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Master Planning

The Linden Oaks Community Emergency Services Station (CESS) at Fort Bragg is the first Army Military Construction (MILCON) project to achieve Leadership in Energy and Environmental Design (LEED) Platinum certification by the United States Green Building Council (USGBC).
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Successes

Technical Support

Professional Development

Three Tactics for Sustainable Development: Lessons from Fort Hood

by Mark L. Gillem

What makes a great place? If, for instance, you look at the Great Place, which is the nickname for Fort Hood, planners there are using specific tactics to meet their planning vision. The new installation master planning UFC describes a series of these tactics that can support more sustainable and energy-efficient installations. In this article, I will focus on three tactics from the UFC that are interwoven into Fort Hood's new master plan that do not depend on large-scale MILCON projects to be implemented.

ON-STREET PARKING

UFC Text: Non-organizational parking needs (can be addressed) though a combination of parking strategies to include on-street parking, off-street parking, and where appropriate, structured parking. On lower speed roadways, such as main streets or residential streets, on-street parking is acceptable because it "calms" traffic and thus reduces vehicle speeds. On-street parallel parking on local access lanes parallel to arterials is also an acceptable solution for multiway boulevards on military installations. For safety reasons, limit on-street parking to only parallel parking. Avoid perpendicular and angled parking on roadways. Perpendicular and angled parking is generally unsafe and increases the hazard of starting, stopping, and turning in moving traffic.

Justification: In addition to the benefits noted in the UFC, on-street parallel parking can significantly reduce paving on an installation. One parking space in a typical parking lot takes 350 square feet of paving for the stall and parking lanes. That same space on a street takes about 160 square feet, which translates into a square footage savings of over 50% because the lane is already there – it is the street. Less paving translates into less maintenance costs, less reflected heat that adds to air conditioning loads, and less stormwater mitigation. Research has also debunked the myth that on-street parking is less safe. In fact, cars parked along streets act as a natural traffic calming devise by encouraging drivers to reduce vehicle speeds. Moreover, parked cars buffer pedestrians from moving traffic. While some may argue that on-street parking contributes to visual clutter, this is an opinion overruled by the UFC and by common sense.

Implementation: Where local and collector roads are excessively wide, restripe them to add on-street parking. Where the width is inadequate, plan for targeted widenings as part of upgrade and repair projects to add parking along with other aspects of complete streets, which include sidewalks, planting strips, bike lanes, and street trees. Be sure to conform to all programming rules regarding complete and useable projects. At Fort Hood, plans call for thousands of new on-street spaces in order to reduce the demand for inefficient parking lots.

Acronyms and Abbreviations	
ADP	Area Development Plan
UFC	Unified Facilities Criteria
CPWG	Comprehensive Planning Working Group
ACSIM	Assistant Chief of Staff for Installation Management
SRM	Sustainment, Restoration, and Modernization

STREET TREES

UFC Text: Planners will ensure that plans incorporate appropriate use of street trees, shrubs and ground cover. These landscape elements can control soil erosion, reduce the heat island effect, absorb stormwater, improve air quality, provide comfortable places for recreation, and support AT/FP measures. In addition, trees improve the environment and provide shade, aesthetics, and security protection on an installation. Regularly spaced street trees shall be incorporated (25'-30' on-center) along roadways to improve pedestrian safety by slowing vehicle traffic; provide shade for paving, vehicles, and pedestrians; and shade buildings, which can reduce energy consumption.

Justification: While the UFC text outlines in general key benefits of regularly spaced street trees, the specifics are even more compelling. According to Dan Burden, an expert on urban trees, they have many benefits. On streets with trees, drivers go slower – from 3 to 15 miles per hour slower, which has direct pedestrian safety benefits. Research at Texas A&M, for example, found that drivers on streets with trees experience less stress and drive slower. Street trees also make a better and safer environment for pedestrians by providing defined edges along the street and buffers from moving cars and pedestrians. Interestingly, business on streets with trees show 12% higher income streams than comparative stores in environments without trees. In terms of stormwater mitigation, trees absorb the first 30% of rain through their leaves and another 30% in their root zones. On average, one deciduous street tree has ➤

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and environmental clearances, regulatory coordination, and design for projects that are not going to be funded. In short, the process allows FS/HAAF to focus efforts on command-approved realities, not on last-minute wish-list dreams.

Indicative of the system's accomplishments are the flawless execution of the IPL and the installation's five awards as an Army Community of Excellence. The FS/HAAF's strategic planning process is clearly a recipe for success.

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a mitigation factor of roughly 200 square feet of paving which translates into 5,191 gallons of rain taken care of by the tree and not the storm water system. And trees provide shade, which translates into a temperature reduction of up to 15 degrees for areas shaded by trees, which can lead to reduced air conditioning and energy demands for shaded buildings.

According to Burden, "a properly shaded neighborhood, mostly from urban street trees, can reduce household energy bills from 15 to 35%." Similarly, Burden notes that due to reductions in expansion and contraction associated with temperature swings, "the shade of street trees can add from 40 – 60% more life to costly asphalt." Furthermore, street trees absorb significant amounts of air pollution and they turn carbon dioxide into oxygen. Taken together, Burden calculates that one street tree, which may cost no more than $250 to $600 inclusive of initial 3-year maintenance costs, produces $90,000 of direct benefits. This does not even take into consideration the aesthetic benefits of street trees, which are common features of our most beautiful historic posts, from Joint Base Lewis-McChord to Fort Belvoir and from Fort Sill to Fort Leavenworth. That is one reason why a place as forward-leaning as Fort Hood has been on a tree planting program for the past few years. The leaders have recognized the benefits of street trees.

Implementation: Plant street trees using all available resources. When doing street upgrades and repairs, include street trees in the project. When building new, add street trees rather than complicated foundation plantings. When renovating buildings and their sites, add trees into the budget. Use other people's money as well and specify in your Installation Design Guide streets with trees so our housing partners, hotel partners, and retail partners are required to provide street trees in their designs. At Fort Hood, following the model of many central Texas small towns, new streets and rebuilt streets are planned with street trees 25 – 30' on center.

ALLEYS

UFC Text: Improve pedestrian safety, reduce automobile use, and support neighborhood cohesion by using alleys in all military family housing neighborhoods, whether funded by MILCON or privatized housing partners. Alleys with paving widths of no more than 15 feet will be used for all new housing and incorporated into redevelopment plans for existing housing except in areas with extreme topographic conditions. All garages and carports will be placed off of the alleys.

Justification: Most historic Army posts placed homes off of residential alleys. At places as diverse as Fort Bliss in southwest Texas and Hawaii's Fort Shafter, the alley was a common pattern. Today that pattern has been successfully repeated at Fort Belvoir and Joint Base Lewis-McChord - for good reason. Residential neighborhoods with alleys can use much less paving per home than neighborhoods without alleys. While this may seem counterintuitive, the math is quite simple. Typical alleys are 15' wide with 5' aprons between the alley and the typical two-car wide alley-facing garage. In a standard 50' wide lot, a front-loaded garage home needs roughly 600 square feet for the two-car wide driveway, which accounts for getting from the garage door, past the sidewalk and planting strip, and to the curb. An alley-loaded home needs just 475 square feet: 100 square feet for the apron between the alley paving and the garage and 375 square feet for its share of the half the alley. That's a 20% paving reduction.

But the savings don't end here. With alley-loaded garages, curb cuts can be eliminated at the front of the homes so on-street parking, which is common in housing neighborhoods, can run continuously on one side of the street only and still provide one space per home. As a result, streets can be narrowed by 8' for a total of 200 square feet per home along the street. The savings increases to 325 square feet of paving per home or over 50% reduction in paving. Now one may argue that the garage isn't for parking but for storing stuff so the driveway is needed for parking. If that's the case, then why build garages at all? Just build storage sheds. The experience at Fort Belvoir and JBLM demonstrates that, when given alley-loaded garages, residents do use them for parking. Extra cars usually end up on the street. And without curb cuts, planter strips can run continuously along a block, which provides places for street trees to successfully grow in a minimum right-of-way.

A final benefit of alleys is that front porches can replace front garages and homes can be moved closer to the street. Front porches at least six feet deep are also listed in the UFC as essential requirements for housing neighborhoods. That means utility runs from the street to the home can be reduced by up to 30' per home. Multiply that by hundreds of homes and numerous utility lines (water, sewer, gas, cable, electric) and the savings add up quickly. And porches are places for friendships to develop through neighborly chats, after-work drinks, and weekend parties. This is how a sense of community can be built on a base.

Implementation: With developers funding most Army housing through privatized initiatives, we can use their resources to build alley-loaded housing. Just as we give them requirements for room sizes, minimum closet and counter dimensions, and number of bathrooms and bedrooms, we can give them requirements for alleys. At Fort Hood, plans for significant new infill privatized housing call for alleys throughout.

PROJECT INTEGRATION

Integration of each of these tactics should be considered when programming and designing related projects. ➤

Renovations Can Achieve Historic Preservation Goals and Meet Military Mission Requirements – A Case Study at Joint Base Myer - Henderson Hall, Quarters 249

by Kristin Leahy and Kristie Lalire

Quarters 249 at Joint Base Myer-Henderson Hall (JBM-HH), Arlington, VA, is a historic barracks building constructed as one of six Enlisted-Men's Barracks in 1903. The building is listed on the National Register of Historic Places (NRHP) and is located on the western edge in the Joint Base's National Historic Landmark District. As part of the Joint Base Master Plan, Quarters 249 was identified for a new administrative use to house two company operations facilities. Early in the planning process, it was acknowledged that the original building floor plan could not accommodate the new use so a major renovation was anticipated in order to meet the new mission requirements.

JBM-HH research found that it was likely the last remaining barracks of this type and style, including many original interior elements. The 2 1/2 story building was constructed in a U shape plan of brick and timber frame, with a courtyard facing the rear. The front façade included a 2-story porch, but in the 1970's the porch was torn down along with other modifications. By 2008, the building was in a serious state of disrepair and was vacant.

At early planning meetings held in the summer of 2008, the preferred plan for renovation was to retain only the exterior brick walls and complete a major renovation of the interior without the reuse of any interior elements. The initial cost estimate exceeded $15 million. In October 2008, the Virginia State Historic Preservation Officer (SHPO) was invited to visit the project to get preliminary comments. At this time, it was recommended to the Joint Base that the historic cast iron columns, timber structure, wooden true-divided-light windows, Soldier Art mural, and porches be retained as part of the renovation, if possible. Upon further investigation, the JBM-HH team found that it was less costly to retain the existing beams, flooring and columns and make security improvements rather than adhere to the original proposed plan for major interior "gutting" of the building. The cost estimate for this altered plan came in at under $10 million, for a considerable cost savings while maintaining much of the building's interior elements.

Completed Renovation of Quarter 249, built in 1909. Photo by Kristie Lalire, 10Dec12.

Under Section 106 of the National Historic Preservation Act (NHPA), the key elements, as previously outlined in 2008, were agreed upon in consultation with Garrison staff and leadership, and SHPO. The consultation was recorded in an agreement document (letter) of Conditional No Adverse Effects. This early coordination illustrates that NHPA compliance when integrated into the project schedule with the participation of key personnel streamlines the process to the benefit of the project and mission.

In the case of Quarters 249 at JBM-HH, the NHPA agreement document identified various character-defining elements to be retained including the preservation and restoration of original, historic, wood windows. However, following completion of the agreement document, a window survey revealed that a majority of the historic windows were too deteriorated to be preserved. With this additional information, the agreement was modified to retain original wooden windows (with blast-resistant units inserted behind) on the front façade, which faces the historic district, and to replace windows on all other elevations with blast-resistant ➤

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For instance, they may be able to be incorporated into existing SRM projects such as when repaving a parking lot or repairing sidewalks or repairing entries to buildings from roads and parking areas. In the end, master planners and programmers need to work closely together to ensure projects follow the plans at all scales.

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Acronyms and Abbreviations	
DPW	Division of Public Works
HVAC	Heating, Ventilation and Air Conditioning
JBM-HH	Joint Base Myer-Henderson Hall
LEED	Leadership in Energy and Environmental Design
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Place
SHPO	State Historic Preservation Officer
USGBC	U.S. Green Building Council