

# Public Works *Digest*

*In this issue:*

## Housing



*Special section on Technology,  
including Building Information  
Modeling, pages 39-43*





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*Sgt. Michael and Kelly O'Brien enjoy the Halloween decorations on the front porch of their new home at Fort Campbell, Ky. Photo courtesy of Fort Campbell Family Housing*

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## L E T T E R F R O M T H E E D I T O R



*It is a universal truth that people are deeply connected to the places where they live. Homes provide shelter and are a source of comfort and sustenance. Who does not look forward to arriving home at the end of the day, enjoying a meal, relaxing or spending time with loved ones in one's own space? People keep their homes cleaned and maintained, and entertain their friends there. Homes tend to reflect those who live in them, and it is natural to want one's home to look and run well.*

*Whether the home is owned or rented, permanent or temporary, matters little; the connection is nearly visceral. That must be why the phrase, "It gets you where you live," refers to an intense situation or profound set of circumstances. Where one lives is very important.*

*Recognizing this essential fact, the Department of Defense and the Department of the Army are in the midst of a huge overhaul of military housing. New barracks are being built, and older structures revamped and refurbished to new standards that provide Soldiers with more room and amenities. Privatized family housing in the United States and renewed housing abroad reflect the types of communities that military families want.*

*In this issue, the Housing Management section includes commentaries from Lt. Gen. Robert Wilson and Lt. Gen. Carl A. Strock, the commanders of the Installation Management Command and the U.S. Army Corps of Engineers respectively. That section also offers articles on trends in Army Housing, including the Residential Communities Initiative, the Barracks Utilization Report, Housing Services Offices, the Automated Housing Referral Network, the new HOMES4 module and the Leadership in Energy and Environmental Design for Homes rating tool.*

*In the Housing Successes section, read about exciting changes across the face of Army Housing. Articles from Europe, Hawaii, Washington state, Colorado, New York, Kentucky, Texas and North Carolina relate story after story about great projects underway or being completed.*

*The Professional Development section contains reports from the Professional Housing Management Association's 2007 seminar and the U.S. Army Corps of Engineers' workshop held in conjunction with the annual Black Engineer of The Year Awards Conference, as well as information on the new Civilian Education System and updates on Career Programs 18 and 27. The Technology section includes pieces on applications of automation and equipment to public works, including Building Information Modeling, the way of the future for design, and new land-use assessment tools..*

*Other subjects in this issue cover a gamut from standards for carbon monoxide alarms and monitors to wise use of geophysical surveys. Please sit back and enjoy this once-again, jam-packed edition of the Public Works Digest.*

*The next issue of the Digest will focus on the environment. I encourage you to submit an article that highlights your environmental program or showcases one of your environmental projects. Articles on other subjects of interest to the public works community are also appreciated. Please submit articles to [mary.b.thompson@usace.army.mil](mailto:mary.b.thompson@usace.army.mil) no later than **Tuesday, April 24**. I can also be reached at 202-761-0022. I welcome your contributions, as well as your questions and comments.*

*Mary Beth Thompson*

Managing Editor **PWD**





## Our goal: Quality housing to equal Soldiers' quality of service

by Lt. Gen. Robert Wilson

First-class housing is essential to Soldier and family quality of life and is an integral part of the Army's vision of installations as flagships. Quality housing for America's Soldiers and their families is especially important as the Army continues to transform and fight the Global War on Terror. Our Soldiers' morale improves when they know that, during times of deployment, their families are housed safely and securely.

Quality housing is also an integral part of the "Army Plan" and will enhance our efforts to fulfill the Army vision of providing ready and relevant land power by providing a quality of life equal to the quality of service of our men and women. Given the importance of housing, the Army is committed to implementing and improving a number of housing programs enhancing quality of life for America's Soldiers and their families, both at home and abroad.

### Family housing

One of our most significant housing programs is the Residential Communities Initiative (RCI). The Army will continue to emphasize RCI as a way to improve housing quality. Ultimately, privatization of Army Family Housing (AFH) will involve more than 86,000 homes at 45 installations, resulting in privatization of more than 99 percent of our family housing inventory in the United States.

The Army also realizes that the first choice of many families may be to live off post. At present, only about 33 percent of Soldiers with dependents reside in privatized housing. The Army remains committed to providing top-notch support for the 67 percent of Soldiers and families who are not affected by housing privatization.

Another area the Army will emphasize is adequate funding for housing in the fiscal year 2008 AFH budget. Adequate funding will ensure support for those who find housing in the local housing market. It will also support those who are serving overseas,



Lt. Gen. Robert Wilson  
Photo by Monica King

where construction dollars will enable the Army to build 138 dwelling units at non-privatized locations. For overseas locations, the budget also supports the elimination of inadequate family housing units at enduring installations by the end of FY 2009.

Customer service for Soldiers and families will also remain a central focus of our housing program. The staff at every installation Housing Support Office (HSO) is committed to assisting married and unaccompanied Soldiers with every aspect of the military relocation process. Guidance and information on the local housing market is a key element of what the HSO provides. In addition, the HSO can serve as a liaison with local rental agencies and those offering home ownership opportunities.

Home ownership is likely to become even more important to Soldiers and families as the Army continues to transform and lengthen the amount of time assigned to a duty location. The HSO will play an even larger role for Soldiers choosing to purchase homes. Home ownership and mortgage forums held by HSOs cover all aspects of ownership responsibility.

To further assist Soldiers and their families, garrison leaders and local housing entities, including both lenders and realtors, are holding industry forums to develop strategies for providing better access to adequate and affordable housing in the local community. All of these efforts are geared toward improving family housing.

### Single Soldier housing

Our efforts to provide quality housing apply not only to family housing, but to unaccompanied personnel housing (UPH). Providing modern barracks for enlisted Soldiers (pay grades E1-E5) is an area the Army is working hard to improve. This fiscal year, the UPH barracks program will receive \$15 billion in funding. To upgrade trainee barracks, we intend to obligate \$100 million annually to provide standardized barracks support for initial entry training. Those upgrades will improve conditions for 87,500 initial entry Soldiers. Our UPH program is steadily moving toward the AFH model — providing Soldiers with the same amenities they have come to expect outside the gate.

The Centralized Barracks Management (CBM) program is another way we are improving housing services. CBM is designed to take the burden of barracks management off units and enhance the command's ability to focus on the mission. It will also enable the Army to maximize the use of facilities and resources.

The expected benefits of the CBM program include better management of barracks maintenance and furniture, as well as increased barracks occupancy rates. By increasing occupancy, the Army can reduce the cost of unnecessary Basic Allowance for Housing payments, potentially saving millions of dollars. Currently, Forts Hood, Sam Houston, Sill and Huachuca, and Aberdeen Proving Grounds are using this program to manage their facilities. The goal is to have all installations implement CBM by the end of FY 2008.

### Housing services

AFH and UPH programs are supported by Army Housing OneStop (<https://onestop.army.mil>), a readily available and easily accessible web site. Army Housing OneStop allows Soldiers and their families to research housing, schools and Permanent-Change-of-Station information



# Corps' centralized support of RCI program successful

by Lt. Gen. Carl A. Strock

The Army's housing privatization program is progressing well, and, most importantly, it's improving the morale of Soldiers and their families around the nation. The centralized support structure that we have set up within the U.S. Army Corps of Engineers and the more localized "centers of expertise," in select districts, are critical to the success of the program. One of the best ways to measure our success is to measure the delight of our customers, and Army leadership tells me that the results are positive.

In 1996, Congress authorized the military to use alternative means to provide housing to the troops (10 U.S.C. §2871 et seq.). The Assistant Secretary of the Army for Installations and Environment (ASA I&E) was tasked with the mission of privatizing family housing and, in doing so, revitalizing, renewing, maintaining and



Lt. Gen. Carl A. Strock  
Photo by F.T. Eyre

operating housing for the benefit of Soldiers.

The total Residential Communities Initiative (RCI) program is scheduled for 45 locations, with an end state of 86,273 family homes — more than 98 percent of the on-post family housing inventory in the United States. Army leadership selected the Corps,

the Army's real estate service and one of its environmental proponents, to support the housing privatization program.

In the beginning, the Corps supported the pilot installations using our traditional formula that regionalized the installations by geographical district boundaries. We soon realized that efficient support of this program, with its high volume of projects, aggressive timeline and complex and unique project structure would require a more centralized approach. This new way of doing business required intensive and focused effort to develop and implement new procedures, capture and deploy innovations and apply them successfully in many different locations.

To avoid the excessive cost and inefficiency of retraining each geographic district, the Corps created three distinct centers of expertise based on func-

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about any Army installation worldwide. The newest additions to the Army Housing OneStop are video pictorials for Forts Drum, Riley and Sill, as well as U.S. Army Garrison Grafenwoehr, Germany. The videos feature designated installation housing options, local temperatures and brief histories of the surrounding area. These videos have received favorable reviews and additional video pictorials are in development for other installations.

As Army transformation continues, our installation housing staff is also changing to stay in step with our many housing initiatives. The Army challenges its housing professionals to gain certifications in real estate operations and real estate finance to better prepare them to assist Soldiers and their families.

The Army will bridge the gap between traditional housing practices and private sector procedures by introducing Vision 2007. Vision 2007 will be modeled after

Career Field 29 (garrison career field), which covers all aspects of installation management, allowing civilian personnel to be well versed in engineering, facility management, community relations on and off post, base operations, strategic planning, innovation and BRAC procedures. By providing housing personnel the knowledge to understand private sector principles and apply the skill sets learned to Army housing standards, the Army will be able to give America's Soldiers the level of service they deserve.

To maintain the level of service expected for our Soldiers and their families, the Army has also revived the housing intern program. The Army recognizes that a high percentage of the current housing staff is expected to retire by 2010. At present, the Army has employed 10 housing interns at various installations within the United States. All interns commit to a two-year development period, during which they will serve Soldiers and their families at installation HSOs. Upon grad-

uation from the program, the interns will transition to positions that will leverage their new skills and experience.

## Commitment to quality

The Army is committed to providing quality housing for America's Soldiers and their families. In doing so, we will continue to look for ways to improve our programs and services. The objective, now and in the future, is to provide adequate and affordable housing for Soldiers and families, whether the housing is off post or in improved facilities on the installation.

The coming year will provide opportunities to further the goal of providing our Soldiers and families a quality of life that is commensurate with the quality of their service.

*Lt. Gen. Robert Wilson is the assistant chief of staff for installation management and commander, Installation Management Command.*

**PWD**



# CHRRS becomes HSO as housing referral services modernize

by Vernona D. Aslim

While Army traditions run deep, the Army has never been unwilling to re-examine how it does business. Army Housing operations are no exception. The Assistant Chief of Staff for Installation Management, Housing Division, set up a housing task force to take a long, hard look at the state of its home-finding, relocation and referral services. The task force determined it was time to modernize the delivery, type and level of services the Army provides to Soldiers and families when searching for housing in the local community. The Housing Services Office (HSO) is the outcome of that effort.

Leading housing specialists, Soldiers and family members formed the task force. It conducted fact-finding visits and focus group meetings with customers and external stakeholders at Forts Lee, Va., Riley, Kan., and Shafter, Hawaii. The task force championed the cause to develop an array of quality and innovative housing relocation services for a global community of customers. As a result, the task force established a road map for housing offices, branded as HSOs, to become the first choice for Soldiers, families and civilians for all relocation services.

The HSO will become more recognizable to Soldiers, families and external stakeholders. The mission of the HSO will

go beyond those outlined in Army Regulation 210-50, *Installations Housing Management*, and will provide housing services above those historically provided by Community Homefinding Relocation and Referral Services (CHRRS).

The HSO will include, but not be limited to, home buying services, housing education and counseling, partnering with the local community and maximizing available technology. In addition, the HSO will assist incoming and departing customers with off-post housing needs, provide quality up-to-date information pertaining to all aspects of military relocation and create a housing services environment where customers can make the best housing choices.

An HSO manual and corresponding training courses provide a framework for leaders and associates of HSO to draw on while creating the new operation and to ensure continuous improvement of existing operations. As the way ahead, ACSIM Housing Division will continue to develop common levels of support standards, functional and organizational HSO structure and manpower requirements, performance metrics, and professional development training and certification.



The transformation of the HSO into a well-supported, customer-centric operation is no small task. Every installation will experience a multitude of challenges while implementing and maintaining this program effectively. The responsibility for the success of the HSO operation falls on the shoulders of the Housing Division chief and the HSO manager at each installation around the world.

Like the song says, “The Army goes rolling along,” and rolling along with it go the families, pets and household goods of the Soldiers. HSOs will be central to the movement and will continue the long tradition of helping Soldiers and their families make each move and relocation roll along smoothly with a new vision and purpose.

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tional areas. Those centers are: Baltimore District – procurement; Mobile District – environmental; and Norfolk District – real estate. All three are administered by a program manager from Corps headquarters who is embedded within the Army RCI office.

We’re more than half way there. At the end of fiscal year 2007, the Corps will have supported the transition to privatized family housing operations at 36 locations. The funded end state at these locations

will be 76,300 homes. The total investment by industry will be \$10.029 billion. The Army’s share is \$836.5 million during the initial development period, which is typically three to 10 years. That results in a leveraged asset/funding ratio of nearly 12 to 1.

The Corps’ success in effectively and efficiently supporting the privatization program has led to regular praise from the ASA I&E. We’ve also been selected by Army leadership to support additional privatization programs, mainly the Privatization of Army Lodging program and,

most recently, the piloting of the privatization of Unaccompanied Personnel Housing.

Through innovation and dedication in how we support our customers, the U.S. Army Corps of Engineers is dramatically improving the lives of our Soldiers and their families, and that is the best part of my job.

Essayons!

*Lt. Gen. Carl A. Strock is chief of engineers and commanding general of the U.S. Army Corps of Engineers.* **PWD**





# Center of Standardization weds two ideals in design for emergency services

by Chris Gardner

The public wants environmentally friendly, or “green,” buildings, and the number crunchers want budget-friendly buildings. Engineers and architects at the U.S. Army Engineering and Support Center, Huntsville, Ala., a Center of Standardization, are marrying the two ideals as they come up with new guidelines for the construction of emergency services buildings for military installations throughout the United States.

The Huntsville Center got involved in the project after being contacted by Manette Messenger, an engineer from the Installation Management Command. Judy Milton, sustainable design champion at the Savannah District, and Annette Stumpf, a research architect at the Construction Engineering Research Laboratory in Champaign-Urbana, Ill., are also key players in the project. The “customer” is Bruce Park, the director of Army Fire and Emergency Services at the Office of the Assistant Chief of Staff for Installation Management.

The team is working on designs and new standards for installation Emergency Services Stations (ESS), which will act as combined fire, police and emergency medical services stations.

Chris Shepherd, an architect with the Huntsville Center, said the agencies will share space for things like administration, 911 answering, showers and eating areas, which should significantly cut overhead costs.

A prototype ESS building is scheduled to be designed, based largely on current fire station standards, in fiscal year 2007 and then built at Fort Bragg, N.C., in FY 2008. The year after that, the new ESS building will be closely monitored, and its costs and environmental impact will be compared to an existing fire station that was built on Fort Bragg in 2003.

Richard Grulich, chief of the Architectural Branch at the Huntsville Center, said the goal of the project is formulating design

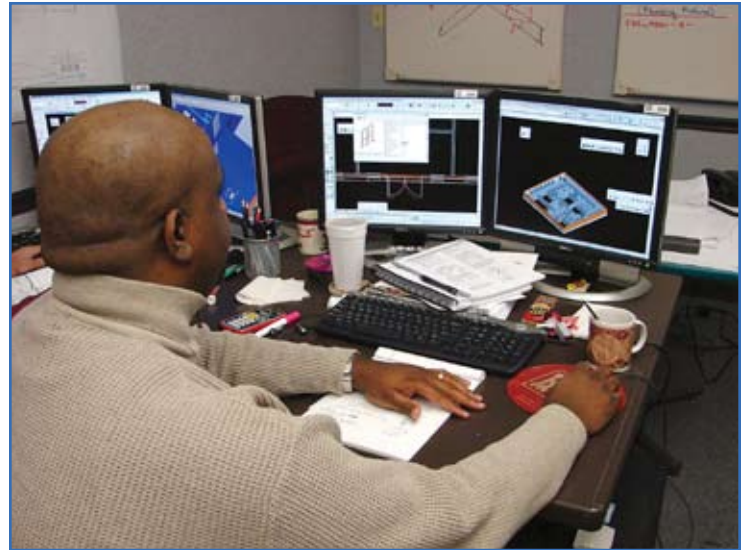
standards that will eventually be used for all new ESS buildings on installations in the United States. The target is to develop standards that will meet Leadership in Energy and Environmental Design (LEED) requirements to earn a Gold rating.

LEED certified “green” buildings are leaders in environmentally friendly construction. Platinum is the highest rating a building can receive; Gold is the next highest and is considered the highest practical standard in LEED certification. There are only about 15 LEED Platinum-certified buildings in the country.

Grulich said that an outside firm that specializes in doing environmentally friendly construction will be the architect-engineer as the team works toward new “greener” standards for the ESS buildings. The goal is to cut energy use by 20 percent and water use by 35 percent.

Shepherd said that the project is expected to be environmentally friendly from start to finish — from using eco-friendly building materials to waste management.

According to Grulich, a fire station runs about \$2.1 million, and the estimated cost for a multipurpose “green” ESS building is expected to be about \$2.7 million. That expenditure would combine the benefits of housing different agencies under one roof along with the environmentally friendly and cost reducing factors.



Chris Shepherd, a Huntsville Center architect, works on building designs at his computer. Shepherd is part of a team tasked with formulating new environmentally friendly standards for future Emergency Services Station construction projects on military installations throughout the continental United States. Photo by Chris Gardner

The project is still in the early design stages, so it is yet to be decided whether the new ESS buildings will feature a “fire pole.” Shepherd, who recently visited the Fort Benning, Ga., satellite fire station, said there have been discussions of a fire pole, but it is not clear yet how practical it would be.

“That’s the first thing the (Fort Benning) fire chief asked me,” Shepherd said with a laugh. “He said they haven’t used one since 1968.”

Grulich added that when the sustainable design components have been applied to the new ESS buildings, they can easily be used as a guide for reworking the standards of other continental U.S. military construction plans such as child care, community service, fitness and youth activity centers.

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# RCI paves way forward for Soldier family housing

by the RCI Real Estate Team, U.S. Army Corps of Engineers, Norfolk District

For decades, Army authorities listened to Soldier and family member concerns about substandard or inadequate family housing and long waiting lines for on-post housing. Those Soldiers lucky enough to find decent quarters off post would experience difficulty staying within their housing allowances. The Army reported that 70 percent of its family housing units needed replacement or major renovations. Congress recognized that traditional military construction could not remedy the problems.

That was then.

Today, there's a new program sweeping across the U.S. Army, one that is changing the face of Army Family Housing. It is a bold and ambitious multi-billion-dollar family housing privatization program called Residential Communities Initiative (RCI), and the U.S. Army Corps of Engineers plays a key role by providing contracting, environmental and real estate support.

RCI has already had a major impact. Currently, 35 installations (27 projects), with a total of more than 75,000 homes, have transferred to different Limited Liability Companies (LLCs). The RCI program has taken about \$1 billion in government assets and leveraged it to generate more than \$10 billion in construction and renovation development in a far shorter time period than military construction could have achieved. A total of 420 new and renovated units per month have been delivered during the past 21 months. RCI projects have awarded \$1.5 billion of development funding to small businesses. The Army was the first to have joint service projects, such as at the Presidio of Monterey, Calif., with the Naval Postgraduate School and in Hawaii with the U.S. Coast Guard.

The RCI program also exceeds the private sector in energy conservation. All homes built for RCI are Energy Star compliant, compared to 5-10 percent in the private sector. New homes must also receive a Gold rating from the Sustainable Project

Rating Tool program to reduce utility costs. RCI partners have shown an excellent commitment to sustainability. Designs incorporate environmentally friendly and energy-efficient features, as well as extensive recycling and re-use of materials. For example, at Fort Meade, Md., where an old neighborhood was being demolished, mature trees were relocated to a new development and all the concrete was crushed and reused.

## RCI's birth

In 1996, Congress passed the Military Housing Privatization Initiative (MHPI). The law authorizes the military services to attract private-sector expertise and capital for improving housing facilities for military members and their families in the United States. It allows the Army's RCI to select a development partner to prepare plans and obtain private capital to construct new housing, repair existing housing, and maintain and operate on-post family housing.

In 2000, President George W. Bush released his Federal Management Agenda. Privatization of military housing was one of his nine agency-specific reforms. In response, the Army created the Office of the Deputy Assistant Secretary of the Army for Privatization and Partnerships (DASA P&P) to streamline the process of privatizing military housing. This office serves as the lead for the RCI program, establishes privatization policy and is responsible for the business documents. The DASA for installations and housing (DASA I&H), as landlord, is responsible for the real estate documents.

In 2001, RCI moved from a pilot program into its full execution phase. Subsequently, the Corps was charged with executing the program's centralized processes through three RCI centers of expertise: Baltimore District for acquisition; Mobile District for environmental; and Norfolk District for real estate.



*New Residential Communities Initiative housing at Fort Ord, Calif., serves both Army and Navy military personnel. Photo by Brad Collier*

The Corps' Baltimore District is responsible for the acquisition process that selects the developer that drafts the Community Development and Management Plan (CDMP) for the host installation. The Mobile District is responsible for overseeing and producing the environmental work required to lease the land and transfer the improvements to the RCI lessee. As the Army's landlord representative, Norfolk District is responsible for preparing, negotiating and managing all real estate documents as well as providing real estate expertise to the program.

## Streamlined process

Using a Request for Qualifications acquisition process to reduce time and costs for both the Army and the private-sector developers, the Army, through the Baltimore District, awards a contract to the selected developer to work with the installation to prepare a CDMP, which defines the proposed scope of work and the developer's long-term relationship with the Army. The local Army installation public works and real property staffs are key participants in determining the lease footprint, assessing the adequacy of utilities, preparing the Report of Availability and coordinating the developer's design effort to meet the installation's requirements. ➤





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When the plan is approved, the DASA P&P and the developer establish a partnership, typically in the form of an LLC, in which the developer is the managing member and the Army is the minority member. The Army secretariat then designates the installation garrison commander as its representative for LLC management.

The complexity, size and value of the RCI projects require new approaches to real estate negotiation. Under the direction of DASA P&P and the authority of DASA I&H, the Norfolk District RCI team negotiates a 50-year ground lease with the LLC as the lessee. The ground lease is of great interest to the financial companies who lend the project hundreds of millions of dollars for construction. The Army transfers full ownership of the housing improvements and associated personal property to the lessee. The team then represents the Army as landlord for the ground lease.

RCI is a cutting-edge program, and as it has been implemented, it has been necessary to blaze several additional paths beyond the typical real estate negotiation realm. The Norfolk District team developed and published several RCI-related handbooks and Standing Operating Procedures (SOPs). Corps real estate instructors use the RCI Jurisdiction Primer in their course curriculum; NASA and the Army General Counsel use an RCI Freedom of Information Act procedural SOP; and installations use the RCI Real Estate Handbook to better integrate real estate into their business practices.

### Unique challenges

Working with top law firms around the country that represent developers and lenders, the Norfolk team negotiates project-specific documents. More than 100 business documents must be created within a six-month period. The consequences of missing the closing date for transfer of real property are severe, resulting in a minimum 30-day project delay and an additional bill to the Army of \$500,000 to \$8 million. Although faced with some significant hurdles, the team has never missed a closing deadline and has transferred an average of more than 1,000 family housing units a month for the last five years.

Not all of the RCI projects have gone smoothly, though. For example, the team used an innovative approach to solve a potential dilemma at Fort Belvoir, Va., when the lessee was unable to obtain financing on time. If the real estate closing did not occur, the Army would have had no contract in place to manage the homes, and it would have cost \$6 million dollars to run the homes for just one month. The team quickly researched various leasing authorities and determined that the Army could perform an interim lease. This interim leasing approach has been subsequently used for several Army RCI projects, and the cost avoidance to the Army has been well over \$70 million.

Last-minute challenges often arise prior to closing. At Fort Benning, Ga., a noise study update for a nearby firing range showed that 94 existing homes were located in a high-noise zone. The team quickly changed the real estate documents to with-

draw the affected land from the ground lease. At Fort Sam Houston, Texas, the garrison requested continued use of a portion of the old officer's club as office space after it was to be transferred to the lessee. The RCI team, in order to better finance the project, requested rent from the Army to remain in the building. The Army secretariat rejected the RCI request as against Army policy. The team examined the issue and determined that the building could be leased rather than transferred and that the installation would pay only reimbursement for utilities. The garrison was able to continue using the space, and the arrangement did not increase the lessee's operating costs.

Army Transformation, which restations troops and organizational equipment, creates challenges for RCI projects. The team, which is now working on Phase II of several projects affected by the 2005 Base Realignment and Closure, works continuously with the RCI lessees, the installations, the Office of the Assistant Chief of Staff for Installation Management and the Army secretariat to meet these changing requirements.

### Team of teams

The Norfolk District team is proud to be a part of a larger team led by the DASA P&P. No part of this larger team could successfully privatize Army housing on its own. The greater team comprises a wide range of personnel who contribute to the RCI mission — from the installation garrison commander, public works and real property staffs and the military community stakeholders up to the Army secretariat.

RCI has been lauded as an innovative and creative way to build sustainable homes, improve quality of life and provide residential communities for Soldiers and their families. That accomplishment has been the most important outcome of the many successes this dedicated team has achieved.

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*The Norfolk District RCI Real Estate Team members are Dillard Horton, Kathleen Germano, Lee Bevins, Phillip Hakey, Todd Waldman and Lynda Christensen.* **PWD**



*Privatized housing at Fort Hood, Texas, provides homes for Soldiers and their families. Photo by Phillip Hakey*



# Fort Leonard Wood RCI contractor diverts demolition waste in prototype project

by Bill Boone and Eddy Smith

The Residential Communities Initiative (RCI) contract partner for Fort Leonard Wood, Mo., successfully diverted 67 percent of debris by weight through recovery of salvageable materials when it deconstructed an old duplex and built a new house on the same foundation. Based on this successful demonstration, additional family housing deconstruction is planned at other sites to generate supporting data and highlight sustainable building removal practices.

The Leonard Wood Family Communities managing partner, American Eagle Communities, worked with the National Defense Center for Environmental Excellence's Solid Waste Sustainability Program, the U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory and Fort Leonard Wood's Maneuver Support Center. The goal was to demonstrate standard material recovery practices for building removal at an RCI site.

The structure selected for removal was a three-bedroom duplex with an attached carport. American Eagle Communities provided professional services for the project with assistance from the subcontractor deconstruction and recycling company, RASTUR Development.

One of the project targets was to attain 50 to 70 percent diversion by weight. The demonstration resulted in recovery of a wide variety of salvageable materials such as wood flooring, doors, windows, metal posts, appliances, fixtures and concrete for potential reuse and recycling — achieving 67 percent diversion, which was within the target.

Once the building had been removed, American Eagle Communities decided to leave the existing foundation in place so that it could be evaluated for reuse as part of the new home. A structural engineer examined the foundation and found it to be sufficient to support a new home.

Next, American Eagle Communities directed an architect to design a home that would make use of the existing foundation and a portion of the sewer and water laterals.

The new home is a four-bedroom, single-family residence with a two-car garage included within the envelope of the old foundation. New foundation walls were added as necessary to provide floor space and aesthetic appeal.

The project demonstrated an economically feasible alternative for building removal at privatized Army communities. This type of removal-and-replacement project offers a safe alternative in an active family tract and sets the stage for further communication and collaboration among family housing partners. Sensible on-site reuse of select building material and components is the beginning of what might best be called "closed loop deconstruction."

Deconstruction may work perfectly for some situations, such as light construction and multiple-family dwellings in fairly good condition, but not necessarily for all circumstances, such as heavier construction with hazardous materials in poor condi-



*This three-bedroom duplex was selected for deconstruction at the Fort Leonard Wood privatized housing development. Photos courtesy of the National Defense Center for Environmental Excellence*



*A new single-family residence rests on the old foundation.*

tion. Factors that affect the feasibility of a deconstruction project include: scope, site access, landfill availability, local resources, local market, existence of hazardous materials and time limitations. Although deconstruction is generally expected to have less of an environmental impact than standard demolition, it is clear that, in some cases, demolition could be more suitable.

The ability to meet safety, risk, cost, time and quality objectives directly correlates to the success of a deconstruction ➤



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project. Time constraints, high local labor costs, lack of material quality, poor weather or just lack of a good opportunity to deconstruct can affect the probability of success. However, a customized combination of demolition, recovery, recycling, reuse and deconstruction techniques can help to improve landfill diversion and meet key project objectives.

While the Army does not require RCI partners to achieve any stated levels of diversion, seeking opportunities to recover demolition waste can help installations and partners avoid landfilling and achieve their sustainability goals. The U.S. Army Corps of Engineers has developed guidance to help installations rapidly assess different residential building types as to the feasibility of deconstructing for privatized developments (see sidebar).

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## Bulletin offers information for deconstruction in Army privatized housing development

by Tom Napier

The Army's Residential Communities Initiative (RCI) partners are not required by Army regulation or policy to divert any construction and demolition waste from community development sites. This approach allows the RCI partners the flexibility and latitude they need to provide the Army with quality housing that is attractive to Soldiers and their families without the burden of excessive requirements.

The good news is that some RCI partners have been more than just sensitive to the installations' solid waste reduction goals and have implemented recycling measures on their own. In many cases, the partners have found that salvaging useable materials and recycling debris creates no added burden and reduces hauling expenses. Waste reduction strategies can be appropriately discussed with RCI partners when these efforts would be of mutual benefit.

For example, the RCI partners at Forts Bragg, N.C., and Leonard Wood, Mo., and at Schofield Barracks, Hawaii, have initiated aggressive recycling practices. By being proactive in this way, the partners are not only being environmentally friendly but are also saving money through waste diversion. These companies are demonstrating that debris reduction goals and economic benefits can be achieved with no adverse impact to the RCI projects.

The U.S. Army Corps of Engineers

will publish a new Public Works Technical Bulletin (PWTB) as an information resource for installations and RCI contractors to assess recycling opportunities. Titled *Opportunities for Reducing Construction and Demolition Waste from Residential Communities Initiative (RCI) Programs*, the PWTB will be available online at the Whole Building Design Guide Construction Criteria Base web site, [www.wbdg.org/ccb/browse\\_cat.php?o=31&c=215](http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215).

The bulletin outlines recommendations and supporting data for evaluating the material content of buildings for a relatively quick determination of opportunities for debris reduction. It provides building descriptions and information about quantities of material to be expected per gross floor area of buildings. No single quantity for material content is applicable to all buildings, construction types and locations. Therefore, several building categories are described to address a range of project-specific conditions.

These quick screening protocols should reveal whether a significant opportunity for debris reduction exists, little opportunity exists or a more detailed building evaluation is advisable.

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# Garrisons can help Army avoid extra expense with Barracks Utilization Report

by Tom Rutledge

The dictionary defines “burr” as, “the rough and prickly covering of the seed of certain plants.” Some may think of the Army’s Barracks Utilization Report, another “BUR,” as synonymous with thorn, like “thorn in the side,” or pain, like “pain in the ... side.” The BUR may be painful at times, but it is essential to the effective use and management of barracks. Without the BUR, the garrison commander is shooting in the dark each time he or she issues a certificate of nonavailability, and that could be a sizeable mistake indeed.

## In the “old days”

Before BDUs and ACUs, company commanders could not authorize a Soldier to live outside the barracks unless their BURs showed an occupancy rating of 95 percent or better. A lot of things have changed in today’s Army, but the requirement for at least 95 percent barracks occupancy before the garrison commander can issue certificates of non-availability to junior enlisted Soldiers remains the same.

Why cannot the garrison commander let Soldiers live where they want? The commander is bound by regulation, and there are good operational, health and welfare reasons, too. The statistics presented in Table 1 demonstrate the other reason: dollars.

The money the Army pays Soldiers to live off post when there is space in the barracks is called excess Basic Allowance for Housing (BAH). If one Soldier receives \$800 BAH a month, that totals \$9,600 a year. Multiplied by 30 — the size of just one platoon, the cost is \$288,000 a year. Continue interpolating the numbers, and it is easy to see why excess BAH might mount to hundreds of millions of dollars a year, money the Army could be spending to help win the Global War on Terrorism, develop better armor or smarter weapons, or any of several other important purposes. Excess BAH is expensive, and it is unnecessary.

## The BUR can help

The BUR is a tool that helps identify problems, so that they can be fixed. But for the BUR to work, it has to be accurate and based on actual data derived from the barracks. It takes a careful count of barracks spaces and a current count of who is actually living in those spaces to get the job done. First sergeants used to do these reports, and many still do, but, more often, housing professionals are surveying and accounting for barracks use.

This practice frees the first sergeant from this administrative task, but those “unofficial room diversions” will show up as the housing professional compares the barracks data against the official Department of the Army data base known as Headquarters Executive Information System (HQEIS). And those diversions cost the Army money.

With the official HQEIS data on the BUR and the approved diversions, the available spaces in that barracks building can be computed. Then, using the occupancy report and giving sergeants two spaces and specialists through privates one space, the number of spaces occupied can be figured. Dividing that number by the spaces available yields the building’s occupancy rate. The housing professionals will do this calculation across the installation to determine the garrison’s occupancy percentage. If the result is 95 percent or better, the garrison commander is authorized to issue certificates of nonavailability.

## Occupancy vs. utilization

That calculation gave us the occupancy percentage, but the report is actually about utilization. What is the difference? Utilization looks at the number of Soldiers in

the barracks, not the spaces they occupy. The barracks’ utilization percentage is the number of Soldiers housed divided by the available spaces. The utilization rate might be the same as the occupancy rate, but not necessarily. If the barracks are occupied by the most efficient number of Soldiers in the most effective grades, then the occupancy percentage and the utilization percentage will be the same. But, if a sergeant is put into the barracks at the expense of a lower ranking Soldier, utilization will suffer.

Utilization is actually a way of seeing how well the assignment of Soldiers into the barracks is being managed. Poor utilization can cost a garrison a lot of money, even if the occupancy percentage is high, because the sergeants get two spaces while the specialists and below get one.

Table 2 demonstrates that utilization is a number important to track. It reflects the Army’s goal of giving senior Soldiers certificates of nonavailability first before offering them to Soldiers of lower rank. The table shows that even with 100 percent occupancy, there may be only 90 percent utilization, and that means the garrison is spending excess BAH dollars. In this example, the excess BAH equates to about \$1 million annually.

The best situation is when the occupancy and the utilization percentages are equal or close to equal. When this happens, ➤

	US	EUROPE	ASIA	Overall
• Initial analysis:	\$104M annual potential excess BAH expensed for single Soldiers at 28 Installations.			
• 2nd analysis (all Installations)	\$135M	\$65M	\$31M	\$231M
• 3rd analysis (sanitized with Barracks Utilization Report data)	\$97M	\$45M	\$31M	\$173M

Chart developed by Housing Branch, Public Works Division, Installation Management Command



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Table 2 Barracks Utilization vs Occupancy: Does it really matter?												
Example Unit Barracks	1000 Facility spaces		Soldiers assigned to the unit									
	E1-E4 equate to 1 space	900		Annual Expense based on Fort Lewis 2006 BAH w/out dep								
	E5 equates to 2 spaces	100		\$\$\$\$ BAH w/out Dependents								
Cost of CNAs												
	Total Soldiers Housed	E1-E4	E5	Spaces	% Occupancy	% Vacancy	CNAs issued	% CNAs	E4-E1	E5	Total	Utilization
Least expense, 100% Occupancy	950	900	50	1000	100.00%	0.00%	50	5.00%	\$0	\$525,000	\$525,000	95.00%
Best Utilization	940	880	60	1000	100.00%	0.00%	60	6.00%	\$193,440	\$420,000	\$613,440	94.00%
Army required 95% occupancy	875	800	75	950	95.00%	5.00%	125	12.50%	\$967,200	\$262,500	\$1,229,700	87.50%
Army required 95% occupancy	925	900	25	950	95.00%	5.00%	75	7.50%	\$0	\$787,500	\$787,500	92.50%
100% Occupancy, Poor Utilization	900	800	100	1000	100.00%	0.00%	100	10.00%	\$967,200	\$0	\$967,200	90.00%
	869	780	89	958	95.80%	4.20%	131	13.10%	\$1,160,640	\$115,500	\$1,276,140	86.90%
	863	775	88	951	95.10%	4.90%	137	13.70%	\$1,209,000	\$126,000	\$1,335,000	86.30%
	850	775	75	925	92.50%	7.50%	150	15.00%	\$1,209,000	\$262,500	\$1,471,500	85.00%
	825	775	50	875	87.50%	12.50%	175	17.50%	\$1,209,000	\$525,000	\$1,734,000	82.50%
	815	775	40	855	85.50%	14.50%	185	18.50%	\$1,209,000	\$630,000	\$1,839,000	81.50%

Occupancy = Spaces filled divided by total Spaces available: F9/B4      Utilization = Soldiers housed divided by total Spaces available: C9/B4

Chart developed by Housing Branch, Public Works Division, Installation Management Command

the barracks are being effectively used, and the right mix of sergeants and lower ranking Soldiers are being housed. It means that two specialist were not sent to live off-post and paid BAH so that one sergeant could be housed.

### Achieving good utilization

Does it seem like a juggling act? It's not really. Good barracks utilization is realized by following the general rule to house the most junior Soldiers in the barracks first and, when there is space, to house the sergeants.

The Army does not expect the occupancy and the utilization percentages to be equal. Units want some sergeants in the barracks, and when the Army programs for barracks spaces, it factors in housing for some sergeants. When the occupancy and utilization percentages are within 2 to 5 percentage points of one another, utiliza-

tion is OK. If utilization is more than 6 or 7 percent below the occupancy percentage, then the garrison should look at why it is moving lower ranking Soldiers off post and housing sergeants instead.

If the BUR is so good, then why is it that a thorn seems an apt analogy? Well, when you haven't done something for a while, it is tough to get going again. Think about how easy it is to stay in shape versus to get in shape. The BUR is very useful, but it is hard to do it right because it has been done wrong, or not at all, for too long. That is no longer an option these days, when every dollar counts.

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CALL FOR ARTICLES

The May/June 2007 issue of the **Public Works Digest** will feature

## The environment

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# New online service automates search for rental housing 24/7

by *Vernona D. Aslim*

The frequent moves of families from one installation to another, from low-cost rural areas with limited off-post housing availability to high-cost urban areas and back again, is a major source of stress. Help is available from Housing Services Offices, which are tasked with the mission to locate, secure and deliver community housing to the approximately 70 percent of Soldiers with families that will reside in local community housing. To further ease the stress of moving, a joint services housing referral solution sponsored by the Department of Defense directly connects service members and their families to available housing in their new community through an Internet solution: Automated Housing Referral Network (AHRN).

AHRN is a web-based service that allows relocating military families to find available housing in their new location *before* they move. It facilitates home finding at any time of day from anywhere in the world, removing inefficiencies, cost and stress from the permanent change-of-station process. For the military member, functional features such as detailed description of properties and local area, current Basic Allowance for Housing calculations, rental



partnership properties and military-only, for-sale-by-owner listings provide immediate results in today's online world.

AHRN targets and limits its access only to military personnel and their families. It also frees housing staff from trying to maintain often outdated listings themselves so they can focus on providing personalized service to their incoming customers. Unlike other rental web sites, AHRN does not charge fees for rental listings, which helps ensure a robust selection of listings.

Local property managers, including Residential Communities Initiative private partners, and landlords can register online and enter their available rental properties, including photos. The information is then displayed to military members searching for a property in that location. In addition, AHRN provides service members with access to home selling and buying services, as well as the ability to list their own properties for rent or sale.

Congress and the DoD have directed

military housing offices to look first to the local communities for housing. AHRN's ability to provide worldwide, 24/7 access to property managers, owners and military members modernizes and enhances the ability to do this.

AHRN is now deployed at 31 Army locations, as well as at Air Force, Navy and Marine Corps bases. The Army alone has more than 62,000 registered military members and 19,000 registered property managers and landlords, and maintains more than 96,000 AHRN listings.

Since its initial deployment in 2004, property managers and military members have become more aware of AHRN. Calendar year 2006 saw the largest growth. Army Housing is looking forward to the continued successes and benefits of AHRN for its customer base.

To learn more about AHRN, visit the web site: [www.ahrn.com](http://www.ahrn.com).

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# Army Housing goes for 'green'

by *Lisa A. Bobotas*

The U.S. Army may begin using a commercially recognized standard for designing, building and maintaining environmentally friendly, or "green," housing in the future. A green home, as defined by the U.S. Green Building Council (USGBC), is a home that uses less energy, water and natural resources; creates less waste; and is healthier for those living inside.

The USGBC is a nonprofit, international organization known for developing tools used in the commercial sector that provide benchmarks for design, construction and

operation of high-performance green buildings. The rating tool program is called Leadership in Energy and Environmental Design (LEED). The USGBC is in the process of developing "LEED for Homes," a rating tool specifically for housing projects, and anticipates a release this summer of the new rating tool.

The U.S. Army has been in the forefront of building with a "green" mindset, following a holistic approach to designing and constructing facilities geared towards the long-term protection of the environment, including such factors as energy efficiency,

durability, use of environmentally friendly materials and processes, and promotion of more environmentally conscious lifestyle opportunities in community design.

The Army transitioned from using the U.S. Army Corps of Engineers' Sustainable Project Rating Tool, called SPiRiT, to LEED for all new construction, except family housing, beginning in fiscal year 2007. The Army excluded the use of LEED for new family housing projects until the USGBC completes its LEED for Homes pilot program.

Last summer, at the Department







# HOMES4 UPH module coming to your installation

by Gabriele (Gaby) Shelley

The Unaccompanied Personnel Housing (UPH) Branch of the Office of the Assistant Chief of Staff for Installation Management, in conjunction with its Housing Information Technology (IT) Team, brought together UPH housing specialists to test the newly developed Housing automated management system, HOMES4. They met at Fort Hood, Texas, Feb. 5-9.

This web-based residential property management system, developed by Yardi Systems, Inc., and enhanced for the Army, incorporates asset management tools in a highly efficient, modern data management system. HOMES4 streamlines the management of single-Soldier housing in one package with a commercial off-the-shelf product using a web-based interface.

The UPH and furnishings modules parallel the Army leadership's Holistic Barracks Strategy, supported by the Centralized Barracks Management (CBM) initiative. As the Army transitions to CBM, HOMES4 will provide procedural functions in support of single-Soldier housing management, such as:

- Soldiers – simplifies assignment and termination procedures for unaccompanied housing;
- Facilities – tracks maintenance and accounts for buildings, rooms and spaces;
- Assets – accounts for furnishings, fixtures

and equipment;

- Management – manages collections, metrics and utilization; automates reports; and provides certificates of nonavailability (CNAs).

Installations not currently operating under CBM can also use the tools available in the HOMES4 UPH module. These include issuing and tracking CNAs and using the formatted monthly Barracks Utilization Report, which is reported quarterly through Installation Management Command to OACSIM.

Fort Hood, the CBM pilot program site, hosted the testing of the HOMES4 UPH module. Housing and IT specialists from Headquarters, Department of the Army, Forts Sam Houston, Texas, and Leavenworth, Kansas, IMCOM-Pacific and IMCOM-Europe regions joined the Fort Hood housing staff in testing the functions and providing recommendations to enhance the HOMES4 prototype to meet the Army's needs. UPH module technical representatives from Yardi provided training and assistance, and initiated on-the-spot corrections to the system.

The HOMES4 UPH module is scheduled for a "go-live" deployment at Fort Hood in early March. Mannheim, Germany, and Fort Lewis, Wash., are to follow.



Peter Gentieu and Gaby Shelley work to resolve an issue during testing of HOMES4 in February. Photo by Elaster Nickelberry

Deployment schedules to other installations will ensue in 60- to 90-day increments. The HOMES Service Desk will continue to handle questions from the field and is working with Yardi to coordinate 60-day prep cycles for installations prior to their conversions to HOMES4.

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of the Army's behest, a USACE team, consisting of technical experts from the Construction Engineering Research Laboratory and several Corps districts, evaluated two recently completed projects — at Fort Huachuca, Ariz., and Fort Lee, Va., — against the proposed LEED rating system to determine how Corps-designed homes would fare. This gave the team, led by the Norfolk District Family Housing Center of Standardization, the unique opportunity to participate in the pilot program.

The team found that many of the

current standards and practices already include sustainability and result in completed homes that are capable of meeting or exceeding the USGBC standards. The use of Energy Star-rated appliances, requirements for durable construction materials and performance testing of the mechanical systems are just a few of the current practices that already contribute to a home's long-term contribution to environmental health.

An important aspect of the Corps' participation in the LEED for Homes pilot program was the opportunity to provide feedback to the USGBC on issues for which it would be difficult or infeasible

for military projects to achieve rating points. This feedback was considered alongside private developers' input during the pilot evaluation period.

The team concluded that the Army can look forward to a smooth transition from SPiRiT to LEED for Homes for future family housing projects.

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**PWD**



## IMCOM-Europe builds townhouses in Germany

by Joseph Baltar

Looking for ways to make Soldiers and their families feel more at home, Installation Management Command-Europe Region developed a strategy to replace the stairwell apartments that are common on U.S. military installations in Europe with townhouses. The idea was presented to the assistant chief of staff for installation management and approved March 1, 2006.

The townhouse initiative at U.S. Army Garrison Ansbach is the first Army construction project to come out of this initiative. The project will provide 138 townhouse units for \$52 million in fiscal year 2008.

### From stairwells to townhouses

For the past several years, IMCOM-Europe has made great strides in renovating stairwell buildings, which represented more than 90 percent of the Army Family Housing inventory in Germany. However, significant numbers of unrenovated units still exist at enduring locations, i.e., those installations remaining after the Army Transformation is complete. The units are inadequate by Department of Defense standards, typically lacking second bathrooms and with laundry facilities in the basements of the buildings.

The plan to eliminate inadequate housing stems from a 1997 congressional mandate directing the DoD to develop a buyout plan that would eliminate inadequate hous-

ing over a 10-year period. In Germany, IMCOM-Europe's remaining buyout program includes \$185 million for new townhouses in FYs 2008-09.

Before 9/11 and global restoration plans, Europe's buyout program to eliminate inadequate Army Family Housing focused on the renovation of existing stairwell buildings. Reconfigurations or building additions also increased living space while adding needed laundries and bathrooms to apartments.

As the buyout progressed, standards evolved. Over time, an ever-increasing list of directed requirements raised the cost of renovation substantially. Modernizing stairwell-type apartments now costs more than 70 percent as much as that of constructing new townhouse units. This is a significant benchmark, because congressional language supports replacement construction when renovation exceeds the 70 percent threshold.

As a result, IMCOM-Europe obtained Department of the Army approval and is designing residential neighborhoods with townhouse units to replace the rigidly laid out rows of stairwell housing at enduring installations in Germany.

The Army is not the only agency in Europe replacing stairwell apartments with townhouses. U.S. Air Force Europe (USAFE) has also established and funded



These stairwell apartment buildings are typical of existing Army Family Housing in Germany. Photos courtesy of Installation Management Command-Europe Region



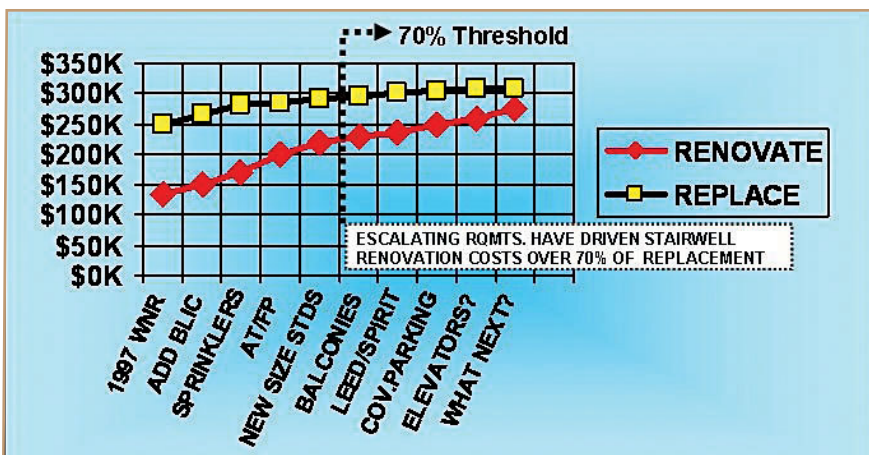
U.S. Air Force townhouses built in 2005 serve both Air Force and Army personnel at Kaiserslautern, Germany.

an initiative to construct more than 1,000 townhouses in Germany, replacing many of its old stairwell buildings. This initiative is part of a \$1 billion strategy to improve or replace family housing units throughout USAFE. USAFE's program is well underway.

### Townhouse design benefits

Another factor affecting the decision to pursue the townhouse initiative is that of functionality. The layout of apartments in stairwell buildings is fixed by the exterior dimensions of the building and further limited by load-bearing walls. Increasing the size of rooms and apartments to meet standards often results in oddly configured living units with excessively long hallways and inefficient use of space.

The flexibility inherent in planning for new construction allows IMCOM-Europe to more efficiently meet current stan-



Escalating requirements have driven the cost of renovating stairwell units above the threshold for replacing them. Graphic by J. Winkler





# Design awards honor homebuilder's Fort Lewis work

by Barbara L. Sellers

When Equity Residential showcased the first modular home built by Champion Enterprises, Inc., on Fort Lewis, Wash., it knew it had a good product. Now that the Building Systems Councils of the National Association of Home Builders has announced the results of its annual Excellence In Marketing and Home Design Awards competition, that contention has been proven.

Champion placed in two categories. It won the Excellence in Home Design Award for modular homes in the 2,300 to 4,000 square foot category and received honorable mention in the Excellence in Home Design Award in the modular multifamily homes category. The modular multifamily designs, which range from 1,750 to 2,050 square feet per family unit, are being built at Fort Lewis's Discovery Village.

"We started building these duplexes and triplexes in Discovery Village near the end of 2005," said Boyd Lucas, executive development manager, Equity Residential. "When all three phases of this project are



*This triplex, located in Discovery Village on Fort Lewis, is an example of the design that won honorable mention in the Excellence in Home Design Awards. Photo by Carly Jackson*

completed, we will have 458 modular family housing units there."

The first phase of the Discovery Village project has 174 units. The second phase has 150, and the last phase, to be done by the end of this year, will have 134.

"The popularity of systems-built homes has been growing recently with consumers and builders alike," Lucas said. "Some benefits of building with systems include a rapid construction time, controlled quality of the product and the ability to quickly build

a quality home in spite of industry labor shortages and material price increases."

"To enter this competition, we had to submit photos of both the outside and inside," said Kevin Flaherty, vice president of Sales and Marketing for Genesis Homes, Champion Enterprises, Inc. "This is a highly respected award within the modular construction industry, and we are extremely proud of winning because it confirms that all of our efforts have paid off."

Champion has been in business since 1953, and has built a total of 1.6 million homes throughout the country.

"We are especially proud to build quality homes for the quality men and women of our armed forces," Flaherty said.

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*This article was reprinted with permission from Northwest Guardian, Fort Lewis, Wash., where Barbara L. Sellers is a member of the staff.*

**PWD**

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dards. It also allows the Army to more effectively meet the expectations of Soldiers and their families. This includes connected garages, backyards and patios — amenities that stairwell living cannot provide.

With the explosion of housing privatization stateside and the implementation of the Residential Communities Initiative (RCI), service members' living standards and expectations have also risen. The perception that Army housing in the continental United States offers better standards and higher quality of life has grown. The townhouse initiative counters this perception.

Townhouse design standards took their cue from the already-developed RCI criteria, adapting them to the vernacular architecture of the German sites. Townhouses enhance the character of

communities. Window views look out onto individual houses and neighborhood cul-de-sacs rather than a rigid lineup of multi-family buildings. Pathways linking individual sections of housing and community gathering areas will also be features of these neighborhoods.

In the architectural, engineering, construction and environmental disciplines, the buzz word for the past several years has been sustainability. Replacing the worst stairwell housing with new construction affords the opportunity to apply the principles of sustainable design.

During planning, new townhouse communities can be made more earth friendly and energy efficient. This includes heating systems, storm and wastewater systems, construction materials, building orientations and overall design. Employing sustainability principles improves the quality of life of residents, is cost effective,

helps maintain good relations with host nation communities and is consistent with U.S. Army strategic policies.

## **Soldiers and families win**

Evaluation of the differences between the renovation of stairwell buildings and the construction of new townhouses demonstrates that the townhouse option wins hands down from both an economic and functional standpoint. Investment in townhouse construction, as compared to the renovation of 50- to 60-year-old stairwell buildings, is the "right thing to do" for our Soldiers and their families.

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**PWD**





# Energy-efficient homes going up in Hawaii

by Ann Wharton

Sustainability is a key initiative of the U.S. Army, especially when it comes to communities where Soldiers live. For U.S. Army Garrison, Hawaii, Commander Col. Howard Killian, it is one of the guiding forces behind the development of new homes.

“We have a tremendous opportunity with our residential development to be a model of sustainability, a model for military communities and for private-sector developments,” said Killian. “Photovoltaic and solar (panels) to reduce energy consumption is just the start. Urban home design, the appliances we use and even our daily habits at home and work are essential to this garrison’s sustainability goals.”

Through privatization of housing, the Army can work with top urban planners, architectural designers and technical and environmental services professionals to create innovative, sustainable communities.

The Department of the Army’s Residential Communities Initiative (RCI) program, which manages privatization under the direction of the local garrison, tasked devel-

oper Actus Lend Lease to design and build sustainable homes. Achieving that goal translates to minimizing waste during demolition and construction, building homes that last and reducing energy consumption. Conserving energy began with the home design.

“From the outside in, our urban planners and architects have taken an innovative approach to cooling homes in Hawaii’s year-round tropical climate,” said Claire Ridding, Actus senior development manager. “For example, the preservation of large, mature trees and planting of new trees will reduce what is called the ‘urban-heat-island effect.’” Retaining existing landscaping provides shading for homes, reducing the need for air-conditioners, which lowers energy consumption.

Several features that help lower energy consumption by reducing the heat gain load include:

- low-e glazing on windows, which reflects heat away from homes;
- radiant barriers under the roofing shingles to reflect heat away from the home;
- insulation in walls and attics;
- ridge vents on the roof to funnel hot air out of attics; and
- high-efficiency air conditioning units.

Inside the home, reducing energy use remained high on the list of priorities. Ceiling fans and operable windows make the most of natural ventilation, allowing residents to take advantage of Hawaii’s trade winds. Compact fluorescent lights replaced traditional incandescent fixtures. Their longer life reduces replacement and maintenance costs.

In the kitchen, all major appliances — refrigerator, oven, microwave, dishwasher — meet Gold energy standards, and all new



To help reduce energy consumption in homes, all major kitchen appliances meet Gold energy standards. Photos by Mark Brown, Army Hawaii Family Housing

homes are outfitted with solar water heaters.

“With these design features, along with community-based recycling and energy conservation programs being developed by AHFH’s (Army Hawaii Family Housing) property management staff, our design team, the garrison and our residents can be proud to be part of an innovative, sustainable community,” said Ridding.

Actus Lend Lease, Army Hawaii Family Housing and local Army officials worked closely with military families to determine what home-design features and amenities were most important to families. Several models have been designed. All of the homes will feature a modern, open living area with integrated kitchen, family and dining areas. The homes will have a minimum of three bedrooms, including a master bedroom with a walk-in closet and private bath, fenced yards, detached one-car garages and front lanais that will offer a place for families and neighbors to gather.

Duplex units will combine numerous functional components to improve the quality of life for its residents. Homes will feature “rear-loading” carports, where garbage and recyclables will also be collected. This layout will minimize the visibility of cars in the front of the home and provide a more open space for pedestrian traffic along the tree-lined street. In addition, the



Workers add sheets of plywood to the roof on a duplex unit.



# Fort Carson's new barracks provide creature comforts in eco-friendly way

by Susan C. Galentine

**M**edical Department Activity (MEDDAC) Soldiers traded up when they moved into new "green" digs next to Evans Army Community Hospital at Fort Carson, Colo., in December. Their new home can accommodate 112 single Soldiers, has a scenic view of the Rocky Mountains and incorporates eco-friendly features.

The new barracks are a part of the U.S. Army and Fort Carson's efforts to construct barracks and facilities that are more sustainable and resource efficient. This new approach to construction also includes the philosophy of ensuring the well-being of the Soldiers and staff who live and work there.

The exterior, a far cry from the stereotypical rectangular barracks buildings, resembles a modern apartment complex. The interior is painted in warm earth tones, an improvement over the stark white paint traditionally used in barracks.

When the Soldiers moved into their new home, it was like living in luxury compared to their old barracks, which had two com-



*Kitchenettes feature Energy star-rated appliances. Photos by Susan C. Galentine*

mon-use bathroom facilities on each floor, small rooms and wall lockers, said Sgt. James Lane, MEDDAC barracks sergeant. They couldn't believe they were going to live there.

The positive sentiments regarding the barracks were echoed by Capt. Kristi Andrews, a MEDDAC company com-

mander, who said she has been getting extremely positive feedback from Soldiers.

"In fact, we are seeing many Soldiers who are eligible to live in the barracks moving back in, rather than pay out of pocket for a place off post," she said. "They seem to really enjoy the apartment-style rooms, rather than traditional barracks rooms."

The coed MEDDAC barracks provide noncommissioned officers with single-occupancy rooms, each with a kitchenette, common area and bathroom. Lower ranking enlisted live two per unit, with each person having an individual bedroom and sharing a common area, bathroom and kitchenette. Each bedroom has a walk-in closet. Safety features such as sprinkler systems and smoke alarms are in the hallways and in each room.

The barracks incorporate several sustainable features. They are located next to the hospital, allowing residents to walk to work and save on vehicle fuel. A bus stop at the hospital provides access to public transportation, and bicycle racks at the barracks ➤



*Rooms at the new Medical Department Activity barracks at Fort Carson enjoy a view of the Rocky Mountains.*

*(continued from previous page)*

new communities will have jogging and bike paths, centralized community centers as hubs, schools parks and shopping — all within walking distance.

Construction of the new communities at Schofield Barracks is underway. Hundreds of homes have been demolished,

and old golf cart paths have been cleared. Demolition has generated more than 55,000 tons of concrete and asphalt and 14 tons of metal, which was all recycled back into the project for backfill, new roads and other uses. When completed, more than 92 percent of these materials will have been recycled.

Some homes are now finished and occupied. When completed, Phase I of the project will add 144 new units.

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# Innovative real estate program fills need for off-post homes near Fort Drum

by JoAnne Castagna

In 2006, Melissa Smith and her husband, an Army Soldier, lived in Denmark in a two-bedroom townhouse with four newly adopted teenage sisters.

“Our family grew quite large quite fast,” said Smith with a chuckle. While living “crazy crowded,” the family thought life could not get any more challenging. Then the Army called her husband to Afghanistan and sent her and the children to Fort Drum, N.Y. Alone, she packed up her daughters and headed to New York.

After they arrived, one of the first tasks was to look for a home. The Smith family found housing near the gate to Fort Drum through an innovative lease program created by the U.S. Army Corps of Engineers, the Army’s construction agent.

The Smiths, like hundreds of other military families, are being returned to the United States due to the Army’s biggest organizational change since World War II.

The Army is transforming from a force that was prepared to take on one or two potential wars at a time to one that is expeditionary in nature and can deploy continuously to different parts of the world to fight the Global War on Terrorism. This restructuring is requiring many Soldiers and their families who were serving overseas to return stateside, drastically increasing demand for quality housing.

To prepare for this influx, posts such as Fort Drum are eliminating inadequate housing and facilities and improving and constructing others. The Corps is constructing barracks for single Soldiers. While family housing is also being built, military families are in urgent need of affordable off-post housing.

In February 2005, the fort informed the Corps’ New York District that it had a pressing need for 2,100 temporary, affordable, quality homes within commuting distance of

the post. New York District, in cooperation with the Fort Drum housing team, began researching the civilian community.

Fort Drum is located in upstate New York and is the home of the Army’s 10th Mountain Division, which trains and deploys thousands of troops. The area within a 30-mile radius of Fort Drum is semi-rural, and outside the 30-mile radius, it is completely rural, so finding off-post housing can be a challenge.

New York District had created its Domestic Lease Program and decided the Fort Drum situation was perfect for putting the program to work.

“This program encourages land developers to construct or rehabilitate new temporary housing specifically for Army Soldiers and their families from bases that are in difficult markets to find housing,” said Noreen Dresser, chief of Real Estate at New York District. ➤

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provide another alternate transportation method.

Appliances are Energy Star-rated, and energy-efficient compact fluorescent bulbs provide lighting. The rooms have individual heat- and air-conditioning controls. The building is oriented to maximize solar gain throughout the day, which reduces energy needed for heating. Additional exterior wall and roof insulation keeps the building cooler in summer and warmer in the winter. Individual rooms have more windows for day lighting than previous barracks’ designs. Exterior shading devices on south- and west-facing windows reduce the need for cooling.

Low-flow water fixtures, drip irrigation and xeriscaping (using native plants, rock and bark) reduce water use. The use of ultra-low flow fixtures in the sinks and showers is also expected to reduce water use.

The building is supplied with environmentally preferable, low toxic cleaning products. The paint and adhesives used and carpeting installed in the building were specifically selected to give off low or no toxic fumes. The building’s air is monitored for potentially lethal carbon dioxide. If the CO<sub>2</sub> level is too high, more fresh air is allowed in to keep CO<sub>2</sub> levels down.

The barracks meet the Army’s Sustainable Project Rating Tool Gold rating level, which is equivalent to the Silver Leadership in Energy and Environmental Design (LEED) rating criteria for new construction and major renovation projects. Meeting LEED Silver means that this facility is built in such a way that there is an improved quality of life for those who live and work in the building.

Constructing sustainable facilities is one of the 12 sustainability goals Fort Carson established in 2002. The post

is targeting Silver LEED ratings for all new construction and is also incorporating more sustainable features in existing buildings during renovations. Sustainable facilities are designed to incorporate features and appliances that reduce water and energy use, reduce the amount of land disturbed by construction, use recycled and rapidly renewable materials in their construction, and improve indoor environmental quality for occupants.

Ultimately, reduced costs to operate facilities in the future can help ensure that more funds are available for Army mission requirements.

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**PWD**





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“We reached out to developers and told them of this new demand from Army families,” Dresser said. “The Army traditionally is about 80 percent rental, and Soldiers receive a base allotment towards housing from the Army, which places real dollars for housing into Soldiers’ hands. This is a great market to build for.”

Under the Domestic Lease Program, the government can offer a developer a lease for one year. The developer operates and maintains the housing, and it provides utility services, refuse collection and maintenance when they are not part of the lease contract.

To reach potential developers, the district began an educational campaign within a 30-mile radius of the fort. The team placed an advertisement in a local newspaper, posted flyers, mailed letters and made telephone calls to a host of institutions, including banks and financial lenders, real estate property associations, community groups, realtors, churches, the Chamber of Commerce, apartment complexes, land surveyors and assessors.

Team members spoke with banks and financial institutions to encourage them to lend for construction, refurbishments and new development of housing in a moderate and affordable range. They also worked with interested developers on their unique development needs, educated them about the market and offered them assistance with

state and local officials.

In addition, the team held meetings with mayors and other city and town officials to express the positive economic impact the program would have on their communities. They also spoke with the county office responsible for certificates of occupancy to expedite the permitting process.

The campaign drew interest from some developers. In the spring of 2005, developer Mike Treanor and Associates contacted the Corps. The company purchased the Pinehurst Apartment Complex, which is close to the fort, with the intent of developing the property into about 27 housing units suitable for Army families. The Corps team visited the property to ensure it met Army housing criteria. The developer obtained money from a lender and used it to create 33 housing units.

“This development sent a positive message to the market early on,” said Dresser. “Since then, Mike Treanor and Associates has renovated over 40 homes and purchased a factory on Black River for an additional 32 apartments, all for the purpose of providing military families temporary, affordable housing.”

Clover Management, one of the largest developers of affordable housing in New York State, also contacted the Corps. In September 2006, it signed a contract for 103 acres just outside Fort Drum to build 648 apartments. The complex will have 418 two-bedroom and 230 three-bedroom

units, with an Olympic-size swimming pool, community room and physical fitness facility.

“The government would normally select one developer to do all of the work,” said Dresser. “What we did with this program is create a natural free market approach with healthy competition.”

The Domestic Lease Program is beneficial in many ways. The program is improving the economy of the community because it brings in more residents, hence revenue, to the area; creates jobs for developers and service industries, such as construction companies; and improves the infrastructure by rehabilitating existing homes and creating new ones.

The program is providing quality, affordable temporary housing close to the fort for military families.

“The potential housing built around Fort Drum at no cost to the government is now well over \$100 million,” Dresser said.

Military families are benefiting, too.

“It is a real home with plenty of room,” Smith said of their new housing. “It’s so nice to live in a community with neighbors, a real yard and room to breathe.”

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*The Smith family found this home near Fort Drum through the Domestic Lease Program. Photos by Barbara Dindl, Fort Drum Housing Office*



*This school building was renovated by Mike Treanor and Associates into homes for Fort Drum military families.*



# Fort Campbell's privatized housing satisfies families' needs, desires

by Cindy Gersch

When Kelly O'Brien and her family first moved into the Army's Fort Campbell, Ky., family housing six years ago, she was less than impressed with the accommodations.

"I cried," O'Brien said. "I couldn't believe this was where we would be living."

O'Brien and her husband, Sgt. Michael O'Brien, moved to Fort Campbell in 2001. They had heard stories from friends about on-post housing and decided to look off post for a home that suited their growing family. At the time, the O'Briens had two boys, ages 5 and 11, and a baby on the way.

"We didn't have much luck finding a place big enough to suit our needs, so we moved into a townhouse about 10 minutes away from post," she said. After a year, the O'Briens decided they needed a bigger place but could not afford anything that was large enough. They chose to move on post.

The O'Briens were quickly given a home in the Fort Campbell neighborhood of Lee Village — a four-bedroom, multiplex apartment-style home with neighbors on either side.

"You would think we would be happy moving from a two-bedroom townhouse into a four-bedroom apartment," she said. "We were anything but."

The home lacked privacy, so that they could often hear their neighbors. The home's heating and cooling had breakdowns, and maintenance sometimes took

a while to respond. These issues, coupled with the fact that her husband deployed frequently, added to the stress of raising three children.

"It was definitely tough at times," she said.

The community also lacked amenities. Many of the playgrounds were old and needed work. O'Brien found that there were not enough neighborhood activities for her children, which made it difficult to get to know her neighbors.

The O'Briens' story is one to which many military spouses and families can relate. Because of these issues, Congress passed the Military Housing Privatization Initiative (MHPI) in 1996. The Residential Communities Initiative (RCI), the Army's program under MHPI, provides a critical component in the effort to improve military housing and foster a better quality of life for service members and their families. Information on MHPI can be found at [www.acq.osd.mil/housing/mhpi.htm](http://www.acq.osd.mil/housing/mhpi.htm), and on RCI at [www.rci.army.mil](http://www.rci.army.mil).

As part of the RCI project, private partners develop homes and communities reflective of military family needs. At Fort Campbell, Actus Lend Lease, a Nashville, Tenn., real estate developer, was chosen in 2002 by the Department of the Army to privatize the more than 4,200 homes and build more than 800 new homes.



Sgt. Michael and Kelly O'Brien enjoy the Halloween decorations on the front porch of their new home at Fort Campbell, Ky. Photos courtesy of Fort Campbell Family Housing

Almost immediately, Actus engaged in a comprehensive program to better understand and ultimately transform into reality the needs and desires of both the residents and leadership of Fort Campbell. Intensive resident focus groups communicated these project parameters to development experts with Actus. The company worked diligently to incorporate amenities such as skate parks and community centers for families into the community.

Home designs with bigger garages, more bathrooms and privacy fences were included in response to resident requests. Consequently, the new Fort Campbell



Older apartment-style housing is found in Lee Village at Fort Campbell.



New homes like these have been built at Fort Campbell under the Residential Communities Initiative.





# Fort Lewis's modular housing conserves energy, avoids construction waste

by Boyd Lucas

In 2005, Equity Residential converted its conventionally built housing replacement project at Fort Lewis, Wash., to a modular product. In keeping with the concepts of sustainability, modular construction presents greater opportunity for energy conservation and pollution prevention. The results have been well received. To date, 250 modular homes have been built, and another 208 are scheduled for completion by the end of 2007.

One of the compelling reasons for converting to the modular process was that it allows the building sequence to be done inside a controlled environment, and the raw materials are both acclimatized and dry. In the Northwest, the elimination of moisture is essential. Most conventional homes must endure a slow and often expensive

drying-out regimen prior to the installation of drywall, but with modular construction, mold never gets a stronghold.

The modules are built by Champion Homes in their Silverton, Ore., plant and shipped to Fort Lewis for assembly. Construction time in the plant averages five days per building. Assembly, final interior finishes, hardscape and landscape are generally completed in four to six weeks.

The units include features such as 9-foot ceilings, hardwood floors, island kitchens and sky-



A modular home is set into place at Fort Lewis, Wash. Photo by Joyce Curtis

lights. Homes are configured as duplexes and triplexes. They have covered

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homes are spacious, durable, beautiful and modern with some of the latest in-home technology.

But the Army's RCI privatization program is about building communities as much as it is about homes. An integrated plan offers residents a myriad of amenities, including town centers where residents can interact with one another and enjoy state-of-the-art fitness centers, playgrounds, baseball fields and tennis courts along with frequent community outreach events. Fort Campbell is already enjoying distinctive amenities, including the first on-post Starbucks café and the first Boundless Playground built on a military installation.

This approach, which through community planning unites leisure activities, sustainability, responsive management and high levels of home comfort and quality, is a new step in the privatization of military family housing.

In addition to new homes and neigh-

borhoods, the RCI program is geared towards making the lives of military members and their families easier. One way to achieve that goal is to integrate the maintenance and property management staffs into the communities where they work. This system allows residents the opportunity to get to know the employees and vice versa. As a result, maintenance response times have improved significantly. Now, responses to maintenance requests, no matter how small, typically occur within 72 hours, and immediate attention is given to emergency requests. This turnaround time gives residents, especially those with a spouse deployed, peace of mind.

The O'Briens recently moved into a duplex home in Summers Park, a new privatized neighborhood. Their new home also has four bedrooms and includes a garage, privacy fence, front porch and a large master suite with an adjoining bathroom. The new homes are energy efficient, comfortable and, O'Brien notes, quiet.

"This is the home I have always

dreamed of having, a place where my children can grow," she said. "This beautiful new home, coupled with all of the new amenities, makes me finally feel like I am living in a community."

The O'Briens find the integrated management feature reassuring.

"Knowing that there are dedicated maintenance teams ready to help if we should encounter a problem gives me one less thing to worry about while he is away. I feel better knowing that he can concentrate on his duties at hand, and I can concentrate on taking care of our family," she said.

O'Brien recalls moving day well.

"Just as I did the first time I walked into an on-post home, I cried," she said. "This time, however, the tears were tears of joy."

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porches front and rear, 50-year siding and 50-year roofs.

A major component of green building is recycling and waste management. Standard housing construction projects produce a great deal of waste. Lumber is usually delivered to a job site in random lengths. Left-over pieces, or tailings, are disposed of as garbage. The modular process precuts the lumber packages and then uses the tailings for blocking. Waste is reduced by more than 60 percent. Other products, such as sheetrock, sheathing and millwork, are manufactured to precise dimensions prior to assembly, further reducing waste.

Another benefit to modular building is the Quality Control (QC) and Building Inspection program, which is constant. As a module moves down the line, each station inspects for conformity to specifications and code. The QC program includes roving inspectors on the production line and in the field. The State of Oregon also conducts routine code compliance inspections in the plant. In addition to these layers of inspection, Equity Residential has hired a third-party inspection firm to conduct code and QC compliance at both the plant and at Fort Lewis. These homes undergo 30 to 40 inspections from start to finish.

In an effort to conserve energy and help sustain resources, these homes are enrolled in the Energy Star program. Sponsored by the Environmental Protection Agency, this program establishes criteria for insulation packages, appliances, furnaces, windows, light fixtures and heat loss. The goal is to reduce wasteful consumption and better serve the environment.

The energy package includes:

- R-21 insulation in walls
- R-33 insulation in floors
- R-38 loose fill cellulose in the ceilings
- Double-pane low emissivity, vinyl-framed windows with a U value of 0.35
- Metal doors with a U value of 0.2
- 90 percent annual fuel utilization efficiency gas furnaces
- Insulated ducts to R-8
- Duct testing with target leakage less than 6 percent CFM per foot squared at 50 pascal
- Gas hot water heater with an efficiency rating of 0.61
- Crawl space ventilation
- Whole house ventilation
- Energy Star compact fluorescent lamps in 50 percent of the fixtures
- Energy Star appliances.

and air conditioning duct system to check for leaks and faulty connections. The home is also pressurized and checked for heat loss. This includes testing weather stripping and door gaskets.

The WSU Energy Office estimates that these energy-efficient homes will use 377 therms a year for heat as compared to standard construction, which uses 442 therms a year. Future designs may place ducts in conditioned space rather than attics and crawlspaces. Estimated savings could approach 100 therms per year.

Equity Residential's efforts at Fort Lewis have resulted in 100 percent of new construction meeting the Energy Star program goals and have earned the developer an Honorable Mention Award from the National Association of Home Builders for design of the multi-family project at Fort Lewis. (See story on page 17.) Equity Residential has also been nominated for the Northwest Energy Star Builder of the Year.

The next step in the effort to become better stewards of the environment is to conduct an energy consumption test. A test duplex that will feature upgraded furnaces and light fixture packages is being built. This building will also have the new whisper fan technology for air circulation and gas-fired, tankless water heaters. The insulation value will be increased, and the windows will be upgraded as well.

Equity Residential will monitor the consumption in these units for a year and will then evaluate installation costs versus dollars spent on natural gas and electricity. This test building may help map the direction for future energy conservation techniques used at Fort Lewis.

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Each home is inspected in the plant for Energy Star compliance by the Oregon State Department of Energy. Then, a representative from Washington State University (WSU) conducts an inspection on-site and verifies that the home meets program goals. A pressure test is conducted on the heating, ventilating



Home interiors feature 9-foot ceilings, hardwood floors, island kitchens and Energy Star appliances. Photo by Sara Fried



# Louisville District partners with Fort Knox to provide Soldiers with new homes

by Monica K. Miller

The Anderson Greens Whole Neighborhood Renewal Project at Fort Knox, Ky., is providing senior enlisted personnel with housing, landscaping and neighborhood amenities comparable in quality and design to upscale private sector residential living. U.S. Army families stationed at Fort Knox are moving into new dwellings that, for many, are surpassing former Army housing.

“It always seemed that we moved right before nice housing became available,” said Sherrie Treida, wife of Sgt. 1st Class John Treida. The Treida family was one of the first five families to receive keys to their new home at the Anderson Greens Ribbon Cutting Ceremony last October. “This is the first time we will be able to come home and have room for all of our things.”

There are 12 courts in Anderson Greens with various numbers of housing units in each court. To date, five courts have been turned over providing 73 families with new

homes. The remaining 88 housing units are scheduled to be completed in early April.

Fort Knox recently became part of the Army’s Residential Community Initiative (RCI) program. RCI is a privatized housing program that partners residential companies with the military installation for lease and maintenance of established homes. The companies will also renovate and build new homes as part of the partnership. Actus Lend Lease partnered with Fort Knox this year to form Knox Hills, the housing managers who now lease the homes at the Anderson Greens neighborhood.

Initial development for the neighborhood began in April 2004 when the U.S. Army Corps of Engineers, Louisville District, awarded a contract to Caddell Construction of Montgomery, Ala. The \$35 million contract required the removal of 52 two-story, wood-frame housing units and associated infrastructure, and the design and construction of 161 family housing units along Wilson Road.

The project consists of permanent construction, three- and four-bedroom single family units. Unit sizes range from 1,500 to 1,800 square feet. The houses include amenities such as Corian countertops in the kitchens and bathrooms, vaulted ceilings, hardwood and ceramic flooring throughout, and marble surrounds in the showers and tubs.

“The square footage alone makes these houses comparable in size to those in the private sector, not to mention all the other amenities these houses have,” said Staci Ogle, USACE’s Fort Knox Resident Office project engineer. “It’s a pleasure to see (Soldiers and their fami-



Col. Raymond Midkiff, Louisville District commander, checks out a tile floor while touring the new Anderson Greens housing units. Photos by Monica K. Miller

lies) turning these houses into their homes.”

Neighborhood amenities in Anderson Greens include a soccer field, two basketball courts and several playgrounds. Its location near the Anderson Aquatics Center means an indoor swimming pool is also available to residents.

The project has been designated as a Showcase Project for Sustainable Design and Development, achieving the mandatory Silver rating under the Department of Defense Sustainable Project Rating Tool.

“(Anderson Greens Whole Neighborhood Renewal Project) provides the quality-of-life housing that Soldiers should expect and people anticipate for the military,” said Russ Boyd, program manager for Fort Knox support team.

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**PWD**



Sgt. 1st Class John Treida stands with his wife, Sherrie, and their son, J.T., in front of their new home in Anderson Greens at Fort Knox.



This home was one of the first six completed.





# Fort Hood Family Housing lives up to motto

by Christine Luciano

Moving disrupts routine, familiarity and security and often causes stress. To make every aspect of moving easier for Soldiers and family members, Fort Hood (Texas) Family Housing (FHFH) and the Housing Services Office (HSO) offer programs and services that help relieve some of the stressors. With the goal of "Great communities and the best customer service anywhere," team members establish a relationship with their customers at the in-processing brief and continue involvement throughout each customer's stay. Fort Hood's priority on customer service and customer care contributes to successfully meeting the needs of Soldiers and their families and improving their quality of life.

## One-stop shop

When Soldiers and family members arrive at Fort Hood, they are greeted and in-processed at the HSO, which offers convenience, resources and personnel ready to assess their needs. Soldiers and family members are welcomed by a housing manager who briefs them on eligibility requirements and waiting times for on-post housing, living in the community, the availability of rentals in the surrounding areas and the Deposit Waiver Program.

The HSO provides computer and Internet access for Soldiers to use Army Housing OneStop and other Army-sponsored programs. The HSO is also developing a customer sign-in kiosk that will better assess the customers' specific needs.

Team members from the HSO also leverage the Army Portal, which has been established and implemented at many installations. The portal allows Soldiers to apply online for on-post housing at their next duty stations prior to leaving their current assignments. Although the HSO at Fort Hood does not accept advance applications, a housing manager contacts the Soldiers and responds to any questions or concerns they may have. The portal serves as an avenue to reach out to more than 1,200 Soldiers annually.



Vonceil Beckett, a Centralized Barracks Management inspector, explains the in-processing paperwork to a Soldier. Photo courtesy of Fort Hood Directorate of Public Works.

New Soldiers and family members who join the 6,200 families living on post enjoy a new culture through Fort Hood's housing privatization partnership between the Department of the Army and Actus Lend Lease. To foster family time and encourage interaction among residents, FHFH organizes a variety of activities, from arts and crafts to conservation education events, in each of the 12 master planned communities.

The collective efforts of the HSO and FHFH team members have directly correlated in the placement of more than 3,200 Soldiers and their families into homes during fiscal year 2007, while maintaining a waiting list of more than 3,000 families and an occupancy rate over 99 percent.

## Seeking customer input

To ensure customers feel that the Housing Program is living up to its motto, a comprehensive customer feedback program is in place that covers both family housing and barracks.

For family housing, point-of-service customer surveys are taken in the areas of quarters assignment, quarters cleaning,

recurring maintenance and repair, and development construction work. These surveys measure residents' satisfaction with the convenience, information, courtesy, responsiveness, timeliness and ability of those providing service, as well as the condition and cleanliness of the quarters. Recent results of these surveys indicate that more than 98 percent of residents are satisfied with the services received.

In addition, an annual family housing resident survey that measures satisfaction with services and with the property is conducted by Educational Benchmarking Incorporated (EBI). The survey conducted in 2006 indicated that residents are satisfied with their housing experience. Overall satisfaction with services and property was improved over the levels reported in the 2005 survey. The current survey also shows that Fort Hood was rated as high as or higher than peer installations in all but one of 16 factors measured.

In response to the survey, the Housing Program has identified top-priority areas to improve and is developing action plans that will bring them about. Residents will be advised in the regularly published newsletter of survey results and planned improvements. Another EBI survey is planned for this June, and the Housing staff is looking forward to seeing whether the action plans that were implemented as a result of the 2006 survey have met with client approval.

Customer satisfaction is also measured for the Centralized Barracks Management (CBM) program. Point-of-service surveys obtain feedback from barracks residents. Two surveys track overall customer satisfaction with the assignment process and the termination process, and a third survey assesses the leaders' opinions. Overall satisfaction is currently at 97 percent.

Fort Hood is also preparing to survey all barracks residents using an instrument from EBI similar to that for family housing. Plans are to conduct this survey this spring. The results will be used to establish a customer satisfaction benchmark in the





# Fort Benning housing partnership opens new doors

by Mickey Kropf

Fort Benning, Ga., and its housing partner, Clark Realty, celebrated the opening of 56 new homes in March in McGraw Village, the first of 11 neighborhoods to be redeveloped. McGraw Village is the first significant redevelopment of Fort Benning's family housing in about 40 years.

"The speed of delivery and the quality of the new homes is phenomenal," said Jim Wiggins, Fort Benning's Residential Communities Initiative (RCI) director.

The one- and two-story new homes are designed to be in harmony with the existing architecture of the local community. The new family homes have a minimum of three bedrooms, average 1,800 square feet and offer a range of floor plans and exterior colors that result in 445 unique unit variations. Residents will enjoy many amenities including separate computer nooks, Corian countertops, 9-foot ceilings, two-car garages and fenced backyards.

The new village center, the 5,900 square-foot central common space in McGraw Village, will include a splash park, a swimming pool and community green space. The village center can be used to host gatherings, conduct meetings, exercise in the work-out room or surf the Internet in the business center. McGraw's village center will also include offices for Fort Benning Family Communities' property management company, Pinnacle.

"The neighborhoods we construct will help instill a sense of community with residents for many years to come," said Phil Cowley, project director of Fort Benning

Family Communities. "The Villages of Benning will be a great place to raise a family."

When completed, McGraw Village will offer 599 new homes and a wide range of amenities to residents that will be easily accessible due to the village's Traditional Neighborhood Design (TND). The TND is evidenced by the close proximity of the homes to the street, the abundance of sidewalks and trails, ample community spaces, such as tot lots and swimming pools, and a planned retail component to be delivered in the near future that will feature a Starbucks coffee shop and a day spa.

The main village entrance will contain ample green space and street lighting, and will mirror McBride Elementary School, connecting the village to its school. McGraw Village's TND will help create a pedestrian-friendly community unique to the surrounding area.

Fort Benning Family Communities has made a concerted effort to use small and local businesses in the development, construction and maintenance of the project. In 2006, about \$30 million of the \$38 million in construction contracts were executed with local businesses.

The redevelopment of Fort Benning's military housing is part of the U.S. Army's



The first 56 out of 599 homes to be built in McGraw Village at Fort Benning, Ga., were delivered in March. Photo by Mickey Kropf

RCI program. Fort Benning Family Communities, LLC — a partnership between Clark Pinnacle Benning, LLC, and the Department of Army — plans, operates and builds military family housing communities at Fort Benning and Camp Frank D. Merrill in Dahlonega, Ga. More than \$467 million was raised by the partnership to demolish 2,110 outdated homes, construct 2,377 new homes and renovate 1,560 historic and non-historic homes. In addition to the 56 new units that will soon be added to the Fort Benning family housing inventory, Clark had renovated 41 historic homes as of Feb. 28.

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Mickey Kropf is a development associate with Clark Realty Capital, LLC. **PWD**

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early stages of the CBM program.

## Customer service, customer care

More than 80,000 Soldiers and family members seeking assistance with their housing needs will visit the HSO and FHFH this year. Surveys, neighborhood

meetings and regular interaction with Soldiers and family members at community events ensure their needs will be addressed.

Fostering connections within military communities and between residents, the Housing Program provides "Great communities and the best customer service anywhere."

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Christine Luciano is the outreach coordinator with the Directorate of Public Works at Fort Hood, Texas. **PWD**



## Executive Order strengthens federal environmental, energy, transportation management

by William F. Eng

**O**n Jan. 24, President George W. Bush issued Executive Order (EO) 13423 mandating that federal agencies conduct their environmental-, energy- and transportation-related activities in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient and sustainable manner. The new EO, which consolidates and strengthens five earlier executive orders (EOs 13101, 13123, 13134, 13148 and 13149) and two memorandums of understanding, establishes new and updated goals, practices and reporting requirements for environmental, energy and transportation performance and accountability.

As the nation's single largest energy user, the federal government has an obligation to lead by example to meet the president's aggressive agenda to reduce dependence on foreign oil and conserve resources. Without question, the Department of Defense is the largest user of energy within the federal government. Within DoD, the Army consumes a significant share and, by inference, has the most to gain by fully implementing the new EO.

The U.S. Department of Energy is the lead agency for coordinating the implementation of the energy and water goals for the federal government. DOE's Federal Energy Management Program offers a variety of resources to assist federal agencies in achieving those goals. According to DOE, the new EO raises the bar for federal leadership and performance in several areas. The following information highlights some of these areas.

### Vehicles and petroleum

Agencies with fleets of 20 or more vehicles will:

- Reduce petroleum consumption by 2 percent per year, from a 2005 baseline, by 2015;
- Increase purchase of alternative (non-petroleum based) fuels by 10 percent per year; and

- Use plug-in hybrid (PIH) vehicles, when commercially available at reasonable costs compared on a life-cycle cost basis to non-PIH vehicles.

Note: Updates expired goals of E.O. 13149. Federal petroleum consumption was reduced by 70 percent to 36 trillion British thermal units from 1985 to 2005.

### Energy efficiency

Agencies will improve energy efficiency and reduce greenhouse gases, relative to a baseline energy usage in fiscal year 2003, by:

- Reducing energy intensity by 3 percent per year through 2015, or
- By 30 percent by the end of FY 2015.

Note: Achieves 50 percent better than Energy Policy Act of 2005 and in half the time as previous EO goal, which measured reductions over 20 years from 1985. The federal government improved energy efficiency 29.6 percent between 1985 and 2005 and reduced greenhouse gas emissions by 22.1 percent between 1990 and 2005.

### Renewable energy

Agencies will ensure that at least 50 percent of the current renewable energy purchases come from *new* renewable sources, i.e., in service after Jan. 1, 1999.

Note: A major change from the EO 13123 goal of 2.5 percent for renewable purchases.

### Building performance

Agencies will construct or renovate buildings in accordance with sustainability strategies, including resource conservation, reduction and use; siting; and indoor environmental quality.

Note: Mandates the elements of the January 2006 "High Performance Buildings Memorandum of Understanding" signed by 19 agencies. Average building energy intensity decreased 16.3 percent in terms of Btu per gross square foot from 1985 to 2005.

### Water conservation

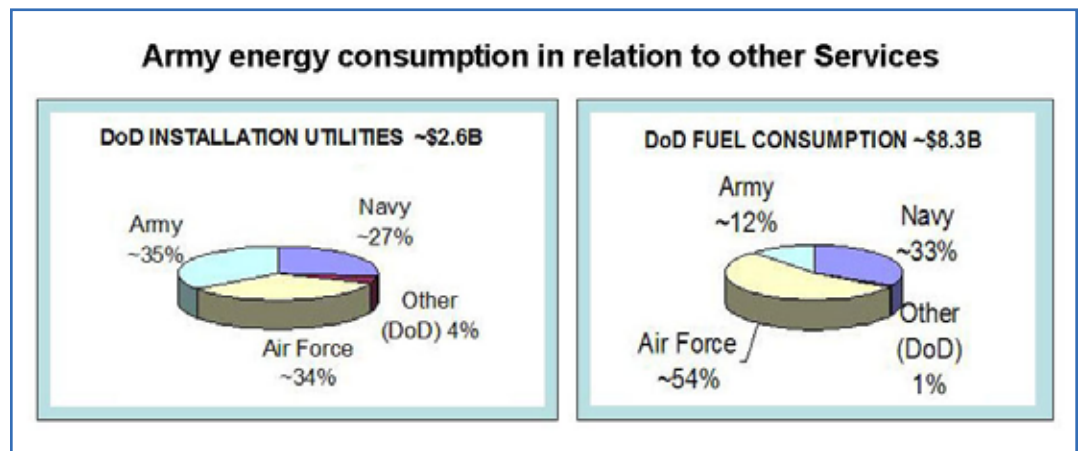
Agencies will reduce water consumption intensity — gallons per person or per unit area — by 2 percent annually through 2015.

Note: Prior EOs did not contain a numeric goal. Good environmental practices reduced water use by 19.6 percent from 2000 to 2005.

### Procurement

Agencies will expand purchases of environmentally sound goods and services, including bio-based products.

Note: Requires integration of four existing disparate purchasing requirements into an integrated federal purchasing effort; continues requirement that federal agencies purchase office paper containing 30 percent post-consumer fiber. Purchases of ener- ➤



Graphic courtesy of the Office of the Assistant Chief of Staff for Installation Management



# To prevent CO poisonings in housing, worksites — use correct alarms

by Christopher Carroll and Andrea Pouliot

Carbon monoxide (CO) — a colorless, odorless, tasteless and nonirritating gas formed as a by-product in the incomplete combustion of carbonaceous materials in oxygen (when carbon is in excess) — is the most common cause of poisoning in the workplace, according to the Occupational Safety and Health Administration. The Centers for Disease Control and Prevention indicate that CO exposure in housing results in many poisonings and deaths each year.

In the U.S. Army, CO exposure has been ranked No. 7 in the Top 50 worksite hazard occurrences. Over the years, there has also been a number of CO poisonings reported within the U.S. military.

Carbon monoxide monitors and alarms are an important part of an overall strategy to prevent CO poisoning and deaths. Carbon monoxide monitoring requirements for industrial worksites differ from those in family housing. It is important to check with your installation occupational health and safety professional as to what type of monitor or alarm is appropriate for the particular situation.

## Family housing

Army Regulation 210-50, *Housing Management*, requirements (Oct. 3, 2005, paragraph 7-12) are as follows:

1. CO detectors must be installed in all new or revitalized housing that has a source of CO, including that with attached garages.
2. Although not a legal requirement, installations should install or provide CO detectors and/or alarms for existing housing units, owned or leased, that have a potential for CO poisoning.
3. The CO detectors and/or alarms can be hard-wired, battery operated or plug-ins. The types used are at the discretion of the installation but, at a minimum, should be Underwriter Laboratory (UL) listed.

AR 210-50 is available online at: [www.army.mil/usapa/epubs/pdf/r210\\_50.pdf](http://www.army.mil/usapa/epubs/pdf/r210_50.pdf).

Unified Facilities Criteria (UFC) 4-711-01, *Family Housing*, requirements (July 13, 2006, paragraph 6-1.6) are as follows:

1. Provide a CO alarm on each habitable floor of units with combustion equipment, appliances or fireplaces in accordance with UL 2034, *Standard for Single and Multiple Station CO Alarms*; National

Fire Protection Association (NFPA) 720, *Standard for the Installation of CO Warning Equipment in Dwelling Units*; and NFPA 101, *Life Safety Code*.

2. Seal existing homes with attached garages to prevent air infiltration or provide a CO alarm.

UFC 4-711-01 is available online at: [www.wbdg.org/ccb/DOD/UFC/ufc\\_4\\_711\\_01.pdf](http://www.wbdg.org/ccb/DOD/UFC/ufc_4_711_01.pdf).

Check the Underwriters Laboratory Inc., web site for a current list of UL certified products: [www.ul.com](http://www.ul.com).

## Industrial worksites

The U.S. Army requires that industrial worksites that produce CO, e.g., warehouses with propane-fueled forklifts, be monitored to ensure that personal exposures do not exceed CO occupational exposure limits, i.e., the more stringent of the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) or OSHA Permissible Exposure Limit.

Residential CO monitors and alarms that are UL 2034 listed are not appropriate for comparison to the ACGIH TLV- ➤

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gy-efficient, recycled-content, biobased and environmentally preferable products will increase.

## Pollution prevention

Agencies will reduce use of chemicals and toxic materials and purchase lower risk chemicals and toxic materials from top priority list.

## Electronics management

Agencies will ensure that 95 percent of electronic products purchased annually meet Electronic Product Environmental Assessment Tool standards where applicable. Agencies must enable Energy Star features on 100 percent of computers and monitors and reuse, donate, sell or recycle

100 percent of electronic products using environmentally sound management practices.

Note: Mandates the elements of the 2004 “Federal Electronics Stewardship Memorandum of Understanding” signed by 12 agencies and the Executive Office of the President. The federal government spends about \$60 billion annually on information technology purchases.

## Environmental management systems

Agencies will, by 2010, increase to at least 2,500 the number of federal operations that implement environmental management systems, up from about 1,000.

New or renewed contracts for operating government-owned, contractor-operated, or “GOCO,” facilities, entered into

after the date of this EO, will require contractor compliance, same as if the facility were operated by government employees. A senior civilian must be designated to be responsible for the implementation of the EO and for monitoring and reporting on the agency’s progress to the chair of the Council of Environmental Quality.

Finally, DoD will continue to report its progress to the congressional committees on meeting the energy efficiency requirements.

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William F. Eng is a professional engineer in the Office of the Assistant Chief of Staff for Installation Management. 





# Vehicle repair shop opens on Kwajalein

by Sarah H. Cox

Officials cut the ribbon Jan. 23 to officially open the U.S. Army Kwajalein Atoll's (USAKA) newly constructed Vehicle Paint and Prep (VPP) Shop on Kwajalein Atoll, Republic of the Marshall Islands.

"They've done a beautiful job on this paint and preparation facility," said USAKA Commander Col. Stevenson Reed at the ceremony, referring to the U.S. Army Corps of Engineers Honolulu District and the project contractor, San Juan Construction, Inc.

Since the military began using Kwajalein in 1944, corrosive damage to vehicles and equipment has been a constant problem. According to Rodney Leong, the project manager, the main cause of premature equipment and vehicle failure on the island is corrosion caused by continuous exposure to the salt-laden air of the atoll.

Kwajalein's extreme marine environment and remote location make preserving military and contractor equipment important. All new equipment arrives on the island via a 2,100 mile-long barge journey or a costly airplane flight. Being able to combat corrosion and properly maintain the equipment on the island saves money on transportation, repairs and replacements, and allows more effective and efficient use of limited installation funds.

Honolulu District's Kwajalein Resident Office managed the \$10 million, 20,000 square-foot VPP project, which includes rooms for hydro blasting and undercoating, and booths for abrasive blasting, metallization and paint spraying. The facility also features administrative space and support facilities including utilities, paving, storm drainage, information systems, air con-

ditioning, 25-ton dehumidification and mechanical ventilation.

In the new hydro- and abrasive-blast booths, small corrosion and rust spots can be removed before they have a chance to spread and ruin the costly and sophisticated equipment, Leong said.

Kwajalein's location far out in the Pacific Ocean also presents big construction challenges.

"When contractors begin a project, they have to bring everything they need with them," Leong said. "Costs are further affected by the fact that there is a limited number of contractors who have the special expertise required and want to take the risks involved in performing work in such remote areas as Kwajalein."

In fact, Honolulu District obtained Department of the Army authority to award about 20 percent over the programmed amount. Yet, the VPP will save the government money in the long run and will be safer for the environment as well, Leong said. The VPP employs an abrasive-media recovery system, and air and water filtration systems that prevent harmful emissions from reaching the environment.

The Corps' Kwajalein Resident Office was established in 1964 when the U.S. Army assumed command of the island from



A crane aids construction of the Vehicle Paint and Prep Shop on Kwajalein Atoll in the Pacific Ocean. Photo courtesy of U.S. Army Corps of Engineers, Honolulu District

the U.S. Navy. The office has administered hundreds of millions of dollars in construction contracts, including recent large projects such as the 13.5 megawatt power plant on Roi-Namur, launch test facilities on Meck and a cold storage facility on Kwajalein.

Kwajalein, which is three miles long, is the largest coral atoll in the world with 97 small islands surrounding the world's largest lagoon. The atoll is the home of the Ronald Reagan Ballistic Missile Defense Test site, the Corps' Kwajalein Resident Office and about 2,000 American military and Department of Defense civilians, support personnel and their families.

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Sarah H. Cox is a public affairs specialist with the U.S. Army Corps of Engineers, Honolulu District.

**PWD**

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TWA (Time-Weighted Average) in industrial worksites. For instance, unless the person is sedentary, residential CO monitors and alarms that are UL 2034 listed will alarm at levels higher than equivalent to the ACGIH TLV- TWA and Biologi-

cal Exposure Indices, the goal of which is to maintain carboxyhemoglobin blood levels at 3.5 percent or less.

POCs are Christopher Carroll, (410) 436-3118, e-mail: chris.carroll@us.army.mil; and Andrea Pouliot, (202) 761-8691, e-mail: andrea.h.pouliot@us.army.mil.

Christopher Carroll is a certified industrial hygienist with the Industrial Hygiene Field Services Program, U.S. Army Center for Health Promotion and Preventive Medicine. Andrea Pouliot is a certified industrial hygienist and program manager in the Safety and Occupational Health Office, U.S. Army Corps of Engineers. **PWD**



# Geophysical surveys help pinpoint underground features

by Michael Hargrave

Geophysical surveys can provide useful images of subsurface archaeological features — houses, pits, graves, etc. — without excavation. However, not all sites are good candidates for this type of survey, and some techniques work well while others may not, given local conditions.

To help installations avoid spending time and money on geophysical surveys that are not likely to succeed, the U.S. Army Corps of Engineers has published guidance for selecting sites and survey methods. Public Works Technical Bulletin (PWTB) 200-4-42, *Selecting Archaeological Sites for Geophysical Survey*, is available at [www.wbdg.org/ccb/browse\\_cat.php?o=31&c=215](http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215).

The National Historic Preservation Act of 1966 requires federal agencies to take into account the effect of proposed activities on any district, site, building, structure or object that is included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). Army Regulation 200-4 details Army policies, procedures and responsibilities for meeting cultural resources compliance and management requirements.

Compliance typically requires the agency to identify historic properties within an area that may be impacted by an activity and to evaluate those properties' eligibility for nomination to the NRHP. In the case of archaeological sites, this evaluation often includes excavations designed to define a site's boundaries and to assess its integrity and historical and cultural significance relative to one or more historic contexts.

Evaluations of a site's NRHP eligibility based on hand excavation are highly invasive, expensive and, because only a tiny portion of each site is excavated, potentially unreliable. In the eastern United States, for example, many prehistoric sites that have been plowed have no intact cultural stratum, but the preserved lower portions of pit features may contain scientifically important deposits. A site assessment program based on a grid of shovel tests and a small number of hand-excavated test units can easily fail to discover any of the pits. In many cases, such a failure could lead to an incorrect recommendation.

Geophysical techniques can be used to search for subsurface features across a large

Are features unlikely?	Yes	Don't use geophysics
↓ No		
Vegetation obstacles?	Yes	Don't use geophysics or clear vegetation
↓ No		
Magnetic clutter?	Yes	Don't use magnetic methods
↓ No		
Recent agricultural disturbance?	Yes	Continue
↓ No		
Extensive use of heavy equipment?	Yes	Don't use geophysics
↓ No		
Site is water saturated?	Yes	Don't use resistance
↓ No		
Site is extremely dry?	Yes	Don't use resistance
↓ No		
Site is clayey?	Yes	Don't use GPR
↓ No		
Soil is sandy?	Yes	Use GPR

*Public Works Technical Bulletin 200-4-42 offers a simplified decision tree for geophysical survey site selection.*

portion of a site. Excavation units can then be targeted directly on possible features, improving the likelihood of detecting intact, culturally and historically significant archaeological deposits. This targeted excavation can reduce the volume of excavation required to evaluate a site's NRHP status and may thus reduce costs associated with fieldwork, analysis and curation. Geophysical surveys can also reduce the risk of inadvertently discovering human remains during training and construction projects. The potential benefits of geophysics can easily be lost, however, if surveys are conducted at sites that do not offer favorable conditions or if the geophysical techniques used are inappropriate for a particular site.

PWTB 200-4-42 provides guidance for choosing good candidate sites and appropriate equipment to conduct geophysical surveys. It is intended to help cultural resources managers, other land managers and archaeologists who have little or no previous experience in using geophysical techniques.

The information in the bulletin includes:

- Background on use of geophysics for cultural resources management;
- Nontechnical definitions of terms used in geophysics, such as contrast, anomaly, noise, clutter and data density;
- Four categories of commonly used geophysical instruments — magnetic, ground penetrating radar, electrical resistance and conductivity;
- Factors important in selecting sites for geophysical survey — vegetation, near surface disturbance, metallic clutter, rocks, multi-component sites and moisture and drainage; and
- Guidance for making decisions about sites and survey techniques.

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Michael Hargrave is a project manager at the Land and Heritage Conservation Branch of the Engineer Research and Development Center's Construction Engineering Research Laboratory.

PWD



## Army Civilian Education System moves out for CP-18 employees

by Lt. Gen. Carl A. Strock

With 2007 well underway, we need to give some thought to the Army's new initiative to improve civilian leadership qualities for all Army employees, the Civilian Education System (CES). The Training and Doctrine Command (TRADOC) took the lead three years ago to revamp the entire Army civilian leadership curriculum, with CES as the final result, and I really think it has a significant value added for all Army civilians, including the Career Program 18 (CP-18) community.

TRADOC's goals were twofold: 1) to update the curriculum and bring it into alignment with current Army leadership and operational issues; and 2) to create a progressive civilian leadership course of study that mirrors the military leadership education system. To achieve this transformation, the Combined Arms School at Fort Leavenworth, Kan., was named the proponent for CES, and the Army Management Staff College (AMSC) at Fort Belvoir, Va., was tasked to develop and implement the CES curriculum.

An example of the old curriculum familiar to most of you is the Leadership Education and Development (LEAD) course, which was taught either at an off-site location or at your offices. As of December, LEAD is no more. Also gone are the two-week Organizational Leadership for Executives (OLE), the 12-week Sustaining Base Leadership and Management (SBLM) and the Personnel Management for Executives (PME I and II) courses. In January, the Army officially launched CES to the entire Army civilian community.

CES consists of four courses, each aimed at civilian employees at specific stages in their careers. The sequence consists of the Foundation, Basic, Intermediate and Advanced courses. (Editor's note: For more information on these courses, see page 33.)

In January, Col. Garland Williams, the AMSC commandant, hosted a town hall



Lt. Gen. Carl A. Strock  
Photo by F.T. Eyre

meeting to officially launch CES to the Army community and answer questions. He acknowledged that CES is getting underway one year ahead of schedule and that the initial sessions of each course are acting as pilots to review, validate and adjust the curriculum.

In each course, there are requirements for some distance learning online, prior to attending the resident phase. If you enroll in a course and don't complete the online requirements by a designated date, you will be deferred to a later session.

CES is a progressive and sequential curriculum, meaning you have to take the Basic Course prior to taking the Intermediate Course, and both the Basic and Intermediate courses to qualify for the Advanced Course. If you have taken the predecessor courses in the old curriculum — LEAD, OLE, SBLM — you will receive credit under CES for their corresponding replacements. For example, if you took LEAD and OLE, you will receive credit for the Basic and Intermediate courses respectively. The school registrars can answer your specific questions regarding eligibility.

The biggest news of all is that the Army will pay tuition, travel and lodging costs for all Army employees, regardless of their sal-

ary funding source. This news is especially noteworthy for U.S. Army Corps of Engineers' civil-funded employees, because it means that they can now attend Army leadership training without placing a financial burden on their home offices.

Enrollment in any CES course is done through the AMSC web site, [www.amsc.belvoir.army.mil/](http://www.amsc.belvoir.army.mil/). Click on "Admissions" on the top bar of the AMSC home page and follow the steps on the web site to select a course and complete the application process.

I challenge all Career Program 18 managers to place a renewed emphasis on notifying your employees about CES and other CP-18 programs, regardless of location or mission. There is an old adage that if you send an employee to training and his or her absence will hurt the performance of your office, you are sending the right employee for training.

I'd also like to say thank you, in advance, to all of you who carry the torch while your colleagues are away for these essential professional development opportunities. I know it's difficult, but the entire engineering community is better for it.

Even with the increased operational tempo and mission responsibilities, training the leaders of tomorrow is more critical than ever for the Army to meet present and future expectations. By sending employees to CES courses to develop leadership skills and abilities, you help to keep your employees, organizations and yourselves Army Strong.

As I mentioned briefly in the last issue, I appointed Robert Slockbower as the functional chief's representative for CP-18. Bob served for 26 years on active duty. His last two assignments were as commander of Louisville District and as director of Public Works at Fort Campbell, Ky. When he left the uniform behind in April 2003, he joined the Senior Executive Service and was assigned to Southwestern Division ➤





# Civilian Education System changes leader development

by Julalee Sullivan

Civilian leader development is being transformed by the Civilian Education System (CES), which was officially implemented Jan. 22. This transformation is particularly significant for all Army civilians.

The CES provides enhanced leader development and education opportunities for Army civilians throughout their careers. Army civilians will have the opportunity to become “pentathlete” civilian leaders of the 21st century. “Pentathlete” is a term the Army uses to describe a well-rounded civilian leader who personifies the warrior ethos in all aspects, from war-fighting support, to statesmanship to business management.

The CES leader development program includes four new courses that replace the previous inventory of legacy courses offered for Army civilians. The new courses are: the Foundation Course, which is under development, the Basic Course, the Intermediate Course and the Advanced Course. The new courses are designed to deliver leadership competencies, derived from the Office of Personnel Management leadership competencies, and capabilities identified by the Center for Army Leadership in Field Manual 6-22, *Army Leadership*.

CES is a structured, progressive, sequential program that includes all Army civilians. It provides leader development opportunities for Army civilians through training and education that supports career

path requirements and professional development needs, and promotes lifelong learning and self development as integral parts of the civilian leader development program. Designated courses are required for interns, team leaders, supervisors and managers.

The Foundation Course is a distributed learning course and will be launched in the near future. The Basic, Intermediate and Advanced courses are a combination of distributed and resident learning. Each course has a target audience, but the distributed learning portion of each course is open to all Army civilians regardless of whether they meet the target audience criteria.

- The Foundation Course is being designed for employees to gain an understanding of the structure of the U.S. Army, the Army’s leadership doctrine and the personnel system(s) for Department of the Army civilians. The Foundation Course is mandatory for interns, team leaders, supervisors and managers employed after Sept. 30, 2006.
- The Basic Course is designed for civilian leaders who exercise direct leadership to effectively lead and care for teams. The curriculum focuses on basic education in leadership, counseling fundamentals, interpersonal skills and self-awareness. This course will be a combination of distributed learning and a two-week resident phase at the Army Management Staff College’s (AMSC) Fort Leavenworth,

Kan., campus. The Basic Course replaces the Leadership Enhancement and Development Course, known as LEAD.

- The Intermediate Course is designed for civilians in supervisory or managerial positions to develop more adaptive, innovative, self-aware and prepared leaders to care for personnel and manage assigned resources. Training and developmental exercises focus on “mission” planning, team building, establishing command climate and stewardship of resources. This course is a combination of distributed learning and a three-week resident phase at the AMSC Fort Leavenworth or Fort Belvoir, Va., campuses. The Intermediate Course replaces the Organizational Leadership for Executives Course, known as OLE.
- The Advanced Course is designed for civilian leaders who exercise predominantly indirect supervision and who are adaptive, innovative, self-aware, and capable of effectively leading a complex organization, guiding programs and managing associated resources. The training focus is on strategic thinking and assessment, managing change, developing a cohesive organization, managing a diverse workplace and managing resources. This course is a combination of distributed learning and four-week resident phase at the AMSC Fort Belvoir campus. The Advanced Course is a replacement for the AMSC’s Sustaining Base, Leadership and Management Course, known as SBLM.

Tuition, travel and per diem for the courses are centrally funded. Salary is not funded.

*Additional information regarding the new courses and application procedures for the Basic, Intermediate and Advanced courses can be found at <http://www.amsc.belvoir.army.mil/>. Click on the Civilian Education System tab at the top of the page.*

*Julalee Sullivan is a senior human resources development specialist at Headquarters, U.S. Army Corps of Engineers. **PWD***

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as the military and technical director. He has served two tours of duty in Iraq — with the Programs and Contracting Office and the Gulf Regional Division, and he is currently the regional business director for Southwestern Division.

Bob has great enthusiasm and the desire to become a strong advocate for civilian career development and advancement. He is looking to increase participation across all Army organizations in

determining the future direction of CP-18. He can be reached at (469) 487-7084 or robert.slockbower@usace.army.mil.

I congratulate Bob on his new assignment and look forward to seeing great things from the CP-18 community.

Essayons!

*Lt. Gen. Carl A. Strock is chief of engineers, commanding general of the U.S. Army Corps of Engineers and functional chief of Career Program 18. **PWD***



# CP-27 Planning Board focuses on developing work force

by Mary Jeanne Marken

**A** Housing Management Career Program 27 (CP-27) Career Planning Board (CPB) meeting was held in New Orleans Jan. 26 during the Professional Housing Management Association's annual Professional Development Seminar. The CPB's charter is to meet Army Housing staffing needs through a planned approach to career development in professional and technical jobs from the intern to executive levels. Right now, CP-27 is at a critical juncture.

According to the Army Civilian Attitude Survey results published in fiscal year 2006, 57 percent of supervisory housing managers reported that it was highly likely that they will retire in the next five years. Only 30 percent responded that it was unlikely that they will retire. Concurrently, military housing in the continental United States (CONUS) is being privatized. New competencies are required to provide oversight of the privatized projects, which are called Residential Communities Initiatives (RCI).

Lt. Gen. Robert Wilson, the assistant chief of staff for installation management is the functional chief of CP-27. Wilson has mandated that all employees work to build a Learning Organization — identify and implement ways to continue to improve; organize resources, including people, to optimize long term strategic performance; and invest in and develop leaders.

The functional chief's representative (FCR) for CP-27 at the time was George McKimmie, then chief of the Army Housing Division. The FCR is responsible for execution of the ACSIM's mandate for CP-27. McKimmie chaired the meeting, which was attended by representatives from ACSIM, Installation Management Command headquarters and regions, and the RCI staff at the Office of the Assistant Secretary of the Army for Installations and Environment (OASA I&E), as well as installation housing managers.

The meeting began with the FCR sharing his vision for CP-27 housing careerists: to take care of **all** Soldiers' housing requirements, including the approximately 25

percent who reside in privatized family quarters, as well as the majority, who live off post or in single-Soldier quarters.

The board's consensus supported the FCR's assessments that CP-27 continues to be a highly specialized career field and that the core competencies have evolved and become increasingly complex with privatization. To prepare the workforce, it is necessary to remain cohesive and resist fragmentation that may occur at the installation level.

Deborah Reynolds, chief of Army Family Housing, informed the board that a team of housing specialists from OASA I&E, OACSIM and IMCOM has developed new position descriptions for RCI and non-RCI housing managers to consolidate installation housing management responsibilities. The position descriptions are expected to be approved in the near future and will greatly enhance mission accomplishment, especially at installations that have been privatized or are in transition to privatization.

The FCR presented his three-pillar CP-27 strategy to prepare the workforce:

- Recruit and develop highly qualified interns in possession of education and skills necessary to succeed as future housing managers.
- Support a robust professional development and training program, including long-term education.
- Revise the Army Competitive Training Education and Development System (ACTEDS) plan to reflect the new competencies and professional development requirements, and track progress with an annual training survey.

Reporting on the progress of the initiatives, McKimmie said there are 19 housing interns throughout CONUS receiving comprehensive training in all functional and technical areas of housing management. About 12 of these interns will graduate this fiscal year and be placed in key positions to become the newest generation of future housing managers. An intern placement plan is under development to ensure that

interns due to graduate within six months are placed in locations with the most critical staffing requirements.

The FY 2007 training agenda includes 1,020 training opportunities with an emphasis on private sector finance, privatization certifications, asset management, off-post referral operations and centralized barracks management. In addition, ACTEDS dollars are being aimed toward sending a cadre of selected housing managers to a two-week graduate course on military privatization conducted by the University of Maryland. The program's purpose is to develop asset and portfolio managers who have the knowledge and skills in finance, real estate and portfolio management to effectively develop, oversee and monitor the Army Housing RCI program.

FY 2007 participants included 26 housing and RCI managers from Forts Meade, Drum, Rucker, Irwin, Huachuca, Eustis, Sill, Leonard Wood, Riley, Jackson, Sam Houston and Hood and from Germany. The Office of the Secretary of Defense is in the process of approving the expansion of the University of Maryland program to a full year leading to a master's degree in real estate development and military privatization.

The board also received briefings from Linda Donaldson of IMCOM on the Installation Management Career Field 29 (CF-29); from Dick Davis, deputy garrison commander at Wuerzburg, Germany, on his transition from CP-27 to CF-29; from Carole Johnson of Headquarters, Department of the Army, on the transition to the National Security Personnel System; and from Ed David of HQDA, on the Career Intern Program.

The next Career Planning Board meeting is scheduled for the June timeframe.

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# USACE workshop provides insight into career growth

by Mary Beth Thompson

“Personal transformation” was the theme of the annual U.S. Army Corps of Engineers workshop held in conjunction with the Black Engineer of the Year Awards Conference in Baltimore in February. The subject afforded lively presentations and discussions among the more than 100 attendees.

## Mentoring

“Mentorship is an important part of learning, an important part of personal transformation,” said Maj. Gen. Ronald L. Johnson, USACE deputy commander at the start of his talk. “You can be on both sides of this transformation — as a mentor or a ‘mentoree,’ sometimes referred to as a protégé.”

Johnson explained that mentorship benefits the organization. It builds trust, boosts productivity and improves teams.

Being a mentor takes desire, time, the ability to offer a reality check to the mentored and a willingness to assist with individual career development, he said. Mentors should be patient, supportive, committed, positive and enthusiastic. And there is much to gain for the mentor. Among the positives is the opportunity to practice interpersonal skills.

“You learn how to have meaningful conversations with people who may not be in the same experience or age category that you are,” Johnson said.

On the other side of the equation, the mentored person should bring to the relationship a willingness to learn, to be a team player, to accept feedback, to stretch and to identify goals, he said.

“Feedback for your personal development can sometimes be annoying,” Johnson said. “You’ve got to take it, filter it, but you can’t afford to ignore it.”

He advised attendees to look for mentors at or near their locations and to look for persons they respect and admire. Potential mentors should also look at or near their location and should reach out to young and promising “up-and-comers.”



Col. Yvonne Prettyman-Beck, James Dalton and Alan Williams (left to right) offer advice, suggestions and wisdom during a panel discussion at the annual USACE workshop. Photos by F.T. Eyre

Johnson offered his general guidelines for mentoring. The relationship should be outside the chain of command and with a grade-level difference.

“If you have a mentor-mentoree relationship that’s all about business, then you do not have a good mentoring relationship,” he said.

Prepare for the relationship to take time, he advised. Talk often. Allow the mentored person to fail. Be aware of generational differences, and keep behavior professional.

“Mentoring is what we call a force multiplier,” Johnson concluded.

## Professional development

A career enhancement and professional development panel included Chris Hinton-Lee, a senior executive service (SES) member from Great Lakes and Ohio River Division; Susan Duncan, chief of Human Resources at USACE headquarters; Mohan Singh, an SES from North Atlantic Division; and Gary Hawkins, a branch chief from New Orleans District. The four talked about their individual career paths and provided advice on advancement.

Hinton-Lee said that it is important to have a broad base of experience, but sometimes diversity can be accomplished by moving around within one location and also

by taking temporary assignments to other locations.

“I can’t say enough about the value of developmental assignments,” she said.

Duncan’s career also demonstrated diversity. She has been a university professor, an Equal Employment Opportunity specialist, a management analyst and is now in human resources. She has worked in the private sector, for the Navy and for USACE.

Singh’s background includes the private sector and USACE, too. The common thread among the panel members, he said, is hard work and variety of experience. He advocated training and advised attendees to put supervisory courses on their Individual Development Plans.

Hawkins introduced his “recipe for upward mobility.” The ingredients are performance, image, exposure and talent, he said.

## Recognition

Lt. Gen. Carl A. Strock, chief of engineers, presented several USACE Certificates of Appreciation to Black Engineer of the Year awardees.

“The people we are going to recognize today are people who were put forward by their peers and their supervisors,”





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James W. Banks asks a question during the USACE workshop.

Strock said.

Those who received certificates from Strock were: **Tony Carter**, South Atlantic Division, for the Affirmative Action in Government Award; **James Dalton**, South Atlantic Division, for the Career Achievement in Government Award; and **Gary Hawkins**, Mississippi Valley Division, for the Professional Achievement in Government Award; followed by **Richard Butler**, Nashville District; **Vernon Crudup**, Savannah District; **Andrew McHugh**, Engineer Research Development Center; **Sarah Palmer**, Vicksburg District; **Gloria Piazza**, Vicksburg District; **Thomas Poole**, Seattle District; and **Cynthia Turenne**, Alaska District; who were all named Modern Day Technology Leaders.

### Transformation

Quoting the dictionary, Strock said that transformation is about changing the nature, function or condition of something.

“As I reflect back on my case as a Soldier, I was not able on the day I entered the Army to do what I am doing today,” he said. “And the other way around, today I cannot do what I did the day I entered the Army. As you transform, you truly become a different person.”



Mike Rogers (holding microphone) offers his thoughts on the subject of image at the USACE workshop in Baltimore.

Strock agreed with the earlier panel members that diversity of experience is beneficial and that performance is crucial to becoming a senior leader. However, he told the group, not everyone needs or wants to be a senior leader. People should have the freedom to be what they want to be. Some people want to be secretaries or hydraulic engineers who go home at the end of the day to coach their child’s team.

“It’s OK to be the very best you can be at what you do,” he said. “You don’t have to be the top of whatever that is.”

Part of transforming is understanding the external and internal work environments, Strock said. External trends affecting USACE include widespread access to information, the media, the Global War on Terrorism, disasters and contingencies, and interagency integration. Internal trends include business process transformations, support to GWOT and emergency operations, and the conversion to the National Security Personnel System.

Seek out opportunities for growth, Strock advised. Volunteer, if possible, for work in Afghanistan or Iraq. Check out the new Civilian Education System that provides structured leadership training. (See article on page 33.) And learn on your own by reading.

“You can actually learn a lot by reading about how others do it,” he said.

He suggested that joining project delivery teams provides another way to broaden capabilities. Working on multidisciplinary teams gets people out of their comfort zones, provides diverse perspectives and offers chances to learn from others.

It all comes down to performance, he said. Getting the job done today, and getting it done right, is very important.

### Presenting oneself

For the afternoon panel, Col. Yvonne Prettyman-Beck, USACE chief of staff, James Dalton, regional business director for the South Atlantic Division, and Alan Williams, chief of the Gulf Region Integration Team and Security Assurance Branch at USACE headquarters, discussed the power of image and first impressions.

Start with the basics first, panel members agreed. Competencies in more than one area provide the basis on which a career rests.

Prettyman-Beck offered words that guide her. Those words included: respect for yourself and others, integrity, values and perseverance. Education is also key.

“You’ve got to aggressively pursue those opportunities yourself,” Prettyman-Beck said. “You are your own career manager.”

She emphasized that oral and written communication make a difference. Read, train and rehearse repeatedly before



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giving a briefing, she said. Lastly, teamwork is all important.

“You don’t get there by yourself,” she said.

Dalton, who will be moving to headquarters USACE in the near future as chief of Engineering and Construction, pointed out that image does not always consist of what can be seen.

“Part of how people see you is actually through virtual means — e-mail,” he said. “I worked from overseas for several years without putting a face to some of the people I knew, but I always had an opinion about what they were like, because I read their e-mails.”

Dalton also stated that knowledge of current events helps people to speak and present themselves well. He reinforced earlier remarks that knowledge of the subject and rehearsal are essential for presentations.

“You have to know what you are talking about,” he said, “because it all forms that image.”

Williams handled the subject of dressing for success. Appearance is an important factor but only part of one’s image, he said.

“Dress appropriately for what you are

doing that day, but you also need to be able to speak competently and demonstrate a mastery of the technical subject,” he said. “I could stand up here in the most elegant suit, but if I’m not saying anything, you’re not hearing it.”

On the other hand, wearing the wrong thing to work creates discomfort and can make clothing a distraction.

“Understand your surrounding environment and dress appropriately,” Dalton said.

Audience discussion brought out other comments on the subject.

“Looking the part can be very important,” said Hinton-Lee. “Everything you do after you’ve made a bad impression is trying to undo that bad image.”

Image is personal, said Mike Rogers of Mississippi Valley Division, but it is also reflective of the organization. Employees project an image of their organization when they meet with others.

“It’s a little bit deeper than just dressing,” Johnson said. “It’s about our willingness to adhere to corporate norms. If you are unwilling to adhere to those corporate norms, then you should expect that you will not be rewarded.”

When the conversation turned to public speaking, Pat Rivers, USACE headquar-

ters, recommended Toastmasters, an organization that helps people improve their public speaking skills.

Judith Des Harnais of St. Paul District suggested that it is beneficial to a speaker to let that person know when patterns of speech or habits take away from the speaker’s credibility.

A discussion of active listening fol-

lowed. Listening to stakeholders and customers is a hard but necessary thing to do, audience and panel members agreed. Done right, it saves time, allowing everyone to get to the issues faster.

Dalton launched talk about nonverbal communication. Facial expressions and body language can let people know the listener is open to their suggestions, their criticism and their recommendations, he said.

“You project your enthusiasm,” said Gloria Piazza of Vicksburg District. “If you are passionate about your job, it comes through. Body language comes through without saying a word.”

While discussing the line between confidence and arrogance, most agreed that the word “I” can be an indicator.

“‘We’ works better than ‘I,’” Johnson said, summarizing the consensus.

The workshop concluded with the traditional singing of the Engineer and Army songs.

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Thomas Poole (left) and James Clark listen and take notes as panel members discuss personal transformation at the annual USACE workshop.

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# Intern learns lessons at housing conference

by Eric Osei

As a new intern, I had the opportunity to attend the Professional Development Seminar XIX and Trade Expo 2007, sponsored by the Professional Housing Management Association and held in New Orleans, La., Jan. 22-26.

Prior to the event, I thought that I had made a wrong career decision. My background is in accounting, and I had worked for the Defense Finance and Accounting Service for a couple of years. After switching to the housing career field, I asked myself, what does accounting have to do with housing?

Another concern was the privatization of housing. Prior to the seminar, I had a negative opinion about the housing privatization program, believing that privatization undermines organized labor and results in jobs without health, pension and other benefits.

At the conference, I took some housing classes and participated in several forums, and I learned several lessons. I realized that with my accounting experience, I have a lot to offer in the housing field. I learned that accounting is the “language of business.” Most managers have to deal with financial information regardless of their functional area.

With the ongoing privatization program, housing managers need accounting knowledge and skills to communicate effectively with private investors. With my accounting background, I will be able to identify, measure and communicate economic information about an organization to help make decisions and informed judgments.

The negative perspective I had on the privatization of military housing also changed. The goal of Residential Communities Initiatives (RCI) is to eliminate inadequate military housing in the United States by creating world-class residential communities; leveraging assets; and obtaining private sector expertise, creativity, innovation and capital. I learned that



Eric Osei  
Photo by Cobby Saka

privatization can be traced back to the 18th century, to the doctrine of Adam Smith. The privatization of housing is a modern day restatement of this doctrine.

Privatization of Army

Housing stresses the virtues of economic individualism and private enterprise and sees competition and impersonal market forces as determining and regulating the economic system. Indeed, some privatization exponents assert that providing governmental services through the market encourages competition, which leads to better quality at lower prices, economies of scale and greater consumer voice and choice.

The key to this success is the competition faced by the private investors. Competition is very valuable because it allows the RCI investors to appeal to Soldiers and their families for the betterment of the economy. Competition can be extremely good for the economy. Privatization attracts a large number of builders, which increases competition. To meet the standard set by the government, the investors have to offer the best product to the Soldiers and their families.

In a nutshell, this conference gave me the opportunity to see myself as part of a big group and an asset to the Army Housing team. I currently work as a support staff member auditing invoices and preparing, submitting and filing vouchers for training programs.

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# Housing professional reflects on annual PHMA conference

by Richard Ybarra

The Professional Housing Management Association’s (PHMA) Professional Development Seminar (PDS) XIX was held in New Orleans in January. As most refer to it, “this year’s PHMA” or “the gathering of the clans” is the world’s largest get-together of housing professionals, representing all branches of the military services, other government agencies, private sector industries and commercial businesses.

Most of us who were there are in the housing profession. We share a common mission of providing the best possible housing and services to our customers, and our common bond is the shared experiences we have all had in this profession throughout the years. During the PDS we talk about housing, network, find old friends, make new friends and, above all, share our stories. Whether our shared stories are about achievement, hard work, philosophical musings, being at the wrong place or time, Murphy’s “sad” Law or are just plain hysterically funny, we can all relate to each other’s experiences.

When did I realize I was in Army Housing? When my phone rang at 1 a.m., and the staff duty officer said, “We have a housing problem.” I got up and went to resolve the situation. We can all tell similar stories, because that is the nature of our profession, which we would not change.

That is what makes the PDS special. All of us — whether military or civilian, public or private sector — can relate to one another’s experiences. It is our unique and special common bond.

Richard Ybarra is the Residential Communities Initiative projects manager at Fort Bliss, Texas. **PWD**





## 3-D technology transforms design process

by Andrea Takash

A designer navigates high above the floor shown on-screen, moving from room to room, adding a pipe here, putting up a wall there and sprinkling the final touches on the building layout that will contribute to millions of dollars in savings. He is not playing a new video game. He is employing a new 3-D design technology known as Building Information Modeling — BIM.

Through the Military Construction Transformation program, the U.S. Army Corps of Engineers is improving construction time and costs. To meet construction deadlines and costs, the Corps is changing existing design philosophies and methods.

For years, the Corps has maintained standard designs on a variety of facility types, such as fire stations, physical fitness facilities and bowling allies. These standards are based upon traditional design and construction methods. To improve the design process, the Corps is applying BIM technology in coordination with the existing standard design program. (See story on page 40.)

As a Center of Standardization, the U.S. Army Engineering and Support Center, Huntsville, Ala., is updating the child development center standard design to conform to BIM technology.

“To kick off the update, Huntsville Center has initiated a five-week BIM training/coaching effort,” said Sandy Wood, a Huntsville Center mechanical engineer who is overseeing the BIM training. “We were tasked with learning the new software and applying it to a child development center project. Since BIM contains mechanical, electrical, structural and architectural components, we brought in employees from all four disciplines for the training.”

Not only does BIM apply four components of engineering, it also uses intelligent graphics.

“The intelligent graphics feature of the software is very beneficial,” Wood said. “This new tool allows us to place a pipe

in a design and find all the attributes of the pipe. Each graphic is linked to a database that contains various attributes and reports. Before, you would just draw a line to represent the pipe, and you couldn’t extract useful information.”

BIM also allows the team to see its mistakes before it finalizes the design.

“If a designer is unsure of a particular aspect of the design, he can run an interference check,” Wood said. “This check will quickly identify any conflicts in the design. Once he sees the conflict, he can easily go back and correct deficiencies.”

After only three days of designing the child development center, the team accomplished a large portion of the work, including building compound walls, windows and drop ceilings, and placing storage cubbies in the rooms.

“We kept the design simple and included more aesthetic features based on the customer’s input,” said James Dunn, lead architect for the child development center design. “With BIM, we can take a project that normally takes four months to design and design it in two months.”

Most people on the team said that the software exceeded their expectations, and they agreed that it is very user friendly.

“I really enjoyed taking a project and putting it into a 3-D model,” said Mo Bryant, an engineering Department of Army



*James Dunn, lead architect for the child development center design, learns the various components of Building Information Modeling technology. Photo by Andrea Takash*

intern. “It also helped that all engineering disciplines were in the same room while working on the project. Being collocated made it easier to deal with problems that arose.”

The benefits of BIM do not stop at the design phase; they reach all the way to the construction phase.

“Even though design cost is higher with BIM, it eliminates the majority of typical changes in the field during construction,” Wood said. “Change orders usually account for 8 to 12 percent of the cost in a typical design project. A design done with BIM has been proven to reduce change orders to as little as 2 percent of the construction costs. In large dollar projects, this could easily add up to millions of dollars in savings.”

Only Corps standard design districts will use BIM for now, but over the next five years, all designs will be done using BIM.

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# Corps forges ahead to implement Building Information Modeling

by Dana Finney

**D**id you hear the one about the two global jet manufacturers? Company A faced delivery delays, huge cost overruns and public embarrassment when its integrated project team used multiple versions of a computer-aided design (CAD) program. The jet's pieces didn't fit together on the production floor.

Company B avoided those pitfalls by requiring everyone on its design team to use exactly the same version of a single vendor's software. However, the company paid a hefty price for licensing the CAD product and training team members to use it. Over time, this strategy will require a continual investment as the CAD vendor releases new versions and effectively locks the jet company into a proprietary CAD product line.

Both aircraft makers could have benefited from using design software that allows critical data exchange through open, internationally accepted standards. And while the example cites jets, the same rationale applies to facilities designed and built for the U.S. Army. Enter Building Information Modeling (BIM), an emerging technology that will use the National BIM Standard to enable open interchange among computer tools for the architectural-engineering-construction (AEC) industry, along with front-end, life-cycle data capture.

## USACE adopts BIM

The U.S. Army Corps of Engineers announced its intent to transition to BIM-enabled business processes in March 2006. A memorandum signed by Brig. Gen. Meredith W.B. "Bo" Temple, director of Military Programs, directed the Corps' eight Centers of Standardization (COS) to realign and to submit plans for implementing BIM, initially for selected facility types within their responsible areas.

"This way ahead will make us more effective providers of technical services while helping us maintain our core technical competencies through our Regional Business Centers and COSs," Temple

wrote. All USACE districts will implement BIM under a phased approach.

BIM produces a building model that represents both physical and functional attributes of a facility, allowing all AEC project participants to communicate using this single reference point. The model includes everything from architectural, structural, piping, heating, ventilating and air conditioning and other macro-scale systems to an individual room's furniture and color schemes.

"A major advantage of BIM is that it allows different design alternatives to be explored and visualized very early in the project," said Bill East, project manager at USACE's Engineer Research and Development Center (ERDC) in Champaign, Ill. "If you look at traditional data charts for construction showing sunk costs versus the ability to impact the overall cost, it's clear that earlier decisions can have a huge impact. Later in the process, you're locked into decisions that can't be altered without expensive redesign or change orders."

BIM is already available in some products, such as Bentley Architecture from Bentley Systems, Inc., with which USACE has an Enterprise License Agreement through 2007. Other vendors have integrated BIM into their software as well. The industry will continue to respond with the growing market demand for this capability, which USACE is helping to drive.



Centers of Standardization are developing models for specific facility types using Building Information Modeling as part of the road map's phase 1. Photo by Dana Finney

Experts within USACE, led by ERDC, are actively engaged in international, requirements-based standards development. The most important emerging standard is the National BIM Standard (NBIMS), for which development is being led by the National Institute of Building Sciences. ERDC is also involved in efforts to produce standards within NBIMS, including the Construction Operations Building Information Exchange (COBIE) and Early Design Information Exchange.

When BIM technology is fully mature and widely integrated into commercial, off-the-shelf products, it will increase the reuse of design work, reducing redesign effort; improve the speed and accuracy of transmitted information used in e-commerce; avoid costs of dysfunctional interoperability; enable automation of design, cost estimating, submittal checking and construction work; and support efficient operation and maintenance (O&M) activities.

"A goal for the Corps is to eventually be vendor-neutral," said Beth Brucker, ERDC project manager. "At some point it won't matter what software product people use as long as it has validated NBIMS-based



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features. This will allow for greater competition and fewer restrictive contracts.”

Toby Wilson, ERDC project manager, also leads the USACE BIM team.

“USACE is committed to implementing BIM technology for MILCON (military construction) Transformation and Civil Works,” Wilson said. “Beginning with the fiscal year 2008 MILCON Transformation program, all requests for proposal will include a requirement for contractors to use BIM. We have developed a plan and timeline for phasing in BIM at all of our districts, and the Centers of Standardization are already working to become proficient.” (See article on page 39.)

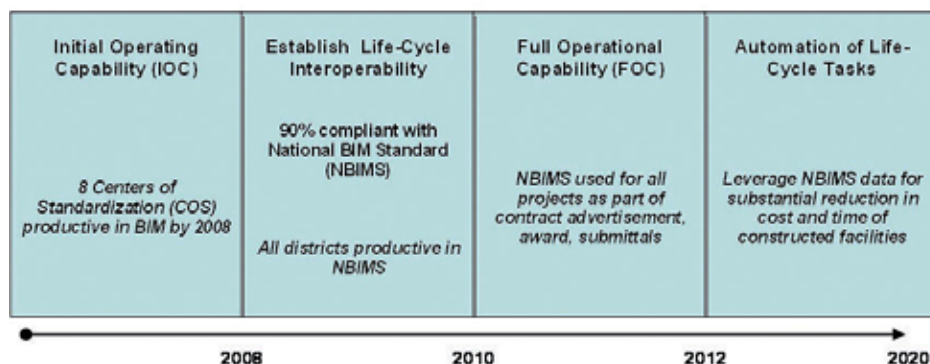
### Road map to BIM

ERDC Technical Report 06-10, *Building Information Modeling (BIM): A Road Map for Implementation to Support MILCON Transformation and Civil Works Projects within the U.S. Army Corps of Engineers*, published in October 2006, details a three-phased approach to adopting BIM, beginning with design of standard facility types and evolving toward complete life-cycle support.

The report also lists USACE’s specific goals in implementing BIM, communicates its intentions to industry to encourage technology development and offers guidance for working with customers to deliver required products during and after the transition. A copy of the report may be obtained from the web site [www.cecer.army.mil](http://www.cecer.army.mil).

In the first phase, which is ongoing, all COSs will establish an initial operating capability by June 2008. During this time, the centers will gain expertise with BIM models by using the technology for just a few standard designs. The focus is on achieving process improvements through the ability to reuse the models that the BIM teams develop.

The second phase requires USACE to



The U.S. Army Corps of Engineers’ road map to implementing BIM appears in Technical Report 06-10.

establish facility life-cycle interoperability by 2010. Achieving this goal will require all design work to be compliant with NBIMS. By providing facility designs and as-built information in the NBIMS standard, USACE will greatly increase the value of BIM models to its customers, who can use them to automatically populate computerized maintenance management and asset management systems. Also during this phase, all remaining Corps districts will become productive in using BIM by the 2010 milestone.

Phase three is to achieve full operational capability using NBIMS-based e-commerce by 2012. At this point, experience and the proliferation of NBIMS-compliant products will enable USACE to fully exploit the power of this technology as a communication medium for contract advertisement, award and submittals. BIM use will be expanded to all design and construction projects for which it makes economic sense. It will automate processes for quantity take-off, scheduling, submittal checking and code checking. It will also be possible to seamlessly transfer as-built and O&M information to the customer.

“The road map is designed to be flexible,” said Brucker. “We recognize that as the BIM technology matures and other circumstances come into play, we will need to

revisit and tweak the plan. The important point is that it provides a strategy for the Corps to be proactive and move ahead with BIM so that we can have a major influence on how it evolves to best serve the Army’s needs.”

USACE is working closely with the Installation Management Command, Office of the Assistant Chief of Staff for Installation Management and Directorate of Public Works customers to ensure that its BIM implementation aligns with the Army’s policies, standards and goals, and, most importantly, with the DPW customers’ expectations. Many issues have yet to be addressed — for example, how BIM data will be maintained and how other ongoing initiatives, such as the Army’s development of the General Funds Enterprise Business System (GFEBs), will impact BIM.

“We are really just at the beginning phase of adopting BIM to support the facility life cycle,” said Wilson. “But we are off and running — gaining momentum every day.”

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Dana Finney is a public affairs specialist at the Engineer Research and Development Center.

PWD





# Project to develop land-use assessment tools wins DoD award

by Dana Finney

A novel approach to analyzing encroachment issues at installations earned two researchers the Project of the Year Award from the Department of Defense Strategic Environmental Research and Development Program (SERDP). James Westervelt of the U.S. Army Corps of Engineers' Construction Engineering Research Laboratory (CERL) and Brian Deal of the University of Illinois at Urbana-Champaign were honored during the SERDP Partners in Environmental Technology Symposium at Washington, D.C., in December.

The award, in the Sustainable Infrastructure category, recognizes efforts to develop dynamic spatial decision support systems that help installations and their surrounding communities plan compatible land uses.

"A Senior Readiness Oversight Committee report identified encroachment as a huge DoD problem in 2002," said Westervelt, a project manager with CERL's Ecological Processes Branch. "To address this finding, ERDC (the Engineer Research and Development Center of which CERL is a part) created the Sustainability, Encroachment and Room to Maneuver program to develop tools to model conditions both inside and outside the fence line."

The award honored two of those tools. One, called Sustainable Installations Regional Resource Assessment (SIRRA), can screen for potential encroachment problems at the national or regional level. If the results suggest that urban growth may create future problems, planners may propose a more in-depth analysis using the other, the Land use Evolution and Impact Assessment Model (LEAM).

DoD considers "encroachment" to be any external stressor that could potentially compromise the training and testing missions at an installation. Urban growth is a primary contributor. Increasing populations and developments destroy surrounding habitat vital to many threatened and



Jim Westervelt (left), Construction Engineering Research Laboratory, and Brian Deal, University of Illinois, collaborated on a DoD-award-winning project to model urban growth effects on military training and testing land sustainability. Photo by Dana Finney

endangered species. Residences built within earshot of an installation's activities, such as live-fire training and flyovers, lead to public and political pressure to stop or curtail the mission. More people mean competing demands for water, airspace, infrastructure and bandwidth, along with other impacts.

According to John Brent, chief, Environmental Management Division at Fort Benning, Ga., that post is feeling the effects of encroachment.

"Light from the community has become a critical issue because it interferes with night training," Brent said. "Another big challenge with population growth is dispersion — the more people we have in areas where we make noise and generate dust, the more likely that will lead to negative attitudes, which can escalate and begin to affect our mission."

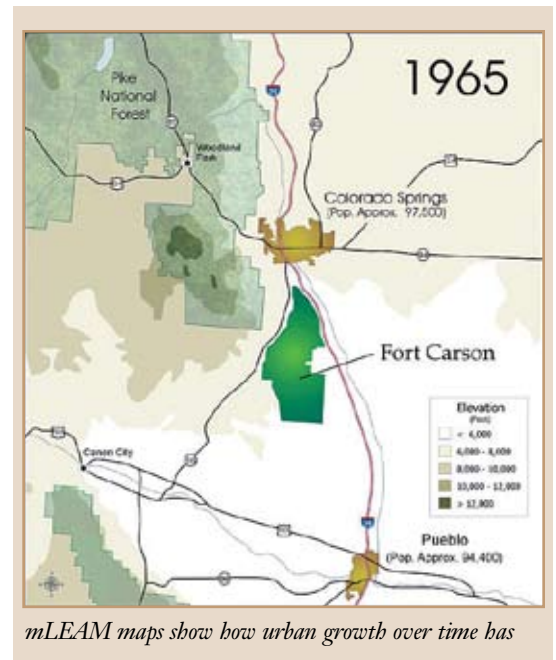
Deal, who previously worked at CERL, conceived of LEAM as his doctoral dissertation topic and originally received funding from the National Science Foundation, which then led to a successful proposal to SERDP.

"The approach was to merge social system modeling with the geographical and biological systems modeling that Jim and others had been doing at CERL," said Deal, now a professor of urban and regional planning at the university.

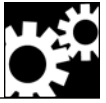
"The bottom line was to connect proposed regional plans with long-term training and testing opportunities for the installation," Westervelt said. "A model can't predict anything, but by using multiple data sets and other things we know about different indicators

in a region, we can run scenarios to inform decision-makers about the potential consequences of their planning."

For example, suppose an installation's local community proposes to build a new road and would like to establish the most strategic location for economic devel- ➤



mLEAM maps show how urban growth over time has



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opment while not interfering with the Army's activities. mLEAM, the version adapted for military analysis, can model and graphically present outcomes, such as subdivisions springing up along the road, and relate that to noise contours, dust dispersion, lights and other training or testing activities.

"With a tool like mLEAM in the 1950s, it would have been possible to see that siting Interstate 25 just three to five miles farther east of Fort Carson would avoid some major encroachment problems in the future," Westervelt said.

The ability for planners and stakeholders to "see" this type of outcome is critical to LEAM's success. The program runs scenarios based on those factors identified as concerns or risks by the community.

"LEAM is a very powerful visualization tool," Brent said. "If you just give the public a lot of numbers, it's meaningless. But when you run a LEAM scenario, and they can see things blinking on and off, it really brings relevance to what you're trying to show them."

mLEAM supports two levels of analysis.

The "quick and dirty" run, which takes about two days, uses national satellite imagery, cover, digital elevations, federal and state lands data, and other existing data. The more intensive mLEAM analysis can take months and is not intended to be a one-shot affair. The model's dynamic, real-time assessment features allow planners to revisit a region again and again, and to adapt 30-year plans as land use changes over time.

In addition to helping fund LEAM's development, SERDP provided partial funding for SIRRA, which was designed to work in tandem with mLEAM and other models within the Fort Future toolbox. SIRRA assesses a region's sustainability based on 10 factors: air, air space demand, energy, urban development, threatened and endangered species, location issues, water, economic issues, quality of life and transportation. Its database contains regional data organized into national data sets that relate to 54 sustainability indicators.

"In the current climate of joint, distributed, regional military training, it's important to be able to evaluate sustainability issues on a regional basis," said CERL's Elisabeth Jenicek, who led SIRRA's development. "SIRRA provides data and

vulnerability ratings, not just for regions containing military installations but for the entire United States."

Jenicek's team has completed SIRRA assessments for 308 military installation regions nationwide, identifying highly vulnerable regions that require more detailed studies. Both SIRRA and mLEAM were used to support the 2005 Base Realignment and Closure analyses. Because of its potential impact on future training and testing missions, encroachment figured prominently in this round of BRAC. SIRRA also supported the 320/366 Range Report to Congress and was applied to a sustainability analysis of watersheds.

Paradoxically, the economic benefits that installations bring to a region fuel population growth that in turn can cripple the military's ability to operate that post for its intended use. Tools like LEAM and SIRRA can help communities avoid encroachment problems by enabling all kinds of "what-if" analyses and arming decision-makers with the best available information.

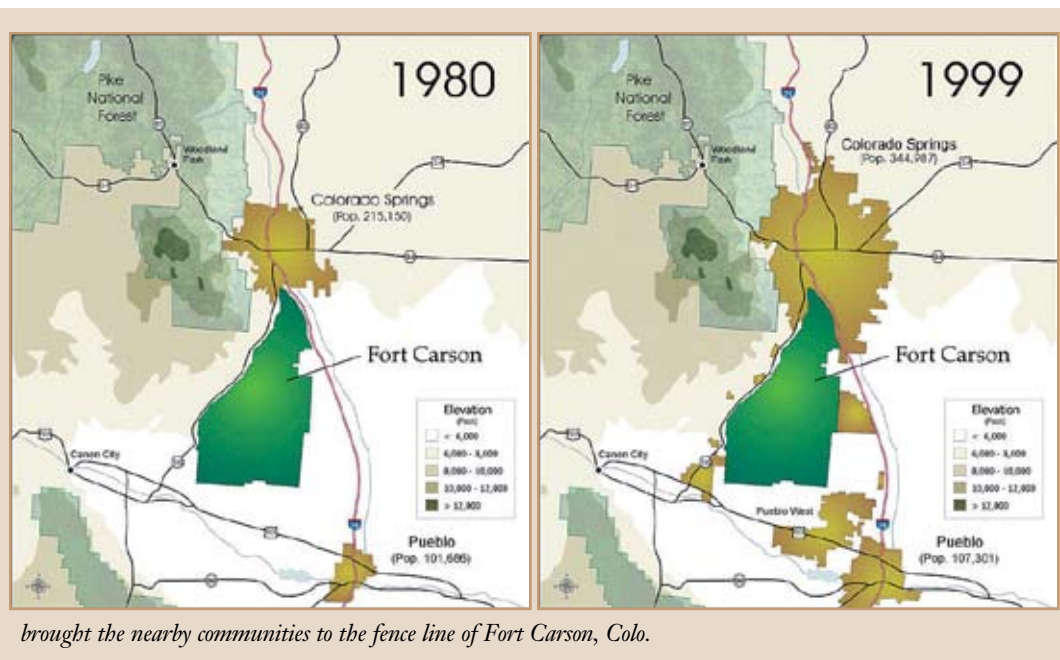
"It brings in the sense of long-term needs and allows the community to see the bigger picture," Brent said. "It can show them that if you only focus on short-term needs, you may be going down a path that will ultimately shut Fort Benning down."

"A model can't give you the answers, although many people would like for that to be true," said Deal. "In the end, the plan is a political decision. But we can model and add value to the process so that people understand the implications of those decisions."

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PWD



brought the nearby communities to the fence line of Fort Carson, Colo.





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