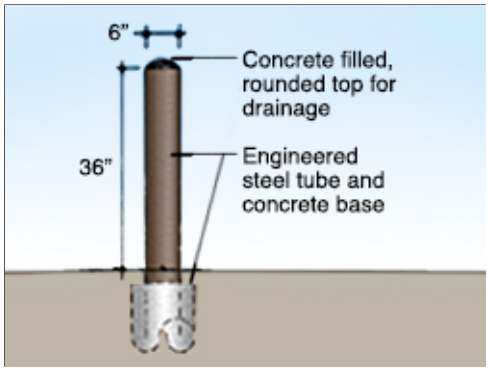
Color: Dark bronze

Finish: Anodized aluminum

Model #: KBA

Other: Flared cone, 3000K LED Lamp

UFGS: N/A



Type: **Building Protection, steel**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: (Bollard Cover) Reliance Foundry

Color: Brown cover may be field painted dark bronze

Finish: Factory

Model #: 6" Steel pipe, concrete filled, Cover: R-7173

Other: A 1" (25.4 mm) rigid conduit and box with shroud may be provided at top of bollard with a receiver/key switch application

UFGS: N/A

C07.2.6. Bus Shelters

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Aluminum Frame with Translucent Roof**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☑ Other

Mfr: Local TBD

Color: Medium bronze

Finish: Powder coated or anodized

Model #: Gabled roof

Other: Provide concrete slab and pre-manufactured aluminum bench

UFGS: N/A

C07.2.7. Drinking Fountains

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Pedestal**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: Most Dependable Fountains, Inc.

Color: Natural

Finish: Stainless Steel

Model #: MDF 440 SMSS

Other: Accessible

UFGS: N/A

C07.2.8. Dumpster Enclosures / Gates

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **1: Brick and Steel**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Local TBD

Color: Dark red brick blend, dark brown doors

Finish: Face brick, powder coated doors

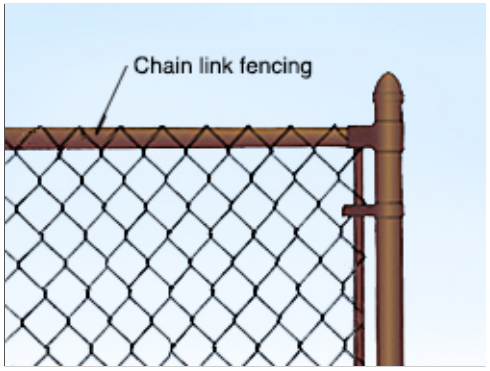
Model #: Match adjacent building

Other: Steel gates and hardware, dark brown, dumpsters will be painted dark brown

UFGS: Section 04 20 00 Unit Masonry

C07.2.9. Fencing

◉ Applicable ○ N/A Number of base standards 7 Image Tool 250 x 188



Type: **Style A Barrier: High Security, Low Visibility**

Applies to: ☐ Group 1 ☐ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: General Wire Co. (US) or ROK equivalent

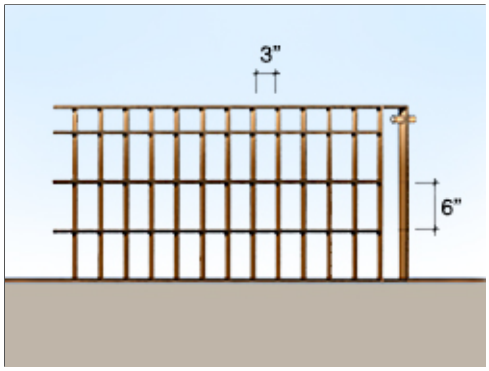
Color: Dark brown

Finish: PVC coating over galvanized steel

Model #: Chain link, steel posts and rails, gates and accessories

Other: Y outrigger and concertina wire may be used when required with CES approval

UFGS: Section 32 31 13 Chain Link Fences and Gates



Type: **Style B Barrier: High Security, Medium Visibility**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

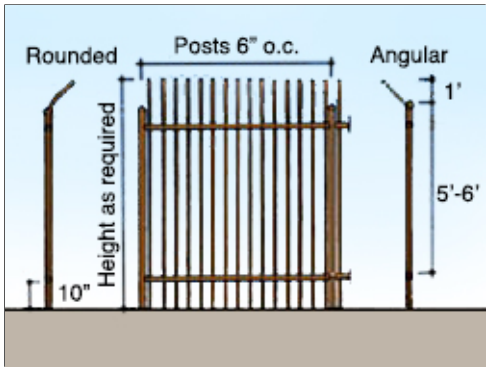
Color: Dark brown

Finish: Powder coat

Model #: Steel grid: flat bar stock verticals, round rod horizontals

Other: Steel posts, horizontal bars, braces, and accessories, in heights, lengths, and gauges as required; close all ends of tubing

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Style C Barrier: High Security, High Visibility**

Applies to: ☐ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom

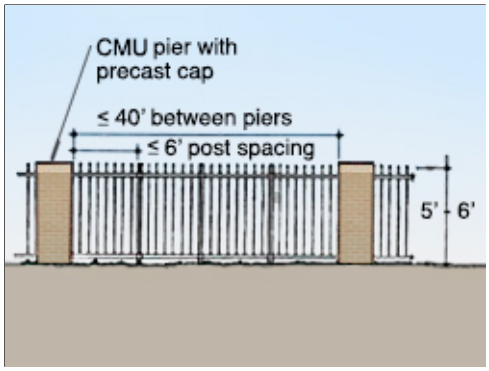
Color: Dark Brown

Finish: Powder coat

Model #: Steel posts, rails and pickets (vertical, bent outward at top)

Other: Posts, rails, and pickets in heights, lengths and gauges as required, (see Appendix for Facility Districts requirements)

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Style D Barrier: Low Security, High Visibility**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom

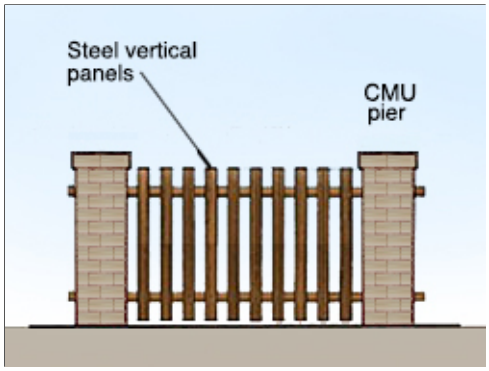
Color: Tan CMU, dark brown or black fencing

Finish: Ground face CMU with tan integral color, powder coated metal

Model #: CMU piers with steel posts, rails and pickets

Other: CMU: 2'x2' (Height as required, equally spaced 12' to 40'), steel posts: 4"x4" (equally spaced), rails: 2"x2", pickets: 1"x1" (6"o.c.); close all ends of tubing

UFGS: Section 04 20 00 Unit Masonry, Section 05 50 13 Misc. Metal



Type: **Style E Barrier: Low Security, High Visibility**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Color: Tan CMU, dark brown or black fencing

Finish: Ground face CMU with tan integral color, powder coated metal

Model #: CMU piers with steel posts, rails and alternating panels

Other: CMU: 32"x32" (eight as required, equally spaced 8' to 40'), steel posts: 4"x4" (equally spaced), rails: 1-1/4"x1-1/2", vertical steel panels spaced alternately on each side of the rails; matching gates; close all ends

UFGS: Section 04 20 00 Unit Masonry, Section 05 50 13 Misc. Metal



Type: **Style F Barrier: Very Low Security, High Visibility**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☑ Group 4 ☑ Other

Mfr: Local, TBD

Color: Integral mixed Davis Colors: dark warm gray

Finish: Factory

Model #: Post and rail

Other: Concrete 3-rail, wood-grain textured (4,000 psi at 28 days); posts: 39" height, 8' spacing, set 30" deep below grade with footing, typical

UFGS: SECTION 03 33 00 Cast-In-Place Architectural Concrete



Type: **Style G Barrier (Alternate): Very Low Security, High Visibility**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☑ Group 4 ☐ Other

Mfr: James Hardie Building Products, Inc.

Color: Off white and Earth tones

Finish: Factory

Model #: Post and rail with vertical cementitious boards

Other: Posts: Height as required, 8' max. spacing; apply boards to outside face

UFGS: Not Available (SECTION 074646 Fiber Cement Siding)

C07.2.10. Flagpoles

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Commercial Flagpole, Aluminum**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Eder Flag

Color: Natural aluminum

Finish: Satin lustre

Model #: ECL30 IH, Internal Halyard

Other: 5" Butt Dia. 33' H (30' Exposed)

UFGS: N/A

C07.2.11. Lighting – Landscape / Accent

Please refer to the Lighting section.

C07.2.12. Litter and Ash Receptacles

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Precast Concrete**

Applies to: ☐ Group 1 ☐ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Belson, Outdoors (US) or ROK equivalent

Color: Weatherstone precast, beige or brown lid

Finish: Medium texture

Model #: TF-1029 (square)

Other: Rigid black plastic internal liner, plastic push door lid

UFGS: N/A



Type: **Metal**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ◉ Other

Mfr: Wabash Valley (US) or ROK equivalent

Color: Black or as approved

Finish: Perforated Pattern

Model #: Urbanscape “E” with liner, 32 Gallon

Other: With dome top, without side door

UFGS: N/A

C07.2.13. Picnic Tables

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Precast Concrete**

Applies to: ◉ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Materials, Inc. (US) or ROK equivalent

Color: Weatherstone Gray

Finish: Standard Finish (Smooth)

Model #: TS-3490 New Mexican

Other: (303) 458-9595

UFGS: N/A



Type: **Metal, vinyl coated**

Applies to: ☐ Group 1 ☐ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Wabash Valley

Color: Brown or as approved

Finish: Factory vinyl coated

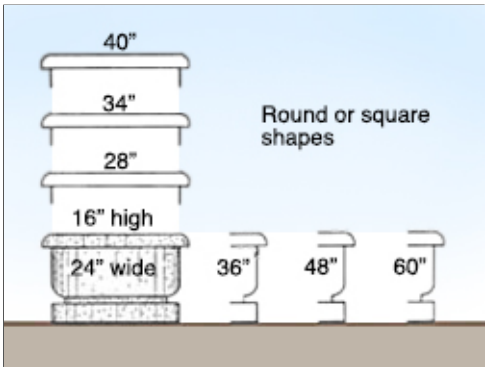
Model #: Signature Series, 46" Square Pedestal Tables with 4 Seats

Other: Perforated Pattern, In-ground mount

UFGS: N/A

C07.2.14. Planters

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Precast concrete**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Materials, Inc.

Color: Weatherstone Gray

Finish: Smooth

Model #: Santa Fe

Other: N/A

UFGS: N/A

C07.2.15. Play Equipment

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Steel**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ◉ Group 4 ◉ Other

Mfr: Little Tikes Commercial

Color: Varies

Finish: Powdercoated Steel

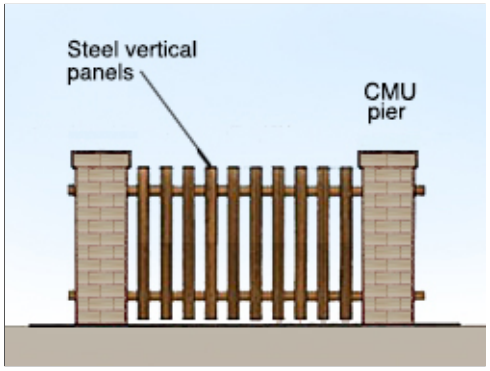
Model #: N-R-G Freestyle

Other: Coordinate with Base Architect

UFGS: N/A

C07.2.16. Screen Walls

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **CMU with Steel Panels (or Solid CMU)**

Applies to: ◉ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Color: Tan CMU, dark brown or black fencing

Finish: Ground face CMU with tan integral color, powder coated metal

Model #: CMU piers with steel posts, rails and alternating panels

Other: CMU: 32"x32" (eight as required, equally spaced 8' to 40'), steel posts: 4"x4" (equally spaced), rails: 1-1/4"x1-1/2", vertical steel panels spaced alternately on each side of the rails; matching gates; close all ends

UFGS: Section 04 20 00 Unit Masonry, Section 05 50 13 Misc. Metal



Type: **Metal Slat Panels**

Applies to: ◉ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Color: Tan, dark brown

Finish: Galvanized steel with fluoropolymer coating

Model #: Post and beam framing with slatted enclosure

Other: N/A

UFGS: Section 05 50 13 Misc. Metal

C07.2.17. Tree Grates

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Cast Iron**

Applies to: ◉ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Neenah Enterprises, Inc. (US) or ROK equivalent

Color: Natural cast iron

Finish: Cast

Model #: 2-Piece, round or square

Other: N/A

UFGS: N/A

C07.2.18. Other

○ Applicable ◉ N/A

C08. EXTERIOR SIGNS

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Exterior Signs:
http://afcfs.wbdg.org/site-development/exterior-signs/index.html

C08.1. Colors and Types

(●) Applicable ( ) N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

(●) Applicable ( ) N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Aluminum Stand-Out Letters Finished in Medium Bronze


Building Identification Sign


Monument Sign at Group 2


Hours of Operation Sign

1. Provide concise functional signs as a visually unifying element with consistent colors and types for all Installation and Gate Identification Signs; Building Identification Signs; Traffic Control Devices; Directional and Wayfinding Signs; and Informational and Motivational Signs.

2. Provide signs with the lowest overall life- cycle costs considering initial cost, ongoing maintenance and lifespan while meeting quality standards. Follow IFS for specifications appropriate for the local climate to withstand weathering.

3. Reduce the number of signs, reduce visual clutter and provide only essential signs required for identification, directions, instructions, and customer service following UFC 3-120-01. Remove non-conforming signs during renovation projects.

4. Use clear concise terms for content consistent with UFC 3-120-01.

5. Display of emblems on building exterior walls or other permanent structures is prohibited by UFC.

6. Raised “standout” letters and numbers may be used for Group 1 with approval on a case by case basis.

7. Group 2 and 3 facilities will have wall mounted facility signs with sizes and layouts following UFC 3-120-01. Signs are not permitted for Group 4 facilities.

8. Only one identification sign is permitted at each building entrance. Include a building address consistent with US Postal Service protocols following UFC 3-120-01.

9. Traffic Control Devices, which regulate vehicular traffic on the installation, will conform to the standards in the Manual of Uniform Traffic Control Devices (MUTCD) published by the Federal Highway Administration or the ROK equivalent. Coordinate street signs with this IFS.

10. Provide Directional and Wayfinding Signs and address both pedestrian and vehicular traffic following UFC 3-120-01 for size, layout and content.

11. Reserved parking signs should be kept to a minimum. When approved, provide post-mounted sign faces in base standard materials and colors. Consider "bracketing" a designated area with a single sign at each end.

12. Parking lot identification signs may be used to identify areas or rows within large lots.

13. Follow the guidelines and requirements in ABAAS and the MUTCD or the ROK equivalent for accessible parking signs.

14. Follow UFC 3-120-01 for Informational and Motivational Signs for size, layout and content.

15. Symbols or pictographs (graphic expressions of actual objects) may be used to indicate service, mandatory / prohibitory, sports, and recreation when rapid communication is necessary.

16. Force Protection signage may be applied to glass doors using white vinyl lettering.

17. Refer to UFC 3-120-01 for prohibited signs, which include those with animated, blinking, chasing, flashing, or moving effects.

18. Manufacturers listed in sections C08.1.1. - C08.1.10. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

C08.1.1. Materials and Color Specifications

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Fabricate sign panels from 2.3mm 0.090 inch thick aluminum or galvanized steel. Sign posts will be 3.2mm 0.125 inch thick aluminum or galvanized steel with capped ends in a concrete base.

2. Fence mounted sign panels may be attached with exposed fasteners.

3. All signage will follow Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) or the ROK equivalent using standard colors. Refer to MUTCD color specifications, which provide cross-referenced Pantone Matching System (PMS) numbers.

a. Standard Blue
b. Standard Dark Bronze (also Federal Standard Color 30040)
c. Standard Red
d. Standard Black (non-reflective)
e. Standard White
f. Standard Brown

Materials and Color Specifications

◉ Applicable ○ N/A Number of base standards 3 Image Tool 250 x 188



Type: **Typical Sign Face**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Custom

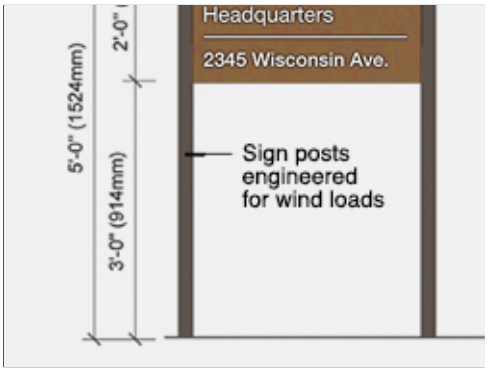
Color: Medium bronze

Finish: Matte vinyl

Model #: Aluminum flat sheet

Other: Mount to square posts. Provide sizes following UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Typical Sign Post**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Custom

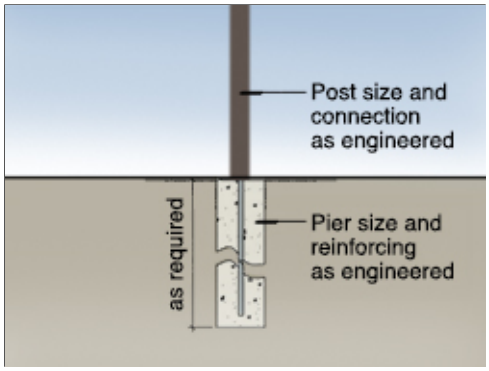
Color: Dark bronze, powder coat finish

Finish: Matte

Model #: Extruded aluminum with capped top ends

Other: Square posts and squared ends. Provide engineered sizes.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Typical Sign Base**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Custom

Color: Natural Gray

Finish: Sonotube-formed

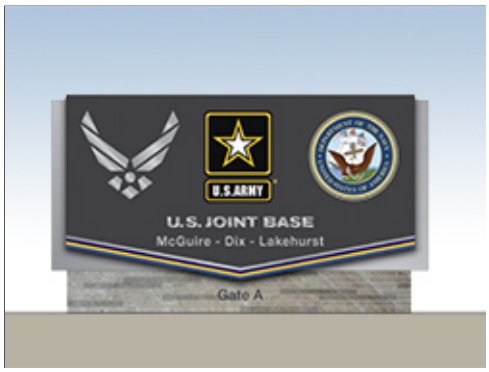
Model #: 24" height x 12" diameter, as engineered.

Other: At grade with 3/4" chamfer. Provide engineered sizes.

UFGS: UFGS 03 30 00 Cast-in-place Concrete

C08.1.2. Installation and Gate Identification Signs

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Primary, Secondary and Tertiary (Uses per UFC)**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom

Color: Dark bronze, brushed aluminum, accents per UFC

Finish: Powder coat or vinyl sign face

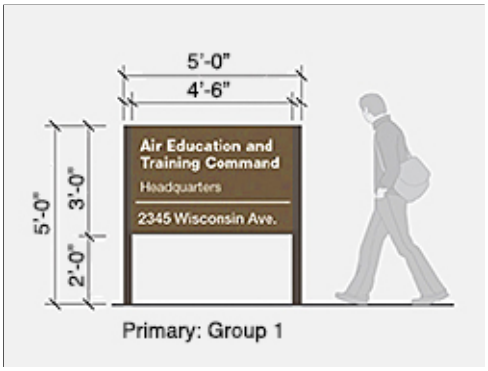
Model #: Metal frame and panels, buff stone base

Other: White vinyl lettering. Provide dimensions per UFC. Secondary signs shall match primary sign's materials, but shall be smaller in size per UFC. Tertiary signs shall follow the UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications

C08.1.3. Building Identification Signs

◉ Applicable ○ N/A Number of base standards 5 Image Tool 250 x 188



Type: **Freestanding Primary Sign (Sizes and Uses per UFC)**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom

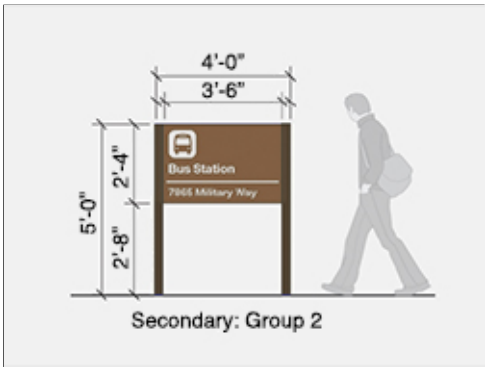
Color: Medium brown face, dark bronze posts, white vinyl lettering

Finish: Powder coat or vinyl sign face

Model #: Aluminum sheet face, extruded aluminum posts

Other: Provide layout and sizes per UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Freestanding Secondary Sign (Sizes and Uses per UFC)**

Applies to: ☐ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom

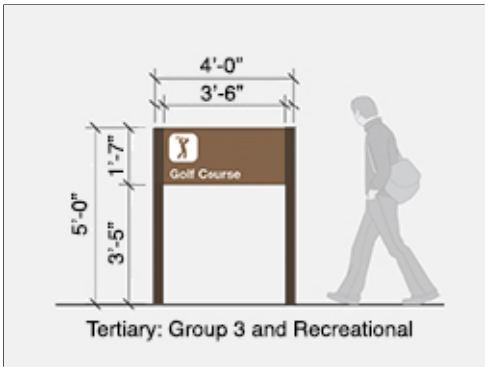
Color: Medium brown face, dark bronze posts, white vinyl lettering

Finish: Powder coat or vinyl sign face

Model #: Aluminum sheet face, extruded aluminum posts

Other: Provide layout and sizes per UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Freestanding Tertiary Sign (Sizes and Uses per UFC)**

Applies to: ☐ Group 1 ☐ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Custom

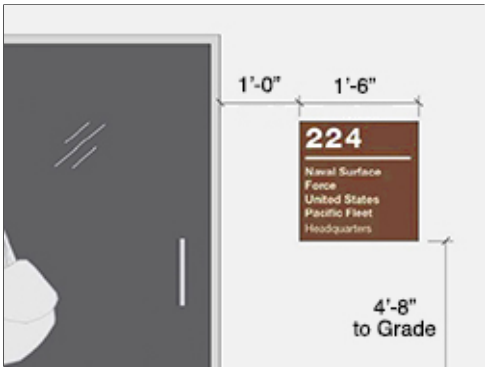
Color: Medium brown face, dark bronze posts, white vinyl lettering

Finish: Powder coat or vinyl sign face

Model #: Aluminum sheet face, extruded aluminum posts

Other: Provide layout and sizes per UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Wall Mounted**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom

Color: Medium brown, white lettering

Finish: Satin vinyl applied to aluminum sheet

Model #: Aluminum sheet with vinyl face and vinyl lettering

Other: Provide layout and sizes following UFC.

UFGS: N/A



Type: **Glass Mounted**

Applies to: ◉ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom

Color: White vinyl lettering

Finish: Matte vinyl

Model #: Machine-cut sheet vinyl

Other: Apply vinyl lettering to glass. Provide sizes following UFC.

UFGS: N/A

C08.1.4. Traffic Control Devices (Street Signs)

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Street Signs**

Applies to: ◉ Group 1 ◉ Group 2 ◉ Group 3 ◉ Group 4 ☐ Other

Mfr: Custom

Color: White reflective lettering on a Standard Brown background

Finish: Powder coat or vinyl sign face

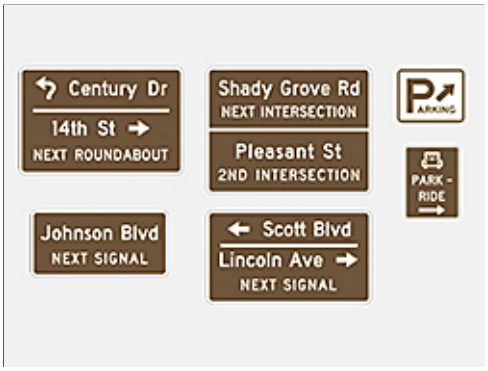
Model #: Aluminum sign face, control arm or pole mounted

Other: Mount 7' above grade minimum, pictographs and logos are prohibited on street name signs per UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications

C08.1.5. Directional and Wayfinding Signs

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Vehicular**

Applies to: ◉ Group 1 ◉ Group 2 ◉ Group 3 ◉ Group 4 ◉ Other

Mfr: Custom

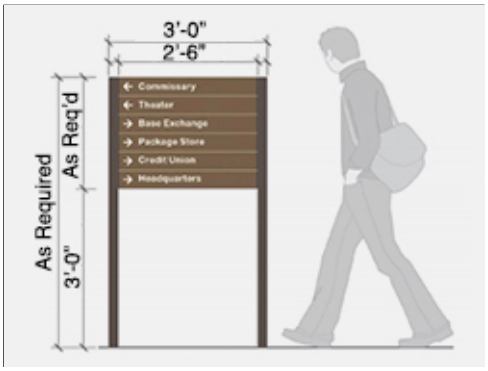
Color: Medium brown face, dark bronze posts, white reflective lettering

Finish: Powder coat or vinyl sign face

Model #: Aluminum sheet face, extruded aluminum posts

Other: Conform to the requirements of the MUTCD and its DoD Supplement. Provide types and sizes where required by UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications



Type: **Pedestrian**

Applies to: ◉ Group 1 ◉ Group 2 ◉ Group 3 ◉ Group 4 ◉ Other

Mfr: Custom

Color: Medium brown face, dark bronze posts

Finish: Powder coat or vinyl sign face

Model #: Aluminum sheet face, extruded aluminum posts

Other: White vinyl lettering. Provide types and sizes where required by UFC.

UFGS: Section 05 50 13 Miscellaneous Metal Fabrications

C08.1.6. Informational Signs

○ Applicable ◉ N/A Large graphics do not apply

○ Applicable ◉ N/A Small graphics do not apply

1. Minimize informational signs such as static display signs, hours of operation, and project signs to reduce visual clutter.

2. Static display signs will have standard brown color.

3. Hours of operation signs will have a level of quality equivalent to the Facility Group number.

4. Temporary / Project Signage will be judiciously placed to avoid visual clutter. Schedule and arrange for the removal of these signs prior to installation.

C08.1.7. Motivational Signage

◯ Applicable ◉ N/A Large graphics do not apply

◯ Applicable ◉ N/A Small graphics do not apply

1. Provide professionally produced motivational signs as important elements of campaigns to boost morale, improve safety, aid in recruiting, and accomplish other motivational objectives. Consolidate this signage to reduce visual clutter.

2. Motivational signs will be limited to an electronic "marquee" type changeable sign near each gate. Temporary signs are not permitted. Motivational information may also be posted in a small, printed format on kiosks in specified, high pedestrian use areas. Refer to kiosks under Site Furnishings.

3. Follow UFC 3-120-01 or the ROK equivalent for color and layout. Note that animated, blinking, chasing, flashing, or moving effects are prohibited by the UFC.

4. Mount marquee signs on reinforced concrete bases with a natural warm gray color.

C08.1.8. Parking Lot Signs

◯ Applicable ◉ N/A

1. Follow UFC 3-120-01 and AFCFS.

C08.1.9. Regulatory Signs

◯ Applicable ◉ N/A

1. Regulatory signage, which restricts, warns and advises, will be limited to those mandated under Highway/Traffic, Government Warning, and/or Parking Regulation. Follow UFC 3-120-01 and its industry references for color and layout.

2. Provide a comprehensive, systematic approach to regulatory signage to avoid clutter and confusion from “over signage.”

3. Maintain base warning signs for safety and security at the base perimeter and at specific secure areas. Use these to notify visitors of restrictions governing conduct on the base, as well as other security procedures.

C08.1.10. Other

◯ Applicable ◉ N/A

1. No information is provided at this time.

End of Section

C09. LIGHTING

Comply with AF Corporate Standards for Site Development:
http://afcfs.wbdg.org/site-development/index.html

Comply with AF Corporate Standards for Lighting:
http://afcfs.wbdg.org/site-development/lighting/index.html

C09.1. Fixtures and Lamping

(●) Applicable ( ) N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

(●) Applicable ( ) N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Standard Street Lighting Fixtures, Placement and Spacing



Pedestrian-Scaled Fixture and Bollards



Indirect Lighting Fixture



Wall-Pack Fixture at Secondary Entrance

1. Provide, coordinate and efficiently install street, parking lot, sidewalk and facility lighting with appropriate luminaires, lamping, placement and spacing following UFC 3-530-01 or the ROK equivalent and Installation Facilities Standards (IFS); ensure the level of quality is consistent with the adjacent facility group number. Pole-mounted, wall-mounted and bollard fixtures are permitted.

2. Integrate controls to automatically reduce lighting power during periods of non-activity; automatically turn off power when sufficient daylight is available.

3. Ensure continuity and consistency of lighting elements. In new construction generally match post types, fixture types, styles, heights, sizes, materials, colors, and lamp types of adjacent facilities and the facility district.

4. Economically provide renewable-energy power sources such as solar photovoltaic when feasible.

5. Use appropriately designed or shielded luminaires to direct light downward to minimize light pollution and intrusion onto adjacent sites and to facilitate night training.

6. Calculate illuminant levels for all lighting applications following UFC 3-530-01 or the ROK equivalent and ensure compliance with pre-curfew maximum brightness level requirements.

7. Sufficiently address environmental factors to prevent corrosion and weathering of fixtures, plinths and other components.

8. Wall mounted fixtures should respond to the architectural character of the facility.

9. Efficient accent lighting of architectural and landscape features may be provided for Group 1, lodging and historical applications. Accent lights in ground-mounted locations may be provided for static displays and signs when these do not conflict or cause hazards with overhead aircraft.

10. Comply with UFC 3-530-01 or the ROK equivalent for light source technology and lamp types. High efficiency lamping such as LED is preferred for most applications.

11. Provide round tapered, square non-tapered, or round non-tapered aluminum or galvanized steel poles and aluminum or galvanized steel fixtures with square, rectangular or circular housings in colors and shapes to match adjacent facilities and the facility district.

12. Install lighted bollards only at Group 1, high-traffic Group 2 facilities and on running trails. Generally match materials, colors and shapes of adjacent facilities and the facility district.

13. Install natural warm gray color, smooth finished concrete bases for all poles in heights appropriate for the facility group and application. Generally Groups 1, 2 and 4 will have at-grade bases. Group 3 will have taller bases for added durability.

14. When parking lot lighting is necessary, provide an illuminated path to the building's main entrance. Pole bases should be contained within an internal landscape median or island.

15. Consistently install lighting for sidewalks, bikeways and trails to match adjacent facilities.

16. Landscape accent lighting may be used in public gathering spaces and in Group 1 facilities. Coordinate the design, luminaire selection, and placement with the location of trees, shrubs, and site furnishings.

17. Manufacturers listed in sections C09.2.1. - C09.2.6. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

End of Section

C09.2. Light Fixture Types

Note: *Apply the below base-wide standards for Light Fixtures (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

C09.2.1. Street Lighting

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **LED Street**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☑ Other

Mfr: Hubbell, Beacon Viper luminaire (US) or ROK equivalent

Color: Dark bronze, gray or clear anodized aluminum as approved by BCE

Finish: Factory

Model #: VPL/ 80NB-180/4K/T3/UNV/GYS, single arm or dual arm

Other: Lamp LED, Roadway – Poles will be 25' round or square seamless aluminum; up to 8' up swept mounting arm; pole will be rated for 100 MPH wind with a 1.3 factor

UFGS: N/A

C09.2.2. Parking Lot Lighting

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **LED Parking Lot**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☑ Other

Mfr: Hubbell, Beacon Viper luminaire (US) or ROK equivalent

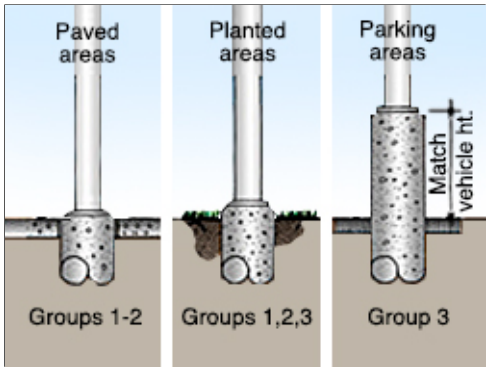
Color: Dark bronze or clear anodized as approved by BCE

Finish: Factory

Model #: VPL/ 80NB-180/4K/T3/UNV/GYS, single arm or dual arm

Other: Lamp LED, Parking – Poles will be 16' round or square seamless aluminum; up to 1.5' up swept mounting arm; pole will be rated for 100 MPH wind with a 1.3 factor

UFGS: N/A



Type: **Parking Lot Fixture Base**

Applies to: ◉ Group 1 ◉ Group 2 ◉ Group 3 ☐ Group 4 ◉ Other

Mfr: Custom

Color: Natural gray

Finish: Trowel

Model #: Form-cast, round

Other: N/A

UFGS: Section 03 33 00 Cast-In-Place Architectural Concrete

C09.2.3. Lighted Bollards

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Lighted Round Flat Top**

Applies to: ◉ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ◉ Other

Mfr: Lithonia Lighting Products

Color: Medium bronze or dark bronze to match adjacent

Finish: Anodized aluminum

Model #: KBC8

Other: Flared cone, 3000K LED Lamp. Follow manufacturer's recommendations for fixture base.

UFGS: N/A



Type: **Lighted Square Sloped Top**

Applies to: ◉ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Kim Lighting (US) or ROK equivalent

Color: Medium bronze

Finish: Anodized aluminum

Model #: VSB1 Square

Other: 3000K LED Lamp, 360° downlighting

UFGS: N/A

C09.2.4. Sidewalk Lighting

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Rectilinear Cutoff**

Applies to: ◉ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ◉ Other

Mfr: Hubbell, Kim Lighting (US) or ROK equivalent

Color: Dark bronze anodized (or clear anodized as approved by BCE)

Finish: Anodized aluminum

Model #: Rectilinear Cutoff, Single Arm or Dual Arm Mount

Other: Lamp: LED. Follow manufacturer's recommendations for fixture base.

UFGS: N/A

C09.2.5. Walls / Stairs Lighting

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Vista Lighting

Color: Dark bronze anodized

Finish: Smooth

Model #: Aluminum Step and Brick Lights, 5230 round louvered

Other: Lamp: LED

UFGS: N/A

C09.2.6. Other

○ Applicable ◉ N/A

D. FACILITIES EXTERIORS

Comply with Air Force Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Group 3 Standard Materials and Colors



Group 2 Training Facility



Group 1 Administrative



Group 4 Housing

D01. SUPPORTING THE MISSION

Comply with AF Corporate Standards for Supporting the Mission:
http://afcfs.wbdg.org/facilities-exteriors/supporting-the-mission/index.html

D02. SUSTAINABILITY

Comply with Air Force Corporate Standards for Sustainability:
http://afcfs.wbdg.org/facilities-exteriors/supporting-the-mission/index.html

D03. ARCHITECTURAL FEATURES

Comply with AF Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

Comply with AF Corporate Standards for Architectural Features:
http://afcfs.wbdg.org/facilities-exteriors/architectural-features/index.html

Insert 3 photos for each facility group.

Image Tool 250 x 188

Group 1





Group 2





Group 3





Group 4





D03.1. Orientation, Massing and Scale

1. Orient new buildings to maximize energy efficiency, passive solar and daylighting potential of the building; narrow buildings oriented along an east-west axis are preferred with fixed shading for appropriate levels of heat gain in the spring, summer and autumn months resulting in less overall energy usage.

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Orientation for Energy Efficiency and Functionality



Monumental Scale



Articulated Massing at Entrance



Massing Reinforcing Function

2. Generally, orient the main entrance, the majority of windows and parking areas to the south, maximizing solar heat gain.

3. Provide orthogonal geometry for principal building form; angular and curvilinear geometry may be used sparingly for Group 1 and used only for emphasis at specific areas such as building entrances or stairwells.

4. Maintain a human scale and reduce the visual scale of large buildings with sub-massing related to interior functional operations; create consistent form and scale in adjacent buildings with compatible profiles or silhouettes.

5. Building heights will not be limited; however, building heights over 2 stories will be considered on a case by case basis.

6. Combine functions where practical to avoid a proliferation of small, independent structures.

7. Use and coordinate shading devices with orientation and for function.

D03.2. Architectural Character

1. Develop architectural features, materials and detailing appropriate for the Facility Group designation. Refer to Building Entrances, Wall Systems and Roof Systems.

2. Respond to the local climate with environmentally functional architectural features. Understated references to the historical architecture may be made but avoid directly reproducing features and ornamental detailing.

3. For new facilities design generally maintain consistency and visual unity with the character of the adjacent buildings through compatible architectural features: repeated use of similar forms such as roofs, and through recurring elements such as doors, windows, materials and colors.

4. Reinforce the local and contemporary vernacular theme with architectural features expressive of innovation and technology that represents the current mission. Building character of new construction will be generally simple massing of concrete construction, usually with 'flat' minimal-slope roofs with extended fascias or parapet designs. Existing building character can be followed for renovations. Renovations and rehabilitations are part of the O&M program.

(●) Applicable ( ) N/A Select number of graphics / images (large: 800 px x 440 px) to insert 2 Image Tool 800 x 440

(●) Applicable ( ) N/A Select number of graphics / images (small: 250 px x 188 px) to insert 3 Image Tool 250 x 188



Contemporary Vernacular Theme with Base-Wide Standard Materials and Color



Group 2 Lodging with Porte-Cochere and Contemporary Vernacular Theme



Base Standard Materials and Color at Gate



Visual Texture at Facility Group 2



Historical References in Gate Features

5. All facilities will express sustainability through their orientation, massing, shape, form, materials, and detailing. Provide louvers, overhangs, fins and other strategies to optimize heat gain and reduce glare and to improve energy efficiency. Use only low-maintenance and highly durable materials.

6. Strive for economical construction without compromising a high-quality, professional appearance.

D03.3. Details and Color

1. Provide a compatible palette of earth-tone colors related to existing facilities in concrete, masonry and powder-coated nonferrous metals. Refer to wall systems and roof systems for detailed material listings.

2. Relate the level of architectural detailing to the Facility Group number. Group 1 is reserved for the highest quality detailing.

3. Use only integrally colored or factory finished materials as the predominant exterior building material; do not use materials that require field painting and ongoing maintenance.

4. Note: Only materials that have been previously painted may be repainted. Refer to supplemental document *G09 Kunsan AB IFS Finishes* which includes exterior painting and color standards: "Facilities Exteriors - Paints and Coatings, Colors." This document may be downloaded using the link in Appendix G.

5. Provide consistent and compatible colors for every exterior building feature, including walls, roofs, doors, windows, gutters, downspouts, utility and mechanical elements, and other visible elements.

6. Noncorrosive metals with factory applied color finishes are required.

7. Combine details and color with orientation, massing, scale and architectural character to maintain base compatibility.

8. Manufacturers listed in sections D03.3.2. - D03.3.7. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

◉ Applicable ○ N/A Select number of graphics / images (large: 800 px x 440 px) to insert 1 Image Tool 800 x 440

◉ Applicable ○ N/A Select number of graphics / images (small: 250 px x 188 px) to insert 6 Image Tool 250 x 188



Compatible Palette of Earth Tone Colors



Coordinated Elements of Facade



Noncorrosive Metals



Stone with Integral Color



Architecturally Compatible Detailing



Stone Cladding at Group 1



Wainscot and Window Detailing at Group 1

6. Noncorrosive metals with factory applied color finishes are required.

7. Combine details and color with orientation, massing, scale and architectural character to maintain base compatibility.

8. Manufacturers listed in sections D03.3.2. - D03.3.7. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

D03.3.1. Climate-based Data and Life-Cycle Cost-Effective Passive and Natural Design Strategies:

- ○ Climate dominated by mechanical cooling
- ◉ Climate dominated by mechanical heating
- ○ Climate with similar mechanical cooling / heating needs
- ○ Climate with minimal mechanical cooling / heating needs

- ◉ Climate with high humidity
- ○ Climate with moderate humidity
- ○ Climate with low humidity

- ○ High Solar Insolation
- ○ Moderate Solar Insolation

- (●) Low Solar Insolation

- ( ) Soils with High Thermal Conductivity
- (●) Soils with Average Thermal Conductivity
- ( ) Soils with Low Thermal Conductivity

Other: Consider the potential for flooding and corrosion

Other: Vapor barriers and flashings must be installed acceptably

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Facility: Narrow buildings along E-W axis are preferred

Wall: Integral shading features and devices / Interior masonry thermal mass walls

Doors: Recessed are preferred

Windows: Limit north-facing windows and appropriately locate windows on south façades to optimize solar heat gain when needed

Roof: Low to medium albedo, minimal to moderate slope

Structure: Do not expose ferrous metals; provide factory finished non-ferrous metals or concrete

MEP: Ground-source, radiant heating and heat recovery following LCCA

Other: Optimize shading devices to allow appropriate levels of solar heat gain year round

Other: Internal thermal mass walls to supplement radiant heat systems following LCCA

Note: *Apply the below base-wide standards for Architectural Features (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

D03.3.2. Natural Ventilation System

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1 Aluminum Windows**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Kawneer (or equivalent)

Color: Dark Bronze (or clear anodized as approved by BCE

Finish: Anodized

Model #: 2x4, slider or awning type

Other: Provide thermally broken frames.

UFGS: Section 08 41 13 Aluminum-Framed Entrances and Storefronts

D03.3.3. Thermal Mass

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1 Interior Wall Material**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Custom, TBD

Color: Red brick blend

Finish: Light texture

Model #: Coursed unit masonry

Other: Brick is preferred. Concrete block may only be used in Group 3 when approved by the BCE.

UFGS: Section 04 20 00 Unit Masonry

D03.3.4. Thermal Shading

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1 Wall Devices**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Kawneer (or equivalent) or custom

Color: Dark bronze

Finish: Factory, to match frames

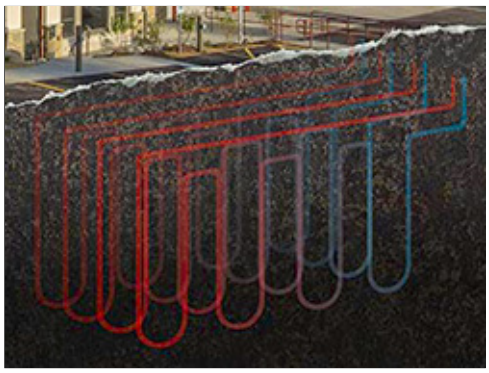
Model #: Louver

Other: Shading devices may be attached to frames or structure

UFGS: Section 08 41 13 Aluminum-Framed Entrances and Storefronts

D03.3.5. Renewable Heating/Cooling

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1 Geothermal (Ground Source)**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: Climate Master

Color: N/A

Finish: N/A

Model #: N/A

Other: Vertical ground loop well field

UFGS: Section 23 81 47 Water-Loop and Ground-Loop Heat Pump Systems

D03.3.6. Solar Photovoltaic System

○ Applicable ◉ N/A

D03.3.7. Solar Thermal System

◯ Applicable ◉ N/A

D04. BUILDING ENTRANCES

Comply with AF Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

Comply with AF Corporate Standards for Building Entrances:
http://afcfs.wbdg.org/facilities-exteriors/building-entrances/index.html

Insert 3 photos for each facility group.

Image Tool 250 x 188

Group 1





Group 2





Group 3






Group 4






D04.1. Primary Entrances

1. Emphasize the primary entrance in the overall building design with a projected or recessed covering for weather protection in a color to contrast with the overall facade. Generally, provide roofs that will endure without degradation due to weathering and with zero to very low maintenance requirements. Ensure an appropriate level of quality consistent with the Facility Group designation.

2. Provide a roof over all entrances to shed snow and ice away from pedestrians. Covered arcade elements may be used for Facility Group 1.

3. Provide vestibules at entries in Groups 1, 2 and 3 unless used infrequently or serving unconditioned space following ASHRAE 90.1. Design vestibules (air locks) to minimize heat loss during the action of opening and closing doors.

4. Fully integrate all elements including the design of handicap ramps in the overall design of the primary entrance in an organized uncluttered appearance.

5. Install paved transitional spaces sized for the building function and occupancy.

6. Install appropriate lighting and site furniture following AT and IFS.

7. Protect entrances from heavy rains and from direct sun. Develop roof slopes to minimize the need for gutters and to prevent water from discharging onto sidewalks.

8. Provide porte cocheres or covered drop-offs when justified for lodging and medical facilities; do not use for prestige or architectural accents.

9. Include vestibules, recessed doors, or large roof overhang at entrances to provide protection from rain and increased splinter protection.

10. Locate main entrances away from service areas.

D04.2. Secondary Entrances

1. Provide vestibules at entries in Groups 1, 2 and 3 unless used infrequently or serving unconditioned space following ASHRAE 90.1; use of stair towers as vestibules for multi-story buildings is encouraged when building and / or energy codes are satisfied.

2. Reflect the general character of the primary entrance but to a lesser extent with a smaller scale and to blend with the adjacent wall using a matching color.

3. Include a recess or projection for weather protection and shading.

4. Integrate service and egress doors and loading areas with the building design by matching the materials and detailing and reflect the overall quality of the facility.

5. Incorporate egress structures such as stair towers into the facility design.

6. Canopies may be used for service and loading areas where there is a documented need; provide weatherstripping and appropriate insulation for all doors including those used only for life safety egress.

7. Develop building massing and orientation to minimize the appearance of service and loading areas; physically and visually separate these from primary entrances.

8. Loading areas must be organized, orderly and have an uncluttered appearance.

End of Section

D05. WALL SYSTEMS

Comply with AF Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

Comply with AF Corporate Standards for Wall Systems:
http://afcfs.wbdg.org/facilities-exteriors/wall-systems/index.html

Comply with AFCFS Recommended Materials:
http://afcfs.wbdg.org/facilities-exteriors/wall-systems/materials/index.html

Insert 3 photos for each facility group.

Image Tool 250 x 188

Group 1





Group 2





Group 3





Group 4





D05.1. Hierarchy of Materials

1. Group 1 facilities may have more refined detailing than Group 2 and Group 2 may have more definition than Group 3.

2. When Group 1 facilities are constructed of reinforced natural concrete framing or precast framing and exterior framing components such as beams, columns and bearing walls are exposed, natural concrete finishes may be prepared and may receive tan synthetic stucco as the final finish. Natural concrete or masonry infill panels may receive the same stucco finish. Infill panels may be constructed of materials with integral color such as brick or architectural precast with BCE approval.

3. When Group 1 facilities are constructed of steel framing or precast concrete framing, tan architectural precast panel cladding with integral color may be used as the predominant wall material. Dark tan precast panels may be used as a secondary material. Do not paint panels with integral color. Natural stone and brick may be used as secondary materials or accents with BCE approval. Curtainwall may be used as a secondary material only with BCE approval.

4. Group 2 facilities will be predominantly tan synthetic stucco finish coat over precast or cast-in-place natural concrete. Where natural concrete structural framing components such as beams, columns, bearing walls, or infill panels are used, all exterior concrete elements will receive a tan synthetic stucco finish. A contrasting dark tan synthetic stucco or masonry wainscot may be used as a visual base to accent the upper walls. Insulated metal panels or EIFS may be used in lieu of synthetic stucco following a life-cycle cost analysis and with BCE approval. Fascias may be finished brown to match roofs.

5. Group 3 facilities that are manned will be predominantly tan synthetic stucco finish coat over cast in place natural, concrete structural columns, beams and bearing walls and / or natural concrete panel systems. EIFS may be used with BCE approval when the proposed system meets IFS requirements. As an alternative, tan insulated metal panel systems may be used over a concrete or steel structural framing following a life-cycle cost analysis. Unmanned facilities may use tan ribbed metal sheeting. Masonry may be provided as a wainscot on one or more exposures for added durability or when facilities are along a high-visibility or special route. Natural concrete foundation walls, with BCE approval, may receive a clear sealer to maintain the natural appearance and create a visual base.

6. Group 4 will be predominantly tan synthetic stucco finish. Brown fascias should match sloped roofing color.

7. All facilities on Kunsan AB must comply with the base exterior color standards listed below. Refer also to sections D05.4.1. through D05.4.13. for colors listed by the type of system.

8. Use of concrete masonry units (CMU) is discouraged for all facility groups due to excessive weathering and maintenance requirements.

9. Multi-story Group 1, 2 and 3 facilities may include a transition in material, color or detailing to create a visual base. Generally, limit these facilities to three field colors and Group 3 facilities to two field colors.

10. Brick Standards:
    a. Use Brick Industry Association (BIA) or ROK standard nomenclature for brick sizes. Use BIA "Modular" size (2-1/4 x 3-5/8 x 7-5/8) or BIA "Utility" (3-5/8 x 3-5/8 -11-5/8) face brick, or ROK equivalent in a running bond pattern with tooled concave joints.
    b. Header, rowlock and soldier coursing or other accents are encouraged for Group 1.
    c. Ensure thru-wall flashings follow SMACNA or ROK requirements.
    d. Dark red brick blend will be the predominant standard color unless matching adjacent facilities. Examples of acceptable dark red brick color and accent color include:

Manufacturer	Color(s)
Belden:	Dark Red: Canyon Clear Velour (Brown)
Belden:	Gray: Smoky Gray Velour

11. Architectural Precast Concrete or Cast-in-Place Concrete Standards:
    a. Architectural precast panels using repetitive sizes and joint patterns are appropriate for walls.
    b. Tan is the standard color for precast concrete with integral color. Dark tan may be used as a visual base.
    c. Detailed designs and patterns may be cast into the pieces for Group 1 facilities to create an individual character for a single facility or complex.
    d. Site-cast, cast in place systems and components require CES approval.

e. Natural concrete will be finished with synthetic stucco except for architectural foundation walls, when approved by CES, which may be clear sealed.

12. Synthetic Stucco Standards
    a. Provide concrete surface coatings per Section 09 96 00 High-Performance Coatings.

    b. Prepare concrete surfaces per Section 09 96 00 High-Performance Coatings and Section 09 90 00 Paints and Coatings following the most stringent requirements of each and following product manufacturer recommendations to maintain full warranty.

13. Exterior Insulation Finish System (EIFS).
    a. Only "drainable" EIFS systems will be considered. Wall sections demonstrating acceptable drainage plane, venting and weep components must be approved by CES.
    b. Refer to supplemental document *G07 Kunsan AB IFS Thermal and Moisture Protection*.
    c. Construction drawings and details of acceptable flashing at window and door openings are required and must be approved by CES prior to award of the construction contract.
    d. Field inspections of the installed flashing must be documented and approved by CES prior to the application of the insulation board.
    e. Approved colors and textures must match those listed in section D05.4.9. EIFS. Other colors textures require prior approval by CES.
    f. Required Maintenance and Inspections:
        1) EIFS may be used only when there are regularly scheduled inspections for impact damage. Inspection must be provided biannually at a minimum. Any impacts noted where the finish coat is broken to allow moisture to reach substrates must be promptly repaired.
        2) If bird nesting or pecking is found, repairs must be made, and protection must be installed to prevent further damage.

14. Metal Panel and Metal Sheeting Standards:
    a. Insulated metal panels may be used for actively crewed industrial buildings, such as hangars and repair facilities.
    b. Metal sheeting with draped or batt insulation backup and interior liner sheeting is acceptable for Group 3 buildings that are small in scale and with limited occupancy.
    c. Uninsulated metal panel and sheeting systems are only acceptable where interior heating or cooling systems are absent, such as unoccupied storage buildings.
    d. Proportions, scale, and orientation of metal panels must be approved by CES.
    e. Exposed fasteners (screws) are not acceptable for either roof or wall panels except with CES approval.
    f. All exposed metals will be factory finished with a fluoropolymer coating such as Kynar 500 or equal. Silicone applications are not acceptable.
    g. Provide a secondary color of metal or a secondary complementary material and color for wall systems on facilities over 5,000 square feet.

15. Use high-performance building envelopes following UFC 1-200-02.

16. Use detailing that is not subject to excessive weathering. Generally, provide wall accents consistently throughout the base for each facility group. In major renovations where CMU is used, ensure thru-wall flashing installation and detailing is per SMACNA (or ROK equivalent standard) and application of proper sealer to prevent efflorescence.

17. Use integrally colored concrete and masonry with clear sealers when recommended by the manufacturer. Do not paint brick, precast concrete with integral color, or concrete masonry units (CMU) with integral color. Materials with integral color may be cleaned and sealed under painting contracts.

18. Translucent wall panels may be used in Facility Groups 1, 2 and 3 when protected from direct solar gain. Provide insulating panels and shading appropriate for the orientation and exposure.

19. Manufacturers listed in sections D05.4.1. - D05.4.13. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

D05.2. Layout, Organization and Durability

1. Organize wall components including doors, windows, accents, shading devices, control joints, etc., to provide an ordered, professional appearance.

2. Integrate shading devices into the overall composition of the wall.

3. Integrate fixed shading devices to reduce glare and promote daylighting in interiors. Generally, promote solar gain into interiors as a passive design measure to reduce energy use. Ensure adequate shading at west entrances. Deciduous trees may be used for shading.

4. Shading systems may be included as part of a manufacturer's window system or may be custom systems integrated into the wall.

5. Provide appropriate transitions between dissimilar materials to mitigate effects of thermal expansion and galvanic action per UFGS 07 60 00 Flashing and Sheet Metal.

6. All joint sealants will be slightly darker than adjacent surfaces.

7. Materials requiring regular maintenance are not permitted; do not use exposed structural steel, exposed glued laminated construction or other materials that require field painting.

8. Refer to C07.2.16. Screen Walls for materials and colors of freestanding walls.

9. Refer to D07. Roofs for parapets.

D05.3. Equipment, Vents and Devices

1. Arrange all mechanical, electrical, fire alarm, lightning protection and other system components to create an orderly appearance that integrates with the wall system.

2. Do not expose conduits, cables, piping, lightning protection components, etc. on exterior walls; if unavoidable in renovations, finish these elements to match the adjacent wall surface.

3. Avoid visual clutter, and where surface-mounted elements are required they will match the wall color.

D05.4 Wall Systems Materials

Facility Group 1 wall materials will be as follows.

Primary:	Brick or Architectural Precast Panel System
Secondary:	Alternate Brick or Architectural Precast Panel
Accent:	Alternate Color of Brick or Precast

Facility Group 2 wall materials will be as follows.

Primary:	Cast-in Place Concrete System
Secondary:	Concrete Infill
Accent:	Optional: Brick Wainscot

Facility Group 3 wall materials will be as follows.

Primary:	Concrete / Stucco, Metal Panels or Sheeting
Secondary:	Alternate Color or Material
Accent:	Optional: Wainscot in Alternate Color or Material

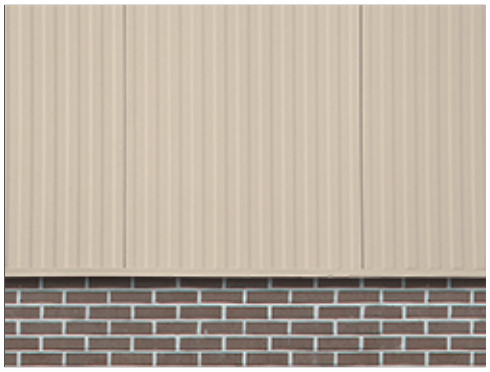
Facility Group 4 wall materials will be as follows.

Primary:	Cast-in-Place Concrete with Stucco
Secondary:	N/A
Accent:	Optional: Alternate Color of Stucco

Note: *Apply the below base-wide standards for Wall Systems (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

D05.4.1. Flat Metal Panels

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Insulated Metal Panel System - Galvanized Steel or Aluminum**

Applies to: ☐ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Metl-Span (US) or ROK equivalent

Model #: Insulated Metal Wall System

Color: Beige or off-white as approved by CES

Finish: Factory embossed, course textured, fluoropolymer

Other: N/A

UFGS: Section 07 42 13 Metal Wall Panels:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 42 13.pdf
Section 07 42 63 Fabricated Wall Panel Assemblies:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 42 63.pdf

D05.4.2. Brick Veneer

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Modular Face Brick - Dark Red**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, To Be Determined (TBD)

Model #: Modular face brick, 2.3x4x8 nominal or ROK standard, extruded

Color: Dark red blend under section D05.1.10.d.

Finish: Straight edges, smooth texture

Other: N/A

UFGS: Section 04 20 00 Unit Masonry:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 04 20 00.pdf



Type: **Thru-Wall Flashing with Weeps at Window Head**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Masonpro (US) or ROK equivalent

Model #: Concealed flashing, open weeps window head

Color: Silver or dark gray to blend with grout

Finish: Mill finish

Other: Provide corner and end dam flashing

UFGS: Section 04 20 00 Unit Masonry:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 04 20 00.pdf

D05.4.3. Architectural Precast

◉ Applicable ○ N/A Number of base standards 3 Image Tool 250 x 188



Type: **Architectural Precast Wall Panel System - Factory Integral Color**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Model #: Smooth casting, 6,000 psi density to resist weathering

Color: Tan, dark tan

Finish: Very light texture

Other: Decorative integral relief patterns must be approved by the BCE

UFGS: Section 03 45 00 Precast Architectural Concrete:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 45 00.pdf



Type: **Architectural Precast Wall Panel System – Synthetic Stucco Finish**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: La Habra (US) or ROK Equivalent

Model #: Perma-Flex Stucco Grade 100% Acrylic Finish, integral color, smooth

Color: Tan

Finish: No exposed form ties, with bonding to receive synthetic stucco finish

Other: Prepare concrete with 100% acrylic latex high strength bonding agent

UFGS: Section 03 45 00 Precast Architectural Concrete:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 45 00.pdf



Type: **Architectural Precast Wall Panel System – Synthetic Stucco Finish**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: La Habra (US) or ROK Equivalent

Model #: Perma-Flex Stucco Grade 100% Acrylic Finish, integral color, smooth

Color: Dark beige building base

Finish: No exposed form ties, with bonding to receive synthetic stucco finish

Other: Prepare concrete with 100% acrylic latex high strength bonding agent

UFGS: Section 03 45 00 Precast Architectural Concrete:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 45 00.pdf

D05.4.4. Stucco Over Sheathing

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Synthetic Stucco Finish over Concrete - Beige**

Applies to: ☐ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: La Habra (US) or ROK equivalent

Model #: Synthetic finish coat with integral color and required bonding

Color: Tan, dark tan

Finish: Sand finish

Other: Accent colors and control joint layout must be approved by the BCE

UFGS: Section 09 24 23 Cement Stucco:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 24 23.pdf

D05.4.5. Curtain Wall

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Traditional Component System**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Kawneer (US) or ROK equivalent

Model #: Exposed or concealed framing

Color: Solar gray glazing, clear anodized framing or other as approved by BCE

Finish: Factory

Other: Comply with UFC 1-200-02 for thermal performance

UFGS: Section 08 44 00 Curtain Wall and Glazed Assemblies:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 44 00.pdf

D05.4.6. Cast-In-Place Concrete

◉ Applicable ○ N/A Number of base standards 3 Image Tool 250 x 188



Type: **Formed Bearing Walls - Synthetic Stucco Finish Coat**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: Local, TBD

Model #: Smooth or liner-formed

Color: Natural gray with light beige, medium beige, or dark beige stucco finish

Finish: No exposed form ties, with bonding to receive synthetic stucco finish

Other: Clear sealer may be applied in lieu of stucco with BCE approval

UFGS: Section 03 33 00 Cast-In-Place Architectural Concrete:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 33 00.pdf



Type: **Formed Foundation Walls – Clear Sealer**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: Local, TBD

Model #: Smooth or liner-formed`

Color: Natural gray with clear sealer

Finish: No exposed form ties

Other: Clear sealer on natural concrete

UFGS: Section 03 33 00 Cast-In-Place Architectural Concrete:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 33 00.pdf



Type: **Formed Structural Columns, Beams and Infill Walls**

Applies to: ◉ Group 1 ◉ Group 2 ◉ Group 3 ◉ Group 4 ☐ Other

Mfr: Local, TBD

Model #: Smooth or liner-formed

Color: Natural gray with tan or dark tan stucco finish

Finish: No exposed form ties, with bonding to receive synthetic stucco finish

Other: Clear sealer may be applied in lieu of stucco with BCE approval

UFGS: Section 03 33 00 Cast-In-Place Architectural Concrete:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 33 00.pdf

D05.4.7. Tilt-Up Concrete

○ Applicable ◉ N/A

D05.4.8. Ribbed Metal Sheeting

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Lap Seam Panel - Batten**

Applies to: ☐ Group 1 ☐ Group 2 ◉ Group 3 ☐ Group 4 ☐ Other

Mfr: Allied (US) or ROK equivalent

Model #: Ribbed Purlin Bearing Rib (PBR) panel with all closures

Color: Tan, fluoropolymer coating

Finish: Factory finished, smooth

Other: 24 gauge galvanized steel; 36" wide, 4" o.c. rib spacing

UFGS: Section 07 42 13 Metal Wall Panels:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 42 13.pdf



Type: **Lap Seam Panel - Corrugated**

Applies to: ☐ Group 1 ☐ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Berridge (US) or ROK equivalent

Model #: Corrugated panel

Color: Dark brown

Finish: Factory finished, smooth

Other: 24 gauge galvanized steel; 16" wide, 4" o.c. rib spacing

UFGS: Section 07 42 13 Metal Wall Panels:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 42 13.pdf

D05.4.9. EIFS

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **"Wall Drainage" EIFS System**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Dryvit (US) or ROK equivalent

Model #: "Outsulation" System

Color: #111 "Prairie Clay"

Finish: "Sandpebble" or "Sandblast" texture

Other: Other colors require prior approval by BCE

UFGS: Section 07 24 00 Exterior Insulation and Finish Systems:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 24 00.pdf

D05.4.10. GFRC

○ Applicable ◉ N/A

D05.4.11. Concrete Block

○ Applicable ◉ N/A

D05.4.12. Fiber Cement Siding

○ Applicable ◉ N/A

D05.4.13. Other

◉ Applicable ○ N/A Number of base standards 4 Image Tool 250 x 188



Type: **Natural Stone – Saw Cut and Honed**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Model #: Coursed rectilinear stone slabs

Color: Muted / neutral Earth tones

Finish: Sandblasted or honed light texture

Other: Use only with BCE approval to match adjacent facilities

UFGS: Section 04 20 00 Unit Masonry:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 04 20 00.pdf



Type: **Natural Stone – Quarry Cut**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Model #: Coursed rectilinear stone

Color: Muted / neutral Earth tones

Finish: Quarry cut rough face

Other: Use only with BCE approval to match adjacent facilities

UFGS: Section 04 20 00 Unit Masonry:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 04 20 00.pdf



Type: **Natural Stone Water Table and Cap**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Model #: Cut, polished and coursed granite units

Color: Neutral colors

Finish: Polished

Other: Use only with BCE approval to match adjacent facilities

UFGS: Section 04 20 00 Unit Masonry:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 04 20 00.pdf



Type: **Failure of Elastomeric Stucco**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: All

Model #: Direct application of polymer-based elastomeric stucco over concrete

Color: All

Finish: All

Other: Follow manufacturer requirements for surface preparation and bonding

UFGS: Provide concrete surface coatings per Section 09 96 00 High-Performance Coatings; prepare concrete surfaces per Section 09 90 00 Paints and Coatings

D06. DOORS AND WINDOWS

Comply with AF Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

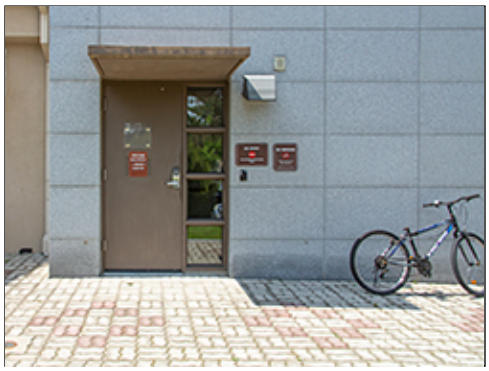
Comply with AF Corporate Standards for Doors and Windows:
http://afcfs.wbdg.org/facilities-exteriors/doors-and-windows/index.html

Comply with AFCFS Recommended Materials:
http://afcfs.wbdg.org/facilities-exteriors/doors-and-windows/materials/index.html

Insert 3 photos for each facility group.

Image Tool 250 x 188

Group 1


Group 2





Group 3






Group 4





D06.1. Types

1. Clear anodized aluminum doors, windows and frames with thermal breaks are preferred for Facility Groups 1, 2, 3, and 4 because they show less wear and weathering than dark anodized finishes. Match the color of the door and frame. For renovation projects the color of new windows, doors and frames may match existing. Follow UFC 4-010-01 for antiterrorism (AT) standards.

2. Power coated hollow metal doors and frames may be used at Group 3 for increased strength and durability. Limit hollow metal doors and frames in Groups 1 and 2 to security doors, utility rooms and mechanical rooms. Louvered doors at utility rooms will match hollow metal doors. Neutral or dark bronze color may be used.

   a. Main and staff entrance doors and frames will be factory clear anodized.

   b. Utility and emergency-egress doors and frames must match the adjacent wall color for an inconspicuous appearance. Refer to D05.4.1. Flat Metal Panels, D05.4.2. Brick Veneer, D05.4.3. Architectural Precast, D05.4.4. Stucco Over Sheathing, D05.4.6. Cast-in Place Concrete, D05.4.7. Tilt-up Concrete, D05.4.8. Ribbed Metal Sheeting, D05.4.9. EIFS, or as applicable for wall colors.

3. Where mechanical support is built into a facility, provide overhead doors 16' tall by 20' wide to access, remove or replace boilers and other Heating, Ventilation, and Air Conditioning (HVAC) components.

4. Aluminum clad wood windows may be used for Facility Group 4.

5. Standard-sized hinged doors are preferred. Use sliding, folding, overhead, sectional and other door configurations only to support mission operations. Hinged doors serving occupied areas must swing outwards.

6. Automatic doors are allowed only where functionally necessary.

7. Passive thermal comfort methods of ventilation are encouraged where life cycle cost justified.

8. Operable windows will be slider or awning type. Double-hung units may be used to match existing condition. Windows must meet force protection requirements.

9. Adjacent joint sealants should be slightly darker than the frame color.

10. Make efforts to contain noise at its source with properly gasketed doors per UFC 3-450-01 Noise and Vibration Control.

11. Windows will have an applicable rating for ROK, and those from the U.S. must be 'Energy Star' rated.

12. Manufacturers listed in sections D06.5.1. - D06.5.4. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

D06.2. Layout and Geometry

1. Visually and functionally compose openings in walls for the climate-specific exposure. Generally, minimize glazing on north-facing facades.

2. Consistently use opening type, size, placement, mullion pattern, and color to reinforce the overall architectural design.

3. Openings will augment interior lighting and space conditioning needs.

4. Protect against vandalism, intrusion and coordinate sound ratings.

D06.3. Glazing and Shading

1. Tinted, energy-efficient, low-e, double-pane glazing is encouraged; provide triple-pane glazing in extreme environments.

2. Glazing color will be solar gray. Solar blue or green will be considered only on a case by case basis and must be approved by CES.

3. Translucent wall panels may be integrated into wall systems.

4. Do not use mirrored glazing.

5. Fully integrate applicable shading designs for overhangs, louvers, light shelves and grilles.

6. Where appropriate for the facility use, install window screens to take advantage of natural ventilation.

D06.4. Hardware

1. Provide hardware appropriate for the Facility Group while considering activity and frequency of use and local climate; hardware may be of higher visual quality for Facility Group 1.

2. Ensure hardware will perform throughout the facility's lifespan without showing extreme wear.

3. Select finishes that will not degrade by intensity of operation or exposure to the elements.

4. Use consistent finishes and colors on window and door systems throughout a facility. For renovation projects the color of new hardware may match the existing hardware.

5. Design building systems to eliminate the need for security screens whenever possible.

6. Hardware requirements:

   a. Main hangar door: Local, TBD, such as ASSA ABLOY Entrance Systems
   b. General purpose: Local, TBD, such as rotary cylinder with inter-changeable cylinder
   c. Cipher lock: Local, TBD.
   d. Padlock: Local, TBD, such as 11B772; Best Co., Ltd.

D06.5. Doors and Windows Materials

Note: *Apply the below base-wide standards for Doors and Windows (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

D06.5.1. Anodized Aluminum

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Anodized Aluminum Doors, Windows and Frames**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Kawneer (or equivalent)

Color: Dark brown anodized

Finish: Matte

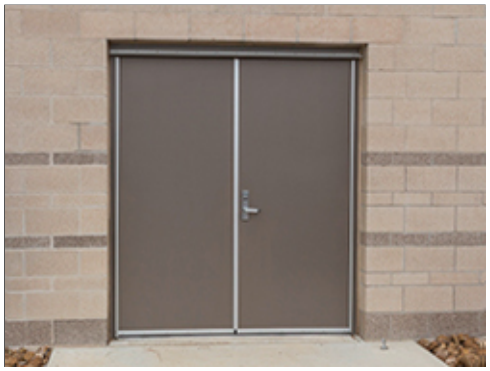
Model #: 2x4

Other: Provide thermally broken frames

UFGS: Section 08 41 13 Aluminum-Framed Entrances and Storefronts: http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 41 13.pdf

D06.5.2. Hollow Metal

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Factory Finished Steel Doors, Windows and Frames**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Hollow Metal Doors, Windows and Frames

Color: Dark brown

Finish: Powder coated, satin

Model #: 2x4 frame

Other: Provide thermally broken frames

UFGS: Section 08 11 13 Steel Doors and Frames:
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 11 13.pdf

D06.5.3. Aluminum-clad Wood

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Aluminum-clad Residential**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☑ Group 4 ☐ Other

Mfr: Marvin

Color: White or Earth tones

Finish: Powder coated, satin

Model #: Aluminum-clad wood windows

Other: Double hung

UFGS: Section 08 14 00 Wood Doors
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 14 00.pdf

D06.5.4. Other

○ Applicable ◉ N/A

D07. ROOF SYSTEMS

Comply with AF Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

Comply with AF Corporate Standards for Roof Systems:
http://afcfs.wbdg.org/facilities-exteriors/roof-systems/index.html

Comply with AFCFS Recommended Materials:
http://afcfs.wbdg.org/facilities-exteriors/roof-systems/materials/index.html

Insert 3 photos for each facility group.

Image Tool 250 x 188

Group 1





Group 2





Group 3






Group 4






D07.1. Roof Type and Form

1. Use proven, cost-effective roof systems with high durability, weather resistance, and low maintenance that are compatible with Installation Facilities Standards (IFS) and requirements for the designated Facility Group.

2. Generally, match the roof type and form of immediately adjacent existing facilities in new construction.

3. Group 1 and 2 facilities of simple geometry under a 5,000 sf footprint and/or narrow in plan will use sloped standing seam metal roofs (SSMR). Single-ply roofing, such an EPDM/TPO, or Korean roof tile may be used as approved on a case by case basis.

4. Group 3 facilities will use sloped SSMR or single-ply roofing such as EPDM/TPO roofs. Larger facilities may use sloped-roof features in conjunction with predominantly minimal-sloped "flat" membrane roofs. Protected metal (PTML) roof may be used as approved on a case by case basis.

5. Group 4 facilities will have gabled or hipped composite SSMR or Korean roof tile.

6. Provide screens for roof-mounted appendages and equipment which are clad to match standing seam roofs or parapet walls.

7. Roof translucent panels and skylights are not allowed.

8. Roof eaves will extend beyond the exterior wall for roof drainage and shading. Provide overhangs for shading in response to local climatic conditions; these should be sized and proportioned to the height of the facility and to the window openings being shaded.

9. South-facing eaves will coordinate with adjacent wall-mounted shading devices.

10. The color, shape and slope of the eave and soffit will be compatible with adjacent facilities.

11. Keep roofs uncluttered and minimize penetrations.

12. Diminish massive roofs into coordinated smaller components consistent with adjacent facilities; avoid random, arbitrary changes.

13. Increase the insulation value of existing roofing systems during renovations if supported by life cycle cost and structural analysis.

14. Roofs will be maintained for the life of the system and replaced in accordance with UFC 3-110-04 and AFI 32-1051. A warranty is required on all new roofs.

15. Apply acrylic-resin rubber coating waterproofing on metal roofs as needed for maintenance.

16. Manufacturers listed in sections D07.9.1. - D07.9.10. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

D07.2. Roof Slope

1. Group 1 and 2 buildings with sloped roofs will have slope of min. 3:12.

2. Low-sloped roofs are allowed for structures. Conform with regional practices on new construction and/or to match existing conditions on renovation projects.

3. Ensure adequate drainage and connect to the subsurface rain collection system where available.

4. Provide roof slopes to accommodate solar photovoltaic, solar thermal, passive systems and daylighting when applicable following UFC 1-200-02.

5. Provide underlayments as required for the roofing type as directed by the UFC.

D07.3. Parapets and Copings

1. Extend wall materials vertically above the roofline and provide metal copings to match the wall. Ensure copings are properly flashed and detailed to avoid roof leaks.

D07.4. Color and Reflectivity

1. Sloped roofs in Groups 1, 2 and 3 will be dark brown (AMS-30108 Red Brown) to match adjacent facilities and follow requirements of IFS.

2. Sloped roofs in Group 4 will be dark brown (AMS-30108 Red Brown) or terra-cotta tile with integral color.

3. All minimal-slope membrane roofs will use only use high-albedo, high-reflectivity color to help decrease the temperature around the buildings and minimize damage to human and wildlife habitat. Comply with UFC 3-110-03 and ASHRAE 90.1 for Solar Reflectance Index (SRI) and thermal requirements. The top surface will be thermally reflective.

4. All roof flashing will match the color of the predominant background material.

D07.5. Gutters, Downspouts, Scuppers, Drains

1. All sloped roofs will use gutters and downspouts. Locate gutters outside the fascia.

2. Internal roof drainage systems are allowed for minimal-slope applications with BCE approval. Minimal-sloped roofs with parapets will be sloped to drain to the building perimeter through scuppers into downspouts. Any internal roof drains must have secondary drains as required by applicable building codes.

3. All gutters and fascias will match the roof color.

4. Size the roof drainage system per IBC and standards based on historical climate records per SMACNA (US) or ROK equivalent for the region.

5. Use scuppers as required in parapet walls. Arrange scuppers in an orderly manner consistent with other elements of the wall system.

6. When open scuppers are connected to downspouts, provide transitions consistent with adjacent facilities.

7. Integrate downspouts with the architectural details of the wall system and arrange in an orderly, non-prominent appearance. Generally, blend downspouts with the color of the wall (not contrasting it).

8. Fabricate downspouts from non-corrosive materials such as aluminum or zinc-coated steel. Provide powder-coated finishes.

9. All downspouts will be solid.

10. Provide angled transitional pieces for downspouts to fit closely against the wall for their entire length.

11. Coordinate locations of downspouts to conceal control joints in masonry walls when possible.

12. Place downspouts away from building entries. Water discharged should not run across sidewalks.

D07.6. Roof Vents and Elements

1. Minimize and consolidate roof penetrations into a single, inconspicuous point whenever possible.

2. On sloped roofs clad pipe penetrations to match the roofing material.

3. Avoid the use of rooftop mechanical equipment, however for renovations and unavoidable configurations ensure units are screened.

4. Provide access points and service routes to equipment that protect the roof.

5. Screen all large vents.

6. Ensure attic spaces are properly vented at ridges and soffits.

7. Match roof color for all exposed equipment and vents.

8. Avoid roof-mounted antenna systems.

9. Arrange Lightning Protection Systems (LPS) components in an ordered, uncluttered, inconspicuous appearance; integrate components into the organization of the roof and wall systems.

10. Ensure that LPS roof mounting systems are approved by the roofing manufacturer.

11. Additions to a roof will not interfere with LPS or other rooftop systems that may be required.

12. Permanent fall protection will be included with any addition to a roof with a slope above 3:12 per UFC 3-110-03.

D07.7. Clerestories and Skylights

1. Clerestories are permitted in Group 1, 2 and 3 facilities only when serving passive systems and are justifiable by life-cycle analysis.

2. Design clerestories using the same principles for seasonal shading that are required for walls and roof overhangs.

3. Translucent panel systems are preferred in clerestory applications due to lack of window cleaning.

4. Clerestories must comply with UFC 4-10-01.

5. Skylights are not permitted due to the potential for leaks and maintenance requirements.

D07.8. Vegetated Roof

1. Not applicable.

End of Section

D07.9. Roof Systems Materials

Note: *Apply the below base-wide standards for Roof Systems (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

D07.9.1. Standing Seam Metal

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Metal - Low to Moderate Slope Roofs**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Berridge (US) or ROK Equivalent

Color: Brown to match existing, per ROK standards

Finish: Matte, thermally reflective

Model #: Tee-Panel

Other: Shed, gabled or hipped standing seam metal

UFGS: Section 07 61 14 Steel Standing Seam Roofing
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 61 14.00 20.pdf

D07.9.2. Membrane Single-ply

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **EPDM - Minimal Sloped Roofs**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Carlisle Systems (US) or ROK Equivalent

Color: Off-white

Finish: Smooth

Model #: TPO single-ply, “flat” minimal slope

Other: N/A

UFGS: Section 07 53 23 Ethylene-Propylene-Diene-Monomer Roofing
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 53 23.pdf
Section 07 54 50 TPO Thermoplastic Single-Ply Roofing
(Not Available on UFGS)

D07.9.3. Built-up Multi-ply

○ Applicable ◉ N/A

D07.9.4. Concrete Tile

○ Applicable ◉ N/A

D07.9.5. Clay Tile

○ Applicable ◉ N/A

D07.9.6. Slate Shingles

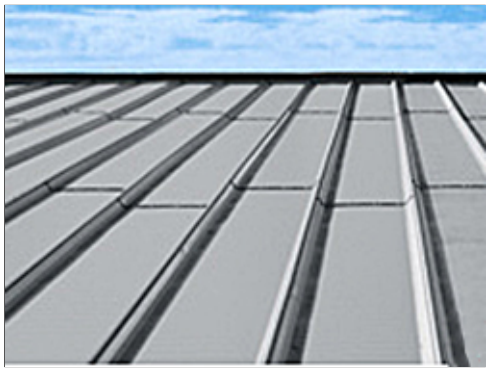
○ Applicable ◉ N/A

D07.9.7. Vegetated System

○ Applicable ◉ N/A

D07.9.8. Ribbed Metal Sheeting

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☐ Group 1 ☐ Group 2 ◉ Group 3 ☐ Group 4 ☐ Other

Mfr: Berridge (US) or ROK Equivalent

Color: Dark brown to match existing, per ROK standards

Finish: Factory, matte, thermally reflective

Model #: High Seam Tee-Panel

Other: 24 gauge steel, mechanically seamed system

UFGS: Section 07 41 13.19 Batten-Seam Metal Roof Panels
(Not Available on UFGS)

D07.9.9. Composite Shingles

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☑ Group 4 ☐ Other

Mfr: Tamko (US) or ROK Equivalent

Color: Earth tones

Finish: Factory

Model #: Heritage

Other: Gabled or hipped with transverse gable or hipped features

UFGS: Section 07 31 13 Glass-fiber-reinforced Asphalt Shingles
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 07 31 13.pdf

D07.9.10. Other

○ Applicable ◉ N/A

D08. STRUCTURAL SYSTEMS

Comply with AF Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

Comply with AF Corporate Standards for Structural Systems:
http://afcfs.wbdg.org/facilities-exteriors/structural-systems/index.html

Comply with AFCFS Recommended Materials:
http://afcfs.wbdg.org/facilities-exteriors/structural-systems/materials/index.html

Insert 3 photos for each facility group.

Image Tool 250 x 188

Group 1





Group 2





Group 3





Group 4





D08.1. Systems and Layouts

1. Pre-engineered structural steel framing may be used for Groups 1, 2 and 3 facilities. Installation-appropriate thermal envelopes, materials and detailing are required.

2. Rigid frame steel systems and concrete systems may be used following a LCCA.

3. Select economical structural systems that integrate roof and wall systems.

4. Narrow buildings 60' or less in width with column-free interiors are preferred for office, administrative and personnel spaces; when interior columns are required optimize the structural grid layout for open-plan arrangements.

5. Fully coordinate structural grids with exterior window systems to align columns with window frames or wall systems.

6. When structure is exposed on building exteriors, it must be made of concrete or non-ferrous metals such as aluminum or stainless steel. Exposed non-ferrous metals are only permitted with weatherproof non-ferrous metal cladding or precast concrete cladding. Metal cladding must be factory finished and will not be field painted.

7. When structure is exposed on building interiors, provide an organized appearance and coordinate with mechanical, electrical, plumbing, fire protection, information technology, and communications systems.

8. Limit the use of specialty systems (such as space frames, vaults or domes) and of structure as a visual feature.

9. Cost-effectively design interior bearing walls as thermal mass.

10. Manufacturers listed in sections D08.2.1. - D08.2.9. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

End of Section

D08.2. Structural Systems Materials

Note: *Apply the below base-wide standards for Structural Systems (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

D08.2.1. Concrete

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Cast-in-Place Concrete Framing**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local, TBD

Color: Natural gray

Finish: Light texture

Model #: Post and beam and/or waffle slab

Other: Note, Interiors may be clear sealed natural concrete

UFGS: Section 03 30 53 Miscellaneous Cast-In-Place Concrete
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 30 53.pdf
Section 03 33 00 Cast-In-Place Architectural Concrete
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 33 00.pdf
Section 03 47 13 Tilt-Up Concrete
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 03 47 13.pdf

D08.2.2. Insulated Concrete Forming (ICF)

○ Applicable ◉ N/A

D08.2.3. Steel

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Rigid Framing**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: US Steel (US) or ROK equivalent

Color: Shop primed

Finish: Matte

Model #: Structural steel shapes

Other: N/A

UFGS: Section 05 12 00 Structural Steel
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 05 12 00.pdf

D08.2.4. Pre-Engineered Steel

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Moment Frame**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Behlen Building Systems (US) or ROK equivalent

Color: Factory primed

Finish: Hot-dipped galvanized metal

Model #: Moment Frame

Other: Draped insulation may be used behind roof system; building manufacturer's standard roof panel or standing seam roof system may be used for Group 3; deflection criteria must follow IBC

UFGS: Section 13 12 00 Steel Building Systems
(Not Available on UFGS)
Section 13 34 19 Metal Building Systems
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 13 34 19.pdf

D08.2.5. Masonry

○ Applicable ◉ N/A

D08.2.6. Heavy Timber

○ Applicable ◉ N/A

D08.2.7. Light-gauge Steel

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Steel Framing**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☑ Group 4 ☐ Other

Mfr: Steelrite (US) or ROK equivalent

Color: Factory

Finish: Galvanized

Model #: Structural framing shapes

Other: N/A

UFGS: Section 05 45 00 Light Gauge Steel Framing System
(Not Available on UFGS)

D08.2.8. Lumber Framing

○ Applicable ◉ N/A

D08.2.9. Other

○ Applicable ◉ N/A

D09. MECHANICAL, ELECTRICAL AND PLUMBING

Comply with AF Corporate Standards for Facilities Exteriors:
http://afcfs.wbdg.org/facilities-exteriors/index.html

Comply with AF Corporate Standards for Mechanical, Electrical and Plumbing:
http://afcfs.wbdg.org/facilities-exteriors/mechanical-electrical-and-plumbing/index.html

Insert 3 photos for each facility group.

Image Tool 250 x 188

Group 1





Group 2





Group 3






Group 4





D09.1. Passive and Active Systems

1. Fully integrate passive heating systems into facility designs whenever practical for the local climate prior to the design of active mechanical systems.

2. Provide optimized passive and active systems, and include heat recovery measures to improve efficiency; design active mechanical systems to supplement thermal mass walls and floors where applicable.

3. Develop renewable energy systems including geo-exchange (ground source heat pumps) when life cycle cost effective.

4. Performance display screens, which report energy performance and utility savings, are encouraged. When provided, locate these in building lobbies or common areas.

5. Solar domestic hot water systems are permitted following a LCCA.

6. Integrate shading into building exteriors to reduce solar heat gain as applicable for the exposure.

D09.2. Functionality and Efficiency

1. Fully coordinate mechanical, electrical, plumbing (MEP) and fire protection systems with each other and with the building structure, enclosure, thermal envelope and interior design.

2. Mechanical support for facilities such as heating, ventilation, and air conditioning (HVAC) systems will either be built within a facility or enclosed by screen walls on the exterior. If built into the facility, floor will be at ground level and access doors will be 16′ tall by 20′ wide in order to remove / replace boilers and other HVAC components. Refer to section C07.2.16. for exterior screen walls.

3. Ensure direct exterior access is provided (for CE) to main mechanical and electrical rooms.

4. Screen exterior equipment from primary views (landscape, building masses, screen walls) and comply with AT requirements.

5. Keep equipment away from main building entrances; locate service area/yard on least visible side of a building.

6. Coordinate the location of all exterior meters, equipment and devices to provide convenient access and an overall coordinated and orderly appearance.

7. Design emergency generator systems integrally with all other building systems and avoid incompatible building additions; locate generators near service areas and ensure they are not visible from primary entrances.

8. When structure is exposed as a finished ceiling, fully integrate MEP and fire protection systems to provide an organized uncluttered appearance.

9. Conceal ducts, piping, conduits, devices, etc., when permanent walls, suspended ceilings or raised floors are provided; locate sprinkler heads in orderly configuration.

10. Limit interior wall-mounted equipment in occupied personnel spaces; avoid surface-mounted conduit and pipes.

11. Provide efficient utility rooms with layouts to facilitate system performance and maintenance; provide convenient access to controls, clearly label systems and include operating and maintenance instructions.

12. Separate mechanical and electrical and communications rooms.

13. Integrate recessed and wall-mounted fixtures such as fire standpipe cabinets and drinking fountains within permanent walls.

14. Lightning Protection Systems:

    a. Comply with UFGS Section 26 41 00, Facility Lightning Protection

b. All Lightning Protection Systems (LPS) designs should comply with the most current version of NFPA 780 Standard for the Installation of Lighting Protection Systems, AFI 32-1065 Grounding Systems, and AFMAN 91-201 Explosives Safety Standards.

c. The BCE is responsible for design oversight of facilities' LPS designs, and the following requirements must be met in the design of the LPS:

1) The three most common lightning protection systems are integral, mast, and catenary (overhead ground wire). Different zone-of protection patterns are provided by each system, so the LPS design engineer is the person to determine the best system or combination of systems that meets protection requirements for a facility.

2) Regardless of the system type, each must be connected in such a manner as to provide at least two paths to ground. This method of connection provides redundancy in case a single path is interrupted or compromised.

3) For metal mast design, no down conductor is needed if the mast is constructed such that ground continuity is continuous across each joint. However, each metal mast must be bonded to an earth electrode system by two paths.

d. For a non-conductive pole used as a mast, two down conductors are required on opposite sides of the pole, each attached to an LPS air terminal on the pole and the earth ground electrode system at the base of the pole.

15. Cathodic Protection Systems:

a. Comply with UFGS section 26 42 00 Cathodic Protection.

b. Cathodic Protection Systems Designs must conform to the most current version of AFI 32-1054 Corrosion Control, UFC 3-570-06 Operation and Maintenance: Cathodic Protection Systems, UFC 3-570-02A Cathodic Protection, and UFC 3-570-02N Electrical Engineering Cathodic Protection.

c. The following requirements must be met in the design of a Cathodic Protection Systems:

1) Accomplish surveys and design before construction contract advertisement or before construction in design-build contracts.

2) For design of any corrosion control measures, the qualifications of the designer or design reviewer must be documented as compliant with AFI 32-1054.

3) Coordination with the base corrosion control engineer must be done during preliminary design.

16. Refer to section C09. for exterior lighting.

17. LG manufactured chillers with BACnet interfaces are standard to KUNSAN AB.

18. Local Natural Gas-Fired Boiler for heating water and domestic hot water will be designed and installed using the condensing commercial stainless steel fire tube boilers with cascaded arrangement to provide redundancy and system part load capability.

End of Section

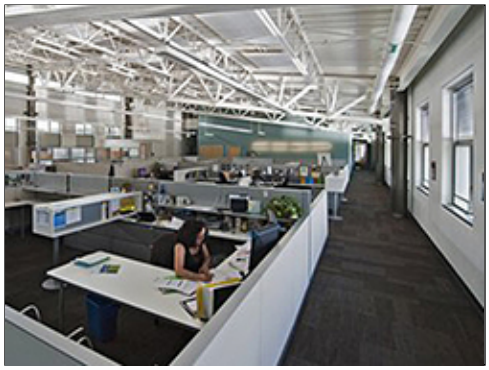
E. FACILITIES INTERIORS

Comply with Air Force Corporate Standards for Facilities Interiors:
http://afcfs.wbdg.org/facilities-interiors/index.html

Insert 3 photos for each facility group.

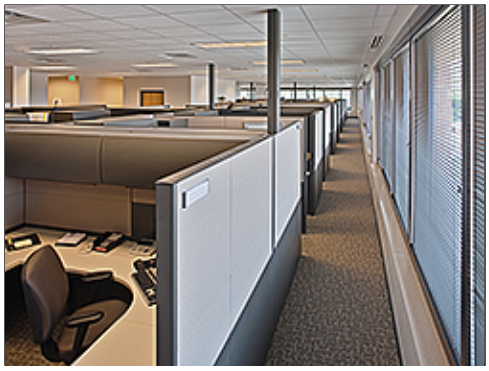
Image Tool 250 x 188

Group 1





Group 2





Group 3





Group 4





E01. Building Configurations

Comply with Air Force Corporate Standards for Building Configurations:
http://afcfs.wbdg.org/facilities-interiors/buildings-configurations/index.html

1. Provide open-plan configurations for office, administrative, operational and related activities and spaces for maximum flexibility. Use a "core and shell" approach in which all building systems, infrastructure and permanent interior partitions anticipate two or more uses (operations) during a facility's life span.

2. Create flexible interior configurations using Furniture, Fixtures & Equipment (FF&E) and limit private offices and private rooms. Refer to AFMAN 32-1084 for space requirements. To the greatest extent, limit permanent partitions to core areas such as toilet rooms, stairs, mechanical and utility rooms.

3. Use more durable long-lasting finishes in core areas for walls, ceilings, floor coverings and built-in casework. Coordinate interior FF&E layouts with structural grids during space planning.

4. Provide high-performance building configurations following UFC 1-200-02. Ensure passive design strategies are cost effectively incorporated before active mechanical systems are designed.

5. Comply with UFC 1-200-01, general building requirements. UFC 1-200-01 provides applicability of model building codes and government unique criteria for typical design disciplines and building systems, as well as for accessibility, antiterrorism, security, high performance and sustainability requirements, and safety.

6. Meet security and force protection requirements in UFC 4-010-01: DoD Minimum Antiterrorism Standards for Buildings.

7. Comply with AFCFS for supporting mission requirements, addressing human comfort and well-being, and creating highly flexible interiors while satisfying metrics for high performance and sustainable buildings.

8. Provide a level of quality for interior features, materials and finishes that is appropriate for the Facility Group number. Group 1 may receive higher quality than Groups 2 thru 4. Refer to Facility Hierarchy.

9. Through open-plan configurations, preserve all passive and natural design strategies and fully integrate facility interiors with overall building systems.

10. Professional interior designers, or architects with significant interior design experience, must accomplish the design and review of applicable new construction, renovations and maintenance projects.

11. Consult with the State Historic Preservation Officer (SHPO) and base-level Historic Preservation offices regarding proposed changes to properties listed on or eligible for listing on the National Register of Historic Places. Follow requirements of The National Historic Preservation Act and Secretary of the Interior Standards for the Treatment of Historic Properties.

12. Maintain architectural compatibility following AFCFS and this Installation Facilities Standards (IFS) document to create continuity while avoiding monotony.

E01.1. Layout and Common Areas

Comply with Air Force Corporate Standards for Layout and Common Areas:
http://afcfs.wbdg.org/facilities-interiors/buildings-configurations/layout-and-common-areas/index.html

1. Create open-plan interior environments to accommodate changes.

2. Limit interior partitions, private offices and rooms; use furniture or modular systems to provide privacy and acoustic control. Refer to AFCFS and its references to the Air Force Office Workplace Furniture Guide.

3. When partitions are functionally justified such as for conference rooms, use systems furniture and moveable (demountable) floor-to-ceiling wall systems for acoustical or visual privacy.

4. Proportion lobbies and common spaces based on type of function, activity and facility group.

5. Allow no direct sight lines into restrooms.

6. Situate utility and core areas to minimize impact on daylighting and to maximize use as thermal buffers.

7. Ensure electrical, lighting and communications system can be adaptable to configuration changes.

8. Avoid power poles to the maximum extent; when poles are necessary minimize the number and coordinate locations with furniture placement and other elements.

9. Avoid sloping floors to maintain flexibility and eliminate future structural changes.

10. Special consideration may apply to Sensitive Compartmented Information Facilities (SCIFs).

E01.1.1. Interior Design Process

1. Comply with UFC 3-120-10 for the Comprehensive Interior Design (CID,) which includes both Structural Interior Design (SID) and Furniture, Fixtures & Equipment (FF&E) design services.

2. Use a collaborative, integrated planning and design team, composed of user, government support staff, and appropriate professionals. Integrate architectural features using simple detailing to create a professional appearance; avoid extravagant or excessive detailing.

3. Ensure interior designs satisfy the functional requirements within the context of flexibility, sustainability and the building's energy performance.

4. Base space planning on square foot allocations from AFM 32-1084. Identify special requirements if any, such as privacy separation, VIP areas, gathering spaces and storage. Note: The occupant's rank and position will influence the square footage and selection of materials.

5. Provide clear circulation and pathway finding for both horizontal and vertical directions that accommodate the number of personnel in the facility.

6. Maximize efficiencies in the space plan for functional relationships and adjacencies for all facility users. Efficiently create and situate rooms and support rooms such as conference / meeting rooms and break rooms.

7. Provide interior design building-related illustrations, drawings, schedules, materials selections, specifications and cost estimates as listed in UFC 3-120-10. Refer to Furnishings in this IFS also.

8. SID Format must follow UFC 3-120-10.

9. Base the FF&E package on the furniture footprint developed in the SID. Identify all new or existing equipment needed and its users within each facility or each area of the facility. Provide specific information on: equipment sizes, electrical requirements, ventilation requirements, weight (if heavy), quantity, and security level if required. Presume all administrative spaces have computers and supporting equipment.

E01.1.2. Codes and Regulations

1. Refer to UFC 1-200-01 for modifications to the International Building Code (IBC) to determine applicable sections of the IBC. Both the IBC Chapter 3 and UFC 3-600-01 govern "Use and Occupancy Classification" for example.

2. Fire code requirements will be as defined in the International Building Code (IBC) and must be used where dictated by UFC 1-200-01 DoD Building Code (General Building Requirements) except where noted in UFC 3-600-01 Fire Protection Engineering For Facilities.

3. National Fire Protection Association (NFPA) 101 must be utilized to determine the occupancy classification as it relates to fire/ smoke resistance rating of interior non-load bearing partitions (other than occupancy separation), means of egress, interior finish, features of fire protection (including vertical openings) and associated requirements.

4. Republic of Korea Air Force (ROKAF) buildings and areas are not subject to Unified Facilities Criteria.

E01.2. Quality and Comfort

Comply with Air Force Corporate Standards for Quality and Comfort:
http://afcfs.wbdg.org/facilities-interiors/buildings-configurations/quality-and-comfort/index.html

1. Include durability in the life-cycle cost analysis for best-value material selections with long life expectancies that do not show excessive wearing.

2. Select long-lasting materials and finishes for permanent core areas such as lobbies, restrooms and stairs.

3. Select low-maintenance materials and products that reduce ongoing servicing and repair and that are easy to clean.

4. Relate the visual quality of finishes to the Facility Group number.

5. Building and interior configurations should address both operations and climatic responses.

6. Convey a professional image; avoid trendy patterns and textures.

7. Use materials and finishes that provide a healthy indoor environment.

8. Orient interior spaces toward views while maintaining cost-effective building performance and efficiency.

9. Promote air movement and daylighting for human health and wellbeing.

E02. Floors

Comply with Air Force Corporate Standards for Floors:
http://afcfs.wbdg.org/facilities-interiors/floors/index.html

E02.1. Floor Materials

Facility Group 1 floor materials will be as follows.

Primary:	Prepared Slabs (Ground, Polished)
Secondary:	Porcelain Tile, Quarry Tile
Tertiary:	Carpet, Rubber Stair Treads, VCT

Facility Group 2 floor materials will be as follows.

Primary:	Prepared Slabs (Ground, Polished)
Secondary:	Ceramic Tile, Quarry Tile, VCT
Tertiary:	Carpet, Rubber Stair Treads

Facility Group 3 floor materials will be as follows.

Primary:	Prepared Slabs (Ground)
Secondary:	Prepared Slabs (Sealer)
Tertiary:	N/A

Facility Group 4 floor materials will be as follows.

Primary:	VCT
Secondary:	Ceramic Tile, Hardwood Strip
Tertiary:	Carpet

1. Natural stone and terrazzo flooring may be used in high traffic areas of Group 1 as approved on a case by case basis.

2. Resilient and rapidly renewable flooring may be used in low traffic areas in Group 1, 2 and 4.

3. Grout should match the floor tile, but when a different color is used it will not be light in color (to prevent dirt and stains from showing over time).

4. Manufacturers listed in sections E02.1.1. - E02.1.8. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

Note: *Apply the below base-wide standards for Floors (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

E02.1.1. Prepared Slabs

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Ground and Polished Slab**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local (TBD)

Color: Natural gray cement, light to dark beige aggregates

Finish: Fine polished texture

Model #: Medium to small aggregate

Other: N/A

UFGS: Section 03 35 45 Polished Concrete Finishing
(Not Available on UFGS)



Type: **Polished Slab**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Local (TBD)

Color: Natural gray cement, light to dark beige aggregates

Finish: Medium polished texture, slip resistant

Model #: Medium to small aggregate

Other: N/A

UFGS: Section 03 35 45 Polished Concrete Finishing
(Not Available on UFGS)

E02.1.2. Natural Stone and Terrazzo

○ Applicable ◉ N/A

E02.1.3. Quarry Tile

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Unglazed Vitreous Quarry Tile**

Applies to: ☐ Group 1 ◉ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Daltile (US) or ROK Equivalent

Color: Earth tones

Finish: Matte, slip resistant

Model #: N/A

Other: Use in commercial kitchen flooring.

UFGS: Section 09 30 10 Ceramic, Quarry, and Glass Tiling
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 30 10.pdf

E02.1.4. Ceramic Tile

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Porcelain Tile**

Applies to: ◉ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Daltile (US) or ROK Equivalent

Color: Earth tones

Finish: Matte, slip resistant

Model #: Porcelain tile

Other: Use in high traffic areas. Epoxy grout is recommended.

UFGS: Section 09 30 10 Ceramic, Quarry, and Glass Tiling
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 30 10.pdf



Type: **Glazed Ceramic Tile**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: Daltile (US) or ROK Equivalent

Color: Earth tones

Finish: Matte, slip resistant

Model #: Ceramic tile

Other: Use in low traffic area toilet rooms.

UFGS: Section 09 30 10 Ceramic, Quarry, and Glass Tiling
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 30 10.pdf

E02.1.5. Resilient Floor

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1 Stair Treads**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Roppe (US) or ROK Equivalent

Color: Neutral tones

Finish: Factory

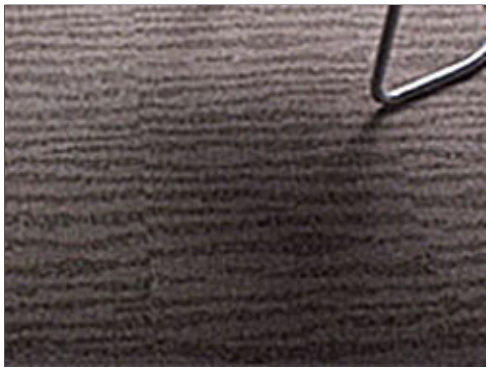
Model #: Raised design rubber tread

Other: Stair treads material

UFGS: Section 09 65 00 Resilient Flooring
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 65 00.pdf

E02.1.6. Carpet

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Mohawk Group (US) or ROK Equivalent

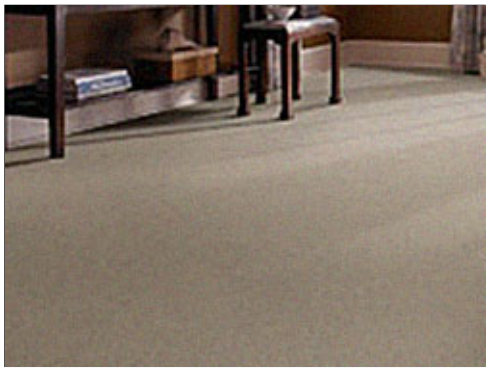
Color: Neutral multi-colored tones/patterned/solid

Finish: Yarn: Nylon 6 or 6.6/cut pile or loop pile

Model #: Broadloom, 6' wide rolled, carpet tiles, entry walk-off carpet

Other: N/A

UFGS: UFGS 09 68 00 Carpeting
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 68 00.pdf



Type: **Style 2**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☑ Group 4 ☐ Other

Mfr: Mohawk Group (US) or ROK Equivalent

Color: Earth tones

Finish: Factory

Model #: Broadloom, residential loop, "Smartstrand"

Other: N/A

UFGS: UFGS 09 68 00 Carpeting
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 68 00.pdf

E02.1.7. Rapidly-Renewable Products

○ Applicable ◉ N/A

E02.1.8. Other

○ Applicable ◉ N/A

E03. Walls

Comply with Air Force Corporate Standards for Walls:
http://afcfs.wbdg.org/facilities-interiors/walls/index.html

E03.1. Wall Materials

Facility Group 1 wall materials will be as follows.

Primary:	Brick (or Other as Approved by the BCE)
Secondary:	Gypsum Board (Painted)
Tertiary:	Ceramic Tile (Restrooms)

Facility Group 2 wall materials will be as follows.

Primary:	Brick
Secondary:	Gypsum Board (Painted)
Tertiary:	Ceramic Tile (Restrooms)

Facility Group 3 wall materials will be as follows.

Primary:	Ground Face CMU, Sealed (Do Not Paint)
Secondary:	N/A
Tertiary:	Ceramic Tile (Restrooms)

Facility Group 4 wall materials will be as follows.

Primary:	Gypsum Board (Painted)
Secondary:	N/A
Tertiary:	Ceramic Tile (Restrooms)

1. Follow UFC 3-450-01 Noise and Vibration Control for acoustic design issues including speech privacy, sound isolation or sound masking.
2. Select and apply paint with sheens (gloss levels) appropriate for the application following UFGS Section 09 90 00 Paints and Coatings.
3. Provide ceramic tile on wet walls of kitchens, toilet rooms, locker rooms, etc., in all facility groups.
4. Neutral split-face or ground-face integrally colored block with a clear sealer may be used in Group 3. Do not paint block.
5. Provide rubber base on drywall partitions in Groups 1 and 2.
6. Hardwood base may only be used in Group 1 as approved on a case by case basis.
7. Hardwood chair rails / bumper rails may be used in high-use areas of Groups 1 and 2; aqueous clear finishes are preferred to reduce maintenance; plastic chair rails are permitted only in medical applications.
8. Decorative moldings may be used only in Group 1 when approved on a case by case basis.
9. Corner guards are permitted only in high traffic spaces with wheeled or cart use such as private service areas in Groups 1 and 2; stainless steel corners guards with a brushed finish may be judiciously used in Group 3.
10. Group 4 may use painted composite wood base.
11. Manufacturers listed in sections E03.1.1. - E03.1.8. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

Note: *Apply the below base-wide standards for Walls (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

E03.1.1. Concrete

○ Applicable ◉ N/A

E03.1.2. Masonry

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Modular Face Brick**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local (TBD)

Color: Red blend

Finish: Light texture

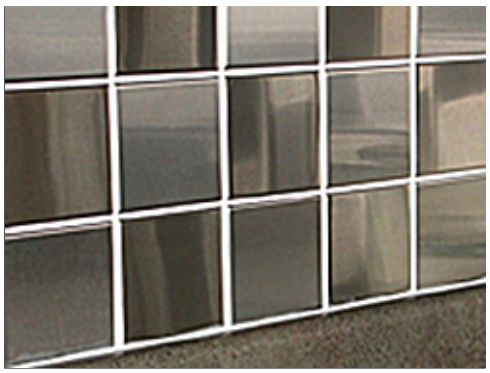
Model #: Coursed unit masonry

Other: Brick is preferred. Concrete block may only be used in Group 3 when approved by the BCE.

UFGS: Section 04 20 00 Unit Masonry
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 04 20 00.pdf

E03.1.3. Ceramic Tile

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Glazed Ceramic Tile**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: Daltile (US) or ROK Equivalent

Color: Earth tones

Finish: Gloss, semi-gloss

Model #: Ceramic wall tile

Other: Located on wet walls in restrooms

UFGS: Section 09 30 10 Ceramic, Quarry, and Glass Tiling
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 30 10.pdf

E03.1.4. Gypsum Board

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☑ Group 4 ☐ Other

Mfr: US Gypsum or ROK Equivalent

Color: Solid Earth tone colors

Finish: Paint (Sheen per UFGS)

Model #: Tapered edge

Other: N/A

UFGS: Section 09 29 00 Gypsum Board
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 29 00.pdf
Section 09 90 00 Paints and Coatings
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 90 00.pdf

E03.1.5. Metal Panels

○ Applicable ◉ N/A

E03.1.6. Wood Paneling

○ Applicable ◉ N/A

E03.1.7. Rapidly-Renewable Products

○ Applicable ◉ N/A

E03.1.8. Other

○ Applicable ◉ N/A

E04. Ceilings

Comply with Air Force Corporate Standards for Ceilings:
http://afcfs.wbdg.org/facilities-interiors/ceilings/index.html

E04.1. Ceiling Materials

Facility Group 1 ceiling materials will be as follows.

Primary:	Exposed Framing (Roof / Floor Structure Above)
Secondary:	Grid and Acoustical Tile
Tertiary:	Gypsum Board (Painted)

Facility Group 2 ceiling materials will be as follows.

Primary:	Exposed Framing (Roof / Floor Structure Above)
Secondary:	Grid and Acoustical Tile
Tertiary:	Gypsum Board (Painted)

Facility Group 3 ceiling materials will be as follows.

Primary:	Exposed Framing (Roof / Floor Structure Above)
Secondary:	Exposed Framing (Roof / Floor Structure Above)
Tertiary:	Gypsum Board (Painted) (Restrooms)

Facility Group 4 ceiling materials will be as follows.

Primary:	Gypsum board (painted)
Secondary:	Grid and Acoustical Tile
Tertiary:	N/A

1. Accent ceiling materials such as metal, wood, and rapidly renewable may be used in Group 1 as approved on a case by case basis.

2. Follow UFC 3-450-01 Noise and Vibration Control for acoustic design issues including speech privacy, sound isolation or sound masking.

3. Manufacturers listed in sections E04.1.1. - E04.1.8. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

Note: *Apply the below base-wide standards for Ceilings (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

E04.1.1. Exposed Framing (Roof / Floor Structure Above)

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Vulcraft

Color: Neutral colors reviewed on a case basis

Finish: Field painted (Sheen per UFGS)

Model #: Formlok floor and roof decking

Other: N/A

UFGS: Section 05 30 00 Steel Decks
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 05 30 00.pdf

E04.1.2. Exposed Concrete

○ Applicable ◉ N/A

E04.1.3. Grid and Acoustical Tile

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Armstrong or ROK Equivalent

Color: White

Finish: Factory

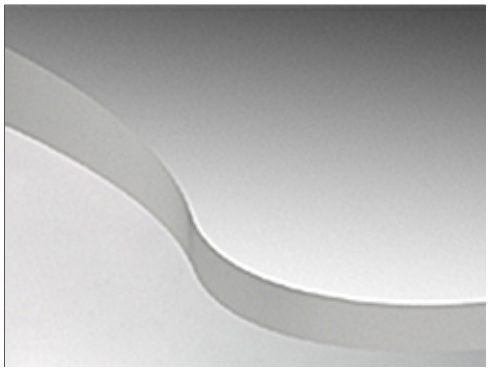
Model #: 2'x2' Tegular with reveal edge and fine texture, grid 15/16"

Other: Performance characteristics are Class A; NRC-0.70; CAC-40; LR-0.86; minimum recycled content 82%.

UFGS: Section 09 51 00 Acoustical Ceilings
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 51 00.pdf

E04.1.4. Gypsum Board

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☑ Group 4 ☐ Other

Mfr: US Gypsum or ROK Equivalent

Color: Solid neutral colors

Finish: Paint (sheen per UFGS)

Model #: Tapered edge

Other: N/A

UFGS: Section 09 29 00 Gypsum Board
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 29 00.pdf
Section 09 90 00 Paints and Coatings
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 09 90 00.pdf

E04.1.5. Metal Panels

○ Applicable ◉ N/A

E04.1.6. Wood

○ Applicable ◉ N/A

E04.1.7. Rapidly-Renewable Products

○ Applicable ◉ N/A

E04.1.8. Other

○ Applicable ◉ N/A

E05. Doors and Windows

Comply with Air Force Corporate Standards for Doors and Windows:
http://afcfs.wbdg.org/facilities-interiors/doors-and-windows/index.html

E05.1. Doors and Windows and Frames Materials

Facility Group 1
door (frame) and window frame materials will be as follows.

Primary:	Aluminum, Clear Anodized
Secondary:	Hollow Metal (Painted)
Tertiary:	N/A

Facility Group 1
door (leaf) materials will be as follows.

Primary:	Hardwood Veneer or Wood Solid Core
Secondary:	Hollow Metal (Painted)
Tertiary:	N/A

Facility Group 2
door (frame) and window frame materials will be as follows.

Primary:	Aluminum, Clear Anodized
Secondary:	Hollow Metal (Painted)
Tertiary:	N/A

Facility Group 2
door (leaf) materials will be as follows.

Primary:	Hardwood Veneer or Wood Solid Core
Secondary:	Hollow Metal (Painted)
Tertiary:	N/A

Facility Group 3
door (frame) and window frame materials will be as follows.

Primary:	Aluminum, Clear Anodized
Secondary:	Hollow Metal (Galvanized, Painted)
Tertiary:	N/A

Facility Group 3
door (leaf) materials will be as follows.

Primary:	Aluminum, Clear Anodized
Secondary:	Hollow Metal (Galvanized, Painted)
Tertiary:	N/A

Facility Group 4
door (frame) and window frame materials will be as follows.

Primary:	Aluminum, Clear Anodized
Secondary:	N/A
Tertiary:	N/A

Facility Group 4
door (leaf) materials will be as follows.

Primary:	Wood Solid Core
Secondary:	Hollow Metal or N/A
Tertiary:	N/A

1. Doors and windows within a facility will be finished consistently, either painted or, in Group 1, finished hardwood. Hardwood casings may be provided over metal frames in Group 1 as approved on a case-by-case basis.
2. Paneled textured doors are preferred in Group 4.
3. Do not use hollow-core wood doors.
4. Provide hold-opens on all doors except fire doors and surface mounted closers with a sliding track arm. Mount closers within a room. Do not mount closers within a hallway or on the door itself. Doors will open in accordance with applicable life-safety codes.
5. Only Best locking devices and hardware for interior and exterior doors will be used. Lock cores must be 7 pin. Coordinate with 8th CES.
6. Generally, match original hardware in renovations.
7. Windows must meet energy-efficiency requirements of UFC 1-200-02.

8. Manufacturers listed in sections E05.1.1. - E05.1.4. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

Note: *Apply the below base-wide standards for Doors and Windows (products, materials and color). Then refer to the Appendix and apply any additional requirements specifically related to the Facility District in which the project is located.*

E05.1.1. Aluminum

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Kawneer (US) or ROK Equivalent

Color: Clear anodized

Finish: Factory

Model #: InFrame Interior Framing, (2x4 nominal framing)

Other: Satin stainless steel hardware

UFGS: Section 08 41 13 Aluminum-Framed Entrances and Storefronts
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 41 13.pdf
Section 08 71 00 Door Hardware
https://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 71 00.pdf

E05.1.2. Hollow Metal

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Steel Doors**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Steelcraft (US) or ROK Equivalent

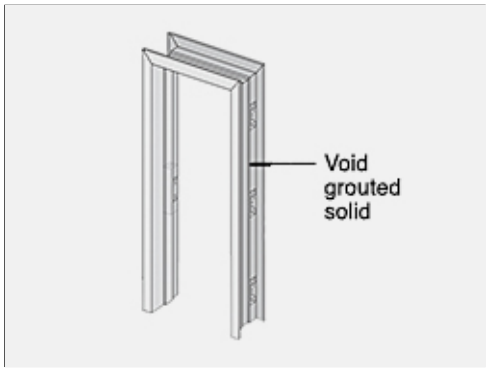
Color: Neutral colors

Finish: Paint (Sheen per UFGS)

Model #: Hollow metal, 2" w. frames, 16 gauge (welded corners) grouted solid

Other: Provide in Group 3 and in utility areas of Group 1 and 2. Provide A25 "galvannealed" coating. All interior steel doors shall have a factory applied primer finish. Provide satin stainless steel hardware.

UFGS: Section 08 11 13 Steel Doors and Frames
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 11 13.pdf
Section 08 71 00 Door Hardware
https://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 71 00.pdf



Type: **Steel Frames**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Steelcraft (US) or ROK Equivalent

Color: Neutral colors

Finish: Paint (Sheen per UFGS)

Model #: Hollow metal, frame grouted solid

Other: Satin stainless steel hardware

UFGS: Section 08 11 13 Steel Doors and Frames
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 11 13.pdf
Section 08 71 00 Door Hardware
https://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 71 00.pdf

E05.1.3. Wood

◉ Applicable ○ N/A Number of base standards 2 Image Tool 250 x 188



Type: **Style 1, Administrative**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Simpson (US) or ROK Equivalent

Color: Natural hardwood veneer

Finish: Clear Sealer, satin (aqueous)

Model #: 3'x7'x 1 ¾", solid core

Other: Satin stainless steel hardware, Glass lites may be used. Stained birch veneer face, 5 ply construction, rotary cut finish.

UFGS: Section 08 14 00 Wood Doors
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 14 00.pdf
Section 08 71 00 Door Hardware
https://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 71 00.pdf



Type: **Style 2, Residential**

Applies to: ☐ Group 1 ☐ Group 2 ☐ Group 3 ☑ Group 4 ☐ Other

Mfr: Simpson (US) or ROK Equivalent

Color: Natural hardwood veneer or paint grade

Finish: Clear Sealer or paint, satin (aqueous)

Model #: Full slab or panels

Other: Satin nickel hardware

UFGS: Section 08 14 00 Wood Doors
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 14 00.pdf
Section 08 71 00 Door Hardware
https://www.wbdg.org/FFC/DOD/UFGS/UFGS 08 71 00.pdf

E05.1.4. Other

○ Applicable ◉ N/A

E06. Casework Systems

Comply with Air Force Corporate Standards for Casework Systems:
http://afcfs.wbdg.org/facilities-interiors/casework-systems/index.html

E06.1. Casework Materials

1. Select casework systems and materials considering durability, maintenance requirements and LCCA.
2. Natural stone and cast stone countertops may only be used in Group 1 with approval on a case by case basis.
3. Metal cabinets and countertops will be provided in heavy-use operations and in Group 3.
4. Refer to AFCFS for approved materials.
5. Manufacturers listed in sections E06.1.1. - E06.1.5. and E06.2.1. - E06.2.6. are provided only to establish a level of quality for use when designers write the salient characteristics of the brand-name item in project specifications following Federal Acquisition Regulations (FAR) or ROK Building Regulations.

E06.1.1. Plastic Laminate

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1, Low Use Areas**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Formica (US) or ROK Equivalent

Color: Medium Earth tones and neutral tones

Finish: Light textured

Model #: High pressure laminate

Other: Combine with matching solid-surface banding on casework edges.

UFGS: Section 06 41 16.00 10 Plastic-Laminate-Clad Architectural Cabinets
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 06 41 16.00 10.pdf

E06.1.2. Solid Polymer Surface

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1, High Use Areas**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Corian (US) or ROK Equivalent

Color: Medium Earth tones and neutral tones

Finish: Light textured

Model #: Solid Surface

Other: Faces and edge banding

UFGS: Section 12 36 00 Countertops
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 12 36 00.pdf

E06.1.3. Rapidly-Renewable Products

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1 Moderate Use Areas**

Applies to: ☑ Group 1 ☑ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Plyboo (US) or ROK Equivalent

Color: Natural or amber

Finish: Satin

Model #: Flat grain bamboo plywood

Other: FSC® Certified 100%.

UFGS: Section 12 32 00 Manufactured Wood Casework
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 12 32 00.pdf

E06.1.4. Metal

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1**

Applies to: ☐ Group 1 ☐ Group 2 ◉ Group 3 ☐ Group 4 ☐ Other

Mfr: Steel Sentry (US) or ROK Equivalent

Color: Natural stainless steel or neural colors (steel)

Finish: Mill (stainless) or Powder coated (steel)

Model #: Lab, workbench, computer workstation

Other: Provide highly durable fabrications and finishes in Group 3 which are subjected to heavy use.

UFGS: Section 12 31 00 Manufactured Metal Casework
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 12 31 00.pdf

E06.1.5. Other

○ Applicable ◉ N/A

E06.2. Countertop Materials

E06.2.1. Plastic Laminate

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1, Low Use Areas**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Formica (US) or ROK Equivalent

Color: Medium Earth tones and neutral tones

Finish: Light textured

Model #: High pressure laminate

Other: Only use rounded half or full bullnose and integral backsplash. Do not use plastic laminate edge banding on front edges.

UFGS: Section 06 41 16.00 10 Plastic-Laminate-Clad Architectural Cabinets
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 06 41 16.00 10.pdf

E06.2.2. Solid Polymer Surface

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1, High Use Areas**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Corian (US) or ROK Equivalent

Color: Medium Earth tones and neutral tones

Finish: Light textured

Model #: Solid Surface

Other: Faces and edges

UFGS: Section 12 36 00 Countertops
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 12 36 00.pdf

E06.2.3. Natural Stone

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1, Group 1 High Visibility, Heavy Use**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local (TBD)

Color: Neutral tones

Finish: High polish, sealer

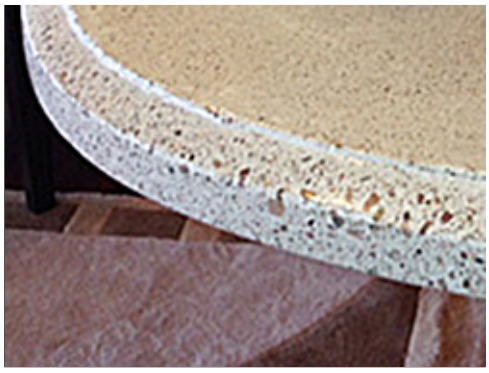
Model #: Custom cut slabs

Other: N/A

UFGS: Section 12 36 00 Countertops
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 12 36 00.pdf

E06.2.4. Cast Stone

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Style 1, Group 1 High Visibility, Heavy Use**

Applies to: ☑ Group 1 ☐ Group 2 ☐ Group 3 ☐ Group 4 ☐ Other

Mfr: Local (TBD)

Color: Neutral tones

Finish: High polish, sealer

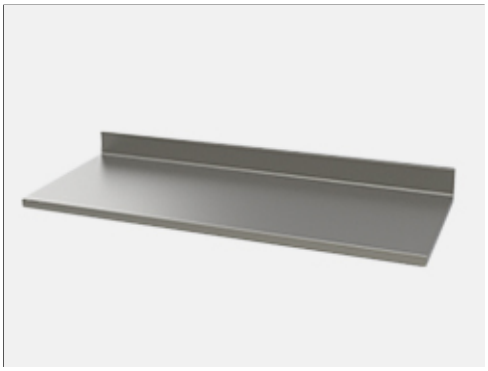
Model #: Custom cast or cut slabs

Other: N/A

UFGS: Section 12 36 00 Countertops
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 12 36 00.pdf

E06.2.5. Metal

◉ Applicable ○ N/A Number of base standards 1 Image Tool 250 x 188



Type: **Metal Countertop**

Applies to: ☑ Group 1 ☑ Group 2 ☑ Group 3 ☐ Group 4 ☐ Other

Mfr: Local (TBD)

Color: Natural stainless steel

Finish: Mill

Model #: Custom fabricated countertops

Other: Provide integral fronts, sides and backsplash

UFGS: Section 12 31 00 Manufactured Metal Casework
http://www.wbdg.org/FFC/DOD/UFGS/UFGS 12 31 00.pdf

E06.2.6. Other

○ Applicable ◉ N/A

E07. Furnishings

Comply with Air Force Corporate Standards for Furnishings:
http://afcfs.wbdg.org/facilities-interiors/furnishings/index.html

E07.1. Durability and Serviceability

Comply with AF Corporate Standards for Durability and Serviceability:
http://afcfs.wbdg.org/facilities-interiors/furnishings/durability-and-serviceability/index.html

E07.2. Accessories

Comply with AF Corporate Standards for Accessories:
http://afcfs.wbdg.org/facilities-interiors/furnishings/accessories/index.html

1. Comply with AFCFS.

E08. Interior Signs

Comply with Air Force Corporate Standards for Interior Signs:
http://afcfs.wbdg.org/facilities-interiors/interior-signs/index.html

E08.1 Types and Color

Comply with Air Force Corporate Standards for Types and Color:
http://afcfs.wbdg.org/facilities-interiors/interior-signs/types-and-color/index.html

E08.2. Interior Signs Materials

1. Natural stone, masonry and cast stone signs may only be used in Group 1 with approval on a case basis.

2. Comply with AFCFS.

E09. Lighting, Power and Communication

http://afcfs.wbdg.org/facilities-interiors/lighting-power-and-communication/index.html

E09.1. Functionality and Efficiency

Comply with Air Force Corporate Standards for Functionality and Efficiency:
http://afcfs.wbdg.org/facilities-interiors/lighting-power-and-communication/functionality-and-efficiency/index.html

E09.2. Types and Color

1. Comply with AFCFS and its references to Federal, DoD and DAF criteria including:

   a. Security Engineering

   b. UFC 4-021-01 Design and O&M: Mass Notification Systems

   c. Air Force Instructions (AFIs)

   d. Air Force Manuals (AFMs)

   e. Any other applicable design guide specific to the system being designed

   f. Republic of Korea Air Force (AFROK) buildings and areas are not subject to these standards

2. In general, system lines (HVAC, electrical, natural gas, water, wastewater, fire, etc.) will be color coded (with either paint or tape) with an arrow indicated direction of flow throughout a facility. This is done to aid in proper identification of pipes by Civil Engineer personnel. Additionally, system isolation valves, breakers, junction boxes and points will be provided throughout the facility to allow for safe maintenance and repair of systems while minimizing system disruption for facility occupants. Piping is to be painted according to intended use. Domestic water pipes will be painted green, heating pipes painted red and chilled pipes painted blue.

3. HVAC Systems:

   a. HVAC systems represent the single largest use of energy within a facility. Therefore, all HVAC systems installed as part of new construction on Kunsan will be of an energy efficient design. Additionally, all HVAC systems will comply with the UFC 3-410 series on HVAC Systems. Carrier and Trane units are preferred over all other brands due to their easy maintainability, as well as the availability of parts and representatives.

   b. Collective Protection Systems (CPS) are HVAC systems that provide protection for a facility from toxic chemical and biological agents. They are typically installed in critical command and control facilities, as well as dormitories. These systems are a unique requirement for United States Forces Korea installations and have additional operations and maintenance requirements. Contractors are required to provide the 8th Civil Engineer Squadron with an Operations and Maintenance Manual for each CPS system installed on Kunsan prior to contract close out.

4. Plumbing Systems:

   a. In addition to UFC 3-420-01 *Plumbing Systems* and AFI 32-1066 *Backflow Prevention Program* plumbing on Kunsan will comply with the preceding standards. For plumbing fixtures, Royal Toto and Dovidos are widely preferred due to availability of parts on the Korean Peninsula.

5. Interior Electric:

a. Electric systems on Kunsan must comply with UFC 3-500 series on Electrical Systems, AFJMAN 32-1083 Facilities Engineering Electrical Interior Facilities, ETL 90-6 Electrical System Grounding, Static Grounding and Lightning Protection and AFI 32-1065 Grounding Systems.

b. Provide identification standards for electrical equipment, raceways, and conductors accordance with KUN 3-500-01 Kunsan Electrical Identification Standard.

6. Refer to section D09.2. for cathodic protection systems and lightning protection systems.

7. Communication Systems:

a. Comply with UFC 3-580- 01.

b. Each facility will have unique, detailed requirements depending on anticipated use. At all new facilities where a separate contractor will install communication systems (wire, fiber optic, cable), the construction contractor will provide the empty conduit, access points and outlets per the UFC.

8. Fire Alarm System:

a. Kunsan AB currently has an approved sole source with Monaco and Honeywell for Fire Alarm Panel.

End of Section

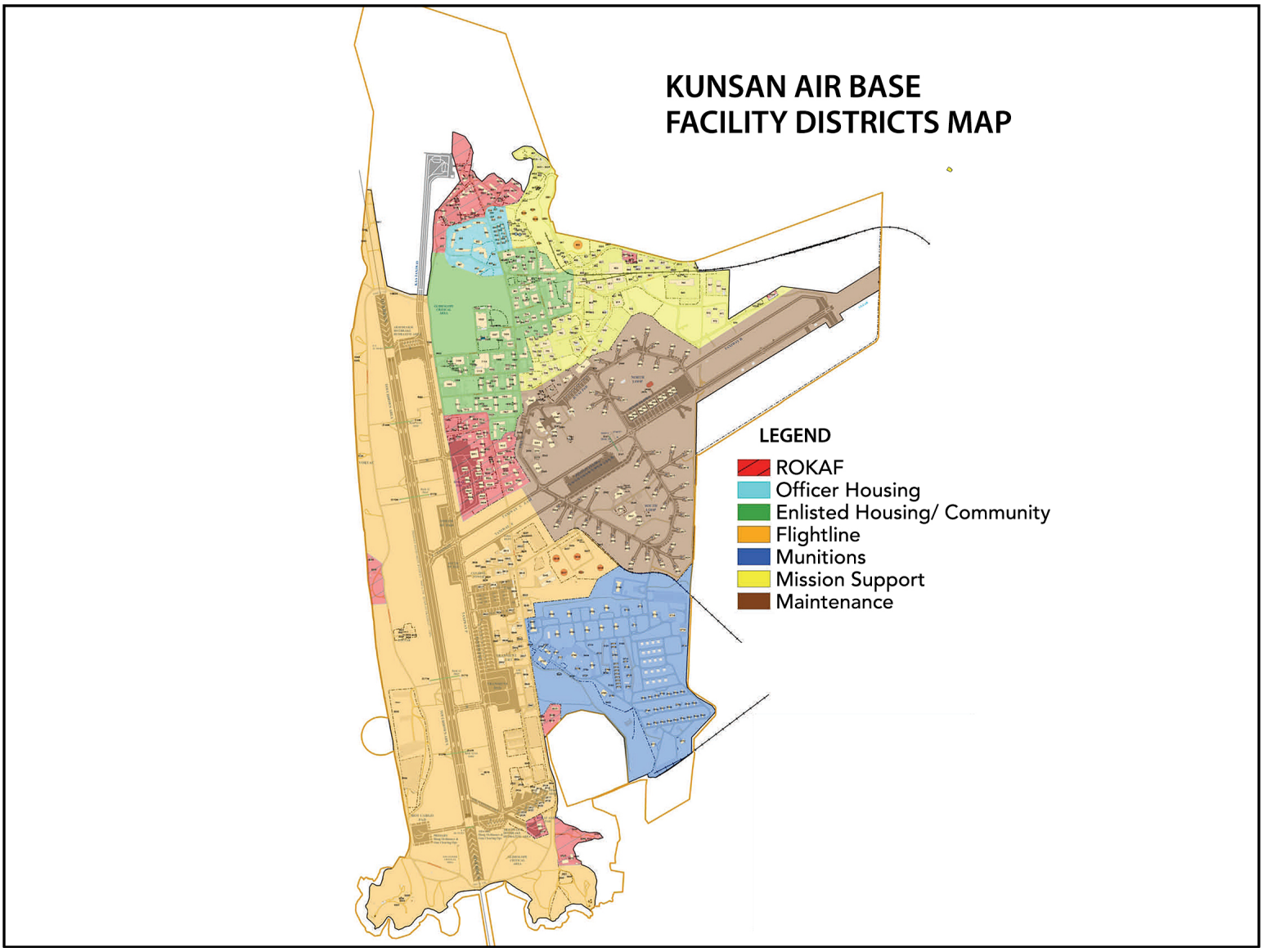
F. APPENDIX - Facility Districts

- (•) Applicable
- ( ) N/A

Comply with Air Force Corporate Standards for Facility Districts:
http://afcfs.wbdg.org/facility-districts/index.html

Facilities Districts Overview Map:

Image Tool 800 x 600



Note: *Apply the base-wide standards in this IFS for Installation Elements, Site Development, Facilities Exteriors and Facilities Interiors (products, materials, color, etc.). Following application of the base-wide standards, refer to the Appendix and apply any additional requirements specifically related to the Facility District.*

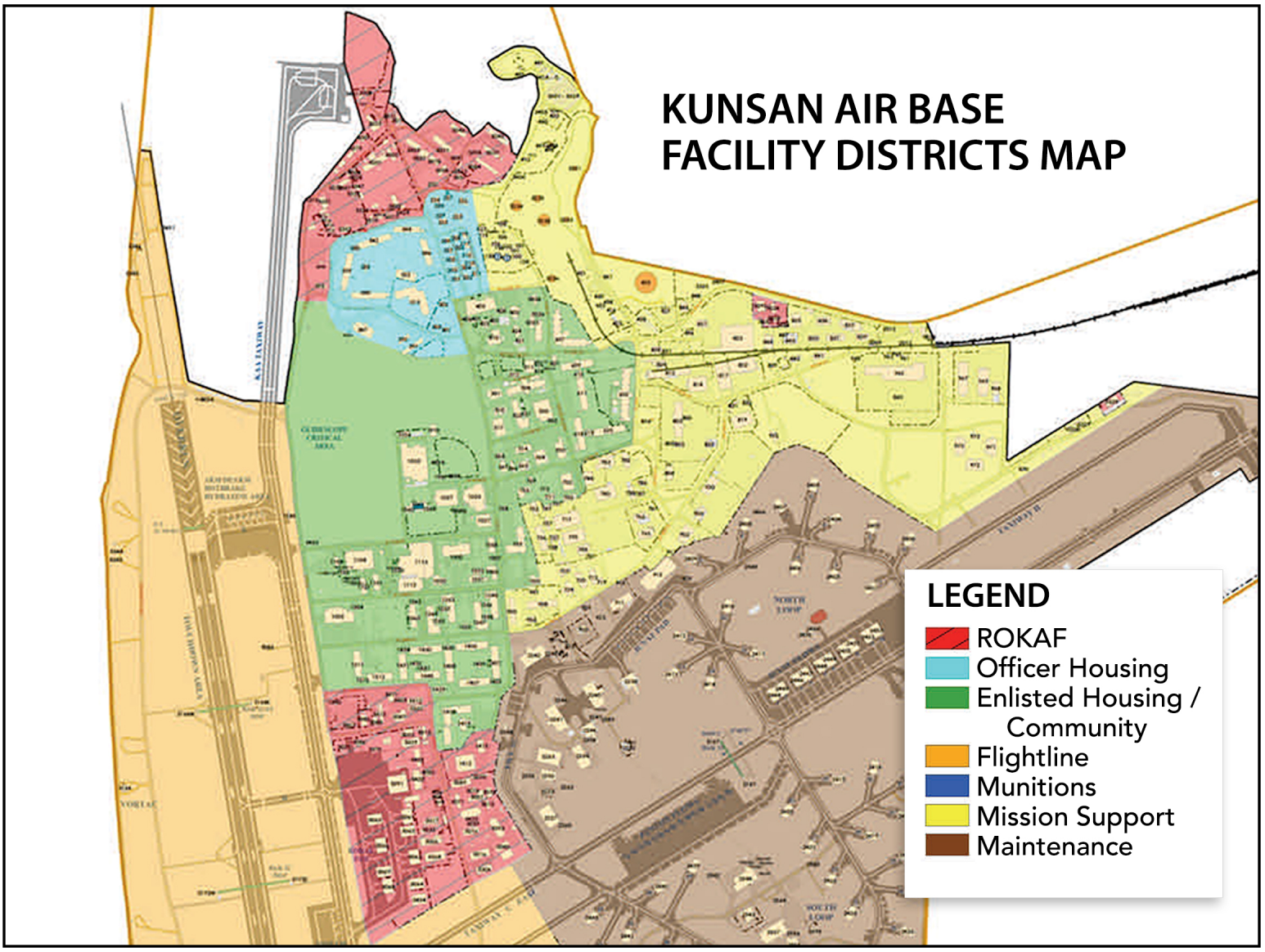
Enter No. of Facility Districts 1

The following Facility Districts list exceptions to the base standards that are unique to each district. Please refer to the Site Development, Facilities Exteriors, and Facilities Interiors sections of this IFS for base standards.

Name of District: Kunsan AB Core Area Map

Image Tool 800 x 600

Map of District



Photos for each facility group within the Facility District as applicable.

Image Tool 250 x 188

Group 1	○ Applicable	◉ N/A
Group 2	○ Applicable	◉ N/A
Group 3	○ Applicable	◉ N/A
Group 4	○ Applicable	◉ N/A
Other	○ Applicable	◉ N/A

Continue to the Next Page

FACILITY DISTRICTS

Kunsan Air Base is divided into districts that align with land use zones as defined in the Installation Development Plan. Each district has designated uses that support the base's operations. Generally, match adjacent facilities in new construction to promote architectural compatibility throughout the installation. Please refer to Section D03.2. and contact the 8th Civil Engineer Squadron for additional information.

A brief description of each district follows:

1. Flightline

Flightline district facilities are characterized as facilities directly related to the operation and support of the airfield and aircraft. These facilities include airfield management, control tower, airfield communications systems, flightline maintenance, base fire department and liquid fuels. Additionally, the US Army Patriot battery sites and alert hangars are located within this district. Facilities in this district, which have been previously painted, will be repainted following IFS supplemental document, *G09 Kunsan AB IFS Finishes*, which includes exterior painting standards. This document may be downloaded using the link in G. Appendix. Building 2860 will serve as the model for this district with which all future construction will be architecturally compatible and follow standards for Facility Groups 2 and 3 as defined in this IFS.

2. Maintenance

Maintenance district facilities are characterized as directly related to the maintenance and support of aircraft. These facilities include maintenance hangars, hardened aircraft shelters (HAS), quick turn pads and administrative offices. Facilities in this district that have been previously painted may be repainted following IFS supplemental document G09 to match the base exterior color standard. With the exception of HAS's, the soon to be built buildings of the Aircraft Maintenance Complex will serve as the model for this district that all future construction and exterior renovation projects will match. HAS's must follow the specifications of the current generation (3rd) and finished to match the base exterior color standards in this IFS.

3. Munitions

Munitions district facilities are characterized as facilities directly related to the maintenance and storage of aircraft munitions. These facilities include munitions igloos and administrative offices. Facilities in this district, which have been previously painted, will be repainted following IFS supplemental document G09, to match the base exterior color standard. With the exception of munitions igloos, Building 2730 serves as the model for this district that all future construction and exterior renovation projects will match. New igloos will be built to the specifications of the current generation (per type of igloo) and finished following IFS standards for Facility Group 3.

4. Mission Support District

The district's facilities are characterized as directly related to the maintenance of base facilities, infrastructure and communications, the storage of supplies, and the support of vehicles. These facilities include civil engineer and logistics warehouses, fuel tanks, civil engineering, communications and logistics readiness shops and administrative offices. Facilities in this district will be plain faced and those, which have been previously painted, may be repainted following IFS supplemental document G09 to match the base exterior color standard. Building 735 serves as the model for this district and all future construction and exterior renovation projects will be architecturally compatible following IFS standards for Facility Groups 2 and 3.

5. Enlisted Housing and Community District

The Enlisted Housing and Community district facilities are characterized as dormitories for the base's enlisted population and community support facilities. These facilities include dorms, the Base Exchange, Commissary, gym, theater, post office, banks, combined ranks club, education office, library and recreational facilities. Additionally, the Wing headquarters, base medical campus and several unit administrative buildings are located in this district. Facilities in this district will feature a gray granite (medium or coarse grain) veneer on exterior walls in addition to the base exterior color standard for paint. Building 603, the enlisted housing tower serves as the model for this district that all future construction and exterior renovation projects will be architecturally compatible following IFS standards for Facility Groups 1 and 2. Refer also to IFS supplemental document G09.

6. Officer Housing District
The Officer Housing District facilities are characterized as dormitories, apartments and houses for the base's officer population. Additionally, the base golf course clubhouse, visiting quarters, Area Defense Counsel and the Mental Health Clinic are located in this district. New facilities in this district will feature a "Minnesota Quarry Creek Stone" veneer on exterior walls in addition to the base exterior color standard. Building 313, the base Visiting Quarters, serves as the model for this district that all future construction and exterior renovation projects will match following IFS standards for Facility Groups 1, 2 and 4. Refer also to IFS supplemental document G09.

Open Space and Preserves
Open space includes undeveloped land both inside and outside of the immediate cantonment area. It both separates and defines the various sections of the base and provides a natural setting. Areas classified as open space may be undeveloped to act as a buffer space between incompatible uses, for safety or security clearances, or there may be other constraints that are not readily visible. All development in this district requires prior coordination and approval from the Base Civil Engineer.

G. APPENDIX - References

Comply with Air Force Corporate Standards:
http://afcfs.wbdg.org/index.html

Note: The below listed documents are provided as supplements to this IFS Kunsan AB IFS If there are any discrepancies between the requirements of this IFS and the Supplemental Documents, the IFS will govern.

8TH CIVIL ENGINEER SQUADRON

G07 Kunsan AB IFS Thermal and Moisture Protection
Includes Exterior Insulation and Finish Systems (EIFS), Vapor Retarders, Air Barriers, and Expansion Control
https://www.wbdg.org/FFC/AF/AFIFS/G07_Kunsan_AB_IFS_Thermal_Moisture_Protection.pdf

G09 Kunsan AB IFS Finishes
Includes Facilities Exteriors - Paints and Coatings, Colors
https://www.wbdg.org/FFC/AF/AFIFS/G09_Kunsan_AB_IFS_Finishes.pdf

G32 Kunsan AB IFS Exterior Improvements
Includes Exterior Plants: Guidance for Selection of Plant Species and Recommended Plant Species
https://www.wbdg.org/FFC/AF/AFIFS/G32_Kunsan_AB_IFS_Exterior_Improvements.pdf

End of Section