Public Works DIGEST

Volume XXIX, No. 1
January/February/March 2017

This Issue:
Master Planning, Housing, and Barracks

U.S.ARMY

The Joint Operations Center Plan for Fort Polk, Louisiana, was designed in accordance with the Unified Facilities Criteria 2-100-01 Master Planning and the associated Fort Polk Master Plan. The Concept Plan was developed by the U.S. Army Corps of Engineers Fort Worth Regional Planning Support Center and The Urban Collective. (Courtesy photo)

Public Works DIGEST

Volume XXIX, No. 1
JANUARY/FEBRUARY/MARCH 2017

U.S. Army Installation
Management Command
2405 Gun Shed Road
JBSA Fort Sam Houston, TX 78234-1223

Public Works Digest is an unofficial publication of the U.S. Army Installation Management Command, under AR 360-1, The Army Public Affairs Program. Method of reproduction: photo-offset; press run: 1,000; estimated readership: 5,000. Editorial views and opinions expressed are not necessarily those of the Department of the Army. Mention of specific vendors does not constitute endorsement by the Department of the Army or any element thereof.

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Printed on recycled paper.

IMCOM transforms regions into new directorates

In this time of declining resources, shifting national priorities, and increasing security concerns around the globe, Army leaders must find alternative solutions beyond asking for more money and additional manpower when confronted with a problem.

To that end, as of Oct. 1, Army Installation Management Command has transformed its regions within the continental United States into three functionally aligned and co-located Installation Management Command Directorates:

- IMCOM-Sustainment with Army Materiel Command at Redstone Arsenal, Alabama;
- IMCOM-Training with Training and Doctrine Command at Joint Base Eustis-Langley, Virginia; and,
- IMCOM-Readiness with Forces Command at Fort Bragg, North Carolina.

The transformation of the regions to directorates is designed to mirror the same level of integration that has been part of IMCOM's support to U.S. Army Europe (IMCOM-Europe) and U.S. Army Pacific (IMCOM-Pacific).

The realigned organization is smaller and more functionally aligned to be better integrated with the Army Command it supports.

"The Army and IMCOM must prioritize the programs and services we deliver to apply constrained resources to the right things, at the right time, at the right place, and for the right customers," said Lt. Gen. Kenneth Dahl, commanding general, U.S. Army Installation Management Command.

This co-location will result in improved integration to facilitate shared priorities across the Army commands each Installation Management Command Directorate supports, focusing resources on the most critical projects. Tough prioritizing decisions are being placed in the hands of the commanders who know their communities best. Prioritizing programs and services means focusing on infrastructure and facility investment as installations enable unit, Soldier and Family readiness, which are essential platforms for power projection

Installation Management Command is creating efficiencies by consolidating functions, using call centers to manage similar functions at multiple garrisons, or by leveraging technology in varying ways. In geographic regions where there is a large installation with several smaller ones nearby, mutual support relationships are being implemented to conserve resources and enhance the command's ability to deliver services when and where they are needed most.

The IMCOM directorates will be more efficient and improve mission command through unity of purpose, a smaller number of garrisons to manage, and similar demographics of communities. The directorates will solve functional challenges for garrison commanders, coordinate IMCOM Headquarters support, and drive/assess garrison execution of service delivery.

Installation Management Command leaders and those they support must work together to separate needs from wants. This new environment is forcing tough choices. Installation Management Command is transforming to enhance readiness for today's force and the future Army, especially in the areas of mission command, workforce strength and alignment, program/service delivery, and as a change agent to align policies with the current environment.

"Although budget constraints are impacting almost every aspect of Army life, Soldiers and Families can rest assured that IMCOM is an efficient and constantly improving steward of resources that will continue to deliver necessary services to the Soldiers, Civilians and Families who live on our installations," Dahl added.

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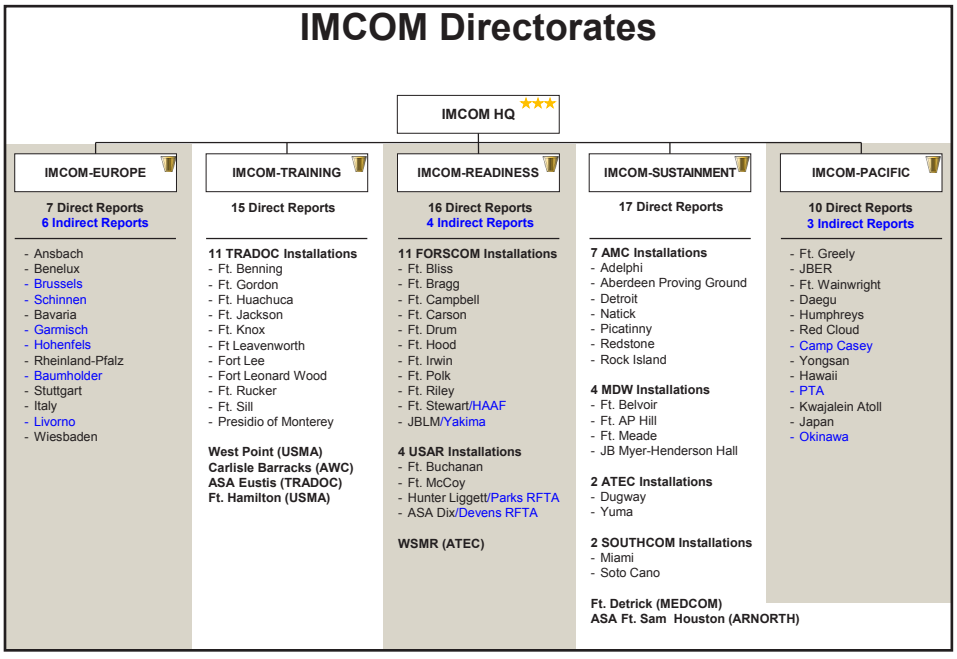
Editor's note: *This article was prepared from material supplied by the Installation Management Command Public Affairs Office.*



Sustainability plan empowers Colorado Air National Guard station

by Lt. Col. William Smith and Susan Wolters

Don't make short term decisions without a long term plan – this also goes for those seeking to reach net zero energy requirements. Master Planners preach it. Greeley Air National Guard Station, Colorado, practices it.

While installations are directed to manage integrated asset portfolios, the challenge is to address federal sustainability mandates such as Executive Order 13693 Planning for Federal Sustainability in the Next Decade by embedding implementable sustainability strategies that translate into projects. Greeley Air National Guard did just this.

Greeley Air National Guard Station approached this challenge by working together with other station stakeholders in a two-day workshop to develop goals and implementable strategies in what is called the Greeley Air National Guard Station Sustainability Component Plan.

The planning workshop format, facilitated by the U.S. Army Corps of Engineer Fort Worth District Regional Planning and Environmental Center project managers and supported by the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory, brought stakeholders including leadership from Buckley Air Force Base, Colorado, members of the 233rd Space Group, and representatives from the National Guard Bureau and the Civil Engineering Technical Service Center together to develop the plan.

The various viewpoints and concerns of each participant enhanced the understanding of the complex problems master planners needed to address to meet energy and sustainability directives. During the workshop, a trip to the National Renewable Energy Laboratory net-zero facility inspired solutions and provided immediate visualization of practical implementation strategies in use in a federal facility. The workshop participants have since become a vocal advocate base for ensuring future development meets the planning guidance. This is the first Sustainability Component Plan to be completed in the Air Force and Air National Guard.

During the Greeley Air National Guard Station planning workshop, participants used the Net Zero Planner Tool to run energy simulations as they developed the installation's Sustainability Component Plan. (Courtesy graphic)

Installation-scale energy planning is a difficult, highly coupled problem. Even most strategic master plans often miss incremental projects that are individually optimal. To tackle the breadth of possible utility rate structures, robust costs, and performance models of existing and potential energy conversion and energy storage equipment, stakeholders used the Net Zero Planner, or NZP, during the workshop to help develop the Sustainability Component Plan. Net Zero Planner is a proven software analytic tool developed by U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory, and helps installations improve energy planning by striving toward net zero energy.

Additionally, Greeley Air National Guard Station met the requirements of the Office of the Assistant Secretary of Defense memorandum regarding Installation Energy Plans for Department of Defense installations. By using the Net Zero Planner through the Sustainability Component Plan process, the station is equipped with reporting on its prioritized plan for the implementation of this policy.

By embracing the plan's strategies and goals, Greeley Air National Guard Station will be in pursuit of ongoing unfettered federal sustainability mandates.

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To be successful, planning process must be organic

by Eric Verwers

The world is not static, and neither is planning.

Within the U.S. Army Corps of Engineers Regional Planning and Environmental Center, we treat the planning process as "organic" – referring to the integral relationship in good planning between many moving parts and the whole. Goals, fiscal realities, targets and mission realities will always change and therefore planning should be tentative, flexible and responsive.

One approach to implement this flexibility is integration of a variety of disciplines and focus areas. Integration is built into our center's structure by combining planning and environmental business lines.

Our employees' educational backgrounds are diverse: civil and mechanical engineers, ecologists, architects, landscape architects, natural resource specialists, geologists, archaeologists and others. The center has knitted together this strong supporting cast, geographically dispersed throughout Southwestern Division in Tulsa, Galveston, Little Rock and Fort Worth, but able to integrate the skills and data into an elegant, useful and durable whole.

An integrated planning process also includes the active and continuing participation of not only consultants from a variety of specialized fields, but more importantly the stakeholders.

An integrated planning process that includes stakeholder participation is the hallmark of the collaborative master planning process, as illustrated by a workshop at Schofield Barracks, U.S. Army Garrison-Hawaii, facilitated by the Regional Planning and Environmental Center, Fort Worth District, U.S. Army Corps of Engineers. (U.S. Army photo)

Some call this community collaboration; some call it stakeholder participation. We call it listening.

In planning paradigms of the past, installations sought professional experts to provide all the answers to their planning dilemmas. In reality, plans prepared by outside experts, irrespective of their technical soundness, cannot inspire the people to participate in their implementation.

Within the Regional Planning and Environmental Center we believe that participation leads to ownership and passion; no one likes to participate in something not of their own creation. To the center, the expert is actually the customer. Our planning role is as a facilitator to help installations solve their own land use and facility issues.

Some call this community collaboration; some call it stakeholder participation. We call it listening.

Participatory planning is to define precisely what specific objectives are to be achieved, which should then be stated in concrete terms. At Fort Hood, Texas, traffic issues were the focus, and everyone agreed that the transportation network needed new street layouts and standards to alleviate them.

Once we know those objectives, we assist by charting a course of action for the next two, five or 10 years forward. Even then this must be a flexible blueprint – continually responsive to changes after the ink dries – to properly plan the future for a resilient installation.

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Realignment integrates master planning with real property accountability

by Kathryn Haught

The reorganization of the Office of the Assistant Chief of Staff for Installation management has resulted in the realignment of Master Planning with the Real Property accountability functions, which should merge the two functions to ensure that real property accountability and master planning are closely integrated. Master Planning will be more involved with requests for conversion, stationing, and construction.

This strategy will fuse the master planning policy with the day to day operations and provide better data for the Headquarters Department of Army decisions that cross those lines. The Office of the Assistant Chief of Staff for Installation Management aims to provide a more complete picture, present and future, for decision makers to ensure that Senior Leader plans are feasible given installation constraints.

Master Planning is reviewing installation real estate and real property development and actions against the guidance provided by the Reduce the Footprint Executive Order 164-15. As Headquarters Army moves forward with reducing its footprint, the Master Plan is a critical tool for meeting goals. Army must balance the infrastructure portfolio against mission requirements.

Reduce the Footprint emphasizes that we do not retain footprint not critical for the mission and that our data reporting and planning tools reflect the true situation on the ground. Reduce the Footprint is the guiding principle for Army real property and real estate development and plans. It is now used as a guide for assessing the feasibility and need of requests for funding and action.

Throughout the Base Realignment and Closure Act and Grow the Army years, Army emphasized preparing facilities in anticipation of growing troops; now, with the Army drawdown and federal and Department of Defense emphasis on more efficient use of resources, including facilities and infrastructure, we must retrain ourselves to consider the true need of any added square footage and to assess the long term viability and cost of any infrastructure not in direct support to an enduring mission.

This approach will also support Office of the Secretary of Defense and Congressional guidance to provide for less sprawl and more sustainability and better use of resources. Master Planning is a critical tool for assessing installation wide assets and how to resolve issues with current mission assessment and dwindling resources.

We also always want to ensure that programming and development other than military construction, including conversions, minor construction, and stationing, are analyzed against the master plan. It is important that when we review proposals, from installation level to Headquarters Department of the Army, we have the proper information by which to assess. It is urgent that our databases of record, including Real Property Planning and Analysis System, Army Stationing and Installation Plan, Installation Status Report, and the Real Property Inventory correct reflect installation data.

Master Planning is a critical tool for assessing installation wide assets and how to resolve issues with current mission assessment and dwindling resources.

Per Defense Department guidance Army should not "program in the absence of a master plan." Army has always relied on the master planner to ensure that military construction is properly sited but now we wish to ensure with greater fidelity that our military construction requests are properly analyzed under the current defense department and statutory master planning guidelines. To that end, we will integrate better into the Program Objective Memorandum cycle an approach that includes a master planning lens by which to view the military construction requests.

We wish to ensure that we do have a site that complies with the approved regulating plan and that the scope of the construction project as documented on the Defense Department Form 1391 considers the analysis done as part of the master plan, including supporting infrastructure.

The Army Master Planning community continues to move forward with updating Master Plans in accordance with Unified Facilities Criteria 2-100-01 by Oct. 1, 2018. We also are preparing a new Unified Facilities Criteria to better guide the detailed Area Development planning process. The Office of the Assistant Chief of Staff for Installation Management has incorporated measures into the Installation Status Reports to determine the completeness and currency of Real Property Master Plans. It is also in discussions with the land holding commands on how to assess compliance with the Unified Facilities Criteria.

As we approach that Oct. 1 suspense, we are refining our expectations for compliant master plans. Per Defense Department guidance we have been addressing currency, timeliness, compliance with the programming process, and training goals. We are also asking what within the master plan entails compliance with the 10 strategies. Our compliance should reflect Army goals in stationing and facility management.

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Creating resilient networks allow installations to respond to change

by Jerry Zekert

With the amazing efforts throughout the U.S. Army and Department of Defense, master planners have created a solid installation planning framework with visionary plans that are implementable. With the rapidly changing mission dynamics facing the Army and DOD, now and in the future, our installations must maintain high levels of readiness to support both planned and unforeseen military requirements while responding to man-made or natural situations.

Can our bases meet the unforeseen mission change? Can they respond to a hurricane, draught and threats to our energy, water, and land use? Can we respond to changing funding strategies?

Building on our sound installation planning foundation, we must offer resilient planning solutions that can meet both the planned assigned missions and the unforeseen situations.

Resiliency, as a planning consideration, brings a holistic approach to base development. It introduces in the planning process the ability to Prepare, Absorb, Recover and Adapt to rapidly changing situations. The Army and DOD planning practices are synced perfectly to support resilient planning solutions.

The 10 planning strategies identified in Unified Facilities Criteria 2-100-01, Installation Master Planning, guide a resilient development strategy that offers compact solutions that reduce our development footprint, embrace more renewable energy, water and waste solutions and promote a building topology of mixed use, flexible and adjustable building designs and repurposing of existing facilities. Listed below are recommendations to assure resiliency considerations are included in the planning products and services.

Embrace the value and prudent use of installation land. As there is only limited availability of installation land; we need to 1) appreciate the value of the land we use, and be prudent in the building out limited developmental areas by embracing principles of footprint reductions; 2) establish a Cantonment Growth Boundary to restrict encroachment into valuable range and training areas; and 3) promote compact development solutions that limit sprawling use of valuable land.

Knowing where the utilities are is an essential part of creating the resilient networks that allow master planners and installations respond to change. (Courtesy photo)

Develop resilient facility solutions that embrace flexible compact designs for new facilities that minimize use of existing land footprint, promote repurposing of existing facilities and adopt resilient energy, water and waste solutions.

Fromulate infrastructure solutions that embrace area development districts and embrace continuity of operations for energy, water and waste, green spaces and stormwater management. Resilient networks must be created to allow installation facilities the ability to respond to rapidly changing man-made or natural situations while meeting mission needs.

Sustainability Component Plans that utilize Net Zero Planner modeling tools are essential planning products and tools that can be used to ensure resilient planning considerations are embedded in base planning decisions. They can quantify impacts of development on the use of limited land, facilities and infrastructure. Contact the local U.S. Army Corps of Engineers planning support center team to learn more about the Net Zero Planner modeling tools.

It is important to build on your installation planning suite of products. Include integrated infrastructure studies for transportation, utilities, and green development plans in your master plan. Engage in development of Sustainment, Restoration and Modernization and Military Construction efforts to ensure resiliency considerations are embedded in programming documentation. A customer concept document is a supplemental planning tool that can help integrate these broad planning considerations.

The U.S. Army Corps of Engineers, as part of our Master Planning Institute, has two courses that offer training in resilient master planning training. Course 258 Master Planning Energy and Sustainability and Course 163 Master Planning for Energy and Sustainability offer great perspective to guide planners to focus on resiliency considerations.

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IMCOM wraps up foundation for master planning – Vision Plans

by Ramona Taylor

With the completion of the Dugway Proving Ground, Utah, vision charrette in November, the Army Installation Management Command, with support from the U.S. Army Corps of Engineers Planning Support Centers, wrapped up providing garrisons with planning expertise necessary to complete the Real Property Master Plan Vision component in accordance with Unified Facilities Criteria 2-100-01 on Installation Master Planning.

The Real Property Management Plan Vision includes the vision, goals, and objectives and installation planning standards that serve as the foundation for the development of the Long Range Component.

The vision planning, underway for several years, supported the command's holistic Master Planning program, which focused on developing collaborative planning outreach to engage internal and external stakeholders in real property master planning. The result was building consensus through collaboration and preparing a Real Property Vision statement, goals, and objectives, as well as a set of planning strategies, which were then folded into a development and regulatory plan as part of an installation's overall Real Property Master Plan.

Several other vision charrettes were completed this past summer and fall. The August vision charrette at Fort Detrick, Maryland, took into consideration its already established "Garrison Initiatives," which dovetailed nicely with the overarching planning strategies outlined in Department of Defense and Army installation master planning guidance. A number of focus areas are included in the "ResponsibleDetrick" initiative, including preservation efforts associated with Nallin Farm Springhouse and Bank Barn and Pond, as well as highlighting various partnerships with organizations such as the American Chestnut Foundation, the Maryland PLANT Community and the Environmental Protection Agency. The Fort Detrick vision planning charrette provided a perfect opportunity to link the ongoing installation initiatives, such as "ResponsibleDetrick," with Fort Detrick's real property vision, goals, and objectives, and to emphasize community outreach and partnerships.

Vision planning also hit a high note at Fort Huachuca, Arizona, in November. Senior mission and garrison leadership involvement set the stage for a vision charrette characterized by energetic and engaged stakeholders, who impressed installation staff with their level of historical knowledge, subject matter expertise, and overall enthusiasm for the planning process. Key discussion topics included making existing infrastructure more efficient, emphasizing Fort Huachuca's diverse activities and missions, and highlighting its location and relationship with the community. The charrette culminated with senior mission and garrison leadership and community participation, to include the mayor and city manager of the city of Sierra Vista, attending the charrette outbrief – a testament to the positive working relationship Fort Huachuca has with the neighboring Sierra Vista community.

While Headquarters Installation Management Command's funding of the initial installation vision charrettes is complete, this does not mark the end of installation real property vision planning. The Vision Plan is the foundation from which an effective planning program is developed. With the Vision Plan, installations are equipped with the tools necessary to revisit the Vision for updating, which is required by Defense Department and Army regulation to be at least every five years, or more often if needed. Installations needing updates to their Vision Plans should contact the Headquarters Installation Management Command Master Planning Branch for assistance.

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Participants in the Fort Huachuca, Arizona, vision charrette receive an inbrief prior to focusing efforts on how to make existing infrastructure more efficient. (Photo courtesy of Michael Baker Jr., Inc.-AECOM Joint Venture)

Executing Master Plan: Opportunities, leadership, fate, timing

by Mark Mitsunaga

SCHOFIELD BARRACKS, Hawaii – The Army's Master Planners are the real property gatekeepers for the Garrison Commander whose goals should be primarily to achieve and maintain a sustainable and eco-friendly installation that is mission focused based on operable efficiencies. Everything we do should primarily support the mission as well as the life, safety and health of Soldiers, Family Members and others.

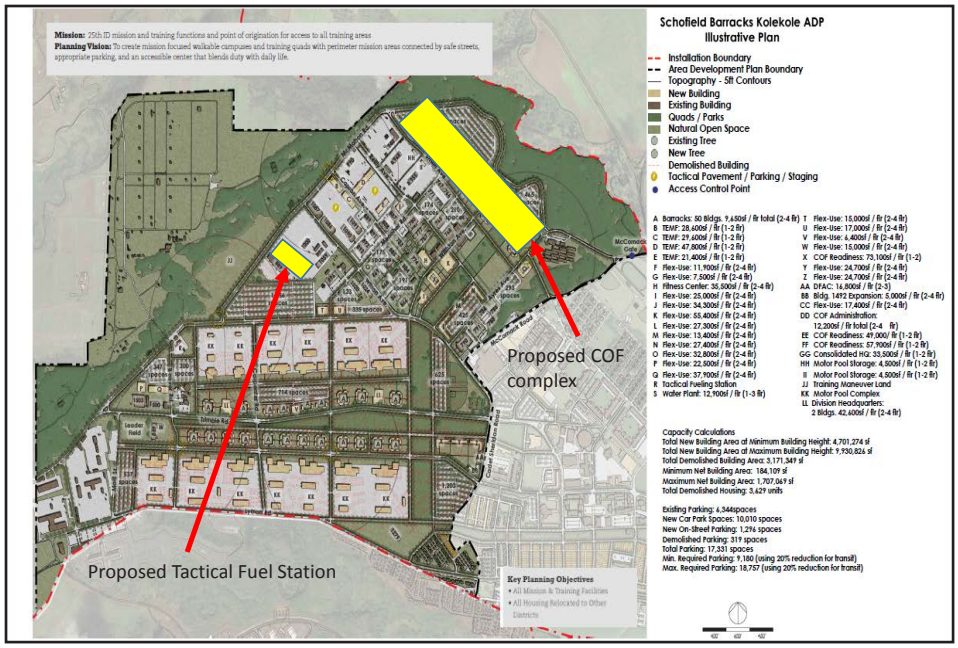
The Army requires Master Plans; to create and keep them updated can be a huge undertaking.

The easiest method to site a mission-related project with the least amount of effort and cost is to seek green space or infilling between facilities, often called "picking the low hanging fruit". When the "low hanging fruit" is picked," what's left are costly, difficult, time consuming searches for solutions sometimes resulting in marginal results – lack of swing space and green space, odd shaped land spaces and inappropriate land use of facilities.

At Schofield Barracks, we recently completed and updated Master Plans that provide some options on the way ahead with a desired end state. Even as we were updating and recreating these plans, things were changing, but that is the nature of Master Planning.

Master Planning requires a multi-prong effort.

1. Execution. Get things done smartly!
2. Socialize the plans so people know they have been approved for execution.
3. Keep leadership involved for guidance and support of the Master Plan.
4. Share copies of the Master Plans and explain how they can help. You'll need to know the players and what they need.
5. Integrate ongoing projects with the plans.
6. Aggressively and continuously pursue efforts to bring the Master Plan to life; convert pictures to buildings and greenery to an efficient and desirable installation.
7. Educate all, and reeducate and reeducate.
8. Adjust/update the plans and show current plans or at least ones that are near current.
9. Take nimble, smart and decisive actions with flexible adjustments along the way – a living process.
10. Be open to opportunities. Move quickly when opportunities, and funding, arise. The Master Plan shows where to use it.
11. Having a Master Plan allows justifying funds and also helps make adjustments more quickly as everyone can see the whole playing field.
12. Use "bridging" plans and alternatives to maintain flow of activities while waiting for additional funds to fill in the blank spaces.
13. Settle for the 70 – 90 percent fix and adjust later as the 100 percent fix may never come.
14. Keep involved with as many of the initiatives to avoid conflicts but also identify the opportunities. Work with units and organizations to ensure everyone is referring to the Master Plans in their efforts.
15. Employ an aggressive outreach program at every level, including with local communities and governments.



Area Development Plan - Schofield Barracks Kolekole, Hawaii (U.S. Army graphic)

Not having a Master Plan updated for more than 30 years practically requires to have it redone, which often means reeducation of all.

Master Planning has many similarities to Strategic Planning. The complexity of the Master Plan comes from moving facilities that create second- and third-order domino impacts. Moving one building may impact two other activities and/or buildings. Any changes will require adjustments to the utilities and infrastructure that support them.

It also requires taking one step at a time; seeking and pursuing opportunities; pouncing on opportunities as they arise; and bridge plans toward the eventual

(See Master Plan, page 10)

New Area Development Planning Unified Facilities Criteria on tap

by Mark Gillem and Jerry Zekert

In 2012, the Department of Defense published Unified Facilities Criteria 2-100-01 (Installation Master Planning). It set an overarching planning framework that all services follow. The document focused primarily on 10 key planning strategies and an overall process for master planning, which included the preparation of actual plans called Area Development Plans, for every district on an installation.

The DOD's Comprehensive Planning Working Group is leading an effort to create a new Unified Facilities Criteria that is focused on Area Development Planning to ensure consistency in Area Development Plans prepared for all services. Unified Facilities Criteria 2-100-04 (Area Development Planning) is nearing completion and is being found to be a great tool for installation planners.

This new criteria describes detailed planning criteria applicable to Area Development Plan districts. The document describes common operating processes and products that are required when completing plans for any district. It describes a common site approval process, which is designed to ensure that all projects conform to the district and associated installation master plan. It also introduces optional key performance indicators in four tiers that services can use to evaluate their own Area Development Plans

The new criteria showcases best practice examples from each service and presents district typology case studies that can be used to guide district-level planning efforts for airfields, industrial districts, civic districts, mixed-use community center districts, housing neighborhoods, and outdoor recreation areas.

It introduces four new optional components that support district-level planning.

The Sustainability Component Plan integrates the tactics of energy reduction and recovery; water reduction and reuse; waste minimization; and stormwater mitigation. It documents this process in an actual plan that is integrated into the installation master plan. The process for developing this plan complies with the Office of the Secretary of Defense requirements for an Installation Energy Plan as well as guides holistic project development that highlights tangible projects that meet mission requirements while meeting the installation's goals for energy, water, and stormwater management.

The second optional component is the Nodal Development Plan. When more detailed planning is needed to support tenants in a small area within a larger district or for small, geographically separated functions or tenants, a Nodal Development Plan is the right approach. These plans do not require the rigor of an Area Development Plan.

The other two optional component is the Area Development Execution Plan, which offers a robust capital investment strategy for the district, and the Customer Concept Document, which documents the customer's concept for a facility and aligns the concept design with the district's regulating plan and building standards.

The new Unified Facilities Criteria for Area Development Planning will be a significant contribution to the planning and design community. It will help all of us create more effective and efficient installations that better support today's missions while leaving ample room for tomorrow's unknown missions.

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(Master Plan, continued from page 9)

resurrection of the military construction program.

Partnering with different players and proponents may help identify joint efforts with common goals and differing pots of monies. Require and strategically step up communication with local governments and communities outside the "fence-line" of the installation because the installation is not an island to itself. Encroachment of the community on the installation is a major issue. Noise from training is a major issue on the neighboring communities. Here in Hawaii, the military's traffic impacts the local community a great deal.

We recently had the opportunity to execute the newly completed Master Plan, resulting in the relocation of military construction projects of a proposed Company Operations Facility Complex to a "Motor Pool Row," where we also decided to locate a Tactical Fuel Station, whose contract was ending.

With the approved Master Plans and leadership support, we may be on our way toward the efficient mission-oriented installation we need and want.

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Area Development Plan targeted strategies address specific issues

by Ramona Taylor

Headquarters Installation Management Command funded a number of Area Development Plans this past year. By design, the command incorporated a certain level of consistency throughout the various installation plans to ensure they adhered to the overarching master planning strategies emphasized in Department of Defense and Army guidance and regulations.

However, the command also recognized that there must be room to tailor these plans to meet an installation's specific needs. Three examples of Area Development Plans that incorporated targeted strategies to address specific issues are highlighted below.

Stormwater Management Strategy

Fort Stewart is in the coastal region of Georgia, approximately 33 miles southeast of Savannah. The West Mission District is one of Fort Stewart's primary troop mission areas, occupied largely by company operations, battalion headquarters, vehicle maintenance facilities, and troop barracks. A variety of community support facilities exist in the district, including the golf course and the Warrior's Walk memorial. Undeveloped open space, which is constrained by wetlands and streams, occupies a significant portion of the district.

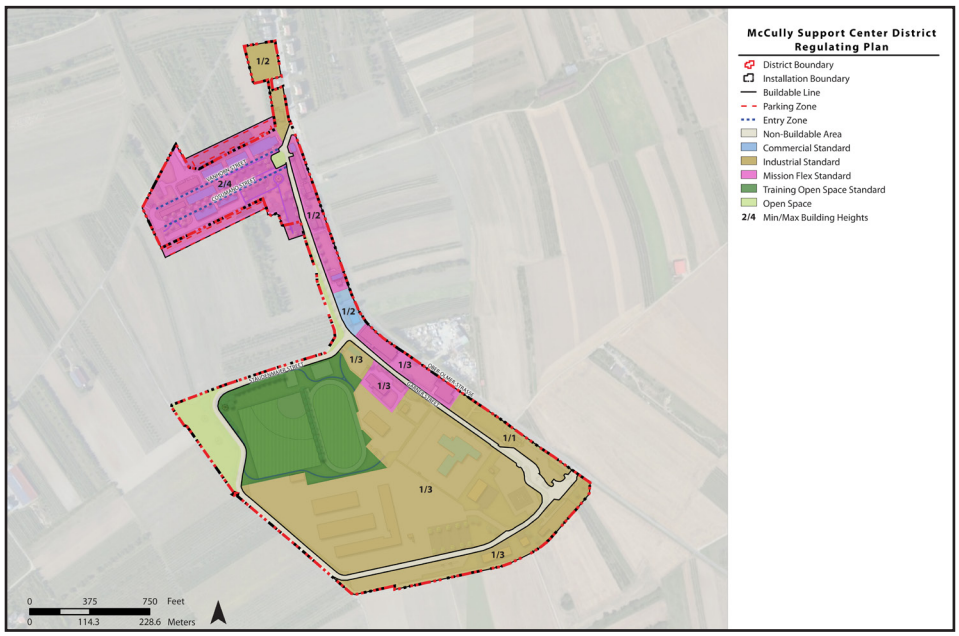
One issue that emerged as part of the West Mission Area Development Plan charrette was the necessity to address stormwater management because of the area's extensive wetlands and floodplains. A number of factors are present that impact stormwater management, including physical limitations such as fine-grained soils and shallow depth, and land-use limitations with the potential to generate high concentrations of soluble pollutants that can threaten groundwater. These concerns prompted the development of a stormwater management strategy that works with the existing topography of the area and guides stormwater to designated infiltration areas.

Physical Fitness Strategy

Fort Bragg is in south-central North Carolina in the Sandhills Region. The Bragg South District is located in the installation's southeastern corner: it is the most southern portion of the cantonment area. Land use in the Bragg South District is primarily unit operational facilities and motorpools. A new development in the south, the Yarborough Complex, houses various Special Operation Forces groups and is a significant element of the Bragg South Area Development Plan.

The Bragg South District is experiencing increased development activity as the build out of the Yarborough Complex continues. The expansion of Special Forces operations has increased the need for physical fitness infrastructure to support PT requirements. As such, the Area Development Plan addresses concerns related to providing more accessible recreation and fitness options in the Bragg South District by:

- improving access to the training areas with the addition of a pedestrian gate;
- proposing a new fitness facility; and
- linking a new PT trail to the existing trail network



The McCully Support Center Regulating Plan for U.S. Army Garrison Wiesbaden, Germany, shows how to incorporate an Anti-Terrorism/Force Protection buffer near the district, which is located close to Mainz, Germany. (Graphic provided by Michael Baker Jr., Inc.-AECOM Joint Venture)

Anti-Terrorism/Force Protection Strategy

U.S. Army Garrison Wiesbaden sites are located around Wiesbaden and Mainz, Germany. The McCully Support Center District, located closer to Mainz, is one of the more southern districts within the garrison. It is a support center with industrial-type uses such as warehouses and motorpools, communications-focused facilities, and athletic and recreational fields. It is expected to experience a slight increase in population with the relocation of enduring functions from sites closing as a result of European Infrastructure Consolidation.

An increase in tenants not only requires facility capacity but safe, secure facilities and infrastructure; however, the overall small geographic footprint and limited open space does not currently fulfill Anti-Terrorism/Force Protection requirements. The McCully Support Center District's Illustrative Plan suggests an Accommodation Program Request for an Anti-Terrorism/Force Protection buffer

(See Development Plan, page 13)

Enhancing mission resilience by using green infrastructure

by Mark Gillem and Jerry Zekert

Resiliency in planning is not a new subject

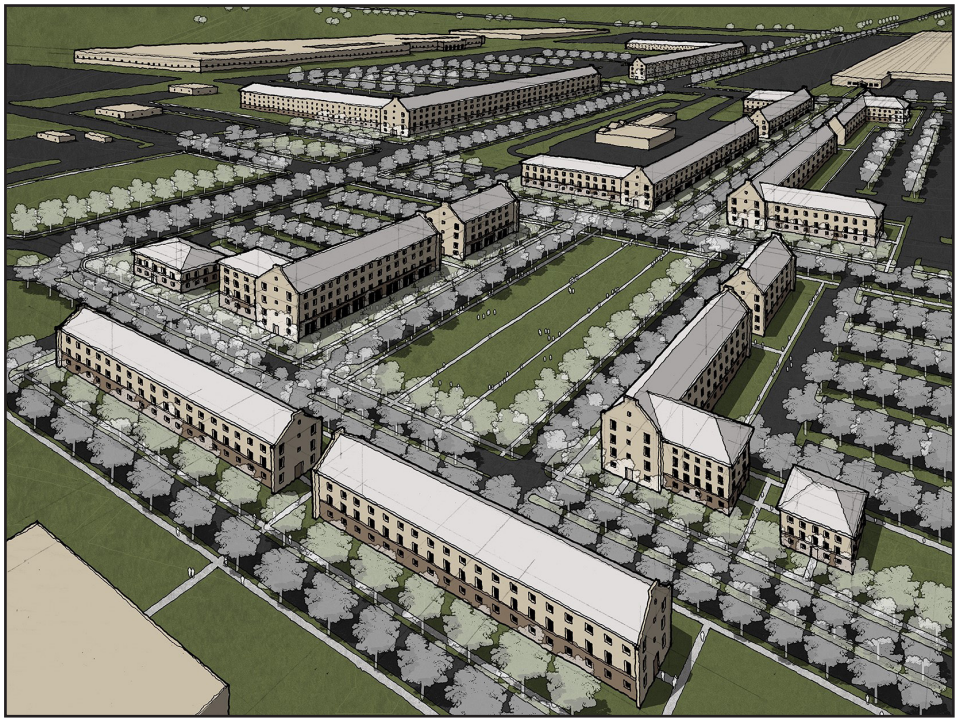
As we learned in our Master Planning Principles Course 75 class, Dec. 6 to 10 in Philadelphia, William Penn prepared a plan for the city of Philadelphia in 1863 that focused in part on resiliency. He applied lessons he learned, for example, from living in London that taught him the value of urban parks in supporting healthy communities and suppressing urban fires.

A major feature of Penn's plan is the green infrastructure that permeates all aspects of the historic fabric. For example, the city center's four major squares serve as public parks in addition to providing stormwater and air quality benefits. Planting strips between street curbs and sidewalks in many neighborhoods help reduce runoff. Planted medians in major streets not only protect drivers but also absorb stormwater.

Military planners can learn from Penn's model by recognizing the value of green infrastructure to mission resilience. When designed effectively, an installation's open space network can help absorb impacts from acute threats that can jeopardize mission effectiveness. The most obvious approach is to incorporate low-impact development strategies into the master plan.

According to the Low Impact Development Center, the basic approach is to "…manage rainfall at the source using uniformly distributed decentralized micro-scale controls. LID's goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Instead of conveying and managing/treating stormwater in large, costly end-of-pipe facilities located at the bottom of drainage areas, LID addresses stormwater through small, cost-effective landscape features located at the lot level."

Surprisingly, many of the same features that improve livability also improve an installation's ability to manage stormwater and reduce the possibility of flooding. For example, planting strips and medians work as well today as they did in the 17th century. We can now add bioswales, engineered wetlands, and other more robust solutions to the equation. In addition, parks and quads located in the hearts of military neighborhoods can be designed to collect stormwater and serve retention and detention purposes. Greenbelts through and around installations not only provide places for close-in training and military laydown areas, but they can provide fire buffers and absorb stormwater.



The long-term plan for the Clear Creek Darnall district, Fort Hood, Texas, provides a clear vision for a new Town Center that uses simple techniques like parks, planting strips along streets and in parking areas, street trees, and bioswales to mitigate stormwater runoff.
(Courtesy of The Urban Collaborative)

At Fort Hunter Liggett, California, planners integrated many of these techniques into the master plan and found that effective planning could absorb up to 32 million gallons of stormwater annually – which more than met the design storm requirements. Similarly, at Fort Hood, Texas, the green infrastructure plan incorporates multiple strategies across the installation to absorb stormwater and reduce the possibility of flooding.

William Penn knew how to use green infrastructure to support readiness for his missions. Today, Unified Facilities Criteria 2-100-01, Installation Master Planning, requires master plans to include green infrastructure network plans within the overall installation development plan. So, as planners regularly update their plans, they have many opportunities to enhance mission readiness through effective and affordable green infrastructure.

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Placemaking in ADPs: Drawing from history to create a unique plan

by Ben Zitelli

Fort Leavenworth, Kansas, recently completed two Area Development Plans that brought new insight to the installation in planning with historic resources for long term facility capacity. The plans covered the North and South Main Post districts, which together comprise most of facilities on the installation, including a National Historic Landmark District, Command and General Staff College, and the installation's town center.

Fort Leavenworth, built in 1827 on the west bank of the Missouri River, is the oldest active U.S. Army post west of Washington, District of Columbia. It was instrumental in the westward expansion of the United States, with traces of that history visible in the landscape and buildings. The historical significance is evident in the National Historic Landmark District, which covers almost all of the North Main Post district, and contains more than 240 historic buildings, structures, and objects.

From both operational and planning perspectives, a historic district this extensive creates serious challenges to implementing modern, sustainable development. Adaptive reuse is a favored strategy for preserving historic facilities, but efficiency of space and energy use, as well as increased maintenance costs left the participants in a recent planning charrette looking for more robust solutions. The plan emphasizes compact, low impact development outside the historic district to make more maintenance resources available to those historic buildings.

To develop the plans, the installation looked to charrette participants for ideas and thoughts.

One insight brought forward was the presence of a historic, but abandoned, trolley line from the main gate to the center of the Main Post. The rails have long since been removed, but a level corridor flanked by an allée of mature trees remains. The trolley line parallels Grant Avenue, the main arterial street into the core of the Main Post – a street with recognized conflicts between bicycles and cars, and difficult pedestrian crossings. For most people, the double-row of trees set back less than 100 feet off of Grant Ave has gone unnoticed. However a few moments of standing under the green arches of the canopy, away from the traffic of Grant Avenue, reveals the special opportunity of this forgotten resource. The charrette participants decided that this picturesque rail bed will become a new multiuse trail, connecting all of the major mission, community, and historic destinations.

The old trolley line parallel to Grant Avenue at Fort Leavenworth, Kansas, is envisioned in the post's Area Development Plan to become a multiuse trail, connecting all of the major mission, community and historic destinations on the post. (Photo by Ben Zitelli)

As the bike and pedestrian network plans were further developed, this "trolley trail" became the central spine for multiple side trails and pedestrian corridors that provide access deeper into the housing, commercial, and college neighborhoods.

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outside the district's northern portion where facilities and shared parking are compactly sited. This land acquisition would serve both as a buffer and an opportunity to expand parking in the future, especially if the district serves a larger population. The land requested is currently not installation land, and since it is not definite that the land acquisition will occur, two Regulating Plans were created – one depicting the proposed land acquisition and the other without the acquisition.

The issues highlighted above were just a few of the unique challenges our installations/garrisons faced as they developed their Area Development Plans. However, through a collaborative planning process that resulted in some creative, targeted solutions, these challenges are being addressed. Headquarters Installation Management Command continues to centrally fund Area Development Plan charrettes. Installations interested in Area Development Planning assistance should contact the Headquarters Installation Management Command Master Planning Branch.

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Corps of Engineers master planners support contingency base camps

by Joey Ball

Army master planners found a new niche to support the warfighter at Middle East base camps by applying a comprehensive process traditionally used at domestic garrisons.

Base Camp Master Planning is not new. Several U.S. Army Corps of Engineers districts have Base Camp Development Teams, managed by the Mobile District, that play a vital reach-back role in standing up base camps in contingency environments. These expeditionary bases are austere, and are built quickly with a tight mission focus. As time passes, missions change, new units pass through. More roads and structures are built, yet nothing is torn down, and new tenants arrive. The base camps occasionally evolve into semi-permanent and enduring locations.

With bare bones staff and almost never a planner, these base camps are forced into a reactionary cycle to support new tenants without consideration for their impact over the long term.

The result, 10 years later, can be a chaotic assortment of land use, which leads to sprawl, an excessive spacing between facilities and functions. Base sprawl hurts walkability of the cantonment area – particularly important since Soldiers don't have cars. They typically need grid streets, which enable clear wayfinding and facilitate the most efficient use of land parcels. Another common area of concern is redundant and reliable utility systems and infrastructure. Each installation deals differently with utilities based on location, availability, and host nation agreements. The Base Camp Master Plan is the central repository of all these issues accompanied by proposed solutions and future opportunities.

Seeing a need, the USACE Middle East District reached out to Fort Worth District in December 2014 for master planning support at various locations in the U.S. Central Command area of responsibility. These initial efforts resulted in the signing of a Memorandum of Agreement in August 2016 between Transatlantic Division and Southwestern Division to use the Fort Worth District Regional Planning and Environmental Center..

Aerial photography depicts base camp storm water flooding recorded from site visit by master planners. Current conditions and issues are recorded into the base camp master plan which can be used to absolve the issues in future planning efforts. (U.S. Army photo)

The Fort Worth team is building upon its experience in writing Area Development Plans for Army garrisons. The process normally begins with a weeklong planning workshop requiring a collaboration among all the stakeholders. But with the operational tempo of base camps, the workshops are shorter and involve only limited base personnel. Supplemental data is gathered for a site analysis by the planning team and through interviews with key installation staff. The team identifies existing conditions, and works with senior leadership to establish a vision, set goals, and develop objectives. Requirements must also reflect agreements with the host nation, to accommodate defense cooperation agreements and determine the applicable funding strategy.

The final comprehensive master plan identifies current conditions, issues and opportunities and then describes, through graphics, and a list of projects, the path to reach the desired end state. It notes what buildings need to come down, what roads need to be realigned, what needs to be built, or where and how should the base adjust.

The team's early success drew further work from U.S. Army Central Command, which runs bases for the Army and other Services across U.S. Central Command's area of responsibility. The Fort Worth Regional Planning and Environmental Center planning teams, working in partnership with the Middle East District, are now active in base camp master planning activities throughout the Central Command's area of responsibility.

Base camps are typically supportive of the team's efforts since they often can't get funding for projects unless they are cited in a master plan. As it is often stated in the military planning community, "funding flows to the installations with a plan".

The more base personnel learn of the program, the more they indicate a need for even more of it. The team is now working on a Sustainability Component Plan in Qatar. This plan typically follows an Area Development Plan or Base Camp Master Plan and will identify strategies for reduction or reuse of energy, water, and waste, as well as strategies for dealing with stormwater.

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(Placemaking, continued from page 13)

The trolley trail also has the ability to link several recreational loop trails into a single trail network. The culmination of this trail network meets the Garrison Commander's vision of an installation focused on the health and readiness of everyone who lives there.

Consolidation and concentration made up the vision for the academic campus and town center nodes.

The circulation network, based on these new pedestrian-oriented corridors radiating from the trolley trail spine, also defined the framework for future development parcels, which lead to the second insight of the planning exercise. The vision and goals for the Main Post districts proposed consolidating functions onto a smaller footprint to reduce maintenance costs. For installations with many historic structures, like Fort Leavenworth, the maintenance costs of these historic facilities strain the Directorate of Public Works' resources. Consolidating facilities reduces not only building footprint, but also the infrastructure serving the buildings, while maximizing its utility by concentrating users in the area. Consolidation and concentration made up the vision for the academic campus and town center nodes.

The form-based plan for parcels defined by pedestrian-oriented corridors allowed the plan to define a 20-year capacity for mission and community uses in the campus and town center. The active engagement of the Army and Air Force Exchange Service, for example, in the charrette process provided an understanding of the building leases and market demand that enabled the plan to anticipate phasing opportunities and integrate them into the master plan.

By integrating expectations of building lifecycle with a form-based capacity plan, the Main Post Area Development Plans identified opportunities for longer term facility consolidation on a 40- and 60-year horizons. These "very long term" consolidation visions illustrated an opportunity to relocate every facility from large swaths of land in areas of the post most threatened by encroachment, or with the most opportunity for close-in training, or redevelopment for future missions. These ideas are not as specific or prescriptive as the typical Area Development Plan with a 20-year horizon, but they provide important visionary context for future plan updates.

Active engagement of the tenants and senior leadership in the planning process bolsters the planning effort success. The Garrison Commander challenged the workshop participants to create an installation connecting the different post's communities on post, promoting fitness and community engagement, and preserving Fort Leavenworth's unique historical identity.

Stakeholders participate in a planning charrette at Fort Leavenworth, Kansas, where they worked on incorporating the post's history while developing two Area Development Plans. (Photo by Ben Zitelli)

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Planning in an overseas environment presents challenges

by David Schaarsmith

The U.S. Army is responsible for managing millions of acres of land and billions of dollars' worth of facilities and other infrastructure on its installations worldwide. According to a 2014 U.S. General Services Administration Federal Real Property Report, the U.S. Army owns more than 70,000 buildings totaling more than 800 million square feet. In addition to the owned facilities, the Army leases an additional 18 million square feet, with a total operating cost of more than $2.6 billion annually for the combined assets.

Management of the Army facility portfolio in steady-state conditions requires thoughtful and thorough planning to ensure efficient use of these assets and minimize ongoing capital and operating expenses. Shifts in global power in the Pacific and a reduction of the Army's active-duty force have significant impacts on the Army facility portfolio in U.S. Army Garrison Japan.

To address the impact of these changing conditions on installation real property, U.S. Army Garrison Japan recently conducted a hands-on charrette to initiate development of its master plan. Planning for military installations outside the United States always presents a unique set of challenges: cultural traditions and host country development patterns influence on-installation development; and project funding streams vary from country to country. U.S. Army Garrison Japan hosts both U.S. Army forces and Japanese Ground Self-Defense Forces and has assets at 16 locations across the archipelago.

Coordinating a stakeholder driven charrette from 14 time zones away for a garrison that spans 1,300 miles can present major challenges. To ensure full participation, in the weeks leading up to charrette the team conducted stakeholder interviews at 14 separate garrison locations. The data gathering effort culminated with a three-day visioning charrette attended by Japanese national and U.S. Army stakeholders to develop the Vision Plan.

Stakeholders, left to right, Joseph Kelley of Public Affairs, Roberta Barnett of the Environmental Branch, and Takashi Tsurumi of the Planning Branch, participating in the U.S. Army Garrison Japan real property vision charrette conduct a document review as part of the three-day meeting. (Photo courtesy of Michael Baker Jr., Inc.-AECOM Joint Venture)

The Real Property Vision Plan charrette developed a vision statement to provide a clear and concise description of a desired end state: Provide safe, sustainable, and adaptable installations that enable readiness in a joint and combined environment dedicated to support operations and contingencies in partnership with neighboring communities while improving the quality of life for service members, civilians, and families.

This vision will be implemented through six goals, each with measureable objectives: Safe Installations; Sustainable Installations, Adaptable Installations; Support Operations and Contingencies; Partner with Neighboring Communities; and Quality of Life.

In coordination with the Real Property Vision Plan, Installation Planning Standards were developed to capture the installation's guidelines for the development of sustainable and efficient facilities, in keeping with the installation's vision and planning objectives. The Installation Planning Standards specifies building, landscape, and street standards, which are developed to accomplish the following: promote visual order; enhance the natural and manmade environments through consistent architectural themes and standards; and improve the functional aspects of the installation. Because of the geographic distances encompassed within the garrison, multiple standards were developed to address different climates and cultures.

Developing a Vision Plan and associated Installation Planning Standards is the first step in developing the U.S. Army Garrison Japan's Real Property Master Plan, which will serve as the road map to ensure that real-property assets support long-term mission requirements.

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Area Development Plan helps define Marshall Army Airfield District

by Kevin Cooper

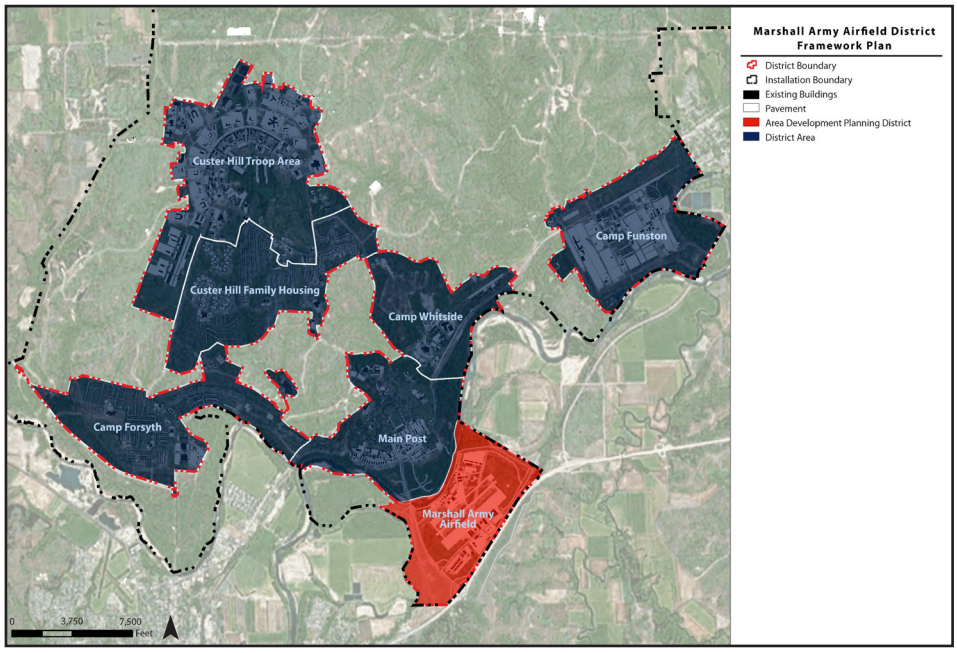
During a Vision Plan Practicum conducted two years ago, a Real Property Master Plan Vision Framework Plan divided Fort Riley, Kansas, into six identifiable and connected districts based on geographical features, land-use patterns, building types, and/or transportation networks. Dividing the installation into smaller, more manageable districts allowed for the identification of the needs and requirements resulting from mission and command priorities.

After developing the Vision Plan, Fort Riley master planners and other stakeholders turned their attention to another component of the Real Property Master Plan – the Long Range Component, comprised of multiple Area Development Plans, one for each of the districts identified in the Vision Plan. With numerous stakeholders following an iterative and collaborative approach, the Marshall Army Airfield District was developed at a workshop conducted in April 2016.

The Area Development Plan identifies capacity for future development and provides a plan for effective and sustainable implementation of the Vision Plan. It illustrates how compact and flexible development can occur within this area by maximizing capacity while improving the mission preparedness and the overall quality of life at Fort Riley.

At the beginning of the workshop, Garrison Commander Col. Andrew Cole, Jr., provided insight into leadership's goals and expectations as well as key ideas for stakeholders to consider during the master planning process:

- Focus on the dynamics of where the population live and work, as well as the accessibility to the day-to-day activities.
- Consider travel arteries and connections between camps (districts).
- Identify issues in the district and propose solutions that strengthen the infrastructure at Fort Riley for the coming years.



The Fort Riley, Kansas, Marshall Army Airfield Framework Plan. (Image courtesy of Michael Baker Jr., Inc.-AECOM Joint Venture)

- Focus on what can help the Marshall Army Airfield District continue to excel at its mission and be flexible for new missions in the future.
- Consider all of the potential implications of new development such as parking, storm water drainage and support facilities.

The plan was guided by the participation of various stakeholders during the charrette. Participants analyzed the existing conditions, developed a Real Property Vision for the Marshall Army Airfield District, identified program requirements, and ultimately crafted a plan that provides flexibility and long-range capacity.

Practicum participants worked in groups to develop alternative plans for future development using guidance provided by planning team members, informed by the District Vision Plan, Goals, and Objectives. The Preferred Alternative Plan selected by the charrette participants addressed the goals and objectives established for the Airfield district. Key elements of the Preferred Alternative are discussed below:

To maintain the ability to adapt to changing missions, the Airfield requires several key projects. By undertaking upgrades such as improved runway lighting and the construction of a new Air Traffic Control Tower, the Airfield will be prepared and adaptable for changing missions and new technology in the coming years. Airfield-related improvements will also help Fort Riley maintain relationships and important coordination with nearby regional airports, while enhancements that support the historic character of the installation, particularly elements such as a fence along I-70, will foster a positive public perception of Fort Riley. Roadway realignments and upgraded communication facilities will further enhance the security of the district.

Quality of life was a resounding issue during the charrette. Improving a running trail, constructing a multi-use field and renovating a building to accommodate a fitness center will allow Soldiers to spend less time commuting to and from the district. Furthermore, renovating the dining facility for Army and Air Force Exchange

(See Development Plan, page 19)

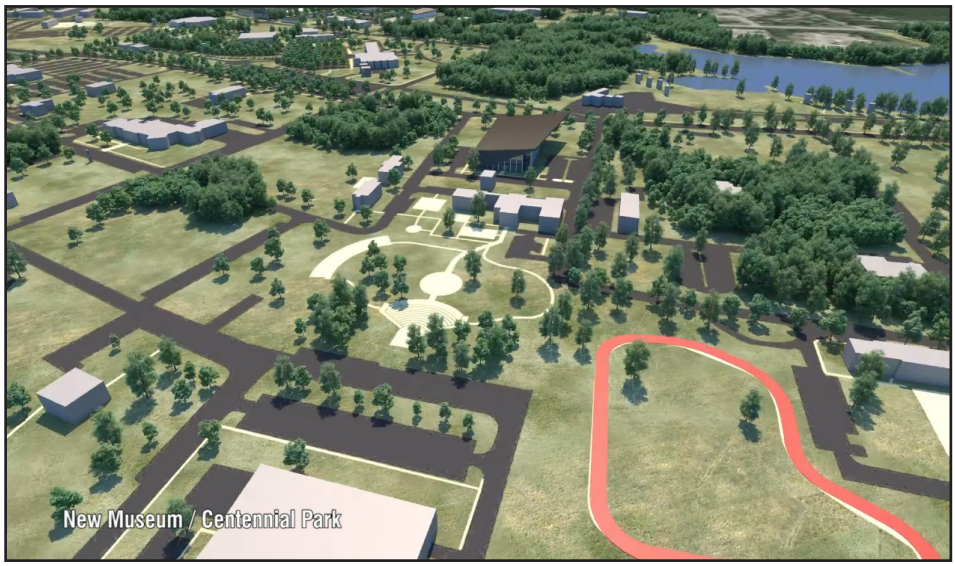
3-Dimensional Fly-Through Model guides Semmes District

by Ramona Taylor and Rachel Richter

The Semmes District is one of the primary Soldier and community support areas on Fort Jackson, South Carolina. It is largely occupied by Army Initial Training units, the Reception Battalion for Initial Entry Training, battalion headquarters, Directorate of Public Works shops and maintenance, as well as troop and community support organizations. Semmes District also contains Semmes Lake, Centennial Park, and additional green space used in part for training.

To enhance Fort Jackson's real property master planning activities and to assist leadership regarding decisions impacting real property and infrastructure, Headquarters Installation Management Command is funding a technique that is being newly employed to assist in this endeavor – 3-Dimensional Fly-Through Modeling.

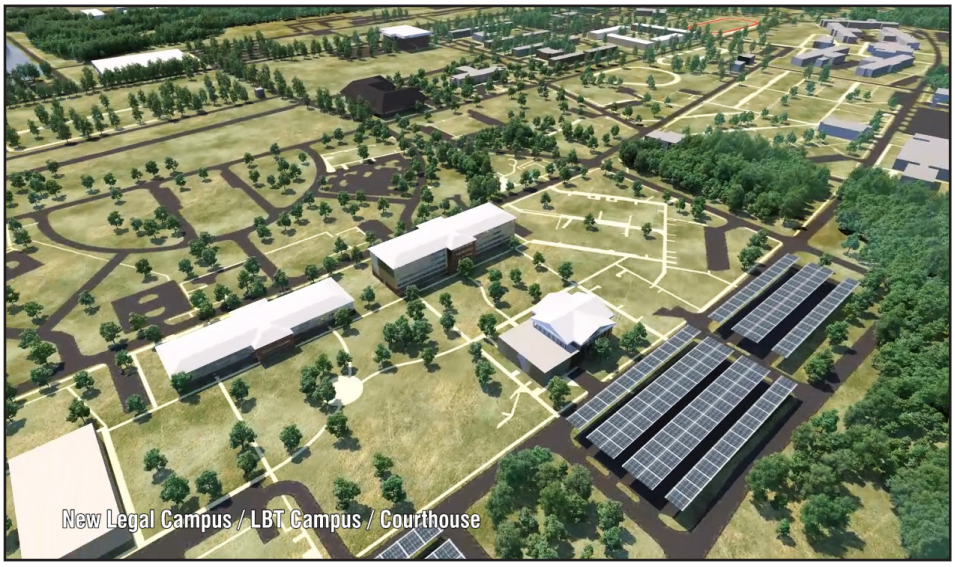
While this tool is not new to the planning world, this will be the first demonstration of how this technique can be used for an installation area development plan. Google SketchUp is the software being used to demonstrate the model. In addition to an introduction and purpose component, the model's site analysis element begins with an aerial view to properly orient viewers, then zooms into key project areas within the Semmes District. The model shows the limits of the site along with environmental considerations and factors including sun angles, prevailing winds, wetlands, approximate topography; site constraints, including Anti-Terrorism/ Force Protection set-back requirements, utility easements, noise contours; and any required demolition. Adjacent facilities, parking lots, and access roads also are shown and labeled.



The graphic shows the New Museum/Centennial Park concept for the Semmes District of Fort Jackson, South Carolina. (Graphic courtesy of Michael Baker Jr., Inc.-AECOM Joint Venture)

The model integrates several forms of software – AutoCAD, Adobe Illustrator, and Adobe Photoshop, Adobe After Effects, and Adobe Premiere Pro CC – to create a comprehensive 3-Dimensional representation of the long-range development plan.

With the master planning assistance of Headquarters Installation Management Command and U.S. Army Corps of Engineers Planning Support teams, Fort Jackson undertook a stakeholder-driven planning process to refine and formalize the long-range development plan for the Semmes District. This planning process focused on addressing key real property issues such as underutilized facilities, disconnected services, non-compliant access control points, and lack of recreational opportunities for the visitors of the basic trainees. Now, with the help of the 3-Dimensional modeling tool, Fort Jackson master planners will be better able to



The graphic shows the new Legal Campus/LBT Campus/Courthouse complex for the Fort Jackson, South Carolina, Semmes District. (Graphic courtesy of Michael Baker Jr., Inc.-AECOM Joint Venture)

(See Semmes District, page 20)

Resilient installation planning considers weather impacts

by Carolyn Mitchell

Military installations must maintain high levels of readiness to respond to rapidly changing unforeseen mission today and tomorrow. This requires installations to be resilient to change.

When developing installation master plans, the key factor is mission assurance and overall installation resiliency – missions must be supported no matter what man-made or natural situations occur. Part of that planning includes looking at the impacts climate can have. A climate-resilient installation is one that has a long-term plan that minimizes the potential for weather to impact facilities. An installation that has enacted a long-term plan to reduce energy will be ready to cope with weather that places higher demand on energy, for example. Similarly, an installation that has enacted a long-term plan that shifts development density away from flood-hazard areas will be ready to cope with future flood events

A flash flood event at Fort Irwin, California, caused $100 million in damage. Understanding how past weather events impact an installation can inform planning decisions. (U.S. Army photo)

Weather impacts are routinely taken into account during master planning. The potential for extreme weather events to increase in magnitude or frequency over the long-term planning horizon indicates that master planners must be aware of the types of impacts their installation may sustain from wind, water, fire, heat, or other extreme weather phenomenon and plan real property investments that avoid the potential damage. To integrate climate-adaptation considerations into the master planning process effectively, planners should be prepared to propose adequate and appropriate measures that decision makers can act on and use the Real Property Master Planning process to ensure these measures are integrated with other planning goals. Several strategies can be employed to ensure that long-term planning makes adequate provision for weather impacts without overinvesting in unnecessary measures.

Know your risks

Planners can begin with a basic understanding of the types of weather-related effects the installation faces – flash flood, heat wave, flooding, or high winds such as tornados or hurricanes, for example - and the scale of damage these events are capable of inflicting. Understanding how past weather events have impacted the installation can inform planning decisions. Constraints analysis that accounts for these impacts is an integral part of planning practice now. Flood hazard areas, conditions conducive to wild-fire, and the impact of seasonal temperature fluctuations are well-understood and addressed through context-sensitive planning and existing standards and mandates. Ensuring that development scenarios considered during the planning process take these into account is a matter of due diligence.

(See Resilient Installation, page 23)

(Development Plan, continued from page 17)

Service food service will provide an additional amenity that does not currently exist in the district.

Opportunities were identified to renovate existing historic structures for mission-related functions in order to ensure that the structures will remain viable in the years to come. An historic residential area within the district will be enhanced with screening to provide a buffer between it and an adjacent motor pool area.

Continued remediation of existing environmental issues will prevent contamination from spreading and ensure that future development will not be impeded. Overall, a sustainable Marshall Army Airfield District will be achieved through planning modern, flexible facilities that incorporate energy efficiency strategies such as natural daylighting and open floor plans.

Area Development Plans, as well as Real Property Master Plan Vision Plans, are funded and facilitated by Headquarters, Installation Management Command to assist with compliance of the Unified Facilities Criteria 2-100-01.

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(Semmes District, continued from page 18)

analyze some of the major elements of the preferred development plan for Semmes District, including:

- Road enhancements, such as designated bicycle lanes and pedestrian trails to improve multi-modal transportation and safety throughout the District;
- Demolition of World War II-era wood warehouses, and the preservation of open and green spaces for future growth and flood management;
- Consolidation of community support services and troop amenities, relocated to improve accessibility and work-life balance;
- Construction of a Town Center that provides a centralized commercial and support services hub to link Semmes District to adjacent residential communities and basic training missions;
- Preservation of open spaces for future notional growth capacity; and,
- Addition of green spaces to ensure development of walkable trails with points of interest that highlight the history, missions, and successes of Fort Jackson.

The 3-Dimensional Model helps to communicate these core plan elements in a quick and easy-to-understand snapshot; helping to continue the vital support from leadership and stakeholders and enhancing the commitment to the plan.

The 3-Dimensional Model helps to communicate these core plan elements in a quick and easy-to-understand snapshot…

Headquarters Installation Management Command intends to fund a number of these fly-throughs throughout its installations worldwide to enhance real property master planning analysis capabilities. Installations interested in learning more should contact the Headquarters Installation Management Command Master Planning Branch.

Editor's note: *Want to learn how to make these wonderful 3-Dimensional planning images? PROSPECT Course 948, Master Planning Visualization Techniques, offers a uniquely crafted hands-on course that provides instructions in SketchUp, Photoshop and 3-D visualization techniques so essential in creating powerful planning products and offers American Institute of Certified Planners and American Institute of Architects continuing education credits. The course will be offered Aug. 1-4, in Huntsville, Alabama. It is open to Army, Department of Defense, Federal agencies and even the general public and contractors. Contact the Registrar at U.S. Army Corps of Engineers Learning Center for information on how to register: http://ulc.usace.army.mil*

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Xeriscaping projects save water at 53rd Regional Support Command

by Jonelle Kimbrough

In the 1746 edition of *Poor Richard's Almanack*, American statesman Benjamin Franklin wrote, "When the well is dry, we will know the worth of water." The U.S. Army Reserve knows the worth of water. In fact, the success of every mission depends on it. At some sites, though, drought is turning water into a limited resource and conservation into a necessity.

The 63rd Regional Support Command has found a practical way to combat the drought and reduce water consumption with some unique landscaping projects.

"Water conservation projects were, and are, necessary due to the water use observed at many sites," said Varun Sood, a 63rd Reserve Support Command resource efficiency manager. Many facilities in the command, which includes the states of California, Nevada, Arizona, New Mexico, Texas, Oklahoma and Arkansas, are located in arid geographic areas that continuously experience drought and water scarcity, resulting in high water bills and a lack of water security that threatens to disrupt readiness.

"We want to reduce our total water consumption," Sood said. To that end, xeriscaping was added to conservation efforts.

Xeriscaping is landscaping and gardening in a way that reduces or eliminates the need for supplemental irrigation. Originally developed for drought-afflicted areas, xeriscaping principles have a broadening appeal as a result of their many benefits.

Typically, xeriscapes have features that are less water intensive such as stone ground covers and native plants, which are plants that have naturally occurred in a particular habitat over time, with no human intervention. Native plants are well adapted to an area's unique climate and environmental characteristics such as its water availability, soil composition and indigenous insects. Xeriscapes therefore require less water, fewer fertilizers and fewer pesticides. As a result, these designs have the long-term potential to conserve water, prevent chemical pollution and save money. Hays Kinslow, an energy manager with the command, said xeriscapes also improve the aesthetics of their sites and reduce the need for water infrastructure and grounds maintenance.

A xeriscape at Bell Army Reserve Center, Bell Gardens, California, has contributed to water conservation efforts at the U.S. Army Reserve's 63rd Regional Support Command. (Photo by Varun Sood)

During the past two years, xeriscapes have been completed in California at Los Alamitos Reserve Center in Los Alamitos, Holderman Hall Reserve Center in Los Angeles and Bell Reserve Center in Bell Gardens. "They are large facilities where we could make a big impact due to the amount of water used there for irrigation," Sood explained. Currently, another xeriscape is planned for Leymel Hall Reserve Center in Fresno, with the command exploring ways to incorporate xeriscaping in future projects.

According to Sood, all of the command's projects include plants native to California, stone ground covers, drip irrigation systems and other features of a traditional xeric garden.

When xeriscapes have been combined with additional water conservation methods, such as plumbing improvements, the results have been quite impressive. The 63rd Regional Support Command has reduced its water use by nearly 38 percent from fiscal year 2014 to fiscal year 2015. "Xeriscape projects have reduced the need for irrigation and have definitely contributed to a reduction in water use at our sites," Sood said.

With innovative ideas for landscapes that work with the environmental conditions at sites, the 63rd Regional Support Command is contributing to a culture of conservation across the Army Reserve – making every drop count.

For more information on the Army Reserve and its sustainability programs, visit usar.army.mil or usarsustainability.com.

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Louisville District in-house teams create sustainable designs

by Carol Labashosky

With skill, precision, innovation, and integration the Louisville District Army Corps of Engineers' Engineering Division Design Branch in-house design teams are exceeding its customers' expectations – delivering high-quality sustainable projects and design services on time and within, or under, budget.

"They are doing it more cost effectively, in most cases, than their private sector design firm counterparts," said Linda Murphy, Louisville District deputy engineer. "The teams are showing that they are efficient and on the average, their design costs are competitive."

A district analysis showed that staying within budget was realized by a reduction in design modifications, which saves money.

The in-house design teams of architects, interior designers, structural, mechanical, electrical and civil engineers, and computer-aided design technicians work on a wide range of building types supporting the district's military and civil works construction missions and operate similar to private sector design firms.

"Customers - those military agencies for whom the district works – benefit tremendously and so do the Soldiers that our work supports," Murphy said.

Because of the teams' focus on each component of design for their projects, some Army Reserve training facilities designed by the in-house team can be constructed at costs even below the project authorization, a testimony to the efficiency of the designs.

This is evident in the Fort McCoy, Wisconsin, Combined Arms Collective Training Facility or "CACTF" project, which is serving as an example for future projects.

In-house designers introduced a new standard for building Army training facilities such as the one at Fort McCoy, by using Building Information Modeling software to design each building in the training environment. The building models, designed with Microstation Triforma, allow future CACTF projects to start with the function designs and modify them for a specific location, saving design time and money.

The Pittsburgh Air Force Reserve Lodging Facility was the first Louisville District project to achieve Leadership in Energy and Environmental Design Gold Certification. It provides guest rooms for the 911th Airlift Wing and personnel on temporary duty. (U.S. Army photo)

Architects now use Autorad Software and Revil to design buildings, which further demonstrate the team's capabilities, said Steve Thibaudeau, Louisville District civil engineer and CACTF design team lead.

"I was very impressed with the professional way the CACTF project was worked and designed," said Terry Hoff, a former Fort McCoy installation range manager. "The Soldiers who will train on this facility will be the real benefactors of all the district's hard work."

The Louisville District's in-house design team has received distinction in that it functions as an integrated staff to include the customer throughout the project. Designers visit construction sites to verify design and troubleshoot construction issues, visit existing buildings, conduct interviews with those who will use the facilities, and use the lessons learned. Throughout construction, designers continue to be an integral part of the delivery process through a collective look at shop drawings, specification reviews and interpretations. "The process is totally integrated," Thibaudeau said.

The Pittsburgh Air Force Reserve Lodging Facility was the first Louisville District project to achieve Leadership in Energy and Environmental Design Gold Certification. Located at the Pittsburgh Air Reserve Station, in Allegheny County, Pennsylvania, the facility is a $12.4 million, 50 room, 28,300 square foot, three-story building that provides guest rooms for the 911th Airlift Wing and personnel on temporary duty.

The challenge was to create and maximize the number of visiting quarters and business suites. The lodging master plan included designing three more buildings for additional visiting quarters, and a dining building.

Positioning the business suite balconies facing outward resulted in 40 sleeping rooms for each phase creating an exterior court for guests. Each building operates independently reducing utility costs when not occupied. The entire complex is tied together with sidewalks, stairs, landscaping and low level site lighting making an impact on visitors. Energy efficient features include insulating concrete forms, and using low

(See In-house Teams, page 23)

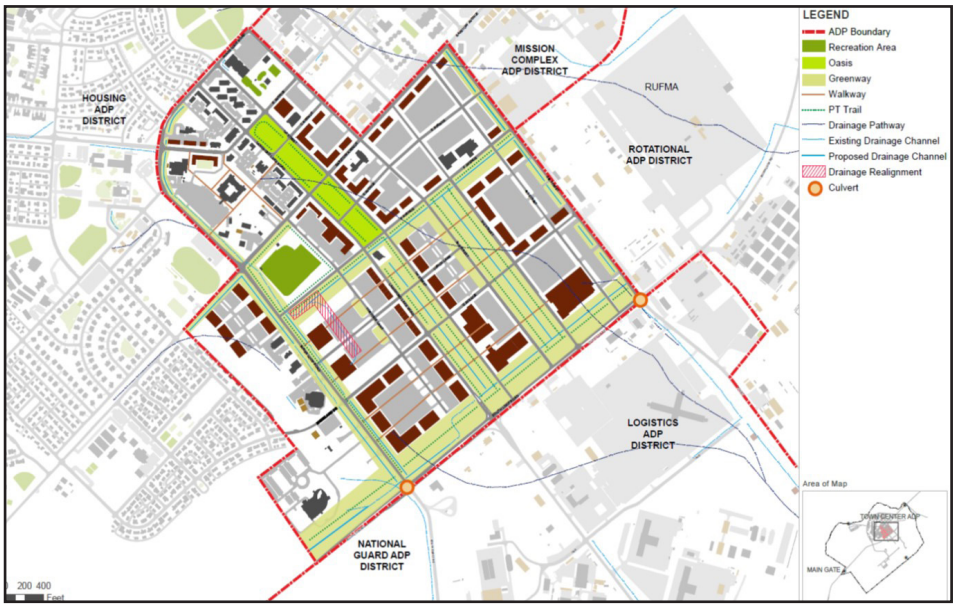
(Resilient Installation, continued from page 19)

Where information is available on potential increased risk, it should also be taken into account. The range and type of information that is available on climate change is voluminous, complex, and based on information that is uncertain – due to the nature of climate modeling and to the inherent variability of nature. Making investment decisions under conditions of uncertainty requires careful vetting of potential investments to ensure they are justified by other benefits, take an appropriate planning horizon into consideration, or are flexible and adaptable so that they can accommodate future conditions as they emerge.

The lack of decision-quality data does not preclude conducting planning level analysis and updating the analysis as information is refined or guidance is provided. A preliminary analysis using readily available data, existing studies, and existing standards can provide a useful roadmap for future analysis while at the same time identifying opportunities to provide the installation with a no-regrets safety margin.

Know your options

The engineering, environmental, and planning professions have developed a toolbox of measures that specifically address climate resiliency. Identifying a range of potential adaptation measures that specifically address climate-related impacts at the installation will provide planners with land use, structural, or facilities approaches to consider during alternatives development. Many of the approaches that ameliorate climate impacts have land use implications that are readily accommodated if they are considered in the context of the Real Property Master Plan and are part of a long-range plan.



Integrate climate considerations into planning process

The range of adaptation measures that the installation considers during Real Property Master Planning can be vetted as part of constraints analysis so that approaches that are feasible and compatible with the installation's natural and cultural resources are evaluated during the Vision Plan stakeholder engagement. Providing stakeholders with sufficient information on climate-related constraints and options for addressing them allows for a more robust Strengths, Weaknesses, Opportunities, and Constraints analysis. Ensuring that subject matter experts participate as stakeholders sets the stage for integrating adaptation measures into the Vision Plan. Testing potential futures that include climate adaptation measures during alternatives analysis will allow planners to identify a future development plan that confers resiliency benefits and is also compatible with the other planning goals that the installation sets for itself.

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(In-house Teams, continued from page 22)

flow toilets, faucets and shower heads to attain a 30 percent water use reduction.

The team designed the Sustainment Brigade Administration Facility, Fort Campbell, Kentucky, with an energy efficient, water-saving, environmentally friendly approach.

The team maximized the sustainable design features most suitable for the Fort Campbell region, which will be replicated on future projects. Its green features include enhanced storm water management, a geothermal heating, ventilation and air conditioning system, solar hot water, rainwater harvesting system and lighting design strategy. A photovoltaic panel system generates energy that is returned to the electric grid. In total, these features reduced the building's energy consumption by 50 percent.

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Intergovernmental program promotes partnering with communities

by Paula Loomis

Today local communities seem more and more entwined with military installations. The actions of the local transportation departments affect how and how quickly people get to work and the changes to road systems (or the number of units we move onto the installation) affect traffic immediately outside the installation. That same increase in units affects housing availability/prices off-base as well as local schools and shops. Finally how we plan and respond to natural disasters can impact the communities outside our boundaries.

Some of our installations have several local governments, many community organizations, a few fellow federal agencies and perhaps several state organizations to coordinate with when they plan. One community has developed a process to help when installations need to coordinate with many multiple partners on community-wide issues.

In response to the need to plan for resiliency, the Hampton Roads, Virginia, area developed a program called "Community Approach to Sea Level Rise Preparedness and Resiliency Planning". The program included 11 federal agencies (including the Navy, Army, Air Force, Coast Guard and the Federal Emergency Management Agency); 13 local governments, several local quasi-government agencies and local community groups. Old Dominion University spearheaded the initiative, but a similar program could be spearheaded by any organization or the leadership could be shared.

The initiative, which began in 2015, established an organizational structure between all the entities so each could share initiatives that would require/benefit from cross-entity collaboration. Currently there are three Joint Use Land Studies that are taking advantage of the relationships developed in the Community Approach. In the future it is anticipated that installation master plans and resiliency planning will take advantage of those relationships to strengthen and coordinate the plans developed. It is envisioned that the Community Approach could be used for coordination for a variety of installation/agency/organizations initiatives.

For more information about how installations can create a similar program, contact Ray Toll at rtoll@odu.edu or 757-683-6650. He can provide information to get you started.

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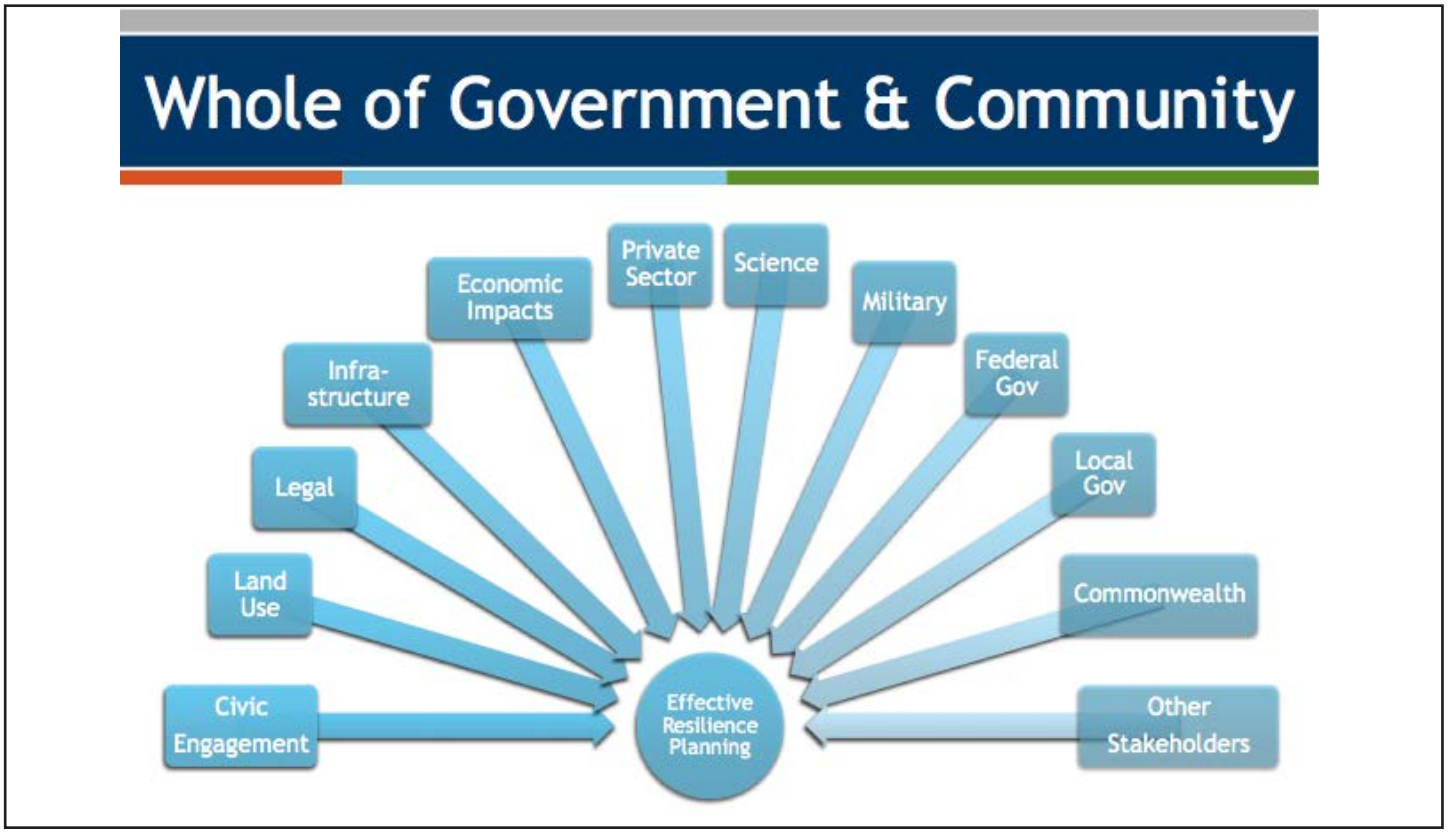

Hawaii barracks renewal program represents end of an era

by David Pawlak and Kenneth Hays

SCHOFIELD BARRACKS, Hawaii – The Army in Hawaii is finally ending a more than two decade program of renovating and replacing its Unaccompanied Enlisted Personnel Housing barracks on historic Wheeler Army Airfield, Schofield Barracks, and Fort Shafter.

The Whole Barracks Renewal program, which began in 1994, was focused on renovating or replacing existing barracks that were initially constructed in the early 1900s in support of the 25th Infantry Division (Light).

The newly designed barracks meet the latest design criteria for Unaccompanied Enlisted Personnel Housing and also address the results of a Tri-Service Barracks survey, which focused on providing Soldiers with more living space, more privacy and less immediate control.

The Whole Barracks Renewal program modernized the barracks' interiors and removed Company Operations from the barracks. There was greater emphasis placed on exterior amenities like landscaping, privately owned vehicle parking and recreational areas to evoke a sense of community.

Each living unit/quarters accommodates no more than two Soldiers with separate sleeping quarters and a shared common area latrine, referred to as "1+1" barracks. The barracks also contain laundry facilities and a mail room.

Draperies have been replaced with blinds, and traditional keyed locksets have been replaced with a keyless proximity swipe card lock system found in most of today's hotel operations. This also saves the Directorate of Public Works from an endless stream of trouble tickets for lost keys or damaged door locks.

In addition, special attention has been paid to making sure the facilities are hardened and able to withstand the normal wear and tear of military units rotating through these facilities, while at the same time eliminating the sanitary or industrial look and feel of the facilities.

Photo shows the interior courtyard at Quad C, Schofield Barracks, which is a National Register District. (U.S. Army photo)

The program also rehabilitated several historic barracks facilities like the Quads at Schofield Barracks. These barracks were retrofitted with modern interiors, but maintained their exterior historic features, which included the landscape.

The historic renovations have received preservation awards for the exceptional job at meeting current needs and keeping a connection to the heritage of the Army in Hawaii.

Building 104 at Tripler Army Medical Center was renovated with energy conservation elements integrated into its design, which resulted in a Green Building Leadership in Energy and Environmental Design Gold certification. This project also received a historic preservation award for the restoration of the building's signature exterior features, such as its pink color.

This year will be the last year for new barracks construction in Hawaii for a long time to come. The newest facilities are located on Wheeler Army Airfield and consist of two, six-story buildings that will accommodate up to 202 Soldiers per facility for a total of 404 living spaces.

The Soldiers who will be moving into these new barracks are currently living in old homes that were retrofitted for Soldiers as a stop-gap measure. They will be demolished after the Soldiers have been relocated to the new barracks.

This 22-year barracks replacement program has been a long time coming and was long overdue. The hope is that U.S. Army Garrison, Hawaii won't have to wait another 100 years before its next cycle of barracks replacement projects begin.

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U.S. Army sweeps Federal Energy and Water Management Awards

by Dennis Bohannon

PENTAGON – The U.S. Army received seven Federal Energy and Water Management awards from the U.S. Department of Energy's Federal Energy Management Program, shared an eighth award, and significantly contributed to a ninth award.

The awards were presented in five categories by Dr. Timothy Unruh, Federal Energy Management Program director, during a November ceremony in Washington, District of Columbia. The Federal Energy Management Program, with the Interagency Energy Management Task Force, sponsor the annual awards to recognize individuals and organizations for significant contributions to energy and water efficiency within the federal government.

The Assistant Secretary of the Army for Installations, Energy and Environment Katherine Hammack participated in the award ceremony, congratulating the awardees for their impressive achievements.

"Across the Federal government, you are helping lead the way in advancing energy efficiency, deploying renewable energy, supporting water reclamation and reuse, investing in integrated planning and design efforts, and leading educational campaigns on sustainainblity.

"The Army has a history of leading by example in determined support of our national warfighter. As administrations and priorities change, we believe our energy and sustainability efforts strongly 'Soldier on' to support increasing Army mission capabilities today and preserving our operating ability in the future. Our team is working to establish specific energy and water security requirements for our Army installations so that consideration of redundant and diverse supplies of energy and water, from renewable sources, is the logical and cost effective norm to support our military mission," she said.

"I am honored to share in the celebration of your success," she added.

Katherine Hammack, center, poses with recipients of the Federal Energy Management Program Director's Award: Randy Shed of the Assistant Secretary of the Army (Installations, Energy and Environment); Randy Smidt, Office of the Assistant Chief of Staff for Installation Management; David Williams, Headquarters U.S. Army Corps of Engineers; Margaret Simmons, Army Corps of Engineers, Huntsville; Michael Norton, Army Corps of Engineers, Huntsville; and Pamela Griffith, Defense Logistics Agency – Energy. The award, the highest award possible, was awarded the team for their roles in enabling the Army to surpass $1 billion in Energy Saving Performance and Utility Energy Saving Contracts in response to a Presidential challenge to all federal agencies. (Photo by Lt. Col. Patrick Dagon)

Director's Award

The Director's Award, the highest award possible, was presented to the Army team that enabled the Army to surpass $1 billion in Energy Saving Performance and Utility Energy Saving Contracts in response to a Presidential challenge to all federal agencies. Recognized individuals were: Randy Shed, Office of the Assistant Secretary of the Army (Installations, Energy and Environment); Randy Smidt, Office of the Assistant Chief of Staff for Installation Management; David Williams, Headquarters U.S. Army Corps of Engineers; Margaret Simmons and Michael Norton, both from the Army Corps of Engineers, Huntsville; and Pamela Griffith, Defense Logistics Agency Energy.

Career Exceptional Service Awards

Two Army civilians received the Career Exceptional Service Award – Brett Jackson and Keith Yamanaka.

Jackson is the sustainability, energy, and engineering branch chief with the Construction Facility Management Office of the Colorado Department of Military and Veterans Affairs, spending 19 years in federal service, which includes active duty with the U.S. Army Corps of Engineers. Jackson created innovative approaches and instituted effective strategies that enhanced the Colorado National Guard's capacity to meet its mission while maximizing energy efficiency and sustainability and increasing renewable energy use.

Yamanaka was recognized for his 24-year career at the Army Installation Management Command, where he improved the efficiency and resiliency of critical energy, water, and mechanical systems for 22 Army installations throughout Hawaii. He instituted retro-commissioning, solar hot water, central chilled water plants, and building energy monitors across a large, diverse, and historical area. During the past several years, he has championed a 50-megawatt

(See Awrads, page 27)

(Awards, continued from page 26)

utility-owned generation plant at Schofield Barracks, Hawaii to increase service reliability for critical Army installations and the island of Oahu.

Contracting Award

A Contracting Award was presented to Christine Ploschke of the U.S. Army's 99th Regional Support Command on Joint Base McGuire-Dix-Lakehurst in New Jersey.

Serving as both the environmental compliance chief and the energy manager for the 99th U.S. Army Reserve Support Command, she was recognized for guiding the energy program and team in securing significant energy and water security-related contracts. One of her biggest accomplishments was implementing an energy savings performance contract designed to achieve $57 million in savings during a 21-year period, which will result in three net zero electric sites.

Program Awards

Program Awards were presented to teams from Fort Bragg, North Carolina, and the New Jersey Army National Guard at Lawrenceville, New Jersey.

The Fort Bragg team consists of Aaron Brown, Brett Funck, Melinda Hakeman, Audrey Oxendine, and Monica Stephenson. Fort Bragg makes up 5 percent of the Army's energy consumption associated with facilities management, and in fiscal 2015 it reduced its energy use intensity by 27.2 percent compared to the 2003 baseline. The energy program employs a multi-pronged approach that reduces energy consumption through awareness and education of building occupants; improving system efficiency through operation, maintenance, and retrofits; and integrating energy security considerations throughout the planning and design process. The Fort Bragg Directorate of Public Works is involved in the project development stage of all projects that directly support the mission, save energy, leverage resources, and reduce the installation's and the Army's long-term operating costs.

The New Jersey Army National Guard's team of Chief Warrant Officer Thomas Comyack, Vernon Hicks, Col. Michael Lyons, Christopher Moore, and Samantha Valentine are credited with developing the New Jersey Army National Guard's comprehensive energy and water conservation program, the Clean Cut Campaign, in collaboration with Rowan University, leading to a 64 percent decrease in energy use intensity from the 2003 baseline. The campaign components include a 15-year comprehensive energy and water master plan, a high efficiency lighting initiative, a statewide solar photovoltaic development plan, and an education and awareness campaign.

Project Awards

Project Awards were presented to U.S. Army Corps of Engineers Mobile District, Tennessee-Tombigbee Waterway Mobile, Alabama, and the Department of the Army, U.S. Army Corps of Engineers, and Fort Riley, Kansas.

In fiscal year 2015, the U.S. Army Corps of Engineers Mobile District, Tennessee-Tombigbee Waterway completed construction on projects using the first-ever energy savings performance contract within the Corps of Engineers Civil Works directorate, with an investment value of more than $3 million. The Tenn-Tom contract was a "proof of concept" initiative, intended to demonstrate the viability of using such a contract to implement energy conservation measures at a series of small, geographically dispersed facilities, including high-mast lighting at the 10 locks and dams along the 234-mile navigation channel that collectively comprise the waterway. Today similar contracts are being used along all Corps of Engineers locks and dams in the Mississippi Valley region from St. Paul, Minnesota, to New Orleans.

The Department of the Army, U.S Army Corps of Engineers, and Fort Riley, Kansas shared an award with the U.S. Environmental Protection Agency. The EPA, Army Corps of Engineers, and Kansas United School District 475 partnered to demonstrate and monitor a green infrastructure permeable pavement parking lot on Seitz Elementary School at Fort Riley. The green infrastructure parking lot, comprised of permeable interlocking concrete pavers, reduces storm water runoff and its associated pollutants. The parking lot also is serving as an educational platform for the school as students will have the opportunity to use the senor data and see the permeable pavers in action.

Worthy of Mention

Worthy of mention is the Project Award presented to the Department of Defense for its Smart Power Infrastructure Demonstration for Energy Reliability and Security (SPIDERS) Joint Capability Technology Demonstration in Hawaii and Colorado. A collaborative effort between the Department of Defense, the Department of Energy, the Department of Homeland Security, and five Department of Energy National Laboratories, the project delivered cyber-secure smart microgrids at three DOD installations in Hawaii and Colorado, providing the intelligence to maximize the efficient use of existing and new generators, batteries, and solar photovoltaics. It was the first base-wide microgrid in the Department of Defense with the capability of long-term power using onside industrial quality generating equipment integrated with solar energy and stationary energy storage, as well as the ability to generate up to $1 million through ancillary services to the local utility.

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Army facilitates alternative energy, security expansion in Southeast

by Michael McGhee

Energy is key to everything the Army does. Potential energy supply shortfalls and power distribution failures represent a strategic vulnerability – they increase the risk to Army missions. The Army must have more certainty that it can accomplish its mission in a world defined by uncertain, adverse, and dynamic conditions.

That is why the Army's Office of Energy Initiatives is committed to implementing large-scale renewable and alternative energy security projects that will strengthen the resiliency of the electric grid serving our installations, and seeking opportunities to increase the security and sustainability of our energy supply. These include projects for distributed generation sources, like solar, wind and natural gas plants, plus onsite storage batteries and microgrids – all leveraging private investment. The Army is making great progress, especially in the Southeastern United States. By collaborating with utilities, industry and other key stakeholders the Army is leading the way in developing energy projects that support the military as well as the local communities.

In Georgia and Alabama alone, Army renewable energy projects total close to 125 megawatts. They include three 30 megawatt projects in Georgia, at Forts Benning, Gordon, and Stewart, and three large-scale renewable solar projects in Alabama, at Anniston Army Depot, Fort Rucker, and Redstone Arsenal. With these projects, Georgia jumped from 16th to 8th in state rankings of new solar power production installed. The Forts Benning, Gordon, and Stewart 30 megawatt solar projects, each comprised of more than 130,000 solar panels, are the largest operational solar projects in the Army to date.

In Alabama, the 10 megawatt solar projects at Anniston Army Depot and Fort Rucker broke ground in 2015. The projects in Alabama are expected to be operational this year. Combined, they increase by 20-fold the amount of installed solar power in Alabama. Solar is becoming an increasingly viable distributed generation energy technology in the Southeastern United States and Army-led efforts lead the way.

At Fort Benning, Georgia, 133,950 solar panels make up the 30-megawatt solar array. It's just one of the U.S. Army renewable energy projects that total close to 125 megawatts of power in Georgia and Alabama. (U.S. Army photo)

While renewable energy growth in the South is expanding, there is a lot of potential for additional growth. Local state and federal investment and regulatory incentives, combined with a considerable drop in the cost of solar technology, have created a strong wave of investment capital and helped fuel an equally strong increased demand for solar. According to a *U.S. Solar Market Insight Q2 2016* report by Greentech Media Research in conjunction with the Solar Energy Industries Association, in 2016 the U.S. solar industry was expected to 14.5 gigawatts of capacity, a 94 percent increase above 2015. In the first quarter, solar made up 64 percent of all new electric generating capacity in the U.S.

It also is worth noting that as of 2014, the solar industry employed 209,000 people, with almost 10 percent of those jobs held by military veterans. Many are graduates of the Solar Ready Vets Program, a program strongly supported by the Army, which connects exiting military personnel to jobs in the solar industry, enabled by the Department of Defense's Skill Bridge initiative.

Nationwide, the Office of Energy Initiatives has facilitated six large-scale renewable and alternative energy security projects that are on-line and producing almost 185 megawatts of power. Five additional projects, totaling more than 140 megawatts, are in the final stages of development or construction. Together, these 11 projects are expected to provide approximately $182 million in cost avoidance for the Army throughout their lifetime. The total current Office of Energy Initiatives portfolio, including additional projects in the assessment and validation phase, has a potential capacity of more than 500 megawatts – about half of the one gigawatt of renewable energy that the Army seeks to deploy by 2025.

The Army's renewable and alternative energy security efforts are proving to be both good for the Army, good for the industry upon which the Office of Energy Initiatives relies to deliver power to our installations, and good for the surrounding local communities.

For more information on the Army's large-scale renewable and alternative energy security initiatives, to follow our progress, and to receive the OEI News, periodic news updates and information about our current projects and future opportunities, visit www.oei.army.mil.

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Army studies feasibility of co-digestion, food waste at Fort Huachuca

by Giselle Rodriguez, Dr. Marc Kodack, and Wanda Johnsen

A wastewater treatment plant is the one facility where energy, water, and waste issues are interconnected and influence each other, an important consideration when establishing Net Zero goals. In terms of water, our domestic water use efficiency is directly correlated to wastewater strength, which influences the treatment efficiency and the potential for effluent reuse. In terms of energy, the process itself is very energy intensive, but energy generation is possible via biogas from anaerobic digestion of the solids generated. This directly affects waste generation and disposal, as the disposal of the biosolids generated is a significant cost.

Wastewater treatment plants with existing anaerobic digesters have the ability to co-digest a variety of organic waste materials (in addition to biosolids), especially the energy-rich carbohydrates, proteins, and lipid wastes found in food waste. Co-digestion at these facilities provides a number of economic, environmental, and human health benefits.

From an economic perspective, delivering water and wastewater services is an energy-intensive effort and can account for a large portion of a facility's total operating and maintenance costs. Co-digestion has the potential to generate renewable energy on-site in the form of biogas, which can be used as fuel for vehicles or to generate heat and power. Environmentally, co-digestion can reduce the carbon footprint of waste by diverting these materials from the landfill, where methane may be generated and released into the atmosphere. In addition, co-digestion practices can minimize hauling distances for municipal solid waste, reducing truck traffic and associated air emissions.

The office of the Assistant Secretary of the Army for Installations, Energy and Environment has tasked the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory to evaluate the feasibility co-digestion of food waste using existing wastewater treatment plant equipment to generate renewable biogas energy. The laboratory has teamed up with the Installation Management Command and U.S. EPA Office of Research and Development to conduct this study.

Anaerobic digesters at the Fort Huachuca, Arizona, Waste Water Treatment Plant have the ability to help reduce the carbon footprint of waste on an installation and help it meet Net Zero Energy goals. (U.S. Army photo)

The U.S. Army Garrison Fort Huachuca, Arizona, was selected as the study site as its on-post wastewater treatment plant has two anaerobic digesters currently not in use, making it an ideal candidate for this study.

As part of Installation Management Command's Net Zero Waste efforts, the team conducted a waste characterization during the summer of 2015, which determined that the majority of the waste generated at Fort Huachuca was organic waste. The study also found several "waste" materials were being disposed of at a cost that could instead be used as feedstock for anaerobic digestion, eliminating their associated disposal cost. These materials include food waste, grease traps, cooking oil, and biosolids.

As part of the study, the potential co-digestion conditions are being modeled using the U.S. EPA Co-Digestion Economic Analysis Tool. Developed by EPA's Office of Research and Development, this tool assesses the economic feasibility of co-digestion at wastewater treatment plants given specific conditions and using national average values for main functions.

The model scenarios considered were: (a) addition of food waste to improve the heat-energy balance, (b) generation of combined heat and power, and (c) generation of compressed natural gas for vehicle fuel. All three scenarios will benefit the installation by increasing diversion of materials from the landfill, saving in current disposal costs and tipping fees, and providing a fuel product that could be used in installation vehicles.

At the conclusion of this study, and based on the scenario best suited for Fort Huachuca, the laboratory and EPA team will provide hardware specifications and a detailed cost-benefit analysis determining whether or not the co-digestion approach is feasible.

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Rodriguez is an environmental engineer at the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory, Kodack is the Net Zero Water lead in the Office of the Assistant Secretary of the Army (Installations, Energy and Environment), and Johnsen is the Net Zero Waste lead in the Office of the Assistant Secretary of the Army (Installations, Energy and Environment).

Sharing lessons learned helps in transitioning to microgrids

by Melanie Johnson, Tarek Abdallah and Harold Sanborn

The technical management team from the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory is completing its part of a five-year demonstration of the Smart Power Infrastructure Demonstration for Energy Reliability and Security Joint Capability Technology Demonstration at Camp Smith, Hawaii. The team is sharing lessons learned that should be useful in creating a "rainbow of satisfaction" for transitioning to microgrid use.

A back up power diesel generator is integrated into a microgrid power system at Fort Carson, Colorado. (U.S. Army photo)

Operating lessons

The first step is to decide the microgrid's purpose. Microgrids can provide new capabilities such as improving backup power reliability and efficiency, utilizing renewable energy resources during commercial utility power outages, and enabling greater visibility into local distribution systems. Each capability's importance must be considered and prioritized in alignment with the microgrid's purpose.

Consider the budget. If the microgrid's purpose is well understood and agreed upon, designers can more easily reduce its scope if the budget requires, while minimizing impact on its utility. For example, designers may reduce the microgrid's geographical footprint by identifying high-density critical load clusters with local generation assets. Reducing project scope to cover these smaller areas typically lowers the cost of new communications infrastructure and sectionalizing equipment. Other cost-cutting measures include reducing the number of control points, utilizing existing control systems, and leveraging existing communications infrastructure. When considering scope options, apply systems engineering thinking before trading off capabilities or costs.

With the microgrid purpose and scope clearly defined, develop the microgrid concept of operations, which should identify:

- Personnel who authorize microgrid entry, exit, and reconnect.
- Conditions, decision sequence, and actions to enter (and exit) microgrid operation.
- Names, locations, and priorities of critical loads and generation assets.
- Maintenance and monitoring procedures.

Defining operational sequences also helps clarify load priorities and uninterruptible power supply requirements. As personnel required for decision making and operation are identified, their training requirements also are identified. Through preparation and planning, having a microgrid concept of operations helps ensure enhanced energy security.

Contracting lessons

Developing a microgrid design and construction request for proposal poses unique challenges. The project's scope may exceed the capabilities of a typical architectural and engineering firm, especially if that firm is a small business. A two-step selection process ensures only qualified candidates submit full proposals. Under this strategy, the initial proposal request responses include only capabilities and experiences related to electrical and communications construction and microgrid design. Once the initial pool is reduced to a smaller pool of qualified candidates, design documentation and site information can be securely transmitted, helping to alleviate security concerns surrounding information sharing.

Results also improve when the selection board includes experts on the site itself and microgrid technology. Among the board members should be someone with detailed knowledge of the site's electrical system and operations, and experts on microgrid electrical design and control systems. Source selection may include a competitive design charette, which has proved very useful in a design-build environment.

Site preparation and circumstances

Any site can reduce the initial capital investment required to implement a microgrid by leveraging other maintenance or sustainment work to prepare for microgrid implementation. A microgrid design study can help determine where such modifications will have the greatest impact.

Potential site preparations include:

- Extending communications infrastructure to potential control points for a future microgrid (e.g., generators, loads, switches).
- Installing switchgear with remote

(See Microgrids, page 31)

(Microgrids, continued from page 30)

operation capability or compatibility with motor operators.
- Expanding distribution system reconfiguration capabilities.
- Installing generators with paralleling capabilities.
- Segmenting large photovoltaic arrays.

Designers should also consider seamless transition to and from microgrid operation to minimize testing impact or power outages to microgrid loads.

Many sites will encounter circumstances making microgrid implementation more challenging. If a third party owns existing large generation assets, such as a photovoltaic array or a combined heat and power plant, project planners must coordinate with the asset owner. Where there are clear advantages to including the generation asset in the microgrid, engage the owner as early as possible. To effectively engage the owner: identify the primary point of contact and then work with that person to identify decision makers and understand the owner's review process.

Invite the asset owner's organization into the microgrid design process to review the use of its generation asset and to provide comments and feedback. Develop agreements that allow integration of the asset into the microgrid and formalize procedures required to work with the asset owner.

At the same time explore design alternatives that allows integration of the asset with minimal or no participation from the owner. Such alternatives are often less efficient or effective than the cooperative path, but they can form a reasonable backup plan.

Demonstrating the microgrid

Demonstration requirements should be planned for in the design, including how non-microgrid loads will handle outages. To avoid outages for non-microgrid loads, consider:

- Distribution system reconfiguration to feed loads from other feeders.
- Construction of bypass feeders for high-density load areas.
- Portable or temporary back-up generation.

Designers should also consider seamless transition to and from microgrid operation to minimize testing impact or power outages to microgrid loads.

Generating a return on investment

Microgrid projects improve the energy security of the loads they support by improving efficiency through generator optimization, extending back-up power runtime on finite fuel supplies, and enhancing reliability by creating system redundancy. Microgrids do not necessarily generate a return on investment on construction costs. Without establishing the value of more reliable backup power or metrics to evaluate energy security, designers will struggle to estimate investment return on a microgrid implementation.

Microgrid controls and capabilities, however, can generate payback in the right environment. Designers should discuss with their utility service provider or investigate opportunities in deregulated markets for: peak-shaving/load-shifting, demand response, ancillary services, and energy arbitrage. The value of these activities will depend on the site's energy market or service provider. Each region or utility will also have differing requirements for metering, telemetry reporting, resource registration, and settlement.

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Johnson and Tarek Abdallah are electrical engineers and Harold Sanborn is a program manager, all with the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory, Champaign, Illinois.

Public Works Digest

2017-18 Theme and Deadline Schedule

Issue	Theme	Deadline
April-May-June	Environment and Sustainability	March 3, 2017
July-Aug-Sep	Operations, Maintenance and Engineering	June 2, 2017
Oct-Nov-Dec	Energy, Water and Waste	Sep 1, 2017
Jan-Feb-March 2018	Master Planning, Housing and Barracks	Dec 1, 2017

Tech transfer program helps installations laser in on energy efficiency

by Melinda Hakeman, Nicholas Josefik, and J.L. Lattimore

Partnering with the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory, the Fort Bragg heating, ventilation and air conditioning team received new equipment and training to assist with the operations and maintenance of motor and pump assemblies.

The team received fiscal year 2015 funding through the Installation Technology Transfer Program to demonstrate technologies to evaluate the performance and ability to be integrated into a military installation setting. This is one of many technology transfer projects that laboratory has demonstrated at the North Carolina post, but the first focused on operations and maintenance.

"CERL is committed to providing Fort Bragg with cutting edge technology to enhance performance and reduce energy and maintenance costs," said J.L. Lattimore, the laboratory's lead researcher.

Approximately 5,000 pumps are used to cool and heat more than 2,500 facilities on Fort Bragg, but throughout time, the pumps become misaligned, causing them to use more energy and break down more frequently.

Aligning pumps requires precision that cannot always be obtained with the human eye; however, evolving technology constantly brings new solutions to the field, resulting in increased efficiency through quicker repair times and an increase in accuracy.

The Vibralign Fixturelaser Shaft Alignment Systems uses lasers to precisely align the motor shaft and pump assemblies quickly and efficiently. A properly-aligned assembly improves energy efficiency, reduces temperatures and extends the life of the pumps.

Johnny Donnell, a Fort Bragg heating, ventilation and air conditioning team leader, is the driving force behind this effort. He coordinated two training sessions for 15 members of his team. This training consisted of a day in the classroom working on mock equipment and a day in the field. Donnell also procured additional trainers so his staff could use the equipment in train-the-trainer exercises.

The current method for identifying misaligned motors is a reactive visual inspection for signs of wear and degradation after damage has already occurred. During a seven-month period, pump and motor repair resulted in 92 service calls and 721 labor hours resulting in excess of $220,000 of parts and labor costs.

The Fixturelaser Pump Alignment equipment offers a proactive method utilizing lasers for a precise alignment, reducing the wear on couplings, bearings and seals.

"With hard data, you know your equipment is aligned. Eliminating 'close enough' saves time, equipment and money in the long term," Donnell said.

Depending on the size of the pumps and motors, alignment may take hours, if not days. The user-friendly Fixturelaser alignment system reduces the alignment time and extends the life of the assembly.

Using infrared imagery, a noticeable decrease in the temperature at various points on the pump assembly was realized after proper alignment using the Fixturelaser. Lower motor temperature correlates to lower internal friction, lower power consumption, and longer life of seals, bearings and couplings. The infrared imagery highlights what the human eye cannot see – the increase in energy, represented in heat, which it takes to run an improperly aligned pump.

The lab staff will analyze the laser alignment technology's effectiveness by reviewing pump repair demand maintenance orders and surveys from the technicians.

Donnell said he hopes for future demonstration projects that increases the proliferation of technology into daily operations and facility maintenance. This demonstration project represents a decrease in energy use, a decrease in repeat demand maintenance orders for misaligned pump issues and a reduction in time to properly align motor pump assemblies.

"Energy savings opportunities exist everywhere," said Audrey Oxendine, the Fort Bragg energy manager. "The HVAC team and efforts such as these are critical to reducing our energy footprint."

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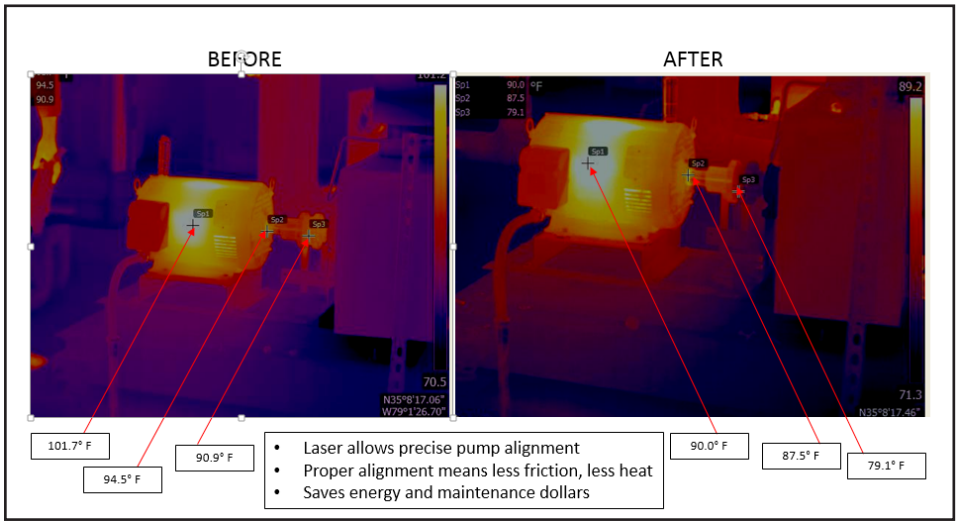
Hakeman is an energy program planner, U.S. Army Garrison Bragg, Nicholas M Josefik is an industrial engineer and J.L. Lattimore is a lead researcher, both with the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory, Champaign, Illinois.



The before and after infrared alignment readings show the difference aligning pumps can make. (Photo by J.L. Lattimore)

Fort Polk water quality improvements pay dividends

by Bryan Raisor

In 2014, water quality at Fort Polk in Louisiana needed attention to meet customer and regulatory expectations. After 60 years of water system development and ambient groundwater characteristics, water quality challenges emerged in the form of lead and copper levels exceeding a regulatory action level, and brown water from years of sequestering iron and manganese.

These were especially prevalent in the North Fort Housing water system. At one point, a Soldier experiencing brown water inside his housing units posted a video on social media, triggering a Post wide concern on water quality. Fort Polk leadership and American Water, the installation's water system owner as a result of Utility Privatization contract, joined together to address the issues.

After quickly assessing the water chemistry, water system configuration, and the interface with the plumbing systems in buildings, American Water proposed several projects designed to reduce lead and copper levels and improve the overall aesthetics of the water. Fort Polk secured funding, and American Water designed and built the improvements within a 12-month period. A number of these delivered immediate results, while others provided more gradual improvement.

Lead and copper can leach from plumbing systems (pipes and fixtures) under certain water quality chemistry. Under the Safe Drinking Water Act, the Environmental Protection Agency set the action level for lead at 15 parts per billion, and for copper at 1.3 milligram per liter.

If 10 percent or more of the samples taken exceed these values, the water system owner must take action to reduce the values below the action level. In July 2013, 20 residences in the North Fort Housing water system were sampled per EPA's "Lead and Copper Rule." These results showed that more than 10 percent of the samples were above the EPA lead action level.

Subsequent samples of the original 20 locations and at an additional 20 residences showed levels above the copper action level.

Jason Johnson, a water operator for American Water Military Services Group, takes samples of the water system at Fort Polk, Louisiana. (Courtesy photo)

American Water designed and implemented a corrosion control prevention program to minimize the impact on plumbing system components, and various improvements to minimize brown water. Safe, compliant, and aesthetically pleasing water were the program's priorities. Projects within this program included:

- Corrosion control inhibitor was added to "coat" pipe walls and prevent leaching of metals.
- Corrosion "coupon stations" were installed. These coupons are pre-weighed before installation and placed in various locations in the distribution system. After a set time frame they are removed and re-weighed. This shows the corrosion rate of the metals. The corrosion inhibitor is then adjusted based on the findings.
- Rehabilitation of the Green Sand filtration system, which removes iron and manganese from the North Fort Housing water distribution system. Iron and manganese are the leading causes of "brown" water, taste, and odor complaints and appears after sequestered iron and manganese are stagnant in pipes and plumbing systems.
- Existing small diameter lines, often in a "dead end" configuration, were replaced with primarily 8-inch "looped" lines to minimize stagnant water conditions and improve fire flow to the area. In the three cul-de-sacs (out of 27), where dead-end lines could not be looped, automatic water flushing units were installed.
- A chemical was added to well water to increase its pH, reducing water corrosivity, mitigating lead and copper leaching.
- Throughout Fort Polk, automatic flushing stations were added in areas with known water age issues, helping to eliminate the brown water issues.
- Mechanical mixing systems were installed inside the water storage tanks to eliminate water stratification in tanks and ensure a uniform age and quality of water in storage.
- New water system flushing technology was introduced, which provided two primary benefits – imparting high velocity in water mains to scour sediment and remove brown water causing agents. It accomplished this without discharging water to the environment. One benefit is there were no brown water complaints called

(See Fort Polk, page 34)

Groundbreaking marks 'leap forward' for Army cyberspace operations

by U.S. Army Cyber Command

FORT GORDON, Ga. The Army took a major step toward the future when Secretary of the Army Eric Fanning joined Army Cyber Command and Second Army commander Lt. Gen. Paul M. Nakasone and other dignitaries Nov. 29 to break ground on the construction of a new Army Cyber Command Complex here.

The ceremony marked the start of an estimated two-and-a-half-year project that will draw together the Army's cyber operations, capability development, training and education in one location – the Army Cyber Center of Excellence at Fort Gordon.

During the event, Fanning and Nakasone donned hard hats and manned shovels for the first turning of earth on the project site. They were joined by other Army leaders and senior representatives of ARCYBER's partners in the venture:

- Army Cyber Command Sgt. Maj. Williams G. Bruns.
- Maj. Gen. John B. Morrison Jr., commanding general of the Army Cyber Center of Excellence and Fort Gordon.
- Hardie Davis J., mayor of Augusta, Georgia.
- Lt. Gen. Todd Semonite, the Army's chief of Engineers and commander of the U.S. Army Corps of Engineers
- John Garlington, president of B.L. Harbert International, the facility's contractor.

Morrison welcomed the more than 100 leaders and guests who attended the ceremony and lauded the project as a landmark for the Army, ARCYBER, the Army Cyber Center of Excellence and Fort Gordon, and their many military, civic, industry and academic partners.

"Today's ARCYBER facility groundbreaking ceremony is a culmination of more than five years of hard work to integrate the planning, design and development of an operational headquarters," Morrison said. "[The complex] will not only enhance the Army's capabilities for cyberspace operations, but also enhance the partnerships with academia, industry, and the local Central Savannah River Area communities."

In his own remarks at the ceremony, Fanning said that building the Army's cyberspace capabilities will prove critical to maintaining the Army's readiness and ensuring dominance on the battlefields of today and tomorrow.

"Cyberspace can be considered the ultimate high ground, which means that in modern conflicts, ceding cyberspace invites defeat," Fanning said.

"So what we're building here won't be your typical government facility. It will be the U.S. Army's premier warfighting platform for cyberspace operations. It is the weapon system that will ensure our cyber warriors go into battle with the tools they need, and that all our Soldiers can operate in a more secure environment."

(See Groundbreaking, page 35)

(Fort Polk, continued from page 33)

in, which is the norm when water mains are flushed in a conventional fashion.

In concert with the water system improvements, Fort Polk leadership and the Directorate of Public Works undertook an active public education program, conducting regular town hall meetings to explain the cause of the problem, keep consumers informed about improvement plans and time frames, seek input, and hear concerns of residents.

Fort Polk also evaluated North Fort Housing plumbing fixtures, water heaters, and other building asset and maintenance practices, and then took action to address deficiencies.

During and subsequent to the various improvements, continued sampling showed a reduction in the lead and copper levels, returning to below action levels.

American Water continued to make operational adjustments to reach an aspirational goal of zero. Corrosion rates from coupon stations were monitored, water chemistry tests conducted, and water chemistry calculations undertaken to determine the optimum water quality chemistry that provides a "stable" environment that all but eliminates corrosion. Adjustments to the chemical feed rates were made based off the findings from these tests.

The water quality improvement projects showed favorable results for lead and copper levels, and drastically reduced "brown" water complaints. "We haven't had a brown water call since the filter rehab in North Fort Housing, when we used to get five or six a month," said Anthony Harper, chief water operator for American Water.

Latest lead and copper sampling in North Fort Housing showed results near zero. The teamwork and commitment to the community from Fort Polk's leadership, the public works directorate, Installation Management Command and American Water make a great case for Utility Privatization, demonstrating how government and private industry brought expertise together and resolved a very serious public health concern in a very short period.

"Improving Fort Polk's water quality took a great amount of team work between IMCOM, Garrison leadership, American Water and the Directorate of Public Works," said R. Ellis Smith, Fort Polk's director of public works. "I am proud of the work that has been accomplished. Fort Polk is the best hometown in the Army!"

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Raisor is the general manger for American Water Enterprises, Inc., Military Service Group, Fort Polk, Louisiana.

(Groundbreaking, continued from page 34)

The construction of the complex, Fanning assured his audience, will demonstrate to the American people that the Army is committed to extending its warfighting capabilities into cyberspace.

"We are demonstrating to the American people that our commitment to fighting and winning the nation's war extends ... to protecting [the] commerce, communication and critical infrastructure that allow our nation to thrive," he said. "We are demonstrating to our adversaries that, no matter how warfare may change, we intend to fight, win and dominate."

For Nakasone, the groundbreaking represented a series of investments that will yield "unparalleled opportunities" for the Army and the nation. The new complex, he said, is an investment in national security and future readiness, an investment in Fort Gordon's future as the center of gravity for Army cyber operations, and an investment in future cyber capabilities that will ensure the Army remains an "elite force in cyberspace."

"This facility will build on the tremendous momentum the Army has generated in cyberspace over the last six years," the general said. "We are constantly growing operationally, institutionally, and in preparation for the future fight. It will ensure that our teams, both offensive and defensive, train, plan and operate in a state-of-the-art facility equipped with cutting-edge technology, enabling them to provide superior support to joint and Army warfighters.

"Today marks a major leap forward on the road to achieving greater readiness, resilience and strength for Army cyberspace operations," he concluded.

The first phase of the project, with construction overseen by the U.S. Army Corps of Engineers Savannah District, is scheduled for completion in May 2018. A second phase of construction to support Cyber Protection Team operations is expected to be completed in early 2019. The buildings, with a total baseline capacity to support more than 1,200 cyber Soldiers and civilian employees, are projected to be fully ready for occupation in 2020."

For more information, contact the Fort Gordon, Georgia, Public Affairs Office at 706-791-0110.

(Left to right) Augusta, Georgia Mayor Hardie Davis Jr.; Maj. Gen. John B. Morrison Jr., commanding general of the U.S. Army Cyber Center of Excellence and Fort Gordon; U.S. Army Cyber Command and Second Army Command Sgt. Maj. William G. Bruns; Secretary of the Army Eric K. Fanning; Lt. Gen. Paul M. Nakasone, commander of U.S. Army Cyber Command and Second Army; Lt. Gen. Todd T. Semonite, Chief of Engineers and commander of the U.S. Army Corps of Engineers; and John Garlington, president of B.L. Harbert International, turn the first shovelfuls of earth in a Nov. 29 ceremonial groundbreaking marking the start of construction on the Army Cyber Command Complex at Fort Gordon, Georgia. (Photo by Bill Roche)

Presidio, cities strike historic intergovernmental service pact

by Brian Lepley

PRESIDIO OF MONTEREY, California – The Army and the cities of Monterey and Seaside approved a five-year agreement Oct. 11 that provides facility and infrastructure operations and maintenance to the Presidio of Monterey at significant cost savings.

The "Monterey Model" began as a concept for the local municipalities to provide these services to the Presidio. Launched as a pilot program in 1998, it was authorized by the Department of Defense in 2003, and resulted in federal legislation creating Intergovernmental Support Agreements (IGSA) in 2013.

Col. Lawrence Brown, Presidio of Monterey garrison commander, sees this IGSA as a model for military installations and neighboring cities to do business together.

"Partnering with cities on municipal services allows cities and military installations to benefit from economy of scale and saves the Army resources to support readiness," he said. "It takes advantage of a wealth of existing expertise, and seeks creative means to safeguard tax-payer funding."

Signing the IGSA in front of Monterey City Hall were Congressman Sam Farr, Monterey City Manager Mike McCarthy, Katherine Hammack, Assistant Secretary of the U.S. Army for Installations, Energy and Environment, and Brown.

The Army seeks partnerships with public and private organizations, Hammack said, because these partnerships benefit all involved.

"In order to make them happen you need a strong sense of purpose, great people, and a lot of persistence and that's what really made this a success," she said. "The IGSA legislation was entered into law in 2013 … so here we are in 2016."

Through three years of lawyer reviews, audits and negotiations, Hammack said, the new IGSA offers both sides flexibility.

"We have truly entered into a partnership where both sides benefit," she said. "That's truly what the military wants to be – a good partner with the community."

Presidio of Monterey Service Agency was the non-profit entity created in 1998 by the city of Monterey to provide services to the Presidio of Monterey. Those services had been previously supplied by Fort Ord, the Army post closed in 1994 by Base Realignment and Closure.

Cost savings are realized by Presidio of Monterey Service Agency handling all necessary projects under one contract. The normal procedure at most military installations is for each project and service to be bid out to commercial providers, a time-consuming, piecemeal process, resulting in numerous separate transactions.

"The Monterey IGSA will be the largest of its kind; nearly $10 million," McCarthy said. "Many communities from all throughout the nation have been watching to see how this was done."

Farr guided the IGSA legislation through Congress and thanked many who helped him in the long process of approval.

"Today what we're doing is really proving that these last two decades of work have saved the taxpayers money, gaining better efficiency, and getting better relationships," Farr said. "Today is another chapter in the military history of Monterey. What this does is unify two governments, federal government and local government, with one purpose."

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Lepley is the public affairs officer for the Presidio of Monterey, California.

USACE offers master planning training opportunities

by Andrea Wohlfeld Kuhn

Are you a planner, engineer, architect, project manager, realty specialist, or employed in a related position and need to gain a better understanding of how the master planning process works and how planning can help achieve resilient installations, including net zero energy, water and waste goals?

Department of Defense Unified Facilities Criteria for Installation Master Planning (UFC 2-100-01), recommends 32 hours of master planning training every two years for those employed as planners or working in related fields. The DOD Master Planning Institute operates under the auspices of the U.S. Army Corps of Engineers Proponent Sponsored Engineer Corps Training program. Courses offered range from introductory level to advanced and include universal planning practices as well as DOD and Army-specific information. Attendees include DOD, other federal agencies and private sector representatives. This mixture of attendees offers an opportunity for interagency and private sector sharing of best practices and innovative, resilient approaches to master planning.

All courses are fully accredited by the American Institute of Certified Planners, American Institute of Architects and National Society of Professional Engineers and provide continuing education units.

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 are necessary parts of the curriculum, students have the opportunity to develop ideas or plans that can actually be implemented at their locations. The instructional staff is composed of federal and private-sector professionals who are American Institute of Architect- and American Institute of Certified Planners-accredited subject matter experts.

Although students are encouraged to take Course 75, Master Planning Principles, early in their training program, there are no prerequisites for any of the master planning courses, and they may be taken in any order. Additionally, the instructor team is available to travel to your installation or regional location, which often results in reduced costs per student and the ability to reach an entire team(s) at once.

Course Descriptions: Below are brief descriptions of Fiscal Year 2017 DOD Master Planning Institute classes, with more detailed descriptions, costs and registration available at http://ulc.usace.army.mil or http://www.dodmpi.org/. Click on "M" for master planning for the entire list of courses.

Course 241: Master Planning Practices, March 14-17, Fort Worth, 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. Students will learn the steps of the Army master planning process to identify components and understand the difference between short- and long-term planning horizons, the concept of capacity planning and formulation of customer requirements.

Course 258: Master Planning Energy and Sustainability, April 11-14, Denver

This course covers energy and sustainability on a broader planning level, rather than building design. Students will alternate between learning effective strategies and applying sustainability planning practices in a mock-planning exercise. Classroom learning is enhanced by field trips and demonstrations of energy/water-saving methodologies from a planning and design perspective, including metrics to evaluate life cycle cost.

Course 163: Master Planning Sustainability & Resiliency, June 20-22, Champaign, Illinois

This course connects the key elements of sustainable planning with resiliency factors. The goal of the course is to make planners more effective by providing them with an understanding of the role of master planning in achieving sustainability and resiliency goals, including net zero planning. Students will learn how to use the USACE developed Net Zero Planner tool to achieve resilient solutions in conjunction with master planning. For non-planners, this course provides linkages to achieve sustainable, resilient installations.

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Course Number	Location	Title	Cost
241	Fort Worth, Texas	MP Practices	$1,564
258	Denver, Colorado	MP Energy & Sustainability	$1,513
163	Champaign, Illinois	MP Sustainability and Resiliency	$1,545
392	Charleston, South Carolina	MP Sustainable Historic Structures	$1,081
319	Buffalo, New York	MP Guideline Implementation	$ 990
326	Buffalo, New York	MP Execution	$1,089
948	Huntsville, Alabama	MP Visualization Techniques	$1,560
952	Dublin, California	MP Advanced Techniques	$1,723

Master Planning course leads to advanced degree pursuit

by Claude Armstrong

The Army offers many rewarding training and education opportunities for both uniformed personnel and civilian employees. As chief of the Engineering Services Branch at Fort Lee, Virginia's Directorate of Public Works, I am eager to pass on information and my personal experiences about the Academic Degree Training Program, an education program available to the Career Program-18 Engineering community

The Academic Degree Training Program allows the Army to pay and/or assist its civilian employees in obtaining an academic degree. The website provides the information necessary to apply. My path was through the Career Program18 development program where I received assistance and shepherding through the process from Kimberly Crandall.

This training also will provide additional analysis and graphic presentation assistance in preparing our future Area Development Plans.

Applications must be received by the approving agency no later than 60 days prior to when funding is needed. However, an applicant should have his or her package to the Career Program-18 program manager at least 90 days in advance as there are many pieces to bring together and signatures to obtain to validate eligibility for the program, including some at your command. So begin your preparations as early as possible.

My Personal Story

I first considered a graduate-level degree program while attending a 2012 U.S. Army Corps of Engineers *Master Planning Principles* Course in New Orleans in 2012. Shortly thereafter I participated in two Area Development Plan Practicum, sponsored by the Corps of Engineers, which renewed my interest in urban design and peaked my pursuit to expand my design skills to provide greater technical support to the Directorate of Public Works and Garrison team. I have basic urban design training from my architectural education at Hampton University in Virginia, along with more than 25 years of Directorate of Public Works experience. However, these recent experiences have collectively prompted my pursuit of an advanced degree.

As a result, I researched Virginia Commonwealth University Master of Urban and Regional Planning degree program. I found that the university is well situated in Richmond, Virginia, a city suited for urban and regional planning studies. I then applied to the program and was accepted.

Benefits of the Program

The Army's new Master Planning regulation requires local public works directorates to conduct their own Area Development Plan, to include a public participation process. This is a major shift from the top-down approach to planning of the past. I realized that my branch with its engineers, architects and Computer Aided Design/Geospatial Information System personnel could play a key role in supporting this process. I also realized that this shift was so great that there were gaps in knowledge, skills and expertise within the directorate for this type of effort. This gap needs to be filled through specific education and training to adequately meet the requirement.

The Master of Urban and Regional Planning degree from Virginia Commonwealth is preparing me to support the fulfillment of the Installation Management Command/Army mandated implementation of the Area Development Plan process here at Fort Lee. I am also a candidate for a certificate in Geospatial Information System, which is expanding my knowledge and expertise in the strategic enterprise use of the system. Upon completing my certificate I should be able to assist the directorate and Garrison leadership in identifying and implementing Geospatial Information System as an enterprise tool.

This training also will provide additional analysis and graphic presentation assistance in preparing our future Area Development Plans. In fact, because of my Geospatial Information System training I've been able to mine data from various Army systems to begin building an enterprise information base that is graphically presented.

If your installation's or organization's engineers meet any of the eligibility requirements, I highly recommend they pursue the Academic Degree Training Program to meet their needs.

Editor's note: *Armstrong was inspired to pursue his advanced degree after taking the Master Planning Principles Course 75, which provides an introduction to master planning concepts and principles, including the comprehensive issues of sustainability and energy. The U.S. Army Corps of Engineers will offer the next Master Planning Principles Course 75 Dec. 5 to 8, 2017, in Philadelphia. Information about course registration and cost will be able through the Corps of Engineers Proponent Sponsored Engineer Corps Training program (PROSPECT): http://ulc.usace.army.mil/*

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National training conferences scheduled for May in New York

by Andrea Wohlfeld Kuhn

The American Planning Association and its Federal Planning Division are offering an educational and training opportunity for planners and those in related fields.

The Federal Planning Division of the American Planning Association Training Workshop will be held immediately preceding the planning association conference May 4-5 at the GSA Conference Center and the Marriott at the Brooklyn Bridge, New York City. More information can be found at https://www.planning.org/divisions/federal/conference/.

The planning association will conduct its annual training conference May 6-9 at the Jacob K. Javits Convention Center, New York City. More information can be found at http://www.planning.org/conference/.

Topics at both conferences will include sessions that address critical issues facing planners and those in related fields, including topics such as energy, sustainability, resiliency, climate change, environmental issues, natural and cultural resources, transportation planning, land use, legal aspects, ethics, etc.

Last year, the Army and the U.S. Army Corps of Engineers won an unprecedented seven Federal Planning Division awards for outstanding Federal planning programs, projects, technical plans, environmental planning projects, and collaborative planning. Deadline to submit a nomination for a 2016 award is Jan. 31. All projects or plans submitted must have been completed within the last two years – Oct. 1, 2014, and Sept. 30, 2016. A new category this year has been created – Technical Plan. Go to https://www.planning.org/divisions/federal/awards/ for more information on how to apply.

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

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Course 392: Master Planning Sustainable Historic Structures, July 11-13, Charleston, South Carolina

This course focuses on instructing planners, historic preservation experts and those in related fields on how to integrate the master planning process with applicable laws, regulations and UFC 2-100-01 (Installation Master Planning) while addressing the unique characteristics of historic structures. Sustainable, energy-efficient solutions for historic preservation and footprint reduction, as well as pertinent laws, regulations and guidance are covered.

Course 319: Master Planning Guideline Implementation, July 24-25, Buffalo, New York

This 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 326: Master Planning Execution, July 26-28, Buffalo, New York

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 948: Master Planning Visualization Techniques, Aug. 1-4, Huntsville, Alabama

This course provides an overview of visualization techniques and offers hands-on training in using Google SketchUp and Google Earth. Students will produce several basic Area Development proposals using these tools and gain knowledge of the concepts of scale, massing of facilities, landscaping, architectural compatibility and force protection requirements.

Course 952: Master Planning Area Development Planning, Aug. 15-19, Dublin, California

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, and although they are encouraged to take Course 75 before this, there are no prerequisites for this or any of the other master planning courses.

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

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