



**BASE ARCHITECTURAL
STANDARDS FOR
EXCELLENCE
(BASE WAY)**



STANDARDS TO BELIEVE IN

Our mission in this command is to replenish the combat capability of America's Air Force with high quality, professional airmen. Setting high standards and then developing strategies to achieve them are what we do in Air Education and Training Command ... whether developing airmen or operating installations.

I expect you as commanders to use this guide and your personal vision to smartly steer your installation to excellence. It's not an easy task given our fiscal constraints; however, I urge you to share this vision with your airmen and instill an interest in the "trees and forests" of details that shape our installations. We can't afford to make 50-year mistakes in siting, in design, or in operation. In short, I expect you to be an active steward of your resources and instill a proactive mindset ... don't wait around for improvements to be made. This program guide gives you the yardstick by which you can measure your progress.

We need to take care of what we have and build on the legacy of our past to make each investment count. Together, we will continue to improve our installations and remain the Air Force's "First Command:" first by assignment ... first in training ... first in installation excellence.



HAL M. HORNBURG
General, USAF
Commander





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ELEMENTS OF INSTALLATION EXCELLENCE

Achieving installation excellence is not magic.

Rather, it takes vision, planning, and follow through to bring about a standard of excellence across an entire base. A few basic elements guide the process.

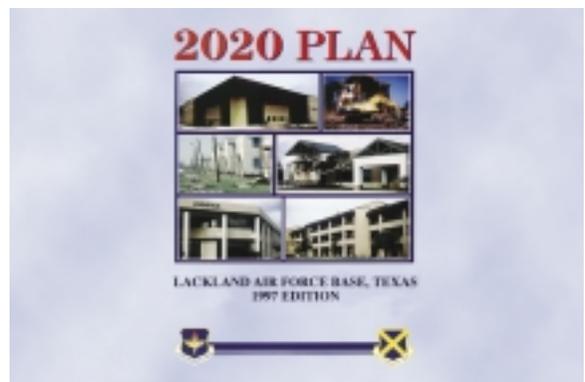
The elements of installation excellence include the following:

- A comprehensive, well-conceived installation development plan that will stand the test of time.
- Planning and design execution to translate the concepts of the development plan into facilities that meet the installation's needs.
- Attention to detail that focuses on architectural compatibility and considers such things as unique facility elements, color, landscaping, signs, infrastructure, and site components. This attention to detail provides the finishing and unifying touches.
- Routine maintenance, good housekeeping, self-help, and other "fine tuning" to hold it all together and sustain the excellent facilities our people have come to expect and deserve.

The key element is the plan. That's where it all starts. The plan organizes the activities of an installation into logical groupings and ties different types of buildings constructed over the years into a unified whole.

If a base has been following a well-conceived development plan for several years, the job of today's commander is made much easier. If not, then the job is made much more difficult. The most important thing in designing new facilities and in renovating the exteriors of existing buildings is to study and adhere to the principles of the plan. These principles include:

- Using similar architectural concepts.
- Carrying themes across the base.
- Using consistent colors and roof styles.





- Blending, not contrasting, colors.
- Using smart, classic designs to avoid 50-year mistakes and falling into the “fad trap” in which a currently popular design feature will go out of style.
- Selecting low-maintenance landscaping.
- Hiding the “warts” by smart screening and selecting low-visibility locations.
- Applying the same standards regardless of execution method or building owner.

This guide will build upon these basic principles of installation excellence. Using them together will ensure your success.



INSTALLATION DEVELOPMENT

Command Policy

Develop AETC installations in a manner to maximize mission accomplishment, optimize existing facilities, and provide the most efficient, professional surroundings possible.

Strive to achieve and maintain installation excellence through contract, in-house, and self-help efforts. Use the installation's General Plan as the foundation to develop your base over time. Supplement your General Plan with an installation architectural compatibility plan or guide to preserve and carry a common architectural theme across the entire base. Use a campus approach to provide the best training environment and to separate student activities from normal, daily base operations.

General Standards

Operational efficiency is best achieved by grouping compatible facilities in the same geographic area. Because most AETC bases have evolved over a period of many years, mission changes as well as budgetary constraints may have short-circuited the planning process. Few installations are strictly organized by functional areas, but we should move toward this goal in our long-range planning.

Specific Guidelines

Land Use

With few exceptions, flying training and base operations and maintenance facilities should be located near the flightline. Be aware of airfield, safety, and other associated criteria when selecting sites for new facilities.

The operations training standard is a campus where classrooms are located near student dormitories and dining facilities. Classrooms should be easily accessible to both instructors and students. The campus concept should promote efficiency of training facilities, separate





pedestrian from vehicular traffic, and allow future mission expansion.

Industrial operations, such as supply, transportation, and civil engineers, should be central to the activities they serve and away from main entrances. Operations training, in addition to classrooms and laboratories, may also require field training areas and special training aids.

The location of mission support facilities may vary from base to base depending on the installation's primary mission. Additionally, support facilities may have unique siting requirements, but the location should be as close as possible to the mission facility it supports.

Flying training requires accessible simulator buildings and other flight support functions in addition to personnel, finance, and other traditional mission support functions.



Community support facilities should include commercial operations clustered in the community center as well as commercial and service functions dispersed throughout the installation. Avoid locating community or commercial activities near prominent areas that detract from a positive first impression such as at base entry gates.

The community center, which includes the base exchange (and its concessions), commissary, satellite pharmacy, bank, and credit union, should be sited to be convenient for dormitory and base housing residents as well as off-base patrons. Clustering community support activities also makes customer parking and access more convenient.



Other commercial and community service facilities, such as the child development center, youth center, base exchange, shoppette, gym, theater, bowling center, hobby shops, post office, chapel, library, and enlisted and officers' clubs, should be located with good vehicular and pedestrian access and be as near as possible to those they serve.

Dormitory complexes should have convenient access to dining, recreational, and support activities.

Locate family housing on the perimeter of the base away from the flightline to minimize noise from vehicle traffic and aircraft.

Outdoor recreation and open space promote and maintain a high quality of life on our installations. These areas should also be convenient for those they serve. Such areas should not be treated as excess land to be used for future building expansion.

Siting Facilities

Locate new facilities according to land use plans identified in the installation's General Plan. New facilities and facility additions should comply with applicable environmental, airspace, and safety criteria for their proposed locations.

Effective base development promotes compatible land use.

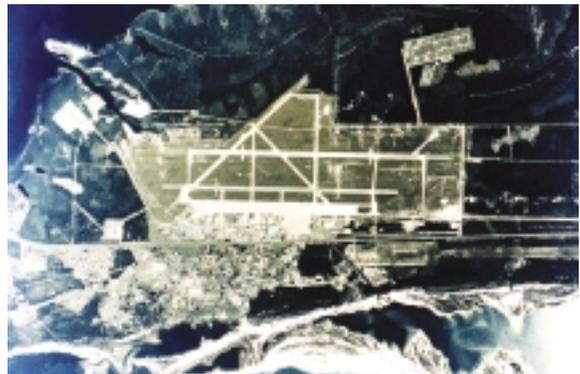
- Control what activities go on the flightline.
- Avoid locating industrial and retail facilities in areas that detract from first impressions.
- Consolidate like activities.
- Take a "whole community" view to dormitory and family housing areas.
- Make sound environmental planning a part of the decision process.

Avoid overdeveloping an area and thereby creating traffic flow and parking problems. Take advantage of the existing environment. Preserve natural features such as steep grades, wetlands, streams, trees, and forests for visual relief. Consider the primary view of new facilities and their surroundings when deciding on locations and orientations.

Historic Preservation

Air Education and Training Command has many historic structures significant for their association with important military and Air Force events, persons, and architectural or engineering distinction. As national assets, they define where we've been and what we've done.

In historic districts or around historic structures, maintenance and repair activities will include





replacement with in-kind materials according to the Secretary of Interior's Standards for Rehabilitation. This includes like-type pavement materials, streetscapes, and landscape materials—all to maintain the overall historic character of the district or neighborhood.

We have an obligation under law to take special care with facilities that are either on or eligible for the National Register of Historic Places or are located within historic districts. Appropriate coordination with the State Historic Preservation Office and the Advisory Council on Historic Preservation must be done before all renovation, maintenance, or routine site work to include self-help efforts.

However, we must use common sense when dealing with our historic properties so that the costs to preserve our heritage do not exceed the perceived benefits from the investments. Establishing a good working relationship with the State Historic Preservation Office can usually achieve the appropriate balance. Active coordination with and seeking assistance from the Command Civil Engineer (HQ AETC/CE) can help ensure this balance is maintained.



INSTALLATION PLANNING AND DESIGN STANDARDS

Command Policy

The General Plan and its component plans (composite constraints and opportunities, infrastructure, land use, and capital improvements plan) provide the planning and design direction for the future development of our installations.

Design facility projects for the long-term. Strive to achieve excellent places to work and live, and reduce the costs of maintenance, repairs, and operations over time. Keep designs simple. Use durable materials and reliable components to meet functional requirements and resource conservation goals.

Each base should supplement its General Plan with architectural guidelines. Use sub-area plans as necessary to maintain consistency in design of new or renovated facilities that are in base areas of significantly different yet acceptable architectural styles.

General Standards

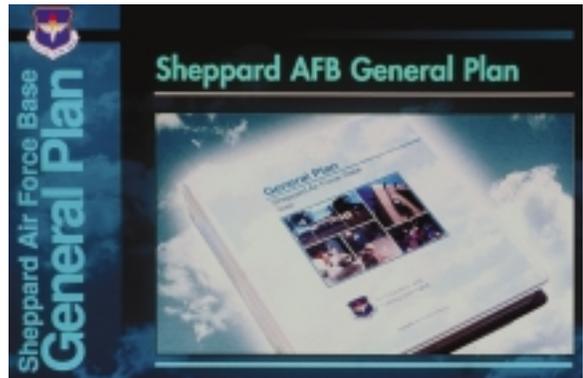
Effective installation planning and design addresses every aspect of an installation including site planning and facility design—signs, pavements, landscaping, service equipment, infrastructure, base entrances, and physical barriers. Explore all avenues to fund and execute installation excellence projects. Senior leaders and unit commanders should lead the way and involve associate organizations in the process.

Specific Guidelines

Use a blend of contract, in-house, and self-help efforts.

Consider the condition of utility and roofing systems when upgrading existing facilities.

Pay special attention to heating, ventilating, and air conditioning systems that support community facilities such as base exchanges, commissaries, health care, child development, and recreational facilities.





When constructing new or renovating existing facilities, consider the use of operable windows with screens to take advantage of natural ventilation during temperate weather. Also consider the use of vestibules on the side of buildings facing the prevailing winds. Both of these considerations can provide comfort and energy savings.

Consider the following when renovating older facilities:

- Building renovation involves the cost-effective and logical upgrade of older facilities. If a new or continuing requirement exists that can be satisfied by renovating an existing facility, renovation should be considered a viable alternative to other improvement methods.
- Renovation can be a cost-effective solution, especially when working with older permanent and structurally sound steel frame, concrete frame, or masonry buildings. The renovation concept can also be applied to older wood-frame structures.
- Consider at least two key issues when renovating wood-frame buildings. The first issue is the structural integrity of the candidate facility. If no significant structural problems are found, the second issue involves the preparation of a 15-year life-cycle cost analysis to validate the cost-effectiveness of the proposed renovation.
- Exterior building renovation, maintenance, and repair (as appropriate) should include a new architecturally compatible roof, an improved wall system of very low maintenance (that is, a siding or exterior insulation system), new energy-efficient windows and exterior doors, and a landscaped main entrance that reflects the established architectural character of the base.



If building renovation is not undertaken, demolition should be completed in a timely manner for those facilities no longer needed or structurally unsound. The key to the demolition process is relocating occupants into other suitable, permanent facilities.

Metal-clad buildings should normally be used only in industrial and flightline areas. However, their use may be appropriate for other functions, such as high-bay operations training facilities. When used, make them architecturally compatible with other base facilities through colors, accent materials, signs, and landscaping.

Never reuse a temporary facility, even short-term. Expedient asbestos and lead-base paint abatement by in-house, contract, or a Command team must be accomplished before demolition.

Avoid using relocatable facilities such as trailers or wooden and metal storage sheds. (If these facilities are being used as temporary space, establish a deadline for their removal and carefully ensure they are architecturally compatible to the maximum extent possible.) Provide permanent facilities or facility additions if additional space is required.

Exterior and Interior Design Standards

Quality design doesn't just happen. It's a process that reflects involvement whether the project is done through the military construction program, the nonappropriated funds (NAF) construction program, the family housing program, a Command or local operations and maintenance (O&M) contract, a base civil engineer work order or job order, a simplified acquisition of base engineers requirements (SABER) delivery order, a self-help effort, or a RED HORSE training project.

Involvement and commitment are needed to do the job right.

Who's involved? A design team often includes key members from:

- Customer or using organization.
- Base civil engineer's design, operations, and environmental staff.
- Base contracting.
- Base supply.
- Army Corps of Engineers, Naval Facilities Engineering Command, or Air Force Center for Environmental Excellence.
- Architect-Engineer firms.
- Major command agencies (host and requiring).
- Base senior leadership.

Quality design understates excellence and delivers facilities that are excellent places to work and live. Quality design maintains our corporate and professional image. To achieve quality design, we must design for excellence. We must look at quality design as an investment in a sustainable future.





Quality design should be simple—matching form with function and focusing on efficient, economic use versus making an architectural statement. Avoid the use of unnecessary atriums, stair towers, and other architectural embellishments that may be in vogue at the time. Build for long-term compatibility.

Quality design is durable. Materials and finishes endure, which in turn reduces maintenance and repairs over time. Such materials as brick and block, standing seam roofs, ceramic, and quarry tile have proven to require little to no maintenance over their life cycle. Wall coverings in high traffic areas require less maintenance than paint. For example, a Type II vinyl wall covering is well-suited for a high-traffic corridor.

Quality design provides reliable systems. Reliable systems reduce maintenance and downtime to building systems and components and are energy efficient. It also means selecting equipment that can be maintained by Civil Engineer personnel. Redundant capacity of critical systems may be a cost-effective solution when high system reliability is paramount.

Quality design is functional—understanding the user's processes and designing to complement the work flow.

Quality design pays attention to the details. Attention to detail—all aspects—is a **must!** All engineering disciplines must integrate their efforts to ensure unsightly warts are hidden by coordinating locations or concealment. Engineering disciplines must coordinate:

- Furniture layouts with windows, light switches, thermostats, telephone outlets, and local area network cabling.
- Equipment colors on mounting surface.
- Location and colors of utility meters, landscaping sprinkler components, vents, vending machines, and discharge of roofs and downspouts.
- Location, colors, and types of fire protection equipment, piping, sprinkler heads, and emergency lighting.
- Transition between materials such as carpeting to tile and wall coverings to painted surfaces.



- Accessibility for all by meeting the Uniform Federal Accessibility Standards.

Quality design coordinates appearances to focus on the end result.

In the end, the design and construction process should produce a building that looks just like the rendering—free of clash, clutter, and visible warts!

Exterior Design Standards

Quality design, coupled with comprehensive base and area planning, keeps everyone focused on the big-picture issues:

- Effective flightline infrastructure.
- Architectural compliance with colors, masonry materials, landscaping, roofing, and graphics and signage to be used within each area of the base.
- Vehicular and pedestrian circulation.
- Keeping industrial areas away from high-visibility areas.
- Buffering housing areas from work areas.
- Short-term, intermediate, and long-term base/facility objectives.

Exterior Design Standards: Site and Civil

Avoid sites that overdevelop an area or create traffic flow or parking problems. Plan for facility expansions. On sites with constraints, consider the use of multiple stories or a below grade floor (not necessarily a basement).

Take advantage of the existing environment—preserve natural aesthetic features such as steep grades, wetlands, streams, and forests for visual relief. Align new facilities to provide a pleasing view from the high-traffic streets.

Select the proper type curb section for the specific job; that is, the curb section selected should not end up creating additional problems with sidewalks, drainage, and crosswalks. Ensure handicapped access is provided at all crossings and intersections.

- Do not use bumper blocks.
- Do not paint curbs, loading areas, culvert heads or other concrete structures at grade level.





- Mark handicapped and reserve parking with a consistent base-wide approach (pavement markings or curb placard preferred over free-standing signs).

Locate utilities underground—particularly in areas around key installation facilities. As a minimum, secondary utility services to facilities should be underground without exception. Do not attach area lighting to the exterior of buildings.

Bore or jack under streets, sidewalks, parking lots, and curbs/gutters in lieu of trenching whenever possible. On new pavements, install conduits under pavements for future utility requirements or relocations.

Develop site plans to maximize the use of existing trees.

- Identify trees to remain on plans.
- Do not “clear cut” project sites.
- Identify trees greater than 4 inches in diameter and not within the building site as “to remain” on plans.
- Minimize cut and fill around tree roots.
- Integrate the facility and support infrastructure around existing trees to the extent practical.

Provide functional parking lots and reduce the visual impact of parked cars through the use of berms or landscape plantings or both. Use buildings to screen parking areas from view.

- Provide several small parking areas instead of one large one.
- Landscape 10 percent of the parking area with tree and shrub groupings to reduce apparent size and soften the hard visual impact. This includes planting islands within the paved areas as well as planting around the perimeter.
- Curb all parking lots.
- Avoid parking at building entrances.
- Provide for security and area lighting.
- Coordinate pole colors with building roof and trims.
- Coordinate location and design of light pedestals—if protected by curb, install pedestal at grade level.

Examine pedestrian traffic patterns and provide appropriate sidewalks. Provide adequate sidewalks between buildings and areas. Create outdoor community areas. If sidewalks are not adjacent to the curb, then set them back an appropriate distance from the curb edge to



allow for landscaping and maintenance. Include sidewalks on both sides of the street.

Exterior Design Standards: Site Components

Site components include fences, walls, and screening; utilities and equipment enclosures; and dumpster enclosures.

Attention to detail is the key to installation excellence. Often overlooked are the site components of an installation's environment.

Continually survey the base for unsightly, poorly located signs, trash receptacles, newspaper and bicycle racks, telephone booths, vending machines, porta-johns, fences, etc. Reduce visual and nonfunctional clutter.

Fences and Screens. Chain-link fencing has its place on our installations, but the need for and use of barbed wire outriggers on chain-link fencing should be continually challenged. With few exceptions, chain-link fencing should be used only for perimeter fencing, flightline and industrial facility security, or appropriate athletic complexes.

When installing new chain-link fencing, consider using vinyl-clad fabric and components to downplay the visual impact of the fence. Aluminum or wooden slats will not be used in chain-link fabric. These slats are costly and difficult to maintain.

Wooden fencing is a cost-effective alternative, especially for screening trash receptacles and building service areas, but requires routine, periodic maintenance for good visual appearance. If used, stick with traditional styles, such as board and batten or shadow box. Use durable woods and stain wood fencing to complement adjacent color schemes.

Masonry walls and screens are attractive and durable, but they can be expensive. If used, masonry materials should match adjacent building materials. Masonry should be used very sparingly, but it is recommended at base entrances and to separate housing from adjacent land uses.





Ribbed, metal panel fences and walls are another excellent alternative and are preferred over wood. They can be used in combination with masonry columns for architectural compatibility or visual relief on long stretches of fence.

Low lying, irregular shaped berms and landscaping can also be an effective screening method.

Whatever screening method is selected, avoid monotonous straight runs without any break in materials. The most effective screening method combines materials with good landscaping for the best visual appeal.

Utilities and Equipment Enclosures. Utility systems and their supporting equipment items are sometimes all too conspicuous. Too often, these systems and equipment items are not totally integrated into the installation's planning efforts, resulting in an unsightly appearance.

Ideally, utilities should be located underground—particularly in areas surrounding key facilities, military family housing, and main installation arrival points. A realistic and systematic utility development plan should be put into action to achieve this goal. If utilities cannot be relocated or buried, neutralize their visual impact by screening or painting them to be compatible with surroundings and with the base color plan.

Screen or landscape or both around ground-mounted mechanical and electrical equipment such as condensing units, steam lines, pad-mounted transformers and switch gear, gas vents, sprinkler system controls and pumps, and meter boxes. Make sure screening will not restrict airflow to mechanical equipment. The design of screens around major equipment will be carefully considered and, when justifiable, match material of the predominant permanent installation construction.

Dumpster Enclosures. Screen dumpster containers, their pads, and large trash-compacting equipment as appropriate. Size screen enclosures for recycling containers. Additionally, design dumpster enclosures to provide storage areas for flammable materials and lawn equipment so that stand-alone storage buildings can be eliminated.



Unenclosed or improperly designed dumpsters do not allow for secondary trash containment. Open and overflowing dumpsters create the potential of blowing trash. Blowing trash also creates foreign object damage, which is a safety hazard to the flying training mission, and requires additional efforts to police trash.

Through a planned effort of evaluating dumpster sizes, quantities, placement, consolidations, and schedules, combined with functionally designed enclosures, a dumpster enclosure plan can significantly reduce the Air Force's O&M funding requirements.

Site dumpster pads and enclosures where functionally required. If a choice of sites exists, place the dumpster where it is least visible. Generic enclosure designs along with implementing instructions have previously been provided by Command guidance letters. This design guidance suggests construction with precast concrete, masonry, woods, or metal panels.

Integrate enclosure design with the base's architectural guidelines or fencing plan. Locate them on concrete or other hard surfaces in accessible, but not prominent, locations. Keep receptacles and other disposal equipment in good repair and either painted or screened.

Exterior Design Standards: Architectural Compatibility

Architectural compatibility is achieved when the appearance of our installations, buildings, and surroundings is in harmony. Architectural appearances should be compatible with one another in function, mass, shape, color, and texture. This produces an overall clean, complementing, and professional image. Architectural compatibility is based on understated excellence.

From a practical standpoint, architectural compatibility boils down to having a plan to tie different buildings together by using similar concepts, base themes, consistent colors and roof styles, matching elements on old buildings, and using colors and screening to hide eyesores. Also, architectural compatibility isn't limited to the exterior.





Each base should have an architectural guide to address its architectural theme, design standards, and materials and colors.

- Architecturally blend physical security features into the building and site development improvements design. Buildings should blend with their natural and developed environment. Use principles of site planning to promote passive energy construction practices.
- Permanent construction is the standard. Use modular or relocatable facilities only for temporary requirements, pending completion of permanent facilities. Upgrade flat roofs of existing facilities to sloped metal roofs.
- Use base standard colors to paint exterior of existing, painted structures. Exterior appearance must reflect pride and professionalism.
- Locate metal buildings only in industrial areas.
- Consider “campuses” or “office parks” to group similar training facilities or mission operations together. Use the same materials and detailing throughout complexes of buildings.



Incorporate architectural criteria into all facility improvements and projects.

Ensure energy conservation is considered in design, consistent with Department of Energy, DoD, Air Force, and AETC policies and objectives.

Exterior Design Standards: Finishes

Exterior finishes of facilities and structures protect against climatic deterioration. Exterior finishes should be durable and require little, if any, maintenance.

Because first impressions of an installation are based on its facilities and level of maintenance, exterior architectural finishes must provide an appearance comparable to our cities and local communities.

The installation must project a professional military appearance—clean, uncluttered, and well-maintained. Through its architectural guidelines, each AETC installation, in coordination with its major associates, will develop planning and design guides to include exterior finishes. These design guides should specify facility



finishes and colors for future planned facilities and major additions to existing facilities.

Use the installation's architectural guidelines as the foundation for selecting exterior materials and colors. Select exterior materials appropriate to the region. This helps create continuity and promotes a consistent architectural theme throughout the installation.

Walls. Materials for exterior walls on permanent facilities should be a low- or no-maintenance type. Stay away from materials that require painting or frequent refurbishing.

Masonry and concrete are typical permanent exterior building materials. Metal (or a combination of metal and masonry) is acceptable for industrial facilities and those specialized structures whose basic structure and exterior material are integral, such as water towers and fuel tanks. Exterior insulation finishing systems are appropriate for those installations where stucco or other cement-based exterior finishes are prevalent.

Roofs. Not only do roofs receive the brunt of a building's solar and weather abuse, they may be the first and final impression of an installation as DVs arrive and depart by air. Materials should take into account sound architectural and engineering principles as well as local climatic conditions. Do not select a material based on personal preference or appearance or just because other installations use it.

Certain roofing materials have historically demonstrated superior durability and resistance to weather.

- Metal roofing is currently the material of choice for both new construction and renovations. However, as functional and aesthetically successful as metal is, it may not be applicable to every roofing situation. An engineering life-cycle cost analysis is required during the project's design phase.
- Clay or concrete roof tile is another durable roof material with strong aesthetic appeal, but its applicability is limited because of structural and weatherproofing criteria. Low-slope situations (less than 4:12) prevent the use of tile. Tile is heavy and may not be suitable for retrofit without extensive structural modifications. Tile profile and color





should comply with the installation's architectural guidelines.

- Glass fibrous and asphalt shingle roofs are comparatively inexpensive, reasonably durable (10- to 15-year roofs are typical), and aesthetically unpretentious.
- Other roof types employing membranes (single ply or multiple ply) are acceptable if functional and economic requirements justify them.

Color. “Not seeing the forest for the trees” often characterizes the way we see our facilities and structures. Incompatible details—red fire alarms, unpainted metal vents and panels, mismatched wood and metal doors and windows, and orange and white airfield structures and water towers—are sometimes so widespread they have been accepted by default. We must develop an eye for detail and not overlook anything.

The installation's architectural guidelines should contain a comprehensive color plan for every exterior feature including walls, roofs, doors, windows, gutters and downspouts, utility and mechanical elements, and anything else attached to a facility or structure.

Factory- or manufacturer-applied color should be required in lieu of post-construction color application. This should include colors integrated into exterior materials such as plant- or factory-tinted masonry or concrete.

For exterior building color schemes, earthtones and neutrals will make up the primary AETC color palette. Earthtones are defined as tan and brown colors ranging on the color value scale from light to dark. Neutral colors include grays, whites, and those browns not distinctively yellow or orange in hue.

Keep colors consistent across the base.

Exterior Design Standards: Electrical

Exterior lighting increases safety, enhances appearance, and provides a sense of orientation and security. Install appropriate lighting for aircraft parking aprons, ramps, streets, parking lots, important buildings, and family areas.



- Select street and parking lot lighting fixture styles and poles that are compatible throughout the installation. Use consistent finishes. Use the appropriate type of pedestal for the pole location, for example, if the light pole is behind a curbed location, mount the pole at grade level.
- Use walkway (bollard type) lights where high foot traffic exists between buildings and parking lots.
- Light important signs and places—ensure above ground spot lights are placed to be “invisible.” Landscaping may be required to conceal light locations. Use timers to shut off lights as appropriate.
- Reduce overhead visual clutter by placing primary and secondary electrical distribution underground.
- Locate transformers within equipment enclosures or consolidate in enclosures provided for mechanical equipment; at a minimum, locate on concrete pads behind visual screens or landscaping.
- Plan for and incorporate all electrical and communication requirements during design—don’t come back after building is complete to surface-mount conduits and equipment.



Exterior Design Standards: Landscape

Landscaping has an enormous impact on installation appearance and resource conservation. The creative and appropriate use of trees, shrubs, other plants, and topography can create pleasant and stimulating energy efficient surroundings for work, home, and recreation.

Each AETC installation will have an active landscape development plan to provide a pleasant, stimulating, and cost-effective environment through the efficient use of our natural resources.

Conserve and maintain existing landscaping and trees by using them in landscape designs to the maximum extent possible.

Any O&M, MILCON, or NAF construction project or activity, such as utility trenching, that removes or will mortally injure a mature tree requires approval by the wing commander. If a tree must be moved to make way for a project, make every effort to relocate the tree to another part of the installation. If relocation is not possible, plant a replacement in an appropriate location.





Revitalize deteriorated, overplanted, or deficient landscaped areas. Avoid crowding and overplanting; allow for the natural growth and form of plants.

Select appropriate, hardy plants that are easily maintained, indigenous to the area, and drought resistant. Plant materials should minimize environmental impact on facilities and improve environmental quality and conserve resources.

Use foundation planting to soften the structural and architectural lines, which helps integrate the building into the site and conceal unsightly views.

Avoid planting trees that drop leaves, sap, pollen, or seeds for extended periods of time. Stress follow-on maintenance to include trimming, watering, feeding, and mulching around new plantings to ensure proper plant growth. Mulch small trees and shrubs to protect bark from lawnmowers and trimmers. Enclose mulch with edging materials appropriate for your area and be consistent throughout the installation. Install tree guards on new trees and those less than 3 inches in diameter.

Annually update the existing installation landscape development plan and then follow it. Provide self-help demonstration projects for installation organizations to emulate.

Designate a permanent landscape project monitor. Use local outside agencies for technical assistance. Contact the local county agricultural agent for a list of plants appropriate to your area and their intended use.

Include landscaping in annual budget requests. Ensure professional landscape design is included in all new facility construction. Also, avoid using landscaping as an additive contract bid item.

Interior Design Standards

The quality of our living, working, and leisure facilities is the key to high morale, mission accomplishment, and installation excellence. Therefore, we must ensure the environment where our people live, work, and relax fosters pride.



Interior finishes and furnishings are an integral part of AETC's facility construction, upgrade, and maintenance programs. Commanders will ensure the interiors of their facilities meet AETC standards.

Our facilities must display tasteful, coordinated, and professionally developed interiors. AETC has professional interior designers to develop concept interior design projects for facility renovations and comprehensive interior design packages for inclusion with new construction projects. Through your base civil engineer office, contact the AETC Interior Design Center for interior design assistance on both appropriated and nonappropriated fund projects. The AETC Interior Design Center will provide you with a concept presentation package (color boards, drawings, order date, etc.) for review and approval.

Interior Design Standards: Colors

For offices, conference rooms, classrooms, and other work areas, principal wall colors will be off-whites, light grays, and light beiges. If an accent wall is desired, the use of other materials—wood, fabric, or vinyl wall coverings in light to medium tones—is permissible.

Overall color schemes in Services facilities must be appropriate for the function of the specific activity and reflect current industry standards. For example, clubs should reflect an understated, elegant atmosphere with muted or vibrant colors, depending on the specific area.

Lodging and dining color schemes should reflect a restful, home-like environment with medium color tones. Carpet will conform to AETC carpet guidance. Details of the carpet type, cut, and color are described in this guide's Flooring section under the Interior Design Standards.

Upholstery for all facilities will be commercial-quality fabric or vinyl that meets current life safety codes and wearability standards.





Interior Design Standards: Wall Finishes

Plain concrete or concrete block walls (painted or unpainted) are not appropriate in non-industrial areas. Fabric and vinyl wall coverings and textured coatings are good alternatives.

Refinish concrete and concrete block walls in living and administrative areas with durable and attractive wall coverings. (Mount the wall coverings only over new gypsum wallboard or properly prepared surfaces.)

Use sound-absorbing wall or ceiling materials where required for sound reduction and control.

Fire detection devices should not detract from facility appearance.

- Use recessed or semi-recessed wall-mounted fire extinguisher cabinets and recessed or flush-mounted sprinkler heads.
- Paint fire alarm bells and horns to match the surrounding interior finishes or replace them with attractive devices compatible with the existing systems.
- Do not paint over the following: fire alarm pull stations; operating instructions on utility cabinets, kitchen hoods, or duct-fire suppression-activating devices; or fire sprinkler heads.

Paint electrical enclosures (except permanent labels) to match color of the surface on which they are mounted.

Stain rather than paint interior wood trim to reduce maintenance.

Limit wainscot to 32 to 36 inches above the floor and cap it with appropriate molding. A chair rail may be used for areas not requiring wainscot as a method of protecting walls.

Interior Design Standards: Lighting

Use energy-efficient lighting consistent with functional needs and required lighting levels and compatible with the overall architecture of the facility. Use natural light when practical. Avoid the use of incandescent lighting. Use high-intensity discharge for accent lighting on



buildings or signs. Also use it for large hangars, warehouses, and industrial shop areas. Excellent examples include recessed fluorescent or high-intensity discharge if the area is large enough.

Incandescent lighting may be used where low or adjustable lighting levels are required or where warm colors are important, such as makeup vanities and lounge areas.

Interior Design Standards: Accessories

Decorative window coverings add to the overall decor of the room and can effectively aid energy conservation and efficiency. Choose from draperies, vertical and horizontal blinds, and shades depending on the theme, style, and functional requirements of the area. Use neutral-color horizontal blinds (1 inch wide) or vertical blinds (2 to 3 inches wide). Conceal plain traverse rods with a cornice or valance or use decorative traverse rods instead.

Artwork and wall decor should complement and reinforce the room's use and interior design theme.

- Use only pictures, paintings, and awards that have a professionally framed appearance.
- Hang framed pictures centered at eye level (approximately 5 feet, 6 inches at the center).
- Choose artwork with color schemes and images that contribute to the room's decor.
- Put temporary notices, memos, etc., on bulletin boards—not taped or pinned to walls, windows, or office furnishings.
- Develop and enforce anti-litter rules. Frame signs, pictures, and bulletin boards and mount them with standard brackets. Use thumbtacks only to tack down corners of bulletin board items.

Conceal beams, ventilation systems, conduits, and cables behind ceilings and walls.

If necessary, upgrade or replace furniture when a facility is renovated. Ensure all painted metal furniture surfaces within an area are one neutral color.





Interior Design Standards: Restrooms

Restrooms should reflect the same high quality standards sought in the work or living environments they serve.

- Locate so they are convenient to personnel.
- Provide quality, wall-mounted privacy partitions between multiple urinals. Provide quality, ceiling-mounted toilet stalls with lockable doors and coat hooks.
- Be sure entrances and windows have appropriate privacy screening.
- Use ceramic tile and other scrubbable material surfaces that are attractive, bright, and easy to maintain for walls and floors.
- Use closed face matching color toilet seats. Use tank-type toilets in all living facilities.
- Provide vanity counter tops in the sink area with soap dispensers, mirrors, shelves, and adequate grounded electrical outlets above the sink.
- Select convenient locations for towel dispensers, waste receptacles, apparel and towel hooks, and a small package shelf (when appropriate).
- Include exhaust fans and floor drains.
- Avoid exposed pipes.



Interior Design Standards: Flooring

Provide areas with the proper floor finishes to enhance facility appearance and flooring durability and longevity.

Carpet is attractive and will last when specified and installed properly. Contact the AETC Interior Design Center for specific guidance for colors and on major carpet installations.

The Base Civil Engineer should be involved with major carpet selections. Carpet selections will conform to AETC carpet guidance. Avoid carpets with stripes or lines, light colors that soil easily, extremely bright colors, or bold geometric patterns. Carpet, in a tweed, textured, or subdued pattern will be restricted to medium color tones. Use solid-color carpet (medium to dark tones) in borders only.

Only commercial-quality carpets will be used in AETC facilities. Administrative areas, classrooms, etc., will use tightly woven, loop-pile carpets. Services facilities are



authorized to use both loop-pile and cut-pile carpets. Loop-pile or cut-pile carpet tiles are recommended for corridors and areas with prewired work stations.

Quarry tile, ceramic tile, and other hard-surface floorings are an attractive and durable alternative in high traffic areas.

Provide soil walk-off areas (that is, transitional floor coverings inside facility entrances) to prevent soiling or otherwise damaging interior floor coverings or finishes.

Provide sealed concrete floors in work areas where lubricants, solvents, or heavy equipment are used. Use heavy-gauge, neutral vinyl composition tile or vinyl sheet flooring in adjoining rooms.



Signs

Signs have a major effect on the appearance of our bases and the professionalism of our units. Only signs that professionally communicate direction and location to those functions and activities that truly warrant identification shall be used. The number of signs on each installation shall be held to the absolute minimum required for directions, identification, and customer service. Develop and execute a plan that standardizes sign material, color, style, and placement throughout the base.



General Standards

Each AETC installation will ensure its signs are well designed, well maintained, and properly located. Exterior and interior signs will have a standard installation format, color, and size as specified in AETCI 32-1001, *Base Exterior Sign Program and Building Graphics*, and AFP 88-40, *Sign Standards* (projected to be AFPAM 32-1097).

Specific Guidelines: Exterior Signs

Exterior signs (except traffic control signs) should be in shades of brown consistent with the installation's architectural guidelines and color scheme. Encourage brown or beige signposts. The back of a sign should match the post to give a finished appearance.





Signs with minor damage or fading or those requiring minor changes in text should be repaired or replaced during normal maintenance cycles.

Entry Signs. Installation entry signs greet the visitor and visually set the “first impression” of the base. Use white letters with brown background or brown letters on an off-white background. Display “Air Education and Training Command” underneath the Air Force emblem. Use a brick or concrete sign base that is compatible with the base architectural theme.

Directional. Install directional signs only where needed to guide visitors and new base personnel.

Building. Identify buildings with either a free-standing or building-mounted sign, but not both (building-mounted preferred).



Building number signs will be removed from all buildings that have street addresses. Each building will be identified by only one address sign. The building number will be retained on those structures without addresses—munitions igloos, utility buildings, etc. An address sign should be located at a height of 6 to 8 feet at the main entrance to the side of the door. Ensure individual letter-type signs affixed to buildings are readable from a reasonable distance on the frontage street.

Street Signs. Street signs will have brown background with white letters and will display the AETC shield to the left of the street name. Consolidate traffic signs to extent allowable on the same posts.

Warning Signs. Install warning signs only where required by codes. Use warning colors (red, yellow, etc.) as accent, not as background. Keep lettering sized to what’s required: for example, if a sign is to be readable at 25 feet, don’t install a sign that’s readable at 200 feet. Consolidate multiple hazard signs at a single location rather than spreading them across the building.

Install AETC standard signs, such as “NO SMOKING,” “DESIGNATED SMOKING AREA,” and “SMOKING IS PROHIBITED EXCEPT IN DESIGNATED AREAS,” as part of an installation-wide sign system.

Do not place signs on doors unless it is necessary to provide information concerning the room behind the



door. For example, a sign considered necessary would be a warning sign for a high-voltage electrical equipment room. Do not place warning signs on the outside of utility or equipment room doors unless required by code (and then use the minimum size allowable). Ensure signage design is consistent throughout a facility and installation.

Murals. Before any self-help work may begin on an interior mural, the design must be approved by unit commanders and coordinated with the Base Civil Engineer for quality and scale. Do not paint murals on exposed interior structures (concrete blocks) or permanent, high-quality finishes. Do not paint murals on the exterior of permanent buildings.



Other Signs. Traffic control signs must be consistent (in color, format, size, and placement) with the manual of Uniform Traffic Control devices and state laws.

Monument-type signs should be used only for selected facilities (for example, lodging offices, headquarters, main base entrances, and marquees). Light monument signs for night visibility if required.



Strictly limit reserved parking signs to visitors, customers, handicapped, key officials, and incentive award winners (for example, NCO of the quarter). Use metal (framed) signs approximately 4 inches high and mechanically fastened to the vertical curb face. Design and color should match the installation-wide system.

At each front desk registration station in lodging, place AETC standard signs that ask travelers to identify their smoking or nonsmoking room preference.

Specific Guidelines: Interior Signs

Interior signs should be professional in appearance and consistent in format, with colors, content, and placement well planned. Make this an integral part of the interior design package.

Keep interior signs to a minimum. Avoid a cluttered appearance. Keep the perspective of a “newcomer” when planning what signs are needed and where they should be placed within a facility. Keep work area signs clear and meaningful.





FIRST IMPRESSIONS

By their very nature, some facilities are unique and create lasting first impressions of our installations. Some notable examples include base entrance gates, visitor reception centers and the thoroughfares leading from them, control towers, water towers, and fuel tanks.

Command Policy

First impressions are important to form a professional image of the Command and to reflect the pride, professionalism, and accomplishment of our installations. Main arrival points must impart an immediate impression of Air Force professionalism and commitment to facilities excellence. Heritage displays contribute to the overall image of the installation and inform and promote pride and professionalism of our people and their accomplishments.



General Standards

Carefully consider the arrival and departure to and from installations as well as the approaches from adjoining communities. Ensure facilities—main gates, visitor reception centers, base operations, control towers, and tanks—are designed and located to convey a positive, professional first impression consistent with the base General Plan and architectural guidelines.

Specific Guidelines

Installation Entrances

Base entrance gates, visitor reception centers, guardhouse, and base operations should make a good first impression with base personnel and visitors.

Entrances. Main entrances should be flanked by walls on which appropriately scaled Command and base identification signs are mounted. Keep these signs to an absolute minimum.

Maintain understated design for the structures and keep signage simple. Give the departure side equal attention and provide for pedestrian and bicycle access.



Landscaping should be used to lend an attractive, professional image, but still ensure adequate visibility for security.

Lighting should enhance security, provide clear visibility, and not blind drivers.

Vehicular traffic flow through, around, and between base entrance guardhouses and the visitor reception center should be uncomplicated and smooth.

Guardhouses. Integrate guardhouses with adjacent structures. They should be permanent construction, preferably masonry. Provide adequate lighting and install heating and air conditioning where climate warrants. An integral restroom is desirable.

Entrance guardhouses should be set well back from public roadways to allow stacking of vehicles both entering and leaving the installation.

Provide a means to identify on-duty security police personnel (name and hometown).

Traffic Flow. Curb cuts for turnaround of vehicles should be provided in front and back of the guardhouse at the main gate. This allows the first-time visitor to access the visitor reception center before or after making contact with security personnel at the guardhouse.

If base access is not desired or authorized, the traffic lane design should allow for easy exit. If access is desired and authorized, the flow from the visitor reception center should allow for a right turn into traffic and back through the gatehouse checkpoint with a displayed visitor's pass.

Visitor Centers. Not all bases need a visitor reception center. Justification should be based on an engineering assessment of traffic and visitor volume. General guidance for base entries is provided in Military Traffic Management Command's *Traffic Engineering for Better Gates*.





Heritage Displays, Parks, and Monuments

To inform personnel of our Air Force heritage and promote esprit de corps, airparks (rather than scattered static displays) are encouraged because of their reduced maintenance cost, increased convenience, and accessibility. Airparks also provide a composite historic view of training and support aircraft.

Monuments that reflect Air Force pride, heritage, and patriotism are encouraged. Monuments must be properly maintained to show proper respect.

Flag displays must be professionally developed and maintained.

Appropriate landscaping, informational signs, walkways, and lighting should be incorporated into the overall design of displays, airparks, and monuments. Airparks, static aircraft displays, and museums are governed by AFI 84-103, *Museum System*.



Flagpoles

There should be only one ceremonial flagpole per installation, normally centered in front of the installation headquarters. *EXCEPTION:* Dependent schools on an installation are also authorized flagpoles.

Memorialization

Each base should have a memorial grove or other suitable memorialization to recognize and honor Air Force Medal of Honor recipients. The memorial should be consistent with the base mission, existing infrastructure, and environment.

AETC bases are encouraged to recognize deceased Air Force leaders, deserving airmen, and Air Force civilians who had roots in the local community or past connections with the unit. Such efforts can include the naming of buildings, housing areas, streets, and heritage parks. Specific guidance for memorialization procedures is contained in AFI 36-3108, *Memorialization Program and Ceremonies*.



MISSION AND MISSION SUPPORT FACILITIES

Mission and mission support facilities house functions accomplishing or supporting the primary mission of AETC—education and training. Included are educational, flying training, operations training, and support and operation facilities such as flightline structures. Also included are specialized training at the Defense Language Institute at Lackland AFB, the 336th Combat Training Group (Air Force Survival School) at Fairchild AFB, and major associate functions on AETC installations such as the US Air Force Reserve flying mission at Keesler AFB and the Air Force Personnel Center at Randolph AFB.

Command Policy

Excellent mission support facilities are required to deliver excellent services. Work centers must be efficiently configured, professionally maintained, and conducive to providing excellent support.

General Standards

Installation Standards. Comply with installation-specific architectural standards for new construction and renovation projects. New construction structural systems should be a permanent type as required by applicable codes. Exterior finishes should normally be masonry, concrete, cement-based (stucco), or insulated metal panels, or a combination thereof.

Interiors. Interiors should be carefully developed as comprehensive, whole-building designs that integrate colors, materials, lighting, furnishings, forms, and spatial-functional relationships. Interior materials should be durable, require minimal maintenance, and be easily repaired or replaced in case of damage or normal wear and tear.

Flightline. Although flightline facilities are generally industrial in nature, they are direct mission support. As such, flightline facilities need to convey a positive first impression to individuals arriving by air transportation the same way the main installation entrance conveys that impression to individuals arriving by ground transportation.





Pay attention to details. Consider every aspect of a facility, including siting and interior and exterior materials, to ensure the facility meets or exceeds AETC standards.

Colors. Color selection for paint or facility materials should be based on criteria established in a base color plan and Command standards. When available, prefinished materials with integral colors should be used to eliminate need for repainting. Exposed structures, piping, panels, etc., should be painted to match the color of the visible surface on which they are mounted.

Specific Guidelines

Customer Service Areas. Customer service areas often establish the first impression of a wing, base, or unit. These areas must convey to visitors or customers that they are important and we care about them.



Locate counters (issue, service, information, ticket, etc.) conveniently and provide ample space to support both customers and service personnel. Provide customer service and waiting areas that are spacious, clean, well furnished, and have appropriate and attractive lighting. Consider traffic circulation patterns when designing the size, type, and placement of furnishings and equipment. Make sure information is readily available, easily accessible, and professionally displayed.

Base Operations. Base operations is the “front door” to a base from the flightline. It should clearly identify a base and display a proud linkage to AETC.

The flightline welcome sign should reflect the architectural style of the base and complement the buildings adjacent to it.

The distinguished visitor (DV) lounge often forms a first or final impression of the base and AETC. Be sure it reflects quality standards in facility, furnishings, and amenities. It should include private restrooms (with sufficient space to comfortably change clothes), a well-stocked courtesy coffee and beverage service, and commercial and “class A” telephone service.

Aircrew work and support areas require unique treatment and should reflect forethought and attention to aircrew members’ needs. Planning rooms need tables or other



work surfaces appropriate for reviewing, displaying, and storing maps and flight information. Briefing rooms and work areas need to be large enough to properly accommodate flight crews and their gear. Crew lounges should be sound insulated and provide an appropriate setting for crew relaxation and rest.

Maintenance/Shop Areas. Maintenance facilities are as unique as the missions they house; however, common standards apply to these facilities as a whole.

The physical and technical nature of the work performed requires special emphasis on space, power, ventilation and lighting.

- Use space for the purpose required; for example, don't use industrial areas for administrative requirements.
- Provide appropriate power, outlets, and ventilation into each work center.
- Provide appropriate lighting for the job being performed (for example, lighting must be designed for "true color" rendition when color-coded wiring is important).
- Select interior paint colors that contribute to bright, well-lit work environments.
- Consider using chemical-resistant urethane or other commercially available floor sealants where they cost-effectively improve mission accomplishment.
- Use neutral vinyl composition tile or vinyl sheet flooring in rooms adjoining industrial areas.

Safety features should be up to date, accessible, and applicable to the job (for example, fire detection/exit systems, non-slip flooring, explosion-proof fixtures, eye wash, deluge showers). Cooling, heating, and ventilation systems are often "life supporting" and must be operative, effective, and well maintained.

Provide well-conceived break areas and latrines with durable furniture, fixtures, and amenities.

Material Support. Material support facilities should be pleasant, safe, and provide ample space to "do the job."

Place emphasis on modern, efficient storage devices and equipment. Include energy-conserving barriers (such as air curtains) where interior/exterior interfaces occur (for





example, between loading docks and warehouse). Provide mechanized handling systems in normal labor-intensive functions (for example, powered lifts and conveyors).

Interior of the structure should be primarily a free-span area for maneuvering vehicles and cargo build-up and break-down locations. Adequate ventilation systems are mandatory for removal of vehicle emissions within the warehouse/terminal. Special considerations are required for cold climates. Lighting should be adequate for reading shipping placards and moving vehicle traffic safely. Interior paint schemes should be light and bright to leverage light levels in working areas.

Controlled areas (for example, security cage, mail, signature service cargo) should be placed where they are not readily accessible or visible from the exterior of the building.

Administrative Areas. Use comfortable and functional office furniture selected to complement a professional atmosphere.

System or modular office furniture in open office areas provides increased privacy and acoustical control; this furniture also provides a long-range cost savings and better space flexibility.

Provide the right space for placement of individual and common use devices such as work stations or printers. Plan for future growth and flexibility in “type” and location of automation equipment and telephones. Ensure that power is located conveniently to the individual work areas and is capable of handling automation equipment. Size air conditioning to support the added heat loads from the automation equipment.

Education/Training Support. Training facilities should be well-lit, spacious, and create environments conducive to learning.

Select tables, chairs, and desks that are comfortable, durable, and coordinated with the interior facility decor. Provide for acoustical control requirements between adjacent areas.



HOUSING COMMUNITIES

Housing in AETC must exemplify our quality-of-life philosophy by providing attractive, secure, and appropriate places for our military members to live and raise families. Next to geographic location, housing is considered by most to be the top quality-of-life item. Good housing improves morale and favorably affects both job performance and retention.

The upkeep of AETC housing requires timely in-house and occupant maintenance and proper programming, design, and construction for repairs and improvements. For the purpose of this standard, housing includes family housing, dormitories, and their associated dining facilities, lodging, and transient family living facilities.

Command Policy

Provide attractive, comfortable, and secure places for our military personnel and their families to live. Lodging quarters must meet the same standards in terms of quality.

Family Housing

General Standards

Military housing communities should be comparable to well-developed, off-base housing areas.

Use and implement neighborhood themes in exterior upgrade projects as developed and promoted in the Housing Community Plan. Develop and implement an architectural theme for neighborhoods. Provide visual relief and variety on exterior surfaces of houses.

Name your housing areas with appropriate, non-institutional names.

Specific Guidelines

Homes. When upgrading existing homes, ensure the Post-Acquisition Improvement Program follows the





Housing Community Plan to provide a one-time, complete renovation project to correct all home and housing area deficiencies.

Replace homes when upgrades cannot be justified economically. Use the O&M program for other requirements.

Design kitchens with efficiently arranged work areas, generous cabinet space, direct access to dining rooms, and convenient access to the carport or garage and exterior service areas. Carefully arrange spaces to provide efficient room circulation patterns and allow for personalizing by occupants. Include ample closet and storage space.

Visually and acoustically separate the laundry area from the living and dining rooms. Provide a physically distinct entrance foyer. Provide a single garage and an adequately sized patio with privacy fencing and adjoining enclosed storage space. Provide exterior electrical outlets. Install central heating and air-conditioning and thermally efficient exterior doors and windows.

For bathrooms, kitchens, and outside areas, provide grounded outlets and ground-fault circuit interrupters as required by the National Electrical Code.

Keep each unit's exterior features (siding, trim, roofs, gutters, and downspouts) and interior features (walls, ceilings, floors, and appliances) well maintained.

Carpeting is an acceptable floor covering for **all** quarters. Carpeting will be only command-approved colors of medium tones and neutral hues. Provide vinyl, tile, or hardwood transition areas at all entryways as appropriate to reduce heavy soiling at high traffic points. Install carpeting only in authorized areas. (Kitchen areas, baths, patios, and porches are not authorized areas.) Bases may decide to carpet such areas as dining rooms and hallways. Use the Government Services Administration schedule as the preferred source for carpeting to ensure acceptable densities and wearability. Contact HQ AETC/CE for additional information.

To reduce maintenance, consider durable prefinished cladding in lieu of field-painted exterior surfaces.



Yards. Establish a lawn maintenance standard and discourage flowerbeds along sidewalks and driveways. Use low maintenance shrubs. Advocate xeriscaping to minimize watering requirements in arid environments.

Ensure self-help landscape plantings comply with established siting standards. Provide a materials list recommended by the local county agricultural agent, local agronomist, or Command to ensure plant materials are appropriate.

Encourage families to improve their homes and yards by providing annual funding and establishing a well-publicized Yard of the Month program.

Neighborhood. Create several small-scale playgrounds located away from traffic. Take advantage of common areas located interior to housing areas.

Provide sidewalks, fencing, and street lighting comparable to typical residential neighborhoods. Strive to standardize fencing throughout the housing area.

Develop recreation facilities, such as playgrounds for young children and jogging/bike trails. Locate them in close proximity to the family housing area.

Provide school bus shelters for children.

Provide a separate, secure, and screened storage parking lot for recreational vehicles, boats, and trailers.

Self-Help. Encourage housing occupants to assume a homeowner's attitude and take advantage of well-established self-help programs for simple maintenance and home repairs.

Develop and use pre-approved standards for common type projects to include landscaping.





Permanent Party Dormitories

General Standards

As permanent residences for our unaccompanied members, dormitories should be a comfortable home. New dormitories and major renovations will provide a private living room/bedroom with access to a shared bath and kitchen. Rooms will have exterior entrances.

Specific Guidelines

Site Amenities. Site amenities include developed landscape areas and covered patios with adjacent barbecue grills. Ensure separate dormitory modules are interconnected with sidewalks. Provide covered bicycle and motorcycle parking.

Dayrooms. Make dayrooms attractive and comfortable by carefully selecting room finishes and other amenities, such as artwork and plants, to enhance the decor.

Living Areas. Ensure bedrooms have a full-length mirror, telephone jack, and central TV antenna or cable connections. Provide built-in closets, window screens, smoke and fire detectors, and individual room temperature control. Make rooms inviting with vanity sinks, refrigerators, hardwood furniture, drapes with linings, and a mix of direct and indirect lighting.

Finishes. Use appropriate interior finishes and colors. Carpet rooms and interior hallways. Select materials and furnishings that are durable, maintainable, and of commercial quality. Refinish existing interior concrete block walls with wall covering over gypsum board furring.

Laundry Rooms. Provide tastefully decorated laundry rooms with sorting counters, hanger rods, and locking doors.

Facility Entrances. Define main entrances with covered exterior landings and proper lighting. Identify facilities with professionally manufactured signs conforming to AETC sign requirements (AETCI 32-1001, *Base Exterior Sign Program and Building Graphics*).



Student Dormitories

By the very nature of AETC’s charter, student dormitories are an integral part of the mission. Dormitories are the student’s temporary home and function as places of study.

General Standards

Dormitories constructed or renovated for pipeline students will accommodate two students in each room and will consist of a living room/bedroom, two walk-in closets and a bath in each room. In contrast to permanent party facilities, student dormitories do not have kitchens, and students are expected to use available dining facilities. For control purposes, central hallways may be desirable instead of private exterior entrances.

Specific Guidelines

Criteria defined for permanent party dormitories—site amenities, dayrooms, etc.—also apply for student dormitories.

Additional requirements may exist for administrative support areas, offices, student processing areas, and learning resource centers.

Lodging Facilities

General Standards

Lodging facilities should reflect outstanding facilities dedicated to customer service. The design and decor of all lodging facilities should be well planned and reflect a high-quality, professional appearance providing the best efforts to make travelers comfortable.

Specific Guidelines

Reception. The lodging office forms a guest’s first impression. Combine attractive landscaping with a





lighted exterior building sign. Automatic doors are a must. A covered walkway with a handicap ramp should lead to the main entrance. Ample short-term parking space is a necessity.

Reduce the clutter of items such as advertisements, newspaper and vending machines, smoking receptacles, and bicycle racks; they do not belong in the open at entrances.

The lobby and front desk area establishes guests' perceptions for the entire lodging operation. Front desk areas must be spacious and uncluttered. Have a courtesy counter for guests to place or open a briefcase. Provide adequate telephone service in the lobby. Build in spaces for computer terminals, printers, and a fax.

Display sundries attractively where customers may view items for sale. Locate a secure storage room near the front desk for guests' luggage.

Separate, professional offices with sufficient square footage should be provided for the lodging manager, assistant lodging manager, reservations clerk, administrative and housekeeping personnel, and supplies.

Visiting Officer and Airman Quarters. Provide a full-length mirror, telephone jack, computer jack, and central TV antenna or cable connections. Provide built-in closets, window screens, smoke and fire detectors, and individual room temperature control. Make rooms inviting with vanity sinks, refrigerators, hardwood furniture, drapes with linings, and a mix of direct and indirect lighting. Use appropriate interior finishes and colors. Carpet rooms and interior hallways. Select materials and furnishings that are durable, maintainable, and of commercial quality. Refinish existing interior concrete block walls with wall covering over gypsum board furring.

Temporary Lodging Facilities. Ensure quality apartment-style living quarters for housing families between assignments as follows:

- Separate living and dining areas from bedrooms and provide a separate sleeping area for children, when possible.



- For children’s safety, use sturdy hardwood furnishings with rounded corners and without glass inserts.
- Design units to accommodate color televisions, typical kitchen appliances (including a microwave), pots and pans, cooking utensils, dishes, glasses, flatware, dish cloths and towels, and an iron and ironing board.
- Ensure guests can conveniently load and unload their baggage at the main entrance or near their rooms.
- Provide adjacent parking areas to accommodate large recreational vehicles, boats, and trailers.
- Provide tastefully decorated laundry rooms with sorting counters, hanger rods, and locking doors.
- Provide commercial telephones and a computer connection.
- Provide site amenities to include a playground area, barbecue grills, and a covered pavilion.





COMMUNITY SUPPORT FACILITIES

Along with housing, community support facilities play an essential role in improving the quality of life. Base personnel depend on quality health care facilities, base exchanges, chapels, commissaries, clubs, bowling centers, theaters, libraries, child development centers, youth centers, and recreational facilities to support their daily needs. Installations should provide these facilities and programs to meet the expectations of our people.

Command Policy

Provide attractive, well-designed, and well-maintained community support facilities for all base personnel.

General Standards

Except for specific functional criteria, community support facilities will comply with Command and installation specific development, planning, and design standards regardless of funding source.

Designs will provide adequate waiting areas and screen service and equipment areas. Minimize clutter (vending machines, newspaper stands, advertising, trash and smoking receptacles) at customer entrances.

Dining Facilities

A quality dining experience is the result of a conscientious integration of the tangible and the intangible—quality food and appropriate atmosphere. Each installation will ensure professional food service for its people by providing quality meals served in superior facilities. Contact AETC's Interior Design Center for comprehensive design guidelines, criteria, and conceptualization. Contact AETC/SVXN for assistance with dining facility kitchen and serving line layouts.

Specific Guidelines

Locate dining facilities next to or within dormitory complexes and provide ample accessible parking, attractive



Facilities should be comparable in design to commercial cafeterias. Because a wide selection of menu items are served, the interior design should not reflect any particular ethnic food theme. Instead, the decor should echo the geographic location or a selected theme for the dining area.

As supplemental lighting, use energy-efficient, level-controllable fixtures consistent with the architectural theme. Examples of such lighting are indirect fluorescent, recessed high-intensity discharge, low-voltage incandescent (for accent lighting only), and compact fluorescent. All of this lighting can be obtained in a variety of decorative fixtures with dimming capabilities.

Provide a central music and paging system with flush-mounted ceiling speakers. Acoustically insulate dishwashing rooms and provide alcoves for busing cart storage.

Recreational Facilities

Quality recreational facilities promote healthy, motivated, and effective personnel. These facilities are important contributors to the overall quality of life for our military personnel, their families, and civilian employees. Base recreational areas should provide modern, complete, and excellent environments for our people and families.

Specific Guidelines

Fitness Centers. Centers should be designed as multipurpose facilities capable of accommodating a full range of fitness activities.

Entry foyers should provide furniture for waiting and resting, and sports courts should have adequate bleachers and viewing areas. Locker rooms should be well ventilated, provide adequate numbers of lockers, and be designed with materials that are easily cleaned.

Provide spacious change areas with wide benches and plenty of lockers. Women's areas need extra electric outlets and mirror/shelf combinations. Locate separate spas, steamrooms, and saunas for men and women in or near change room areas. Provide modern restroom and





shower facilities. Privacy curtains or doors for showers and drying areas, where appropriate, are encouraged.

Wall and floor coverings should be selected for safety, functionality, durability, appearance, and sound control.

Walkways and workout stations should be well defined to prevent participants from being crowded while training. Offer a full variety of fitness equipment and have specialized rooms for cardiovascular equipment, aerobics, and weights. Provide equipment tailored for all patrons, such as small weights. A storage area for weights, separate from traffic and workout areas, should be provided.

Bowling Centers. Centers should be comparable to commercial facilities. Attractive offices, a centralized sales and pro shop, an enclosed video arcade, restrooms, a snack bar, and separate locker rooms should be available. Automatic scoring machines are recommended.



Golf Courses. Courses should be well maintained and comparable to public facilities. The clubhouse should have a pro shop, separate restrooms, and separate locker rooms. Tastefully designed lounge, snack bar, dining, and patio areas should be provided.

Adequate storage for golf carts and golf club bags should be available along with waste cans, ball cleaners, and durable, attractive, and sheltered benches at each tee box. The course should take advantage of and accent its natural features. Course maintenance may be improved by using underground sprinkler systems as well as incorporating the use of “gray water” to conserve potable water in arid areas.

Playground Areas. Provide fun, creative, and attractive spaces for users to enjoy. Stress safety by using impact absorbing materials. Provide a variety of play spaces and adequate seating. Avoid dissimilar and multi-colored materials. Provide attractive landscaping. Consider need for restroom facilities and drinking fountains.



Swimming Pools. At many installations, swimming pools occupy prominent locations. Supporting equipment

should be screened. Fencing should be upgraded using landscaping or other materials to improve the aesthetics, maintain privacy and safety, and eliminate the need for unsightly netting.

Outdoor Recreation. Locate outdoor recreational facilities near the population they serve. Place bleachers for football, soccer, and softball fields on concrete pads to control erosion, eliminate settling, and mitigate weed growth. Pads also improve litter and insect control.

Athletic fields provide recreation where people may interact competitively, safely, and enjoyably. Provide permanent and modern restroom facilities. Include attractive, clean, and functional snack bar facilities. Consider paved parking, enclosed official's box, electronic scoreboards, and enclosed dugouts. Mount field lights on storm-resistant poles and run all utilities underground.

FAMCAMP areas should provide facilities and services for all types of campers. These include paved parking surfaces with complete utility hookups, nature walks, and play areas with good landscaping.

Each recreation facility should present a good appearance and provide equipment to match the functions and services available.

Create fitness "bike and hike" trails and a path network between recreational facilities and housing areas. Be sensitive to noise levels that can detract from the quality of housing areas.

Picnic areas provide space for relaxation. They should be easily accessible from parking areas and provide good shelter. Provide sizable and compatible refuse and recycling receptacles.

Other Community Support Facilities

Specific Guidelines

Clubs. Design clubs to meet the needs of each installation's population. Ensure the main entrance and exterior appearance are attractive and professionally landscaped. Create inviting foyers with tastefully selected accessories, lighting, and furnishings.





Provide attractive lounges, dining areas, cashier cage, barber shop, coat room, telephone areas, and game room. Ensure kitchen equipment is commercial quality.

Exchanges and Commissaries. These facilities provide the local military community with commercial-quality facilities and services. Each installation should have a detailed community center development plan that carefully integrates the siting, architectural compatibility, landscaping, and other amenities of these essential community support facilities. Minimize product advertising and customer inconveniences at the main entrances to these facilities. Pay particular attention to the location of vending machines, newspaper stands, and other clutter.

Chapels. Base chapel facilities must reflect genuine care and commitment to our people and families.

Chapels should have a comprehensive, multi-denominational interior design package with coordinated wall coverings, furnishings, floor coverings, and accessories. Include a nursery so that parents can worship together. Cry rooms are an alternative. Provide administrative areas for chapel staff to conduct day-to-day duties and private counseling. Include multi-purpose rooms that can serve as training areas. Install a kitchen with plenty of storage and workspace.

Provide a high-quality public address system, full lighting control, and furnishings that are comfortable, attractive, and professional.

Child Development. Child development facilities provide full- and part-day preschool, hourly care, and summer camp programs to children ages 6 weeks to 6 years. Each program offers opportunities that enhance the social, emotional, cognitive, and physical development of children.

Facilities should include a covered reception and drop-off area at the main entrance. Playgrounds must meet the requirements of the latest US Consumer Product Safety Commission Handbook for Public Playground Safety. Shaded areas on playgrounds must accommodate at least one-third of children present at one time. Playgrounds must have a combination of surfaces to include soil for



gardening, grass, cement, or asphalt for riding toys, and sand. Closed circuit video surveillance cameras must be operational in all activity rooms, with monitors visible to parents, administrative staff, and visitors. Locate video equipment to be discreet and not a detractor. Child-sized, age-appropriate equipment and furnishings must be located in all activity areas. Floors and wall coverings must be washable and durable.

Youth Activities. Youth programs include youth activities, youth support, and school-aged programs. Programs are based on the needs and interests of the youth community.

Facilities include outdoor playgrounds that meet US Consumer Product Safety Commission Handbook for Public Playground Safety standards, reception areas, indoor space for physical fitness activities (gymnasiums), activity rooms for school-age programs and classes, and areas for teen activities. Each facility is equipped with closed circuit surveillance cameras to supervise activity areas that cannot be seen from the reception area. Locate video equipment to be discreet and not a detractor. Equipment is age-appropriate and safe.

Family Support. Family support centers must reflect a professional, caring environment where people are comfortable seeking assistance.

Centers must be easily identifiable, designed for easy accessibility, and be within close proximity or connected to other support activities (for example, American Red Cross, retirees activities, and other family-related activities). The interior design should be warm, comfortable, relaxing, and inviting, creating a pleasant environment. Include reception area, private staff offices for counseling, conference and classroom areas, child care area, kitchen, storage and supply areas, library or reference area, and restrooms.





INFRASTRUCTURE SYSTEMS

Command Policy

Each AETC installation will have upgrade plans to improve its infrastructure systems. These plans will include each system's requirements to support current and future missions. Systems include airfield infrastructure, utilities systems, and major facility components.

Airfield Infrastructure

General Standards

Installation excellence cannot be achieved on a flying training mission base without an adequate, well-maintained airfield infrastructure to launch, recover, and park aircraft, including airfield pavements, airfield lighting, and aircraft arresting systems. Protecting the integrity of these systems is a primary responsibility of the installation commander, operational personnel, and the base civil engineer.

Specific Guidelines

Airfield Pavements. Structurally sound pavements are required for safe flying operations. A comprehensive pavement plan that addresses maintenance of existing pavements and requirements for new construction is essential.

Detailed airfield planning criteria are contained in applicable Air Force directives. Airfield obstructions should be the exception rather than the rule; waivers should be processed and approved by the appropriate authority having jurisdiction. If correctable, obstructions should be eliminated at the earliest possible time.

Portable buildings should not be allowed on parking aprons. Signs around the airfield should be kept to a minimum and installed on frangible supports.

Airfield Lighting. Airfield lighting systems are essential for conducting safe and efficient airfield



operations at night and during inclement weather. Ensuring such systems are operational and well-maintained is imperative.

Airfield lighting criteria are contained in applicable Air Force directives and associated documents. All open bus structures in night lighting vaults should be eliminated and replaced with low-voltage enclosed wiring systems. All existing conductors must be equipped with the appropriate cutouts to ensure conductors remain de-energized during system repairs. Airfield lighting conductors must be placed in direct buried conduits or concrete-encased duct banks. Generators supporting airfield lighting should be sized to support the entire lighting system and ancillary devices associated with such systems.



Airfield Arresting Systems. Aircraft arresting systems (AAS) save lives and property. Under normal conditions, these systems are rarely employed. When needed, AAS must perform their intended function: stop the aircraft with minimal damage and ensure pilot safety.

AAS criteria are contained in the applicable Air Force directives and associated technical orders (TOs). AAS must be maintained in strict compliance with the governing TOs. Record keeping to track training and maintenance on AAS must be enforced. The base should develop supplements to formalize agreements for inspection, training, runway end changes, holiday and weekend coverage, etc., between base operations and the fire department. Timely requests for aircraft certifications (as applicable) must be accomplished to ensure uninterrupted, continuous service.



Utility Infrastructure

General Standards

Installation excellence cannot be achieved on an AETC installation without adequate, well-maintained utility infrastructure systems for power, natural gas, water, sewage, storm drainage, steam, chilled water, communications (telephone and control), and POL. Protecting the integrity of these systems is a primary responsibility of the installation commander, support and logistics personnel, and civil engineers.





Specific Guidelines

Power Distribution. We must provide reliable and, to the highest degree possible, uninterrupted power to our facilities. Overhead power lines are unattractive, exposed to the elements, and represent safety concerns. Whenever possible and practical, overhead systems should be converted to underground systems.

Develop base electrical distribution standards and master plans that conform to Command and Air Force directives to convert existing overhead systems to underground. Apply this standard to the extent possible on all construction regardless of the method of accomplishment or funding.

Standards shall include drawings, details, specifications, and life-cycle and technical justification for all major system components. Master plans should be developed based upon known and projected needs. Plans should be integrated with master plans for facilities and other utilities through the 5-year plans to effectively accomplish the overhead to underground conversion, without impacting other mission-related support. An important aspect of the conversion process is to ensure environmental and architectural compatibility with the surrounding areas. Use decorative enclosures, interior installations, and groomed vegetation prudently to screen above-grade devices. However, screening methods must not interfere with equipment operations and maintenance.



Maintain reliability by using quality products, installation, and system design. Design power distribution systems to be looped and redundant. As an objective, try to design systems with a minimum of three points of service for every device.

Tag cables and devices so they can be easily identified in the field.

Provide adequate switching (at transformers, padmounted switches, etc.) to allow the system to be isolated by device. When practical and possible, allow for “cold” transfers of load break terminations in lieu of using load breaks as switches. Avoid inefficient devices, such as under-loaded transformers, high-loss transformers, mercury vapor lighting, series area lighting systems, and highly resistive circuits. Ensure power factors are as



close to unity as is practical. Most of all, ensure underground systems are designed and installed to facilitate operations and maintenance!

Natural Gas Distribution. Natural gas is one of the two largest energy utilities. It presents a potential hazard and its distribution system must have a leak survey every 12 to 18 months. Gas will be distributed on base with a distinct odor to help leak detection. Maintain corrosion protection on metallic piping. Replace metallic piping with polyethylene plastic piping when a large scale replacement project is needed. Maintain system pressure below 50 psi on base. Piping systems above 50 psi should be inspected with Department of Transportation guidelines. Periodically check for gas leaks inside facilities also.



Pay attention to the location of utility meters and vents to ensure they do not detract from facility appearance and functions. Coordinate with base transportation planners on the location and possible use of compressed natural gas government official vehicle refueling stations.

Storm Drainage. Storm drainage systems are vital to prevent damage to Air Force facilities due to flooding. The most efficient with the least maintenance is an underground system.



Open-channel drainage systems must be maintained to ensure proper flow of the runoff. Vegetation must be removed from the joints of concrete-lined ditches. Sediment must also be removed. In turfing areas, control the height of vegetation by mowing and maintaining the gradient of the ditch. Remove sediment at culverts. Remove debris from surface inlets to prevent ponding of runoff.

Check joints of underground systems for misalignment to prevent leakage and the development of voids and surface failures.

Tanks. An elevated water storage tank on an AETC installation offers an ideal backdrop to showcase the First Command's logo—the AETC shield. As with most corporate entities, the tank and logo is used in the Air Force as an identifier to the surrounding community and visitors.





As people approach the base, an elevated water storage tank can be seen from a great distance because of its size and height. In fact, a water tank may be as visible as the base entrances. For this reason, the use of the AETC shield on this tank must be carefully and proportionately displayed to convey a positive first impression. The display of the AETC shield and color specifications are detailed in Command policy letters. Avoid the use of super-graphics, logos, and glossy finishes. Keep colors consistent with the base plan.

All new above-ground POL tanks should include a geodesic-domed roof to minimize the possibility of introducing water into the fuel. Existing tanks should be retrofitted to include such a roof. These aluminum domes should either be constructed with a dull finish or be painted to minimize glare to aircraft.

Major Facility Components

General Standards

Installation excellence cannot be achieved on an AETC installation without adequate, well-maintained, and efficient facility infrastructure systems for power; major equipment components; fire protection; roofs; heating, ventilating, and air conditioning (HVAC) systems; and base pavements. Providing timely maintenance and repairs is the key to keeping these components functional and reliable. Systematic investments in major facility components keep our installations excellent.

Specific Guidelines

Electrical and Mechanical Plants. Adequate electrical and mechanical systems are required to support current and future missions. Programmed upgrades should be developed and maintained by each installation.

Central cooling plants should be used whenever possible to cool buildings in close proximity to each other. Interconnecting utilities (chilled water, hot water, domestic water, natural gas, and communications) should be installed in shallow concrete trenches with lift-off lids serving as sidewalk to allow for accessible repair and maintenance, reduce corrosion, and eliminate unsightly repairs.



Professionally managed and professional-looking mechanical and electrical equipment rooms and fully operational building systems begin with a well-maintained physical environment. “Pride of ownership” can be fostered among shop personnel with minimal effort. Walls, floors, equipment, piping, conduit, etc., should be thoroughly cleaned, repaired, and painted in a base-wide uniform color-coding system. Piping and ducting should have insulation repaired, jacketed, painted, and decaled, as appropriate, with uniform markings for contents and directions of flow.



Initiate a program to create signs for equipment rooms that match the building’s sign system, and list the names and phone numbers of the engineering shop superintendent and persons in charge of the room. This “crew chief” concept, as applied to a facility’s system maintenance, should instill pride, caring, and responsibility into the sometimes-forgotten engineering maintenance shops.

Fire Protection. Fire protection systems are a significant cost of construction and are necessary to protect lives and property. Specific guidelines are contained in Military Handbook 1008B, *Fire Protection for Facilities Engineering, Design, and Construction*.



Installation excellence cannot be achieved without adequate, well-maintained fire protection systems. Keeping systems operational is a key responsibility of base leadership. New construction and facility renovations will provide required upgrades to meet fire protection requirements.

All fire hydrant barrels should be painted the same color as the base’s exterior color scheme; the hydrant’s top color will be painted according to the fire hydrant’s flow as required by NFPA Standard 291. Fire hydrant locations will be identified by using utility reflective road markers (cat eyes).



Exposed fire sprinkler piping on the exterior or interior of the facility should be painted to match the color of the facility finish. Interior emergency fire activating appliances (manual pull stations) should remain in the factory-finish red color for easy identification by building occupants.



Roofs. Roof surfaces and systems of our facilities serve several vital roles. They not only deflect water, they also control weather and temperature extremes to make our working and living environments more comfortable. Roof materials, colors, and geometric shapes are major influences on the building's architectural style or character and its compatibility with adjacent structures.

Sloped roofs are preferred to provide positive drainage. Overhangs for weather protection and shade are desirable. Avoid rooftop mechanical equipment. When rooftop mounting is unavoidable, rooftop units should be screened. Use proven, cost-effective roof systems with high durability and weather resistance, compatible with the installation architectural guidelines. Where justified, use standing seam metal roofs.

Evaluate roof systems during the design process of any proposed new facility or major rehabilitation project to existing facilities to ensure cost-effective and architecturally desirable materials.

Convert low-slope roofs to a 3:12 minimum pitched roof according to the detailed guidance and standardized Air Force methodology of AFI 32-1051, *Roof Systems Management*.

Minimize the use of built-up roofs in new construction and repair projects. Low- to no-slope roofs historically have problems with drainage and ponding water that results in ceiling damage and leads to premature roof failure. Additionally, solar heat build-up below the roof structure can reach 180 degrees and more than 212 degrees in the roof plies themselves. The steam created results in premature roof failures.

On retrofit maintenance and repair projects, special consideration shall be given to reroofing with low-slope (even involving 1/4 inch per foot) metal roofing systems now available. The use of these metal roofing products for very low slopes (less than 3:12 pitches) are specially engineered and are generally not architectural standing seam roofs. If used, these systems will then need to be evaluated from the standpoint of added dead load to the structure. Architectural roof designs should employ simple and straight-forward roof geometry. Avoid the use of "flat" or very low-slope roofs (BUR or otherwise) with a high-pitched roof on the same structure if full-pitched roofing will fulfill all other requirements.



Research and development and validated life-cycle cost analysis confirm the roofing material of choice is architectural standing seam metal for both new and retrofit construction.

Clay or concrete tile roof tile is another durable roof material with strong aesthetic appeal. Its application in retrofit work, however, is limited due to its dead weight and weatherproofing limitations on roofs less than 4:12 pitch. When tile roofs are used, take care to match the base's tile standard to avoid any 50- to 100-year mistakes with this costly material. Sample roof mock-ups (minimum of one square (100 square feet)) should be constructed on-site, adjacent to the building whose roof is to be "matched," and with the same pitch to properly compare color changes due to changes in sun exposure. Project specifications should include a tile roof mock-up requirement for final color and material approval. If not already a base standard, the use of clay or concrete tile roofing requires the approval of HQ AETC/CE.

Glass fibrous or asphalt shingle roof should not be excluded from consideration. These roofs are comparatively inexpensive, reasonably durable (10- to 15-year life) and aesthetically unpretentious.

Other roof types employing membranes (modified bitumen and single or multiple plies) are acceptable when functional and economic requirements justify their use.

Heating, Ventilation, and Air Conditioning (HVAC)

HVAC is a process to add or remove heat in a facility. It also introduces fresh air to maintain indoor air quality to eliminate "sick building syndrome." HVAC systems may consume as much as 60 percent of a facility's energy. Therefore, we must design and maintain HVAC systems to optimize energy use and to provide adequate fresh air.

Central Plants. Existing facilities close together should be connected to a centrally located plant to provide cooling or heating as appropriate. Reference AETC ETL 92-1, *Central Cooling Plant Policy*.





New facilities or major facility expansions should either connect to an existing plant or provide a new plant. Run piping between buildings in a shallow trench that may also be used to conceal other utilities.

Automate plants to the maximum extent possible. Due to their long life cycle, design plants to use the most energy-efficient conversion equipment possible. Use thermal storage tanks to provide extra surge capacity instead of providing larger energy converters.

HVAC Systems. In the vast majority of cases, variable air volume fan systems are the most economical to install and to operate. Their use is encouraged. To avoid indoor air quality concerns, provide adequate fresh air and keep HVAC systems balanced.

Do not install HVAC equipment on rooftops. If necessary, pay strict attention to the location and screen from view. Provide permanent ladders and platforms when HVAC equipment must be installed in an elevated location.



Energy Management and Control Systems (EMCS). Each installation should strive to have a commercially available off-the-shelf EMCS from a single vendor. Each new facility should connect to the EMCS. Existing facilities, plants, utility meters, and other utility systems should connect as soon as feasibly possible. Current technology allows EMCS connection to direct digital control systems in a facility.

Temperature Controls. Automatic HVAC control systems should be of the direct digital control type from the same EMCS vendor. Control systems should interface with the basewide EMCS.

Energy-Efficient Equipment. Consider energy-efficient equipment in all new and repair work. Compare high-efficiency motors, lighting, etc., on a life-cycle cost basis (reference 10 CFR 436).

Alternative Energy Sources. Alternative energy sources may allow a facility to operate uninterrupted and at a lower utility cost. Fuel switching strategies should be considered to reduce long-term operational costs. Examples include:



- The use of desiccant fresh air dryers to reduce the size of cooling equipment and their electric utility demand costs.
- The use of commercial fuel cells that use natural gas to produce electricity and hot water for a facility.
- The use of wind or photovoltaic (solar cells) for special remote power applications.

Renewable Energy Sources. Renewable energy sources reduce dependence on purchased energy. Examples include:

- Ground source heat pumps, which use the earth to store heat removed from a facility during the cooling season and return it during the heating season.
- External heat walls, which heat fresh air for ventilating systems.
- Passive solar design, which is the consideration of a facility orientation, its window use, etc.

Utility Meters. Install utility metering on buildings and connect to the basewide EMCS. Meters are required for electricity, natural gas, and water. When a central plant provides some utility service (steam, chilled, or hot water) to a facility, metering of those services must also be provided.

Pay attention to the location of utility meters and vents to ensure they do not detract from facility appearance and functions.

Energy Service Performance Contracting (ESPC). ESPC should be pursued at every installation. This is a relatively new contracting concept in which a contractor provides the investment capital for energy infrastructure improvements, operates and maintains it for up to 25 years, and is paid from the savings generated from the investment.

Base Pavements

Pavements include streets; parking lots; sidewalks; and hiking, jogging, and biking trails. Airfield pavements such as runways and aprons are considered part of the airfield infrastructure.

Each AETC installation will provide comprehensive planning, programming, and design to ensure pavements





are functionally and aesthetically integrated into the installation's natural and manmade environments.

In addition to their significant physical and visual impact on AETC installations, the safe and effective movement of vehicles and pedestrians depends on a well-planned and well-developed system of streets and pavements. The transportation component plan should define transportation and pavement needs.

Off-Street Parking. Design streets to accommodate traffic flow and not to be parking lots. With the possible exception of family housing areas, parking should be eliminated from streets whenever possible. Use several smaller parking areas rather than one large area. Avoid diagonal or 90-degree parking where vehicles will back into streets.



Screening. Use appropriate landscaping and berms to screen unsightly parking areas.

Integrate appropriate landscaping elements into parking areas to soften the hard visual impact on an area. A rule of thumb is to landscape 10 percent of the parking area. In the parking plan design, use several smaller parking areas selectively placed around the facility served, rather than a single large area.



Curbing. Curb all streets except perimeter roads. Curbs and gutters enhance installation appearance by preventing street and parking lot edges from eroding, keeping vehicles off improved grass areas, and controlling drainage. Include curbs and gutters in all future street and parking lot construction. Do not use small curbing machines for major street curbing; use them only for secondary pavements and parking lot work. When installing new or replacement curbing, select the proper curb sections for the specific job. Selecting an incorrect curb section for a particular application is not an improvement to an uncurbed street. For example, don't construct a header curb without drainage cuts when a roll-over curb is needed. Consider providing mower ramps through curbs that enclose turf-ed areas.

Pedestrians and Vehicles. Minimize pedestrian crossings (crosswalks) to prevent pedestrian-vehicular conflict and improve the flow of traffic.

Mark street crosswalks with white traffic-tape bar stripes (24 inches wide by 8 feet long) evenly spaced with 18- to 24-inch intervals between stripes. Stripes will run parallel with traffic flow. Do not use crosswalk markings of continuous stripes across the street (perpendicular to traffic flow). Provide handicapped access through curbs at major crossings and intersections. Do not paint curbs. Include systematic maintenance and repair of all streets, sidewalks, and parking areas in the installation pavements plan.



Sidewalks. Install sidewalks to promote pedestrian safety, prevent landscape erosion, and enhance installation appearance. Sidewalks should be at least 42 inches wide. Eliminate the narrow planting strips between the sidewalk and curb if on-street parking is permitted. For safety reasons, separate sidewalks from high-traffic roadways by at least 6 feet. Where on-street parking is not used, this area may be landscaped. Carefully plan the location of sidewalks between facilities to ensure sidewalks adequately serve occupants.



Do not encroach upon sidewalks with utility poles, street furniture, or signs. (Street furniture includes site enhancements—benches, trash receptacles, bicycle stands, kiosks, site signs, etc.) All street furniture needs to be carefully selected and specified to maintain design continuity throughout the installation.

Exterior Lighting. Provide architecturally compatible and energy efficient lighting for parking lots, streets, building exteriors, high-traffic sidewalks, and general security. In most cases, high and low-pressure sodium fixtures can be used for this purpose, but a uniform system should be maintained throughout the installation. (The exceptions would be in historic districts where period fixtures should be maintained.)

Select the proper pedestal design for the location of the light pole, for example, if the light pole is located behind a curb, the base of the pole should be at grade-level.

Patching Pavements. To reduce or eliminate recurring street pavement patching costs associated with trenching, accomplish all pavement trenching for utility work by boring or jacking under streets, sidewalks, and curbs or gutters where possible. In addition to minimizing traffic





disruption, this process will help reduce or eliminate the negative visual impact (discoloration) and safety impact (depression, settlement, and fracturing of pavements) normally associated with utility trenching.

When patching concrete pavements in highly visible areas such as the front of headquarters or base operations, use color additives to match the color of existing surrounding concrete pavements. The concrete tint should be approved with submittals of color samples and additive specifications proposed by the supplier's batch plant. Use clear, as opposed to white pigmented, curing compound.

An alternative to tinting in less visible areas is power cleaning. This process cleans the surfaces of adjacent concrete with a high-pressure water spray and lessens the color differential between new and existing concrete. In perimeter, outlying, or ramp areas, do not attempt to match tint color or power clean the concrete.



Hiking, Jogging, and Biking Trails. These trails should be included in the installation's infrastructure plan to serve the fitness needs of our people, while at the same time protecting their safety.

Biking should generally not be allowed on sidewalks unless the sidewalks are designed much wider than normal (at least 6 to 8 feet) to accommodate both bicycles and pedestrians.



Hiking, jogging, and biking trails can be constructed of concrete, asphalt, cinder (with curbs to prevent erosion), or other artificial resilient surfaces. These trails should be at least 8 feet wide and ideally should connect housing areas with the installation's gymnasium, fitness center, and other community services and recreational facilities. Connections should be through established green belts (where they exist) and away from heavy vehicular traffic or aircraft areas. The installation's perimeter road is normally a good low-traffic route for these trails.

SELF-HELP PROGRAM

Self-help is a significant resource multiplier especially in a constrained budget environment. It is a highly effective alternative to manage limited resources to more effectively improve the quality of life for our personnel. Not only does self-help save money and give users an updated facility sooner, but it also fosters a pride of ownership and involves the users in maintaining what they have.

Command Policy

All AETC bases will provide convenient and adequately staffed self-help stores and will strive for excellence by establishing an aggressive and innovative self-help program. To be successful, the program must be a total wing effort to include participation in the program as well as support to the resources needed to maintain the store and its personnel.

General Standards

The self-help program must be a wing program.

- Establish a “corporate perspective” that actively involves key unit commanders and top NCOs.
- Set goals, identify requirements, establish priorities, and designate roles and responsibilities for planning and execution.
- Develop a program that is responsive and customer-oriented.
- Pursue and encourage “community” projects such as playgrounds, pavilions, and bus shelters.

Specific Guidelines

Self-Help Store

The self-help store should parallel a commercial hardware store or home improvement center.

- The self-help store facility and decor must reflect the same high quality we seek from self-help projects.
- The store should be sized, staffed, and equipped to provide “same day” service.
- The display techniques should be customer-oriented and professional.





- Put the base and family housing self-help stores in the same place if feasible. Keep the funding separate.
- Locate self-help materials in or adjacent to the self-help store for maximum customer support. A separate base civil engineer bench stock storage area ensures proper material accountability.

Customer Assistance. Customers should get on-the-spot assistance with planning and selecting materials to support their self-help project.

- Use free-standing display racks and shelves so the customers can actually look at or touch the material.
- Mock-ups should be readily available to show the customer how materials go together.
- “How-to” pamphlets or booklets should also be available to help the customer along.
- “How-to” videotape instructions can also serve as excellent training aids.

Standards. Each base will develop standards for typical self-help projects.

Provide customers with the right materials. Ensure availability of high-use items and state-of-the-art materials that are easy to use, energy efficient, and enhance the overall architectural scheme of the installation. Maintain tools and equipment to loan to organizations for self-help projects. Comply with safety, building, and fire codes.

Provide a few (three to five) interior design and landscape planting schemes that are professionally developed to reflect base standards.

Enforce standards!

Base Participation and Recognition

Encourage participation from the base population through healthy competition. Competition produces results while enhancing unit morale and pride.

Reward the achievers with individual and unit recognition by establishing a timely and meaningful recognition program. Present a “golden hammer” or similar award quarterly for the best self-help project.



Publicize the self-help efforts through local newspapers and bulletins.

Oversight

Assign qualified personnel to provide technical assistance, quality control through frequent site inspections, and solutions to problems encountered during the job. Tap all the resources available in the wing to provide this expertise. Get customers the right information.





AETC FACILITY EXCELLENCE EVALUATION

This evaluation measures the Command's progress toward installation excellence. This competitive program recognizes achievement in facility enhancement, exterior maintenance, general housekeeping, and self-help initiatives. It should help promote a sense of base unity and pride as people pull together to make the most of their community.

Command Policy

AETC bases and major associate units will compete in the facility excellence evaluation to ensure the quality-of-life improvements and facility maintenance provided by building occupants meet the AETC standard. Bases will be visited once every 2 years in conjunction with IG visits.



General Standards

Command Competition. This competition promotes installation excellence by:

- Encouraging high standards and facility improvements.
- Improving the places where people work, live, and relax.
- Encouraging occupants to take care of existing facilities.
- Promoting the use of self-help resources to improve working and living conditions.
- Recognizing the most outstanding installations in each category with appropriate awards.

Facility age doesn't matter; what counts is how well the facility has been maintained. This evaluation measures the care, not the age, of the facility.

Factors. Evaluators will focus their attention on the following areas:

- Compliance with base development plans and this *Standards for Installation Excellence*.
- Care of facilities, grounds, and general housekeeping to promote and enhance professional military



appearance. For arid southwestern bases, green landscaping isn't required—adapt to the local environment.

- Attention to areas of “first impression” and heritage.
- Community care and pride in housing and recreational facilities.
- Self-help program and projects to showcase those projects and teamwork that go beyond aesthetics and result in greater user efficiency and effectiveness.

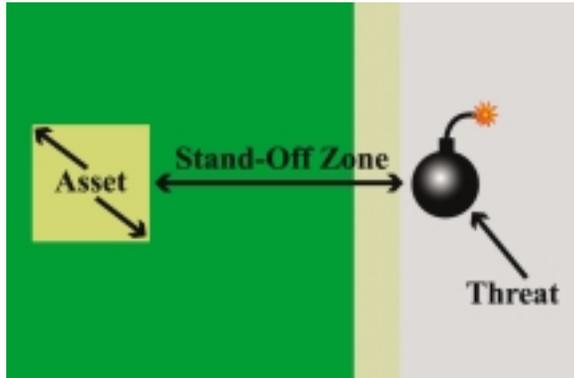
Impressions. First impressions are important to form a professional image of the Command and to reflect the pride, professionalism and accomplishments of our installations. How a base measures up in the eyes of a cross-functional team of evaluators can reinforce the efforts made by base personnel and provide a forum for recognition. Evaluators can also provide wing leadership with crossfeed on installation excellence issues.

Success in this competition depends on an installation's ability to:

- Understand the importance of attention to detail and the overall impact it has on installation appearance.
- Motivate units to enhance their facilities and landscaping with self-help projects.
- Understand that installation excellence results from a continuous, year-long pursuit of excellence, which requires a team effort from the entire community.

Strong leadership is the key to an excellent installation!



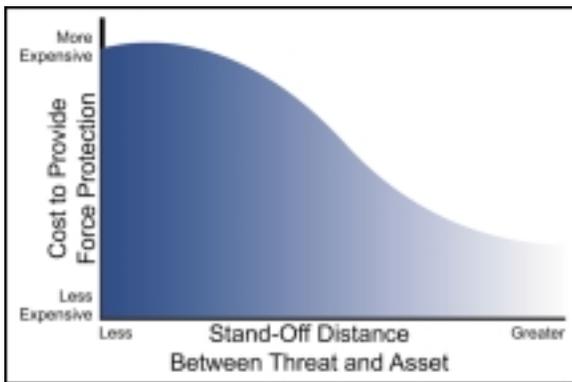


FORCE PROTECTION

There are no universal solutions to prevent terrorist attacks. We can only be certain attacks will continue and that methods will change over time. Attacks on the World Trade Center in New York City and the Murrah Federal Building in Oklahoma City clearly highlight we no longer have the luxury of thinking those things only happen overseas.

Command Policy

Force protection must be an essential part of the planning and design process. Planning defensive measures to reduce our vulnerability upfront in the process goes a long way toward protecting our most valuable asset -- the highly skilled individuals critical to the success of our mission.



General Standards

Comply with the minimum standards established in the current DoD Antiterrorism/Force Protection Construction Standards publication. Standoff distance, or the distance maintained between an inhabited structure and the potential location for an explosives detonation, is a key component of force protection to reduce the blast effects on the structure. When standoff distance is met, force protection standards are easily incorporated into the project without being costly or obtrusive. As standoff distance decreases, force protection requirements and cost increase. When standoff distance cannot be met, the objective is to blend the force protection requirements into the design in a manner so they are not tacky, readily apparent, massive, or prison like.



INSTALLATION EXCELLENCE:

Let's remember what we do day in and day out in this Command.

- We introduce people to new skills, educate and train them well, and instill excellence.
- We do this not only for the entire Air Force, but for our sister services and allies as well.

Excellent installations are a benchmark for these students throughout their careers. Workers respond to first-class workplaces, take more pride in their jobs, and produce at higher levels. When you feel good about where you work, you feel better about your job. Excellent facilities also add to the quality of life our people have come to expect and deserve.

Installation excellence requires direct and frequent commander involvement. We all know budgets are getting tighter, but we've got to keep chipping away to leave our facilities better than we found them, be it a fresh coat of paint, housekeeping, or self-help improvements.

Decide first on building standards, stick to your plan before the construction starts—on architecture, color, landscape, and signs—and then, take care of what you've got through maintenance and housekeeping. This will sustain excellent installations.

We simply cannot afford to let our installations go downhill. Working together as a team, through vision, planning, and follow through, all installation personnel can ensure their installation will be excellent.





**HEADQUARTERS
AIR EDUCATION AND TRAINING COMMAND**