

Public Works DIGEST

Volume XXI, No.4,
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U.S. ARMY INSTALLATION MANAGEMENT COMMAND

IMIGOM



Thermoplastic composite lumber, made from recycled plastic, is used to construct a bridge in a remote area of Fort Bragg, N.C. The bridge is expected to last 50 years with little maintenance. Photo by Dr. Tom Nosker, Rutgers University. See the finished bridge on page 7

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Breakthrough year for facilities improvement

by Brig. Gen. Al Aycock

Working to meet mission unit requirements and senior commander priorities, the Installation Management Command is on track to complete a record-breaking year in upgrading, sustaining, modernizing and restoring facilities and infrastructure for our Soldiers and Families.

The IMCOM Facilities Sustainment, Restoration and Modernization program is alive and well in fiscal year 2009 as evidenced by the \$2.5 billion investment in infrastructure. This investment was the result of \$500 million in congressional-adds for barracks, \$160 million from overseas contingency operation and \$340 million in headquarters-directed funding.

The American Reinvestment and Recovery Act of 2009 unexpectedly provided an additional \$1.5 billion for restoration and modernization projects across installations within the United States. Barracks, Army Transportation Infrastructure and newly created Community Support Restoration and Modernization programs all benefitted from these funds.

Barracks

The IMCOM FY 2009 Barracks Restoration and Modernization Program took a giant stride forward funding more than \$750 million in needed barracks R&M. The barracks R&M effort targeted a known mold and mildew challenge in our 1970s-vintage Volunteer Army-era permanent party barracks.



Brig. Gen. Al Aycock
U.S. Army photo

With the great assistance from the U.S. Army Engineer Research and Development Center's Construction Engineer Research Laboratory and the U.S. Army Corps of Engineers' Fort Worth District, the Barracks Center of Standardization, we will fund more than \$300 million for VOLAR Barracks R&M projects, to increase the life of the facilities, eliminate the conditions that have led to the mold/mildew challenges and achieve Leadership in Energy and Environmental Design compliance. In this process, we will also modernize to the "One Soldier-One Room" concept by providing better-arranged living space with highly functional kitchenettes.

For our Army recruits and trainees, we were able to increase the FY 2009 Training Barracks Upgrade Program from a planned \$160 million to more than \$220 million. We continued the Starship modernization efforts, funding two more projects in FY 2009 at Fort Jackson, S.C., and Fort Sill, Okla. These are coupled with a Military Construction, Army, effort to construct dining facilities and increase classroom space, providing far more efficient Soldier training facilities.

The increased program gave us the opportunity and flexibility to assist smaller installations to restore barracks, such as at Blue Grass Army Depot, Ky.; Corpus Christi Army Depot, Texas; Hawthorne Army Depot, Nev.; and Yuma Proving Ground, Ariz. All in all, a great year for

the Soldiers who will be moving into these restored and modernized barracks at 41 U.S. installations plus those in Europe, Korea and Japan.

Transportation infrastructure

The Army Transportation Infrastructure Program was also a success story in FY 2009. More than \$277 million in transportation infrastructure projects have been funded.

This follows the \$78 million for 72 transportation projects funded in FY 2008. The program also provides inspection and evaluation of the Army's transportation infrastructure — 2,000 bridges, 212 dams, 45 Army airfields, 19 waterfront facilities and 1,326 miles of railroad track. In addition, the program provides \$8 million annually for technical support, training and research projects.

The FYs 2008- and 2009-funded projects will have a positive impact on the mission and/or improve the safety of the facilities. These projects include \$60 million to repair the tank trails in the training areas at Fort Bliss, Texas; \$10 million to repair the "War Road" that connects White Sands Missile Range, N.M., and Fort Bliss, Texas; and \$7 million to repair Lake George and Ketch Lake Dam at Fort Sill. Other examples include \$5.7 million for the tank trail crossing at Fort Irwin, Calif., and \$8.7 million to repair the Fort Campbell, Ky., Army Airfield pavement.

Centralizing and managing the ATIP program from IMCOM ensures that public laws are met, efficiency in saving Army's resources, consistency in the evaluation and condition reporting, and retrieval of data from one source. In general, garrisons have responded with positive feedback and are satisfied with the performance of the program. The condition of the Army's transportation infrastructure has improved over the past two years, and, with continued support from the garrisons, I anticipate further improvement. ➤

Acronyms and Abbreviations	
ATIP	Army Transportation Infrastructure Program
EPAct 05	Energy Policy Act of 2005
FMWRC	Family and Morale, Welfare and Recreation Command
FY	fiscal year
IMCOM	Installation Management Command
LEED	Leadership in Energy and Environmental Design
R&M	Restoration and Modernization
SDD	sustainable design and development
VOLAR	Volunteer Army



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Community Support

Two new initiatives are helping IMCOM provide needed restoration and modernization to underrepresented facilities and ensure that sustainable and energy efficiency is built into our Military Construction projects.

Community Support is the new facility type introduced in the FY 2009 R&M Program. Facilities long overlooked for funding are now recognized in this new category to include auditoriums, gymnasiums, child development centers, youth centers, chapels and others. Much needed repair and modernization projects are already underway.

Garrisons received initial guidance in December 2008 for entering FY 2009 Community Support projects into the IMCOM Project Priority System. IMCOM Public Works — in coordination with regions, garrisons, and Family and Morale, Welfare and Recreation — identified projects for funding. IMCOM Public Works worked closely with Headquarters, FMWRC, to establish final priorities.

Nearly \$80 million has been allocated for Community Support projects in FY 2009. Examples of funded projects include \$800,000 for repairs to a chapel at Fort Drum, N.Y.; \$125,000 to renovate and modernize the Family Support Welcome Area at Fort Richardson, Alaska; \$1.8 million to renovate a child development center at Fort Knox, Ky.; and \$3.2 million for repairs to a Family readiness center at Fort Bliss. In Germany, \$4.7 million was provided to renovate a community center at Storck Barracks, and \$4.75 million dollars will provide repairs to community support facilities and child development centers in Baumholder.

Sustainability

IMCOM is also championing sustainability and energy efficiency in our constructed infrastructure by participating on the Army Sustainable Design and Development



A seal coat is applied to a test strip on the airfield tarmac at Fort Drum, N.Y., as part of the Army Transportation Infrastructure Program's testing of airfield seal coats. See story on page 11. Photo courtesy of Ali Achmar

Validation Committee. Fifteen Military Construction projects at 12 garrisons will be evaluated by mid-August to meet statutory requirements for validating the Army's self-certification process for project sustainability scoring.

The Army SDD Validation Team comprises members from the Office of the Assistant Chief of Staff for Installation Management, IMCOM, the U.S. Army Corps of Engineers and the Army Environmental Command, and is charged with validating the LEED or Sustainable Project Rating Tool scoring claimed by each project delivery team in addition to the energy efficiency requirements of the Energy Policy Act of 2005.

Nine garrisons have been visited to date, and all projects are on track to meet the SDD scoring requirements. Most projects will meet EPA 05 requirements, however some require a relook by the architect-engineer of record to ensure the energy modeling is accurately depicting the energy efficiency of the constructed facility. Site visits remaining this FY include Fort Sill; Fort Riley, Kan.; Fort Wainwright, Alaska;

and Fort Richardson.

A report will be written following the conclusion of the SDD Validation Team site visits. Individual project review as well as highlighted overarching findings will be addressed. Best practices and commonly overlooked opportunities will be presented. Garrisons are asked to continue support of this validation effort and ensure sustainability and energy efficiency remain integral to all construction, sustainment, restoration and modernization projects.

Moving forward

FY 2009 is proving to be a great year for IMCOM infrastructure improvements to support mission unit requirements and senior commander priorities. Continue your vigilance. Be proactive. And always, ensure today's hard work is a key ingredient of the Army's future sustainable and energy-efficient infrastructure solution. It is always about better service to our Soldiers and Families.

Brig. Gen. Al Aycock is the deputy commander, IMCOM.





Working the stimulus

by Patricia Rivers

On Feb. 17, President Barack Obama signed into law the American Recovery and Reinvestment Act. The act is aimed at providing funds for projects to create jobs that will stimulate the economy and help alleviate the downturn we have been experiencing over the last year.

The Army has received a total of \$2.1 billion in ARRA funds for its active component, Reserve component, National Guard and Family housing projects. The Navy, Air Force, Tricare Medical Agency and other Department of Defense agencies are also receiving funds for their installations.

The Installation Management Command and the U.S. Army Corps of Engineers are pressing ahead to get ARRA projects awarded to create the jobs that our country needs and to make better the facilities for our Soldiers and their Families.

MILCON and ECIP Programs

The Military Construction portion of the ARRA is \$1.1 billion and 48 projects. USACE is scheduled to award 29 projects totaling \$489 million by Sept. 30. The remaining ARRA projects not scheduled for a September award include one DoD medical MILCON project, one Army Family housing project and seven Energy Conservation Improvement Program projects. These projects, to be awarded after September, require more detailed designs necessary to support acquisition requirements.

The DoD medical ARRA MILCON project is the \$621 million Fort Hood, Texas, Hospital Replacement project, which represents 45 percent of the ARRA MILCON program. The project



Patricia Rivers
Photo by F.T. Eyre

is scheduled for award late in FY 2010. The housing project, at McAlester Army Ammunition Plant, Okla., is scheduled for a December 2009 award.

In addition to the ARRA is the “regular” MILCON Program to be executed in FY 2009. That MILCON work amounts to about \$19 billion for 612 projects. This work includes the prior year carry-over dollars and projects, the FY 2009 president’s budget, congressional adds and projected FY 2009 supplemental projects, as well as the Base Realignment and Closure 2005 program, all of which impact the execution capabilities of IMCOM and USACE for the ARRA program.

Those numbers — 612 projects totaling \$19 billion — include all of our military customers — Army, Air Force and DoD. Of this MILCON program, USACE is scheduled to award 562 projects at \$17 billion.

FSRM Program

The DoD ARRA’s Facilities Sustainment, Restoration and Modernization program totals \$4.2 billion and includes 4,151 projects designed to invest in DoD facility improvements in the United States. These improvements include the repair of roads, roofs, barracks, Family housing, medical facilities and buildings that support operational requirements, such as aircraft runways and hangars or training sites.

The Army ARRA FSRM program for IMCOM installations, which includes active Army and Family housing projects, comprises \$1.5 billion over FYs 2009 and 2010. IMCOM is scheduled to award a sizeable portion of these projects by the end of the calendar year. The larger, more complicated projects will be awarded later in FY 2010, and IMCOM and USACE will award the entire program by the end of FY 2010.

The ARRA FSRM program assigned to USACE is estimated at \$1.3 billion for 700 projects. This workload includes FSRM work provided to Army, Army Reserve, Army National Guard, Air Force and Tricare Management Activity, including limited Army and Air Force Family housing.

USACE has received ARRA FSRM funding of \$1.3 billion, which came in during April, May and June, and has been distributed to 19 districts and one center. USACE is scheduled to execute 181 projects at \$279 million by Sept. 30.

We have distributed \$688 million in Army FSRM funding to our executing districts.

USACE will execute about 50 percent of the total active Army FSRM program of \$1,475 million. The remaining projects will be executed by IMCOM.

The teamwork that IMCOM and USACE exhibit are a true indication of how we are both committed to ensuring we succeed with the ARRA mandate. Through constant coordination and communication, we have achieved great strides in a short period of time.

Working together, the IMCOM and USACE teams will use the ARRA to help make our country and our installations better for the future.

Patricia Rivers is the chief, Military Programs Integration Division, Headquarters, U.S. Army Corps of Engineers.

Acronyms and Abbreviations	
ARRA	American Recovery and Reinvestment Act
DoD	Department of Defense
FSRM	Facilities Sustainment, Restoration and Modernization
FY	fiscal year
IMCOM	Installation Management Command
MILCON	Military Construction
USACE	U.S. Army Corps of Engineers



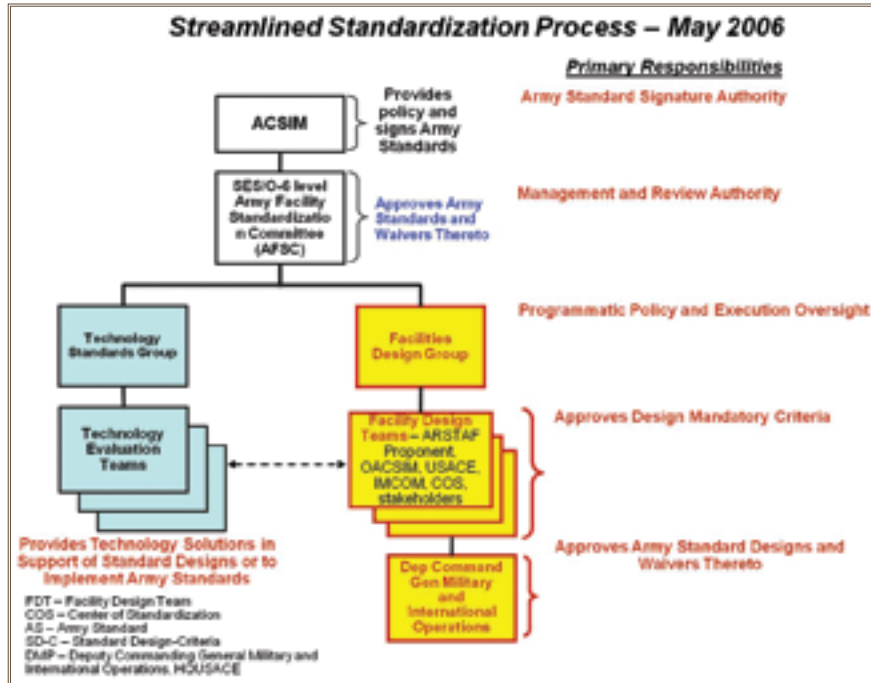
Army Facility Standardization Program: who, what, how, why

by Vincent Kam, Philip R. Columbus and Kelly Dilks

The overall objective of the Army Facilities Standardization Program is to provide quality facilities that consistently include the fundamental features, components and criteria required by the Army for real property of the same facilities category code. This goal is accomplished through Army standards administered by the Office of the Assistant Chief of Staff for Installation Management and implemented through the U.S. Army Corps of Engineers in Standard Designs/Criteria, Military Construction Transformation documents and through technology standards.

The Army Facilities Standardization Committee approved the *Army Facilities Standardization Program Charter* in May 2006. The OACSIM has overall control of the AFSP, provides policy guidance and approves all Army standards.

Army standards are the universal, mandated performance parameters and technology requirements that define a facility's design, construction and utilization. The facility-specific Army standards are managed by the Facility Design Group. The FDG oversees the Facility Design Teams, whose membership includes representatives from the Army staff proponent; OACSIM; Headquarters, USACE; Installation Management Command; and USACE Centers



Graphic courtesy of Operations Directorate, OACSIM

of Standardization. The Facility Design Team determines the criteria and requirements for the specific facility.

Army standard designs, developed by USACE, ensure the specific needs and functionality required by the Army functional proponent for a specific facility type. Standard designs are narrative and/or graphic criteria that delineate space allocation, functional layout and adjacencies or dependencies depicted as spatial relationships. They include all mandatory elements of the Army standard. For a complete list of Army standards and Army standard designs, see the Center of Expertise web site, <https://portal.usace.army.mil/sites/COS/Pages/Default.aspx>.

In addition to facility standards, the AFSP has generated several Army technology standards. The technology elements are managed through the Technology Standards Group.

The TSG voting members are representatives from OACSIM; Headquarters, IMCOM; Headquarters, USACE; and the Engineering Research and Development

Center. Nonvoting members include representatives from the Offices of the Deputy Assistant Secretaries of the Army for Installations and Housing, and for Environment, Safety and Occupational Health; and the Tank-Automotive Research Development and Engineering Center.

Army technology standards are not specific to a specific facility type and can be

applied to a variety of facilities. Waivers to Army technology standards are approved by the ACSIM based upon a thorough review by the AFSC.

The TSG has two major components — technology evaluations and the Installation Technology Transition Program. A technology mature enough to be designated an Army standard is evaluated. A qualified researcher conducts a literature search concerning the technology and produces a detailed technical report for the TSG.

The TSG reviews the document, and, if it is determined that the technology can provide a benefit to the Army, a recommendation is prepared by the TSG for adoption Armywide. Examples of successful Army technology standards are nonwater-using urinals, LED traffic lights and photo-luminescent exit signs.

If the applicability of any new technology to the Army is not quite clear, a demonstration and validation project of the technology can be done through the ITTP. The ITTP, a multi-million dollar pro- ➤

Acronyms and Abbreviations	
ACSIM	Assistant Chief of Staff for Installation Management
AFSC	Army Facilities Standardization Committee
AFSP	Army Facilities Standardization Program
FDG	Facility Design Group
ITTP	Installation Technology Transition Program
OACSIM	Office of the Assistant Chief of Staff for Installation Management
TSG	Technology Standards Group
USACE	U.S. Army Corps of Engineers



Recycled plastic bridge stands up to M-1 traffic

by Dana Finney

An innovative thermoplastic composite bridge at Fort Bragg, N.C., is the first known structure of its kind to support military equipment loads exceeding 70 tons. On June 11, an M-1 tank safely crossed the newly built bridge, which is made from some 85,000 pounds of recycled plastics.

“The first crossing was greeted with a big sigh of relief from some of us and a hardy round of applause from about 30 people in attendance,” said Richard Lampo, materials engineer with Engineer Research and Development Center’s Construction Engineering Research Laboratory, who led the project. The tank’s foray across the bridge marked the completion of load testing and safety validation for the new structure, which was completed in May.

Working with the Fort Bragg Directorate of Public Works and industry partners, CERL designed and built the thermoplastic bridge to replace a dilapidated wooden bridge with a load limitation of 4.7 tons. The goal was to provide a low-maintenance, affordable structure using recycled materials and avoiding the use of any wood components that require chemical treatments to fight rot and insect attack as well as costly routine maintenance to repair or replace deteriorated members.

“The Army has many timber bridges in use, often in remote training areas,” said Ali Achmar, Army Transporta-

tion Infrastructure Program manager at Headquarters, Installation Management Command’s Public Works Division. “Wood naturally degrades with environmental exposure, and this happens faster in harsh environments. The result of this degradation is a reduced load capacity or possible removal of the bridge, which can compromise critical training activities.”

To date, thermoplastic composite lumber, commonly known as “plastic lumber,” has mainly been used in nonstructural or low-stress applications such as park benches, picnic tables and residential decking. But now, structural-grade reinforced plastic lumber is an emerging technology for use in load-bearing construction. These materials do not contain any wood material and are inherently resistant to rot and attack by insects without the need for chemical treatments.

At Fort Bragg, innovative plastic I-beam components were



An M-1 tank crosses the new recycled thermoplastic bridge at Fort Bragg. Photos by Dr. Tom Nosker, Rutgers University



Fort Bragg’s recycled thermoplastic bridge is equipped with sensors for remote monitoring to collect performance data.

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gram through which installations can use OACSIM operations and maintenance funds to test a technology within the installation environment, began in 2008.

A wide variety of technologies have been tested, such as improved cement additives to widen the construction window in cold climates, various solar and alternative-energy projects, corrosion resistant material within bridge construction in training lands, condition indexes of facility components, building information

modeling applications, and mold abatement and avoidance techniques.

For more information on the TSG and ITTP programs, log onto AKO at <https://www.army.mil> and search for the “Army Technology Standards Group.”

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used to support the heavy loads and to provide a design that is cost-competitive to a treated-wood bridge designed to carry the same load. ➤

Acronyms and Abbreviations

CERL	Construction Engineering Research Laboratory
CPC	Corrosion Prevention and Control Program
DoD	Department of Defense
DPW	Directorate of Public Works
DUSD-AL&T	Deputy Undersecretary of Defense for Acquisition, Logistics and Technology
ERDC	Engineer Research and Development Center



Sustainment Management System boosts facility investment decisions

by Philip R. Columbus

The Army owns and operates 59,000 miles of roads, 443 million square yards of paved areas, 2,522 miles of railroad track, 1,013 million square feet of building space and a vast portfolio of other infrastructure assets across the world, according to the Department of Defense's *Fiscal Year 2008 Base Structure Report*. That infrastructure plays a key role in supporting the service's various missions.

Each Army Public Works department is responsible for managing and maintaining the structures located on its garrison so that the safe and reliable operation of these facilities is ensured. This effort can become quite a challenge under a large and dynamic operating environment such as the Army has seen over the past several years.

To help Public Works personnel and facility managers deal with these challenges, a suite of facility decision support tools collectively known as the Sustain-

ment Management Systems have emerged. This "next generation" facility management approach focuses on consistent and meaningful engineering-based performance metrics, including the condition index metric.

The CI, adopted as a standard for airfield and road pavements by ASTM, one of the world's largest voluntary standards development organizations, is used to quantitatively measure the physical condition of an asset on a 100-point scale. The result can be used to support facility sustainment, restoration and modernization resource allocation.

What is SMS?

The concept of the SMS approach started in the 1970s with the emergence of innovative pavement management practices that resulted in the development of the



Workers perform ROOFER distress survey with visual guide book. Graphic and photo courtesy of the Engineer Research and Development Center

PAVER engineered management system. Since then, the same concepts have been applied to other infrastructure domains, including roofing (ROOFER), railroad track (RAILER) and buildings (BUILDER).

Each SMS product encompasses a

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"We expect the advantages of the plastic lumber bridge will be lower maintenance costs and the ability to meet long-term training needs," said Darryl Butler, civil engineer with Fort Bragg's DPW. "The potential for this innovative material is only limited by the commander's requirements and the mission."

The Office of the Deputy Under Secretary of Defense for Acquisition, Logistics and Technology's Corrosion Prevention and Control program funded the plastic bridge's design. The Office of the Assistant Chief of Staff for Installation Management's Installation Technology Transition Program paid for its construction and initial load testing.

For the load testing, the Army Bridge Inspection Team, from ERDC's Geotechnical and Structures Laboratory, along with its contractor Bridge Diagnostics Inc., recorded measurements from various strain and deflection gauges mounted on the bridge. To complete the load testing, different types of vehicles, in addition

to the M-1, crossed the bridge multiple times.

In addition to assessing the bridge's structural performance under heavy loading, CERL is equipping the bridge with special sensors and video cameras to remotely monitor the durability of the thermoplastic materials for long-term use in such a bridge. This long-term, remote-monitoring of the bridge is supported by funding from the CPC.

"DoD is interested in recycled-plastic as a possible replacement for wood-timber bridges at all of our military installations," said Lampo. "Deteriorated timber bridges are very costly to repair, often exceeding the cost of replacement, at which point the bridge's capacity will either be lowered, or it will be closed."

"A maintenance and repair budget is not always available to renovate deteriorated bridges," Achmar added. "Also, if the same materials are used, the same degradation cycle begins all over again."

Fort Bragg has built a second thermoplastic composite bridge and has approval to construct a third. These structures will also be monitored to further validate the technology and provide lessons learned.

"This thermoplastic bridge, able to withstand heavy loads with little-to-no maintenance, expected to last at least 50 years, is no longer the bridge of the future — it's the bridge for today," said Daniel J. Dunmire, director of the Corrosion Policy and Oversight Office, Office of the DUSD-AL&T. "It also meets national environmental goals of being completely recyclable.

"This technology is not only good for DoD but should be immediately transferred to state departments of transportation for use with short-span bridges wherever possible..." Dunmire said.

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Dana Finney is a public affairs specialist, ERDC-CERL, Champaign, Ill.



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structured set of data and processes for asset inventory, inspection, condition assessment and work identification analysis. The goal of these processes is to provide the timely and accurate information that Public Works needs to enable sound business decisions in support of facility operations.

Specifically, they help facility managers determine:

- what condition facilities are in;
- what functional obsolescence issues exist;
- how well facilities meet performance requirements;
- what corrective repair actions are needed and when;
- what budget requirements are needed to meet management objectives; and
- what the facilities condition consequences of different budget levels are.

To capitalize on the benefits that these systems provide, the Army has begun to specify the use of some SMS products. The latest Army facilities management regulation, AR 420-1, states that the PAVER pavement management system and the RAILER railroad track management system will be used for the management of Army pavement, airfields and railroad track. ROOFER is also specified to be used to manage roofing on buildings.

In addition, the Office of the Secretary of Defense has also adopted the universal use of PAVER and RAILER across the services as part of its real property linear segmentation initiative. New real property linear network standards have been established based primarily on the SMS data structure and procedures for segmenting of linear assets. The SMS database information for each rail or pavement network will feed these new DoD standard requirements, pending 100 percent implementation of PAVER and RAILER across all services, which is mandated by 2012.

Current status of SMS products

The SMS products are not new, but

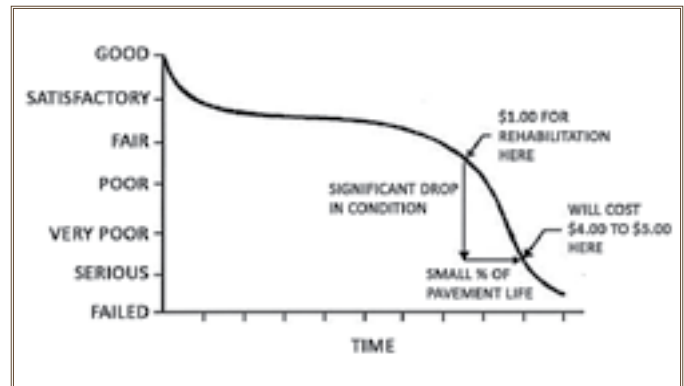
they have seen a host of improvements and system upgrades recently. PAVER has been implemented for all Army, Air Force and Navy airfields and at several installation road and parking networks. In addition, RAILER is being implemented for each Army railroad track network as part of Installation Management Command's Transportation Inspection Program.

Finally, select pilot implementations for the BUILDER and ROOFER web-based applications are ongoing as part of the Army's Installation Technology Transition Program. An outcome of these pilots will be a nationwide roofing inspection contract that will allow all installations to procure roof inspection services if they don't have in-house resources.

To date, BUILDER, PAVER, ROOFER and RAILER all exist as fully functional software applications. BUILDER version 3.0 is a web-based enterprise application designed to run as a client-server interface. Version 3.0 of ROOFER is under development under the same web-based architecture with options to run either as a roof-only application or in integrated mode with BUILDER.

PAVER version 6.0 is the latest Windows desktop application, with a networkable and web-enabled version to be released in a year. Finally, RAILER version 6.0 is a Windows desktop application.

BUILDER and ROOFER web-based products are currently undergoing system certification and accreditation under the DoD Information Assurance Certification and Accreditation Process to become officially approved on Army computer networks. In addition, certificates of net worthiness are being processed for Desktop PAVER and RAILER. All are expected to be Army-approved systems by Sept. 30.



SMS chart displays condition trend.

Future of SMS within Army

Developers at the Corps of Engineers' Construction Engineering Research Laboratory, part of the Engineer Research and Development Center, are working to integrate the SMS applications into current and future Army real property management system initiatives. These systems include the Headquarters Installation Information System, known as the HQ-IIS, for managing and storing Army real property information; Army Installation Status Reports-Infrastructure for infrastructure condition reporting requirements; the General Fund Enterprise Business System for financial tracking and work execution; and Army Mapper for visual reporting.

The vision is to interact with these systems to provide accurate, real-time data to the ultimate end user of this information — the local Army installation Directorates of Public Works. This helps the DPWs continue to support the ultimate end user of their services — the Soldiers and civilians at their garrisons who rely on Army facility infrastructure to meet their missions.

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Philip R. Columbus is a general engineer, Operations Directorate, Office of the Assistant Chief of Staff for Installation Management.



Cold-weather paving now possible

by Edel Cortez, Lynette Barna and Marie Darling

A field demonstration of the cold roller compacted concrete technology was conducted at Fort Drum, N.Y., in cold weather. Cold RCC is the result of merging RCC paving technology with cold-weather admixture technology. This combined, new technology extends use of RCC paving well beyond the traditional construction season.

RCC technology

RCC paving technology evolved from soil-cement and cement-treated base courses used in ground improvement projects geared to produce environmentally cleaner logging yards at low cost in Western Canada in the 1970s. With a succession of improvements, the RCC technology expanded to other applications such as intermodal transportation facilities and military hardstands where traffic is slow and heavy, which is especially harmful to asphalt pavements because of rapidly developing ruts.

The advantages of RCC paving technology include low cost and high productivity, since no forms, reinforcement or dowels are required, and high-volume mixing and paving equipment is used with fewer workers.

Cold-weather admixtures

Conventional, freshly placed concrete develops strength more slowly at low temperatures. In practice, when air temperatures fall below 55 degrees Fahrenheit, engineers begin to implement measures limiting the effect of cold temperatures on concrete strength development. When temperatures fall below 40 degrees Fahrenheit, shelters, thermal insulation and heaters are traditionally used to create an artificially warm environment that enables concrete to gain adequate strength.

The U.S. Army Corps of Engineers Engineer Research and Development Center's Cold Regions Research and

Engineering Laboratory in Hanover, N.H., has, over the past 20 years, developed admixtures that enable engineers to place concrete at subfreezing temperatures that acquire adequate structural strength without the use of shelters, insulation or heaters.

The internal temperature of the concrete material may be as low as 23 degrees Fahrenheit during curing, and the resulting concrete is unharmed by frost while it continues to gain strength. Because the chemical reaction of Portland cement with water produces some internal heat during the initial curing hours, the ambient temperature can be even lower than 23 degrees Fahrenheit.

With some precaution, placing concrete over frozen substrates is now feasible. Although the admixtures needed to place concrete in subfreezing temperatures can be made of raw inorganic chemicals, for applications in fixed installations, it is more convenient and reliable to use a combination of commercially available admixtures known as cold-weather admixture systems. Besides accelerating strength development, these admixture systems protect concrete from freezing that may cause permanent damage.

Cold RCC technology

RCC paving technology and cold-weather admixture technology were developed independently. Each of these technologies generated significant gains in capabilities and economy. As a component of the Office of the Assistant Chief of Staff for Installation Management-sponsored Installation Technology Transfer program, an effort was undertaken to merge these technologies and demonstrate feasibility of the result by building a test section in cold weather at Fort Drum.



Contractors place and compact concrete using cold RCC technology during a field demonstration at Fort Drum March 31. Photo by L. Barna, CRREL

The purpose of ITTP is to transfer innovative technologies that improve infrastructure design, operation and maintenance. Cold RCC adds a new capability for winter construction that can help extend the construction season and take advantage of the lower cost and high productivity contributed by the RCC paving technology.

Fort Drum demonstration

On March 31, in the early morning hours, a hardstand measuring 75 feet by 20 feet was paved in cold weather using a continuous concrete mixer, a heavy-duty paver and an ordinary steel drum compactor. At the time of the placement the ambient air temperature was 33 degrees Fahrenheit and remained near that temperature for most of the day.

Eight hours later, a Humvee was allowed to travel and park over the newly placed concrete hardstand. An hour later, a 20-ton dump truck traveled over and momentarily parked on the hardstand. The hardstand was able to carry these vehicle loads without noticeable damage.

Half of the hardstand is open to traffic, and the other half is subjected to only the environment. CRREL continues to monitor the performance of the hardstand.

For this field demonstration, the ➤

Acronyms and Abbreviations	
CRREL	Cold Regions Research and Engineering Laboratory
ITTP	Installation Technology Transfer Program
RCC	roller-compacted concrete



Evaluation of seal coats on airfield pavements underway

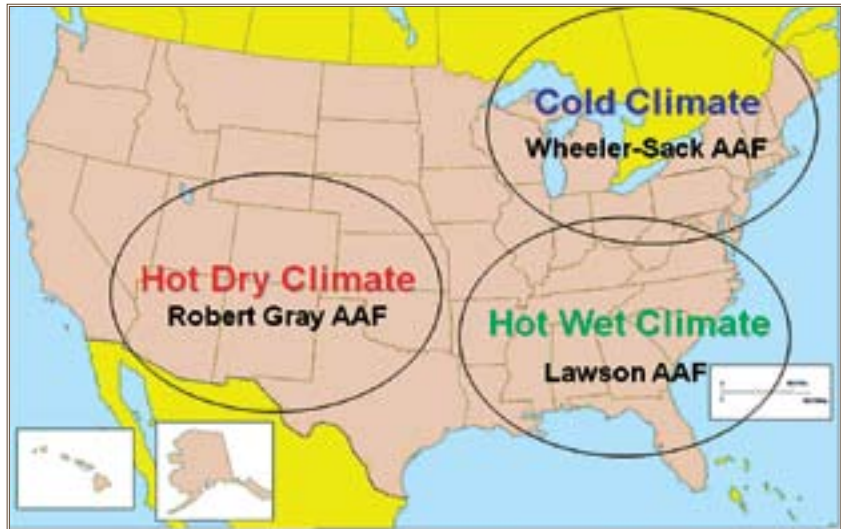
by Ali Achmar

Asphalt deterioration resulting from untimely or improper maintenance represents 90 percent of the distresses found on Army airfields. The majority of these distresses are caused by environmental influences. Sealers can reduce the rate of environmental aging on asphalt pavements when used properly.

Currently, adequate guidance for sealers on Army airfields does not exist. The installation Directorates of Public Works typically rely on local contractors' recommendations that sometimes are wrong.

As part of the Army Transportation Infrastructure Program, Headquarters, Installation Management Command, provided funding to the Geotechnical and Structural Laboratory to evaluate and examine representative products and technologies, including local practices, at different climatic regions and to monitor the pavement deterioration rates over the next five years. The laboratory is part of the U.S. Army Engineer Research and Development Center.

As a minimum, five products are being evaluated at each site on test sections of 12



A five-year Army study is evaluating seal coat products and technologies at different climatic regions in the United States. Graphic by Department of Geography, University of Alabama

feet by 300 feet. The materials represent a diverse range of available treatment types.

The products were placed on five- to 10-year-old asphalt taxiways or aprons. Materials placed include the brands and products CBRTSO, GemSeal Asphalt Emulsion Sealer, GemSeal Federal Coal Tar Sealer, Grip Flex, Pass QB, PaverX, PDC, Polytar, Reclamite, Rejuvaseal, Sealmaster PMM and Type II asphalt slurry.

ERDC will provide an in-progress report on how the materials are performing

annually for the next five years, as a minimum. At the end of the evaluation period, ERDC will publish the results and recommendations in the *Surfaced Areas Material Utilization Catalogue*, which is currently being developed.

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Ali Achmar is the program manager, Transportation Infrastructure, Public Works Division, Headquarters, IMCOM.

Acronyms and Abbreviations

AAF	Army Airfield
ERDC	U.S. Army Engineer Research and Development Center

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concrete mixture was produced with a continuous, pug mill-type mixer transported from Alabama. The concrete was placed with a heavy-duty, German-made paving machine transported from Nebraska. The paving contractor was familiar with Fort Drum, having previously worked there in the summer construction seasons of 1988 and 1989.

During that time, the contractor paved about 88 acres of RCC on the installation, despite concerns over suspected freeze-thaw susceptibility of the RCC material. Twenty years later, the RCC hardstands continue to serve their intended purpose

with relatively little maintenance.

This test section was built near the Fort Drum Roads and Grounds Branch office led by Frank Coburn. Coburn provided valuable logistic support for the field demonstration.

Cold RCC advantages

The primary benefit of using cold RCC technology is to extend a construction season into the cold months of the year, both toward the spring and toward the fall, and sometimes even into the winter. At some locations, this may result in year-round construction that carries the benefits of a stable work force and better equipment utilization.

The traditional methods of cold-weather concrete construction that rely on building enclosures coupled with insulation and heaters are more difficult and expensive to implement with pavements that are in direct contact with frozen ground. However, the high production rates and economy achieved with RCC paving technology are now available in cold weather.

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An approach for developing, evaluating water reuse strategies

by Scott Hill

The Army Energy and Water Campaign Plan for Installations, dated Aug. 1, 2006, includes a major initiative to conserve water resources. In keeping with this objective, water reuse strategies can convert wastewater into a valuable resource for your installation.

This article describes an installation-based approach for developing and evaluating water reuse strategies in a way that is tailored to site-specific conditions and needs. It derives from a set of general findings from on-going studies being conducted by and for the Acquisition and Technology Branch of the U.S. Army Environmental Command.

The approach consists of the following steps:

- identify your installation's motivations for water reuse;
- understand the prevailing regulations;
- identify your supply and demand;
- identify treatment requirements;
- develop evaluation methods;
- design infrastructure options;
- evaluate and revise these options; and
- identify the most feasible of the options.

Identify water reuse motivations

Installation motivations drive evaluation criteria and treatment requirements. Motivations for water reuse often fall into two categories: *source substitution and pollution abatement*.

Source substitution occurs when reclaimed water reduces the burden on other water sources, such as groundwater, imported water and surface water. Pollution abatement occurs when water reuse results in the avoidance of wastewater discharge into surface water or groundwater.

Understand regulations, guidelines, best practices

Regulations, guidelines and best practices influence decisions for water reuse. Many states have yet to develop regulations. To fill this gap, the federal government published

nonregulatory guidelines for water reuse. If your state does not have regulations, use the *2004 Guidelines for Water Reuse* as a reference to start your analysis.

The same agency that manages your National Pollutant Discharge Elimination System permits likely regulates water reuse. Regulations define water quality, treatment requirements and allowable reuse applications. Requirements can include:

- water rights,
- permitting,
- operational requirements,
- general design,
- system reliability,
- alternative and emergency discharge, and
- public involvement.

Your counterparts at other installations and in civilian communities can help with best practices. Visit their sites and speak with their managers and planners to develop a set of regional best practices.

Identify demand, supply

Common demands for reclaimed water at military installations include vehicle and aircraft wash racks, groundwater recharge, parade ground irrigation, landscape irrigation, golf course irrigation, toilet and urinal flushing, boiler feed and cooling water and street cleaning. It can be difficult to reliably determine the quantity of reclaimed water that could be reused.

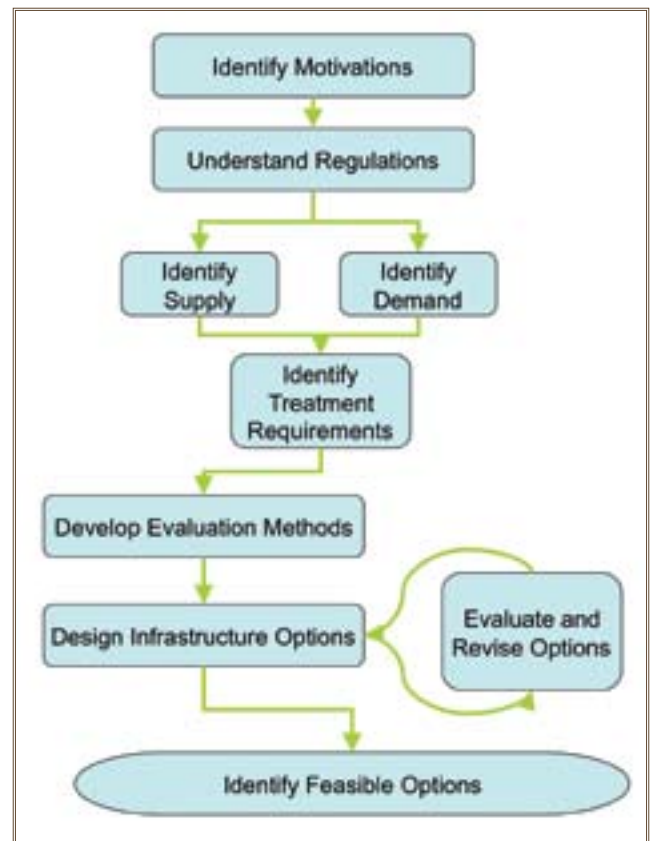
In some cases, metering data is available. If not, you will need to estimate demand. Remember that demand for reclaimed water fluctuates over the

course of a year, which makes it important to plan for *peaking characteristics* as well as *seasonal fluctuation*.

A map of your installation's existing sewer network can identify potential sources of supply for reclaimed water. Determine the locations of the principal sewer lines, their drain points and the flow rates in each line. Data should be collected for average, peak seasonal and diurnal periods.

Identify treatment requirements

You must match the quality of your reclaimed water with specific uses to identify treatment options. For example, if primary uses on your installation are limited to industrial applications, advanced disinfection probably will not be necessary. However, if reclaimed water is used to irrigate a golf course where human contact is pos- ➤



Approach for Developing and Evaluating Water Reuse Strategies. Graphic by Malcolm Pirnie Inc. for U.S. Army Environmental Command.



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sible, disinfection likely will be required.

You will probably need treatment technologies to support your overall water reuse strategy. As a start, determine whether your current facilities provide treatment that is suitable for your selected reuse applications. If not, it may be possible to add modular upgrades to meet reclaimed water quality standards.

Adding satellite plants, such as membrane bioreactors, or constructing a new central treatment plant are options. Your current wastewater treatment plant operators and managers can provide useful feedback regarding these technologies and their associated operations and maintenance requirements.

Develop evaluation methods

Your installation probably has existing procedures for assessing the benefits and drawbacks of large-scale infrastructure projects. Making these methods transparent and including the buy-in of major stakeholders increases the overall probability of success. A suggested evaluation methodology for water reuse strategies is described below.

Concept screening – Concept screening is a useful tool to quickly develop a short list of good options. This typically involves a high-level review of all available options, associated infrastructure, required permitting and a rough estimate of capital and annual costs. The objective of concept screening is to quickly identify which options have critical flaws, thus reducing the total range of options to a smaller, more manageable set.

Scenario planning – Uncertainties in planning for water reuse include the future water supply, future population and public sentiment. Traditional methods of identifying several alternatives, evaluating alternatives and picking the “best” alternative may not work well as these uncertainties play out over time. Therefore, *scenario planning* for water reuse might be a worthwhile evaluation method.

This approach begins with several

plausible futures constructed around the most critical uncertainties over which your installation has least control. After comparing these alternate futures, your planners identify which elements of the various water reuse options are common to the most number of futures. By focusing on these high value elements, you increase the probability that your water reuse system will be able to adapt to future variations.

Cost estimation tool – Developing a cost estimating tool before designing water reuse options allows you to identify major cost drivers early in your analyses. Depending on your installation’s needs and resources, this tool can vary in complexity. It can be built into your geographical information system in a way that provides the cost of a certain length of pipeline, or it can be a simple spreadsheet.

Costing tools are available from the Environmental Protection Agency, water organizations, engineering organizations and perhaps from your counterparts at other installations. Recognizing that detailed and specific cost data are sometimes unavailable, this tool need only provide planning-level, order-of-magnitude cost estimates.

Typical line items could include:

- treatment plant – cost to upgrade or construct;
- distribution system – cost per linear foot of pipeline;
- reclaimed water storage – cost per gallon;
- pump/booster station – cost for gallon per minute pumping; and
- connections – cost per connection to the distribution system.

A cost estimation tool helps you answer some basic planning questions. For example, if source substitution is your motivation, how does the per-unit cost of water reuse compare with the unit cost of seawater desalination, brackish groundwater treatment or piping surface water from 100 miles away? If pollution abatement is your goal, how does the unit cost of water reuse compare to upgrading your existing wastewater treatment plant to meet higher effluent standards?

Weighted ranking – Weighted ranking is another useful tool for assessing water reuse options. In order to develop this tool, stakeholders are asked to identify specific criteria against which options can be judged. Stakeholders are then asked to assign a weight to each criterion.

Each option is given a score for each criterion. This score is multiplied by the weighting factor assigned to this criterion, and these products are summed for all the criteria. The sums for each option serve as a numerical ranking of the options.

Examples of criteria include:

- cost,
- flexibility for future expansion or change,
- public acceptance,
- complexity of program implementation,
- permitting needs,
- constructability,
- operations and maintenance burden, and
- level of chemical and/or energy use.

Develop, evaluate infrastructure options

At this point, you understand your specific motivations for water reuse, you have reviewed prevailing local regulations and guidelines, and you have identified your installation’s supply, demand and treatment requirements. You’ve also developed a set of evaluation methods that include concept screening, scenario planning, cost estimation and weight ranking. You’re ready to start developing infrastructure options that meet your objectives.

The work that you’ve done to identify evaluation methods gives you a prioritized sense of the important evaluation criteria for your installation and helps to guide the development of these infrastructure options. Once these options are available, you can immediately begin an assessment of them using your installation-tailored evaluation methods.

Summary

Properly evaluated and applied, water reuse can be an important component of your installation’s overall sustainability efforts. It can provide security and





IMCOM uses stimulus funds to energize energy, water projects

by Scott McCain

The American Recovery and Reinvestment Act provided Headquarters, Installation Management Command and its garrisons with a once-in-a-lifetime opportunity to invest in critical energy and utility projects. The funding will support IMCOM's efforts to achieve its energy, water and renewable energy goals, according to Paul Volkman, Headquarters, IMCOM, Energy and Utilities Program manager.

When the stimulus funding was released, IMCOM was ready. Garrisons are required to continuously develop and maintain an inventory of energy and utility projects, and the preparation has paid off. Headquarters, IMCOM, centrally funds two energy assessment programs that assist garrisons with the identification and development of energy projects.

The Energy Engineering and Assessment Program:

- involves level II assessment focused on large capital-intensive projects;
- uses computer modeling;
- creates tailored acquisition strategies for "best-fit" solutions; and
- identifies traditional alternative funding sources.

Acronyms and Abbreviations	
ARRA	American Recovery and Reinvestment Act
DoD	Department of Defense
DoE	Department of Energy
FEMP	Federal Emergency Management Program
IMCOM	Installation Management Command

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flexibility in a changing environment, allowing civilians and Soldiers on your installation to focus on their core missions.

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Energy Awareness and Conservation Assessments:

- involve level I walk-through assessment;
- focus on low-cost or no-cost energy-saving opportunities; and
- capture "quick wins."

The initial challenge was prioritizing the investments, as requirements exceeded available finding. To satisfy the most pressing requirements, Volkman relied on the Installation Status Report to support the decision-making process for identifying the initial contracts.


The next step was for the regions to prioritize the projects across six energy and water categories. Through ARRA, IMCOM was able to fund about \$365 million out of a \$1.2 billion inventory backlog of energy and utilities projects:

- \$142,329,552 – steam, chilled water
- \$100,822,404 – energy distribution system
- \$67,586,663 – energy efficiency
- \$29,272,741 – renewable energy
- \$11,447,162 – recommissioning
- \$13,234,800 – energy security
- \$674,250 – water conservation

Projects the garrisons are pursuing include installation of energy-efficient windows; improvements to building envelopes; repairing old and inefficient heating, ventilation and air conditioning systems; installing LED street lights; adding daylighting and roof-top photovoltaic systems; recommission-

ing existing buildings; decentralizing boiler plants; converting furnaces from oil-fired to natural gas; repairing damaged water lines; upgrading utility plants; and repairing electric substations and transformers.

In addition to repairing and replacing old and inefficient energy equipment, garrisons are also investing in renewable projects. Fort Wainwright, Alaska, which generates the majority of its power requirements from coal, is investing in meteorological towers that will gather critical wind data to evaluate the potential of renewable wind resources available in remote areas of the Donnelly Training Area and Black Rapids Training Center. This strategic investment could help the garrison improve its energy security and minimize the impact of potential carbon legislation.

The U.S. Army Garrison Hawaii is developing a unique energy solution that will allow the garrison to harvest two of its most prevalent renewable resources in a cost-effective manner. The remote Kahuku Training Area on the island of Oahu relies on diesel-fired generation to satisfy its power requirements. This expensive and inefficient power source will be replaced by a combination of renewable wind and solar power. In addition to offsetting an annual fuel bill of \$300,000, the renewable energy solution will provide an increased level 



Headquarters, IMCOM crafted a user-friendly project dashboard to track ARRA funding deployment. Graphic by courtesy of Public Works Division, Headquarters, IMCOM



Garrison Hawaii saves water with robust projects

by Paul E. Major Jr.

The staff and leadership of Kilauea Military Camp and Schofield Barracks, Hawaii, faced with diminishing resources and growing budget restrictions, employ water conservation projects that benefit the entire military Family.

The Directorate of Public Works' Utilities Division, working in partnership with Aqua Engineers Inc., developed an R-1 Reuse Plant at the Schofield Barracks Wastewater Distribution Plant. The plant recycles about 100,000 gallons of wastewater per day.

As federal environmental compliance level R-1, the recycled water is being used for in-plant operations and various landscape watering systems instead of potable water. If 100 percent of the recycled water is used, R-1 projects could reduce the Army's demand for potable water by more than one million gallons per day and potentially eliminate wastewater discharge.

The wastewater treatment plant at Schofield Barracks became one of the first plants under the Department of Defense Privatization Program and is the largest privately owned R-1 facility in Hawaii. The R-1 upgrade was an economically efficient way to improve the quality of wastewater treatment while simultaneously creating a sustainable benefit to the island of Oahu.

KMC sits at the summit of Kilauea Volcano on the island of Hawaii. At 4,000 feet in elevation, 20 miles from the nearest county resources and overlooking some of Hawaii's most unforgiving yet environmentally sensitive lands, KMC has a staff who understands sustainability.

Providing daily support to more than 100 cottages, a 110-bed dormitory, food and

beverage operations, two laundries and a fire station, the staff depends on renewable natural resources and multiple initiatives.

With a consumption of more than nine million gallons of water and a \$738,000 price tag for hauling water annually, KMC has transformed more than six acres of rooftops and otherwise unused overhead space into a water-catchment system that pipes clean, purified water throughout the camp. The innovative, gravity-fed system saves an average of \$162,000 annually and greatly reduces the need to draw valuable drinking water from local communities.

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Acronyms and Abbreviations

KMC	Kilauea Military Camp
USAG	U.S. Army Garrison Hawaii

(continued from previous page)

of energy security to this critical training facility that supports range operations for the Army, Navy, Air Force, Marines and National Guard.

Underpinning the ARRA investment allocation was the creation of jobs. There was an aggressive timeline associated with the stimulus funding as well as tracking the direct output, job creation. Since the goal is to create new jobs, garrisons were required to obligate their funding quickly but no later than Sept. 30, 2010. To closely track deployment of funding and job creation, Headquarters, IMCOM, developed a user-friendly project dashboard.

Volkman advised garrisons to take full advantage of this wonderful opportunity but invest wisely and execute smartly. To support the garrisons' project development requirements, engineers from the U.S. Army Construction Engineering Research Lab have been retained. Garrisons are also encouraged to contact the Department of Energy's Pacific Northwest National

Lab and the U.S. Army Engineering and Support Center, Huntsville, for additional project development support from IMCOM's Energy Support Team.

In addition to the direct allocation of stimulus funds, IMCOM is working with the Department of Energy's Federal Energy Management Program, which is responsible for facilitating the federal government's implementation of sound, cost-effective energy management and investment practices to enhance the nation's energy security and environmental stewardship.

FEMP received ARRA funds directly through DoE. The funds will be used to expand its laboratory and contractor support to agencies and to quickly provide technical advice and assistance.

The technical services will help agencies identify and prioritize ARRA-funded projects and will provide the same services for agencies that did not receive ARRA funding. Examples of the proposed technical assistance services available to federal

and DoD energy managers include, but are not limited to project development and feasibility analysis, strategic energy planning and benchmarking, retro-commissioning, renewable assessment and technology validation.

Responses for support from interested parties were due May 22 and were accepted on a first-come, first-served basis until funds are expended. Based on initial feedback from DoE, IMCOM submitted 37 requests for technical assistance from FEMP and was by far the largest applicant from the Army, which led all services in total requests.

IMCOM leadership coordinated the evaluation and prioritization of the requests. This effort was completed at the end of June.

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Camp Pendleton installs submeters to track housing electrical costs

by Don Millstein

Older on-base home construction typically omitted tenant electrical metering, since such costs were traditionally absorbed by the base's operating budget. Driven by rapidly increasing utility costs, housing privatization requirements and the need to better manage and account for all on-base energy use, the decision was made to retrofit electric metering in 605 single-Family detached houses and duplex units that were constructed with no electrical metering capability at Marine Corps Base Camp Pendleton, Calif.

This large metering retrofit project was awarded to San Diego-based Hondo Electric, a large-scale commercial and residential electrical contracting firm. Hondo's supplier on the project was Consolidated Electrical Distributors.

The tightly coordinated team effort involving contractor, distributor, local company rep and manufacturer was responsible for a very smooth installation, free of unusual problems, according to Steve Shoop, Hondo president.

The initial challenge of retrofitting electrical metering into more than 600 housing units was solved with submeters, which provided a simple solution to a complex problem. The homes in question were all built without electrical meters, and the service entrance to each was routed directly to a load center inside the house.

"This made measuring energy usage a major change that conventionally would have required installing a new service entrance to the outside of each home with a meter/main and running a subfeed through the house to the existing load center," Shoop said. "As a result, there would have been considerable drywall and stucco damage."

Manufactured by E-Mon LLC of Langhorne, Pa., the outdoor meters provide a 120/208-240-volt, single-phase, three-wire configuration using 100A split-core current sensors. This low-cost submeter and former Department of Energy Innovations Award winner provides reve-



Two-volt output split-core current sensors installed noninvasively around the electrical feeds allow for a quicker, safer install that does not require the load to be shut down for installation. Photo courtesy of E-Mon LLC

nue-grade accuracy to American National Standards Institute's C12.1 and C12.16 standards, and is well suited to any single-phase metering application, Shoop said.

The submeter provides:

- selection of popular voltage, phase, current and wiring configurations;
- direct-read, eight-digit LCD display without multiplier, which displays cumulative kilowatt-hour and real-time kilowatt load;
- nonvolatile memory that maintains reading in the event of power failure;
- compatibility with leading automatic meter-reading software;
- Underwriters Laboratories listing and Canadian Standards Association approval;
- certification to California metering standards by the Bureau of Weights and Measures;
- California Energy Commission listing; and



The unobtrusive outdoor meter in a NEMA 4 weatherproof enclosure is installed near the entry to a typical Camp Pendleton housing unit, allowing fast, accessible utility data collection. Photo courtesy of Hondo Electric

- New York City and Consolidated Edison Inc. approval for the Retrocommissioning Service Providers program.

Installation of the submeters began in September 2007 and was completed in March 2008.

"The install at Camp Pendleton went without a hitch, and the meters performed perfectly 100 percent of the time," said Jeremiah Fimeah, one of two Hondo electricians on the project from start to finish. "The split-core current sensors sped up the process and allowed the installation to be completed without power interruption."

"By using the meters with the split-core sensors, installation took an average of only 90 minutes per house and required minimal drywall repair and paint touch-up," Shoop said.

Rent for military Families includes utilities as part of their Basic Allowance for ➤

Acronyms and Abbreviations

BAH	Basic Allowance for Housing
MHPI	Military Housing Privatization Initiative
NEMA	National Electrical Manufacturers Association



Fort Irwin uses technology to improve customer responsiveness, save money

by David Canady

Spread over 14 square miles of California's Mojave Desert, Fort Irwin's water and wastewater utilities consist of numerous physical components and facilities, including seven remote groundwater wells, one water treatment plant, five large water storage tanks, 11 wastewater lift stations, one wastewater treatment plant and several miles of water and sewer pipelines. While the infrastructure itself has held up well to the desert's harsh climate, an outdated communications system had become increasingly inefficient for monitoring and controlling these facilities.

As it became more critical for the existing and new water and wastewater facilities to remain in service, the design team recommended the installation of a

computer-based, systemwide supervisory control and data acquisition solution. The system, brought online in March, delivers an impressive yet cost-effective array of functionality that helps save time, decrease inventory and associated costs, reduce environmental impacts, and improve water and wastewater treatment processing quality.

"The control system changeovers from the old system to the new system have proceeded smoothly, while the water and wastewater facilities were in full operation," said Lance Toyofuku, the Fort Irwin director of Public Works. Toyofuku credits everyone involved in the project with its success.

SCADA

The term *SCADA system* applies to a combination of telemetry and data acquisition. Information is collected, transferred back to a central site, analyzed and dis-

played on a computer screen.

A SCADA system is used to monitor and control plant equipment, remote facilities or both. Control may be automatic or can be initiated by individual operators at the central site or remotely using a laptop computer connection to the Internet.

Supervisory control refers to the ability to control the entire water and wastewater system from one or more locations. For the Fort Irwin SCADA system, data such as pressure, flow, well-water levels, energy consumption or equipment set points are transmitted and received from location to location via radio.

Data acquisition refers to accessing and managing data from equipment that is being controlled and monitored. Data can be analog (continuous) or digital (discrete values) gathered by sensors such as ➤

Acronyms and Abbreviations	
SCADA	Supervisory Control and Data Acquisition

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Housing, a variable formula that factors in the military pay grade of the tenant, number of dependents and other personal information. Data from the Census Bureau's annual American Community Survey is also used to establish average utility costs for each specific dwelling type in each military housing area, adjusted to local housing conditions, geography and climate.

After the applicant signs the lease agreement, the government pays the service member's BAH directly to the private-sector property management company, which then pays the tenant's utilities according to the baseline allowance stipulated in the lease contract.

The submeters allow property managers to recover costs incurred by excessive use. By the same token, conscientious tenants who fall beneath the allowance cap can be rebated the savings.

Submeters are a quickly installed, inexpensive way to bring unmetered housing into the energy management envelope in response to the growing need for energy-monitoring capability. Far from being unique to Camp Pendleton, unmetered Family housing exists on many other installations around the country.

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Camp Pendleton housing project

by Don Millstein

Authorized by Congress in 1996, the Military Housing Privatization Initiative opened the door to private-sector partnerships with the Department of Defense to supply high-quality military housing quicker and at lower cost than government construction would allow. Tasked with reaching 100 percent compliance by the end of this decade, the widely implemented MHPI is resulting in significant quality-of-life improvements for military Families on dozens of installations around the country.

In late 2006, the Department of the Navy awarded one of the largest public-private venture contracts for a multi-year housing renewal program on 125,000-acre Marine Corps Base Camp Pendleton. A multi-phase military housing development, the Camp Pendleton project will see the construction of 1,035 new housing units, demolition of 640 units and renovation of 2,171 units over an expected 48-month period.

As completed, the housing units are turned over to the private-sector property management company responsible for operating several housing communities on base.



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flow meters. Data can also be from control equipment such as actuators, relays, valves or motors.

To bring cohesion and organization to the massive, year-long undertaking, the design team first mapped all aspects of the communications systems, determined how to integrate historical and new data from each facility into one database management system and designed training programs for operations staff and maintenance personnel.

During this process, the goals for the new SCADA system were clearly identified and included a system that:

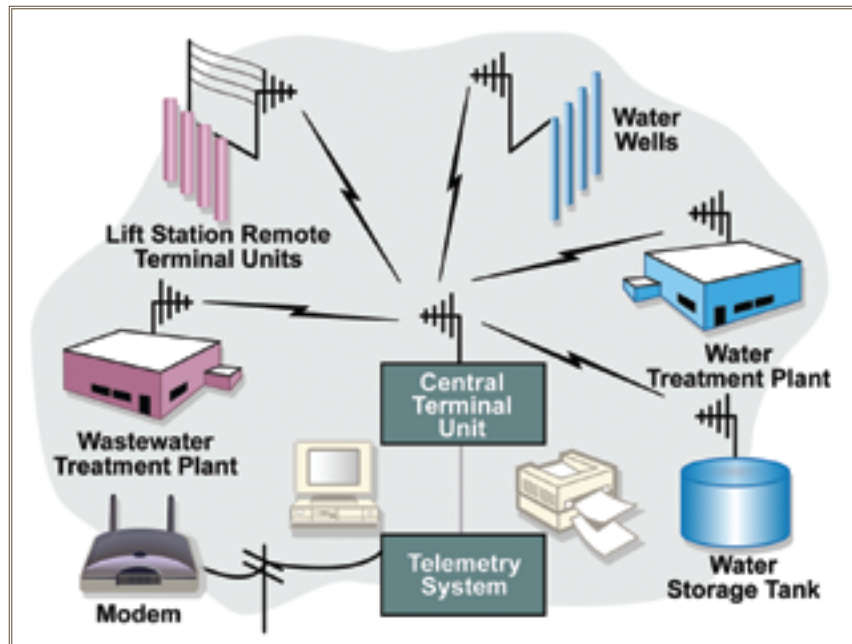
- uses common hardware, software and operation;
- uses readily available parts from local suppliers;
- is easily maintainable in-house at Fort Irwin;
- has the ability to incrementally replace and upgrade system components;
- includes a central control room;
- includes alarm notification of system failures via telephone during after hours; and
- could be completed within a target time frame and on budget.

In addition to installing the SCADA software, control systems and operator stations, the multi-year project also included a 250-MHz radio system to communicate with remote facilities such as groundwater wells.

Comprehensive solution

The team conducted a complete review of Fort Irwin's current system and researched available replacement solutions based on project goals of:

- increasing reliability and maintainability;
- replacing obsolete equipment and software;
- switching to a more dependable communications backbone with redundant paths;
- maintaining a user-friendly graphic interface; and
- ensuring data are stored in easily-accessible format.



Fort Irwin DPW employs a SCADA system to monitor and control water and wastewater systems. Graphic courtesy of Elena Zorn, CH2M HILL

The new system is a web-accessible, client/server software solution that allows operators anywhere to view key performance indicators and graphical interface screens.

Instant benefits

This project is now a fully integrated, utilitywide SCADA system, and the benefits are already becoming readily apparent. Radio terminals on more than 500 monitoring points, i.e., pumps, valves, reservoirs and lift stations, send and receive data to and from a central operator 24/7 via radio communication.

The benefits of the system are many.

Reducing water-loss and sewage overflows – SCADA increases visibility of remote facilities, which will result in reducing inadvertent overflows of water reservoirs and will reduce potential sewage lift station overflows.

Reducing operator interfacing and overtime – SCADA has the ability to operate equipment remotely and to initiate corrective actions from a central location, which will result in less driving time and fewer visits to more than 25 remote sites. The

estimated time to check all sites was previously four to six hours and covered about 15 miles per operator shift.

Improving operability of the water distribution system – SCADA remotely monitors and controls water distribution system hydraulics for maintaining system pressures, as well as determining which booster pumps should be running to reduce overpressurization.

Providing energy savings for off-peak demand periods – SCADA provides the capability of operating the water system during off-peak demand periods. Cost savings will be realized if water pumping is performed during off-peak periods. Annual savings will be monitored in the coming years.

Increasing life of water and wastewater equipment – SCADA results in more timely analysis of current and historical run times on motors. The increased ability to trend motor operating data will now enable decision making from an energy-savings perspective. This practice also identifies pumps that run more often and continuously. This should result in reduced energy costs, eliminate unnecessary starts and ➤



Fort Irwin zeroes electricity use in new building

by Hossam Kassab

The start of the 2009 summer brought the promise of better things to come at Fort Irwin, Calif., located in Southern California's Mojave Desert. In response to federal energy conservation requirements, Fort Irwin took critical steps to expand its energy conservation efforts by constructing a net-zero energy building.

A net-zero energy building requires no electricity from the commercial electric grid because it produces enough electricity to power all of its electrical needs. Fort Irwin is committed to conserve energy and is looking into various projects focusing on solar-thermal electric power generation, wind power generation and a waste-to-energy power plant. This article describes one of the many renewable and energy-efficient projects taking place at the post.

This project consists of a 6,250 square-foot, prefabricated steel building used for ammunition storage that has its electrical needs entirely supplied by renewable energy. The building is not connected to the electrical grid and is totally self sufficient.

Solar panels on the roof of the building supply 2.3 kilowatts of power. These solar panels are connected to a battery bank for power storage to use when the sun isn't shining. At maximum power, the interior overhead lighting, exterior lighting and fire alarm system consume only 1.74 kw of power, leaving more than 0.5 kw of power available for energy storage or use in the electrical receptacles.

Skylights in the roof of the building

(continued from previous page)

stops of pumps and motors, and increase life expectancy of equipment.

"With instant access to information from all of our sites, we can provide better customer service, make more prompt and informed business decisions, and readily comply with industry regulations," Toyofuku said.

Toyofuku cited two major factors in


provide most of the lighting needed throughout the day. Electrical lighting is required when battery backup is not available. The battery backup storage has the capacity to store up to 72 hours of power for use when the solar panels are unavailable or when more power is required for items plugged into the electrical receptacles.

The interior lighting uses high-efficiency light bulbs that are on timers which turn off the lights after use. The exterior lighting is also high-efficiency and is coupled with a light sensitive photocell that turns the exterior lighting on only when it is dark outside.

From the beginning, this building was a money saver for Fort Irwin. Total electrical building costs for the structure were \$62,000. When plans for constructing a traditional building connected to the electrical grid were investigated, it was determined that running an electrical line to

the success of the SCADA project to date: the design philosophy and system architecture, and using a single, proven supplier for the SCADA hardware and software.

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Skylights in the roof of Fort Irwin's net-zero energy building provide lighting during daylight hours. Photos by Hossam Kassab



Exterior lighting fixtures have light-sensitive photocells that turn the lights on only when it is dark outside.

the proposed building site would have cost \$74,000. Constructing a net-zero energy building saved Fort Irwin \$12,000 just by choosing to build it.

The savings don't stop there. ➤

Acronyms and Abbreviations

BRAC	Base Realignment and Closure Act
GIS	geographic information system
IRP	Installation Restoration Program



National Guard's got it made in the shade with solar projects

by JoAnne Castagna

Under the Energy Policy Act of 2005, all federal agencies are required to use some renewable energy.

One agency that continues to incorporate renewable energy successfully is the U.S. National Guard with the assistance of the U.S. Army Corps of Engineers.

Recently the Guard's New Jersey branch sought the expertise of the Corps' New York District to construct two solar power projects. These projects will not only help the Guard meet the country's energy laws but will also save money on electricity and earn a profit from the state of New Jersey.

New Jersey requires its citizens to support the use of renewable energy. Under the New Jersey Solar Renewable Energy Certificate Program, solar system owners that generate more than 1,000 kilowatts of electricity per year that is connected to the public power grid receive certificates. These certificates are then publicly sold and traded to New Jersey businesses and individuals, enabling them to receive solar power benefits without building a solar power system themselves. The revenue is returned to the solar system owners.

The New Jersey National Guard owns several solar power systems. It has benefited from the SREC Program and will continue to do so. The Corps is constructing two open-panel photovoltaic carport solar power projects for the New Jersey National Guard — one for its Joint Forces Head-



Solar power panels on a photovoltaic carport project in Atlantic City, N.J., are similar to what is being constructed by the Corps for the New Jersey National Guard. Photos by Armando Jimenez, U.S. Army Corps of Engineer, New York District

quarters at Fort Dix, N.J., and the other for its National Training Facility Headquarters at Sea Girt, N.J.

The projects are being erected over existing parking lots at both locations. The energy generated will power these two buildings, which are less than 200 feet from the respective parking lots.

The Corps is building the carport structures above the parking lots and installing area lighting, inverters, transformers, switchgears and electrical metering equipment. When the projects are completed,

the pavements will be restriped.

The steel carport structures will stand 16 feet above the pavement and will be supported by web steel joists and joist girders. On top of these structures, the photovoltaic panel arrays will be installed.

The panels are composed of modules. Each module is made up of several solar cells, or photovoltaic cells, that absorb the sun's light and produce electricity. The larger the size of the panel, the more electricity it will produce.

The panels produce direct current electricity, which is not directly usable for a building. Most buildings require alternating current at a higher voltage. To make it usable, the solar panel's DC is fed into an inverter that transforms it into AC at a higher voltage.

This AC power is then sent to the buildings' main transformers where it can be used by the buildings for energy needs. The New Jersey National Guard's solar ➤

(continued from previous page)

Because this building produces its own electricity, Fort Irwin doesn't need to buy it from the electric company. At today's prices, this avoidance saves the fort more than \$1,000 per year. As electric prices increase, so will these savings.

This project has shown that net-zero energy buildings and energy-efficient technology choices are cost effective and great for the environment. This building not only saved Fort Irwin in initial

construction costs, it will continue to save annually through electricity costs avoided.

Fort Irwin is planning to build two more net-zero energy buildings this summer and cash in on any opportunity in the near future for more to come.

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Acronyms and Abbreviations

kw	kilowatt
SREC	Solar Renewable Energy Certificate



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power system is tied into the public power grid, and excess power is shared with the community.

When completed, both structures, including the panels, will be roughly the size of a football field. The Fort Dix project will generate about 240 kw and the Sea Girt project about 238 kw.

Both projects were also designed to save the National Guard considerable energy during the high-demand summer months. At Fort Dix, the panels will be placed at a 25-degree angle and at Sea Girt, at a 15-degree angle. These placements will provide the Fort Dix building 40 percent of its summer energy needs and the Sea Girt building 80 percent. Placing the panels on an angle facilitates runoff of rain and snow, too.

The New Jersey National Guard will also save about \$116,000 on its electric bill and earn about \$350,000 from the SREC Program. Besides these financial benefits, there are additional plusses that come with constructing solar power projects on new, open-panel carports on existing parking lots.

A solar system installed on an existing roof will most likely have to be removed in the future to repair the roof as it gets old and leaks, which can be very expensive and time consuming. The solar power system will also add weight to the existing roof, increasing its deterioration.

“You don’t want to install panels that can last 20-25 years on top of a roof that has only one year left,” said Armando Jimenez, the Corps’ project manager. “By placing panels on new roof tops, you also don’t have to deal with building or roofing permits to reinstall roof-mounted solar power systems,” he added.

Constructing on existing parking lots also has its benefits. Storm water runoff is not affected, so there are minimal impacts to the environment. In addition, parked vehicles receive some shading from the sun.



The solar power panels are composed of modules, and each module is made up of several solar photovoltaic cells that absorb the sun’s light and produce electricity.



Web steel joists and joist girders will support the steel carport structures above the parking lot pavements.

An open-panel carport design, as opposed to a solid ceiling structure, prevents debris, such as bird nests and snow, from accumulating, which would require regular maintenance. Also, a solid ceiling would add weight to the structure that would require a stronger and more expensive structural support, which an open-panel carport design does not.

Jimenez envisions an increase in solar power project construction in the future and has suggestions for builders who plan on embarking on them.

Before beginning a solar power project, seek advice from experts in solar and renewable energy, because they can save you considerable time and money, Jimenez said. For these projects, the New York District collaborated with the Corps’ Engineer Research and Development Center, which has extensive experience working on solar power projects with Corps districts, the Department of Defense and other federal agencies.

When designing the project, it is important to make sure the buildings that will receive the solar power are large enough to be able to use most of the energy and are situated near the solar power panels,

he advised. The further a building is from the panels, the more energy it will take to transport the solar energy to the building.

“For example, it doesn’t make sense to have solar power panels way out in a desert, because you will lose efficiency by using the energy to transport electricity from there to where buildings are that will use the energy,” Jimenez said. “Due to power transmission lines having inherent resistance and capacitance, energy is always wasted when transporting power.”

Calculate how much money the customer will save in electric bills in the long run as well as learn whether there are any energy credit programs from which they can benefit, such as New Jersey’s SREC Program, so that the project is economically justified, he said.

Both solar power projects are expected to be completed this fall.

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Corps helps Fort Knox prepare for change

by John Neville

Fort Knox, Ky., is growing, and the Army Corps of Engineers is ensuring an orderly process. The Corps' Louisville District is managing three main projects on the post — the Human Resources Center of Excellence; facilities for the incoming 3rd Brigade Combat Team, 1st Infantry Division; and the new Fort Knox High School.

Two huge chevrons

Construction of the Human Resources Center of Excellence began in earnest in March 2008. The structure will house more than 4,000 employees within 880,000 square feet of office space. The center is scheduled for completion in June 2010.

The center's positioning at Knox was mandated by the 2005 Base Realignment and Closure report. It will consolidate the Human Resources Command — currently in facilities in Alexandria, Va., St. Louis and Indianapolis — with the Army Accessions Command.

The center comprises two chevron-shaped buildings, which appear like a corporal's rank from an aerial view. Customer requirements demanded that certain facilities be close to one another to ensure efficiency.



A contractor cuts metal at the site of the new Fort Knox High School.



Two Louisville District U.S. Army Corps of Engineers employees walk out of the New Fort Knox High School during construction. The school was completed in May. Photos by John Neville

“The different branches are designed in such a way that you have them close together,” said project engineer Sarah Sinclair. “The chevron allows maximum area to be as close as possible.”

The Corps' permanent presence at the site ensures that all the work completed by contractors meets the Corps' standards. From cutting and filling soil to making sure the final spool of wire is installed correctly, Corps representatives are there to ensure the nearly \$200 million center will be ready for its customers.

And, as always, the Corps is focused on safety. So far, 360,000 man-hours have been racked up without lost time due to injuries.

“We're very safety focused,” said the Corps' supervisory construction representative, Scott Hearne. “Our contractor has a very aggressive safety program with significant incentives for their employees, and their management is completely behind it. They budgeted for safety, and they're incorporating it into the job.”

“We have several quality-assurance representatives on site each day,” Hearne said. “One of their primary focuses is safety

enforcement. We have a lot of people watching each day, and they make sure deficiencies are corrected.”

Construction of the center is also helping the economies outside the gate. Construction laborers who reside in the local area numbered 175 in May, and that number jumped to between 200 and 250 in June. About 72 percent of materials used for the site have been, or will be, purchased from area vendors. Hotel and restaurant businesses have also been positively affected.

Incoming!

The Corps is also overseeing the construction of several new facilities being built for the incoming 1st Division's 3rd Brigade Combat Team.

Two barracks complexes will house 1,442 single Soldiers who will begin arriving this summer following a deployment to Afghanistan. The first, a \$51 million project that will house 600 Soldiers, was completed last summer. The second, a \$63 million complex that will house 842 Soldiers, will be finished within the next few months.

Each barracks unit houses two Soldiers, and each Soldier will have his or her



(continued from previous page)

separate room. The two will share a bathroom and kitchen area that will include an oven, range with microwave and a full-size refrigerator.

“You talk to some of the sergeants major who have been in here, and they usually say, ‘You’ve got to be kidding me.’ [The barracks] are pretty amazing to them,” said resident engineer Jason Root.

The structures will be heated and cooled with geothermal pumps. Other Knox buildings have been heating and cooling with geothermal pumps for several years, and the post’s energy costs have dropped sharply as a result.

While energy-efficient windows are nothing new, the glass is heavy duty.

“These barracks are force-protection compliant,” Root explained. “The windows are built into the structure so that if the building was hit, the windows won’t become deadly projectiles.”

And if there is a blast, Soldiers living on the first floor won’t need to worry about floors two, three and four crashing down onto floor one.

“The design is called progressive collapse, which means if the top three floors collapse, the first floor is strong enough to hold [up] the top three floors,” Root said.

Brigade combat team Soldiers won’t have far to go for a good meal. Both barracks complexes, as well as the brigade’s renovated headquarter building and new \$12.2 million annex, surround a recently completed \$13.5 million dining facility. The facility has the capacity to feed the entire brigade in two separate feedings, according to Root.

New school

The final major project the Corps is managing on Knox is the new \$16 million high school. The current school, constructed in 1958 and added to in 1961 and 1966, is scheduled for demolition in August.

Despite a tight schedule, the Corps finished the school prior to the final day of the 2009 school year — May 18. The Corps increased the number of contracting representatives and intensely managed the project to meet the deadline.

Phased process

The Corps uses a three-phase system to ensure quality. During the first phase — the preparatory phase — the Corps reviews all submittals for designs, details, specifications and test reports. A physical check of material on site against approvals and customer requirements is also completed. This phase also includes the all-important safety analysis

“You’ve got to identify the hazards, and you have to decide how you’re going to mitigate against those hazards,” said site resident engineer Roger Riddick. “When you sit down for the preparatory, you’re going over the entire phase of that work, and you’re discussing it in detail before you start. And, as you start, we have the second part of that three-phase system — the initial phase — where, as you’re watching things go up, you’re making sure what you discussed in preparatory is actually happening.”

The final stage — the follow up — occurs daily. During this phase, Corps inspectors review completed work to ensure compliance.

“It precludes problems and helps identify issues,” Riddick said.

Part of history

Corps employees feel a sense of pride in being part of the post’s historic transformation.



A contractor talks to his boss at the site of the Human Resources Center of Excellence.

“This is no small task to achieve in such a short construction duration,” said George J. Jageman Jr., chief, Construction Division, Louisville District. “The skills and abilities learned from this experience will serve our newer employees well for many years to come and allow all to speak with pride that they where very much part of this busy and exciting era on the post.”

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From the ground up: Wiesbaden townhouse project illustrates new era of housing for Army forces in Germany

by Rachel Goodspeed and Justin Ward

When some military members and civilians think of Family housing in Germany, apartment-type “stairwell” living in old buildings, some constructed in the 1950s, may be what comes to mind. But, all that is about to change.

Earlier this year, the U.S. Army Corps of Engineers’ Europe District began work on a new \$133 million military townhouse community near the Wiesbaden Army Airfield in Germany for the U.S. Army Garrison Wiesbaden. Preparations on the 99-acre tract began April 16 with the demolition of an ammunition storage area.

The project marks the first Army-funded townhouse community in Wiesbaden — a change in direction from stairwell living, said Sibylle Ballnath, Europe District project manager for the site. When fully funded, the two-phased construction project will be the Army’s largest ever in Wiesbaden.

“This housing project is monumental not only in its size, but also in its symbolism,” Ballnath said. “It may not look like a lot now, but that’s what makes it interesting. Not often can a construction project look like so little but say so much.”

Stairwell buildings usually house from 18 to 24 Families and provide apartment-style living. Townhomes, also called row homes, are multi-story units that share walls with adjacent neighbors.

Ballnath said the demolition is on track to finish in August. She expects to wrap up design by the fall. The district anticipates having a construction contractor on board before the end of the year, so construction can begin in the spring.

Plans call for up to 324 new townhouses, duplexes and single-Family homes to be built by early 2012. The community will include a mix of three- and four-bedroom quarters ranging from junior enlisted to general officer.

According to its web site, the garrison currently supports more than 12,500 Soldiers, civilians, Family members and retirees. Family housing areas vary in configuration from singles, duplexes and multiplexes to stairwells.

For the Europe District, this project is also unique due to the difficulty of site preparations. Typically, the district renovates housing areas, but for this project, contractors are starting from nothing and building up, said Tammie Stouter, the Corps’ regional program manager for Wiesbaden.

“This is a new site. We’re starting with farm land and building up into new housing,” Stouter said. “All of this is new construction, so we have to lay the foundation for everything — sewer, water, electric. We have to reroute power, move a sewer station and build a pond for storm-water runoff, among other things.”

As for the units themselves, the design is typical of American suburbia, Ballnath said. Each unit will have an attached garage, small front and back yards, built-in closets, built-in kitchens and hardwood floors.

Typical of new housing in Germany, the units will be fashioned from precast concrete walls and include a thermal insulation composite system and wooden pitched roofs with concrete tiling.

“We’re working on options now to standardize the whole subdivision so that the houses have the same features and overall appearance,” Stouter said. “We’ll have anywhere from two to four contractors building these houses throughout the phases, so what we don’t want is a house on one street



An artist's rendition shows a proposed interior of one of the Family housing units to be built just outside Wiesbaden Army Airfield, Germany. Graphic courtesy of U.S. Army Corps of Engineers, Europe District

looking completely different from a house on another street.”

Tight environmental considerations regulate that the units meet the Leadership in Energy and Environmental Design Silver rating, Stouter said. The materials used, the water and energy efficiencies, and the sustainability of the existing outdoor environment will meet that standard.

Recreation areas will include 10 playgrounds, seven picnic areas with grills and shelters, two sports fields, two community plazas for yard sales, shuttle bus service and a running path. Other plans for the community include a new access road for the South Gate, a relocated public bus stop, a rerouted agricultural road, a dust protection wall and a new perimeter fence.

Other actions include protection of an endangered species; surveying and clearing unexploded ordinance; examining and collecting small archeological relics; and the planning of water, sewer, electrical, heating and telecommunications infrastructure for the new community.

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Gainesville Reserve Center undergoes rejuvenation

by John Neville

What's the next best thing to getting a brand new reserve center? Getting an Army Reserve Full Facility Restoration.

That's exactly what the 81st Regional Support Command received in April following the \$5.1 million renovation on its Army Reserve Center in Gainesville, Fla. The project — managed by the U.S. Army Corps of Engineers' Louisville District — was such an improvement that the city of Gainesville presented Army officials a beautification award for *Excellence in Restoration and Adaptive Reuse*.

The city recognized the project based on these criteria:

- aesthetic and artistic appeal;
- originality, innovation and creativity;
- long-term strategy, maintenance and use of serviceable materials;
- general improvement of the area, property or neighborhood, and compatibility with area neighborhoods; and
- appropriate use of land and effective planning.

The two-story structure was originally constructed for the Navy in 1948, but Army Reserve units based in the area have used the building as a training and staging complex for the last 50 years. While the building never lost its functionality, it was in need of an interior and exterior facelift and replacement of critical facility support systems.

“The intent was to provide a functional facility with an appearance that complements the adjacent surrounding [area] and provides quality of life for the Soldiers during training,” said Gene Dohrman, the Louisville District project manager.

The rework of the facility included new heating, ventilating and air conditioning equipment, electrical and telecommunications systems, along with a new roof and exterior coating system. Private offices were added, a break room was upgraded, and classrooms were reconfigured for utilization flexibility.



The Gainesville, Fla., Army Reserve Center sports a fresh, clean look following a \$5.1 million renovation. Photos by Lt. Col. Brian Griffin, Office of the Assistant Chief of Staff for Installation Management

The finished structure is awaiting a U.S. Green Building Council's Silver certification for optimized energy performance and water efficiency. Low-flow faucets, a heat-island reduction roof and energy-efficient windows will cut energy costs and shrink the structure's carbon footprint. Even the materials used in the renovations were purchased from vendors located within a 500-mile radius of Gainesville, shrinking the project's total energy output even further.

“It is important that the Corps join the nationwide coalition of construction industry leaders promoting buildings that are environmentally responsible and healthy places to live and work,” Dohrman said.

While cutting utility costs and reducing total energy output is important, the customers — the men and women in uniform who will be fulfilling their obligation to country within the building's walls — needed to be satisfied with the facility's outcome.

“The people who have moved in are very happy,” said retired Sgt. 1st Class Bruce Swanson, a seasoned noncommissioned officer who was affiliated with the facility for seven years. “The Soldiers are really enjoying it. When you gotta work in Vietnam-era furniture, then you're not going to really want to come to work.

“The new place has really lifted up the spirits,” Swanson said “This makes them



Renovated office space and modern furnishings await Soldiers at the Gainesville Reserve Center.

want to come to work. It's a much more professional environment.”

The Army Reserve Full Facility Restoration program is a major building block of the Army Reserve initiative designed to enhance unit readiness and retention and improve the Soldier's quality of life. Completed projects extend the usable life of Reserve facilities by 25 years and increase the facilities' ability to support unit and individual training. Proposed projects are centrally funded from the Army Reserve Sustainment Restoration and Modernization fund allocation.

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Corps completes convenience-loaded housing at Fort Huachuca

by Daniel J. Calderón

The U.S. Army Corps of Engineers' Los Angeles District turned over the final phase of a completed housing project at Fort Huachuca, Ariz., in March.

"It's just tremendous," said Col. Melissa Sturgeon, garrison commander at Fort Huachuca, after she toured the new homes. "I'm convinced that housing on Fort Huachuca is the best in the Army."

At around 1,800 square feet, each home is designed to provide Soldiers and their Families with amenities comparable or exceeding those they would find in any suburban neighborhood. Sturgeon said the new housing represents the commitment by the Army to Soldiers and their Families to provide services commensurate with the Soldier's service to his or her country.

"It was built with military Families in mind," Sturgeon said. "There is a lot of storage — huge pantries and plenty of room to store stuff without cluttering up the living space. It feels like any other house you would go out and buy in the community."

"But the rent is the Soldier's BAH [Basic Allowance for Housing], so there's no out-of-pocket expense for Soldiers, and that's outstanding," said the garrison's Command Sgt. Major Douglas Sandstrom. "It's close to work, close to school for the kids, close to commissary, the PX [post exchange], the medical center, and everything else the military Family would need is close at hand."

The homes were designed to meet Leadership in Energy and Environmental Design standards. According to the U.S. Green Building Council, LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high performance green buildings.

There are standards a project must meet in order to receive a LEED rating of Certi-



Homes in Phase III of a Fort Huachuca housing project await Soldiers and Families. Photos by Daniel J. Calderón

fied, Silver, Gold or Platinum. Currently, the Army is working toward building to Silver standards on its projects.

"The insulation is improved and all of the appliances are Energy Star rated," said Mike Brown, project engineer at the Corps' Fort Huachuca office. "The roofs are all concrete tile with a 50-year warranty. The exterior is stucco, and there is almost no maintenance required there. The windows are double-paned, so they also contribute to the overall energy efficiency of the house."

In addition, there are solar tubes built into the roofing that allow natural light into the homes. These tubes can either augment or replace the electric lighting depending on the amount of light available.

"This project was important because the housing on Fort Huachuca was built in the '50s and the '60s," said Rob Lewis, the



The kitchens in the new homes offer amenities like those in many homes in the off-post community.

Corps' project manager. "It was out of date, and it didn't have the amenities that today's Soldiers' and their Families need."

The 90 homes for junior enlisted Soldiers completed in March closes out Phase III of a three-phase housing project with Sundt as the contractor. Phases I and II were turned over in December and February, respectively.

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Acronyms and Abbreviations	
LEED	Leadership in Energy and Environmental Design



Biggs constructs facilities for combat aviation brigade

by Virginia Reza

Within budget and on schedule is the construction site that will support the combat aviation brigade scheduled to arrive at Biggs Army Airfield, Texas, in the fall of 2011. The \$350 million project will house and support about 2,800 Soldiers and more than 100 aircraft including, UH-60 Black Hawks, H47 Chinooks and AH-64 Apaches.

“As an engineer, it’s very exciting to be involved in this kind of work,” said Dennis Ballog, program integrator for the Combat Aviation Brigade. “Engineers usually don’t see this level or quantity of work in one location throughout their careers, so it’s pretty impressive.”

The construction includes a three-story barracks building, a dining facility, a two-story headquarters building, and five hangars. The hangars will house an aviation support battalion, a general support aviation battalion, and attack and assault aircraft. Each hangar will have an attached company operations facility to provide administrative support and supply functions, as well as a back-shop support facility where various helicopter subsystems can be maintained.

“This type of facility, where they can perform all the required maintenance for the aircraft in its own hangar, is also very interesting, because it provides a capability the Army had never included in their restructuring,” said Ballog.

The 4th Infantry Division’s Combat Aviation Brigade, now stationed at Fort Hood, Texas, and composed of five battalions, will transfer to Fort Bliss, Texas, in support of the 1st Armored Division. Biggs



The aviation support brigade hangar is under construction on Biggs Army Airfield. Photos by Virginia Reza

Army Airfield is adjacent to Fort Bliss.

The brigade will support Fort Bliss ground units with aviation assets as needed in field exercises, training and deployment. They will also provide the garrison with general support missions.

“The brigade will be conducting the same required training that other aviation units are required to perform per the tasks outlined in the Army Aircrew Training Manual for aviation proficiency,” said Randall J. Stewart, Biggs Army Airfield safety officer. “But in addition to that, they will

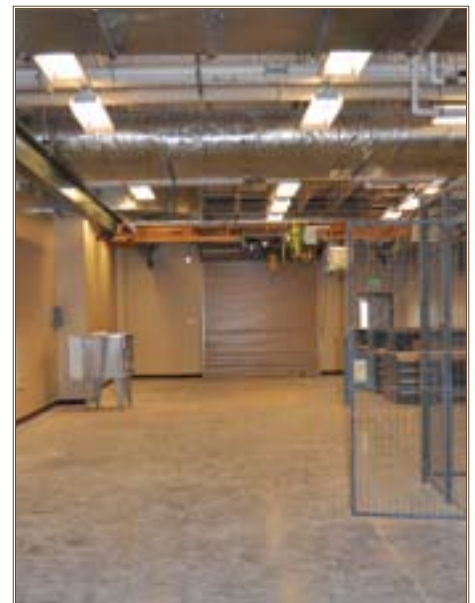
have the benefit of Fort Bliss’ unique environment to perform desert and mountain training.”

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Virginia Reza is a photojournalist, Fort Bliss Public Affairs Office.



This aviation support hangar will house CH-47 Chinook aircraft in the fall of 2011.



The back-shop support facility, where the helicopter subsystems will be maintained, is attached to the aviation support hangar.



Fort Hood works with nonprofit organizations to recycle furniture

by Christine Luciano

Since 2001, Fort Hood, Texas, has been coordinating with nonprofit organizations to recycle building materials. Jeff Salmon, an installation planner at the post, worked with the Fort Hood Area Habitat for Humanity on projects to reuse valuable building materials from houses that were scheduled for removal.

“We have been very successful in small deconstruction projects with the Habitat for Humanity,” Salmon said. “By recycling the building materials, we increase the life of the landfill, while the nonprofit organization makes good use of the materials for home construction projects.”

Recently, Fort Hood personnel took that success one step further by offering an opportunity for nonprofits to also reuse “unsalvageable” barracks furniture. The Directorate of Public Works’ First Sergeant’s Barracks Initiative, Real Property Division and Recycle Center, and the Defense Reutilization and Marketing Service partnered to recycle the barracks furniture. As a result, more than 82,000 pounds of furniture valued at \$345,546 was diverted from the landfill.

“At Fort Hood, we strongly believe in doing the right thing for our community,” said Michael Nix, Housing chief. “Barracks furniture that ends up in the landfill does no good for anyone. We have worked hard to coordinate with other organizations on Fort Hood to get barracks furniture into the hands of people who can use it.”

The DRMS collects materials and equipment that are no longer needed or wanted. When items are turned in, usable property is sent to Texarkana, Texas, for reuse by other Department of Defense facilities. Items that cannot be recycled or reused are designated “unsalvageable” and disposed of at a landfill.

To prevent items such as barracks furniture from entering the solid waste stream at the landfill, the FSBI employees made nonprofit organizations aware of the DRMS’s Greening Program. Interested organizations may submit applications

to DRMS to verify their legal nonprofit status. The nonprofit organizations are then notified if they are approved to collect unsalvageable furniture.

“Our mission is to find a way to reuse the property,” said Debra LeBlue, DRMS site leader. “The Greening Program is an opportunity for Fort Hood to give back to the community and help fulfill the needs of nonprofit organizations.”

Maggie Simpson, an Installation Management Command fellow on a rotational assignment at Fort Hood and working under the FSBI, coordinated with the Fort Hood Area Habitat for Humanity and the Catholic Charities Diocese of Fort Worth. Their applications were submitted to DRMS. Both nonprofit organizations were approved and took advantage of the opportunity to collect three floors of unsalvageable barracks furniture from two buildings.

Before the nonprofits arrived, usable furniture was removed and turned into DRMS, and 1,200 box springs were recycled at the Fort Hood Recycle Center. Then, with a government official present, the barracks facilities were opened for the nonprofit organizations to collect refrigerators, microwaves, beds, dressers, chairs and cabinets. The two organizations coordinated their labor and transportation to collect more than 82,000 pounds of furnishings.

“This is a great partnership between Fort Hood, the Fort Hood Area Habitat for Humanity and the Catholic Charities Diocese of Fort Worth Diocese to work



Catholic Charities Diocese of Fort Worth volunteers load beds into a truck. The beds and other barracks furniture will be used by the nonprofit to support its programs. Photo by Maggie Simpson

together to extend the life of the furniture while helping others and not waste landfill space,” Simpson said.

The Catholic Charities Diocese of Fort Worth worked with the city of Fort Worth to identify 200 high-risk homeless families.

“In collaboration with the city, we will use the barracks furniture to set up housing for these families and meet their furnishing needs,” said Steve De Leon, the nonprofit’s coordinator of Volunteer and In-Kind Services. The furniture will also be used to support the Refugee Resettlement and Community Approach to Resource Empowerment programs.

De Leon came to Fort Hood on four trips with 20 volunteers who spent more than 240 hours collecting 25,773 pounds of barracks furniture.

“This was an unbelievable opportunity to get so much furniture that will impact so many lives,” said De Leon. “The Fort Hood community has been phenomenal with their support.”

The Fort Hood Area Habitat for Humanity collected 56,514 pounds of barracks furniture.

“This is a great program that serves the community in so many different ways,” said Gene Bauer, its executive director. Bauer explained that the barracks furniture will

Acronyms and Abbreviations

DRMS	Defense Reutilization and Marketing Service
FSBI	First Sergeant’s Barracks Initiative



Fort Riley's recovered materials help military, community

by Sam Robinson

Reclaiming building supplies from homes slated for demolition on Fort Riley, Kan., yields a quadruple win, according to Gary Stowe, the Manhattan, Kan., ReStore director.

"It's good for the environment to divert materials from the landfill," Stowe said. "It is good for Picerne Military Housing to find a partner in the demolition process. It is good for Habitat for Humanity to have such a large donation. It is good for consumers who want low-cost building supplies."

Stowe and his seven-member crew worked with Picerne Military Housing in Fort Riley's McClellan Place Neighborhood the last week of February. They removed multiple items from 28 homes slated for demolition to make room for a neighborhood center.

"We are reclaiming appliances, cabinets, doors, windows and carpet from the McClellan homes," Stowe said. "We hope to have time to reclaim mirrors, vanities, toilets, shower surrounds and breakers as well.

"I estimate that we have already diverted 10 tons of waste from the landfill just by reclaiming the windows from this project," he said. "I think we will divert 15 tons minimally with this project."

The Army's goal is to divert 50 percent of construction and demolition debris from landfill disposal by 2010 through reuse and recycling, according to Jill Dalton, Fort Riley's Recycle/ Solid Waste program coordinator.

"This is good for the environment," said Dalton. "Many of the materials that go to landfills are valuable resources. Landfill diversion can easily be defined as resource recovery."

In addition, various other construction materials can be reused, such as the concrete, drywall, pallets, shingles, copper, steel and aluminum, according to Dalton.

"We are excited about the possibilities that can come from this partnership with ReStore," said Scott Kotwas, director of construction for Picerne Military Housing at Fort Riley. "I think we are just scratching the surface of what can be accomplished with this effort."

The recovered materials will be sold at a reduced cost at the Manhattan ReStore. ReStore is the nationwide outlet for selling used building materials as a fund-raising mechanism for Habitat for Humanity.

"We have a great selection of building materials and wood furniture at our Manhattan location," said Stowe. "Most people can find what they need and at an affordable rate." The money raised goes directly to Habitat for Humanity projects in local counties.

"We are pleased to have ReStore on board with us," said Kotwas. "Gary and his team have been great to work with, and it is good to know that others will be able to get use from the materials out of the homes. Plus, best of all, it will help the overall Habitat for Humanity project locally."



ReStore worker James Stowe prepares carpet for removal from a Fort Riley home that is scheduled for demolition. Photo by Stephanie Hoff

This is the first of three possible projects with Picerne, Stowe said. Picerne has 100 homes slated for demolition later this year and 1,700 during the course of its development period. Stowe hopes to work out a long-term partnership with the program.

"It's just such a great opportunity to be here and to be able to get this size of donation in one location," said Stowe. "I am really happy Picerne made contact with us."

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Sam Robinson is the Picerne Military Housing communications manager, Fort Riley, Kansas.



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be examined to identify how it can be used.

"If Habitat for Humanity cannot reuse the furniture, then we act as a conduit to our sister nonprofit organizations to see if they can reuse it," said Bauer. "If it cannot be used by our partners, then we sell it and use the funds to help support our mission in building and selling homes to low income families," said Bauer.

"The last resort is to recycle the furniture. It does not end up in the landfill and

is reutilized in some form," Bauer said.

The barracks furniture has been used to assist homeless and women's shelters as far away as San Antonio and Houston.

In late fall, other Fort Hood buildings will be renovated, and there will be more unsalvageable barracks furniture. The FSBI employees are identifying ways to improve the process of getting unsalvageable furniture to nonprofit organizations.

"We are looking at opportunities such as a storage unit to help extend the life of

the unsalvageable furnishings," said Hermelinda Sandifer, Barracks Management chief. "The Barracks Furniture Reuse program will continue to save time and money from having to pull out unsalvageable furniture and take it to the landfill."

POC is Maggie Simpson, 254-285-2233, margit.simpson@us.army.mil.

Christine Luciano is the environmental outreach coordinator, Directorate of Public Works, Fort Hood, Texas.





BUILDING STRONG by building SMART

by Lt. Gen Robert L. Van Antwerp

We face a time of unprecedented challenges and opportunities in our service to the nation and the Army. The requirements on our team of Career Program 18 professionals to deliver Base Realignment and Closure, global restationing and stimulus commitments on top of our “day jobs” are creating demands of historic proportions on our work force.

At the same time, we are experiencing an increasing proportion of our work force becoming retirement-eligible, increasing work-force mobility and a severe shortage of college graduates in the fields of science, technology, engineering and mathematics. In this environment, we need to be aggressive and innovative with our strategies to recruit, develop and retain our work force.

SMART scholarship

One of these strategies to invest in our most important resource — our people — is the Science, Mathematics and Research for Transformation Scholarship for Service program established by the Department of Defense to support undergraduate and graduate students pursuing degrees in 19 science, technology, engineering and mathematics disciplines. This program is jointly administered by the Naval Post-graduate School and the American Society for Engineering Education.

The Army laboratories have been regular participants in the program since 2006. This is the first year the SMART program has significantly expanded its participation beyond the Army laboratories by sponsoring 25 students in U.S. Army Corps of Engineers districts for 2009.

These highly ranked scholars are from the top engineering schools, including Massachusetts Institute of Technology, Carnegie, Stanford, Cornell, University of Illinois at Urbana-Champaign, University of Pennsylvania, Texas A&M, University of California at Berkeley, University of Michigan, Purdue, Georgia Tech, Virginia Tech, Penn State and Notre Dame.

SMART is one of the most comprehen-



Lt. Gen. Robert L. Van Antwerp
Photo by F.T. Eyre

sive scholarships being offered to university students. Benefits include full tuition and education-related fees (not including meal plans, housing or parking), a cash stipend ranging from \$25,000-\$41,000 based on educational experience (may be prorated), paid summer internships, health insurance up to \$1,200 per calendar year, mentoring and employment placement after graduation.

To be considered for the SMART program, students must meet very select criteria. Selectees must be —

- U.S. citizens;
- able to participate in summer employment for 2010;
- willing to work full time for a DoD activity for a minimum of two years after graduation;
- making steady progress toward an undergraduate or graduate degree in an engineering program; and
- maintaining at least a 3.0 out of 4.0 grade point average.

SMART process

Initially, there were more than 2,000

qualified candidates for the 2009 class. Each student’s application was rated by three engineering professionals. The top 800 student applications were then made available via the SMART web site to the hosting DoD activities.

Prior to the engineer panel review in San Francisco in early February, each activity reviewed its anticipated future staffing requirements. Once USACE had a clear strategic approach mapped, we proceeded to work with the SMART panel to identify possible selections. Cindy Livermore, who serves as human resources forward for South Pacific Division, facilitated the selection process by conducting comprehensive interviews of the SMART candidates with representatives from the potential sponsoring regional commands.

The result is that there are now 28 highly qualified selectees from civil, electrical and mechanical engineering fields enrolled in the SMART program entering into our profession in service to the Army and the nation. These highly qualified and diversified SMART selectees will participate in a summer orientation where they will learn more about the programs and support offered to them.

SMART involvement

One of the keys to success of the SMART program is to provide strong mentors. Upon placement the gaining commands, a local journeyman will be identified for each SMART student. This mentor will serve as a resource for the summer employment and during the two year employment commitment. The SMART students will meet their mentors at the summer orientation program. ➤

Acronyms and Abbreviations	
CP-18	Career Program 18, Engineers and Scientists – Resources and Construction
DoD	Department of Defense
SMART	Science, Mathematics and Research for Transformation
USACE	U.S. Army Corps of Engineers



3 receive Career Program 18 Awards

by Robert Slockbower

Career Program 18, Engineers and Scientists – Resources and Construction, announced the winners of its *Career Program 18 Awards*. The awards were presented July 14 during the CP-18 Annual Training Workshop in Grapevine, Texas.

The awards recognize the dedication, contributions and outstanding achievements of CP-18 careerists Armywide. For each of three categories, Installation Management Command regions and U.S. Army Corps of Engineers divisions solicited web-based nominations and paneled the applicants.

Each submitted its finalist to the CP-18 Proponency Team. Another panel reviewed and ranked the finalists against their contributions to the CP-18 mission and goals as well as their advocacy of CP-18 programs and their demonstrated mentoring.

Three individuals were selected to receive these prestigious awards for 2009. Their time, dedication and contributions help ensure that the Army can recruit the best talent, develop a world-class work force and facilitate a lifetime learning environment to retain a highly talented team of professionals.

The winners are:

Michelle Rhodes, Buffalo District, USACE – CP-18 Journeyman of the Year

William Hall, Sacramento District, USACE – CP-18 Senior Journeyman of the Year

Gustavo De Jesus, IMCOM-West – CP-18 Activity Career Program Manager of the Year



Michelle Rhodes
Courtesy photo



William Hall
Photo by Mike Nevins



Gustavo De Jesus accepts his award from Bob Slockbower, CP-18 functional chief representative. Photo by Donna Crawford

Robert Slockbower is the director of Regional Business, Southwestern Division, USACE, and the functional chief representative for CP-18.

Acronyms and Abbreviations

CP-18	Career Program 18, Engineers and Scientists – Resources and Construction
IMCOM	Installation Management Command
USACE	U.S. Army Corps of Engineers

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There are many ways to become involved, such as a being a hosting organization, a mentor or even helping someone you know become a qualified SMART candidate. Current employees may apply for the SMART program provided they meet eligibility. This is known as a retention applicant. Retention awardees are required to continue working for DoD and may continue working for their sponsoring agencies.

Work is already underway for next fiscal year with the deadlines listed below. For expanded SMART information, see www.asee.org/fellowships/smart.

- Aug. 15 - Dec. 15 – Window open for 2010 SMART applications.

- Feb. 15 – Rating panel evaluates all applications, and top applications are posted to a protected web site. Activities are given access. Each activity holds selection and telephonic interviews of students.
- March 1 – Activities provide names of selectees, location of placements and mentors to SMART program.
- March 1 – Arrangements made for summer employment for 2009 SMART students.
- March 15 – SMART notifies activities of selections and those students who were chosen by other activities. Students are connected to their mentors.
- April 1 – If funds are still available, activities may make second choices to fill any mismatches.

- May 15 – Information on orientation and training is sent to mentors.
- Mid-July – Summer orientation is held for mentors and students.

In our journey from Good to Great, we want to become the employer of choice for recent college graduates in the science, technology, engineering and mathematics fields. Leveraging the SMART program gives us a distinct advantage in this journey. I encourage each of you to work to identify new opportunities for our work force and share them with the CP-18 community of practice.

BUILDING STRONG

Lt. Gen. Robert L. Van Antwerp is chief of engineers, commanding general of the U.S. Army Corps of Engineers and the functional chief of CP-18.



It's not too late to enroll in building automation systems workshop

by David Schwenk

There is still time to sign up for the Corps of Engineers and Installation Management Command workshop on employing building automation systems on Army



installations Aug. 25-27 at the Hilton St. Louis at the Ballpark Hotel. This free, three-day workshop provides a rare opportunity for Army personnel and industry representatives to learn about and discuss how to implement open systems in the Army environment using the CorpsLON specifications developed by the Corps

Workshop highlights

Day 1 – Joint industry and government session: crash course with details and requirements of CorpsLON

Day 2 – Joint industry and government sessions: more on the details and requirements of CorpsLON with a discussion of system testing and certification

Day 3 – Government-only session: implementing CorpsLON at an Army post, including topics on procuring, expanding and using a postwide building automation system

Registration

To register for the workshop, e-mail BAS.CERL@us.army.mil; include your name, phone number, organization name, city and state in your request. The deadline was July 31, but workshop registration and hotel reservations will be accepted after that date on a space-available basis. Hotel reservations can be made by calling 1-800-HILTONS. Attendees should be prepared to pay their own travel and lodging costs.

POC is David Schwenk, 217-373-7241, david.m.schwenk@usace.army.mil.

David Schwenk is a mechanical engineer, Construction Engineering Research Laboratory, Engineer Research and Development Center.

Directorate of Public Works training available

by Tracy Porter Wilson

Spaces are available in the final Directorate of Public Works course session for fiscal year 2009. The course is designed for staff members who would benefit from training as new DPW employees or as a refresher for senior DPW budget analyst, business management or real property maintenance activity staff.

Course 981 DPW Budget/Job Cost Accounting

Aug. 24-27, Huntsville, Ala.



This course provides a concentrated look at the Integrated Facilities System Job Cost Accounting module's role as a tool to manage the financial aspects of work accomplished by the DPW. The scope of the presentations includes both RPMA resources interfaced to the installations financial management system and project work maintained internal to IFS.

Through lectures, individual study and exercises, this class teaches students how to enter cost data into IFS, how obligations and expenses are related to engineer work documents in the system, and how costs, hours and engineering operation resource information are passed to other accounting systems.

To register or view the course description, go to <http://pdsc.usace.army.mil> or contact Janine Wright at 256-895-7431, janine.p.wright@usace.army.mil; or Betty Batts at 256-895-7407, betty.j.batts@usace.army.mil.

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Tracy Porter Wilson is the DPW program manager, Headquarters, U.S. Army Corps of Engineers.

Acronyms and Abbreviations

DPW	Directorate of Public Works
IFS	Integrated Facilities System
RPMA	real property maintenance activity

Look us up on the WEB

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go to:

<http://www.imcom.army.mil/hq/>

Click on '**News**' tab and then on '**Public Works Digest**'



Housing and lodging training offered

by Dana Fikes

The following Military Housing and Lodging Institute courses are being offered and are open for registration.

RCI (Residential Communities Initiative) 100

Executive Overview of RCI

Sept. 9-11, San Antonio, Texas

Sept. 22-24, Leesburg, Va.

This course will cover the in-depth critical elements of the RCI Program, focusing on the procurement, real estate and environmental requirements. It outlines the processes involved prior to and throughout the creation of the community development and management plan. Course includes comprehensive RCI reference notebook.

Register at <https://pnmamb.sslcert19.com/reg/EventSelectClass.asp>.

CDPM (Certified Defense Privatization Manager) Level 3 Capstone of CDPM Certification

Aug. 17-21, Fort Lewis, Wash.

Sept. 14-18, El Paso, Texas

With the maturing of both the privatization process and the training jointly provided by Professional Housing Management Association, the Institute of Real Estate Management and National Apartment Association, an overall, long-term capstone program was mandated. This course will concentrate on

maintaining the relationships and sustaining the privatization project through the term of the ground lease.

This training is designed to enable the asset manager to develop the successive future generations and lay the groundwork for continued success. Through this course, the student will learn how to:

- sustain the vision through strategic planning;
- sustain the people through mediation, negotiation, teamwork, integrity and ethics;
- sustain the agreement through a better understanding of both public and private sector real estate;
- understand, through a multi-day case study, the financial considerations in determining project trends and long-term financial viability; and
- sustain the asset through applying problem-solving techniques and understanding project management as a disciplines.

Material will be presented through classroom lectures, student discussions, group exercises and case studies. Successful completion of the CDPM Levels 1 and 2 are prerequisites.

Register at <https://pnmamb.sslcert19.com/reg/EventSelectClass.asp>.

Other fourth quarter MLHI classes are also open for registration. The entire schedule is available at <http://www.mhli.org/current-register.html>.

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Dana Fikes is training coordinator, Military Housing and Lodging Institute.



Army Energy Manager Training Workshop and GovEnergy 2009

by James Paton



The Office of the Assistant Chief of Staff for Installation Management will hold the annual Army Energy Manager Training Workshop Aug. 13-14 at the Providence, R.I., Convention Center in conjunction with GovEnergy 2009, Aug. 10-12.

GovEnergy is the government's premier energy training workshop and trade show jointly sponsored by the Department of Energy, Department of Defense, General Services Administration, Environmental Protection Agency, Department of Homeland Security and the Department of Veterans Affairs.

The agenda for the Army Energy Manager Training Workshop includes current topics on Army Energy Program initiatives, funding, program requirements, case studies and a discussion of the new *Army Energy Security Implementation Strategy*. Among the initiatives being pursued in the strategy is validating requirements for full-time installation energy management personnel and securing funding for those dedicated positions.

All Army energy managers attending GovEnergy are expected to also attend the Army Energy Manager Training Workshop.

Anyone planning to attend the Army workshop must preregister at the Army web site, <http://army-energy.hqda.pentagon.mil/training/training2009.asp>. Additional information on GovEnergy can be found at <http://www.govenergy.com/>.

POC is James Paton, 703-602-5073, james.b.paton@conus.army.mil.

James Paton is a staff action officer, Army Energy and Utility Office, Facilities Policy Division, Office of the Assistant Chief of Staff for Installation Management.



Ford-Gillett: IMCOM's SRM program manager

by Mary Beth Thompson

Not many people believe work should be fun, but that is Asoldé Ford-Gillett's attitude. Ford-Gillett is the Sustainment, Restoration and Modernization program manager, Public Works Division at Headquarters, Installation Management Command.

"People associate *fun* with children's play, but that's not what fun is about. Fun is about finding enjoyment in what you do; it's just your view on life," Ford-Gillett said.

Often when Ford-Gillett has completed a task and turns it over to the person who asked for it, she asks, "Are you happy?" The question is more than a polite inquiry.

For Ford-Gillett, the query has two meanings. She is asking whether the product meets the requirements, and she is also asking about the satisfaction that should accompany a job completed. She is looking for the good — the happiness — in the workday world.

Ford-Gillett's fun focus derives from the FISH! Philosophy. The FISH! Philosophy is a set of processes and tools that generate the skills to design a workplace full of inspiration, creativity and innovation, she said. It uses four simple practices: be there, play, make their day, and choose your attitude.

At Headquarters, IMCOM, Ford-Gillett is responsible for "everything SRM." She is also in charge of the programs for laboratory revitalization, relocatable buildings, storm and fire damage, and permanent and trainee barracks upgrades. In addition, she assists Don LaRocque, IMCOM's chief of Public Works, with American Recovery and Reinvestment Act projects.

These different programs have differing



Asoldé Ford-Gillett
Photo by Mary Beth Thompson

requirements. All the projects that fall into these programs cross her desk. Ford-Gillett communicates with and advises the installation Directorates of Public Works about the needed paperwork and authorizations for their individual projects. She packages and reviews the DD Form 1391s and moves them forward to the appropriate level for approvals.

Ford-Gillett earned a bachelor's degree in architectural engineering with a minor in structural engineering from Tennessee State University, and a certificate in congressional and legislative affairs from Georgetown University.

She started her career with the U.S. Army Corps of Engineers' Omaha District Civil Works Directorate as a civil and structural engineer. Ford-Gillett later worked as a project manager for SRM and minor Military Construction projects at the Engineering Activity Capital Area, with USACE's Europe District MILCON program in Germany and with USACE's Transatlantic Division. During her time with the latter, she deployed as a civilian to Kuwait. She then moved to Headquarters, USACE, Civil Works as a senior program manager.

After leaving the federal government, she lived in Belize. When she returned to the United States with her two small children, she ran a child-care business for several years.

She rejoined the federal work force at Andrews Air Force Base, Md., as a project manager in the Civil Engineer Squadron.

She shifted to the Air National Guard at Andrews, where she was involved in program management-type work with SRM.

Her next move was to the Office of the Assistant Chief of Staff for Installation Management, Army Reserve Installations Division. She served as program manager with responsibilities for the SRM, energy, and facilities reduction programs. She left that job about six months ago to come to Headquarters, IMCOM.

Ford-Gillett's experience with SRM at several Army and Air Force levels means she understands what the DPWs go through with their projects. She appreciates what they are up against and is responsive to them.

"On my list of all of these projects, you will find very few that stay on my desk for more than two days," she said.

She responds to phone and e-mail messages the same day or, if she's out of the office, the next day that she is at work, even if the reply is only an acknowledgment that she received the message and will reply in the near future. She wants the people who contact her to understand that she has their concerns in mind and will respond.

"What I tell everybody is that I'm here to work for you," she said. "I don't want to slow you down; I'm trying to help you."

Communication is the key, and Ford-Gillett offered one recommendation to make that element go as smoothly as possible. State upfront specifically what is needed, she advised.

"If you want a project approval, put that in the title," she said. "Then I'll know that's some action I need to take right away." Burying mention of what is needed in an e-mail message runs the risk of having the need overlooked amidst the hundreds of e-mail messages she receives and the many short-suspense requirements at Headquarters, IMCOM.

All those projects keep Ford-Gillett busy, and she likes that the work changes daily. She's always tired but never bored, she ➤

Acronyms and Abbreviations	
DPW	Directorate of Public Works
IMCOM	Installation Management Command
MILCON	Military Construction
SRM	Sustainment, Restoration and Modernization
USACE	U.S. Army Corps of Engineers



Stygar: IMCOM's senior program manager for Military Construction

by Mary Beth Thompson

While growing up, Michael D. Stygar helped his father, an immigrant carpenter, build and repair homes. From his father, he learned a strong work ethic. Now, he and his wife grow vegetables in their garden, heat their home with firewood and do their own car and plumbing repairs.

"We do whatever we can around the house, whatever we have to," Stygar said, "and we brought our children up that way — to be self-reliant."

Though it may sound like Stygar has spent his life in rural America, that impression is far from accurate. He has worked and lived in large urban areas, as well as a couple unusual places across the globe, and he is a magna cum laude graduate of prestigious schools.

Stygar earned a bachelor's degree in civil engineering from Tufts University near Boston and a master's in construction management from George Washington University in Washington, D.C. His multifaceted working career has been with both the public and private sectors.

After a two-year work internship, he started his career with the Direct Federal East Region of the Department of Transportation for 10 years, advancing from inspector to senior construction manager of federal projects from Maine to Puerto Rico. He then spent about two years with the Reinforced Earth Company before moving to Parsons International, an engineering and consultation firm. Parsons sent him to the United Arab Emirates, where he served as the senior resident engineer on



Michael D. Stygar
Courtesy photo

multi-million-dollar upgrades to the downtown Abu Dhabi infrastructure.

After returning to United States, Stygar worked as a development consultant and then joined the Federal Aviation Administration as airport engineer at National Airport in Washington, D.C. Another interesting overseas assignment lured him to the Navy's Facilities Command, Pacific Division. He was the director of Program Management for the program that constructed the rapid deployment facility on the island of Diego Garcia in the Indian Ocean. For that project, Stygar was named *1987 Federal Engineer of the Year*.

Stygar then became the chief engineer at Marine Corps Air Station, Cherry Point, N.C., which he described as much like a director of Public Works on an Army installation. A desire to return to New England led him to a job with the Massachusetts Port Authority at Logan International Airport in Boston. He spent 12 years there as a senior project manager and airport engineer.

His next move was to the Baltimore-Washington area. He worked as a consultant overseeing projects at Baltimore Washington International, National and Dulles International airports. Stygar then went back to work for the federal government at the National Archives in College Park, Md., where he served as a program manager for Presidential Libraries and Archives.

Stygar transferred to the Office of the Assistant Chief of Staff for Installation Management. There, he served as the MILCON senior program manager for three years. Just before taking his current job, Stygar worked at Installation Management Command, West Region as the master planning team leader and acting chief of Master Planning.

In March, Stygar became the senior program manager for MILCON in the Public Works Division at Headquarters, IMCOM. He is part of the San Antonio forward contingent located at Fort Sam Houston, Texas, in anticipation of IMCOM's move there over the next 14 months.

With his extensive and varied work history, Stygar brings to the job in-depth technical experience as well as a wealth of know-how in coordinating both up and down the chain of command. Listening and communication are the keys, he said.

"Senior leadership are great people; they oversee the global aspect and provide continuity," Stygar said. "But the end users understand how their systems work and have to live with the end product."

It's important to listen to the users when they offer suggestions or ask questions about doing things another way, he said. At Logan, for example, he listened to the people who had to work the infrastructure ➤


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said. She rolls with the flow, takes pleasure in the work and concentrates on getting it done right the first time.

"My grandfather always told me your word is who you are — say what you mean, and mean what you say," Ford-Gillett said. "I always believe that what you say should go with your actions, because

a picture paints a thousand words. If I tell you I'm going to do something, then that's what I'm going to do."

If actions do speak louder than words, as the saying goes, then making work fun for herself and others speaks volumes.

Mary Beth Thompson is the managing editor, *Public Works Digest*. 

Acronyms and Abbreviations

DPW	Directorate of Public Works
IMCOM	Installation Management Command
MILCON	Military Construction
OACSIM	Office of the Assistant Chief of Staff for Installation Management



Bartley: deputy program coordinator for MILCON in Combat Readiness Support Team

by Mary Beth Thompson

What does Barry Bartley, one of the members of the U.S. Army Corps of Engineers' Combat Readiness Support Team, have to do with the Army's four core enterprises? The answer may be one of the secrets to his success in his new position.

The Army's four core enterprises are readiness, human capital, materiel, and services and infrastructure. Bartley has been involved in all four core enterprises during his active duty and civilian career, and now he is in a position to use that experience to better help installations and Soldiers.

"When I go to meetings, it might take me an hour to get over some acronyms, but I know what people are talking about," Bartley said. "And I'm not guessing; I know what's going on."

That skill is very useful in a job that requires working with and for multiple commands.

Since January, Bartley has been a member of the CRST, a USACE command asset. He is a staff augmentee to the Office of the Assistant Chief of Staff for Installa-



Barry Bartley
Courtesy photo

tion Management and the Army staff.

The CRST's mission is to help the transforming Army determine what facilities are needed and develop design standards for facilities that meet the needs of new, evolving and future weapons, vehicles and equipment.

"We're helping the Army look forward to what facility requirements are going to be required to take care of new weapons systems, or new trucks, or tanks or whatever it may be," Bartley said.

"One example is the new motor pool," he said. "The way we maintain vehicles now has caused us to change the motor pool design such that there's a center aisle down the middle." The new design allows vehicles to move down the aisle for servicing and maintenance rather than moving them in and out of bays, as the old system required. The G4 and the Combined Arms

Support Command refer to it as "pit-stop" maintenance.

Recently, Bartley has been doing airfield evaluations for the stationing of Combat Aviation Brigades and their newest aircraft, the MQ-1C Extended Range, Multi-Purpose Unmanned Aircraft System better known by its commercial name, the Sky Warrior. He is working with installations, the contractor and communities on planning efforts involved in helping the Army to station these systems based on a tasking from the Army G3 (Capabilities Integration and Requirements). The effort directly supports Army G3 Aviation and the Military Construction Integrated Programming Team, which is co-chaired by Army G3 and the deputy director of operations for construction, OACSIM.

"I consider myself a troubleshooter," Bartley said.

Although Bartley works out of USACE's Installation Support Community of Practice, he actually serves as the CRST's deputy program coordinator for MILCON and as a subject matter expert on facility standardization, MILCON execution and compliance for OACSIM and the Army G3. When he attends conferences or visits installations and USACE districts, he is usually representing OACSIM or the Army staff rather than USACE.

Bartley graduated from the Virginia Military Institute with a bachelor's

Acronyms and Abbreviations	
AMC	Army Materiel Command
CRST	Combat Readiness Support Team
MILCON	Military Construction
OACSIM	Office of the Assistant Chief of Staff for Installation Management
USACE	U.S. Army Corps of Engineers

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day-to-day and pushed their ideas onward to the designers.

Now with the Headquarters, IMCOM, forward group, he sees his job as supporting the installation Directorates of Public Works in a similar way. He views himself as an intermediary between the installation, the region and OACSIM.

"I will stand behind you and work hard

for you," Stygar said of the DPWs. "The main goal I've had since I came to work for the Army — I do whatever I can for installations, because, bottomline, they're here for one thing — to serve the Soldier and his Family."

Although his job is important, not everything in Stygar's life is about work. He raised five children and was a self-described "soccer dad." He still officiates at soccer games, and he loves to play golf,

cycle, hike and read. Yet, work is important, too.

My parents always stressed, "Do a good day's work for a good day's pay, and thank God each day for the many things in life," Stygar said. It's clear his parents taught him well.

Mary Beth Thompson is the managing editor, *Public Works Digest*.



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degree in civil engineering and was commissioned as an engineer officer. He served with the 1st Engineer Battalion at Fort Riley, Kan., with the 518th Engineer Company, 193rd Infantry Brigade in Panama and at the U.S. Army Engineer School at Fort Belvoir, Va., before leaving the Army. While at Fort Belvoir, he attended George Washington University at night and earned a master's degree in engineering administration.

As a civilian, Bartley worked for the Naval Facilities Engineering Command in Alexandria, Va., in MILCON project management. After 10 years, he transferred to the Army Materiel Command as a project lead for a proposed new headquarters building at Fort Belvoir. Later, still at AMC, he did space management for a few years and then again managed MILCON projects in the Office of the Deputy Chief of Staff for Engineering, Housing and Environment. When the Installation Management Agency was created in 2002, Bartley joined the Public Works staff as the headquarters' MILCON program manager.

"While working at IMCOM for six years, from my position in construction, I reached out and touched almost every aspect of business that IMCOM does," Bartley said.

He held that position until January when he moved to the CRST at Headquarters, USACE.

"It seems like every job I've had to date — working with the Army and even my Navy time — well, everything I've done until January — was preparing me for this," Bartley said.

That background gives him a wealth of knowledge to draw upon to help the Army make the "right" decisions concerning facilities. He sees one aspect of his job as helping the Soldier and installations get the best facilities they can with the dollars the Army has, which can be quite challenging.

The hardest part is getting people to

change attitudes and adapt to something new, he said. He cited MILCON Transformation.


"MILCON Transformation says we build a 25-year building, and then we renovate it at the 20- to 25-year point to last another 25 years," Bartley said. People think they're going to get the equivalent of a trailer home when what they want is the equivalent of a single-Family, brick-clad, four-bedroom colonial, he explained.

"But we're still building the four-bedroom colonial. We're just not building it as

expensively as we used to, using the most expensive kinds of materials."

Bartley praised the people with whom he works, calling them a great team. And he finds day-to-day satisfaction in having a positive effect on the Army's mission.

"The Army's still transforming, and CRST is right in the middle of it," Bartley said. "If you want to be somewhere, be in the middle of it."

Mary Beth Thompson is the managing editor, *Public Works Digest*. 

New faces at Headquarters, USACE




James Balocki
Photo by John Hoffman



Jack Kons
Photo by Mary Beth Thompson

James Balocki retired in July from active duty and joined the Headquarters, U.S. Army Corps of Engineers. Balocki is the chief of the Environmental Community of Practice and the chief of the Southwestern Division Regional Integration Team. He had been the chief of the Base Realignment and Closure Division in the Operations Directorate, Office of the Assistant Chief of Staff for Installations Management, for two years before his retirement.

Jack Kons heads the team that is managing the American Reinvestment and Recovery Act program at Headquarters, USACE. Kons works in the Installation Support Community of Practice. He came from the Corps' New York District Office at Fort Belvoir, Va., in January.

Look for feature articles about both of these new faces at Headquarters, USACE in future issues of the *Public Works Digest*. 



Howell: program manager in Combat Readiness Support Team

by Mary Beth Thompson

As a retired Soldier, Ravin L. Howell knows about the rewards, demands and frustrations of the job. As a program manager for the Combat Readiness Support Team, Howell is all about taking care of Soldiers as they do their jobs.

“It’s always about taking care of people,” Howell said. “If you take care of people, then you don’t have to worry about mission.”

Howell, a logistician, spent 25 years in the Army, retiring as a lieutenant colonel. Since January, he has been a member of the CRST, a U.S. Army Corps of Engineers’ command asset.

The CRST’s mission is unique. Its goal is to help the Army identify, define and validate facility and infrastructure requirements. These requirements are then used to develop design standards for facilities that meet the needs of new, evolving and future weapons, vehicles and equipment. These same standards and criteria are used by other Army staff activities to integrate, synchronize and validate Army needs and resources across all doctrine, organization, training, materiel, leader development and education, and personnel facilities domains.

“We are looking out into the future,” Howell said. The team works with scenarios at least 10 to 15 years into the future, and the aim is to look even further. The goal is to build a facility that will last 20 to 30 years. “For systems and components, we are looking at requirements like size, weight, characteristics, electrical requirements — that we have all that info.”

Howell provided the example of the Mine-Resistant Ambush-Protected vehicle. The MRAP provides more protection to its occupants than a Humvee. The vehicle also has a different configuration and other requirements, which affect the type of



Ravin L. Howell
Photo by Mary Beth Thompson

facilities needed to store, maintain, use and train with it.

“The key to the MRAP is that MRAP was a joint buy,” Howell said. Because the Department of Defense made the purchase, the vehicle did not go through the regular Army procurement process. So now, the Army must ensure that its maintenance facilities can accommodate the size, height and weight of that piece of equipment. The CRST’s job is to ensure the information is understood and the requirements are clear among logisticians, OACSIM and USACE.

Although Howell works out of USACE’s Installation Support Community of Practice, he actually serves as a logistics subject matter expert to OACSIM and liaison officer to the Army G4 (Logistics). When he attends conferences or visits installations and USACE districts, he is usually representing OACSIM or the Army G4 rather than USACE.

After graduating with a bachelor’s degree in business administration from South Carolina State University, Howell was commissioned as a field artillery officer. Three years later, he transferred to the Quartermaster Corps.

During his Army career, Howell served at Forts Hood, Texas; Gordon, Ga.; Bragg, N.C.; Lee, Va.; and Polk, La.; as well as in Germany and Korea. He was Logistics Branch chief and taught logistics at the U.S. Army Signal School and is a graduate of the Command and General Staff College and

the Support Operations Officer Course. He deployed to Haiti and to Bosnia.

His last active duty assignment was with OACSIM’s Operations Division as the Program Analysis Branch chief. After retirement, Howell returned to the Operations Division, where he worked as an action officer for three years before moving to USACE and the CRST.

Howell brings pertinent expertise to the table. The knowledge and skills he gained as a Soldier ensure that he understands facilities requirements from a logistics viewpoint. His experience at OACSIM provides installation management know-how.

Yet, there is always more knowledge to acquire. Obtaining information from various entities on a myriad of future systems can be a challenge, he said.

“I do a lot of research,” Howell said of his job. “It takes a lot of research into future systems and requirements.” The information he gains, along with his expertise, helps the appropriate Center of Standardization or Center of Excellence develop or refine standards and criteria for the facilities that will serve that system to meet the needs of the Soldiers who will work with it.

“When I came along, there were facilities that weren’t really built to be warehouses nor were they really built to be motor pools,” he said. “They were, in some cases, turned into motor pools, but they weren’t designed for that purpose.”

Knowing that in the future, Soldiers and commanders will not have to “make do” with whatever facilities exist but will have facilities that will give them what they need to do their jobs efficiently is what he enjoys most, Howell said.

“We always improvised, or we always made do with what we had,” he said. “But for a facility to be designed for that purpose and meet those needs is a great thing.”

Mary Beth Thompson is the managing editor, *Public Works Digest*.

Acronyms and Abbreviations	
CRST	Combat Readiness Support Team
MRAP	Mine-Resistant Ambush-Protected vehicle
OACSIM	Office of the Assistant Chief of Staff for Installation Management
USACE	U.S. Army Corps of Engineers



Pedersen: IMCOM master planning proponent

by Mary Beth Thompson

How do you help yourself and help others? By parenting, as part of your life at home, and by mentoring, as part of your life at work. That is how Dale Pedersen, one of the master planning proponents at Headquarters, Installation Management Command does it.

Parenting is about preparing children for school, guiding them through life's lessons and helping them as they get started in adult life, as Pedersen is now doing with his children. At work, mentoring encompasses offering people similar counsel and encouragement. As part of the Headquarters' Public Works "advance party" at Fort Sam Houston, Texas, Pedersen sees that tutoring-type role in his future.

"We have well over 2,000 positions moving to San Antonio, and there are a lot of people who may not be coming from Headquarters, IMCOM," Pedersen said. "We're going to have a whole boatload of people who are coming probably from our installations or are completely new to the Army system."

One thing he can do to help is to be involved in mentoring — helping new employees learn the system, pointing them in the right direction and serving as an advocate, Pedersen explained.

Passing on knowledge to the next generation is also an important part of one of his current projects. As a master planner, he is working with others to create the *Army Space Planning and Criteria Manual*. The two-volume manual will converge information from several sources. As a companion to the Master Planning Technical Manual, it will be an essential go-to resource for Army space planning and management.

"We have a lot of long-time, experienced master planners who are retiring soon," Pedersen said. "We are essentially documenting the thought process from



Dale Pedersen
Courtesy photo

experienced master planning personnel to capture that knowledge for the next generation and also to provide a consistent means of doing things."

For example, the manual will address such matters as how to determine the usable area for calculating square footage, he said. Different installations often interpret the situation in different ways. The manual will not only explain how it should be done but also provide graphical examples.

Before moving to his Headquarters, IMCOM, position at San Antonio, Pedersen worked at IMCOM-West where he was involved in master planning and Military Construction programming for the West Region.

A double graduate of the University of Minnesota, he earned a bachelor's degree in political science from the Morris campus and a bachelor's degree in mechanical engineering from the Institute of Technology on the Minneapolis campus. After college, he worked in the private sector. An interest in living and working overseas led him to the Army intern program and a job in Germany.

Now, looking back on about seven years in Germany and seven more in Japan for the Army, Pedersen has certainly accomplished that goal. He also worked for the Navy for three years as the chief of Production Engineering at Naval Air Station,

Corpus Christi, Texas, a position that is similar to an Engineering Plans and Services Division chief in an Army Directorate of Public Works.

His education along with his work résumé inside and outside of the country, as well as inside and outside of the Army, have provided him with valuable hands-on experience with different job functions and viewpoints. He has been exposed to a variety of areas of responsibility in addition to master planning.

"You draw on that experience," he said. "It enables you to think on your feet."


As a proponent for master planning at Headquarters, IMCOM, Pedersen deals with siting and construction that result from new stationing initiatives in support of installations.

"When you work at a headquarters, you're on someone's staff, which is the majority of your time," Pedersen said. "But at the same time, [IMCOM master planner] John Peasley and I are looking out for the installations' interests."

Acknowledging that it often takes headquarters longer than installations would like to handle some actions, Pedersen said that it's important to remember that the folks at headquarters have different bosses than the installation folks have. That boss has priorities his or her employees must address. At the installations, the same is true. And regions feel it from both ends.

"Everyone is trying to maintain their own responsibilities," Pedersen said. "One thing we could always keep in mind is to always respect each other's position and treat each other as fellow professionals. Walk a mile in each other's shoes. And that works both ways."

Good advice.

Mary Beth Thompson is the managing editor, *Public Works Digest*. 

Acronyms and Abbreviations	
IMCOM	Installation Management Command

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U.S. ARMY INSTALLATION MANAGEMENT COMMAND

IMIGOM

