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Koontz Electric Company, Inc., employees update the hydropower plant at Soo Locks, Sault Ste. Marie, Michigan, by removing and replacing protective relays as part of the U.S. Army Corps of Engineers Detroit District operations and maintenance work for the locks. See article on page 19. (U.S. Army Corps of Engineers, Detroit District photo)

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Improving public works on garrisons to enhance Army readiness

by Gregory Kuhr

As a result of our fiscal uncertainty, the Army prioritizes today's readiness and accepts risk in modernization, infrastructure maintenance, and sustained end strength in the mid and long term.

- 2017 Army Posture Statement

Installation Management Command is looking this hard reality in the eye and taking action to get after the Army's infrastructure problem "in house," with no additional funding. We will balance resources and make every dollar count through leadership and a common understanding of, and focus on, our priorities.

The Army's installation funding strategy – Divest, Reshape, Invest – provides the framework for IMCOM as it reshapes programs and services to harvest resources to invest in higher priority requirements. Addressing the urgent infrastructure challenges brought on by a decade of underinvestment is IMCOM's number one priority, and we do it to provide facilities that enable speed of assembly and deployment for a ready Army. The posture statement also acknowledges "Army readiness occurs on Army installations – where Soldiers live, work, and train. Installations provide the platform where the Army focuses on its fundamental task: readiness."

When hunting for efficiencies, a good place to start is with the paperwork. At U.S. Army Garrison Wiesbaden in Germany, the Directorate of Public Works invested a month of concerted effort in conducting a detailed analysis of its existing work order backlog. The team then did a variety of simple things like closing work orders mistakenly left open and eliminating redundant work orders determined to be also included in European Infrastructure Initiative planning. In some cases, the team converted major renovation projects like parking lot replacements to pothole repair.

"For buildings that were scheduled for demolition or returning to host nation in the next four years, the DPW surgically reviewed all work orders to identify only those needed for short term use, applying health and safety rules, and then retired all others," said Garrison Commander Col. Todd Fish.

Through these and other practical, common sense measures, the garrison was able to retire $61 million worth of low priority work and reinvest the time and money in sustainment, restoration, or modernization projects deemed critical by the senior commander.

Another initiative is Utilities Privatization. Title 10 (U.S.C. 2688) permits installations to convey their aged and deteriorated utilities systems to private entities, thus divesting from the requirement to recapitalize, operate, repair and maintain these systems with scarce Army funding.

Gregory Kuhr talks with directors of public works at Installation Management Command installations during the Directorate of Public Works Leadership Workshop in February. (Photo by Neal Snyder)

Utilities Privatization leverages private sector financing and efficiencies and relieves the maintenance burden on installation DPWs. This is real privatization: the Army does not retain ownership of the systems, they are completely conveyed to a private owner-operator. In return, the new utility provider receives regular monthly payments and delivers the utilities commodities to the installation. Utilities Privatization, where economically justified, is becoming the preferred way ahead for IMCOM, positioning the Army as a customer of a professional utilities service company rather than a utility owner.

IMCOM also applies the Army installation funding strategy to the reshaping of its professional installation management workforce. IMCOM scrubbed its manning documents last year to determine where it could accept risk as it returned 883 civilian positions to the Army. As we adjust to this smaller workforce, IMCOM is now better able to see itself, identify where gaps exist, and create solutions to close them.

We also have a realistic understanding that all of our best efforts to streamline public works operations can only do so much when facing a $10.8 billion backlog of infrastructure maintenance requirements. So, we appealed to "buy back" some of the civilian authorizations from lower priority areas to bring average manning at garrison DPWs up to 70 percent. After enthusiastically receiving about a third of what we asked for, IMCOM is left with about 5,000 positions unfilled. While better positioned, our streamlining efforts nevertheless remain important. As these new hires are integrated into the IMCOM team, we will track the corresponding increase in execution (productivity) to determine where we can refocus efforts to reinvest in the public works program.

In addition to laying out the fiscal reality of today's Army and how it drives priorities, the current Army Posture Statement acknowledges that "before the Army can significantly increase readiness, there must be an infrastructure to support Army manning, equipping, training, and leader development. Army readiness occurs on Army installations." Delivering this infrastructure to the Army at acceptable levels of safety and quality within existing funding allocations is a tall order.

IMCOM is moving out to take bites out of this rather large elephant through tactics like harvesting the low hanging fruit of backlog reconciliation, turning over utilities to private entities, and applying the increase in productivity of our new hires to the most critical projects.

As we learn from our efforts, IMCOM is becoming adept at innovating to create efficiencies, something that will benefit Army readiness now and in the years to come.

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Communication necessary in upgrading, modernizing facilities

by Lt.Gen. Todd T. Semonite

To all the members of the U.S. Army Installation Management Command, I want to offer a hearty congratulations for recently launching the IMCOM Service Culture Initiative in which you've pledged to provide the best possible customer service to Soldiers, Families, and communities. I know part of that pledge requires delivering resilient, efficient, and sustainable facilities on the installations our Army families call home.

We, at the U.S. Army Corps of Engineers, are excited to be your partners providing program management and oversight for the Army's Sustainment, Restoration, and Modernization Program, Facilities Reduction Program, and other installation support activities that ensure the readiness of warfighters and well-being of families.

In a recent interview with *Federal News Radio*, Army Assistant Chief of Staff for Installation Management Lt. Gen. Gwen Bingham and Randy Robinson, the acting assistant secretary of the Army for Installations, Energy and Environment, addressed the Army's aging infrastructure challenges and the Army Facility Investment Strategy for its 33,000 facilities. They noted that while almost $11 billion is needed to bring the poor or failing infrastructure up to adequate standards, 78 percent of the facilities is still adequate and directly supports readiness.

Leaders at all levels are exploring ways to be more innovative than ever, more efficient, and more resourceful as they strive to prioritize services to ensure the Army maintains its readiness. Directorates of Public Works are re-doubling their resolve to effectively and efficiently sustain and maintain facilities. Some have expressed concern that much of the technology being installed in upgraded and new facilities is difficult to maintain. Our objective is to install the industry standard in Army facilities. There are facilities where we may install a newer state-of-the-art technology but for the most part what you see in new or upgraded Army facilities is what you see in commercial facilities.

Addressing concerns about technology is necessary, and USACE wants to work with DPWs at the very start of any project to discuss facility requirements, approaches

Lt. Gen. Todd T. Semonite, the U.S. Army Chief of Engineers and U.S. Army Corps of Engineers Commanding General, center, visits Corps of Engineers Europe District Sept. 13 in Wiesbaden, Germany. Semonite was meeting key partners from U.S. Army Europe and Department of Defense Education Activity-Europe. (Photo by Jennifer Aldridge)

to technology, and DPW capabilities. We must communicate early and often at all levels. It is necessary for the people who will ultimately maintain and operate the systems participate in the planning and design, not just appear once the facility has been completed. Everyone, for example, agrees that energy savings and energy efficient design elements are desirable, but they will not deliver the savings promised if the systems are improperly operated and maintained, thus don't work.

I recognize that frequent engagement takes considerable time and commitment. With dwindling staffs it may be a lot to ask, but it is well worth the effort. Time spent early on can reduce confusion and dissatisfaction later on.

USACE has options to tailor technologies to those with which the DPW has experienced success. The project specifications can narrow selections of materials for reason, something that can be identified through early communication between USACE and DPWs.

Once a building and its systems are constructed, hands-on training is provided on how to operate and maintain the systems. Often, the training is recorded for future use by existing and new DPW staff. Additional training also may be available through other resources. Operation and Maintenance services can be contracted out as part of the military construction project and should perform the same level of service as would be expected by the DPW. DPWs who contract out building maintenance should make sure their contractors have sufficient knowledge and training to remain certified on the current systems so facilities' systems and technologies operate as designed.

As much as we may all prefer to stay with technologies we are familiar with, newer technologies become available and may offer efficiencies in life cycle cost and management of an asset that we just can't ignore.

No matter what the system or what maintenance is required to keep operating at optimal efficiency, personnel from the U.S. Army Corps of Engineers districts, divisions, centers and labs are committed to working with installations to ensure effective and efficient installation support. We pledge to work hand-in-hand with you to ensure the installations our Soldiers and their Families call home remain sustainable, resilient and efficient. We want to be your key partner in accelerating your Service Culture Initiative.

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IMCOM leaders pledge to enable employees, build a culture of service

by U.S. Army Installation Management Command Public Affairs Office

FORT SAM HOUSTON, TEXAS – An Army-wide campaign was publically launched May 31 at a Headquarters Installation Management Command town hall hosted by Lt. Gen. Kenneth R. Dahl, commander of the U.S. Army Installation Management Command.

Officially known as the IMCOM Service Culture Initiative, the campaign represents the Command's long-term commitment to providing the best possible customer service to Soldiers, Families, and communities. The campaign is based on the premise that excellence in customer service is a result of how an organization treats its employees. If employees have engaged and caring leaders, feel valued and respected for the work they do, are properly trained, and live the Army values, they will in turn pass forward this positive attitude to their customers and to their co-workers.

"This will take the combined effort and commitment of every IMCOM professional to be successful," Dahl said.

Underscoring the importance of the campaign and acknowledging that IMCOM touches each and every Soldier and Family every day, Dahl waited until he could personally address the workforce and emphasize his commitment to the campaign by unveiling it personally, and publically.

At the town hall, Dahl, along with other senior IMCOM leaders, signed the first "Leadership Pledge" surrounded by his headquarters workforce.

The Pledge serves as a visible symbol and a reminder to leaders that all employees deserve respect and the basic tools needed to be successful, including proper on-boarding, performance standards, training opportunities, recognition programs, empowerment, and a commitment to hold one another accountable.

"The Pledge and the principles defined signify a return to the basics – Leadership 101. The Pledge serves as a reminder of the importance of these ideals and a reaffirmation that we, as leaders, have a responsibility to ensure you are successful," Dahl said.

Lt. Gen. Kenneth R. Dahl signs the U.S. Army Installation Management Command's Leadership Pledge May 31, 2017 at Fort Sam Houston's theater. (Photo by Richard Slade Walters)

The campaign relies on actions related to four basic focus areas to reach that goal: team member sense of belonging to their organization, leader engagement, on-boarding, and team member recognition.

"We want to establish a culture where members of the IMCOM team take pride in the organization, fully understand and live by our organizational values, feel valued and respected, and are led by engaged and caring leaders," said Matt Margotta, program manager for the Service Culture Initiative.

"While most of the command is already doing this in some fashion, codifying and standardizing the principles, the process, and providing the tools and training to assist leaders and employees at all levels helps ensure we establish a culture of service excellence across the 70 plus installations around the world," Margotta explained.

In informal communications to the staff as the campaign was being developed, both Margotta and Dahl were quick to point to examples of great employee and customer service throughout the command.

"This is going to help us define who we are as an organization," Dahl said. "When it comes to taking care of our customers–our Soldiers and their Families–we've done a marvelous job and really have become experts at customer service."

"But when you think about it," he continued, "those of you working in human resources, operations, range support, emergency services, public works, MWR… you all provide service to customers. Even if the person you're helping is a fellow IMCOM professional, they're still a customer."

"So we've got to do this together," he concluded. "We're one team. If we take better care of ourselves, we're going to take better care of our customers."

During the coming year, starting with a self-assessment at the garrison level, leaders will implement changes in the four focus areas, sign employee and customer pledges,

(See Leaders Pledge, page 6)

Kelley Hill tests Army protocols for protecting dormant facilities

by Kirk Ticknor, Dahtzen Chu, and Kelly Moon

Changes in mission, deactivation of units, deployment and stationing actions all affect the Army's infrastructure. Facilities intermittently become dormant for short periods of time, or remain dormant for a number of years before reoccupation. Reactivating a dormant building requires its restoration to fully operational status in a short period of time

Deactivating a facility is not as simple as turning off the power and locking the doors. Physical and permanent deterioration of the facility can quickly occur if proper and comprehensive procedures are not followed. Building envelopes' integrity must be preserved against moisture leakage and air infiltration. Decisions regarding conditioning of interior space, plumbing concerns, security during vacancy and many other factors require consideration during protocol development. Buildings not properly protected during their dormant phase are vulnerable to damage from water leakage and infiltration, growth of mold and mildew, deterioration of interior and exterior materials, structural corrosion, etc., resulting in significant remediation costs and delays when reactivation is required.

The 3rd Brigade, 3rd Infantry Division (Sledgehammer) called Kelley Hill at Fort Benning, Georgia, home since 1996. In 2009, $41 million was put into modernization of the facilities with support from the Savannah District, U.S. Army Corps of Engineers. In April 2016, the 3rd Brigade, 3rd Infantry Division was deactivated as part of the U.S Army draw down from 490,000 to 450,000 troops.

After deactivation, Fort Benning Directorate of Public Works personnel approached the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory Installation Technology Transition Program manager about the possibility of updating the Army's protocols for dormant facilities. Previous research by the laboratory personnel compiled facility layaway procedures in 1991, and an Excel workbook-based Layaway Economic Analysis model was developed in 1996 to address the cost analysis of disposition of dormant facilities.

A project was created within the Installation Technology Transition Program portfolio to use Kelley Hill as a dormant facility laboratory to update earlier protocols based on current engineering and facility management science and principles. The protocols being tested at Kelley Hill are intended to be applicable to all Army installations.

Fort Benning's Kelley Hill cantonment area contains facilities of various types, age, and condition. The facilities include 22 Headquarters buildings, eight enlisted Unaccompanied Personnel Housing, two dining facilities, 10 Tactical Equipment Maintenance Facilities and approximately 40 other buildings totaling 850,000 square feet. The expectation was the facilities will be dormant for more than three years, with a reactivation window of one to three months depending on the type of facility. Just recently, demonstrating the fluid nature of dormant facilities, 11 Headquarters and one large maintenance building are being reactivated for a new incoming unit.

The Fort Benning Directorate of Public Works, its base operating support contractor, and the Construction Engineering Research Lab personnel are working together to test many aspects of dormant facilities and their systems. The protocol development parameters include:

- Representative facility types
- Building environment
  - Moisture and humidity – cooling season
  - Freeze protection – heating season
  - Overlap during swing seasons
- Building envelope integrity
- Heating, ventilation and air conditioning equipment – maintain minimal interior conditions versus complete shutdown
- Interior furniture and equipment protection or disposition
- Plumbing; draining, not draining, hybrid
- Fire protection; drained, not drained, antifreeze, disposition of extinguishers
- Monitoring; passive vs active building controls, inspection schedules
- Vegetation and pest management and control

The Army's building inventory includes buildings ranging from decades old to ones

(Leaders Pledge, continued from page 5)

demonstrate a commitment to employees and each other, and create, reinforce, or enhance employee recognition and on-boarding programs.

"Leaders will be provided the maximum flexibility in the implementation of the campaign" Margotta said. "Some garrisons already possess robust onboarding and recognition programs, like Fort Riley's ESPRIT (Employee, Satisfaction, Performance, Recognition and Improvement) Team. Our goal is to reinforce what we are doing well and enhance areas we've identified for improvement."

Dahl told his senior leadership while the campaign was being developed to "drive on with the things you are already doing that are working."

"We're not trying to tell you to do anything new," Dahl explained. "Follow the most basic leadership principals, and we'll reach our desired end state: an organization filled with enabled and enthusiastic employees supported by involved leaders, providing the best possible service to our Army and our nation."

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(Kelley Hill, continued from page 6)

recently constructed. Regardless of their age or condition, when mission changes or force reductions occur, these buildings can end up remaining dormant for years before they are used again. How these buildings are deactivated and prepped for long term storage determines the speed and cost to reactivate them in the future. The protocols developed as a result of the study at Kelley Hill are expected to be incorporated into updated guidance from the Assistant Secretary of the Army (Installations, Energy and Environment) and the Assistant Chief of Staff for Installation Management in fiscal 2018.

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The Kelley Hill cantonment area at Fort Benning, Georgia, contains numerous facilities now dormant after the 3rd Brigade, 3rd Infantry Division (Sledgehammer) was deactivated. The Army is testing protocols for deactivating facilities such as those at Kelley Hill. (Photo by Kirk Ticknor)

IGSAs save Army installations much more than money

by Tim Hipps

Intergovernmental Support Agreements are the saving grace of the Army's Airborne Special Operations Museum and the stray animals that roam nearby Fort Bragg, North Carolina.

Thanks primarily to an Intergovernmental Support Agreement, or IGSA, between the U.S. Army and the city of Fayetteville, the Airborne and Special Operations Museum, or ASOM, managed to remain one of the area's top tourist destinations. Budget cuts threatened to close or curtail hours of the facility until IGSAs made custodial and maintenance services affordable. A third IGSA rescued animal-control services on the Army installation.

"I would like to thank Fort Bragg for being the first command out of the chute to take advantage of IGSA legislation," said Ivan Bolden, chief of Army Partnerships at the Pentagon. "Due to the budget control act and sequestration, when the garrison received a reduction in their operating budget, the commanders had to make hard choices. One of the choices was to reduce the hours of the ASOM until the commander talked to the city manager [then Ted Voohres] and they came up with an idea to keep the museum open seven days a week vice having it open only on the weekend."

An IGSA allows the Army to enter into a support agreement with a state or local government to provide, receive, or share installation-support services if the Army determines that the agreement will serve the best interests of the department by enhancing mission effectiveness or creating efficiencies or economies of scale, including by reducing costs.

The IGSA for ASOM custodial services, executed April 4, 2014, lowered the cost from $160,000 to $87,000 – an annual savings of $73,000. The IGSA for ASOM maintenance services, executed Dec. 5, 2016, lowered the cost from $400,000 to $110,000 – an annual savings of $290,000.

"That is what we're trying to seek in all partnerships: a win for the community and a win for the garrison," Bolden said of Fort Bragg's IGSAs. "They were the absolute first ones, so I commend them."

The highly visible museum is located in revitalized downtown Fayetteville, about 18 miles from Fort Bragg.

Thanks in part to an Intergovernmental Support Agreement between the U.S. Army and the City of Fayetteville, North Carolina, the Airborne and Special Operations Museum remains one of the area's top tourist destinations seven days per week. The museum will commemorate National Airborne Day 9 a.m. until noon, Aug. 19, featuring static displays, World War II reenactors, and jumps by the U.S. Army Parachute Team, also known as the Golden Knights, and the U.S. Army Special Operations Parachute Team, or Black Daggers.
(Photo courtesy of the Airborne and Special Operations Museum)

"We've been nothing but pleased," said Jeffrey Bryan, chief, Supply and Services Branch at Fort Bragg. "I like the efficiency and the cost factors. Things get done quickly, on both the custodial and maintenance sides, and the city is doing it for significantly reduced pricing. Whatever it costs them to do it, that's what they charge us.

"It all boils down to the federal government's cost savings and being efficient, and we're getting it as stewards for the taxpayers' dollars," he said. "The service has been spot on. We haven't had any complaints that I know of, and the folks down at the museum seem to be happy with it. We've been pleased with it. Everything is running smooth and effortlessly."

Because of reduced services, Bryan said it was a "no-brainer" to add the maintenance piece to supplement the custodial services.

"There was an op order that came down from IMCOM (Installation Management Command) Headquarters about the custodial services that was changing the requirements and the frequencies of the services, so we were bound to have to make that change to meet that op order," Bryan said. "With the museum being a high-visibility, high-traffic area, it pretty much needed services daily. That's when we came up with the idea of an IGSA, and then once we saw the benefits of it, that's when we thought: 'Why not just do the maintenance and repair piece of it?' We took the initiative. We couldn't let this thing go on without the attention it needs.

"It was in the interest of Fayetteville because it's a big tourist attraction that brings a lot of revenue for them and the surrounding businesses. It was just a win-win situation. It's good for them because they maintain it, take care of it, and keep it up to standard for their interest. And for us, it's our property, so they're taking care of it and it's efficient. It lets the burden off of us," Bryan said.

IMCOM Headquarters plays a major role in the Army's IGSA process.

"We have 12 active IGSAs right now," said Art Douglas, the IMCOM G4 chief of Logistics. "Those 12 IGSAs doesn't sound like much, but it's a multimillion-dollar program. In those 12 partnerships all of those services that were provided before cost us about $15 million and some change to provide those services. Through the partnership program, we've been able to reduce cost down to where those same services are now costing us just a little over $11 million, about a 24 or 25 percent savings are being realized on average with this IGSA program."

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Collaborative approach improves Fort Carson transportation woes

by Joe Wyka

When an Army post grows from 14,500 Soldiers to 30,000 Soldiers in 12 years, transportation networks can become loaded beyond capacity. Fort Carson's growth since 2005 has prompted the need for significant roadway and pedestrian improvements.

With limited funding to address roadway improvements, the engineers and planners at Fort Carson, Colorado, use a collaborative three-pronged approach to maintain outstanding levels of service for the motoring, biking and walking residents and visitors to the installation.

The first "approach prong" is to integrate transportation improvements into all Military Construction Program projects on the post. Each project is reviewed by engineering and planning staff to ensure the right transportation improvements are included as Military Construction – Army work is completed. Fort Carson planners use design charrettes to identify the full impact of each new buildout, and work to ensure that onsite improvements are included in the scope as funds allow.

As an example, when the template for the new 4th Combat Aviation Brigade at Butts Army Airfield was developed, the team realized that the supporting road infrastructure was not adequate. The team included a new high-capacity traffic circle at the key intersection to handle the increased flow. The limited budget was used to include building running trails and sidewalks in smart locations to encourage Soldiers and Civilians to walk instead of driving.

Utility corridors or "utilidores" also were developed to consolidate underground infrastructure into manageable locations. This mimics the concept of right-of-way so crucial in any project planned by neighboring local governments. Enforcing this ensures that future development is not hampered by utilities that are in the way.

Fort Carson's second "approach prong" has been to fully integrate the installation into local and regional planning efforts. Richard Orphan, the Directorate of Public Works Engineering Division traffic planner, serves as the representative on several local committees in the Pike's Peak Area Council of Governments. One example of this teamwork is the establishment of two new gates to better support traffic headed to and from the post's airfield and the two new brigades located there.

The Colorado Department of Transportation maintains key routes that form two of installation boundaries: State Highway 115 to the west and Interstate I-25 to the East. Tens of thousands of Soldiers and Civilians use these corridors each day coming to work on Fort Carson. Gates 6 was opened as a result of joint improvements with the state transportation department on State Highway 115 to widen and add turn lanes, signals and signage. Offsite improvements continue at Gate 19, with future road improvements planned that will not only improve traffic into Fort Carson, but also facilitate future economic development for the nearby city of Fountain where many of Soldiers and Families live.

The traffic engineering team is confident that these projects move forward because of the commitment senior leaders demonstrate. The garrison commander and other senior leaders help by advancing projects that relieve traffic congestion for neighboring communities and Fort Carson.

The final "approach prong" has been Fort Carson's collaboration with the Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA). Fort Carson fully leverages the expertise of the agency to assist in planning traffic improvements. This agency is a resource available to any Army post.

The traffic engineer contacts SDDCTEA for periodic site visits to evaluate areas on post where there are traffic capacity issues or safety challenges. The Provost Marshal Office staff is included in discussions to get their perspective on accidents and conditions that contribute to near misses. The study then targets these locations and includes both priorities and recommendations for improvements. The traffic engineers take these recommendations and create projects that are prioritized in the Directorate of Public Works Annual Work Plan.

"Fort Carson has implemented dozens of projects recommended in the SDDCTEA studies," Orphan said. "These projects have proven to be exactly what was required to meet the traffic demands along key corridors and at individual locations, and they continue to prove their worth on a daily basis."

The goal is to program projects for the next five years, with three-to-five traffic projects completed each year. These projects typically include creation of turn lanes, upgrades to traffic signals, improvement of pedestrian crosswalks, limited road widening to increase capacity and correcting geometry issues at intersections to facilitate turning movements. Fort Carson uses contracts for the projects through both the installation contracting office and the U.S. Corps of Engineers, Omaha District, depending on the scope.

Fort Carson's partnering approach has allowed the installation to achieve many successes not possible by simply "going it alone."

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A traffic project recently completed extending Nelson Boulevard at Fort Carson, Colorado, has provided straight line access from the post's main gate to the west across to the most remote logistics area on the east side of the cantonment. (Photo by Susan C. Galentine)

Routine potable water leak detection crucial to avoiding costly repairs

by Elisabeth Jenicek

Leaks, losses, and unaccounted water are some of the major issues inherent in drinking water supply and distribution systems due to deterioration of the infrastructure. The American Water Works Association estimates that close to 237,600 breaks occur each year in the United States leading to approximately $2.8 billion lost in annual revenue. Water loss in distribution systems requires more water to be treated and supplied to meet water demand.

Proactive leak detection through methodical field work is the best solution for reducing water loss. In addition, it has proven to be a formidable system in helping to identify and repair system leaks when used in conjunction with water pressure monitoring.

Fort Leonard Wood partnered with the U.S. Army Corps of Engineers to survey a portion of the Missouri fort's drinking water system for leaks. Many of the post's pipes are reaching the end of their effective life and may be in need of repair or replacement. Leaks in water lines can be difficult to find because of the depth at which they are buried. In addition to the loss of a precious resource, water leaks can cause damage to property, such as sink holes, damage to roads, or water intrusion in other underground utilities such as electrical lines.

The survey area was based on previous net zero water projects that evaluated the condition of water infrastructure. Researchers from the U.S. Army Engineer Research and Development Center's Construction Engineering Research Laboratory employed the American Water Works Association Buried No Longer tool to determine potable water piping areas that were at or approaching the end of their useful life. Additionally, historical work orders and service orders were compiled to help inform this recommendation. This study identified three piping areas on post for leak detection evaluation. These were presented to Fort Leonard Wood Directorate of Public Works personnel who selected the survey area.

The equipment was Micron2 and Eureka3 systems from Primayer. This system consists of a processor, transducers, transmitters and receivers. The receivers and processor are integrated in the Prime Touch device, and the transducers are accelerometer type or hydrophone type.

The Eureka3 display shows a strong correlation indicating the presence of a leak. (Photo by Elisabeth Jenicek)

Using acoustic leak detection equipment includes leak location through leak noise correlation using the Eureka3 system. This is accomplished with two sensors, placed to bracket a suspected leak, and a signal processing unit. Each sensor will detect the noise generated from a leak. Due to the time difference for the sound to propagate to each sensor from the noise source the two sensors will detect the same sounds, but with a time lag between them. The sensors then send their respective signals to the processing unit. The two signals are processed. Since both sensors are picking up the same leak noise, differing only in the time it takes to travel from the source to each sensor, their respective signals will match when shifted by the appropriate time. With this time displacement the distance between each sensor and the leak can be calculated. The correlation function represents the similarity of the two signals. The best correlation occurs when pipe material, size and length are known.

The Eureka3 system identifies the rough location of a leak, and the Micron3 system is a set of tools for pinpointing identified leaks. Consisting of a processor and transducers, it can be used with piezo type transducers (ground microphone or listening rod), or with an accelerometer from the Eureka3 system.

The survey at Fort Leonard Wood used point to point correlation with transducers placed on adjacent hydrants. Suspected leaks were pinpointed using the ground microphone or listening rod. No leaks were detected in this survey zone.

A second survey was conducted in a former housing area where structures had been demolished. Two active leaks were located visually by the streams of water running downhill in the gutters. The correlators and listening rod were used to pinpoint one leak to the base of a hydrant. The second leak was in the middle of a waterlogged field and was not pinpointed by the team, but by Directorate of Public Works staff at a later time.

Portable acoustic leak detection is an affordable means of proactively assessing water infrastructure condition. Conducting surveys of a fixed percentage of piping each year will identify leaks before they are large enough to cause greater damage.

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O&M management reduces treatment facility solid waste costs

by Randy Mize, Elizabeth Keysar and Kathy Lahaye

Reducing municipal solid waste is one of the easiest areas to achieve quick wins in sustainability. A focus on solid waste reduction not only saves money, it also leads to greater awareness and engagement on other sustainability issues. Increasing diversion of materials from the municipal solid waste dumpsters through recycling is another highly visible way to show commitment to sustainability. Recycling leads to other diversion approaches and eventually to improved material management throughout a product's life cycle.

Medical Treatment Facilities typically have good quality data on their regulated medical waste and hazardous waste, and these waste streams receive significant operations and management focus. Solid waste and recycling do not tend to have the same focus. The municipal solid waste collection is seldom observed and data is not collected; these materials are often not weighed and volume data may be the only information available. This type of information is critical, however, to identifying and documenting operations and maintenance improvement opportunities.

The U.S. Army Medical Command Sustainability Program Team recently led efforts to improve data quality for the Command and, in the process, to identify and highlight successful efforts by individual Medical Treatment Facilities.

Environmental Services at Ireland Army Health Clinic, Fort Knox, Kentucky, has reduced the clinic's refuse hauling and disposal bills significantly by paying close attention to where the dumpsters are located and how frequently they are emptied. The Health Clinic is billed through a municipal solid waste disposal contract based on number of tips and receives a monthly bill from the installation Directorate of Public Works.

Some of the fiscal 2016 reduction disposal costs can be attributed to the August 2016 conversion of the hospital to a clinic. When this occurred, the clinic team looked into how its organization was charged, number and type for containers, and how often the containers were tipped. This was primarily a situational awareness issue to gain understanding of how the bills were generated and paid. The clinic is charged the same per tip, whether the dumpster is overflowing or if it only contains one bag. It has had up to 18 or more 8-yard dumpsters that were frequently emptied, resulting in high annual disposal costs.

From January through May, the resulting trash stream diversion has been a 56 percent reduction in annual refuse removal costs compared to the same time period in 2016.

The team worked aggressively to identify all its containers and reduce those that aren't needed. The team members began surveying the contents of the containers the day prior to the scheduled tip date, noting that many were only 30 percent full. They were immediately able to eliminate eight 8-yard containers from the inventory of 18 scheduled for multiple tips per week with zero impact to the refuse mission requirement.

Subsequently, the team has continued to reduce the number and size of containers as well as frequency of tips per container with an overall reduction from 18 8-yard containers and one 8-yard compactor on Jan. 1 to three containers (one 8-yard, one 6-yard, and one 4-yard) and one 8-yard compactor. From January through May, the resulting trash stream diversion has been a 56 percent reduction in annual refuse removal cost compared to the same time period in 2016.

The team continues to explore the possibility of additional backhauling trash from adjacent buildings to eliminate an additional two to three containers with test runs now in progress. The team's goal for calendar year 2017 is to continue to reduce the Health Clinic's annual refuge cost.

The Ireland Army Health Clinic team also purchased and distributed desk-side recycling containers to enhance an already robust recycling program. Team members work very closely with the Fort Knox Recycling Center and receive outstanding support from the center's staff. With renewed emphasis on recycling from the U.S. Army Medical Command, combined with U.S. Army Medical Department Activity, fellow employee support and a solid understanding how the refuse charges are generated and levied, the clinic team is looking forward to a fruitful and successful recycling year with further reduction in municipal solid waste generation rates.

The success of the significant decrease in trash generation and increased recycling can be attributed to a Command-supported program combined with a responsive staff taking ownership in to the recycling program and their continued support of the program.

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Wilmington District upgrades Special Operations facilities

by Hank Heusinkveld

The nature of warfare continues to change, and Special Operations Forces are becoming more relied upon for complex battlefield engagements. They are valued for their out-of-the-box thinking, imagination, and initiative, and ability to operate within a small footprint with light support.

At Fort Bragg, North Carolina, construction managers of the U.S. Army Corps of Engineers Wilmington District's Special Operations Command Area Office manage the construction of state-of-the-art facilities being built to accommodate the specific needs of the special operations community. Construction teams have an intense schedule, and combined with the Fort Bragg's operations tempo spearheaded by the 82nd Airborne Division, team members say the numerous construction projects are challenging, yet rewarding through support to the Green Berets. That means keeping projects on time and on budget.

"Our stakeholders know what their facilities require to meet their mission and they work hand in hand with us through the life of the projects," said Ron Cannady, area engineer at the Wilmington District Special Operations Command Area Office. "And at the Corps, we take pride in our projects, by partnering with our stakeholders and contractors to make every project successful."

What has worked well in keeping construction projects on time and on budget is constant communication between USACE and Special Operations Command officials. The Wilmington District team has a broad understanding of the specialized activities of the Special Operations community, so team members know what their customers need when they plan strategic missions.

"These buildings are specifically designed and constructed for these Soldiers to meet their requirements and their needs with the correct square footage, both operationally and administratively," said Special Operations Command Headquarters Command Engineer Col. Lee Hicks. "The older buildings have never been the right size. So they've had to modify those buildings to meet the space requirements to store all of their equipment to include personal gear and professional gear."

The areas where the buildings are located were strategically designed, Hicks said. Battalions, brigade group-sized headquarters, battalion headquarters, company headquarters and the motor pools are consolidated into one area.

"With these facilities it takes the Soldiers all the way through the planning phase from receiving the mission to planning the mission to preparing for the mission to actually moving out to go execute the mission," Hicks said. "So all of that is done in one house instead of several houses that they were in before."

In the older facilities, he said the team room was overcrowded. The Soldiers couldn't do their planning properly so they had to go to another facility. They would then go to another facility to prepare their equipment to put in their vehicles before moving out for the actual mission.

"So you had very different stages of preparedness," he said. "Now with the new facilities, everything is under one roof. They've got all of the specialized gear standing by that's in their ready room. When they finish their planning, which is right next to their team room, they go downstairs, grab their equipment and move on out. So it's very efficient and it cuts down on a lot of wasted time going back and forth between different facilities."

The facilities are designed and built to meet specific training and mission needs, and for energy efficiency. The Corps of Engineers incorporates Leadership in Energy and Environmental Design specifications into the Special Ops project, which saves money on utility expenses.

"The cost savings come in the lifecycle of the buildings," he said. "A lot of time the upfront costs you put into a project may be the same or a little bit more for normal construction. However, when you look at the lower long term costs to operate and maintain these facilities that's where you realize the savings."

Project engineers Joshua Kallam, left, and Anthony Byrd of the U.S. Army Corps of Engineers Wilmington District's Special Operations Command Area Office check data from the construction of the U.S. Army Special Operations Command Language and Cultural Center on Fort Bragg, North Carolina. (Photo by Hank Heusinkveld)

Among the design features, Cannady said, are building lighting control and heating, ventilation, and air conditioning management, which allow for energy usage to be monitored and optimized. Solar power water heaters and geothermal units provide cost effective and efficient operational facility. In addition, Cannady said the facilities are built with a very robust security and communications infrastructure. To achieve success, the project delivery team must work closely with the stakeholder throughout the life of the project.

"Technology is always evolving. And that is where we usually run into the timeline disconnect between project planning and design versus construction," Cannady said. "When this happens we partner with our stakeholders to determine the best path forward to ensure the facilities have the required capabilities to meet their mission."

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Army Housing professionals teach peers about RCI

by Tim Hipps

FORT SAM HOUSTON, Texas – Participants in the Army's inaugural Residential Communities Initiative Training Course praised the U.S. Army Installation Management Command for using Army Housing professionals as instructors.

Hosted March 21 through 24 by IMCOM's G4 Facilities and Logistics Housing division, instructors from IMCOM garrisons, IMCOM Headquarters, and the Office of the Assistant Chief of Staff for Installation Management covered the fundamentals of the Residential Communities Initiative, or RCI, privatized housing program.

The students included RCI-savvy veterans of Army Housing and Career Program, 27 interns, and virtual rookies of the RCI program. After a week of classroom training, intensive reading, collaboration and networking with peers, 32 students and six instructors left San Antonio as better connected Army Housing leaders.

"Doing the job and not really knowing my left and right limits, this kind of brought everything into perspective," said Lucien Sweetenberg, a retired Army Command Sergeant Major serving in a two-year internship at Fort Bliss, Texas. "It really enhanced my knowledge of knowing what I should be doing and things that the partner should or should not be doing.

"It's kind of overwhelming because it's a lot," Sweetenberg said. "You come in with a 10 percent knowledge base, and the light comes on, but I think the best part was the collaboration – learning how things are going from different installations. I have a huge network now of different people that I can call and see how they do at their installation, and knowing it's not a bad thing to call them."

RCI provides a vision for solving an old problem. Years of funding shortfalls and resource allocation decisions created a significant deterioration in the construction, repair and maintenance of housing. In 1996, Congress passed the Military Housing Privatization Initiative Act that provided alternative authorities to manage, construct and improve military and unaccompanied housing. The Army launched RCI to leverage private funds through partnerships to do that.

Addressing the urgent infrastructure challenges brought on by a decade of underinvestment is IMCOM's top priority.

Aberdeen Proving Ground Housing Division Program Manager Michael Fancher is one of 32 students and six instructors at the inaugural Army Residential Communities Initiatives training course March 21 through 24 at the College of Installation Management on Fort Sam Houston, Texas. (Photo by Tim Hipps)

Yolanda Brown, the Army Housing Executive of the Year from Fort Bliss, Texas, was the lead instructor for the four-day course.

"I think it's great that IMCOM decided to change over to having the facilitators be housing management careerists," Brown said. "Before, we had contractors, and they did a great job, as well, but just having the relationships with other housing managers to be able to say "I do what you do every day so I understand and I can empathize with what you're going through and what you're doing" instead of just someone telling them, 'Hey, this is how you need to do it.' The contractors weren't doing the housing management every day like we are at the installations, so I think it's great that they switched over to housing professionals teaching other housing professionals.

"During these courses, we learn from each other. The give and take is great," she said. "We fix so many problems in those few minutes that we can just sit and talk to each other than all the research and hard work you can do at the installation by just getting a roomful of housing management professionals together."

RCI has constructed nearly 35,000 homes and renovated 32,000 more with continued capital repair, replacement, maintenance, and property management. The Family Housing end-state inventory is 86,077 homes by 2020, with an unaccompanied housing goal of 1,590 apartments.

This was the first time IMCOM hosted and led the RCI Level I training at the College of Installation Management.

"This was probably the best course that I've ever attended as a housing professional," said Pedro Saldana, who manages Army Housing at Camp Red Cloud, South Korea, and has been working with traditional Army housing since 2008. "I didn't even know what RCI was until I got to this class. The material was presented in a very professional, and most importantly, a very understandable level of instruction. No one tried to use ambiguous terms, and they allowed us to ask questions.

"The other plus was the networking and the collaboration with different installations and different ways of doing the same thing," Saldana said. "And something that you don't get from any other course: the camaraderie and the ability to interact and meet new folks."

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Maintenance key to continued savings from pre-rinse spray valves

by Elisabeth Jenicek

Food service facilities have one of the highest water intensities (gallons/square feet) on military installations, including approximately one third of water use by pre-rinse spray valves, which remove solids from dishes, pots, and pans before they are loaded into dishwashing machines.

In 2013, the US Environmental Protection Agency's WaterSense® program developed a specification for a 1.28 gallons per minute unit that includes standards for performance and water efficiency. Retrofitting older wasteful pre-rinse spray valves with the newer efficient models is only the first step in reducing water and energy bills. Routine maintenance is necessary to ensure that the valves are operating correctly. Repairing or replacing a broken valve will pay for itself in lower utility costs.

The U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory, under sponsorship of the Assistant Chief of Staff for Installation Management Installation Technology Transition Program, demonstrated and monitored WaterSense® certified pre-rinse spray valves in an Army dining facility, an Army club, a bowling center, and a golf club house. The technology was evaluated based on water demand, user satisfaction, operations and maintenance, and cost/benefit including water, energy, and maintenance savings. Building water usage was monitored using Meter Master EL100 flow recorders attached to the building water meters. Demonstration results showed payback periods as short as a month in a dining facility.

Demonstration results showed payback periods as short as a month in a dining facility.

A retrofit pre-rinse spray valve undergoes a water temperature test to ensure that it meets the needs of the facility for proper operation. Retrofitting older pre-rinse spray valves with newer efficient models can help reduce water and energy bills on military installations. (Photo by Elisabeth Jenicek)

Commercial pre-rinse spray valves are an essential component of food service facilities. They use water under pressure directed through a nozzle to pre-clean cooking and food storage containers prior to sanitation in automated dishwashing machines. Often this includes removing large amounts of food that is then directed into a food grinder, freeing the dishwasher from excessive food debris.

Kitchens are estimated to use nearly half of total water consumption in restaurants. Pre-rinse spray valves consume up to one-third of the water in a typical commercial kitchen. Water maintained at required temperatures for commercial kitchens contains a large amount of embedded energy from the water heating process. Thus, reducing water consumed by the valves also saves a substantial amount of energy.

Procedures for evaluating each pre-rinse spray valve were based on the methods used by the U.S. Environmental Protection Agency in conducting its field study. These included visual inspection noting condition and any flow markings, flow rate measurements, water force measurements, water temperature, and photographs. Users also were interviewed about their experience with both the existing equipment and the retrofit valves.

Data was collected for the existing pre-rinse spray valves, and for the retrofit valves upon installation, and again between one and three months later.

User Tips

A number of other factors will improve pre-rinse spray valve operation, support longevity, and minimize operations and maintenance:

- Routine inspections of the valves for leaks and broken or loose parts can save additional water, energy, and money. Tighten screws and replace the flat rubber washer to stop leakage. If

(See Continued Savings, page 15)

(Ccontinued Savings, continued from page 14)

leaks cannot be stopped, replace the pre-rinse spray valve.

- The demonstration findings suggest that kitchen personnel should change pre-rinse spray valve washers themselves, rather than submitting a work order through the maintenance system. A system of replacing washers at a regular interval, similar to group relamping of light fixtures, also is recommended. This could be scheduled for a time when the pre-rinse spray valve is in low or no-use. The slight cost of a washer, about a dollar, can pay for itself quickly with savings in hot water.
- The hose height of the pre-rinse spray valve should be adequate for the user to be comfortable and encourage use in lieu of other kitchen sprayers. Tie-back features should be installed, such as a ring on the valve and a corresponding hook mounted on the faucet riser. This permits stowage of the pre-rinse spray valve so it is not hanging free with the possibility of it being damaged.
- Dishes should be scraped of as much food waste as possible prior to cleaning with the pre-rinse spray valve.
- Heavily soiled dishes should be pre-soaked to loosen food residue.

... reducing water consumed by the valves also saves a substantial amount of energy.

- Users should be trained in the use of the always-on clamp, that is, use only when needed;
- Pre-rinse spray valves should be inspected periodically for scale build-up, which can restrict flow. Scale should be cleaned using cleaning products designed to dissolve. Users should report leaks, breaks, and incorrect operation. Posting a sign near the sink/food grinder area with operations and maintenance contact information is recommended.

The results of the demonstration project support retrofit of pre-rinse spray valves with the WaterSense®-certified models with a flow no less than 1 gallon per minute and a spray force no less than 7.0 ounce force. All pre-rinse spray valve retrofits should include follow up with users after retrofit to ensure the valves are working as expected and meeting the needs of the facility. Also, maintenance and user awareness programs should be instituted to prevent malfunctioning valves.

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U.S. Military Academy New Cadet barracks stands for one of its own

by JoAnne Castagna

Douglas Melville of New York City was very close with his late uncle, U.S. Air Force general officer Benjamin Oliver Davis Jr.

He smiles as he remembers the lessons he learned from the U.S. Military Academy West Point's first African-American graduate of the 20th Century. Davis was a military pioneer during his time – a time of racial segregation that inspired Melville to take on a career as a Chief Diversity Officer.

"My uncle said the wheels of justice turn slowly. Things are going to take time, take generations and take lives to get changed and implemented but you need to stay determined and dedicated towards those goals," Melville said.

Melville is witnessing this change in action this century as the U.S. Military Academy names a new Cadet barracks after Benjamin Davis.

Davis was selected because of what he stood for, Melville said. "My uncle made sure to instill in me that as I go through my professional career that it was important for me to take what I learn and make the path easier for those that come after me," he said.

Davis lived his words. He had a life-long love of flying and became the commander of the World War II Tuskegee Airmen and soon after became one of the first African American to receive military aviation wings. He also helped create policies that opened doors for other African Americans in the military.

Davis Barracks was designed and constructed by the U.S. Army Corps of Engineers New York District's contractor Walsh Construction Company of Chicago, and its subcontractor, Clark Nexsen.

The sprawling, six-floor structure contains enough floor space to house five football fields and sits in the Central Area of the main campus which was designated a National Historic Landmark.

When Melville was informed about the building dedication he also was invited to the Academy. "A historian showed me around. At one point, I turned around and there were gentlemen wearing hard hats and yellow vests and they said we are from the U.S. Army Corps of Engineers and they wanted to show me the building," Melville said.

"They put a hard hat on me and told me that they wanted me to see, touch and feel the Davis Barracks."

Melville was shown every aspect of the structure from where rock was blasted to make room for the barracks to the interior of the cadet rooms.

Mathew Ludwig, New York District's Military Programs chief at the time, walked Melville around, "He was impressed with the detail and stated on numerous occasions that he was honored to be part of the event and thanked everyone who had a hand in the facility," Ludwig said.

Melville first observed where solid rock was cut for two years to make space for the building.

"The barracks stand where there used to be a large rock hill. To make way for the building, we blasted and removed 60 feet of solid rock from the top of the hill. This is enough material to fill a football field 71 feet high," said Catherine Scott, New York District's team leader.

The barracks' first floor of the barracks consists of mechanical rooms and space for a chiller plant that will provide air conditioning to neighboring existing barracks. The mezzanine level on the West side provides cadet storage and trunk rooms. Floors two through six are the dormitories – each dorm designed to house two to three cadets who will have access to restrooms and laundry rooms.

An architectural highlight is its central light well. "There is a large 17-foot square skylight on the roof and a large open area on each of the floors below; this central "well" space allows natural sunlight to illuminate the common area," Scott said.

"The Army Corps showed me each of the barracks, and explained how the heat and air conditioned floors work. It is the first barracks to have air conditioning," Melville said.

"We are using an innovative method to

(See New Cadet Barracks, page 19)

The front exterior of Davis Barracks at the U.S. Military Academy West Point, New York, is shown during construction. Great care was taken to ensure that the building's exterior maintained the look of the rest of the historic 200-year-old campus. Cadets began moving into the barracks in early June. (Photo by Daniel Desmet)

Prime Power receives HQ facilities upgrade at Fort Belvoir

by Chris Gardner

Most times, when an active duty U.S. Army unit is deployed it is not to American cities. But for the 249th Engineer Battalion (Prime Power), it is not unusual at all.

These specially trained Soldiers, part of the U.S. Army Corps of Engineers, help provide temporary emergency power to critical facilities in communities impacted by natural or manmade disasters, including anything from providing power to the New York Stock Exchange after the Sept. 11 terrorist attacks to help bring normalcy to the Nation's economy, to providing power to fuel depots in New Jersey after Hurricane Sandy in 2012. They also support military operations overseas, assisting with various power generation needs.

With four companies strategically stationed across the United States, the battalion's headquarters currently sits in aging facilities on Fort Belvoir in northern Virginia … but not for long.

The U.S. Army Corps of Engineers, Baltimore District, has been working with its Prime Power colleagues to renovate the three buildings that are home to the battalion's headquarters, as well its C Company and a Reserve platoon.

"Our Soldiers provide outstanding support to contingency and emergency operations both at home and deployed," said 249th Engineer Battalion Commander Lt. Col. Julie Balten. "The funding for and completion of these renovations lets our Soldiers know we are investing in them and that their mission is important."

Soldiers with C Company, 249th Engineer Battalion (Prime Power), based out of Fort Belvoir, Virginia, install electrical generator equipment Nov. 6, 2012, at a Carteret, N.J. fuel depot that lost power during Hurricane Sandy. This work was critical to relieving gas shortages experienced by recovering communities in the immediate days following the storm. (Department of Defense photo by EJ Hersom)

Construction is being completed at Building 1417, the 249th's heavy maintenance facility, with the roughly $6 million interior renovation there slated to be completed in the coming weeks.

"The goal is to upgrade the battalion's post-World War II facilities to bring us into the future and provide us with the maintenance space we require to provide power support to the Army and the nation," said Capt. Brad Davis, logistics officer for the 249th Engineer Battalion.

The next two phases of construction will each focus on the other two buildings used by the 249th, buildings 1416 and 1418. The contract for the next renovation is being discussed for possible bidding and award later this year.

"What we're finishing currently is phase one to enable the 249th to maintain their generators and vehicles," said Baltimore District Project Engineer Nhat Tran.

Building 1417, where the unit performs generator maintenance as well as vehicle maintenance, was originally designed for use as a storage warehouse with entrances in the front and back and elevated office space splitting the open-spaced building into separated areas.

"Previously, they couldn't move trucks or generators from one end of the building to the other without going outside," Tran said. "We've improved the flow of work of the building by removing the office space in the middle of the building and we've also added in built-in cranes to help with the functionality of the facility."

The work is not only being done to improve functionality for 249th Soldiers, it's also improving safety by removing rust, lead paint and asbestos, and improving the facility's efficiency by replacing aging mechanical, electrical and plumbing systems.

While the phased work continues, the 249th is carrying out its missions using its buildings awaiting renovation. The Soldiers say they are appreciative of the improvements to the facilities.

"This renovation will update our 1940's era facility and enable us to continue our mission well into the future," Davis said.

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About the 249th Engineer Battalion (Prime Power)

The 249th Engineer Battalion (Prime Power) is a versatile power generation battalion assigned to the U.S. Army Corps of Engineers that provides commercial-level power to military units and federal relief organizations during full-spectrum operations. Additionally, the commander serves as the Commandant of the U.S. Army Prime Power School, the institution responsible for the development of Army and Navy power generation specialists. The organization is charged with the rapid provision of Army generators to support worldwide requirements.

The battalion consists of a headquarters and headquarters company, four Prime Power line companies (A, B, C & D), and the Prime Power School. The Prime Power School graduates the Army's Prime Power Production Specialist (MOS 12P) following a one-year course that includes math, physics, engineering, and power plant operations and maintenance.

Each line company has a headquarters and four to six platoons comprised of a warrant officer and 15 noncommissioned officers. The platoons are capable of setting up, operating, and repairing complete medium voltage power generation and distribution systems worldwide.

- Alpha Company, 249th Engineer Battalion, Schofield Barracks, Hawaii.
- Bravo Company, 249th Engineer Battalion, Fort Bragg, North Carolina.
- Charlie Company was activated in 2008 and is located at Fort Belvoir, Virginia.
- Delta Company, comprised of all Reserve Soldiers, has its headquarters and three platoons at Cranston, Rhode Island, and one platoon is at Fort Belvoir.

Building Information Modeling becomes everyday business

by Jonathan Boone

The days when cutting edge technology was not being used to its fullest potential on a construction project are over. Benjamin Franklin coined the phrase "Time is Money" as he mentored a young tradesman in 1748, and it is never more prevalent at the U.S. Army Engineer Research and Development Center in 2017, as it relates to the center's headquarters building construction by prime contractor Yates Construction.

As the center delivers innovative solutions for a safer, better world, investments are continually being made to ensure that its facility infrastructure meets the demands of future generations. The most recent investment includes the center's headquarters building in Vicksburg, Mississippi, that is nearing 60 percent completion. Yates Construction has implemented the use of Building Information Modeling (BIM) to enhance the traditional construction drawings, designed by the U.S. Army Corps of Engineers Mobile District, with 3-D computer models.

Through the use of BIM technology, Yates' project teams use information contained in the models to perform a variety of complementary tasks including visualization, construction simulation and ultimately improving the accuracy of as-built documentation. Yates Construction's leadership team finds great efficiencies are gained when the team builds a project twice. By virtually building the headquarters building using BIM modeling software before physical construction started, Yates' project teams were able to create information rich models that contain valuable information regarding the building's design, potential constructability issues, as well as subcontractor logistics.

This preconstruction effort leads to more efficient field construction schedules, reliable costs, and reduced waste due to rework. During a recent site visit by members of the Information Technology Laboratory's Computer-Aided Design/Building Information Modeling Technology Center team, Yates Construction's project manager Mickey Lane said BIM technology provides too much of a benefit for their company not to use it. Lane referenced the clash detection tool as an important and integral part of the team's BIM modeling process.

In the BIM modeling there is not just one model created by the Yates Construction team, but several that are integrated into a composite master model. Each discipline, including structural engineering, mechanical, electrical and plumbing engineering, creates a model independently of all the others, based upon the Mobile District's original contract plan set, which is the starting point. After each discipline has finished its work, the next step is clash detection, identifying where the models clash when elements of separate models occupy the same space. Finding these inconsistencies before construction starts is vital to the project.

This technology has added great value to the three-phase control system, which is the core of the U.S. Army Corps of Engineers Construction Quality Management System, according to Mobile District's lead inspector Jon Beasley. Inconsistencies during the field construction impact construction progress, potentially causing delays, design changes, potential escalation in material costs and other issues.

Clash detection is not new, Lane said, it's just that in the past, clash detection took place on the construction site. For example, a structural steel beam designed by one engineer can end up right in the path of a major plumbing line designed by another engineer using traditional two-dimensional design methods. BIM modeling helps engineers and architects as they work together. It can ultimately reduce project costs and schedule delays.

With project schedules only second to employee safety on a construction site, Yates Construction continues to push the technology envelope by incorporating 4-D BIM into its management scheme. The fourth dimension incorporated into BIM is project scheduling or time.

The construction of 4-D models enables the architect, engineer, contractor and customer of a construction project to visualize the entire duration of a series of events and display the progress of construction activities through the project's lifetime.

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The U.S. Army Engineer Research and Development Center's headquarters building in Vicksburg, Mississippi, is scheduled to be completed this fall. (U.S. Army photo)

Michigan hydropower plant gets upgrades after 60 years

by 1st Lt. Erica Mitchell

You might think it's a flip of a switch that turns the lights on or generates the electricity at the Soo Locks in Sault Ste. Marie, Michigan. But it goes deeper than that. Hydropower plays a critical role in getting electrical power to the Soo Locks and Michigan's Eastern Upper Peninsula.

Since 1951, the U.S. Army Corps of Engineers, Detroit District has maintained and operated the St. Marys Falls Canal Hydropower Plant consisting of two hydro-electric powerhouses located on the Soo Locks facility. Generating more than 150 million kilowatt hours of electrical energy yearly, the plant powers operations at the Soo Locks as well as providing 20 percent of the power needed for the residents in the Eastern Upper Peninsula.

With original, aging technology running the plant, in the fall 2015, the Detroit District awarded a nearly $3.2 million contract to Koontz Electric Company, Inc., from Morrilton, Arkansas, to update the plant by removing and replacing protective relays and switchgear-motor control assemblies.

The Soo Locks Main Powerhouse in the foreground, located at the foot of the St Marys rapids in Sault Ste. Marie, Michigan, contains four hydropower generating units. Unit 10 pictured in background is located west of the main plant. (U.S. Army Corps of Engineers, Detroit District photo)

"The protective relays and switchgear were original equipment from when the Main

(See Hydropower Plant, page 20)

(New Cadet Barracks, continued from page 16)

control the climate in the cadet rooms through plastic tubing that was installed in the concrete floor slabs. This tubing will provide radiant heating during the winter months as well as radiant cooling during the summer season. While radiant heating has become more widespread and popular in recent years, using the same tubing to cool the ambient space is a relatively newer technique," Scott said.

Another way the building is energy efficient is by using a solar hot water system built on the barrack's roof, which will deliver 30 percent of the building's hot water.

All of this is being done to achieve the U.S. Army's requirement of Leadership in Energy and Environmental Design Silver certification. These energy saving features will save taxpayers approximately $44,000 annually.

The structure is modern, but you wouldn't know it by looking at the exterior. The building was designed to maintain the look of the rest of the historic 200-year-old campus. "The building was designed in the military gothic revival architectural style to blend in with the adjacent historical structures located in the Central Area of the Academy," Scott said.

The design includes granite surface covering on the exterior walls and gothic arches. There are secured entryways that extend the width of the structure and allow a way out to egress from the north formation area to the south side of the building. There also are parapets, where the roof meets the walls along the roof perimeter that were designed in a defensive battlement style and include concrete crenels, open space, and cast stone lintels and cap stones.

Scott said a significant volume of granite was required for the façade and a pedestal structure below the building –121,000,000 pounds to be exact – the equivalent of 10,083 elephants, each weighing 12,000 pounds.

Melville is amazed at what was created in his uncle's name. "He has a monument in his name that stands taller than the others, in the center of the campus and is the last barracks to be built in our lifetime and maybe in our children's and grandchildren's lifetime at the U.S. Military Academy, West Point," he said.

Cadets began moving into Davis Barracks June 1.

"It isn't very often that someone will ever get the opportunity to work on such a magnificent project that will help define the future leaders of this great country. The extreme gratitude and excitement that Doug Melville showed to the Army Corps during the tour helped reinforce the importance of this project," Ludwig said.

"This is a man's life work," Melville said. "It's not just granite, it's not just wiring, it's not just glass and steel, it's actually a real person who lived his entire life putting it on the line and making it out in the end."

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3 ERDC labs come together for success in Thule, Greenland

by Stacy Tennison

Three laboratories of the U.S. Army Engineer Research and Development Center (ERDC) – Cold Regions Research and Engineering Laboratory (CRREL), Construction Engineering Research Laboratory (CERL), and Geotechnical and Structures Laboratory (GSL) – brought their expertise to solve the problem of permafrost damage at Thule Air Base in Northwest Greenland.

"The Air Base in Thule has the very important mission of tracking and detection. They are an early-warning surveillance security for the United States. It is of great benefit to the nation to make sure Thule is operational," said Kevin Bjella, research civil engineer at CRREL.

The airfield and two structures at Thule Air Base had experienced damage from permafrost thaw.

Building on frozen ground in high-latitude regions presents many challenges for construction of any kind. CRREL was tasked with finding ways to mitigate the issues of infrastructure on the frozen ground and provide new ways of construction.

U.S. Army Engineer Research and Development Center researchers successfully attempted a repaving design that incorporated buried extruded polystyrene (foam insulation boards) to prevent permafrost thaw at the most critical locations on the Thule Air Base runway in Northwest Greenland. (Photo by Kevin Bjella)

CRREL partnered with CERL to find ways to mitigate thaw settlement damage to existing structures. These methods would need to account for summer thaw and ensure the thaw would not reach the permafrost, which would compromise the stability of the structures built on it.

Bjella and James Wilcoski, a structural engineer at CERL, worked together to complete a structural assessment of two buildings at Thule Air Base, the most critical of which was the primary facility for the Ballistic Missile Early Warning System.

The assessment of both buildings revealed previous modifications and remodeling projects to the structures had caused settlement and damage.

The team successfully developed mitigation strategies to reverse the impact of previous modifications and helped define upgrade recommendations to ensure the buildings' future safety. The Air Force is now working with the installation contractor on implementing the modifications.

In addition, CRREL provided the geological assessment and foundation alternatives for the U.S. Army Corps of Engineers New York District on the construction of four military structures, successfully addressing concerns of permafrost thaw and ensuring long-term stability for the structures.

(See Thule, Greenland, page 25)

(Hydropower Plant, continued from page 19)

Powerhouse was constructed in the early 1950s. They had long surpassed their designed service life and were becoming difficult to maintain and service," said Steven Rose, assistant chief of Operations for the Detroit District.

This summer Koontz has replaced more than 35 protective relays and more than 12 switchgear-motor control assemblies.

The protective relays monitor various types of electric power parameters and provide equipment protection. The new digital protective relays replaced the original obsolete electromechanical relays providing a safer, more responsive and reliable system. The switchgear/motor control assemblies direct and distribute electrical power to auxiliary plant equipment and circuits. The functionality of the upgrades will help engineers accurately isolate problems, if any were to occur, in safer more responsive way.

"The replacement of this equipment provides a more reliable source of power to the Soo Locks and the power grid of the Eastern Upper Peninsula. The new relays and switchgear readily work together with the hydropower plant's modern digital control system that optimizes power generation within the plant," Rose said.

The power plant consists of the Main Powerhouse, located at the foot of the St Marys rapids with four generating units; three built in 1951-1952 with 5.5 megawatt capacity and one built in 1954 with 2.5 megawatt capacity. Unit 10, located west of the main plant, has a 2.5 megawatt capacity. This accounts for a total of five hydro-electric generating units for a total power output of nearly 22 megawatts.

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Army guides BUILDER™ implementation, training

by Liisa White and Kelly Moon

May 2017 marked the beginning of a long awaited and much anticipated facilities operations initiative, the Headquarters Department of the Army-directed Execution Order 159-17, charting the training and implementation of the BUILDER ™ Sustainment Management System Suite.

The order describes the roles and responsibilities for the implementation of the Army Sustainment Management System (SMS), and applies to the Active Army, Army National Guard, and Army Reserve facilities. The covered facilities include all buildings not scheduled for demolition within the next two fiscal years as well as horizontal facilities such as pavements and railroads. Land holding commands have the objective of completing 100 percent initial inspections by Sept. 30, 2021. Reporting begins with the submission of each land holding command's implementation plan by Nov. 1, 2017.

This initiative tracks back to the birth of the standardized ratings for facility conditions. In 2012, Congress expressed concerns about the inconsistency of facility condition assessment tools and methods utilized by the Department of Defense. The facilities assessment method used at the time made it difficult to make comparisons of financial and facility condition data submitted by the Services. To address this difficulty, Congress directed DOD to resolve this conflict in the National Defense Authorization Act 2012, establishing the need to adopt a standardized Facility Condition Index to make informed justifications for facility sustainment, restoration and modernization programs.

The Department of Defense did not have to seek new solutions as the Army already possessed multiple condition assessment systems and sister Services have been utilizing identical systems to assess the conditions of pavements and railroads. After investigating alternatives, on Sept. 10, 2013, DOD standardized the Facility Condition Index process to ensure consistent and reliable data for all service components. BUILDER™ SMS methodology was selected as the only Facility Condition Index acceptable to the Office of the Secretary of Defense.

The U.S. Army Engineering Research and Development Center Construction Engineering Research Laboratory is the government developer and Technical Center of Expertise for BUILDER ™ Sustainment Management System. Facility inspections will be conducted using the BUILDER™ SMS standard process. The end state is each military component must ensure a Facility Condition Index is assigned for each asset on their installations and recorded in their real property databases.

The Office of the Assistant Chief of Staff for Installation Management (OACSIM) has formed an Army Configuration Support Panel to guide implementation. The panel consists of membership from OACSIM, U.S. Army Installation Management Command, U.S. Army Materiel Command, U.S. Army Medical Command, U.S. Army Reserves, U.S. Army National Guard, and U.S. Army Corps of Engineers. The panel is providing guidance on quality assurance and quality control procedures for incorporation into land holding commands' implementation plans.

The Office of the Secretary of Defense standardized rating for facility conditions is a long awaited Army objective. Programs and resources are in place to support the implementation. Armywide impacts include more accurate facility condition assessments, a shift of inspections responsibility from tenants back to the land holding commands, and better integration of information for Army data systems including PAVER ™, RAILER ™, and the Installation Status Report.

The Installation Status Report-Infrastructure system inspection process currently generates Facility Condition Indexes. Once BUILDER ™ inspections are integrated into Installation Status Reports, tenant facility condition assessments in facilities inspected by the SMS program will no longer be required. This is because the Construction Engineer Research Lab will transfer the BUILDER ™ generated Facility Condition Index information to Installation Status Reports. Tenants will continue to complete mission functionality inspections. The initial transfer of data will be a manual process, but Army SMS users can expect automated processes to facilitate a seamless facilities operation in the future.

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Cybersecurity Program oversees system accreditations

by Kerry Gates

The U.S. Army Engineering and Support Center, Huntsville provides quality oversight for the management of cybersecurity system accreditations of Industrial Control Systems for the Department of Defense using the Risk Management Framework requirements.

The cybersecurity requirement is mandated for the defense department per the Risk Management Framework standards in accordance with the DOD Instructions 8500.01 "Cybersecurity" and 8510.01 "RMF for DOD IT" both updated and released in March 2014. Replacing the DOD Information Assurance Certification and Accreditation Process, the Risk Management Framework is comprised of six steps: Categorize the System, Select Security Controls, Implement Security Controls, Assess Security Controls, Authorize System, and Monitor Security Controls.

The cybersecurity project delivery team includes cybersecurity program and project managers, Industrial Control System Technical Center of Expertise technical experts and contracting professionals. The Cybersecurity Program works directly with the Industrial Control System Technical Center of Expertise, also located within Huntsville Center, to assess and authorize industrial control systems for various defense department customers.

Industrial Control Systems can include, but are not limited to, Utility Monitoring and Control Systems, Electronic Security Systems, Building Automation Systems, Supervisory Control and Data Acquisition systems and similar control systems. Huntsville Center also provides Industrial Control System technical expertise through additional programs, including the Electronic Security System Mandatory Center of Expertise, Sustainability and Energy Center of Expertise for Metering, and the Utility Monitoring Control System Mandatory Center of Expertise.

Additionally, the Cybersecurity Program is developing the capability to execute Risk Management Framework requirements for microgrids and medical systems. The program can perform studies to assist customers in evaluating if their Industrial Control System can undergo an assessment and achieve an authorization to proceed or if updates are required before applying the Risk Management Framework requirements.

When initiating a project, the cybersecurity team, in coordination with the customer, will develop an acquisition plan and execution schedule for obtaining and maintaining system accreditation. The team also ensures the contractor fulfills the duties of the contract by providing all required documentation and artifacts, to include, but not limited to, a final hardware and software list, a System Security Plan, Configuration Management Plan, Contingency Plan, Risk Assessment Report, Physical Security Plan, Patch Management Process, a Plan of Actions and Milestones, and Continuous Monitoring Plan.

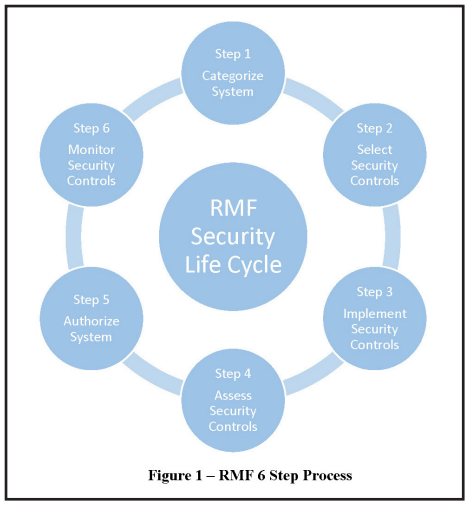

Figure 1 – RMF 6 Step Process

The Risk Management Framework is a six-step process to accredit Industrial Control Systems. (U.S. Army Corps of Engineers graphic)

The team also ensures the appropriate personnel are on site during the independent Security Control Assessor-Validator assessment to assist with answering any questions related to the system. The team can contract out the requirements for executing continuous monitoring after the Authority to Operate is achieved to ensure the certification is maintained as required under the Risk Management Framework; or the team can support the customer in ensuring the continuous monitoring process is understood and executed at the local level.

The cybersecurity team has various contract vehicles available and will work with various DOD organizations to obtain an Authority to Operate certification and will work with customers to ensure the requirements for maintaining that certification are understood and can be executed as required. Through up-front coordination and communication with the customer, the cybersecurity team ensures the customer is aware of all of the requirements for securing its system and what its roles and responsibilities as the end user and system owner will be once Authority to Operate status is achieved.

The Cybersecurity Program understands the requirements for obtaining and maintaining a Risk Management Framework Authority to Operate certification and has proven successful in obtaining those certifications for customers. The Cybersecurity Program is home to the Industrial Control System Cybersecurity Technical Center of Expertise, the Electronic Security System Mandatory Center of Expertise, the Sustainability and Energy Center of Expertise for Metering and the Utility Monitoring Control System Mandatory Center of Expertise, and has the necessary in-house support to execute a wide array of projects.

The Cybersecurity Project Delivery Team provides turnkey solutions that include project management, technical expertise and contract support and manages cybersecurity projects from inception to completion. Finally, the Cybersecurity Program has Information Assurance Management level II and level III certified cybersecurity specialists in the Industrial Control System Cybersecurity Technical Center of Expertise to assist with execution of the Risk Management Framework process to meet the customers' cybersecurity needs.

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New Fort Irwin medical center gets communication system upgrade

by Heidi Connelly

Soldiers and their Families will see big changes when they start using the new Weed Army Community Hospital at Fort Irwin, California, in September.

Hospital users will see the new building, new furniture and new medical equipment. What they won't see is just as important.

The U.S. Army Engineering and Support Center, Huntsville's Medical Communications Infrastructure & Systems Support Program has been working with the U.S. Army Corps of Engineers Los Angeles District and the Health Facility Planning Agency to ensure facilities-related communications systems and communications infrastructure maintenance and upgrades are installed.

The project equipped the new hospital data center with hardware cabinets, uninterruptable power supplies, power distribution units, and inline cooling racks. The $616,000 project included the assembly of all equipment within a hot aisle containment system and included the installation and deployment of the uninterruptable power supplies, batteries, power distribution units and in-row cooling units.

"Working with the Los Angeles District, we provided key guidance in the development and execution of the facility related information technology portion of the integrated master schedule," said Kevin Miller, the Huntsville Center project manager. "This enabled all dependent medical systems to remain on schedule and acquire their certification testing and staff training for opening day."

While providing procurement and installation of several key systems for the new hospital, the team attended onsite meetings that ensured the delivery and installation of critical components in a timely manner. During the course of any construction project of this magnitude, numerous changes are anticipated.

The team coordinated with the general contractor, Turner Construction, as well as the Los Angeles District, to mitigate any issues with overall project completion. Working in parallel with the Los Angeles District and the Health Facility Planning Agency program manager, the project remained on schedule throughout the construction process. These key complementary services ensure the completion of a world class medical treatment facility for the Fort Irwin Soldiers and their Families.

A view of the Weed Army Community Hospital Data Center, Fort Irwin, California, from outside the server infrastructure. (Courtesy photo)

The new Fort Irwin medical facility will be approximately 216,000 square feet and will provide Soldier and Family patient care, emergency medicine and clinical support. The hospital will support not only the garrison but also the brigade size units that rotate through the National Training Center each year.

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CERL looks at ways to make cost-efficient HVAC changes

by Sean Wallace, Brian Clark, and Joe Bush

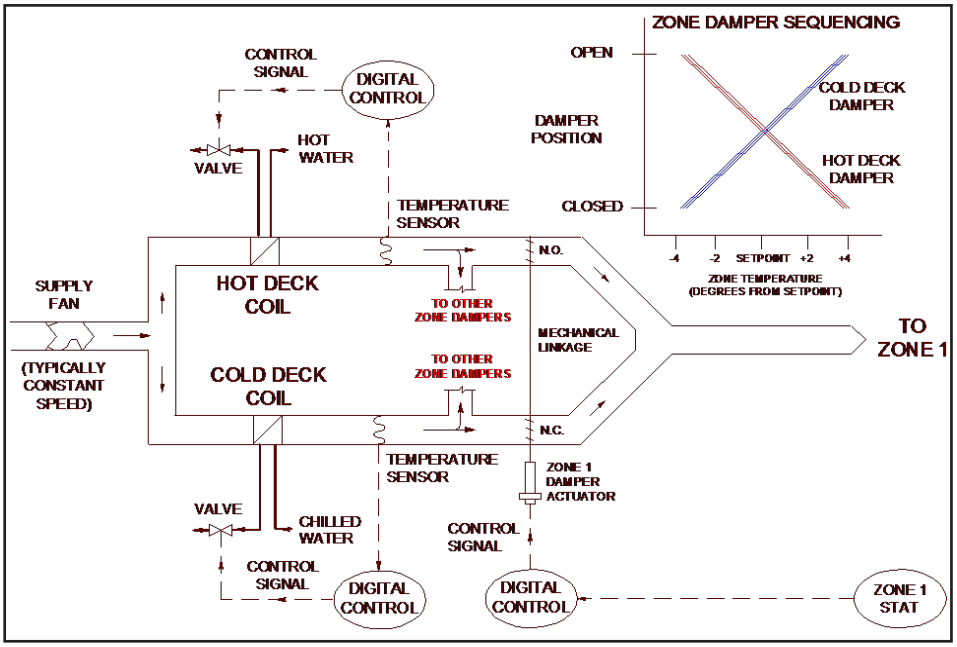
The current design practice for new heating, ventilation and air-conditioning systems that serve multiple zones is to use variable air volume systems with variable air volume boxes in each zone. The Army and the Department of Defense have a large existing inventory of energy inefficient constant volume multizone air handling units, an older technology used to serve multiple zones. As these multizone units continue to age, the units' controls systems are often upgraded or replaced.

Due to the common need to perform a controls retrofit on multizone units, U.S. Army Corps of Engineers Construction Engineering Research Laboratory researchers wanted to determine if it would make sense to convert the constant volume multizone units to variable volume multizone units as part of the controls retrofit. Would the cost of bolstering the controls retrofit by adding variable frequency drives, outside air flow stations, and some additional programming effort pay for itself in energy savings?

The researched decided to retrofit five multizone air handling units in two different climate zones and then evalute one year's worth of operational data. The objective was to validate the effectiveness of the retrofit approach in reducing energy consumption, analyze the economics/comfort associated with the upgrade, and develop technical guidance to help installations perform successful retrofits.

Multizone Units Explained

In a traditional multizone, or two-deck, system, the air handling unit contains a hot deck and a cold deck with associated heating and cooling coils. Constant volume multizone air handlers tend to be inefficient because they cannot reduce the supply fan speed when some building zones do not need full heating or full cooling. To deal with the lack of fan speed control, multizone systems blend conditioned air from the hot and cold decks to create a zone air supply temperature to meet the demands of the zone, which leads to simultaneous heating and cooling. Converting a constant volume multizone air handling unit to a variable air volume unit will reduce heating, cooling, and fan energy.



Neutral deck, or Texas-style, units have a third deck for unconditioned air to mix with either hot or cold deck supply air to maintain zone temperature set points. Though both traditional and neutral deck multizone units operate fan systems at a constant speed, neutral deck units are more energy efficient as they can use the "neutral air" both to avoid mixing heated and cooled air and provide "free heating" to zones with minimal heating requirements.

CERL Retrofit Approach

Converting a constant volume multizone system to a variable air volume system ordinarily requires re-ducting and re-zoning to accommodate variable air volume box terminal units and is a major renovation effort that can be very costly, time consuming, and disruptive to the building occupants. This complete overhaul renovation approach is seldom considered attractive; thus, multizone systems are usually operated as constant volume systems until they fail or otherwise warrant replacement such as due to a building renovation.

The retrofit technique developed and studied by the reseachers retains heating, ventilation and air-conditioning infrastructure and leverages simple controls changes to achieve variable airflow. The approach includes the installation of variable frequency drives for the system fans and a flow station for the outside air intake, and is applied as part of a planned heating, ventilation and air-conditioning controls upgrade effort. Because the approach avoids tampering with ductwork and terminal units, it has a lower first cost with less system down time and less disturbance to building occupants.

The Construction Engineering Research Laboratory developed standard controls drawings that define the sequence of operation changes required for both traditional multizone air handlers and neutral deck multizone air handlers. The drawings include sequences for the modulating fan speed based on critical zone

(See HVAC Changes, page 25)

(HVAC Changes, continued from page 24)

damper position and an optional sequence for demand controlled zone ventilation through room carbon dioxide or occupancy sensors.

Results

To test the retrofit approach effectiveness, the researchers programmed the multizone units to alternate operation daily between constant volume with a fixed outside air damper position simulating the pre-retrofit system (Mode 0), variable volume with a fixed outside air flow setpoint (Mode 1), and variable volume with a variable "demand controlled ventilation" outside air flow setpoint based on occupancy (Mode 2). Mode 0 data reflects the baseline energy consumption to which Modes 1 and 2 data were compared.

In addition to all the relevant energy usage data, such as fan, chilled water, and hot water, the researchers collected zone temperature and humidity ratio data, to determine how comfortable the zones were. This was important because the retrofit technique was judged based on its ability to pay for itself in energy savings while maintaining occupant comfort. Each air handler, in Modes 1 and 2, maintained American Society of Heating, Refrigerating, and Air-Conditioning Engineers 55-level comfort as well as Mode 0 while increasing energy efficiency.

Historical weather data and system performance at various temperatures during the year were used to determine expected annual energy savings for each system. Considering only the additional costs associated with implementing the variable volume conversion as part of a heating, ventilation and air-conditioning controls retrofit project, four of the five multizone units paid back within the 15-year lifecycle period. The larger the unit, the faster the payback tended to be due to energy savings being proportional to multizone unit size but with only incremental implementation costs increases. However, retrofits for traditional multizone units as small as 3 horsepower were lifecycle cost-effective.

This retrofit technique is viable, readily implemented, and in many circumstances will be cost-effective when added to control renovation. Use the contact info below for more details about this study or to receive template drawings for use in multizone retrofit projects

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(Thule, Greenland, continued from page 20)

Bjella also worked with John Rushing, Jesse Doyle and Jeremy Robinson, GSL research civil engineers, in the successful quality reconstruction of the Thule Air Base runway. CRREL led a multi-phase investigation into the current method of permafrost mitigation – painting four million square feet of airfield asphalt pavement white. Painting pavements white in cold regions is a Cold War-era method of preventing damage by thawing permafrost; however, this technique causes aircraft braking problems and is very costly.

The ERDC investigation revealed that much of the runway did not require thaw mitigation and was still in good condition. Thule's runway had not seen new asphalt since 1991. During a recent repaving during the summers of 2015 and 2016, researchers successfully attempted a repaving design that incorporated buried extruded polystyrene (foam insulation boards) to prevent permafrost thaw at the most critical locations, or approximately 18 percent of the runway.

ERDC support led to successful, resilient reconstruction of the entire runway ahead of schedule, ensuring normal flight operations could quickly resume.

The GSL team provided continual inspection of the paving operation and helped identify deficiencies. It was able to troubleshoot problems as they occurred, communicating all findings to the Air Force squadron responsible for maintaining the airfield.

"This was the first time I've been able to work on a project with multiple ERDC labs," Bjella said. "I was happy to be able to demonstrate to the customer that we have this multi-faceted ability and expertise across ERDC. The Air Force was able to see ERDC effectively provide quality assurance, analysis and consultation for these projects."

ERDC's unique ability to combine capabilities across laboratories and disciplines gives a competitive edge and holistic solution to the Warfighter and the nation.

Bjella, Wilcoski, Rushing, Doyle and Robinson combined their expertise to remedy permafrost thaw damage, establishing a formidable team to solve the problem and create a safer, better solution for the airfield and its buildings.

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Fort Hood surge event offers one-stop shop for turn-in

by Christine Luciano

Fort Hood, Texas, offered a one-stop shop experience for units to clear out their CONEX containers and dispose of serviceable and unserviceable items.

"As everything has built up over the years, based on op-tempo, we have accumulated military equipment and items," said Lt. Col. Charlie Slosson, Headquarters, Department of the Army, G-4. "Units need to look at how we account for those items, how we put it where it needs to be and increase the readiness across the board."

Capt. Michael Smith, surge event officer-in-charge, 13th Expeditionary Sustainment Command, coordinated with Sierra Army Depot to accept serviceable equipment for the Army's property records and for Defense Logistics Agency-Disposition Services to accept items to be reutilized throughout the Department of the Defense.

"We have identified all the key strategic players, and established the formula that takes something from being overwhelming to manageable," Smith said.

Partners from Fort Hood Recycle, Sierra Army Depot and DLA-Disposition Services were on-site to help identify recyclable and reusable items.

"There is a myth that if something is tan or OD green that the recycle center cannot accept it," Smith said. "The center can take select items as long as it does not have to be demilitarized and is unserviceable."

Everything from unserviceable steel furniture and brake shoes to tent poles and radiators were recycled.

"Our team wanted to make it easier for the Army to turn in old supplies and unserviceable equipment," said Michael Bush, recycle operations manager, Fort Hood Recycle. "If we can save the Soldiers time and help relieve the burden of unnecessary paperwork, then this will save training hours and manpower. These benefits have a very positive effect on the Army's bottom line."

The streamlined service collected more than 1 million pounds of excess equipment, and eliminated the need to prepare and inspect most turn-in paperwork, saving units 12,225 man-hours.

In addition, Sierra Army Depot filled 16 containers with serviceable repair parts for reuse by the Army and the Department of Defense potentially saving, or avoiding, significant costs for other units.

Chief Warrant Officer 3 Karen Parsons, 62nd Expeditionary Signal Battalion, 11th Theater Tactical Signal Brigade, and her Soldiers disposed of a 20-foot container and a Tricon worth of materials.

"We didn't have to do any paper work on some items, which made it so much easier," Parsons said. "It is a bit of a process to be able to turn it into the SSA (supply support activity), and would take more manpower."

"Traditionally, all of the property would have to be identified and would be time consuming to turn into DLA," said Andre Robinson, property disposal supervisor, McAlester Demil Center. "By doing this process, it saves the Army time on property that is unserviceable and is a win-win for everybody."

More than 557,000 pounds of scrap metal were collected from the surge and clean sweep event, which generated $22,583 in revenue for Fort Hood

"The dollars this generates for the installation improves the quality of life for Fort Hood Soldiers and Civilians," Slosson said. "Other installations and their MWR (Morale, Welfare and Recreation) programs can benefit as well, and to be able to defray those costs and put on more events for our Soldiers is important."

Staff Sgt. Treana Harrison, 2nd Battalion, 5th Cavalry Regiment, 1st Brigade Combat Team, 1st Cavalry Division, took advantage of the opportunity to clear out excess equipment that had been stored for years and was happy to contribute to the installation's recycle program.

Spc. Dartanian Pina And Staff Sgt. Nicholas San Miguel from 115th BSB, 1st Brigade Combat Team, 1st Cavalry Division, Fort Hood, Texas, unload a pallet of unserviceable parts for recycling, and help contribute to the more than 557,000 pounds of scrap metal collected during a special one-stop "surge" event to clear out and dispose of serviceable and unserviceable items. (Photo by Christine Luciano)

"Knowing that we can recycle these items, makes me feel good that we are giving back and allowing opportunities for our Families to do things on Fort Hood," Harrison said.

Other installations can learn from Fort Hood's successful surge event and maximize synergies through partnerships.

"This is something that can be replicated easily, based on real estate, and other installations and garrisons could definitely benefit," Slosson said. "We are trying to put the emphasis back where it belongs, and that's on the commanders to adjust their property books routinely rather than as an operation."

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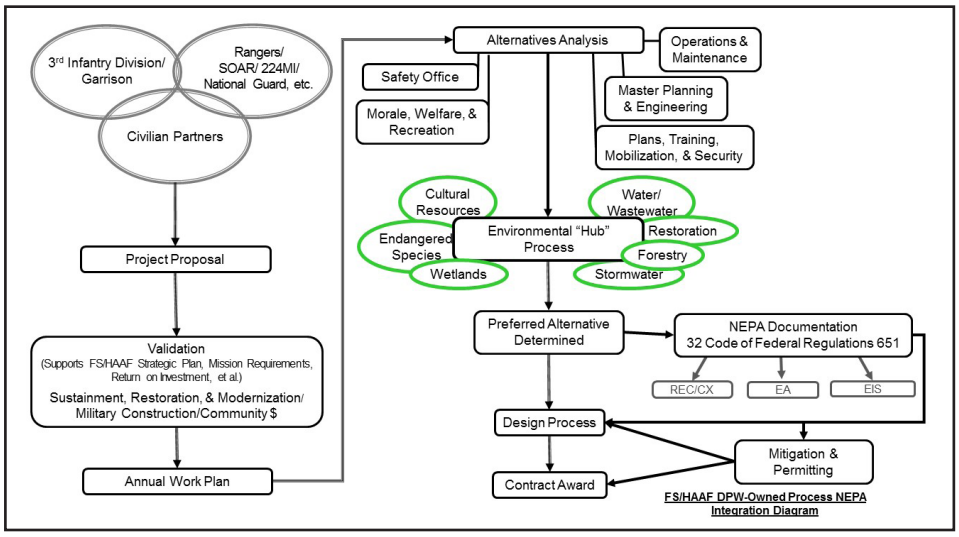
NEPA integration lays strong foundation for strategic decisions

by Amber McCormick

As with any great process, adapting to change is key and can be difficult to achieve without a strong foundation. Throughout the years, Fort Stewart/Hunter Army Airfield has maintained an adaptive ability to produce strategic decisions.

Its foundation is built upon an engaging annual strategic planning process where installation and community stakeholders contribute to support a holistic set of Army goals. Change in command priorities become manageable with such a proven process, resulting in successful implementation of strategic actions year after year. When it comes to implementation, the Directorate of Public Works plays a robust role in the Georgia installation's ability to satisfy strategic goals.

At the outset, most installation strategic priorities become projects that result in the Directorate of Public Works' Annual Work Plan, or the yearly "to do" list. Not all work plan projects are new facilities. In fact, many are infrastructure upgrades, repair, and maintenance actions necessary to continue the installation's progress toward accomplishing the Army's readiness and strategic goals. This is an important aspect to consider. These actions are numerous and can have long lasting impacts on the environment. Thus, successful completion of Annual Work Plan actions compels environmental consideration during project scoping.



FS/HAAF DPW-Owned Process NEPA Integration Diagram

To do this, the Fort Stewart/Hunter Army Airfield Directorate of Public Works Environmental Division engages in a review process to ensure proposals such as tank trail hardening, vegetation removal, and infrastructure repair, etc., comply with federal, state, and local environmental laws and avoid or minimize adverse impacts to the environment. The installation's Environmental Division has integrated environmental factors during project scoping and design, maximizing the spirit and usefulness of the National Environmental Policy Act.

Benefits of National Environmental Policy Act integration include reduced operations and maintenance costs through energy minimizations, type of energy fuel to be used, inbound materials reduction (including hazardous), pollution prevention, and siting alternatives that minimize adverse environmental impacts and promote environmental aspects. Streamlined outcomes also have resulted in concurrent permitting and regulatory consultation, avoiding environmental delays to project implementation, avoiding placement of an environmental resource in a "significance" category; upfront environmental protection measures incorporated into designs and contracts; and a contracting officer representative's understanding of project-specific environmental compliance expectations.

Successful implementation of strategic decisions at Fort Stewart/Hunter Army Airfield is a team approach. Early integration through the installation's National Environmental Policy Act process assists in developing environmentally feasible Annual Work Plan projects. Hence, active involvement by environmental team members produces positive results as projects are accomplished with environmental compliance expectations that become well known from scoping and design review phases, proving a strong process foundation. Ultimately, this integrated approach is a strong strategic planning foundation supporting Army goals at Fort Stewart/Hunter Army Airfield.

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Price is an environmental project manager for the Environmental Division, Directorate of Public Works, Fort Stewart, Georgia, and Amber McCormick is the NEPA Team leader, Fort Steward/Hunter Army Airfield, Directorate of Public Works Environmental Division Leader.

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2017-2018 *Public Works Digest*

Themes & Deadlines

October-November-December 2017
Energy, Water and Waste
Deadline: Sept. 1, 2017

January-February-March 2018
Master Planning, Housing and Barracks
Deadline: Dec. 1, 2017

April-May-June 2018
Environment and Sustainability
Deadline: March 2, 2018

July-August-September 2018
Operations and Maintenance
Deadline: June 1, 2018

Cultural resources project becomes 'rocket restoration'

by Bill Godby and Victor Palma

In November 2014, the cultural resources program at White Sands Missile Range, New Mexico, executed a memorandum of agreement in support of the demolition of the Green River Test Site in Green River Utah, an annex to White Sands. The site was determined to be an eligible Historic Military District.

The Green River Test Site was originally built in support of the U.S. Air Force Advanced Ballistic Re-entry System Program, using the Athena rocket to study re-entry phenomena, determining optical and radar signatures. The scale model intercontinental ballistic missile Athena test vehicle was designed to reproduce trajectory dynamics at re-entry and to facilitate the development testing of full size decoys. Between 1964 and 1973, the Air Force launched 140 Athena rockets.

The O.K. Anderson Park in Green River is home to a full-scale replica of the Athena rocket. Throughout the years the replica developed numerous cracks, blisters, holes, and large breaks in its external aluminum casing, particularly along the bottom half of the booster rockets attached to the sides of the missile. The City of Green River takes great pride in its past support of the Advanced Ballistic Re-entry System Program with the Athena rocket proudly representing that history.

In consultation with the Green River community, Bill Godby, White Sands Missile Range archaeologist, learned of the city's desire to restore the missile. Godby incorporated restoration of the rocket as one of the stipulations of the memorandum of agreement developed as mitigation for the demolition of the facility (yet to occur), in addition to developing additional interpretation of the Green River Test Site. To execute the mitigation, AmaTerra Environmental, Inc., which also completed the National Register evaluation of the site, was awarded funds to repair and improve the Athena rocket display.

On the rocket's initial inspection it appeared that the project would not be too difficult to complete and could be done in place. Previous repairs to the rocket were visible, largely concentrated toward the bottom of the rocket. Godby and AmaTerra staff agreed it would be reasonable to attempt to subcontract an autobody repair shop or repairman to complete on site repairs. However, after months of trying to attract local talent, AmaTerra had no success, encountering several very high price proposals that included the rocket being removed and located to the job shop.

Removing the rocket was out of the question due to logistics and cost. Instead, Victor Palma, AmaTerra vice president, decided to do it himself, along with contractor John Henry.

In June 2015, Palma and Henry flew to Green River, on a mission to get the job done no matter what. Despite a few surprises, they completed the effort in about seven days, with an interesting story to tell.

They discovered that the missile has an internal "skeleton" of steel and an external casing of aluminum and between the two was a mortar/concrete layer. Upon further inspection the two found a hole at the top of the booster, there by design,that allowed precipitation from snow and rain to enter the interior of the missile. In turn, the water was absorbed by the concrete middle layer like a sponge. During winter the collected moisture froze, expanded and caused the cracks in the external aluminum casing, and ultimately caused several large pieces to break off.

The initial course of action to complete the effort on site was to address the minor repairs by using a power grinder to ground broken and exposed edges and fill the cracks and holes with an epoxy mixture. At a minimum, three layers of epoxy were necessary to completely fill these areas. Once the epoxy layers reached a point where they were slightly above the casing, the epoxy was sanded smooth to be even with the casing, and then repainted.

The challenge was bigger when it came to the larger cracks and breaks, which required a good deal of creative "on your feet" thinking. They decided a concrete polymer in combination with epoxy and fiberglass cloth would be best to fill the larger sections. Upon removing sections of the middle concrete/grout layer they ground the edges of the broken and cracked external casing surface, preparing the areas for the concrete polymer and epoxy fill.

Through a cultural resources program at White Sands Missile Range, A full-scale model of an Athena Missile at O.K. Anderson Park in Green River, Utah, was restored thanks to the Cultural Resources Program at White Sands Missile Range. The former Green River Test Site was an annex to White Sands Missile Range. (Photo by Victor Palma)

Ultimately, six layers of concrete polymer followed by three layers of epoxy were required to fill the larger cracks and breaks. The entire process, for both major and minor repairs, was completed with the application of two coats of white, oil-based exterior paint.

As mitigations go, this one was certainly a first. What seemed to be the easiest tasks of the mitigation plan turned out to be not so easy. Fortunately, as a small company, AmaTerra had the flexibility to find a homegrown solution, and now can add "rocket restoration" to its list of capabilities.

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Godby is an archaeologist with White Sands Missile Range, New Mexico, and Victor Palma is with AmaTerra Environmental.

Planning association honors Zekert, Army, USACE

by Candy Walters and Jim Frisinger

The American Planning Association continues to honor the Army and the U.S. Army Corps of Engineers for their outstanding Federal planning programs, projects, technical plans, environmental planning projects and collaborative planning.

In May, the association once again presented top honors in its Federal Planning Division to the Army and Corps of Engineers for seven projects, commending them for holistic planning, stakeholder engagement, comprehensive approaches, sustainability, and innovative breadth and depth of planning.

In addition, Jerry Zekert, chief of the U.S. Army Corps of Engineers master planning team within the Installation Support Division, received the Rik Wiant Distinguished Service and Leadership Award, which recognizes a Federal Planning Division member or Federal employee "who has contributed to federal agency planning in a substantial manner over a sustained period, as well as to the development and mission" of the Federal Planning Division in general. The award was named in memory of Rik Wiant, a member of the Headquarters U.S. Army Corps of Engineers master planning team who was a champion of Federal planning and geospatial standardization.

Zekert was recognized for his effective contributions and leadership within the profession through distinguished practice, management, consulting, and promotion of sound planning within the Federal sector.

During his more than 30-year career, Zekert has shown a commitment to planning excellence. He chairs the Department of Defense's Comprehensive Planning Working Group, established and serves as the founding director of the DOD Master Planning Institute, and serves as the primary Army advisor on installation planning for the Office of the Secretary of Defense. He also oversaw the creation of the USACE Planning Support Centers.

Category 1 Outstanding Federal Planning Program:

Merit Award to the U.S. Army Reserve Regional Support Commands Vision Plan and Capital Investment Strategy, National

Jerry Zekert, chief of the U.S. Army Corps of Engineers master planning team, receives the Rik Wiant Distinguished Service and Leadership Award from Aaron Briggs, chair of the Federal Planning Division of the American Planning Association, at the American Planning Association meeting in early May in New York City. Zekert was recognized for his contributions and leadership within the Federal planning sector. (Courtesy photo)

89th Regional Support Command, 31st Regional Support Command, 88th Regional Support Command, and 63rd Regional Support Command Army Reserve Facilities, supported by Donga Yi and his team at the U.S. Army Engineer and Support Center, Huntsville, Planning Support Center and contractor AECOM. Huntsville Center employees Sean Martin and Sidney "Trace" Taylor also were part of the team supporting the Army Reserves. The plan provides a coherent set of action plans within the master planning process that can be used to evaluate individual facilities while recognizing the need for mitigation options to offset the permanent change in the facilities.

Citation Award to the Integration and Demonstration of CAMPS Dashboard with Net Zero Planner Tool. It featured demonstrations at two pilot sites: Fort Hood, Texas, and Joint Base Pearl Harbor-Hickam, Hawaii. The project developed and demonstrated integration of sustainability software that reduces the cost and time for energy planning. The honored team included the U.S. Army Corps of Engineers Fort Worth District Regional Planning Support Center, the U.S. Army Engineer Research and Development Center, Construction Engineering Research Laboratory and contractor Ecology and Environment Inc. It should be noted that in September this effort was awarded the President's GreenGov Award for Innovation.

(See Honors Zekert, page 30)

(Honors Zekert, continued from page 29)

Category 2 Outstanding Federal Planning Project:

The Honor Award was given for the Fort Belvoir Master Plan, Fort Belvoir, Virginia. Beth Santos, Chief of Planning Support Center, at the Baltimore District of the U.S. Army Corps of Engineers worked with the Directorate of Public Works at Fort Belvoir and contractor Atkins to develop a comprehensive master plan that is detailed and specifically tailored to its client, resulting in a readable and graphically polished product that will facilitate ease of use.

Category 3 Outstanding Area/Site Development Plan:

The Honor Award for the North Main Post Area Development Plan, Fort Leavenworth, Kansas, went to the U.S. Army Installation Management Command and U.S. Army Corps of Engineers Omaha District, with contractor Louis Berger with Black and Veatch. The award recognized the team's effort in development a plan to address the challenges of providing modern, sustainable development within an extensive National Historic Landmark District, incorporating a visioning process, preserving and enhancing cultural resources, planning for green infrastructure, and communicating a clear, realistic plan for short- and long-term implementation.

The Honor Award was given for the Fort Polk Warrior Plaza Area Development Plan, Fort Polk, Louisiana, in support of Jerry Zekert, and the U.S. Army Corps of Engineers Headquarters, with contractor The Urban Collaborative. The team developed a planning vision to create a downtown that focuses on recreation, shopping and housing services for the base community.

Category 4 Outstanding Technical Plan or Study

The Merit Award was presented for the Human Infrastructure System Assessment performed by the U.S. Army Corps of Engineers Engineer Research and Development Center. It assesses not only the extent of impact due to infrastructure disruption, but the reaction of the local population to it.

Category 5 Outstanding Environmental Planning Project:

The Merit Award was given for revising the Whitney Lake Master Plan, Whitney Lake Brazos River Basin, Texas, which had not been updated since 1972. Dr. Rumanda Young and her team at the Corps of Engineers Fort Worth District Planning Support Center executed an innovative USACE Headquarters process that was measurable, practical, found efficiencies, sped the revision, reduced the cost and made future lake master plan revisions routine. It included a new set of land classifications to guide the managers for this Corps of Engineers-managed facility in Central Texas. A new Environmentally Sensitive Area zone will help protect designated cultural resources, viewsheds and critical habitat for the endangered golden-cheeked warbler.

Category 6 Outstanding Collaborative Planning Project:

The Merit Award was presented for the NASA Johnson Space Center Master Plan Update. It laid out long-range plans for Johnson Space Center Main, Johnson Space Center Ellington Field and Sonny Carter (Clear Lake, Texas), and White Sands Test Facility (Las Cruces, New Mexico), developed by Corps of Engineers Fort Worth District Planning Support Center with contractor The Urban Collaborative. The team used newly developed sustainability software tools to update the Johnson Space Center Master Plan to cope with new challenges of tight capital budgets, climate change, energy conservation and greenhouse gas emission reduction.

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Walters is the managing editor of the Public Works Digest, and Jim Frisinger is a public affairs specialist with the U.S. Army Corps of Engineers Fort Worth District.

Magazine recognizes 2 Huntsville Center engineers

by Debra Valine

Consulting-Specifying Engineer magazine announced May 15 that two U.S. Army Engineering and Support Center, Huntsville, engineers are among 40 nonresidential building industry professionals age 40 and younger to receive the 2017 40 Under 40 award.

Porscha Porter, chief of the Strategy and Business Management Branch in Huntsville Center's Energy Division, and Africa Welch-Castle, the strategic development lead, also with the Energy Division, will receive the award at an Oct. 3 ceremony in Chicago.

Candidates were nominated by a professional colleague or mentor and judged based on nine areas including their commitment to excellence in their academic, professional, personal and community involvement. Porter and Welch-Castle are the only two U.S. Army Corps of Engineers employees to receive the 2017 award.

"This year's 40 Under 40 winners are superb in so many ways," said Amara Rozgus, *Consulting-Specifying Engineer* editor-in-chief. "Now in its 10th year, the program has expanded to honor the best of the best in the industry."

Africa Welch-Castle, the strategic development lead with the Energy Division of the U.S. Army Engineering and Support Center, Huntsville, will receive a 2017 40 Under 40 award from Consulting-Specifying Engineer magazine in October. (U.S. Army photo)

Porter holds a Bachelor of Science degree in electrical engineering from Alabama A&M University, in Normal, Alabama, and a Master of Science degree in management from the Florida Institute of Technology, in Melbourne, Florida. She is also a certified project management professional. As the strategy and business management branch chief, she manages the Huntsville Center's energy strategic-development team, providing a strong and unique combination of services to include strategic development for integrated energy planning, microgrid solutions, international/interagency support, energy center of expertise/sustainability, and support for the Army's Office of Energy Initiatives and the Air Force's Office of Energy Assurance.

She plays a key role in developing frameworks, guidance and transformative energy concepts and initiatives into viable programs by leveraging the Energy Division's expertise, providing outreach and pursuing partnerships within the energy community.

"Our team works with internal and external organizations in developing new energy initiatives into potential projects and programs," Porter said. "We collaborate and share knowledge and expertise with our strategic partners across many agencies to include Department of Energy, Department of Defense and local organizations such as Energy Huntsville."

An active participant with Energy Huntsville, a nonprofit dedicated to growing the region's economy in the energy sector, Porter was instrumental in the support of the Huntsville Center's Energy Division earning the Corps of Engineers a 2016 Good Neighbor Award for its collaboration and partnership with Energy Huntsville.

Welch-Castle is a professional engineer who holds a Bachelor of Science degree in mechanical engineering from Louisiana Tech University, Ruston, Louisiana, and a Master of Business Administration in project management from Walden University in Minneapolis, Minnesota, and is a Civil Engineer Corps officer in the U.S. Navy Reserve. She has more than 15 years of diverse engineering experience, ranging from hydraulic pedestal crane design/manufacturing to roadway/hydrologic designs for the Texas Department of Transportation to mechanical, electrical and plumbing design.

Porscha Porter, chief of the Strategy and Business Management Branch, Energy Division, of the U.S. Army Engineering and Support Center, Huntsville, will receive a 2017 40 Under 40 award from Consulting-Specifying Engineer magazine. (U.S. Army photo)

In her nearly six-year U.S. Army career, Welch-Castle has been instrumental in teaching, implementing and taking an innovative approach to energy. For five and a half of those years, she was an energy manager for Fort Hood, Texas, Directorate of Public Works, Energy Management Branch where she coordinated and developed energy conservation projects for solicitation of energy funding. She also served as a consultant for projects related to environmental, electrical and mechanical, including new construction, alterations, repair and maintenance by overseeing and participating in the development of long- (or short-) range energy management plans for the incorporation of energy conservation by using various program opportunities. She integrated the energy

(See Magazine Honors, page 32)

USACE honors McDaniel with installation support award

by James F. Lowe

William McDaniel, program manager-forward for the Kansas City District at Fort Leonard Wood, Missouri, has been selected as the U.S. Army Corps of Engineers 2017 Installation Support Professional of the Year.

McDaniel participates on multiple installation committees, including Real Property Master Planning, Facility Working Group, Integrated Strategic Sustainability Program, and Specification and Design Guide Working Group. He also serves as the installation liaison for the Kansas City District Environmental and Real Estate Sections, and to other districts and laboratories conducting business at Fort Leonard Wood.

"Bill's extensive experience and knowledge of Fort Leonard Wood allows him to provide expert advice on matters ranging from the installation's long range master plan to its preferences for specific construction materials," said Kelly Miller, McDaniel's supervisor. "His knowledge, exceptional leadership skills and outgoing personality, coupled with an outstanding work ethic, make him one of the most valuable members of the Corps of Engineers and the Fort Leonard Wood Department of Public Works team."

Installation and Corps of Engineers staff with whom McDaniel has served have characterized his contributions as significant. His opinions are valued and sought after by other Districts and stakeholders, according to Bobby Rakes, director, Fort Leonard Wood Directorate of Public Works.

The projects that McDaniel executed as part of the Corps of Engineers' support to Fort Leonard Wood, as well as his recent actions to resolve flooding issues at the installation's water treatment plant, have extended the useful life of that and all facilities. McDaniel's support to the garrison's director of public works and installation tenants has resulted in significant enhancements to the quality of life for Soldiers, Families, and Civilians, Rakes said.

William McDaniel, program manager-forward for the U.S. Army Corps of Engineers Kansas City District at Fort Leonard Wood, Missouri, has been selected as the U.S. Army Corps of Engineers 2017 Installation Support Professional of the Year. (Courtesy photo)

"Bill is a consummate professional. He is all about services. He makes my problems, his problems or no supported director could ask for more," Rakes said.

"I have the privilege to liaison with so many of the organizations on Fort Leonard Wood and our customers have grown through the years," McDaniel said. "We have enjoyed building strong relationships here and been able to build a lot of positive momentum.

"This award means very much to me – comparing myself to career Corps employees who have done so much has me very humbled," he added.

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(Magazine Honors, continued from page 31)

program with other Army programs through interrelationships and ensuring compatibility with Army plans, policies and goals by reviewing plans, specifications, shop drawings, material approvals, engineering studies, cost studies, surveys, and analyses; and assisting in writing contracts and specifications for various energy related projects.

At Huntsville Center, Welch-Castle works with military installations and laboratories to conduct microgrid assessments.

"I am working on a microgrid initiative using third party financing that will help enhance energy security and resiliency for different agencies," Welch-Castle said. "We look at the installations existing infrastructure makeup used for operation. Then identify mission critical functions and look for ways to ensure those functions can continue if something catastrophic were to happen. A microgrid is typically a standalone approach that is considered to be one solution that can be used to enhance energy security, but we are innovatively looking for others."

For additional information about the 40 Under 40 program, visit www.csemag.com/40under40.

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Valine is the chief of the Public Affairs Office for the U.S. Army Engineering and Support Center, Huntsville, Alabama.

USAG Stuttgart receives Army's top installation award

by the U.S. Army Garrison Stuttgart Public Affairs

STUTTGART, Germany – The Army Chief of Staff announced that U.S. Army Garrison Stuttgart has received the 2017 Army Community of Excellence Gold Medal award as the top installation in the Army.

"I'm extremely proud of the amazing garrison team that supports the units and family members of the Stuttgart community," said Col. Glenn K. Dickenson, garrison commander.

The award reflects how U.S. Army Garrison Stuttgart consistently excelled at providing base operations, training support and quality of life services to Soldiers, Families and Civilians.

"Simply put, it is the all-encompassing installation award," Dickenson said. "There are awards for installations that look at specific areas like supply, energy, environment; the ACOE looks at the totality of a garrison.

The garrison was specifically graded on seven categories: leadership; strategy; customers; measurement, analysis, and knowledge management; workforce; operations; and results, Dickenson explained.

The Malcom Baldrige National Quality Award criteria is used as a framework for the Army Community of Excellence performance assessment by helping Army installations and communities focus on providing excellence in facilities and services in support of Soldiers, their Families and Civilians. Baldrige-based performance assessments provide opportunities to identify best practices in installation management and reveal potential opportunities to apply appropriate performance improvement tools.

This is not the first time U.S. Army Garrison Stuttgart has been recognized with an Army Community of Excellence award. In 2014, it was the only overseas garrison to be recognized, and one of only two garrisons Army-wide, to be named as Most Improved by the Army Community of Excellence program.

Established in 1985 and sponsored by the Chief of Staff of the Army, the Army Community of Excellence program is an annual Army-wide assessment of all aspects of installation management. The program is designed to improve installation operations and readiness through business transformation processes.

For the Army Community of Excellence assessment, each installation documents its strategic planning, performance, process improvements and initiatives for innovation, which in turn are evaluated and scored by teams of trained experts at the Office of the Assistant Chief of Staff for Installation Management and Installation Management Command headquarters.

The Lantern Walk is an annual activity that brings the residents of U.S. Army Garrison Stuttgart together each year. Quality of life is one of the criteria installations are graded on as part of consideration for the Army Community of Excellence award program. (Photo by Kevin S. Abel)

GSA plans geographically based repair and renovation pilot

by Timothy Benoit and Tracy P. Wilson

At the end of December, Headquarters, U.S. Army Corps of Engineers, in consultation with the Army, initiated actions to revitalize the Job Order Contracting Program. While researching current trends, the Corps of Engineers senior leadership was engaged by Mary Ruwwe, Government-wide Category Manager for Facilities and Construction, General Services Administration, and her staff regarding the suite of acquisition tools, asset management hallways and communities, directories, tutorials, and document libraries available on the Acquisition Gateway.

The Acquisition Gateway is a workspace for acquisition professionals and federal buyers to connect with resources, tools and each other to improve acquisition government-wide – https://hallways.cap.gsa.gov. Managed by the General Services Administration's Acquisition Platform Team, the Gateway is becoming the hub of an acquisition professional's daily activities by connecting federal acquisition professionals who want to share advice, success stories, and lessons learned.

The Corps of Engineers is encouraging the other Military Services to join General Services Administration in an upcoming pilot program for repair and renovation contracts as well as to participate on the Acquisition Gateway itself. The Facilities and Construction Category will be championing a new, government-wide solution for Repair and Renovation later in calendar year 2018.

The new vehicle will be a total small business set aside solution utilizing the Job Order Contracting/Simplified Acquisition Base Engineer Contracting methodologies to reduce procurement lead times and costs for accomplishing maintenance, repair, and minor construction work requirements at federal installations and facilities. Installations and facilities will have the freedom to establish single-project task orders or Blanket Purchase Agreements for recurring work requirements with one or more contractors.

As with other Job Order Contracting solutions, this approach takes Unit Price Book pricing and a competed, not-to-exceed coefficient to arrive at predictable project costs. All awardees will be pre-approved by the General Services Administration to perform repair and renovation work. The new contracting vehicle will be administered by General Services Administration's Heartland Acquisition Center and be a part of Multiple Award Schedule 03FAC, Facilities Maintenance and Management.

The new Repair and Renovation solution will be piloted in the following states:

- Virginia
- Maryland
- West Virginia
- North Carolina
- Washington, District of Columbia.

"We are excited to pilot this Repair and Renovation contracting solution as we expect it to save federal agencies not only taxpayer dollars but also enable increases in efficiency in getting repairs and renovations made," Ruwwe said.

"We believe this contracting solution will help installations get repairs and renovations made quickly and put facilities back into productive use faster," said Stacey K. Hirata, former chief, Installation Support Division, U.S. Army Corps of Engineers.

For more information about the Repair and Renovation pilot solution and the vendors being considered, contact the team at HSS_Marketing@gsa.gov.

Additional information can be obtained by contacting Tim Benoit at tim.benoit@gsa.gov or 816-260-1972.

U.S. Army Corps of Engineers contact for Public Works and Job Ordering Contracting information and support is Tracy P. Wilson, CFM, AICP, AAIA, at tracy.p.wilson@usace.army.mil or 202-761-7581.

POCs are Tim Benoit, who is the Federal Acquisition Service Category Manager with GSA, and Tracy Wilson, the Public Works Program Manager/Sustainment Management Systems National Program Manager for the Installation Support Division, Headquarters, U.S. Army Corps of Engineers.

A new government-wide pilot for Repair and Renovation Job Order Contracting is being planned for later in calendar year 2018 for recurring work requirements. (Government Services Administration courtesy photo)

Huntsville Center names Marin programs director

by Debra Valine

Albert "Chip" Marin III assumed the duties as programs director at the U.S. Army Engineering and Support Center, Huntsville, Alabama, on May 15.

Marin had been acting programs director since Charles Ford retired March 3.

Previously, Marin was the director of Huntsville Center's Installation Support and Programs Management Directorate, which consists of 42 Program business lines that execute roughly $2 billion in goods and services in support of U.S. Army and Department of Defense installations worldwide.

As programs director, he serves as the Senior Civilian and Commander's Civilian Deputy for the execution of all support functions, day to day operations, operational and strategic communications. He is responsible for acquisition planning, scheduling and awarding of numerous major acquisitions through which 5,500 contract awards and task orders are made annually.

Marin joined the Huntsville Center in December 2013 following an assignment as the U.S. Army Corps of Engineers strategic liaison officer to U.S. Army Central Command (ARCENT) and the Coalition Forces Land Component Command (CFLCC), the senior Army-level commands responsible for the warfighters in Iraq, Syria and Afghanistan. He planned, coordinated and gained funding for all Corps of Engineers support to ARCENT, CFLCC and U.S. Central Command (CENTCOM). He also served as a member of the ARCENT commanding general's senior planning group responsible for developing, wargaming and writing all contingency and operational plans in the CENTCOM area of responsibility.

Before joining the Corps of Engineers, he worked as a Pacific area program and project manager in the Federal Government Group with the Fluor Corporation, an international engineering, procurement and construction management firm.

Prior to his work there, Marin served 26 years in the U.S. Army as an engineer officer and retired from active duty as a colonel.

He is an active member in the Society of American Military Engineers, the Army Engineer Association and the Project Management Institute.

Albert "Chip" Marin III is the new programs director at the U.S. Army Engineering and Support Center, Huntsville, Alabama. (U.S. Army photo)

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Valine is the public affairs officer for the U.S. Army Engineering and Support Center, Huntsville.

Army releases Environment, Safety & Occupational Health Strategy 2025

by David Guldenzopf

The Office of the Deputy Assistant Secretary of the Army for Environment, Safety, and Occupational Health has published a holistic Army-wide strategy that incorporates environmental, safety, and occupational health strategy, policies and programs into one document: the Army Environment, Safety, & Occupational Health Strategy 2025 (Army ESOH Strategy 2025).

The Army ESOH Strategy 2025 introduces an entirely new strategic design and direction for the Army's Environmental, Safety and Occupational Health program.

The strategy establishes a new paradigm that views environmental resources as mission enabling assets that are the foundation of a ready, proficient, and resilient Army. This paradigm transforms the costs of environmental compliance into investments that improve the Army's operational capability.

The Army ESOH Strategy 2025 also introduces the synchronization of safety and health in the workplace. This synchronization will drive synergies in the use of risk assessment, medical surveillance examinations, safety training, safety engineering, workplace wellness programs, and total worker health. By maintaining the health of Soldiers and employees, health-related costs decrease while work productivity and mission support increases.

The Army ESOH Strategy 2025 establishes new Army-wide Environmental, Safety and Occupational Health program goals and objectives that maintain an effective environmental stewardship program and a safety-based culture for Soldiers, their families, civilians, contractors, and communities surrounding Army installations. These goals and objectives also contribute to a stronger, ready and responsive fighting force. The Army ESOH Strategy 2025 goals establish where we intend to go and tell us when we get there, and the objectives identify the specific steps the Army will take to attain the goals.

To meet future challenges and succeed in future operating environments, it is imperative that the Army ESOH Strategy 2025 is implemented in a manner that ensures its goals and objectives are attained at every level.

The strategy is available at https://www.army.mil/e2/c/downloads/472081.pdf

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Guldenzopf is the director for Environmental Quality, Office of the Assistant Secretary of the Army for Installations, Energy and Environment.

E-RAS makes data reporting better, cheaper, faster

by David Carr

There is inconsistency across the U.S. Army Installation Management Command enterprise in reporting toxic chemical releases and hazardous materials. In addition, the command's Environmental Funding Allocation Model no longer accounts for Emergency Planning and Community Right-To-Know Act (EPCRA) contract funding.

Many installations use contractors to report but there is a better, cheaper and faster way, which Installation Management Command has standardized. It is the EPCRA Reporting Analysis and Standardization (E-RAS).

Through the E-RAS, Installation Management Command's G4 provides guidance and best practices for cost-effective data collection to support EPCRA Sections 312 and 313 reporting at all Installation Management Command garrisons (Ref: 40CFR §370 for Section 312, §372 for Section 313, Executive Order 13693, and Department of Defense Instruction 4715.6).

Standardization across the command will be achieved using a common set of standard operating procedures.

The E-RAS is a guide for the garrisons to define roles and responsibilities for managing data for EPCRA Sections 312 and 313 hazardous chemical inventory and toxic chemical release requirements. Application of appropriate exemptions also is addressed. Standardization across the command will be achieved using a common set of standard operating procedures.

This standardization will result in continuity of EPCRA reporting and allow visibility of garrison EPCRA data to Installation Management Command headquarters. Visibility of EPCRA data will facilitate upward reporting in the Department of Defense Annual Report to Congress and, more importantly, enable transparency for providing information to the public.

The Emergency Planning and Community Right-to-Know Act (EPCRA) Reporting Analysis and Standardization (E-RAS) system enables installations to use a set of standard operating procedures across an entire installation to gain consistency in reporting EPCRA data. (U.S. Army photo)

The E-RAS provides many tools to optimize EPCRA reporting, including lessons learned from various site surveys of garrisons; worksheet; and screenshots of the Enterprise Environmental, Safety, and Occupational Health – Management Information System and Toxics Release Inventory – Data Delivery System. State and U.S. Environmental Protection Agency contacts for both Tier 2 Submit and Toxic Release Inventory – Made Easy Web (TRI-ME web) are included for use by the garrisons.

The E-RAS will help garrisons streamline data collection, calculations and reporting while promoting consistency in the Army approach to EPCRA compliance (similar to both Air Force and Navy). A consistent approach ensures fulfillment of EPCRA reporting requirements pursuant to Executive Order 13693 and Title III of the Superfund Amendments and Reauthorization Act, with less scrutiny by regulators.

While this guidance document will be updated periodically to accommodate changes in regulatory requirements, new executive orders or interpretations, it remains the responsibility of each installation to comply with current regulatory requirements, policy, etc., and to recognize the effects of changes regarding on-site activities, operations and chemicals.

Three E-RAS classes have been conducted since November, with the goal of having someone trained from each of the 31 IMCOM installations that provide EPCRA reports. For more information about classes or the E-RAS guide, contact David Carr at david.j.carr.civ@mail.mil.

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Carr is responsible for environmental program implementation and operation for Installation Management Command and assigned to the G4, Environmental Division.

Courses help educate facility personnel about corrosion prevention, control

by Cynthia Greenwood

There has never been a better time for building professionals in government and the private sector to become immersed in the practice – and the science – of corrosion prevention and control. Since 2005, the Department of Defense Corrosion Policy and Oversight Office has been sponsoring facilities-centric coursework provided by NACE International, SSPC: The Society for Protective Coatings, and the Whole Building Design Guide portal.

"We encourage anyone responsible for sustaining a military installation to take advantage of our array of online and in-person training opportunities to improve his or her knowledge in mitigating corrosion," said Daniel J. Dunmire, director of the DOD Corrosion Policy and Oversight Office.

Since 2005, officials at the DoD Corrosion Office have contracted with NACE and SSPC to provide tuition-free courses in corrosion prevention to military personnel. This fall, NACE (starting Sept. 1) and SSPC (starting Aug. 1) will offer free tuition to active duty and civilian personnel within the DOD for approximately 65 courses pertaining to the fundamentals of basic corrosion, protective coatings, cathodic protection, and coatings inspection for shipboard, pipeline, refining, marine, and offshore applications.

Professionals who have benefitted from DOD-funded courses have come from a variety of armed service divisions, including the U.S. Army Corps of Engineers, which employs highly trained and experienced coating inspectors in its quality assurance program. "The availability of DoD funding for training and certification courses in industrial coatings provides an outstanding resource for the Army Corps of Engineers to ensure that our quality assurance staff is exceptionally knowledgeable," said John L. Pariseau, a quality assurance specialist at the Corps of Engineers Portland District.

Another source of free training for can be found on the recently enhanced Corrosion Prevention and Control Source compendium, located on the Whole Building Design Guide website (www.WBDG.org). WBDG.org, sponsored by the National Institute of Building Sciences, is a far-reaching, Web-based reference portal that provides easy access to building-related guidance, criteria, training, and technology.

Installations similar to this Army repair depot in Corpus Christi, Texas, were evaluated by the Department of Defense Corrosion Policy and Oversight Office for its 2012 Facilities and Infrastructure Corrosion Evaluation Study. The congressionally mandated study projected a vital need for training as the facilities workforce ages and newer personnel, with little corrosion-related experience, are charged with maintaining DOD's aging infrastructure. (Photo by Jaclyn Nix)

Since 2014, the Whole Building Design Guide's Corrosion Prevention and Control Source (wbdg.org/ffc/dod/cpc-source) has housed short training vignettes on corrosion prevention, mitigation, policy, criteria, and best practices. The DOD Corrosion Office and National Institute of Building Sciences created these resources for all government and private-sector building professionals involved in the planning, design, construction, quality control, sustainment, and maintenance of DOD facilities. The vignettes, which can be viewed in 20 minutes or less, include such titles as "Corrosion Overview;" "Planning, Project Development, and Design;" "Introduction to Paints and Coatings;" "Sustainment (Repair and Maintenance);" and "Construction and Quality Control."

The training vignettes comprise a small part of the Whole Building Design Guide's newly enhanced Corrosion Prevention and Control Source compendium. It provides up-to-the-minute information and knowledge for planners, designers, constructors, and maintainers, and assists in the planning, identifying, repairing, or eliminating of corrosion during a facility's life cycle.

The Corrosion Prevention and Control Source helps users realize the key objective of reducing overall life-cycle costs, while increasing sustainability and providing improved durability. These resources can be found on pages dedicated to these topics: Criteria; Training; Best Practices Identified During the FICE Study; Environmental Severity Classification; DoD Facilities and Infrastructure Corrosion Costs; The Importance of Including Corrosion in the Planning Process; and Sustainment, Restoration, and Modernization (SRM) and Operations and Maintenance (O&M).

"We are confident that the Whole Building Design Guide's CPC Source will serve as a useful knowledge resource related to design criteria, system design, material selection, production processes, and corrosion prevention strategies, so that building experts at all levels are equipped to make good design decisions that promote long building life and sustainability," Dunmire said.

The Corrosion Prevention and Control Source was enhanced and revised this spring. The Whole Building Design Guide website is available to the building community with the support of DOD, the Army Corps of Engineers, the Naval Facilities Engineering Command Engineering Innovation and Criteria Office, the Air Force, the General Services Administration, the Department of Veterans Affairs, National Aeronautics and Space Administration, the Department of Energy, and the Sustainable Buildings Industry Council.

DOD personnel may inquire about DOD-sponsored funding for NACE courses by contacting Shawna Jones at Shawna.Jones@nace.org or Carmen Peebles at Carmen.Peebles@nace.org. Interested students also may inquire about funding for SSPC courses by contacting Jennifer Merck at merck@sspc.org.

POC is Cynthia Greenwood, 713-527-8699, cynthiagreeenwood@flaviusink.com

Greenwood is the outreach liaison and editor at large for the DOD Corrosion Policy and Oversight Office.

USACE district reaps benefits of engineer officer development program

by Lt. Col. Timika M. Wilson

The U.S. Army Corps of Engineers Jacksonville District has been finding some extra assistance in the form of Army Engineer Officers through the eight-year-old Technical Engineer Competency Developmental Program.

Jacksonville District Commander Col. Jason A. Kirk has established a rigorous program for the 18- to 24-month tour for the Army Engineers Officers with Engineer degrees who participate in the course prior to assignment to the Engineer Captain Career Course. For the engineer officers in the development program, their experience with the Corps of Engineers affords them the opportunity to excel with an advanced knowledge base many of their peers will not experience.

The Jacksonville District program participants have made significant contributions to not only the Corps of Engineers, but also military and public partners throughout Jacksonville's Area of Operations in the areas of Operations, Maintenance and Engineering from Florida to Puerto Rico.

The district's department development program officer, 1st Lt (P) Robert Cornell, began his tour in January 2016. He quickly became a lead for projects that impact the public works domain, contributing to 10 separate office Project Delivery Teams across business lines to deliver the program for multi-year, multi-million dollar projects including Herbert Hoover Dike and the Loxahatchee SMART Study. He also published an article in the *Army Engineer* magazine on the study achieving milestone success.

Cornell also participated in discussions with the South Florida Water Management District on plan formulation and alternatives for the Loxahatchee River Watershed Restoration, a river and watershed that provides homes for 33 federally threatened and endangered species, 20 federally protected migratory bird species, and 30 additional State's species of concern.

In March, Cornell earned his Project Management Professional Certification and applied those techniques to using the Resident Management System to manage all construction submittal reviews for the $38 million Water Control Structure 12 replacement that will aid in managing water flows in and out of Herbert Hoover Dike. He also provided the South Florida Operations Office assistance in creating a 2017 Emergency Operations Standard Operating Procedure to ensure preparedness, a document that positively impacts Okeechobee Waterway recreation users' awareness of lock and dam emergency procedures.

First Lt Joseph Cotton, a second Jacksonville District developmental program participant, will complete his tour in 2018 and is slotted to attend the Engineer Captain Career Course in early July 2018. He will follow a similar professional development training plan with the addition of tours in Operations and Planning Divisions.

"It has been exciting to see different parts of the organization that most officers are not exposed to so early in their career," Cotton said. "Having the freedom to assist with multiple projects and focus in on what interests me has allowed me to develop a deeper understanding of how the Corps of Engineers truly works as opposed to just seeing what processes there are to get a project completed.

"This will help with completing my PMP (Project Management Professional) and Professional Engineer certification as I don't get many opportunities to do hard engineering in a construction or combat unit. Being able to revisit topics that were covered in college has also been exciting and is better preparing me to be an engineer," he added.

Key to the success of this program is the opportunity for hands-on application of technical principles the engineers learned in both military and civilian schools. From repairing a piece of equipment to reviewing contractor submittals and developing Emergency Operations Standard Operation Procedure for All Hazards Preparedness, these officers push themselves to learn their craft while engaging with new tools, resources and interactions with the public and Corps of Engineer professionals.

No matter the task or challenge, these young officers have met every single one with a maturity and ability to adapt. They are both dynamic communicators with technical acumen that I wish I had cultivated at their age.

They are truly value added to the organization and have leveraged this professional development opportunity to the fullest.

POC is Lt. Col. Timika M. Wilson, 904-232-2242, Timika.m.wilson2@usace.army.mil, deputy commander, U.S. Army Corps of Engineers Jacksonville District.

First Lt. Robert Cornell (kneeling) and 1st Lt. Joe Cotton assist Miccosukee tribal elder Jimmy Tigertail repair a swamp buggy that jumped off its track during a the spring survey of tribal lands in the Florida Everglades. Cornell and Cotton have been honing their engineering skills while participating in the Technical Engineer Competency Developmental Program at the U.S. Army Corps of Engineering Jacksonville District. (Photo by Kim Taplin)

Master Planning Institute sets training course schedule

by Jerry Zekert

The need for master planning is becoming more and more important as our Army and Department of Defense leaders are looking at holistic comprehensive installation development solutions.

At a recent conference, a member of the Senate Armed Services Committee provided insight that members of Congress are expecting DOD to use installation master plans to guide development of their installations. Keeping up on current planning practices is essential in light of Office of the Secretary of Defense direction to update installation master plans by 2018, new initiatives for Installation Energy Plans, and planned issuances of new Area Development Plan Unified Federal Criteria.

The Department of Defense Master Planning Institute, which operates under the auspices of the U.S. Army Corps of Engineers Proponent Sponsored Engineer Corps Training Program, has training courses available throughout the remainder of the calendar year. People who are interested in attending should work with their training officers to consider attending one of the remaining master planning training courses. All classes are open to employees of the Corps of Engineers, the Army or other DOD Services, and Federal agencies as well as city and state agencies, contractors and private planning professionals. Both the American Institute of Certified Planners and the American Planning Association accredit the courses.

If interested or for more information to include detailed descriptions, costs and registration, contact the U.S. Army Corps of Engineers Learning Center registrar's office in Huntsville, Alabama, at 256-895-7425, 256-895-7422, 256-895-7437, or 256-895-8086. The fax number is 256-895-7469. Also, go to http://ulc.usace.army.mil or http://www.dodmpi.org/.

POCs are Anthony Edwards, 256-895-7495, Anthony.t.edwards@usace.army.mil, or

Jerry Zekert, chief, Master Planning Program, Headquarters, U.S. Army Corps of Engineers, at 202-761-7525, jerry.c.zekert@usace.army.mil

FY2017 Master Planning Institute Courses

Date	Course #	Description	Place	Tuition
11-13 July	392	MP Sustainable Historic Structures	Charleston, SC	$ 1,081.00
24-25 July	319	MP Guideline Implementation	Buffalo, NY	$ 990.00
26-28 July	326	MP Program Execution	Buffalo, NY	$ 1,089.00
01-04 August	948	MP Visualization Techniques	Huntsville, AL	$ 1,660.00
15-18 August	952	MP Advanced Techniques (ADP's)	Portland, OR	$ 1,723.00

Please note: Except for course 392, all these courses have numerous openings and are subject to cancelation. Thus, it is imperative if you all are interested please contact us as soon as possible to register.

FY2018 Training Program

05-08 Dec.	075	MP Principles	Philadelphia
13-20 April	258	MP Energy & Sustainability	New Orleans
19-20 April		Federal Planning Division Training Workshop	New Orleans
21-24 April		American Planning Association National Conference	New Orleans
24-26 April	163	MP Energy & Resiliency	Champaign, IL
08-11 May	241	MP Practices	Savannah, GA
04-07 June	075	MP Principles (2nd Offering)	San Francisco
10-12 July	392	MP Sustainable Historic Structures	Cincinnati
23-24 July	319	MP Guideline Implementation	Kansas City
25-27 July	326	MP Program Implementation	Kansas City
07-09 August	948	MP Visualization Techniques	Huntsville, AL
21-24 August	952	MP Advanced Techniques (ADP's)	Norfolk, VA

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