Public Works DIGEST

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This Issue:
Master Planning

Master Planning 3

Unified Facilities Code 2-100-01 14

Successes 22

Technical Support 32

Professional Development 36

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).
Page 22.

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Master Planning

3 Master Planning with Restoration and Modernization, *by John Ramey*
5 Master Planning – A Collaborative Effort, *by Kristin Froistad*
6 Back to Basics – The next generation for master planning, *Part II , by Mark Mitsunaga*
9 Real Property Master Planning for Installations 2020, *by Kathryn J. Haught*
10 Planning Support Centers, *By Jerry Zekert and Andrea Wohlfeld Kuhn*
11 Side by Side – Master Planning and Environmental, *by Jillian Dunnam*
13 New Trends in Master Planning, *by Andrea Wohlfeld Kuhn*

Unified Facilities Code 2-100-01

14 A New Recipe for Energy-Efficient Planning: The Unified Facilities Criteria for Installation Master, *by Mark L. Gillem and Jerry Zekert*
16 The Unified Facilities Criteria's Strategies for Master Planning Success, *by Mark L. Gillem and Jerry Zekert*
18 The Unified Facilities Criteria's Processes and Products for Success, *by Mark L. Gillem and Jerry Zekert*
20 Participatory Planning at Army Installations, *by Barry I. Gordon*

Successes

22 Fort Bragg CESS Achieves LEED Platinum Certification, *by Jonelle Kimbrough*
24 Fort Hood 'LEEDs' the way with green chapel, *by Christine Luciano*
25 Iowa Army Ammunition Plant embraces renewable energy resources, *by Linda Loebach*
26 Fort Stewart and Hunter Army Airfield's integration and prioritization tool is recipe for success, *by Alana Olson and Amber Franks*
28 Three Tactics for Sustainable Development: Lessons from Fort Hood, *by Mark L. Gillem*
30 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*

Technical Support

32 New Collaboration Tool Available, *By William S. Farrow*
33 Innovative system maps aquatic habitat, *by Heidi R. Howard and Paul Ayers*
33 Seed bombs for successful revegetation in remote areas, *by Heidi R. Howard and Timothy J. Cary*
34 The Benefits of Economics in Master Planning, *by Wesley Bushnell and Jimmie Jackson*
35 Master planning technical handbook, *by Dwayne Melton*

Professional Development

36 STEM and CP-18 Developmental Assignments, *by Donna Crawford*
37 The Department of Defense Master Planning Institute, *by Andrea Wohlfeld Kuhn*
39 A New Class for IMCOM PW Master Planners, *by Anne de la Sierra*
41 Importance of Professional Planning Credentials, *by Andrea Wohlfeld Kuhn*

Master Planning with Restoration and Modernization

by John Ramey

Master Planning is a continual process. It is ever evolving and, at the same time, attempting to meet the overall Vision. It is our mission as DPWs to use Master Planning as a tool to create a stable platform from today's environment which is full of uncertainty.

A good master plan has these elements: vision and future direction for its installation based on the missions of the installation; a framework for the installation management of real property within limited resources; and, a capital investment strategy that strives to correct deficiencies while minimizing turbulence in resource programming.

Several years ago Fort Gordon started implementing a Master Plan that has brought about change and improvement; however, it has had its challenges. Our biggest success is our five year rolling model. This has been the focal point in discussions of where the installation should go in our strategic communications with our mission commanders and our Senior Commander. Many will say that we should look further out than five years. Internal to the DPW, we contribute to the Installations' long range Strategic Plans; however, the Army's construction plan is for the next five years. Unfortunately, current Army planning as realized by the installations does not program past five years. Our planning for beyond the five years is tied to the real property we have and when we will need to renovate or modernize it.

Our vision for the installation was developed around the need to improve the quality of life of our Soldiers by providing upgrades and modernization to both our Permanent Party and Trainee Barracks. Our Capital Investment Strategy was used to champion Army level programs

John L. Ramey, Director of Public Works, Fort Gordon, GA

and our Annual Work Plan was developed using the Army's Facility Sustainment Model, which supplied resources to our real property sustainment account. The Facility Sustainment Model identifies that amount of resources each facility category code receives as well identifying the funding MACOM. For Fort Gordon the sustainment funding over the last five years has been $142 million. The modernization program which included the Permanent Party and Trainee Barracks upgrade ➤

Acronyms and Abbreviations	
AFIS	Army Facility Investment Strategy
CLS	Common Levels of Support
DoD	Department of Defense
DPW	Director of Public Works
ISR	Installation Status Report

TBUP Barrack exterior before and after.

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programs and MCA projects, was $514 million

One of the keys to our successful results are the Real Property Planning Boards, which are held twice each year with all Garrison and Tenant senior leadership and ultimately approved by the Senior Commander. Prior to convening the Board, the DPW and the Master Planner work closely with the Installation mission commanders (who have a requirement for buy in) to ensure support during the voting process when the Board convenes. As I stated earlier, master planning is a process and must be updated and refined as change occurs. In these ever changing times within the Army of downsizing, growth, adding and eliminating Brigades, adding Battalions, etc., the DPW must be able to react rapidly, while continuing to maintain existing facilities. Whether it is a surge in training that takes away barracks swing space planned for in a project, or new deployment orders, the Master Plan is adaptable, flexible and constantly adjusting for the opportunities as they arise assuming that resources are available. Across the Installation, stability is desired, and as DPWs, we can provide a tool that allows for adjustments to meet the needs of the Mission. It is the information presented in the Annual Work Plan and Capital Investment Strategy that provides the ability to adjust with facts and workable solutions

As defined in AR210-20 for Real Property Master Planning for Army Installations, analyzing and justifying sustainment (i.e. maintenance and repair of real property) is one of the objectives of the regulations. All DPWs should know how much DoD has allocated to their installation for sustainment under the accounting code of 132.078. Why is this important and why should it be a part of the DPWs vision? Normally, only 75-80% of the requested requirement will be received, therefore, not all facilities will be sustained. Over a 20 year model, the Installation Status Report (ISR) infrastructure will become red in many areas if not closely monitored and the facilities resource allocation is not prioritized.

Fort Gordon received approval to use sustainment funds for maintenance and repair (sustainment) but not for new missions, growth or diversions. Implementation of the Capital Investment Strategy of the Master Plan has improved preventive and scheduled maintenance, replacement of worn out components, and corrected many breakdowns. Over the past five years component breakdowns on Fort Gordon have reduced by a third and the ability to complete preventive and scheduled maintenance has doubled. Customer satisfaction is up and predictability is on the rise.

The challenge, which is one faced by all DPWs, is protecting sustainment funds from those in the installation who would like to build and modernize. In our model considerable time is devoted to developing and briefing the Command of the requirements for sustainment and promoting the reasons why supporting new missions, mission creep, and modernization using sustainment funds is not a good idea for the installation. When presented, all three statements have very valid justifications when presented; however, if the higher headquarters does not allocate the resources ensuring units achieve success, then the issue that needs attention is the readdressing of the mission, not ➤

Typical TBUP Barrack exterior with roof mounted solar panels.

TBUP Campus depiction with wide walkways.

Master Planning – A Collaborative Effort

by Kristin Froistad

Master Planning is the systematic and orderly development of Installations which includes not only the cantonment area, but also the ranges and training areas that are central to the Installation's Mission. Master Planners are tasked with integrating civilian and military interests to produce a Master Plan that is unified and comprehensive. Master Planning establishes an Installation's vision and future blueprint to effectively manage its real property in support of mission requirements, focusing on investments, and insuring proper and adequate funding.

Master planners gather information from different sources and prioritize ideas to establish the Installation's Real Property Vision. Planners use a number of different methods to collect and analyze data on existing conditions;

Planning Charrettes, Requirements Analysis, Space Utilization Studies, Utility and Traffic Studies, Installation Status Reports/Facility Condition Surveys, and Energy Conservation and Alternative Power Studies to validate stakeholder requirements. Throughout the Project development, Plan formulation, environmental evaluations and cost estimations unforeseen problems are levied. Critical thinking is required to reduce uncertainty. A technically proficient Master Planning team is paramount to presenting an iterated sequence of planning decisions. Issues of concern and compliance with laws, regulations, and statutes are then documented, in full, in a quality study. The key to the success of planning is Collaboration.

Upon completion of data analysis, Goals and Objectives are established which serve to develop and evaluate alternatives leading to plan development in the form of Area Development Plans and Real Property Master Plans. The steps forward include plan implementation, monitoring, and most importantly amending the plan as missions change.

The Savannah District US Army Corps of Engineers Regional Planning Production Center works in partnership with Installation Master Planning Divisions to ensure the Installation's vision is documented and customer's, regulators, and stakeholders are involved throughout the processes. The team is composed of an in-house staff of architects, landscape architects, community planners, site civil engineers, mechanical engineers, and electrical engineers with extensive master planning experience. The team is currently working a variety of master planning projects at several CONUS and OCONUS installations. A recent paradigm shift is conducting ISR inspections using teams of architects and engineers to validate facility conditions in support of Army Facility Investment Strategy (AFIS) and Common Levels of Support (CLS).

Acronyms and Abbreviations	
AFIS	Army Facility Investment Strategy
CLS	Common Levels of Support
ISR	Installation Status Report

The Master Planning process provides a means for sustainable installation development that supports mission and environmental requirements, and establishes and prescribes planning philosophies and strategies applicable across the Army. As funding levels diminish, the need for Master Planning increases.

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the movement of the sustainment funds for requirements with no allocation.

The Army, through IMCOM, has developed an Army Facility Investment Strategy (AFIS) and is working on standards for Common Levels of Support (CLS). DPWs are in great need of these two products in order to be able to execute the installation Master Plans. The AFIS had encountered some stumbling blocks during its first year; however, the AFIS can benefit the installations if the Army can resist constant change. One of the issues the Army needs to address is its strategy for repurposing and reusing of facilities. Repurposing is a cornerstone of the strategy with new building construction as a last resort. The current conversion rules do not allow DPWs to repurpose a large facility if the repurposing requires a conversion approval due to category code changes. The "new work rule" requiring Congressional approval for any new work that exceeds $750,000 is restrictive and a show stopper.

At Fort Gordon, we are working on our next model adjusting to the Army's mission's updates. We are ensuring our limited resources go to the deficiencies in our current real property inventory. We continue to execute through our short range plan to meet our installation critical missions while we reduce turbulence on the resource provided through our programs.

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Back to Basics – The next generation for master planning, Part II

by Mark Mitsunaga

MILCON moneys continue to be scarce!

As mentioned in the January 2012 article, master planners are the real property gatekeepers for the garrison commander and the Army. The Asia-Pacific culture equates land to life, and the Army entrusts master planners with the life of the Army, present and future.

Vacant lot planning has been the way of doing business. We will continue to suffer the effects till we slowly resolve the shortfalls.

Schofield Barracks has been filled with facilities that don't belong where they have been built. People use cars to travel to and from every activity they attend, thus causing parking problems and congestion. The garrison has much work to be done to achieve the "work-live-play" philosophy. Mission work areas, as well as recreational facilities, are far from some barracks and housing (Diagram 1).

The installations are also being challenged by people who want short-term projects inserted due to their personal agendas or because they can't foresee second and third order impacts, or both.

Since the last article, we've moved forward in working on our master plans.

These are identified issues:

- The ISR and the RPLANS are continuing to have challenges that provide inconsistent and sometimes erroneous data to master planners and decision makers.
- Monies to create or update master plans are scarce.
- Manpower is less due to downsizing. This fact has reduced and negatively impacted our GIS/CADD capability, master planners, engineering and other garrison subject matter experts. Present and next generation engineers do not have proper exposure and training for master planning. People often do not know what master planning entails, but assume they know.
- The next generation of planners and engineers do not understand nor realize the value of the master plan.

Here's what we have done thus far:

1) Assessed our situation and established a baseline. We had a one day off-site meeting among the master planners, which included the real property accountable officer. We needed to determine what we presently have in regards to required master planning documents, as well as how we needed to proceed to get them updated.

LESSONS LEARNED: Schedule five days, in succession or three days the first week and two days on the week following.

2) Identified prioritized steps, which needed to be taken towards getting our program "healthy."

LESSONS LEARNED: We felt working one master plan location first to set an example and train others within our office was the first prudent step. Then, we will systematically work the other master planning areas. We have 22 sites on two islands that comprise our garrison, our "fence to fence."

3) Schofield Barracks is the first location, home of the 25th Infantry Division.

LESSONS LEARNED: Our visioning session, attended by stakeholders, helped establish a priority list of the locations to update master plans. Schofield Barracks was identified as first. Some key issues at Schofield Barracks are a) a lack of parking at work and physical training sites and b) heavy congestion during peak or rush hours, e.g., to and from PT areas.

4) Established the end state to accommodate the mission of our Soldiers.

LESSONS LEARNED: We recommend starting with a relatively clean slate, "green grass," but to include immovable constraints, e.g., runways and impact areas. The mission area should be adjacent to training ranges and maneuver lands.

Acronyms and Abbreviations	
AHAs	Ammunition Holding Areas
ASPs	Ammunition Supply Points
COFs/ BOCs	Company Operations Facilities/Brigade Operations Centers
FYDP	Five Year Development Plan
GIS/CADD	Geographical Information System/Computer Aided Design
ISR	Installation status report
MILCON	Military Construction
PAX	Programming, Administration and Execution
PT	Physical training
RM	Repair and Maintenance
RPLANS	Real Property Planning and Analysis System
SMEs	Subject Matter Experts
SRM	Sustainment, Restoration and Modernization

Consider also adding other constraints, e.g., topographic contours, historically and culturally (environmentally) sensitive areas. Use the Tabulation of Existing and Required Facilities (TAB) to obtain allowances and requirements, as well as information from past studies. A comparison of this information provides a relatively close order of magnitude for validation.

Looking 50 years to the future was determined by the end of our privatized housing lease. Family housing is not properly sited in concert with mission facilities (Diagram 1). Our parking problems and traffic congestion are due to the improper land use.

Worst-case scenario, relocation of housing may not occur till after the lease ends. However, pursuing relocation is still an option to discuss once other locations are identified and offered for consideration.

In starting, take a look from the "30,000-foot altitude," so everyone is reminded what the entire "fence to fence" garrison looks like. Have everyone understand that every garrison operational "piece" impacts the "whole," and the "whole" impacts the "piece".

Occasionally, refer back to the holistic garrison requirement as a "course" ➤

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sanity check. Set guidelines and "rules" that drive the effort forward. Meet weekly to put together results and reset azimuths, as necessary.

People should be held accountable for achieving weekly targets. Leadership accountability is a major driver.

5) Mission areas or mission complex.

LESSONS LEARNED: Identify training areas and impact areas, the motor pool row, barracks row, Company Operations Facilities/Brigade Operations Centers (COFs/BOCs) row and the headquarters "band." These bands are placed with the motor pool row closest to training areas and other bands in succession, as recommended by Army designs (Diagram 2).

6) "Work-Live-Play" means to apply the basic philosophy to plan facility types and green spaces for a "walkable" community.

7) Mission areas are planned first, and other activities and tenants supporting Soldiers and their families can be planned "around" them.

LESSONS LEARNED: Networking and dialoging early with stake holders will keep them informed, as well as glean information from them that may help our plan development. For example, in an "outreach" meeting, Morale, Welfare and Recreation provided the suggestion to plan mission areas first and support facilities and activities can be planned "around" them.

8) Activities with Large Land Requirements

LESSONS LEARNED: These set the foundation of land use and requirements, such as organizational parking, airfields, ammunition storage (ammunition storage points/ammunition holding areas) and operational facilities, live-fire ranges with their surface danger zones, etc.

9) 2nd and 3rd Order Effects

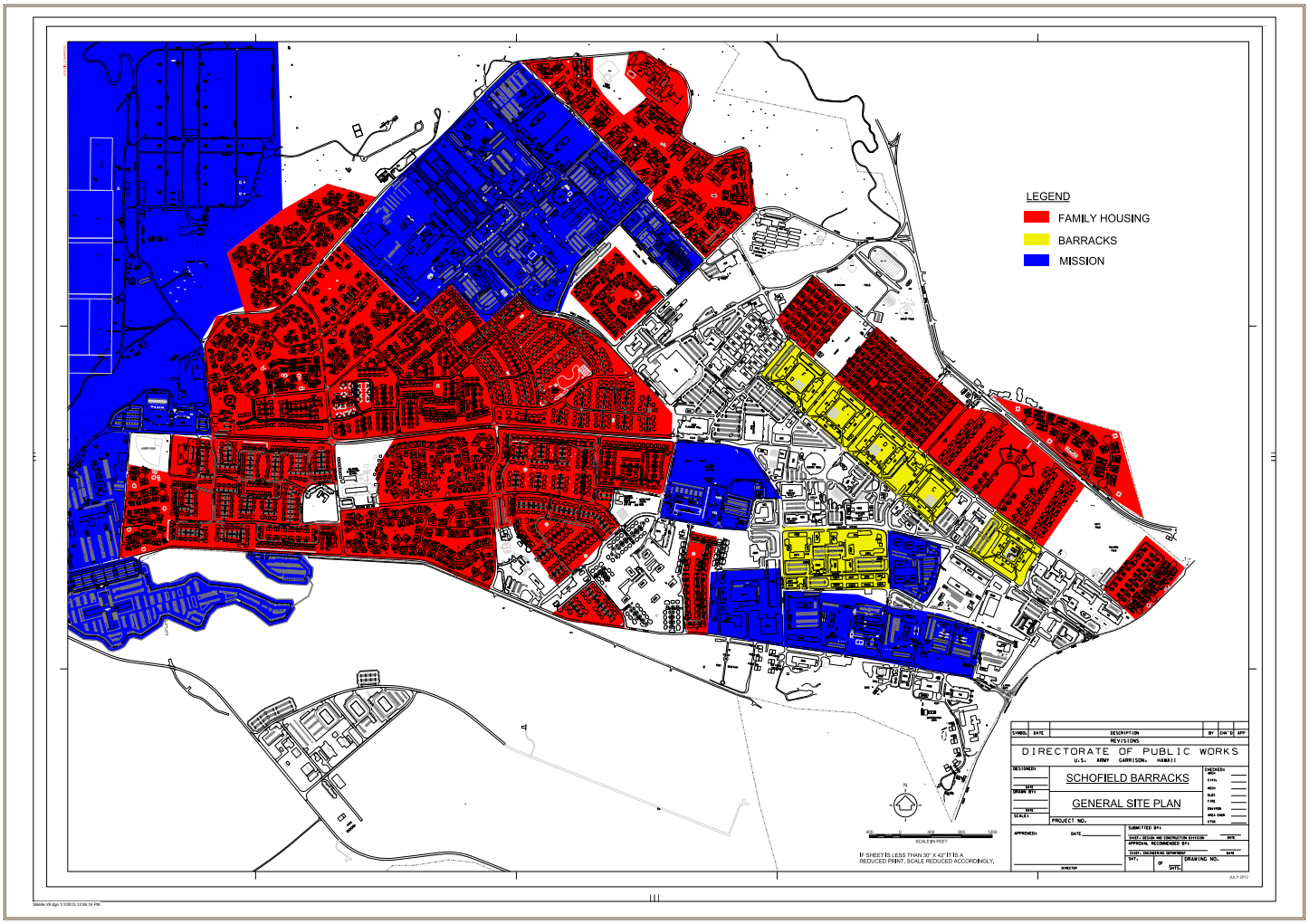

Diagram 1

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should be considered for planning facility locations.

LESSONS LEARNED: Ammunition storage and operational facilities are being planned to be sited on Navy property. By planning relocation and consolidating many of the existing facilities to the Navy property, we may be able to make space available on Schofield Barracks, as well as adjacent Wheeler Army Airfield for other uses.

10) Funding from Military Construction (MILCON) and sustainment, restoration and modernization (SRM), and repair and maintenance funding programs, should be closely coordinated to apply toward the end state. Such is not an easy task, but necessary.

LESSONS LEARNED: Efficiencies of the use of monies and labor in a phased and concerted approach is based upon available funds. Look to troop construction for low-cost labor. A major challenge is keeping up with schedules of the many units, including other services, e.g., Marines, Navy and Air Force and their capabilities.

Equipment and materials will need to be coordinated, while waiting for units to hit the ground running. It is hoped that each dollar spent and each project will contribute towards the end state.

11) "Implementation" phases need to be created once the end state has been established. Doing so will determine how to get from here (existing) to there (end state).

LESSONS LEARNED: Once an end state is determined, the hard work is yet to come. There are MILCON projects in the Programming, Administration and Execution System (PAX) system for a reason. We revisit those reasons and compare how the projects fit into the ➤

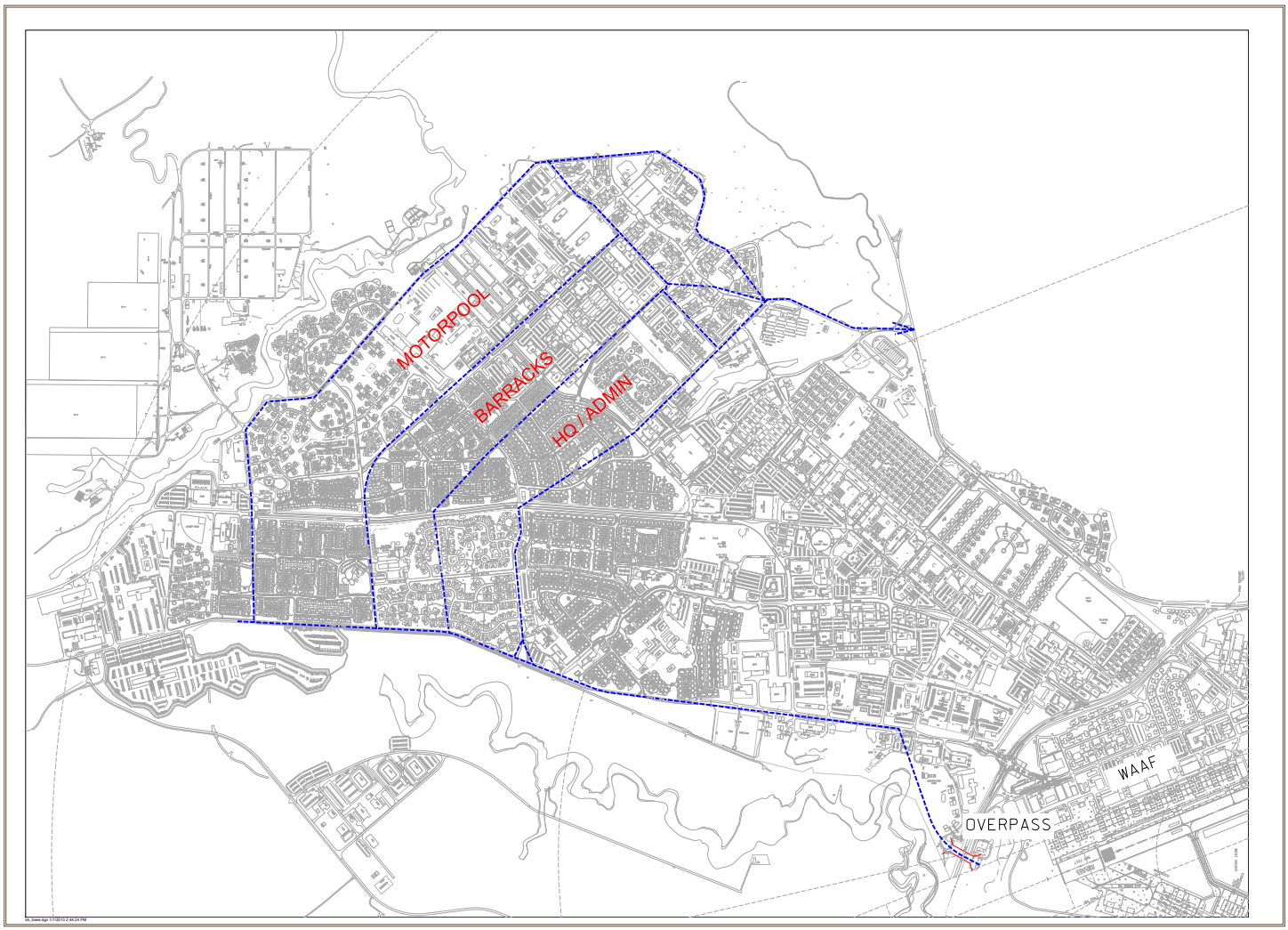

Diagram 2

Real Property Master Planning for Installations 2020

by Kathryn J. Haught

As the new calendar year begins we in the Master Planning community have achieved a major milestone for the Master Planning community. The Unified Facilities Criteria (UFC) 2-100-01 for Master Planning was signed by the DUSD for Master Planning on 15 May 12. This new UFC includes 10 planning strategies that are now instituted across DoD for Master Planning:

1. Sustainable Planning
2. Natural and Cultural Resource Preservation
3. Defensible Planning
4. Healthy Community Planning
5. Capacity Planning
6. Area Development Planning
7. Network Planning
8. Form Based Planning
9. Facility Standardization
10. Plan Based Programming

Army continues to be a leader in sustainability and smart planning, Now OSD had codified into official DoD wide guidance several forward reaching strategies that will give Army the tools to expand upon current planning initiatives. Many Army installations have already successfully implemented the new guidance. In fact, some installations were used as a model of the potential for ➤

Acronyms and Abbreviations	
ACOM	Army Command
ADP	Area Development Plan
AFH	Army Family Housing
APD	Army Publishing Directorate
ASCC	Army Service Component Command
DoD	Department of Defense
DRU	Direct Reporting Unit
DUSD	Deputy Under Secretary of Defense
IDG	Installation Design Guide
IDP	Installation Development Plan
HQDA	Headquarters, Department of the Army
HQIM COM	Headquarters, Installation Management Command
MILCON	Military Construction
NEPA	National Environmental Policy Act
O&M R&M	Operations & Maintenance Restoration & Modernization
OACSIM	Office of the Assistant Chief of Staff for Installation Management
OSD	Office of the Secretary of Defense
OTJAG	Office of the Judge Advocate General
RPMP	Real Property Master Plan
UFC	Unified Facilities Criteria

What is "form based planning?" The form based code takes the standards currently in the IDG and codifies them in a graphic plan. This type of code puts less emphasis on land use and more emphasis on building appearance, massing, etc. While the form of the building will to a certain extent drive the function, this type of code will allow for more mixed use development. Mixed use development will allow for greater efficiencies in planning and will promote the conservation of one of the Army's most important and quickly shrinking asset — real estate. A form based plan will also enable planners to determine maximum build out capacity, necessary for capacity planning.

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garrison end state. We also determined priority of these projects and the second and third order impacts these projects have on the overall execution health of the mission.

Phase 1 may be 5-10 years, to include the Five Year Development Plan (FYDP), Phase 2 may be 11-20 years, and Phase 3 may be 31-50 years. Even after setting an end state, we will strive to bring the end state closer to the present by finding ways to implement our intermediate phases.

12)ISR and RPLANS are continuing to have challenges that provide inconsistent and sometimes erroneous data.

LESSONS LEARNED: Use reference documents that help plan size and space of facilities, e.g., Army Space Planning Criteria Manual. Document what you're using to determine those facility sizes in order to justify your plans, as well as making adjustments when criteria are changed.

The real property inventory, validated on the ground by garrison personnel, is the most dependable data when computer data is in question.

13)Outgoing senior engineers/planners leave behind projects to be continued by remaining personnel.

LESSONS LEARNED: "Transition folders" per project need to be created by outgoing senior planners prior to their departure. It should contain project executive summaries and all key project documents, to include, but not limited to, major initiatives to watch for, as well as points of contact related to the project.

Accountability by leadership is required to ensure these folders are done properly and in a timely manner.

The Master Plan is a living document, so expect changes. The master planner, as the Army's installation gatekeeper, is the overall coordinator who will ensure garrison efforts are working towards the master plan end state. Be persistent in order to maintain forward progress.

Master Planners deal with the past 20-50 years, and plan for the future 20-50 years. Projects are created to achieve the end state of the master plan.

Master planning is not an easy profession, but necessary!

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Planning Support Centers

By Jerry Zekert and Andrea Wohlfeld Kuhn

The USACE Campaign Plan (Objective 3a.2) recognizes the importance of creating and maintaining master planning capabilities within USACE to guide sustainable, energy efficient design, construction and planning support to the Army, DoD and others. This is also in line with the recently updated and published DoD Unified Facilities Criteria (UFC) for installation master planning which also emphasizes the importance of installation planning in meeting Federal and DoD policies and directives for energy and sustainability, among other related goals.

Implementation is Key

How do we implement these worthwhile and important goals? That's where USACE Divisions and Districts enter the picture. By the end of FY-13, each Division will have identified at least one planning support center. As of this writing, the following Districts are in full operation with Planning Support Centers:

- Fort Worth
- Sacramento
- Louisville
- Savannah
- Mobile

These Planning Support Centers provide technical support to both USACE HQ as well as the field. They stand ready to work with IMCOM, the Reserve component, and any other Army or other service branch to provide planning support on an as needed basis. Goals include:

- Maintaining robust Planning Support Centers that integrate Army/OSD planning tenets into all product lines while providing responsive support to installations.
- Ensuring planning staff and project managers understand the role of planning in achieving energy and sustainability goals.
- Ensuring planning consultants have the right skills needed to support com- ➤

Acronyms and Abbreviations	
DoD	Department of Defense
IMCOM	Installation Management Command
MPI	Master Planning Institute
OSD	Office, Secretary of Defense
PROS PECT	Proponent Sponsored Engineer Corps Training
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers

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planning excellence (suggest providing names (if the installation is in agreement) to assist the reader with implementation). The Army Regulation (AR 210-20, Real Property Master Planning Give Name soon to be replaced by AR 420-1 Facilities Engineering Chapter 10) was developed parallel with the UFC; all comments received during formal review have been resolved. AR420-1 Chapter 10 is under final review by APD and OTJAG.

In the meantime, Army and our land holding commands have begun implementing new policy into the RPMP updates. Guidance has been issued by both HQ IMCOM and OACSIM to implement these strategies into installation RPMPs.

Master Planning is one of the most important processes within the Army due to its assistance in resource utilization in regards to land and real property. Without proper planning, we will never be able to realize a reasonable balance among work, leisure, training buildings, etc. HQDA has realized that high level decisions that will impact real property cannot be made in the absence of the RPMP. The new policy is crafted to ensure that the Senior Leaders have available the tools with which to make a more informed facility assessment in support of operational and strategic decisions.

The strategies about which I am most enthusiastic are those with which HQDA can do better planning. HQDA has recognized the importance of the RPMP and will begin implementation of "plan based programming" immediately. HQ, IMCOM has initiated a process by which we ensure inclusion of Master Planning considerations in 1 to N submissions of MILCON, AFH, Energy, and O&M R&M projects by the ACOMs, ASCCs, and DRUs. A good Master Plan should guide HQDA in decision making and we would be remiss by not taking the results of analysis into effect, including NEPA analysis on the RPMP. The Area Development Plans (ADPs) should guide development at the neighborhood or district level and the Installation Development Plans (IDPs) should guide overall installation planning at the macro level including infrastructure (network planning). Results of analysis should tell us true impact of development at the installation. We will also continue with implementation of form based planning which will give the Master Planner more leverage in establishing footprints (are these zones?) than traditional land use planning. Form based planning will also aid in determination of possible capacity and assist in stationing. These strategies will assist in bridging the gap between installation level planning and Army strategic planning.

We want the RPMP to be a tool for all levels to use. We also want the RPMP to be a living document easily updated and accessed and useful for all level of decision making. Capacity Planning is essential for smart stationing decisions. An RPMP in electronic format that allows for real time update will facilitate the installation in managing resources and in providing HQDA with the information needed to make smart decisions.

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Side by Side – Master Planning and Environmental

by Jillian Dunnam

When a project is proposed to the Fort Lee Master Planning Division, the first question that John Royster, Fort Lee Master Planner, asks is "What does Carol say?" When a project crosses the desk of Carol Anderson, Fort Lee Environmental Management Chief, the first question she asks is "What does John say?" At Fort Lee, the Master Planning Division (MPD) and the Environmental Management Office (EMO) work side-by-side, literally, to ensure that all projects are appropriately and legally sited and developed.

This relationship has developed over the past seven years as both Mr. Royster and Ms. Anderson realize that early involvement of both Master Planning and Environmental Management greatly improves the project development process and aids in avoiding delays and legal entanglements. Ms. Anderson and Mr. Royster previously worked closely together at Fort Lee before her appointment as Chief of the EMO. In becoming Chief, Mr. Royster and Ms. Anderson brought the working relationship closer and have imparted the spirit of cooperation and the importance of communication to their staffs.

Project meetings are routinely attended by both MPD and EMO representatives and each will keep an ear open for issues important to the other. For example, MPD staff knows that when a contractor speaks of clearing trees or using a pesticide that EMO needs to be in the loop. When EMO staffers hear the mention of a change in exterior materials or the layout of a parking lot, they know to get MPD involved.

John Royster, Fort Lee Master Planner, and Carol Anderson, Fort Lee Environmental Management Chief

Fort Lee's EMO and MPD work intimately to ensure that Fort Lee supports current and future missions while protecting the environment through sustainable facility planning. When the 2005 Base Realignment and Closure (BRAC) Commission selected Fort Lee as a gaining installation, the Directorate of Public Works (DPW) faced the challenging task of siting more than 4,000,000 square feet of new facilities to house the U.S. Army Ordnance School, to establish a Sustainment Center of Excellence, and to accommodate Joint Force training in Culinary Arts, Mortuary Affairs, and Transportation. Fort Lee needed to accommodate double the pre-BRAC population while meeting the unique, pedestrian friendly community requirements of an average daily population of 7,000 Advanced Individual Training ➤

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prehensive planning.

- Supporting continuous professional education and training of planning teams.
- Providing enhanced planning capabilities to meet the needs of a rapidly changing Army.
- Providing leading-edge technical planning advice to IMCOM, OSD and other Services.
- Creating a well-trained master planning Community of Practice that understands the professional practice of master planning
- Building an enterprise-wide master planning program that provides state-of-the-art planning support to the Army, Air Force and others.

The DoD Master Planning Institute (see related article in this publication) offers practicums, workshops, and PROPSECT courses to ensure an agile and highly trained workforce, ready to address master planning issues and ensure that planning plays a key role. The MPI is playing a key role in revitalizing planning support to the field and ensuring the success of the Planning Support Centers.

In sum, USACE District-focused Planning Support Centers provide holistic planning support to installations throughout DoD. Installations are encouraged to engage any of the Planning Support Centers listed above for assistance with any of their planning needs.

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Acronyms and Abbreviations	
AIT	Advanced Individual Training
BCO	BRAC Construction Office
BRAC	Base Realignment and Closure
DPW	Directorate of Public Works
EMO	Environmental Management Office
LEED	Leadership in Energy and Environmental Design
LID	Low Impact Development
MPD	Master Planning Division
PWD	Public Works Digest
SOPs	Standard Operating Procedures

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(AIT) students. Considering that Fort Lee is within the Chesapeake Bay Preservation Area and is adjacent to Petersburg National Battlefield, siting projects on the 5,907-acre installation footprint, while meeting the mission requirements, protecting the environment, and limiting off-post impacts required significant collaboration between the planners and the environmentalists.

Mr. Royster and Ms. Anderson knew they would be spending many long hours together to see BRAC through to completion, but neither expected the Fort Lee BRAC build-up would forge one of the strongest working friendships in the organization. Fort Lee stood up the BRAC Construction Office (BCO) which served as the Garrison liaison for all BRAC projects. The office was staffed by personnel from MPD, EMO as well as representatives from other Garrison activities that were needed in the planning process. BCO representatives, which always included a master planning and environmental representative, traveled multiple times to the installations that were transferring missions to Fort Lee to ensure the mission requirements would be met upon arrival. Mr. Royster recounts memories of the site visits: "Carol would drive and I would ride in the front of the car and we would banter back and forth about where to stop for gas. Other members of the BCO team would ride in the back seat and say that Carol and I were `just like mom and dad.'" Mr. Royster and Ms. Anderson spent weeks learning about each other's program's ideas and objectives in order to make Fort Lee the best military installation around. Now that this rapport has been built, no one can separate them.

This close relationship is even reflected in the layout of the Fort Lee DPW building. Previously, Master Planning and EMO were located in separate adjacent buildings. When Fort Lee's new DPW building was being designed, EMO and MPD chose offices right next to each other on the same hall. Mr. Royster and Ms. Anderson joke about installing a door between their areas to increase the connectivity.

Through this great relationship, MPD and EMO have developed exceptional guidebooks for interested and required users to read and understand how these divisions' goals fit together. EMO has created a guidebook of standard operating procedures (SOPs), "Fort Lee Environmental Special Conditions" which is included in Request for Proposals and other contractual documents which explain in detail the specifications and requirements to perform work on Fort Lee. The Fort Lee Installation Design Guide is a master planning document that is also distributed to contractors which lays out specific standards for building design, materials, and appearance. Both of these documents were established with input from each division and comments from one another were taken into account. Soldiers, civilians and the public now have a resource document identifying how work is performed at Fort Lee in a manner that prevents pollution, protects the environment, preserves the land, conserves natural and cultural resources and ensures universal aesthetics while staying in compliance.

This close relationship between EMO and MP has lead to continuous conservation of natural and cultural resources as well as the implementation of good planning practices. Fort Lee has developed a successful process that involves all stakeholders discussing the project at the concept level and then helping the end user to identify requirements, determine environmental constraints, and finally, how to mitigate potential impacts.

A great example of how well Fort Lee's EMO and MPD work together was uncovered during site selection for the Training Support Center. Prior to the project being awarded, EMO and MPD regularly held meetings to select a site. EMO informed MPD that a protected 100 foot wetland buffer existed at the proposed site. MPD agreed to move the building footprint out of the buffer zone so that the protected site would not be affected. Had this coordination not occurred in these early stages, the site would have been difficult to develop resulting in costly mitigation efforts or contractual modifications.

The unprecedented growth over the past seven years at Fort Lee required detailed, planning, placement and coordination. The challenge to accommodate and sustain this type of growth was historical. The collaborative working relationship that EMO enjoys with MPD has benefited Fort Lee with accomplishments that include but are not limited to:

- Development of over 665 acres or approximately 12% of the Installation land area while only impacting 1.35 acres of wetlands.
- Stormwater infrastructure retrofits using Low Impact Development (LID) techniques that have reduced stormwater flow on more than 30 acres.
- All new buildings and major renovations must meet Leadership in Energy and Environmental Design (LEED) Silver standards. Construction over the last five years includes over 60 buildings and numerous renovations. Four projects have been certified Gold with two pending, while three have been certified Silver with seven pending.
- On average, approximately 90% of all construction and demolition waste is recycled.

While still working hard on projects other than those related to BRAC, MPD and EMO staffs continue to lean on and rely on one another in support of the other's programs and efforts. The blending of concepts and requirements of the two departments has made it easier to save money and to form a long term proper usage of the facilities and scarce available land on Fort Lee. ➤

New Trends in Master Planning

by Andrea Wohlfeld Kuhn

Where is planning headed in 2013? What are some of the trends on the horizon? While I don't claim to have the proverbial crystal ball, **partnering** is a key word we often hear and I predict will be even more important as we move into 2013, with its promise of "doing less with more." If we partner with others who have similar goals, we can save scarce resources and benefit from combining forces. Recently, three Federal agencies realized that they could achieve more through partnering. On June 16, 2009, the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) formed a partnership to develop more livable communities and to help communities nationwide improve access to affordable housing, increase transportation options, and lower transportation costs while protecting the environment. I find this relevant to the Army/DoD situation in that their goal is similar to the Army's triple bottom line for sustainability, as they strive to implement a triple bottom line to foster communities that are environmentally sustainable, economically strong and equitable.

This partnership is designed to help American families gain better access to affordable housing, more transportation options and lower transportation costs while protecting the environment. Through a set of guiding livability principles and

Andrea Wohlfeld Kuhn

a partnership agreement that will guide the agencies' efforts, the partnership will coordinate federal housing, transportation and other infrastructure investments to protect the environment, promote equitable development and help address the challenges of climate change.

The livability principles most related to the Army's and the Department of Defense's sustainability efforts include:

Support existing communities – Target federal funding toward existing communities — through strategies like transit-oriented, mixed-use development and land recycling — to increase community revitalization and the efficiency of public works investments, and to safeguard rural landscapes.

Value communities and neighborhoods – Enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods — rural, urban or suburban.

Acronyms and Abbreviations	
DoT	Department of Transportation
EPA	Environmental Protection Agency
HUD	Department of Housing and Urban Development

The terms of the partnership that relate most closely to the Army's master planning approach include:

Provide a vision for sustainable growth – This effort will help communities set a vision for sustainable growth and apply federal transportation, water infrastructure, housing and other investments in an integrated approach that reduces the nation's dependence on foreign oil, reduces greenhouse gas emissions, protects America's air and water, and improves the quality of life. Coordinating planning efforts in housing, transportation, air quality and water — including planning cycles, processes and geographic coverage — will make more effective use of federal housing and transportation dollars.

Enhance integrated planning and investment – The partnership will seek to integrate housing, transportation, water infrastructure and land-use planning and investment. HUD, EPA and DoT are making planning grants available to metropolitan areas and create mechanisms to ensure those plans are carried through to localities.

Initiatives such as these that other federal agencies and organizations have implemented demonstrate best practices and provide ideas to expand Army sustainable planning efforts. The Army's Master Planning Program can serve as a catalyst to achieve like-minded goals in a sustainable manner. In the quest to develop installations that support the mission, benefit Soldiers and families, and minimize impacts to the environment, the importance of master planning is crucial. A holistic planning approach can improve quality of life, conserve limited land and other natural resources, and create a sense

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This can even be said in the writing of this article as it was done through the collaboration of EMO and MPD staffs. When the word came out about highlighting Master Planning for the next issue of Public Works Digest (PWD), staff from both offices got together and wrote an article to highlight just how connected the teams are here at Fort Lee. The fact that Fort Lee's MPD and EMO would work together on an extracurricular project to showcase the relationship that exists on the installation says it all.

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A New Recipe for Energy-Efficient Planning: The Unified Facilities Criteria for Installation Master

by Mark L. Gillem and Jerry Zekert

In May 2012, the Department of Defense (DOD) published a new Unified Facilities Criteria (UFC) for Installation Master Planning (UFC 2-100-01). This is the first major update in over 25 years and the first time the UFC has ever focused on sustainable strategies of planning. The new UFC is more than a regulation, it marks a fundamental change in the way the DOD approaches master planning. It establishes a worldwide planning program that includes guiding policy, education, training and metrics.

A plethora of new planning issues have emerged since the last UFC update. They include a focus on energy efficiency and sustainability, a much greater reliance on limiting pollution and increasing citizen health through pedestrian-friendly communities, and an awareness of federal budget limitations that support repurposing and innovative funding models. Coupled with these contemporary planning challenges and the fact that military planners often lack formal planning training, the need for the DOD to provide master planning guidance, training, and education proves incredibly salient in the context of today's environmental and economic climate.

The use of Illustrative Plans, like this one for Fort Gordon's community center, can effectively guide sustainable development.

Ten planning strategies serve as the foundation of the UFC. These include sustainable planning (transit-oriented development, horizontal and vertical mixed use, compact development), historic, natural and cultural resource preservation, healthy community planning, area development planning, form-based planning, network planning, and capacity planning. The new UFC calls for physical, on-site planning with stakeholder participation and analysis of existing conditions rather than the all too common planning from afar, within a vacuum. With a new focus on neighborhood-scale

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Acronyms and Abbreviations	
ACSIM	Assistant Chief of Staff for Installation Management
ADP	Area Development Plan
CPWG	Comprehensive Planning Working Group
DoD	Department of Defense
UFC	Unified Facilities Criteria

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of community for Soldiers and families in a sustainable manner. By integrating planning, design and construction, a higher level of sustainability can be achieved.

We are exploring partnership possibilities with EPA. On 19 November 2012, HQUSACE representatives Jerry Zekert and Andrea Kuhn met with EPA representatives and gave a presentation on sustainable Army planning and the new UFC for Installation Master Planning (UFC 2-100-01). EPA attendees immediately related the smart growth concepts they're promoting to the ten strategies in the UFC. These concepts all have the same goals—to achieve sustainable, well-planned communities that not only meet today's needs, but those of the future.

Partnering can occur at all levels—whether it is at the headquarters or local level. Many installations have partnered with local entities and have realized gains in the provision of transportation, housing, recreation, etc. In these times of fiscal constraints, it's more important than ever to partner to achieve larger gains than can be had through individual entities.

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planning using Area Development Plans (ADPs) and an innovative use of form-based planning, the products that result from this new process will be specific enough to guide development consistent with an overarching planning vision and flexible enough to accommodate an unknown future. These strategies lead to a holistic planning process that begins with the crafting of a clear planning vision, specific goals that support that vision, and measurable planning principles that operationalize the goals. The process requires the preparation and evaluation of development alternatives for all scales of planning, from individual districts to the overall installation. Furthermore, the process calls for a clear implementation plan with detailed documents to flexibly guide installation development.

Writing the new UFC was a collaborative effort involving all branches of military service and representatives from the U.S. Green Building Council and the National Capital Planning Commission. The Master Planning Team at Headquarters, U.S. Army Corps of Engineers led the process. Senior planners from each Service, including Mike Bryan from the Navy, Stephen Anderson from the Marine Corps, Jerry Zekert, Kathryn Haught, Allan Carroll, and Andrea Wohlfeld Kuhn from the Army, and Geno Patriarca and Mark Sanchez from the Air Force, identified not only common planning practices but also best city planning practices that are used in the profession and applicable to military installations.

The UFC is designed to be transferable and useable at all Army and DOD installations. By working with senior planners from each agency, the UFC authors were able to capture each agency's requirements. Through these efforts, every installation will have a plan with a clear vision, supporting planning standards, area development plans, network plans,

The use of Regulating Plans, for the same area at Fort Gordon, can allow for needed design flexibility while ensuring that the vision is still achieved.

a development program, and a summary document. The Army and the Air Force are transferring the process to the development of their own regulations on master planning and the Navy is beginning an update on its planning regulation.

In a departure from typical DOD approaches, that rely on policy development preceding implementation, planners prototyped the content of the UFC for over two years. Lessons learned were used to refine the new UFC. For example, Fort Sill was the first Army installation to apply the new vision process to the redevelopment of its master plan and the use of form-based planning was first used to guide new development in the Army at Fort Lewis (now Joint Base Lewis-McChord - JBLM). The robust use of Capacity Planning was first tested in the plan for Fort Hunter Liggett in central California. And Fort Hood is now leading the way in implementing all aspects of the UFC through a complete update of its master plan. The use of ADP Execution Plans to synchronize work across the enterprise will be implemented at Fort Hood for the first time in the Army.

The strategies and processes described in the UFC have made a tremendous difference in achieving enterprise-planning processes at installations where UFC-compliant plans have been implemented. A primary reason for this is that the new UFC requires comprehensive inclusion. Stakeholders find a role and relevance for all parallel studies. Studies centered on environmental impact, energy, utility capacity, cultural and natural resource effects, transportation plans, and maintenance can all be folded into detailed ADPs. Developing a platform on which to examine related subjects and draw meaningful conclusions regarding intent, requirements, and synergies allows planners to communicate with other offices and ➤

The Unified Facilities Criteria's Strategies for Master Planning Success

by Mark L. Gillem and Jerry Zekert

The new Unified Facilities Criteria for Installation Master Planning (UFC 2-100-01) starts by describing 10 key strategies for installation planners to follow as they prepare master plans and other planning documents. Application of these 10 strategies noted below, taken from the UFC, will help ensure that all DOD installations prepare plans that will lead to more sustainable and more secure installations.

1. Sustainable Planning

Sustainable planning leads to "lasting" development – meeting present mission requirements without compromising the ability of future generations to meet their needs. The goal of such development is to make the most effective use of limited resources, reduce fossil fuel use and increase the use of alternative fuels, and to create more compact and sustainable communities that still meet security and safety requirements. Planners will incorporate principles of sustainable planning in their master plans, area development plans, and other planning products.

Acronyms and Abbreviations	
ADP	Area Development Plan
AT	Antiterrorism
DCIP	The Defense Critical Infrastructure Program
UFC	Unified Facilities Criteria

2. Natural, Historic, and Cultural Resource Management

Installations have natural, historic, and cultural resources that must be considered in the planning process. Natural resources include threatened and endangered species, wetlands, habitat areas, forests, undisturbed land, and important viewsheds. Historic and cultural resources may include historic buildings, structures, objects, districts, landscapes, and archaeological sites, as well as sacred sites to Native American tribes. Planners will coordinate planning decisions with installation cultural and natural resource managers early in the planning process to avoid project delays and additional funding needs from the inadvertent discovery of historic, cultural and natural resources within proposed project areas.

3. Healthy Community Planning

Regular physical activity is critically important for the health and well being of people of all ages, and reduces the negative impact from many chronic diseases. Physical fitness is key to readiness. Planners will incorporate health considerations and opportunities for physical activity based on advice from representatives of the installation's medical staff. Effective planning can create conditions that encourage physical activity, connect land uses and facilities, and provide safe, protected pathways for physical fitness training for our service members and their families. High connectivity, mixed land uses, and well-designed pedestrian and bicycle infrastructure decrease auto dependence and increase levels of walking, running, and cycling.

4. Defensible Planning

Military installations must be safe and secure in order to operate effectively and efficiently. Two key strategies impact planning: the Defense Critical Infrastructure Program (DCIP) and ➤

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integrate their efforts. In the past, military master plans could be encapsulated into a land-use map showing an entire installation. This scale of planning did not provide adequate guidance, and led to vacant lot planning. The UFC requires installations to focus on more manageable areas and generate plans that allow planners to identify capacity for compatible growth in order to avoid vacant lot planning and build efficiently within current landholdings.

As part of the effort, U.S. Army Corps of Engineers has developed a comprehensive education and planning support strategy. Master planning courses taught by the Corps are now using the UFC as a guide. These are accredited continuing education courses approved by the American Planning Association, the American Society of Landscape Architects and the American Institute of Architects. Hundreds of planners have already taken advantage of these opportunities. Additionally, a suite of metrics has been developed to track compliance with the UFC at every level and a series of standard Statements of Work have been created so that process consistency and conformance is improved.

The UFC is a new recipe book that guides more appropriate and sustainable development using ingredients, like roads, parking lots, buildings, and open spaces, available at all installations. The new UFC puts an end to vacant lot planning, and instead guides energy-efficient development that economically sustains our missions and our environments.

The UFC can be accessed using this link: *http://www.wbdg.org/ccb/browse_doc.php?d=9224*

The public release of the UFC can be viewed using this link: *http://www.ncpc.gov/ncpc/Main(T2)/PublicParticipation(Tr2)/Public%20Participation(Tr3)/upcomingEvents/dodplanning.html*

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Antiterrorism/Force Protection (AT/FP). The master plan must incorporate DCIP analysis to minimize risk to the installation's strategic infrastructure and networked assets that support the critical missions necessary to provide combat capabilities. The master plan must incorporate UFC 4-010-01 and the applicable Geographic Combatant Commander's ATFP Construction Standards.

5. Capacity Planning

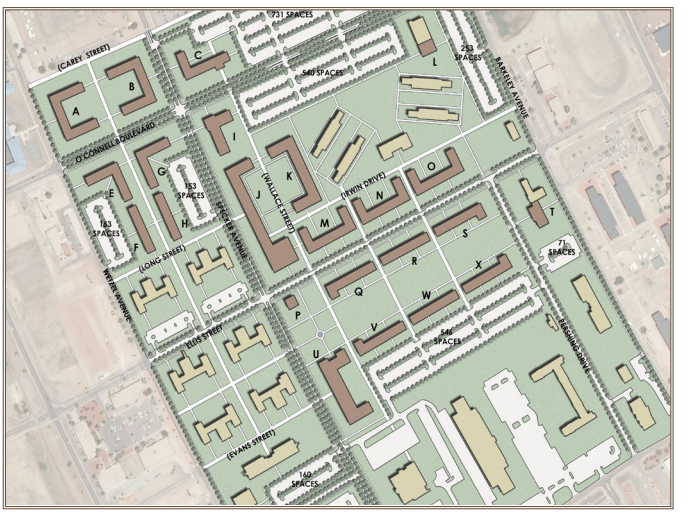
Capacity planning allows planners to determine an installation's maximum development capacity based on conformance to the installation's planning vision, goals, and objectives. While known requirements need to be sited in the master plan, room needs to be reserved for unknown future requirements. The difference between the existing condition and the future build-out is the capacity. In this way, planning precedes programming, is proactive, and does not just account for current known requirements. Capacity planning can be shown on illustrative plans through the use of "notional buildings" or areas designated for "potential future growth."

6. Area Development Planning

As part of the master planning process, installations will be divided into identifiable and connected districts based on geographical features, land use patterns, building types, and/or transportation networks. An Area Development Plan (ADP) should then be prepared for each district. This leads to developing the Master Plan in logical planning increments. The installation planner determines the number of ADP districts.

7. Network Planning

While significant planning is completed at the ADP level, these ADPs are also linked through network planning. These networks consider linkages and systems that span ADP district boundaries. These include installation-wide utility systems, transportation networks, and parks and open space networks. All installation master plans must plan at both the district scale and the installation scale. Network planning should also include coordination and integration of planning with privatized housing or privatized utility partners.



This Illustrative Plan for a district at Fort Carson shows the elements needed to make an ADP work. These include existing and proposed building footprints, roads, and parking areas.

8. Form-Based Planning

Form-based planning guides construction by identifying the form for installation development (building types, height, set-backs, circulation patterns, landscaping, land use, etc.) and translating that form into a set of specific planning directives. The directives use products typically developed by planners, including illustrative plans, land-use plans, and street, building, and landscape standards to flexibly guide development. The form that this approach supports reflects mission needs, program requirements, environmental constraints and opportunities, and other development factors. This practice gives installation commanders the ability to exercise more control in the installation development process.

9. Facility Standardization

Service-developed standard area requirements and spatial relationships recognize the need for consistency in building types repeated across installations. These area requirements and spatial relationships can be maintained within a variety of building designs that are consistent with the installation's Regulating Plan and Installation Planning Standards. When appropriate, standardized area requirements and spatial relationships will be included in the development of Illustrative and Regulating Plans. Planners will not site standard designs that are inconsistent with the Master Plan. Planners will pursue waivers as appropriate.

10. Plan-Based Programming

Facilities and projects will be programmed to fulfill the Master Plan's planning vision. Programming cannot be accomplished in the absence of a Master Plan.

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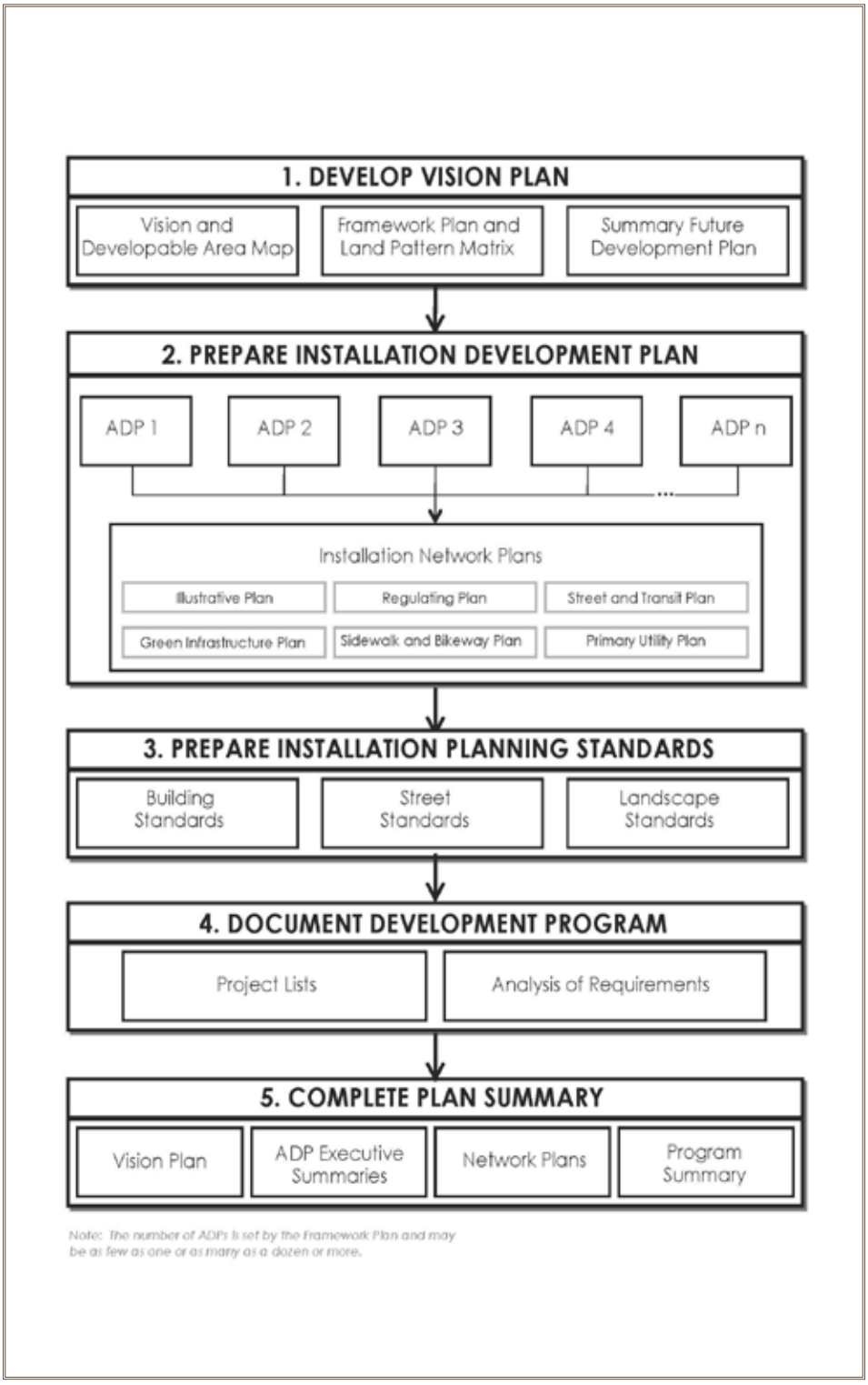
The Unified Facilities Criteria's Processes and Products for Success

by Mark L. Gillem and Jerry Zekert

After describing the planning strategies applicable to installation master plans, the new Unified Facilities Criteria for Installation Master Planning (UFC 2-100-01) outlines the process that planners will use and the minimum set of products that they will produce to make effective master plans. Development of the 5 products noted below, taken from the UFC, will occur through a stakeholder-driven process that begins with the creation of a Vision Plan, continues with preparation of planning standards and the Installation Development Plan, and ends with the preparation of the development program and plan summary.

1. Vision Plan

The installation mission statement cites the specific responsibilities the installation must support. It is near-term and meets the current military needs for our nation. Installation missions change as our nation's military requirements change. A vision for planning differs from an overall installation mission in that it defines ideal development principles for maximizing the installation's long-term capabilities. Establishing a vision statement for planning is the first step in the planning process. Planners should meet with the senior installation leadership and ask for their input into the overall vision and goals for the installation planning process. Planners should be prepared to help the installation leadership understand how to develop a vision to ensure that priorities for future installation-wide development are met. Planning objectives support the goals and vision and are derived from both the planning process and the planning strategies. The Vision Plan shall also have a composite constraints map, a developable area map, and a framework plan that shows all planning districts, key transportation and land use concepts, and other significant features that will influence development patterns. ➤



The UFC process and products are directly aligned to meet the planning needs of all military installations.

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2. The Installation Development Plan

The Installation Development Plan (IDP) includes Network Plans and Area Development Plans (ADPs) with detailed constraints and opportunities maps, Illustrative Plans, Regulating Plans, Implementation Plans, capacity calculations, and supporting sketches and renderings. The bulk of the installation planning effort should occur at the scale of an ADP. The requirements in this UFC are relevant whether an installation's development is solely focused on SRM projects or on MILCON projects. These are programming and funding avenues designed to achieve the Master Plan vision and should be driven by the Master Plan. ADPs are ideally suited for the task of identifying, coordinating, and synchronizing work at any scale and as such they are useful at installations focused on SRM funding as well as installations focused on MILCON funding. Once ADPs have been completed for the priority districts on the installation, the relevant information can be easily combined into appropriate Network Plans. Network Plans show the future development for the installation as a whole, and will, at a minimum, consist of the Installation Illustrative Plan, Regulating Plan, Street and Transit Plan, Sidewalk and Bikeway Plan, Green Infrastructure Plan, and Primary Utility Plan.

3. Installation Planning Standards

Installation planning standards provide a clear set of guidelines to ensure that the installation's vision and planning objectives for development are achieved, even if drastic changes to mission or program occur. These standards are developed to 1) meet sustainability and energy efficiency requirements; 2) promote visual order and architectural consistency; 3) enhance the natural and man-made environments through consistent architectural themes and standards; and 4) improve the functional aspects of the installation. At a minimum, these will include building standards, street standards, and landscape standards. Many installations have standards for buildings, streets, and landscapes. These standards will be reviewed and, if needed, adjusted to conform to this UFC.

4. Installation Development Program

The program is the overall installation strategy for using and investing in real property to support installation missions and DOD objectives. It describes permanent comprehensive/holistic solutions, as well as short-term actions necessary to correct deficiencies and meet current and future mission needs in a method that assures infrastructure reliability and contributes to sustainable development.

5. Plan Summary

Once the above planning processes and products are completed, the installation planner shall prepare a plan summary document that will include the Vision Plan, executive summaries of the Area Development Plans, appropriate Network Plans, and a summary of the development program.

Planning and Site Approval

All facility acquisition or construction projects will be sited in accordance with an approved Master Plan. An approved Master Plan siting means that the project meets all guidelines and objectives set forth in the Regulating Plan and Installation Planning Standards. All projects must have approved sitings prior to the start of design. Site approval shall be attained during the project programming process for Sustainment, Restoration, Modernization (SRM) projects and during development of the DD1391 for military construction (MILCON) projects. Furthermore, all projects must remain in compliance with the Master Plan through construction and occupancy. Projects proposed by affiliated agencies, including but not limited to, privatized housing contractors, MCCS, NEX, the Exchange, DeCA, MEDCOM, and DoDEA must also go through this process. The ADP's Regulating Plan provides the required regulatory guidance to ensure that the installation's vision for development is met. It applies to all forms of acquisition that are used to implement the Master Plan. The Regulating Plan and supporting Building, Landscape, and Street Standards that apply to a proposed construction project will be included in any solicitation and subsequent contract documents for design and development of a project. Additionally, if single-line drawings (floor plans, elevations, etc) are developed as part of an ADP, these should also be included to illustrate a way to meet the intent of the Regulating Plan. Project designs shall be evaluated in part on how well they conform to the Regulating Plan and supporting standards.

Acronyms and Abbreviations	
ADP	Area Development Plan
DeCA	Defense Commissary Agency
DODEA	Department of Defense Education Activity
IDP	Installation Development Plan
MCCS	Marine Corps Community Services
MEDCOM	U.S. Army Medical Command
MILCON	Military Construction NEX: Navy Exchange
SRM	Sustainment, Restoration, and Modernization
UFC	Unified Facilities Criteria

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Participatory Planning at Army Installations

by Barry I. Gordon

At a recent Area Development Planning Practicum I noticed an attendee sitting at the side of the room unengaged in the current exercise. I approached him and asked if he had any questions or concerns that were holding him back from taking part in the activity. He responded, "No, I am just observing." This is the same person that only "observed" in a previous workshop and then proceeded to punch holes in the process and the plan throughout the comment period. Why is it that some people feel that participation is only for "other" people and does not apply to them? Participatory planning is a transparent and open process that uses consensus building through the collaboration of ideals, values, objectives and input from stakeholders involved within a defined study area. Participation is a core attribute of democracy; without the right and opportunity to actively participate, there can be no talk of democracy. Participatory planning, as a method, has been used extensively in the design fields of landscape architecture, architecture, urban design, and planning due to its institutionalization in those fields at universities like Harvard, the University of California at Berkeley, the University of Oregon, and others. It is now much more common in military planning as well and has been applied in charrettes to varying degrees of success across the Army. At Fort Hood, 140 stakeholders participated in the preparation of the installation's new planning vision. At Fort Sill, nearly 100 stakeholders participated. At U.S. Army Garrison Hawaii about 80 stakeholders participated. These stakeholders bring their expertise to the planning process.

There are two predominant process flows in planning. The first is the traditional model that uses a top-down planning/design approach. The top-down approach is restricted by what Mark Francis, author of Proactive Practice: Visionary Thought and Participatory Action in Environmental Design, calls "the culture of practice" which can be characterized as exclusive, project-oriented, and authoritarian. The second process flow uses participatory methods; a bottom-up process that takes the focus off the designer and client, and expands the process to include the actual users. This approach is problem-oriented and inclusive. It creates a collaborative process that unites and empowers its participants in a democratic way. At Army installations, the client – usually DPW staff and USACE representatives – opens up to allow the stakeholders that represent units from across the installation into the planning and design process.

The flow, whether traditional or participatory, involves a process that is, hopefully, a means to an implementable plan. But, research shows that the traditional, top-down approach results in a planning document that is less implementable than the bottom-up, participatory model. Often literally collecting dust on a shelf – dead on arrival. Why is this? Is it the fault of the client not being able to effectively describe their dreams, hopes and desires? Is it the fault of the professional for not listening well enough, or the inability to translate those dreams successfully? Were cultural norms taken into consideration? This list can go on.

An important question to ask is, "what method of practice should be used for planning and design on military installations and is it appropriate for this project?" These are questions senior agency planners discussed while rewriting the Unified Facility Criteria for Installation ➤

IMCOM, U.S. Army Garrison-Hawaii, and mission personnel participate in a framework planning exercise at United States Army Garrison Hawaii's Vision Workshop.

Acronyms and Abbreviations	
UFC	Unified Facilities Criteria
AT/FP	Anti-Terrorism/Force Protection
IMCOM	Installation Management Command
USACE	United States Army Corps of Engineers
ACSIM	Assistant Chief of Staff for Installation Management

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Master Planning. Additionally the same questions were addressed in the update of Army Regulation 210-20, Real Property Master Planning for Installations. In the January/February 2011 issue of the Public Works Digest, Kathryn J. Haught, master planner, Operations Directorate, OACSIM, stated that "the update accentuates process rather than end products." This mode of practice engages the client - and a wider spectrum of users - to generate knowledge to inform the planning/design process in a transparent, collaborative, consensus-building process.

Participatory planning and the new Unified Facilities Criteria (UFC)

Chapter three of the new UFC, Master Planning Process and Products, clearly states that "the importance of stakeholder involvement cannot be overemphasized – it is essential for planners to get out of their office, walk the site in each area development plan district, and talk to users and stakeholders." It also designates a section specifically for Stakeholder Involvement, stating who should be included and in what stages of the process they should be included.

The UFC emphasizes that planners have an obligation to reach out to all stakeholders throughout the process. Stakeholders should include DPW staff involved in any way with planning on an installation, including staff from Morale Welfare and Recreation, environmental, safety, training, emergency services (fire and police), AT/FP, privatized housing and lodging partners (accompanied and unaccompanied), installation leadership, tenants, units, private utility partners, retirees, reservists, spouses, and civilian and military staff who work, shop, recreate and train on the installation. Additional stakeholders include members of the Real Property Planning Board not included in the above categories and higher-level headquarters and echelons with oversight of the installation, internal DOD stakeholders and external stakeholders are also important sources of information and input. These can include local municipalities, state governments, transportation agencies, other federal agencies, and federally recognized tribes.

The Professionals Role

The professional planner brings knowledge and experience to the planning and design process, but ultimately the professional wears two hats. One is as facilitator, guiding the overall process while remaining observant and vigilant over the collaboration and consensus building exercises; identifying, translating and evaluating the ideas generated through stakeholder dialogue. It is this role that allows the professional to invoke a sense of openness among the participants. The other is as documenter, collecting and interpreting knowledge. During planning workshops, a massive amount of information is produced that needs to be quickly and effectively sorted into broad groupings. A good documentation process can make the second step of process and design easier. Additionally, the professional must make user involvement meaningful and real, while remaining mindful of any obstacles that may block the equitable participation of all users. With this in mind, it is the responsibility of the professional to maintain effective communication in a collaborative environment, and to foster a transparent, consensus-building approach that allows for the participation of a broad group of stakeholders.

What Stakeholders Provides

By involving a broad stakeholder group there is an increased understanding of the issues by the participants and professionals. Stronger plans are developed and an increase in consensus can be achieved amongst the working group. Planning and implementing collaborative processes increases the ability to gain efficiencies in functional uses and help meet current and future mission needs, optimize tenant and unit location and uses, and create high quality processes and products and equity amongst user groups.

Acclaimed architect, professor and author of A Pattern Language, Christopher Alexander noted two reasons for user participation: "First, participation is inherently good; it brings people together... in their world...involves them in their world...creates feeling between people and the world around them, because it is a world which they have helped to make. Second, the users know more about their needs than anyone else...so the process of participation tends to create places which are better adapted to human functions than those created by a centrally administered planning process."

Better experiential knowledge and ownership of outcomes are additional benefits of a participatory planning process. Though possibly the most valued outcome is the relationships stakeholders leave the workshops with. Not just relationships with the DPW, but with IMCOM, USACE, other stakeholders. These long-term relationships and shared planning and design experience benefit the Service members, civilians, and families who currently work, live and recreate at our installations worldwide. Participation in the planning process benefits current users as well as future generations stationed at the installation. But, in order to receive these benefits it is imperative to step into the planning process and actively participate; because observation is not participation.

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Fort Bragg CESS Achieves LEED Platinum Certification

by Jonelle Kimbrough

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). The USGBC awarded the prestigious status on March 6, 2012. Recently, the Federal Energy Management Program (FEMP) chose the Linden Oaks CESS as one of the top projects for the year.

Why are environmentally sound, energy efficient facilities important? The Department of Defense (DoD) occupies over 300,000 structures worth $600 billion and spends close to $4 billion every year on energy consumption. In fiscal year 2012, the energy cost for Fort Bragg was $46 million, and future costs may rise as troops return from deployments and as real property inventory increases.

Efficient facilities can be accomplished with an integrated building design concept. Unlike traditional design which focuses on the performance of individual building components, integrated design focuses holistically on an entire structure. Integrated building design can potentially achieve a 25 percent decrease in operational expenditures. Building occupants can experience improved comfort, productivity and health. Reduced energy and water use conserve our natural resources, and pollution can be prevented. All of these benefits contribute to mission capability.

The Linden Oaks CESS demonstrates the efficiency of integrated building design for Army facilities. Completed in March 2011, the project is a combined emergency services facility in a residential community in the Northern Training Area, ten miles north of the main cantonment of Fort Bragg. At 8,295 square feet, the CESS supports a population of 5,500 Soldiers and Family members with fire, emergency services and military police operations.

The structure was conducive to the integrated building design concept for three reasons. "The facility allows us to look at sustainable concepts across several occupancy and use types in a single project," said Rob Harris, chief of engineering with the Fort Bragg Directorate of Public Works. The structure includes dormitory rooms, office space, a kitchen, a fitness center, a training room and a vehicle maintenance bay. Second, the facility serves as a viable comparison to a 2004 fire station designed to USACE standards in the cantonment. Furthermore, the CESS and the residential community of Linden Oaks were constructed in a previously undeveloped area, so the project was subject to fewer design restrictions. "We started on a fresh canvas," Harris explained. "We had fewer concerns and constraints in terms of architectural compatibility, historic or cultural view-sheds and such."

Acronyms and Abbreviations	
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
BTUs	British thermal units
CESS	Community Emergency Services Station
DOD	The Department of Defense
ESTCP	The Environmental Security Technology Certification Program
FEMP	Federal Energy Management Program
FSC	Forest Stewardship Council
LEED	Leadership in Energy and Environmental Design
MILCON	Army Military Construction
USGBC	United States Green Building Council
VOCs	Volatile organic compounds

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To achieve LEED Platinum certification, the Linden Oaks CESS collected 56 LEED points in the areas of sustainable siting, water efficiency, energy and atmosphere, materials ➤

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and resources, indoor environmental quality, and innovation and design. The building project was funded in fiscal year 2008, prior to the 2012 National Defense Authorization Act. The Act included an amendment which prohibits DoD funding for the pursuit of LEED Gold and Platinum certification for facilities unless such achievement poses "no additional costs."

Sustainable siting is one feature of the Linden Oaks CESS facility. Builders limited construction site disturbance and maintained over 70 percent of the site as vegetated open space. The landscaping features drought tolerant, native plants that require minimal maintenance and negate the need for a permanent irrigation system. Vegetated retention cells that mimic the pre-development hydrology of the site effectively manage storm water. Hardscapes contain light-colored concrete that reflects radiation from its surface to reduce the heat island effect. The structure is oriented north to south to optimize natural lighting yet reduce glare and heat gain.

The Linden Oaks CESS is water efficient as well. Low flow faucets and rain water harvesting technologies for toilet flushing and vehicle washing help reduce water consumption in the facility by 83 percent based on American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) standards.

The Linden Oaks CESS is designed to reduce energy costs by 34 percent when compared to ASHRAE standards. A cool roof, a ground source heat pump and solar technologies such as solar hot water optimize the facility's energy performance. Passive solar design strategies such as light shelves and clerestory windows with high efficiency glaze provide day lighting to 94 percent of all regularly occupied spaces in the building. The structure also features a variety of lighting controls such as manual on switching with dimmers and occupancy sensors.

Sustainable materials are major components of the facility, too. Twenty-nine percent of the construction materials were manufactured with recycled content, and 25 percent were extracted, harvested and manufactured within 500 miles of the site. Eighty-two percent of wood materials were Forest Stewardship Council (FSC) certified. During the construction of the project, the contractor diverted 90 percent or over 55 tons of construction waste for recycling.

The Linden Oaks CESS achieves indoor environmental quality standards in numerous ways. To increase fresh air in the facility, the building is designed with a ventilation system that exceeds ASHRAE standards by over 30 percent. Adhesives, sealants, paints, composite woods and carpets all have no or low concentrations of volatile organic compounds (VOCs) such as formaldehyde. Permanently installed, recessed mats prevent debris from entering the facility.

In addition, the project received innovation and design credits. An instructional program educates occupants and visitors about the sustainable features of the structure. For housekeeping and vehicle washing, personnel use environmentally preferred and cost effective cleansers that comply with Green Seal or Environmental Choice standards. The use of green housekeeping products is now standard practice at post fire stations. Occupants have also implemented a robust recycling program. Other fire stations on the installation shared these initiatives, and as a result, all six fire stations on Fort Bragg have been certified as green agencies in the Green Boot Program.

The Environmental Security Technology Certification Program (ESTCP) has monitored the performance of the building and compared the Linden Oaks CESS to the 2004 Longstreet Fire Station on post. The Linden Oaks CESS is indeed more energy and water efficient than its counterpart. For example, data gathered in the first months of observation indicates that the facility has achieved an energy savings of 293 million British thermal units (BTUs) – 20 percent more than expected. Furthermore, the Linden Oaks CESS has required less maintenance than the comparable structure.

Perhaps, the best testimonial to the structure's performance comes from the people who work in the facility. "Many of the environmental features of the building make it an enjoyable and functional place to work and live," said Stephen Fox, captain of Fire Station 6 at the Linden Oaks CESS. "Overall, we are happy with the facility, and I would recommended incorporating some or all of these systems in future facilities on Fort Bragg," he remarked.

According to Harris, the Linden Oaks CESS facility and similar structures can possibly pave the way for the integrated building design concept in all DoD facilities– regardless of LEED certification status. "Whether the Army is 'counting LEED points' or not, the high performance materials, systems and construction techniques used in this project have applicability throughout the Service," he said.

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Fort Hood 'LEEDs' the way with green chapel

by Christine Luciano

The 40,000-square-foot Spirit of Fort Hood Warrior and Family Chapel Campus at Fort Hood, Texas, boasts a sanctuary that seats 600 people, but also low-flow toilets, sinks and waterless urinals. When the doors are open for worship, all are welcome, but those who come by low-emitting and fuel efficient, eco-friendly car or bicycle get to park up close.

The Army is building green and sustainable facilities, and the chapel complex and religious education facility is the Army's first Leadership in Energy and Environmental Design Gold certified chapel structure.

"LEED and sustainability is good for the people that are going to work and use this facility and for Fort Hood as we go to the future to achieve our net-zero goals and do the right thing," Brian Dosa, director of Public Works, said.

LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. The LEED rating system awards points based on dozens of variables for sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. The point totals add up to ratings as LEED Certified, Silver, Gold or Platinum.

The chapel had actually set a goal of achieving LEED Silver. As the construction contractor, Solis, and the U.S. Army Corps of Engineers were tracking everything, they realized the facility could reach Gold by earning one extra point without any additional cost.

The chapel earned points for everything from efficient lighting, electrical, and heating, ventilation and air conditioning systems that will help cut its energy costs by 31 percent to low-flow toilets, low-flow sinks and waterless urinals that reduce potable water use by 53 percent. More than 85 percent of the construction waste was diverted from the landfill. And 27 percent of the building materials used in the chapel's construction was from recycled materials.

"This is a unique place," said Col. Bill Phillips, garrison chaplain. "We have a brand new big chapel, a religious education facility, a Family life training center and a youth oriented gymnasium. There is nobody in the Army that has this. The synergy that comes from having all of this in one place is amazing."

Tammy Matthews, a Fort Hood spouse who has been attending service since the chapel opened last fall, agreed.

"The first time we came here, it was welcoming and warm. I love the services, programs, and that the youth gymnasium will offer activities for my fourth- and sixth-graders," Matthews said. "It's also great that the building is green, and we should have more buildings like the chapel."

Fort Hood is building more green facilities to be Silver certified. Some of the projects include the child development centers and the 69th Air Defense Artillery campus. The new hospital and stadium are being constructed to achieve Gold status.

Lessons learned from Fort Hood's first Gold certified facility will help future green building on the installation.

"Fort Hood always likes to push further to build more sustainable facilities that will be better for our community and environment," said Tim McClaran, civil engineer, DPW Real Property Planning Division.

The practices developed for the chapel complex can be used on other construction projects to divert waste from the landfill by repurposing or recycling, using energy-efficient technologies and low water use products to support Hood's net-zero waste, energy and water goals, McClaran said.

As part of the second phase, the Chaplain Family Life Training Center will be constructed. A multi-purpose center, which completes the second phase, will include a gymnasium and an arts and craft center. Both centers will be Silver certified.

When completed in the spring, the more than 70,000-square-foot chapel complex will be the largest one of its kind in the Army.

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Acronyms and Abbreviations	
DPW	Directorate of Public Works
LEED	Leadership in Energy and Environmental Design

Iowa Army Ammunition Plant embraces renewable energy resources

by Linda Loebach

The Army Energy Security's mission is to "make energy a consideration for all Army activities to reduce demand, increase efficiency, seek alternative sources, and create a culture of energy accountability while sustaining or enhancing operational capabilities." To this end, Iowa Army Ammunition Plant is undertaking a two-phase installation of geothermal and photovoltaic systems at its administration building.

"Through this project, IAAAP is helping the Army gain ground in the Net Zero Energy campaign," said Dennis R. Lacy II, energy execution project manager with the U.S. Army Corps of Engineers, who provided specialized support on the project. A Net Zero Energy Installation is an installation that produces as much energy on site as it uses, over the course of a year. One of the new systems at IAAAP uses geothermal energy resources. Geothermal energy refers to the heat from the Earth. It is clean and sustainable and exists, literally, right under our feet. The other renewable resource harnessed at IAAAP is the sun's energy. A photovoltaic system was installed and uses solar panels to convert sunlight into electricity. Both of these systems will allow IAAAP to heat and cool its administration building via renewable energy sources.

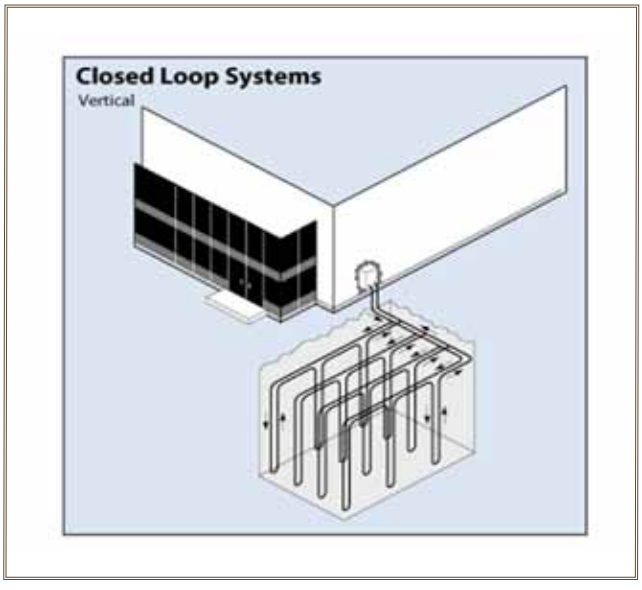
Acronyms and Abbreviations	
IAAAP	Iowa Army Ammunition Plant
JMC	Joint Munitions Command

"The completion of this project starts IAAAP on its first step of energy conservation using green technologies," said Leon Baxter, Chief of Operations Support Division at IAAAP. IAAAP received funding for this project through the American Recovery Act's stimulus program. Congress awarded $1.46 million to convert the administration building's cooling system to a more energy-efficient system.

The first phase of the project is complete. Already installed, the geothermal system incorporates a vertical closed, ground loop system. Vertical loops are used where the soil is too shallow for trenching, and minimize the disturbance to existing landscaping. In a vertical system, holes, approximately four inches in diameter, are drilled about 20 feet apart and 100 to 400 feet deep. Two pipes are inserted into these holes and are connected at the bottom with a U-bend to form a loop. The vertical loops are connected ➤

Contractor–Project Identification Sign: Sign at IAAAP announces construction of new geothermal and photovoltaic systems at its administration building.

Photovoltaic array system at IAAAP is already capturing solar energy to create electricity for the building, and future projects may expand its use.



This diagram demonstrates how a closed loop geothermal system, like the one installed at IAAAP, works.

Fort Stewart and Hunter Army Airfield's integration and prioritization tool is recipe for success

by Alana Olson and Amber Franks

Fort Stewart and Hunter Army Airfield, Ga., has developed a strategic planning process that integrates and prioritizes garrison functions. FS/HAAF's planning process supports national security objectives while sustaining the training platform and environmental resources critical to ongoing mission readiness, and it incorporates sustainability as a means to integrate mission requirements with environmental, economic and community goals.

To efficiently prioritize mission support efforts, the installation relies on its strong foundation of strategic planning based on total quality management, which has been in place since 1995. Once this foundation was established, FS/HAAF integrated its International Organization for Standardization 14001 conformant sustainability management system into the strategic planning process. In March 2010, the installation capitalized on that proven process and began aligning it with the *Installation Management Campaign Plan* with an underlying theme of sustainability. This integration puts the environmental impact analysis of ongoing Army actions on par with other economic and technical considerations in the planning process.

Welcome Sign at Fort Stewart's Main Access Gate highlighting the Installation as of five-time recipient of the ACOE award.

Effective integration requires execution of the strategic plan across the command. FS/HAAF realigned its five existing quality management boards with the IMCP's six Lines of Effort: Soldier, Family and Civilian Readiness; Soldier, Family and Civilian Well-Being; Leader and Workforce Development; Installation Readiness; Safety; and Energy Efficiency and Security.

Acronyms and Abbreviations	
FS/HAAF	Fort Stewart and Hunter Army Airfield
IMCOM	Installation Management Command
IMCP	Installation Management Campaign Plan
IPL	Integrated Priority List
LOE	Line of Effort
NEPA	National Environmental Policy Act
PAT	Process Action Team
QMB	Quality Management Board

By integrating the IMCP into the QMB process, FS/HAAF identifies and prioritizes requirements to meet the goals and targets established by Installation Management Command, as well as local measures to support installation-specific requirements. Each QMB develops measures to track progress toward meeting its goals and reports the status of those measures in the Strategic Management System, IMCOM's planning database. Each measure has an action plan that ➤

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with horizontal pipe, or manifold, placed in trenches and connected to the heat pump in the building. IAAAP's vertical system required 117 holes, or wells, which initially were intended to be drilled to 185 feet deep, but ended up at 182 feet deep due to a hard layer of earth at that depth. Currently, the geothermal system is being used to cool the admin building. The photovoltaic system is now creating electricity for the building and future projects may expand further use of the technology.

"The second phase of the project will be complete within the next year and a half," said Linda Wobbe, environmental protection specialist with IAAAP. "The current steam-heat system will be removed to make way for geothermal heating of the building." The new system will pay for itself and, over its lifespan, actually will save IAAAP in energy expenses.

IAAAP used regional and local companies to design and install these new, energy-efficient systems and considered the project a win-win for the installation, the local economy and the Army's energy accountability mission. Part of Joint Munitions Command, Iowa Army Ammunition Plant produces and delivers high-quality, large caliber munitions to U.S. Joint Forces.

From its headquarters at the Rock Island Arsenal, JMC operates a nationwide network of conventional ammunition manufacturing plants and storage depots, and provides on-site ammunition experts to U.S. combat units wherever they are stationed or deployed. JMC's customers are U.S. forces of all military services, other U.S. government agencies and allied nations.

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describes short-, mid- and long-term actions to be taken to meet the established target.

During each quarter, all six QMBs meet to discuss the status of their measures. Those measures that are not meeting the mark are flagged as issues that require command support and guidance. Throughout, cross-functional sustainability management system process action teams are supporting those efforts.

The Directorate of Public Works Environmental Division is involved in every PAT and QMB. The strategic planning process aids in prioritizing the environmental clearance workload and enables coordination of preliminary environmental assessments to identify potential roadblocks to execution.

Communication, coordination, stakeholder engagement and accountability are important parts of this mature planning process. In effect, the LOE-based QMBs serve as road maps for stakeholders to understand their roles in supporting targets and prioritizing their efforts.

In addition to the working group meetings, each QMB briefs the garrison commander and directors quarterly. This high-level visibility of the challenges ensures garrison support functions are aware of how they can contribute to overcoming those challenges and realizing success as a team.

Aware of challenges throughout the year, each QMB develops a prioritized list of projects and process proposals intended to meet defined objectives. The QMB-specific lists are rolled into an integrated priority list, which is reviewed by the Installation Planning Board. This board, chaired by the installation commander, reviews the measures, and evaluates and prioritizes projects for execution, pending funding. The IPL is published to the workforce to ensure everyone is tracking and supporting the installation's priorities.

The Environmental Division's role is to make sure projects have been fully coordinated with media managers, comply with applicable regulations, and are prepared in accordance with the appropriate level of National Environmental Policy Act documentation.

During the QMB process, the Environmental Division tracks the IPL actions to be executed. Working with project proponents, the division's NEPA process structure coordinates with media managers and tracks all types of projects and plans requested by installation customers, with QMB-developed actions as the established priority. This methodology fully integrates the Environmental Division into the installation's decision-making process for each proposed action.

Proactive participation engages proponents and designers early in the process so they are fully aware of the need to protect and sustain the environment and incorporate required local, state and federal requirements into each project's design, construction, and implementation. Participation also helps to avert unrealistic expectations.

The process allows the Environmental Division program managers to better prepare for:

- U.S. Fish and Wildlife Service coordination,
- erosion sedimentation and pollution control plan submission,
- National Pollutant Discharge Elimination System permitting,
- U.S. Army Corps of Engineers wetlands regulatory permitting and associated mitigation,
- cultural resource coordination,
- wet utility permitting, if necessary,
- state air quality notifications, if needed, and
- Forestry Branch notification, when removal of merchantable timber from project sites is necessary.

Ensuring Sustainability and Environmental Project Review/NEPA are a part of the strategic planning process equates to efficient and effective execution of command priorities.

The success of the division's coordination process has led to more defensible NEPA documentation that is also easier for the public to understand.

Long-term installation sustainability in support of the mission requires collaborative solutions that engage installation staff, regulators, interest groups and stakeholders. FS/HAAF defines its stakeholders as its key customers — Soldiers, Family members, the workforce and retirees — as well as suppliers, partners and the surrounding communities. The stakeholders' role is evidenced by their QMB memberships as well as their participation in the annual strategic planning workshop, at which a complete review of the objectives, measures and action plans is conducted to ensure alignment with the IMCP.

FS/HAAF's strategic planning process is a tool for integration and prioritization of garrison functions. The process eliminates unrealistic expectations on the part of project proponents and the inefficient use of time associated with siting, preparing NEPA documentation ➤

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

(continued from previous page)

metal units, matching the style and profile of the original front façade units. These decisions and the restoration of other key elements were made prior to the start of construction.

By the summer of 2009, the removal of interior finishes and asbestos abatement had peeled off false ceilings, partition walls, and floor tiles of the interior. The partial demolition revealed two surprising findings: stamped tin ceilings, which were still intact above false ceilings and additional panels of a 1950's Soldier Art mural depicting 18th and 19th Century Army battles. The JBM-HH team worked to preserve the tin ceilings in the first floor hallways and protect a section of the Soldier Art mural for display in one of the new conference rooms. These were unexpected discoveries revealed during the interior renovation of the building but because there was an agreement document in place with specific terms for future coordination with the SHPO, Fort Myer was able to expedite the process. Following the regulations, JBM-HH consulted with the SHPO to ensure that, even with these inadvertent discoveries, they complied with regulation and considered the effects of the renovation project. This constant communication was much praised by SHPO staff both during the building renovation project and since its completion.

The design-build team came up with several floor plans to retrofit the standard design of the building into a company operations facility. The new use consists of the housing of two companies to include office space, arms storage, and other purposed rooms. The main foyer and large ceilings were integral to ensuring large, open spaces would be available with ample interior lighting. Many original historic features are integrated with the new configuration, such as the tin ceilings, Soldier Art mural, wood floors and exposed cast iron columns on the first floor.

Since Building 249 renovation was completed, soldiers using the building have expressed an interest in and have become knowledgeable about the history and tradition of the building. Soon after it was occupied, a group of DPW Environmental Office staff toured the building to see final details associated with the renovation. The soldiers they met in the primary hallway spontaneously started giving them a tour pointing to the building's historic details such as the tin ceilings, original cast columns, wooden floors and especially the Soldier Art in the conference room. Though unplanned, this event demonstrated that the building's historic character had created a portrait of the past for those soldiers occupying it and a sense of their position within a larger context of military history and tradition.

Completed Renovations of Quarters 249, built in 1909, included restoration of original windows on primary façade, as pictured, and reproduction windows on all other façades. Photo by Kristie Lalire, 10Dec12.

The success of this renovation project highlights accomplishments in the significant challenge faced in managing the Army's historic and cultural resources while meeting new and changing needs for resources on Garrisons. The building's renovation to include interior elements saved the Department of the Army considerable funds associated with a mission essential renovation project. The work required close and constant consultation with the SHPO and resulted in a "no adverse effect" determination for the work. The renovation had additional challenges associated with inadvertent discoveries and changing needs that resulted from those finds – all completed successfully and with preservation of those materials in mind. The project met the sustainable goals set forth by the Department of the Army and the USGBC LEED program in a manner sympathetic to the historic nature and importance of the building including replacement of selected windows, renovations and repairs of others, and improved HVAC systems and achieved LEED Silver. JBM-HH exemplifies the ability to successfully meet Department of Army requirements, including Force Protection and Sustainability, while also considering the historic significance of a historic building, which contributes to the National Historic Landmark District at Joint Base Myer-Henderson Hall.

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New Collaboration Tool Available

By William S. Farrow

When an earthquake struck Japan Dec. 7, 2012, Huntsville Center's Director of Engineering wanted to know if the Center had employees located in Japan and specifically in the area affected by the earthquake. Boyce Ross' questions were answered using a Common Operating Picture GIS tool created by the Center's GIS team made up of Jay Plucker, Dustin Ray, George Wade and Beverly Richey.

"I combined U.S. Geological Service data with the CFEMS travel data and pulled up the map of Japan," said Jay Plucker, a member of the GIS team. "Using travel data in the CEFMS database, I was able to tell him the location of the people on temporary duty assignment and assure him they weren't close to the quake epicenter. The application even provides travel order numbers and costs associated with the travel."

With more than 6,000 projects in progress at any given time, Huntsville Center leaders recognized a need for a tool to effectively and efficiently collaborate information enabling program managers, engineers and contractors. The GIS team has built applications for the tool, known by the team as Common Operation Picture GIS, for the Facility Reduction Program, Energy Division and Ordnance and Explosives programs.

The COP GIS platform delivers geospatial capabilities by integrating applications, databases and location-based information to achieve situational awareness across programs, projects and applications. The team used ESRI software technologies to build the platform which is similar to any geographical information program available online. The GIS technicians can build customer specific application by incorporating specific data, that provide decision makers with "ground-level" tools to note problems and develop solutions.

Mr. Plucker, a GIS technician, said the team's vision is to have all Center projects loaded into the enterprise GIS database. Adding the data will build a more efficient system with the capacity to gather information not always shared easily. For instance, if the engineers in Utility Monitoring and Control Systems are evaluating which facilities on a military installation will benefit from metering, they can use the platform to identify which facilities the Facility Reduction Program is scheduling for removal and thereby reduce time and effort spent analyzing and assessing those facilities' utility use.

Jay Plucker inputs data into the Common Operation Picture GIS platform. The COP GIS platform delivers geospatial capabilities by integrating applications, databases and location-based information to achieve situational awareness across programs, projects and applications through a common operation picture. The team used ESRI software technologies to build the platform which is similar to any geographical information program available online.

According to Mr. Plucker, data from other Department of Defense and government agencies, such as the Environmental Protection Agency and the U.S. Department of Agriculture, allows the platform's architecture to grow and for them to build very customer-specific applications. "As more apps are built, the time and costs associated with building them reduces since each application eases the input of data because the other data is already available."

Acronyms and Abbreviations	
CEFMS	Corps of Engineers Financial Management System
DoD	Department of Defense
ESRI	Environmental Systems Research Institute, Inc.
GIS	Geospatial Information System
USACE	U.S. Army Corps of Engineers

One of the most important concepts in creating applications is to build them on the KISS, or Keep It Simple Stupid, design principle. "We build really simple, specific apps for customers and try to never reuse code or duplicate data," Mr. Plucker said. "Everyone gets caught up in the apps, but it's more about the data we have available to us. With the right amount of data we can build the apps for Huntsville Center, USACE, the Army or other DoD agencies."

The work the team does for the Huntsville Center is in accordance with USACE geospatial standards and strategy and Service Oriented Architecture principles based on sharing their work. "A lot of useful data sets are out there and provided by other entities including Army Mapper and CorpsMap. So we strive to never recreate data or software that has already been developed. If available, we consume services provided by other DoD, USACE, or government entities and if we have data that would be useful to other agencies we make that data available as a secure service." Mr. Plucker said they are working with other USACE agencies to secure applications and services. "We're adding more customized tools to our tool library and will make that library available to any valid USACE entity requesting the tools."

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Innovative system maps aquatic habitat

by Heidi R. Howard and Paul Ayers

The Corps of Engineers has issued a new Public Works Technical Bulletin that describes a unique approach to identify and map aquatic habitat along rivers and streams using underwater video mapping technologies. By mounting equipment on a canoe or kayak to obtain georeferenced video images, land managers can now create a continuous river habitat map and determine optimal habitat for aquatic species, establish stream health, and detect changes in stream substrate over time. Also, the method outlined in the PWTB can be used along extended river sections, allowing land managers to identify areas requiring more intensive surveys.

The PWTB has a lessons-learned format and describes the methods used and results of a survey conducted for the Driftwood River at Camp Atterbury, Indiana. The survey's purpose was to establish baseline data for population levels of the Rayed Bean mussel (Villosa fabalis) related to habitat quality. This species has been proposed for State listing as a threatened or endangered species. The PWTB describes the devices used for the underwater mapping system and outlines the results, including aquatic attributes and species-specific optimal habitat maps. This PWTB provides an approach and guidelines for determining aquatic habitat using georeferenced images that can be used to conduct survey and evaluation of optimal habitat for species of interest within a stream system. PWTB 200-1-114, "GPS-Based Underwater Video Mapping for Aquatic Threatened and Endangered Species Habitat," can be found on the Internet at *http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_114.pdf*.

Acronyms and Abbreviations	
PWTB	Public Works Technical Bulletin

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Seed bombs for successful revegetation in remote areas

by Heidi R. Howard and Timothy J. Cary

A Corps of Engineers Public Works Technical Bulletin (PWTB) presents study results for a novel method of reseeding remote training areas without tillage. PWTB 200-1-103, "Investigation of Seed Bombs for Military Lands," is available for download at *http://www.wbdg.org/ccb/ARMYCOE/PWTB/pwtb_200_1_103.pdf*

Rapid revegetation is critical for military land management. Many times lands needing revegetation are located within areas that are either difficult to access or off-limits due to unexploded ordinance. Since military lands often have diverse and, in certain cases, extreme terrain, it can make traditional agricultural methods for seeding nearly impossible. In addition, many times seeding needs to take place under suboptimal conditions.

The U.S. Army Engineer Research and Development Center investigated an inexpensive, noninvasive method to establish vegetation using "seed bombs". The concept of seed bombs grew from research in the 1970s to develop a means of introducing seeds within tightly packed projectiles that include a growing medium within a casing. The goal is to deliver seed material remotely in a way that protects the seeds from predation and the elements to greatly increase germination and survival rates.

ERDC's Construction Engineering Research Laboratory and Cold Regions Research and Engineering Laboratory conducted a preliminary study in growth chambers to focus on optimization of materials and ratios for constructing seed bombs. Prefabricated seed bombs are currently unavailable commercially. The team produced variations of multiple plant species in combination with different ratios of compost, sand, and clay based on information from the literature. Seed bombs were placed into a growth chamber along with controls that had been established in petri dishes. Results showed that the most viable seed bombs contained either clay or compost, and no sand. Successful implementation of the methods may reduce expenses and provide an alternative to revegetation under suboptimal field conditions.

Acronyms and Abbreviations	
ERDC	Engineer Research and Development Center
PWTB	Public Works Technical Bulletin

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The Benefits of Economics in Master Planning

by Wesley Bushnell and Jimmie Jackson

There is nothing more fun or rewarding or informative in the life of an economist than the completion of a well written economic analysis. Those who focus on the future should consider the merits of economic analysis. Master Planning is the art of bringing the future into the present so that we may realize a vision of the future. The passage of time has an interesting effect on planning. Time can cause assumed positive impacts to evaporate and dismissed negative impacts to explode at the most inopportune time. Most importantly, Master Planning is the beginning of a long process of managing change in which an economic analysis is vital to ensuring an unbiased, well thought-out end-state.

At its core, an economic analysis is an evaluation system, a method by which various alternatives of achieving a given objective are evaluated within the context of a common metric in an effort to identify the course of action that provides the most beneficial return. By this definition, an economic analysis is no different than the evaluation systems of any discipline, it differs only in the metric by which alternatives are compared and contrasted. When safety engineers perform a "Life, Health and Safety Analysis" or evaluation a common metric is the number of accidents avoided. A biological assessment would use an environmental factor such as habitat units as a common metric. An economic analysis is an evaluation system based on scarcity and uses dollars as the metric. The devolution of all things into a matter of dollars seems to cause some significant consternation. It is a truth that money is not the most important consideration, even an economist must accept that, but it is also a truism that money is the unit of measure into which all things can be stated and therefore compared.

An economic analysis ensures practicality and effectiveness. We've all been there, in a meeting or on a teleconference call, when someone with vision begins to describe in detail the exact dimensions and amenities of a never seen but long sought after product hidden in a forest of wayward thoughts. More common is the proposal of an idea which is minimally different from the accepted course of action but contains the promise of significant savings. To achieve the brilliant ideas we are forced to analyze alternative courses of action. It is a level of effort we might wish to avoid in the name of saving time and energy in an already compressed schedule. This is the cost of the economic analysis, time spent in analysis. In the great sum of all things this cost is probably pretty minimal when compared to the total cost of the project. One of the benefits of engaging in this step and performing our due diligence may be the discovery, however improbable, of something truly beneficial to the Soldier and taxpayer. It is hoped that for any significant issue encountered, prior to pursuing any one course of action, the decision maker will have engaged in a systematic analysis of multiple courses of action in an effort to identify the most effective alternative. At its core, a decision is an investment; an investment in the fact which what you choose to do is more profitable than that which you have chosen not to do.

An economic analysis provides validation. In a word: 'Beware!' 'Beware your assumptions.' Although 'assume' is not a dirty word in the realm of the economist, it does not mean that economists or anyone else should make their assumptions carelessly. To assume that energy features are cost effective in all regions and all locations is careless. To assume the inclusion of Leadership in Energy and Environmental Design features in building design is cost effective is careless. Basically, to assume cost effectiveness in any feature that is not required by building code or mandated by guidance is careless. There is a dual benefit of economic analysis in providing validation to an argument: you need not guess at the cost effectiveness of a feature and, if queried, you are able to prove the validity of your argument to others.

An economic analysis allows you to provide a level of proof to your ideas: that an idea is practical, that it is the best course of action and that your assumptions are valid. But finally, if you don't like any of the above justifications for engaging in an economic analysis, let me apply the lash as opposed to logic. In the end, you have no choice. AR 420-1 requires that some level of economic analysis be done when justifying most any endeavor including consideration of Soldier housing, purchase or lease of a relocatable building and many issues as small as the redistribution of excess furnishings requires an economic analysis. Guidance also requires that any military construction project over $2 million must include an economic analysis as part of the DD Form 1391. Within the programming process, an economic analysis along with a validated site plan must be provided prior to the commencement of a planning charrette. In other words, your Planning Investment Strategies must survive the test of cost effectiveness otherwise they are doomed to remain plans and not realities.

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Master planning technical handbook

by Dwayne Melton

The master planners role and endless list of responsibilities include more than merely creating appealing illustrations, graphics, and maps. Years ago, IMCOM developed the Master Planning Technical Manual (MPTM) to assist master planners in preparing the Real Property Master Plan. Since then, many changes have occurred in the Department of Defense, the Army, and therefore IMCOM. Master planning best practice philosophies, regulation updates, troop strength adjustments, and fiscal limitations have reshaped our master planning world.

The existing MPTM describes Army specific planning tools but does not address in detail how to properly use them in the planning process. On the 4th of December 2012, master planners from AMC, TRADOC, and FORSCOM installations along with OACSIM, HQAMC, and HQIMCOM participated in an on-site kickoff meeting to update the IMCOM Master Planning Technical Handbook (MPTH); formerly known as the MPTM.

The MPTH concept will provide a single source document providing guidance for the best master planning practices and outlining how the master planner can do their job not just producing the required products. The update will align the MPTH with current guidance, installation best practices, and describe plan enforcement. Additionally, the MPTH will address day-to-day activities that take up most of the master planners' time.

The MPTH collaborative effort will create a how-to-desktop guide for new and seasoned master planning professions. From concept development to fielding, installation input is key to creating a relevant master planning handbook. Once completed, the MPTH will be available online and hardcopies will be provided to those who attend the IMA Master Planning courses.

This HQIMCOM led and OACSIM supported initiative is one of five primary IMCOM Master Planning initiatives this year. In addition to updating the MPTH, development of the Installation Management Academy (IMA) Master Planning course, a central repository of master plans, a monthly master planning newsletter, and IMCOM standards for determining master plan compliance. These initiatives are being worked concurrently and collaboratively to provide consistent guidance.

Acronyms and Abbreviations	
AMC	Army Materiel Command
FORSCOM	Army Force Command
HQAMC	Headquarters Army Materiel Command
HQIMCOM	Headquarters Installation Management Command
IMA	Installation Management Academy
IMCOM	Installation Management Command
MPTM	Master Planning Technical Manual
OACSIM	Office of the Assistant Chief of Staff for Installation Management
TRADOC	Training and Doctrine Command

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STEM and CP-18 Developmental Assignments

by Donna Crawford

So what is STEM, why is it important and what does it have to do with developmental assignments? STEM is an acronym that stands for science, technology, engineering and mathematics. It is important because it represents various efforts at the local, national and federal level to increase the knowledge, awareness, education and development of current and future employees in the STEM disciplines.

Our CP-18 Functional Chief, LTG Thomas Bostick strongly supports STEM development of our youth and careerists to include developmental opportunities for our current employees.

In our March 2012 PWD article we touched on several efforts regarding STEM programs in high schools. What many may overlook is the need for ongoing development of our current employees and how important it is to continue development throughout the lifecycle of an individual's career.

Developmental assignments allow our Military and Civilian careerists to gain critical knowledge and hands on experience in areas not normally in their immediate work assignments. For CP-18 our focus areas are STEM related and used to help close known or expected competency gaps.

Many may associate developmental assignments with travel or relocation while more often than not the opportunity for these assignments exists locally. Supervisors and community of practices leaders should work to identify opportunities for all employees to engage in developmental opportunities.

CP-18 uses four primary types of developmental assignments which can be competitively offered to individuals who meet minimum qualifications for the duties and position(s) being considered:

1. Job Swap positions or sometimes referred to as no-cost or cross training developmental positions. In this particular type of assignment two individuals located in the same geographic areas work with their Command chain to identify opportunities for employees to switch positions at no cost to the organization.
   a. Example 1: Civil Engineer located at Fort Sam Houston swaps with Civil Engineer at Randolph Air Force Base in San Antonio, TX.
   b. Example 2: Master Planner at AMC HQ swaps with Master Planner at Huntsville.
   c. Example 3: Architect at Redstone Arsenal swaps with Architect at Huntsville Center.
2) Target positions which may or may not involve a cost. Typically this is an assignment in a targeted technical area where work is being done that is valuable to the individual and the organization. These assignments are sometimes seasonal, project specific and/or ad hoc opportunities and may be limited duration or limited scope.
   a. Example 1: two or three slots for individuals in lock and dam to participate in a structural review and repair that happens only occasionally such as triennially.
   b. Example 2: special project to assist in developing policy for sustainability and energy training.
   c. Example 3: review of tidal basin erosion during seasonal draining or wetland remediation superfund projects.
3) Traditional positions which may or may not involve a cost. Typically this is a competitive assignment in a technical area where work is being done that is valuable to the individual and the organization.
   a. Example 1: 90 day assignment with IMCOM or other Command planning office.
   b. Example 2: Job swap with travel cost between USACE/IMCOM and AMC for 90 days. (could be longer based on total cost not to exceed 120 days)
   c. Example 3: 60 – 90 day assignment within Army to obtain critical competencies that works to close identified competency gaps.
4. Strategic positions are those in which specific positions are filled on a time-limited basis competitively. The selected candidate position then creates a new developmental opportunity.
   a. Example 1: HQ USACE employee in environment selected for position with Army environmental office in DC.
   b. Example 2: position of HQ USACE employee then competed for same time frame for individuals in the local area as well as individuals who may require funding for travel and per diem such as an installation or Division candidate.
   c. Example 3: the second position duties could be used for a third opportunity such as a District employee going to Division or an installation employee going to Regional office. This may or may not require travel and per diem support.

Acronyms and Abbreviations	
ACTEDS	Army Civilian Training, Education and Development System
AMC	Army Materiel Command
CP	Career Program
CP-18	Career Program 18, Engineers and Scientists – Resources and Construction
CPD	Competitive Professional Development
IMCOM	Installation Management Command
NDAA	National Defense Authorization Act
STEM	Science Technology Engineering and Mathematics
USACE	U.S. Army Corps of Engineers

In FY13 the CP-18 Proponency Office is working to increase utilization of their Army Civilian Training, Education and Development System (ACTEDS) funding for developmental opportunities. Competitive announcements will be released in February and will be posted on the CP-18 website.

We have worked with the DPW Digest Editor to establish a section on STEM development and training. In future editions we will be providing tips, ➤

The Department of Defense Master Planning Institute

by Andrea Wohlfeld Kuhn

Are you a planner, engineer, architect, project manager, or employed in a related position and need to gain a better understanding of how the master planning process works and how planning can be of benefit to your projects? With the recent publication of the DoD Unified Facilities Criteria (UFC) for Installation Master Planning on 15 May 2012, it is more important than ever to employ an integrated approach that includes master planning.

New courses and Planning Practicums are offered through the U.S. Army Corps of Engineers Proponent Sponsored Engineer Corps Training (PROSPECT) program, also known as the Department of Defense Master Planning Institute (DOD MPI). Course proficiency levels range from introductory to advanced, and include universal planning practices as well as Army-specific information. Each of the courses references the UFC and provides key information on UFC implementation.

The key goals and objectives of the DOD MPI are to develop a world-class workforce by providing the most up-to-date, essential tools and materials to achieve sustainable, energy-efficient planning, engineering and architecture solutions. Classes and workshops are open to all interested parties, including private citizens; contractors; and all federal, state, city and county employees. The original Army-focused materials were expanded to include information relevant to all DOD service branches and other Federal agencies including Civil Works. All courses are fully accredited by the American Institute of Certified Planners (AICP), American Institute of Architects (AIA), American Society of Landscape Architects (ASLA) and National Society of Professional Engineers (PE) and provide continuing education units.

One of the unique features of these classes is that the instructors employ a variety of dynamic media that goes beyond lectures, and includes hands-on training, small group exercises, field trips, site visits, and other learning opportunities. While basic theory and history is a necessary part of the curriculum, students have the opportunity to develop ideas or plans that can actually be implemented at their locations. By identifying and engaging all relevant stakeholders in Planinng Practicums/Area Development Plan workshops, full participation is realized and buy-ins to solutions and subsequent implementation is enhanced. Technologies include computer programs used for site design and calculations of space, materials, and personnel. Sketches, data from on-site observations, interviews with stakeholders, guest lecturers, multi-media presentations, field trips, and literature reviews are used to provide a complete learning experience. The instructional staff is composed of Federal and private-sector professionals who are accredited subject matter experts.

Course Descriptions: Brief descriptions of Fiscal Year 2013 DOD Master Planning Institute classes are as follows, with more detailed descriptions and registration available at http://www.dodmpi.org/ or http://ulc.usace.army.mil/. All classes are fully accredited and offer American Institute of Architects (AIA), American Institute of Certified Planners (AICP), Professional Engineer (PE) and continuing education units.

Acronyms and Abbreviations	
AIA	American Institute of Architects
AICP	American Institute of Certified Planners
ASLA	American Society of Landscape Architects
DOD MPI	Department of Defense Master Planning Institute
PE	National Society of Professional Engineers
PROS PECT	U.S. Army Corps of Engineers Proponent Sponsored Engineer Corps Training
UFC	Unified Facilities Criteria

Course 392
Master Planning Historic Structures I
July 29-1 August 2013: Savannah, Georgia

This course provides an awareness of the unique characteristics, legal requirements, procedures, technical knowledge and skills necessary to administer, maintain and repair federal historic properties. Sustainable, energy-efficient solutions for historic preservation as well as pertinent laws, regulations and guidance are covered.

Course 258
Master Planning Energy and Sustainability Factors
March 19-22, 2013: San Francisco, California

This new course covers energy and sustainability on a broader level, rather than at the individual building level. Discussion and demonstration of energy-related planning practices and initiatives demonstrate effective strategies. Classroom learning is enhanced by field trips and demonstrations of energy-saving methodology from a planning and design perspective.

Course 163
Master Planning Historic Structures II
May 21-23, 2013: San Diego, California

This course increases awareness and sensitivity to maintenance, repair and energy-saving measures in historic structures and enhances preservation craft skills. Through lectures and field exercises, the course covers the Secretary of the ➤

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tools and initiative information to increase STEM awareness throughout the Army. All future articles will also be posted on the USACE STEM collaboration site: https://team.usace.army.mil/sites/hq/PDT/STEM/default.aspx

If you have questions or concerns about STEM or developmental assignments, please contact your current CP Proponency Office or your human resources specialist.

POC is Donna Crawford, 202-761-7493, cp18proponencyteam@usace.army.mil.

Kathye Gerrity Milihram is the managing editor, Public Works Digest.

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Interior's standards, levels of treatment and repair versus replacement, a key concept in promoting sustainability and energy efficiency.

Course 326
Master Planning Applied Skills
June 24-28, 2013: Savannah, Georgia

This course provides an overview and techniques to develop real property requirements and allowances, assess stationing actions, and ensure sustainability and energy factors are included. Students will learn to use Army planning tools to conduct planning studies and requirements analyses, and determine the impact to the installation's real property master plan.

Course 319
Master Planning Coding Practices
July 23-26, 2013: Norfolk, Virginia

This new course provides students with an understanding of the concept of form-based coding and its use in the planning and development of sustainable installations. Students will learn how to develop a code, planning standards, and create a regulatory plan for code enforcement.

Course 952
Master Planning Advanced Techniques
August 12-16, 2013: Portland, Oregon

Through an intensive, hands-on workshop, students use a planning charrette technique to develop an Area Development Plan for a real world planning problem at an installation. Advanced concepts and cutting-edge sustainable and energy-efficient practices are featured. Participants are required to have a fundamental knowledge of master planning or real property management.

Course 258
Master Planning Energy and Sustainability Factors
August 20-23, 2013: San Francisco, California

This course covers energy and sustainability on a broader level, rather than at the individual building level. Discussion and demonstration of energy-related planning practices and initiatives demonstrate effective strategies. Classroom learning is enhanced by field trips and demonstrations of energy-saving methodology from a planning and design perspective.

Course 241
Master Planning Practices
September 9-13, 2013: San Antonio, Texas

This course expands on the basic sustainable, energy efficient planning concepts in Course 75 and relates them to Army-specific examples and practices, including analysis of requirements and forecasting.

Course 948
Master Planning Visualization Techniques
September 23-27, 2013: Huntsville, Alabama

This course provides a fundamental overview of planning visualization tools such as Google SketchUp, Google Earth and Photoshop. Students receive hands-on instruction in various software applications and produce renderings and Area Development Plans that illustrate sustainable, energy efficient solutions.

Course 75
Master Planning Principles
Check website for FY-14 classes; anticipated date is November 2013:

This course offers an introduction to master planning concepts and principles including the comprehensive issues of sustainability and energy. An overview of the planning process is provided, with an emphasis on general planning principles that are applicable to all organizations and government levels.

Register now and increase your understanding of master planning by signing up for one or more of these courses at http://www.dodmpi.org/ or http://ulc.usace.army.mil/.

POCs are Jerry Zekert, 202-761-7525, jerry.c.zekert@usace.army.mil; and Andrea W. Kuhn, 202-761-1859, andrea.w.kuhn@usace.army.mil.

Jerry Zekert is the Chief of the Master Planning Team at Headquarters, U.S. Army Corps of Engineers. Andrea W. Kuhn is AICP, LEED Green Associate with the HQ USACE.

A New Class for IMCOM PW Master Planners

by Anne de la Sierra

There are many classes offered by the Corps of Engineers via their PROSPECT program on How to Master Plan, from the Development of a Vision Plan through Programming projects to execute the Vision Plan. However, the missing piece, is the 'How to' of actually managing a Master Planning Division or Branch, and the cyclic activities which take place each year, such as preparing for the Real Property Planning Board, preparing the Annual Work Plan and the resources needed to execute the plans.

HQ IMCOM has established the School of Public Works (former DPW Academy) under the Installation Management Command. The Academy was created in FY10 at the request of Garrison DPWs with a requirement for continuous institutional learning on many facets of the DPW mission. The

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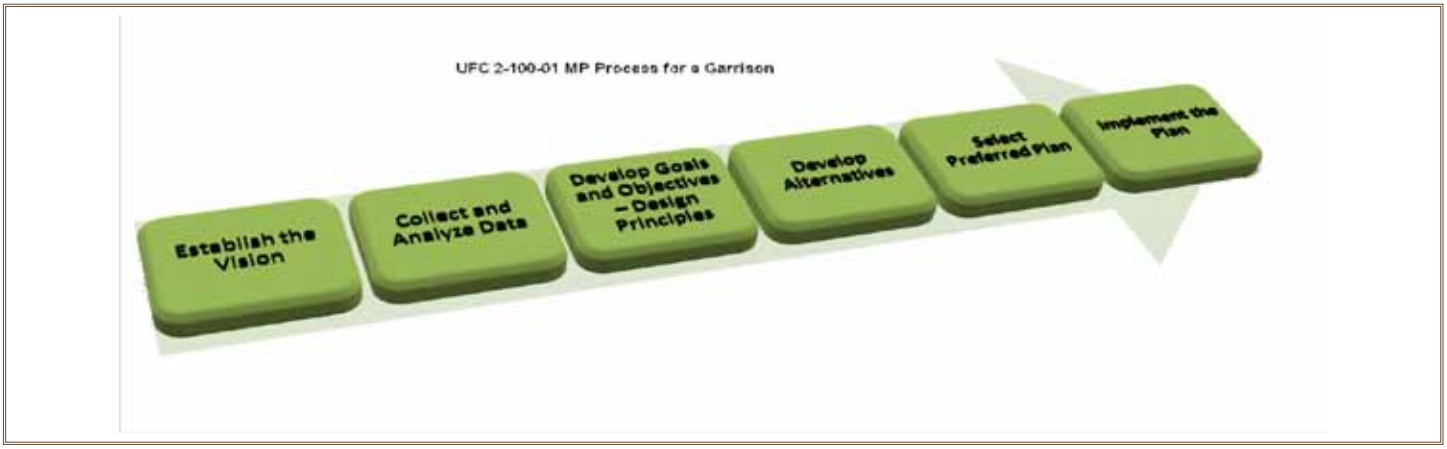
web site, *https://www.us.army.mil/suite/page/649494*, provides a listing of all training opportunities available to the DPW personnel. It includes functional, technical and professional training opportunities, new to the curriculum, is DPW Master Planning.

The class focuses on organization, processes and descriptions of how a Master Planning Division fits into the DPW.

Specific topics cover the changes in the UFC 2-100-01 that apply to the Army, and IMCOM, regarding the need for Vision Plans, Area Development Plans, Installation Design Standards and the Capital Investment Strategy, as well discussions on the tasks required to meet those needs. Class exercises focus on the importance of a Vision Plan; optimizing space utilization and analyzing space requirements; site selection criteria and ➤



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the site approval process; knowing how to use the ASIP and RPLANS to maximize your SRM and MILCON dollars; and, development of a Master Planning Division annual work plan for inclusion in the overall PW annual work plan.

The class will provide an appreciation of the organizational context of the Master Planning Division, an understanding of the people, processes, and products of master planning, asset management, and military construction as well as an appreciation of DPW and Master Planning business and financial management practices.

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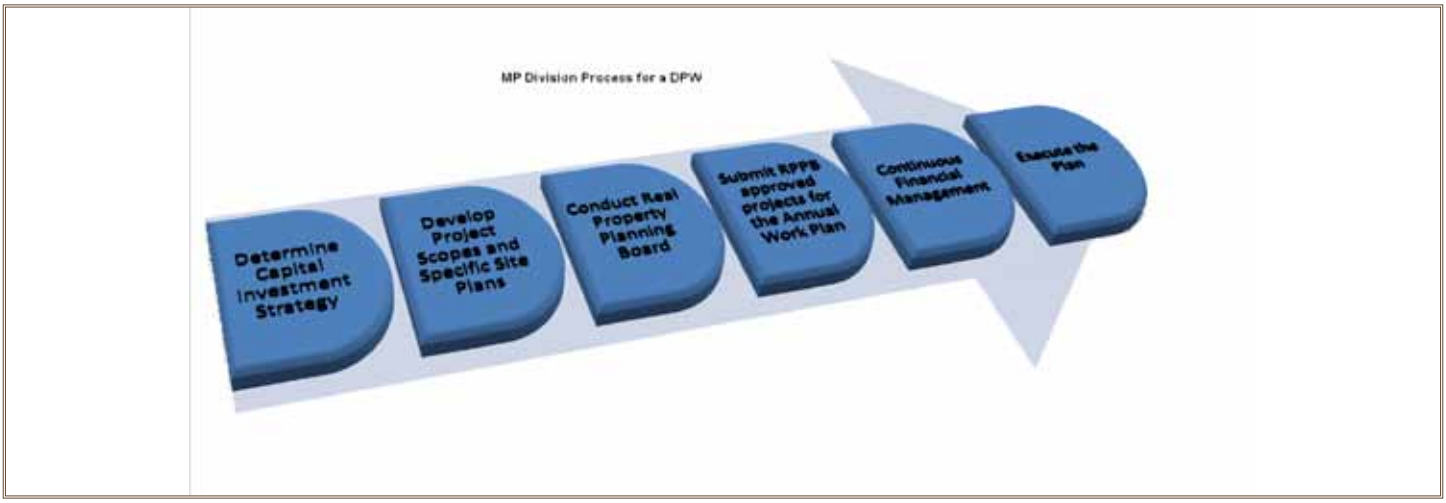
Anne de la Sierra is the Team Lead, Master Planning, Master Planning/MILCON/Real Property Branch, PW Division, HQ IMCOM



Importance of Professional Planning Credentials

by Andrea Wohlfeld Kuhn

Army planners are encouraged to pursue American Institute of Certified Planners designation from the American Planning Association. Professional credentials are a reflection of expertise and commitment to the profession and provide recognition both to the individual and the organization.

To obtain certification and use the AICP designation, APA members must meet certain education and experience requirements and pass a written examination. The higher designation of Fellow in AICP, or FAICP, recognizes the achievements of individuals who are considered model planners and who have made significant contributions to planning and society.

In addition to the eligibility requirements, a candidate must be a member of APA to sit for the exam. The cost is $495.00, and the eligibility requirements are spelled out in the chart below.

The exam is given twice a year, in May and November. Degrees and professional work experience in related professions such as engineering, landscape architecture, architecture, environmental planning, history, geography and others may qualify one to take the exam. Online training and exam preparation is available through state APA chapters and private companies. More information can be found at http://planning.org/aicp.

Advanced specialty certification

In 2011, two advanced exams were made available for AICP-credentialed planners who seek recognition for their specialized knowledge, experience and leadership in the transportation and environmental planning fields. The Certified Transportation Planner and Certified Environmental Planner exams are given once a year at a cost of $495 each.

Level of education	Years of professional planning experience required
Graduate degree in planning from a program accredited by the Planning Accreditation Board (PAB)	2
Bachelor's degree in planning from a program accredited by the PAB	3
Graduate degree in planning from a program ***not*** accredited by the PAB	3
Any other post-graduate, graduate or undergraduate degree	4
No college degree	8

Chart courtesy of the American Institute of Certified Planners website at http://www.planning.org/certification/eligible.htm

To qualify, applicants must be AICP members in good standing and have at least eight years of experience in the area of planning specialization for which they will be tested. In 2013, applications must be made by February 26, and testing will occur during a two-week window from May 7-21. Additional information is available at www.planning.org/asc.

Credentialing maintenance requirements

As of January 1, 2008, AICP members must engage in continuing education in order to maintain their certifications. The intent of certification maintenance is to enhance the credibility of the planning profession and increase the value of AICP credentialing. The requirement ensures that members have current knowledge, skills and training in best practices.

AICP members must earn a total of 32 CM credits during a two year period. One hour of training equals one CM credit. A minimum of 1 1/2 credits must be on the topic of ethics, and another 1 1/2 credits must be on current planning law. More information can be found at http://planning.org/aicp. The Master Planning Institute is pleased to announce that these required CM credits are available through the Master Planning Institute Proponent Sponsored Engineer Corps Training suite of classes.

Certification enables planners to demonstrate their knowledge and dedication to the profession and may give them a competitive edge in their career advancement.

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Andrea Wohlfeld Kuhn, AICP, LEED Green Associate, is a senior planner, Headquarters, U.S. Army Corps of Engineers.

Acronyms and Abbreviations	
AICP	American Institute of Certified Planners
APA	American Planning Association
CM	Certification Maintenance
PAB	Planning Accreditation Board

From the editor

I am honored to introduce myself to the Army Public Works community as the new managing editor of the Public Works Digest. I am so excited about working with and learning from the various Army communities and hope I am able to fill at least a part of Mary Beth Thompson's shoes as she explores and enjoys retirement. I look forward to publishing your articles and sharing your input on the subjects you feel are important so we can continue to make our Public Works Digest a great resource.

Kathye Gerrity Milihram
Managing Editor

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